



VistA Blood Establishment Computer Software (VBECS) Version 1.4.0.0

User Guide

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Department of Veterans Affairs
Office of Enterprise Development

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Revision History

Date	Revision	Description	Author
6-17-08	1.0	<p>Modified VistA Blood Establishment Computer Software (VBECS) User Guide for VBECS 1.4.0.0:</p> <ul style="list-style-type: none"> • Replaced "1.3.0.0" with "1.4.0.0." • Replaced "March 2008" with "June 2008" in the footer. • Added "electronically or serologic" to step 4 of C:T Ratio Report, VBECS actions. • Added to Incoming Shipment section, fifth bullet under Limitations and Restrictions: "The display label that is built when logging a blood product into VBECS does not change from volunteer donor to autologous when the donation type is changed." • Added to Post-Transfusion Information section, Limitations and Restrictions: "VBECS cannot update a unit record to presumed transfused when a user has that unit record open (locked) in Enter Post Transfusion Information. VBECS will attempt to update the unit the next time the presumed transfused background routing runs if the unit remains in an issued status." • Added to Working with Data, ninth bullet: "VBECS allows selection of deceased patients without a warning message presented when VBECS has not received a patient death update message from VistA." • Added to Select Units section, step 9: "Units that are selectable with an override do not appear on the list of available units and must be scanned or entered by the user." 	BBM Team
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Introduction

The main purpose of the VistA Blood Establishment Computer Software (VBECS) is to automate the daily processing of blood inventory and patient transfusions in a hospital transfusion service.

VBECS is an improved Blood Bank application that facilitates ongoing compliance with Food and Drug Administration (FDA) standards for medical devices and enhances the VA VHA's ability to produce high-quality blood products and services to veterans. The system follows blood bank standards, standards of national accrediting agencies, FDA regulations, and VA policies.

VBECS supersedes VistA Blood Bank v5.2 for blood bank operations. VistA Blood Bank v5.2 blood unit records remaining after the transfer of patient information to VBECS are available for reference only and cannot be edited. VistA Blood Bank v5.2 validation records must be maintained for five years after the last of the blood unit records is transferred to VBECS.

Unauthorized access or misuse of this system and/or its data is a federal crime. Use of all data shall be in accordance with VA policy on security and privacy.

The U.S. Food and Drug Administration classifies this software as a medical device. Unauthorized modifications will render this device an adulterated medical device under Section 501 of the Medical Device Amendments to the Federal Food, Drug, and Cosmetic Act. Acquiring and implementing this software through the Freedom of Information Act require the implementer to assume total responsibility for the software and become a registered manufacturer of a medical device, subject to FDA regulations.

Freeware Disclaimer

Requests for VBECS may be submitted through the Freedom of Information Act (FOIA). Submit requests to:

Department of Veterans Affairs
VHA Office of Information Field Office
ATTN: VA Service Desk (FOIA Request)
3701 Loop Road East, Building 40
Tuscaloosa, AL 35404

Related Manuals and Materials

- *VistA Blood Establishment Computer Software (VBECS) Installation Guide*
- *VistA Blood Establishment Computer Software (VBECS) Technical Manual-Security Guide*

Copies of *VistA Blood Establishment Computer Software (VBECS) User Guide* may be obtained from VDL: VistA Documentation Library (VDL), VHA OI – Health Systems Design & Development Web page.

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Orientation

This section covers:

- How This User Guide Is Organized
- Security: who can use VBECS
- Application Architecture: the architectural requirements for VBECS
- Hardware and Infrastructure Architecture: the system environment for installation and operation of VBECS
- VistA and VBECS: how VBECS compares to VistA
- Customer Support: how to get help

How This User Guide Is Organized

Terms

For consistency and space considerations, the pronouns “he,” “him,” and “his” are used as pronouns of indeterminate gender equally applicable to males and females.

In many instances, a user may scan a barcode or enter data manually (by typing). The term “enter” is used throughout this guide to mean “enter manually.”

See the Glossary for definitions of other terms and acronyms used in this guide.

Background and Basic Knowledge

The Introduction, Orientation, and Using the Software sections provide the background and basic knowledge VBECS users need.

Figures and Tables

If you refer to figures and tables from the user guide in your local policy and procedure documents, you may wish to use their titles only, without figure or table numbers: as the user guide is updated, those numbers may change.

Options

The Configuring Site Parameters, Component Processing, Processing Orders, Patient Services, and Reports sections cover VBECS options.

Each option section starts with an introduction, a short paragraph that explains what a function allows a user to do, followed by:

- Assumptions: tasks that must be completed before performing a function.
- Outcome: results of performing a function.
- Limitations and Restrictions: features of the system that are restricted by and exist within this function.
- Additional Information: information that helps the user perform a function.
- User Roles with Access to This Option: which users may perform this option in whole or in part.
- A detailed description of what the function allows each user to do. Two or more arrows (►) indicate functions limited to a specific role.
- Table of steps for the basic path (user and VBECS actions).
- Tables of steps for alternate paths (user and VBECS actions).
- Figures (examples of reports, screen shots, etc.).
- Table of alerts that may occur during an option.

A  (bullhorn) indicates that VBECS emits an audible alert. Keep the sound on to hear the alerts (see Volume for instructions on adjusting the volume).

- Outlined, italicized text highlights tips, warnings, and cautions, for example:

A  signals potential hazards throughout this guide as they occur.

Supplemental Information

The third group of sections (References, Glossary) provides knowledge that may be needed beyond the standard, daily use of VBECS.

Appendices

The appendices contain truth tables, diagrams, and other materials for reference.

Click a section name or page number in the table of contents to move to a section. The index does not incorporate this feature.

Security

User roles identify who can access which functions. Not every VBECS user has access to all VBECS options or functions within options. Two or more arrows (►) indicate functions limited to a specific role.

 *It is critical that each site evaluate its staff and determine appropriate security levels based on training and qualifications.*

User roles also govern which options are available and which warnings can be overridden. VBECS displays options that are not available to a user in gray text.

Each of the six user roles is associated with a security level (see Table 1). Privileges accumulate as the security level increases. For example, a Lead Technologist's privileges include those of a Blood Bank Technologist and Enhanced Technologist.

Table 1: User Roles and Functions

Security Levels and User Roles	Accessible Functions	Who Should Fill These Roles?
Level 1: Blood Bank Technologist (all users)	<ul style="list-style-type: none">Activate/edit some shipper information.Activate/edit some blood product information.Standard access (includes patient testing, accepting and canceling orders, modifying units, processing shipments, processing transfusion reaction workups, accessing report functions)	Rotating technologists, new employees, and students trained to perform associated tasks and overrides.
►► Level 2: Enhanced Technologist	<ul style="list-style-type: none">Edit unit cost.Modify/issue expired blood products.Release blood products from quarantine.Edit unit login prior to defining patient associations.Edit verified unit confirmation testing.Edit patient record/verified data and test results (except the ABO/Rh for historic record and the antibody field, which results in an antigen negative requirement).Release directed units to the main blood supply.	Experienced technologists trained to process associated overrides and options.

Security Levels and User Roles	Accessible Functions	Who Should Fill These Roles?
►►► Level 3: Lead Technologist	<ul style="list-style-type: none"> Select/issue ABO incompatible blood. Select/issue antigen positive or untyped red blood cells (for the clinically significant antibodies in the table). Print internal reports. Maintain login message. 	Experienced technologists trained to process associated overrides and options (e.g., evening- or night-shift supervisors).
►►►► Level 4: Traditional Supervisor	<ul style="list-style-type: none"> Maintain minimum levels. Edit permanent record of the patient's historic ABO/Rh. Edit Transfusion Requirements (TRs) and Special Instructions (SIs). Edit patient record red cell antibody permanent fields (match antigens in the antigen table). Edit a blood unit's record (verified unit data when unit has any previous patient associations). 	Experienced blood bank supervisors trained to process associated overrides and options
►►►►► Level 5: Enhanced Supervisor	<ul style="list-style-type: none"> Edit antigen frequency table to reflect local population. Add new local shipper, not already on the table issued with VBECS. Edit and create canned comments for the division. Edit and create consultative reports, templates, MSBOS, reagents, and equipment maintenance logs for the division. 	Experienced blood bank supervisors or VBECS administrators trained to process associated overrides and options
►►►►► Level 6: Administrator/Supervisor	<ul style="list-style-type: none"> Define VBECS users' security settings. Enable electronic crossmatch at the division. Populate International Council for Commonality in Blood Banking Automation, Inc. (ICCBBA) number for the division. Define valid unit modifications for the division. Assign workload codes for the division. Configure testing. Configure division. 	VBECS administrators trained to process all overrides and options not designed to change frequently. This role may be assigned temporarily to a blood bank supervisor at setup to configure the division.
VBECS System Administrator (not a VBECS user)	<ul style="list-style-type: none"> Add users to active directory. Applies maintenance and VBECS patches to the system. 	When the division is configured, assign this role only to the System Administrator defined by VA policy and procedures.

The VA Wide Area Network (WAN) is protected from unauthorized access. The hardware running the VBECS application and its database will be installed in a secure location to prevent unauthorized modifications and accidental damage.

Application Architecture

The primary purpose of VBECS is to automate the daily activities of a hospital transfusion service: blood inventory and patient transfusion processing. The major goals of the application are:

- Improve the safety of blood/blood component transfusions by decreasing the risk of errors through effective use of current technology such as barcode scanning, retrieval of previous records to be used for comparison, and detection of inconsistencies in data input
- Improve the quality of patient care through evaluation of transfusion appropriateness and follow-up on the effectiveness of transfusions
- Provide comprehensive reporting capabilities for quality monitoring within the transfusion service and for clinicians

VBECS operates as a discrete application, in accordance with FDA regulations regarding change to a medical device. It interfaces with the current VistA applications, using Health Level 7 (HL7) and VistALink. Areas of operation that are part of the VistA Blood Bank v5.2 software medical device (except for the donor module) are contained in this encapsulated VBECS package. Patient orders originate and are received from the Computerized Patient Record System (CPRS) and Laboratory applications.

Hardware and Infrastructure Architecture

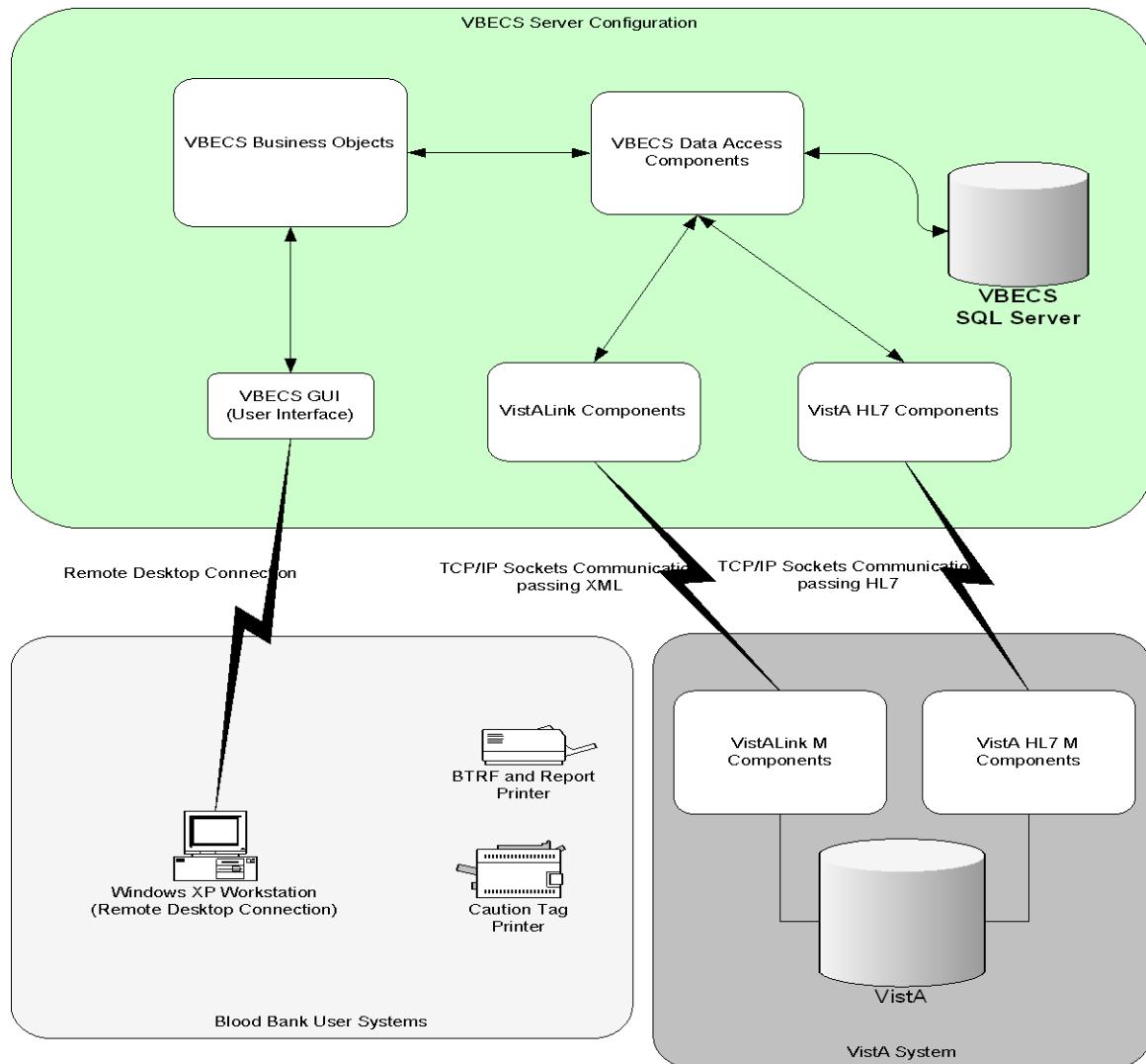
The VBECS application requires hardware and system software to serve five users in a standard configuration and up to 25 users in an integrated Veterans Integrated Service Network (VISN) environment. Figure 1: System Schematic describes the major system components: a Windows 2003 Server system (the execution environment for the VBECS application) and Windows XP workstations for access to VBECS through Windows Remote Desktop Connection. The VBECS server communicates with and exchanges information with VistA applications through Extensible Markup Language (XML) and Health Level 7 (HL7) messages over Transmission Control Protocol/Internet Protocol (TCP/IP) networking.

Options That Require VistALink

These options require a connection through VistALink. When VistALink is not active and VBECS requires access to VistA data, VBECS prompts the user to activate VistALink. When VistALink is not available, VBECS warns the user and asks him to try again later.

- Accept Orders: Pending Order List
- Blood Products
- Component Classes
- Display Order Alerts
- Document ABO Incompatible Transfusions
- Edit Unit Information (used when editing patient restrictions)
- Incoming Shipment (used when restricting units to patients)
- Issue Blood Components
- Medication Profile
- Return Issued Units To Blood Bank
- Transfusion Complications Report
- Transfusion Complications
- Transfusion Effectiveness Report
- Transfusion Effectiveness
- Transfusion Requirements Report
- Workload Codes

Figure 1: System Schematic



Users may not change or replace operating platforms.

Customer Support

Problems?

Contact your Information Resource Management (IRM) or Laboratory Automated Data Processing Application Coordinator (ADPAC) if you encounter problems and for training support.

VA Service Desk Primary Contact

For Information Technology (IT) support, call the VA Service Desk (VASD), 888-596-HELP (4357) (toll free), 24 hours per day, 7 days per week. [Users with access to the VASD-supported request tool (e.g., Remedy) may file a ticket in lieu of calling the VASD.]

VA Service Desk Alternate Contacts

- During business hours: As an alternate to the toll-free number, call 205-554-4710 (or 205-554-4711 through 205-554-4725), Monday through Friday (excluding holidays), 8:00 a.m. to 7:30 p.m. (Eastern Time).
- Outside business hours: Call 205-554-3459 (or 205-554-3460 through 205-554-3465, 205-554-3472, 205-554-3475, or 205-554-3482 through 205-554-3485).
- Web site: http://vaww.va.gov/emc/index.asp?s=6&p=nhd_home (VHA Enterprise Management Center)
- Email: vhacionhd@va.gov

Using the Software

Using the Software explains:

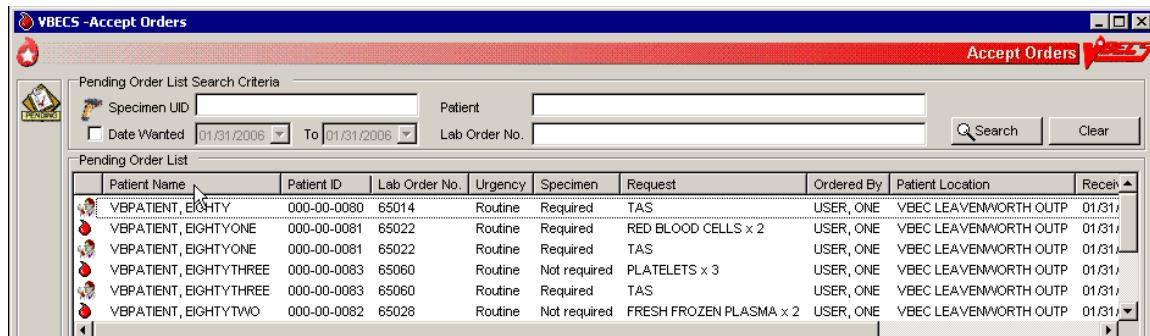
- How to access VBECS and VistA
- What users will see on the screen
- What the icons and other symbols mean
- Which conventions are used in this guide
- How to exit VBECS

Software Basics

- When a message window requires a user response and VBECS displays it behind the active window, the user must minimize the active window or click and drag dialog boxes to expose the message window.
- Press the **F1 key** to view screen-specific online help.
- A user may click **Cancel**, **Close**, or **☒** in the upper right corner at any time to exit without saving.
- All operations depend on the user being logged into the appropriate division.
- A user may click a column heading to resort the items in that column (Figure 2 and Figure 3).
- Reaction results entries are allowed for only those reagents defined as part of the reagent rack.
- Select a date from the calendar in the drop-down list to edit a date, or click each part of the date to edit the date and time (Figure 4 and Figure 5).
- Labels shown in figures are visual aids only and do not represent actual labels.
- VBECS does not offer a spell-check feature. (The user may write text in Microsoft Word, spell check the text, and then copy and paste the text into VBECS.)

 Although the copy-and-paste function is enabled, do not use it to enter patient identification information. It is highly recommended that the user scan this information when possible; otherwise, enter it.

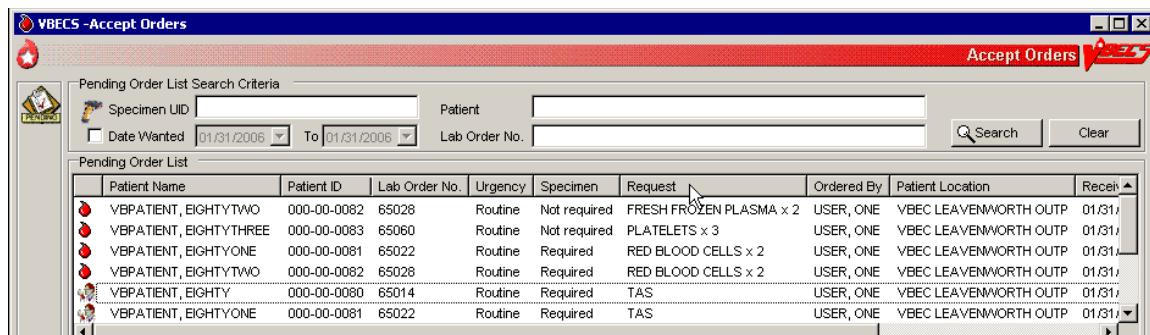
Figure 2: Click to Sort by Patient Name



This screenshot shows the 'VBECS - Accept Orders' window. At the top, there's a toolbar with icons for patient, specimen, and lab. Below the toolbar is a search criteria section with fields for Specimen UID, Patient, Date Wanted (set to 01/31/2006), To (set to 01/31/2006), Lab Order No., a Search button, and a Clear button. The main area is titled 'Pending Order List' and contains a table with columns: Patient Name, Patient ID, Lab Order No., Urgency, Specimen, Request, Ordered By, Patient Location, and Receipt. The table is sorted by 'Patient Name'. The data in the table is as follows:

Patient Name	Patient ID	Lab Order No.	Urgency	Specimen	Request	Ordered By	Patient Location	Receipt
VBPATIENT, EIGHTY	000-00-0080	65014	Routine	Required	TAS	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYONE	000-00-0081	65022	Routine	Required	RED BLOOD CELLS x 2	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYONE	000-00-0081	65022	Routine	Required	TAS	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYTHREE	000-00-0083	65060	Routine	Not required	PLATELETS x 3	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYTHREE	000-00-0083	65060	Routine	Required	TAS	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYTWO	000-00-0082	65028	Routine	Not required	FRESH FROZEN PLASMA x 2	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/

Figure 3: Click to Sort by Request



This screenshot shows the same 'VBECS - Accept Orders' window as Figure 2, but the table is sorted by 'Request'. The data in the table is as follows:

Patient Name	Patient ID	Lab Order No.	Urgency	Specimen	Request	Ordered By	Patient Location	Receipt
VBPATIENT, EIGHTYTWO	000-00-0082	65028	Routine	Not required	FRESH FROZEN PLASMA x 2	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYTHREE	000-00-0083	65060	Routine	Not required	PLATELETS x 3	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYONE	000-00-0081	65022	Routine	Required	RED BLOOD CELLS x 2	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYTWO	000-00-0082	65028	Routine	Required	RED BLOOD CELLS x 2	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTY	000-00-0080	65014	Routine	Required	TAS	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/
VBPATIENT, EIGHTYONE	000-00-0081	65022	Routine	Required	TAS	USER, ONE	VBEC LEAVENWORTH OUTP	01/31/

Figure 4: Select a Date from the Calendar

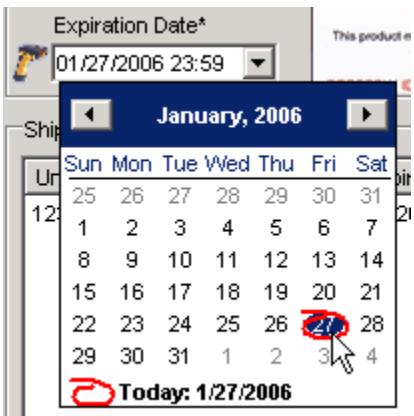
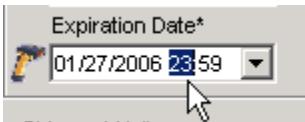


Figure 5: Edit the Date and Time



Commonly Used System Rules

This section includes system rules that apply to several or all options.

Date and Time

- The date and time displayed in VBECS depend on the date and time set on the server. Sites are not notified when an administrator changes the date or time on the server. Users must contact their System Administrator when the date or time is incorrect.
- Refer to *VistA Blood Establishment Computer Software (VBECS) Technical Manual-Security Guide* to change the time zone.

Locking and Time-Outs

- In many cases, VBECS's locking feature prevents more than one user from accessing data. When a user attempts to access locked data, VBECS displays a message indicating which user has the locked data.
- A local configurable setting (Lock Inactivity Timeout field) specifies how long a user can be idle and in control of data being edited. VBECS warns the user 60 seconds before the lock inactivity period expires that he will lose priority for the data. When he responds within 60 seconds, VBECS clears the warning and resets the lock activity timer. Otherwise, VBECS informs him that his lock was released and he must reenter his changes.

Working with Data

- The user may enter interpretations and reactions in full-service facilities. The user may enter only interpretations in transfusion-only facilities.
- Information displayed on an active window is updated with information from other options only when the user refreshes (minimizes, then expands) the active window.

- When VBECS displays a scanner icon next to a data entry field, a user may enter or scan the data. The Caps Lock key must not be engaged.
- VBECS accommodates Codabar and ISBT 128-labeled units. VBECS uses special data identifiers embedded in an ISBT 128 product code to determine the label type scanned. The lack of data identifiers indicates that the barcode is for a Codabar unit (default: unknown).
- VBECS warns the user when a Codabar unit ID contains “A,” “B,” “I,” “O,” or “U” (invalid characters) and does not save the unit.
- VBECS captures all technologist IDs and the name of the technologist who displays and/or prints testing information on reports associated with entering test results on a worksheet.
- With each valid keystroke entry in the antibody screen and crossmatch test grids, VBECS moves the cursor from top to bottom in the far left column within the cells in which results are being entered. The cursor returns to the top cell in the next column to the right and so on across the worksheet grid. The cursor stays in the reaction results cells by default (the technologist may navigate independently) until the last entry is made in the reaction result portion of the grid, then the cursor moves to the first (top) interpretation cell.
- To clear an entry in a test grid cell, press the **Backspace** key.
- VBECS allows selection of deceased patients without a warning message presented when VBECS has not received a patient death update message from VistA.
- VBECS displays the data that a user enters in a session. The user may edit the data and save them. When a user cancels, VBECS warns that it will not save the data. VBECS closes the form and returns the user to the main menu screen that may include unrelated open windows.
- VBECS displays Transfusion Requirements (TRs) to all divisions in a multidivisional database. No division allows issue until requirements are met.
- The user may not edit the title column of the data grid that specifies the reagent used in the test with a patient specimen.
- Unless otherwise indicated, data entry and retrieval are restricted to the division logged into.
- To enter data after VBECS has been unavailable, a user may enter a past date, time, and the technologist who performed the work.
- VBECS displays changes in reverse chronological order.
- VBECS calculates and displays the days (hours, if less than one day) remaining until a unit’s expiration based on the date and time of unit selection entered during modification.
- The format of an expiration date may be “mmddyy” or “mmddyyyy” (Codabar).
- Data are never deleted: they are saved indefinitely.
- Although a user may appear to select and delete data in gray fields, VBECS does not save such edits.

Searching the Database

- A user may search for a patient by:
 - Last name
 - ID (omit hyphens) (“Full”)
 - Initial of the last name and last four numbers of the ID (“Last 5”)
 - Last four numbers of the ID (“Last 4”)
- A user must scan or enter a unit ID and a product code to select a unit from inventory.
- When VBECS does not find a unit record, it displays an error message stating that the unit was not found and instructing the user to reenter unit information. A user may close this message, click **Clear**, and enter another unit ID and product code.
- VBECS associates the technologist ID, date, time, and division with each process for retrieval by division.

- VBECS lists all or part of a division's blood component inventory, based on system rules. A user may enter a varied combination of unit information to create a customized list of selectable units, including:
 - Unit ID
 - Product type
 - ABO/Rh
 - Special testing
 - RBC antigens (available only for the RED BLOOD CELLS component class)
 - Received date range
 - Expiration date range

VBECS displays this unit information in the selection list whether full inventory, subset, or filtered subset:

- Unit ID
- Unit ABO/Rh
- Product short name
- Product code
- Unit status
- Unit expiration date
- Donation type
- Date and time received (standard format)

Testing

- >>>> Administrator/Supervisors may configure reagent racks to use a tube, solid phase, or gel method.
 - VBECS allows a user to perform QC testing at AHG and later perform patient testing at all phases using a rack configured for AHG only.
 - VBECS does not verify that the phase of testing matches the reagents used for testing.
 - Users working with reagent racks containing different reagents must do so in accordance with local policy and procedures.
- Reaction result cells in the data grid contain only symbols. A legend of the symbols and their meanings, specific to the data grid and its truth tables, is located in the bottom left corner of the form and is available to the user throughout data entry.
- Entry of a symbol (not a number or letter) into a test grid reaction result cell or interpretation field will not elicit a system response. The entry of the symbol is not allowed and does not overwrite the previous entry, if any.
- After entering a canned or free-text comment in the testing comment field of the testing grid, the user must press **Enter** to store the comment.
- The user may enter canned comments in comment cells by selecting from a pick list, or enter free-text comments by selecting “Other.”

Table 2: Valid Observed Test Result Entries

Entry	VBECS Translation	
H	Hemolysis	Positive
W	Weak	Positive
F	Mixed Field	Positive
M	Microscopic	Positive
1	1+	Positive
2	2+	Positive
3	3+	Positive
4	4+	Positive
X	Not Tested	Not Tested
0	No Agglutination	Negative
R	Rouleaux, No Agglutination	Negative

- When recording test results:
 - In the Test Details window, click a check box to select a rack.
 - In the Date Tested field, select the default date and time (current date and time) for testing performed, which the user may edit to a past date and time.
 - In the Tested By field, select the default identification (current user) for the testing technologist or another user from the drop-down menu.
 - Click the appropriate radio button to determine the grid configuration for antibody screen and crossmatch grids [All phases (default) or Anti-Human Globulin (AHG) only].
 - When an automated instrument is used, click the **Using Automated Instrument** check box, enter the instrument name in the Instrument Name field, and click the **Instrument QC'd?** check box, as appropriate.
- VBECS requires ABO confirmation testing for units in ICCBBA component classes¹ containing red blood cells (forward typing), and Rh confirmation testing for units in ICCBBA component classes containing red blood cells labeled as Rh negative.
- The user may not edit VBECS-populated grid worksheet fields that contain unit or patient data.
- The user may sort worksheet entries only before beginning data entry, preferably during unit selection. When the user wishes to sort a worksheet after entering the first reaction result, he must exit without saving the work and begin again.
-  When a user enters an invalid symbol in a cell, VBECS emits an audible alert and prevents the cursor from moving to the next cell.
- VBECS moves the cursor to the comment cell automatically, when applicable; the user may also use the mouse to move to another cell.
- VBECS displays  (error) at the beginning of invalid rows and  (valid reagent) or  (reagent will expire within 24 hours) at the beginning of valid rows. These warning icons change as the user updates information. When the user holds the mouse over an icon, VBECS displays the message associated with the truth table interpretation (as with a tool tip).
- VBECS compares user-entered interpretations with truth table data.
- The user performs tests and enters data simultaneously.
- Throughout this option, the user may view the patient's VBECS demographics, including the information entered in the patient Special Instructions (SIs), Transfusion Requirements (TRs), and other clinical lab results related to the transfusion through CPRS.

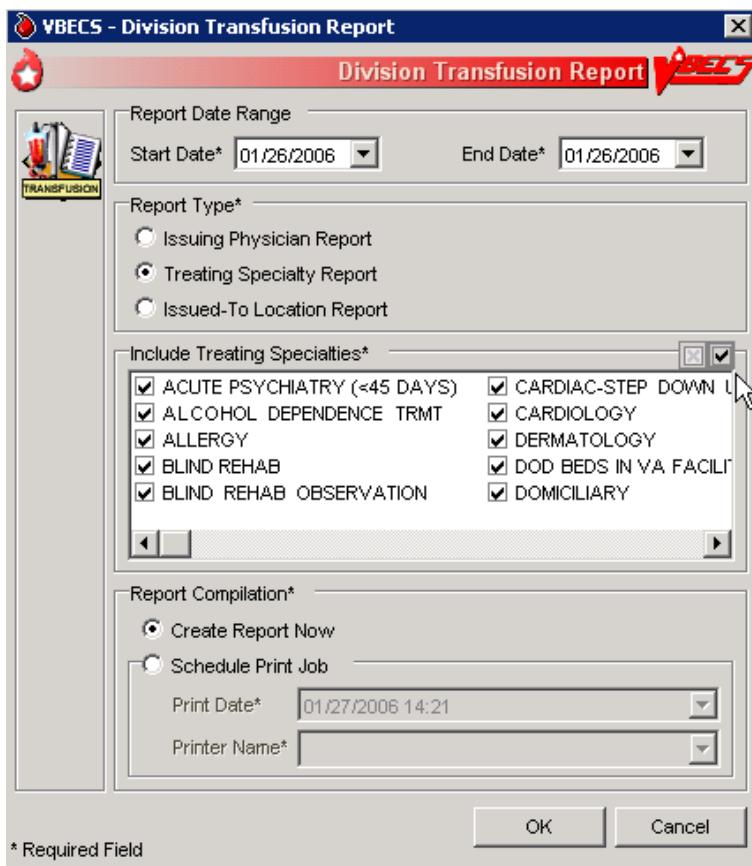
¹ VBECS recognizes the WHOLE BLOOD, E001; RED BLOOD CELLS, E002, E003, E004, E005, E006, E007, E008; and APHERESIS RED BLOOD CELLS, E009, E049, E050, E051, E052, E053, E054 ICCBBA component classes.

- The historical ABO/Rh display includes the date and division of creation or indicates that the record is from the VistA database conversion.
- The test record captures the entering and testing technologists' ID and the display/print technologists' name, the division, date, and time of the save, the content (details of the verified testing), QC rack ID (if not by automated instrument), test method, automated test instrument information, if indicated, data entries, interpretations, and comments. (When the configuration changes in Configure Testing after the test data are entered, the record is retrievable as originally configured.)
-  When a site is defined as “full service” and daily QC was not performed on the selected rack or the Not in Use Today check box was checked for the current 24-hour period (beginning with the time set for the alert defined in Configure Daily QC), VBECS emits an audible alert, warns the user, and asks whether he wishes to continue. **Yes** requires a comment and captures details for inclusion in the Exception Report (exception type: QC not performed on rack used for testing). **No** allows the user to select a different rack or cancel and return to the main menu.
- Repeat tests are not billable. Repeat tests are not available to the patient chart unless they are part of a corrected report test.
- When reagents or antisera are within 24 hours of expiration (23:59 on the expiration date), VBECS warns that the reagent will expire at 23:59 on the expiration date and asks whether the user wishes to continue. **Yes** allows the user to continue testing. **No** moves the cursor to a cleared lot number cell, which is ready for the user to enter a new lot number.
- The unit record will capture the entering tech ID, and display and/or print the entering tech name; the selecting tech ID, and display and/or print the selecting tech name; division, date, and time of the save; and the content (details of the unit selection), if indicated, data entries, interpretations, and comments.
- VBECS allows a user to save partially completed tests and allows the same or different user to complete the tests later. A first or second user may enter only new results and may not edit prior entries. VBECS allows the user to save partially completed testing. The user may return to complete the pending tasks, but may not edit saved interpretations.

Creating and Viewing Reports

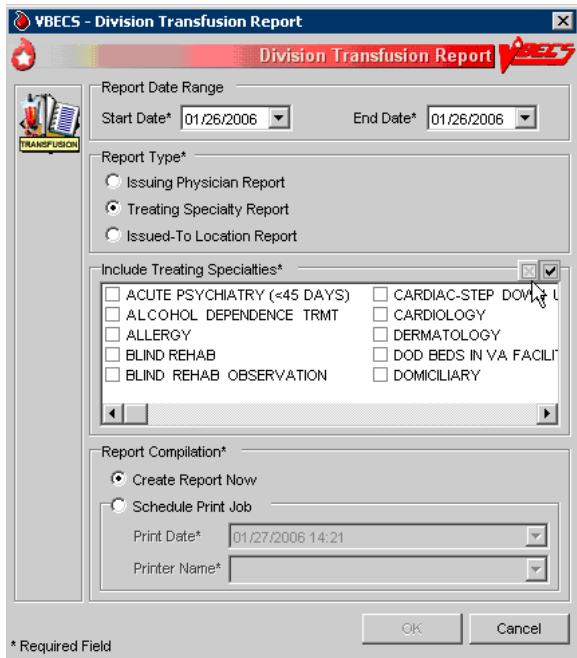
- A division's printer name cannot exceed 50 characters in length.
- Click in the Include Report Sections area to select all report sections (Figure 6).

Figure 6: Click to Select All Report Sections



- Click in the Include Report Sections area to clear all report sections (Figure 7).

Figure 7: Click to Clear All Report Sections



- In the Report Compilation area, click the **Create Report Now** radio button and **OK** to view the report, or click the **Schedule Print Job** radio button and **OK**, then enter or select a print date and printer name, then click **OK** to view and print the report.
- Reports are printed only in their entirety.
- A single-division report includes information from one division.
- When a site is a single division or a user does not have multidivisional access and a report has a multiple-division option, the user may not select a multidivisional report.
- VBECS maintains a cumulative history of all transactions, including testing and status changes, for every blood unit entered in the database (Unit History Report).
- VBECS captures changes to verified data for inclusion in an audit trail report (Audit Trail Report, Unit History Report, Patient History Report, and Order History Report).
- VBECS displays patient ABO/Rh results in reverse chronological order, regardless of division, then from the VistA database conversion. When no ABO/Rh records exist, VBECS displays "NR" (no records). When there are discrepant ABO/Rh results from the same universal ID (UID) or from two specimen UIDs, VBECS displays the results recorded just prior to the latest result that created the discrepancy and warns the user.
- When a search will return a large number of items on the report, VBECS notifies the user that the report will be longer than 50 pages and asks whether he wants to display and perhaps print the report. **Yes** notifies the user that the process will take a few minutes. **No** clears the screen and returns to the option's main menu.
- When no information that fulfills search criteria is available, VBECS notifies the user that no information is available, per entered search criteria.
- The user may change the default start and end dates (the previous day). The end date and time must be later than or the same as the start date and time. Report activity begins at and includes midnight on the

start date, and ends at and includes midnight on the end date. When the date range includes the current date and time, VBECS displays “Preliminary” in the header on each page of the report.

- VBECS displays headers on every page of a report; it displays search and sort criteria and date ranges at the end of the report. VBECS identifies whether reports are generated from a test environment or from a production environment.
- A user may schedule a report to run and print in the future. When the activity date range includes a date that precedes the date and time of printing, VBECS processes the data on the date and time the report is scheduled to print. When a date range is greater than 30 days, VBECS warns the user and asks whether he wishes to continue.
- Local record retention policy instructs users to print, review, document, and save the Audit Trail, Exception, and Testing Worklist Reports. The reports contain only data entries generated in the user’s login division. Each entry includes an area for supervisor acknowledgement (signature or initials and date of review) and comment.
- The search functionality (binoculars icon) may not work in a displayed report. When the processing technologist differs from the login technologist, the report includes both names.
- When the processing date differs from the data entry date, the report includes both dates.
- VBECS displays the patient historical ABO/Rh, antibodies identified, antigen negative requirements, and transfusion reaction history (date, division of testing, whether from the VistA database conversion), and whether the historical ABO/Rh was changed.
- When a patient has a history of an ABO/Rh change justified through Justify ABO/Rh Change, VBECS displays “History of justified ABO/Rh change” next to the historical ABO/Rh information.
- VBECS reports are not exportable to other formats.

Using VBECS

VBECS is a Windows-based application.

One VBECS system (hardware and software) is implemented for each VistA database.

Subject matter experts (SMEs) at user sites will help implement VBECS and train blood bank staff and other authorized users.

The Office of Information National Training and Education Office (OI NT&EO) provides a variety of educational initiatives on the VistA University Web site to support the implementation and use of health system applications. Users may access links to VBECS training modules and frequently asked questions, and join a ListServ (an email distribution list to manage discussion groups) for announcements and updates. Contact information is provided for comments and questions.

Documentation

Users may retrieve VistA documentation from the VistA Documentation Library (VDL) Web page.

Using Online Help

Select **VBECS Help** from the Help menu (Figure 8) to view a directory of help contents (Figure 9).

Figure 8: VBECS Help

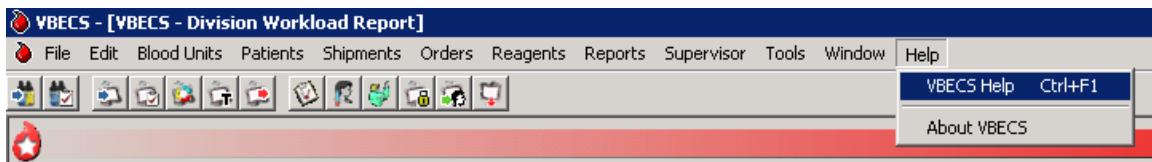
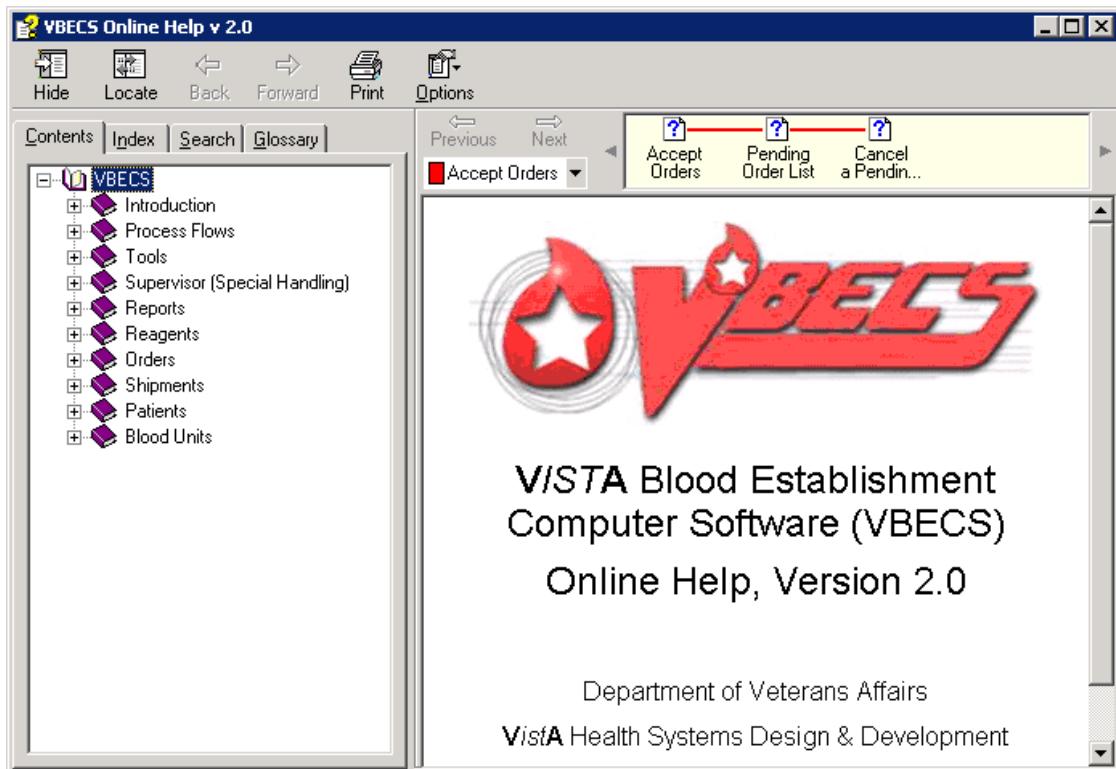
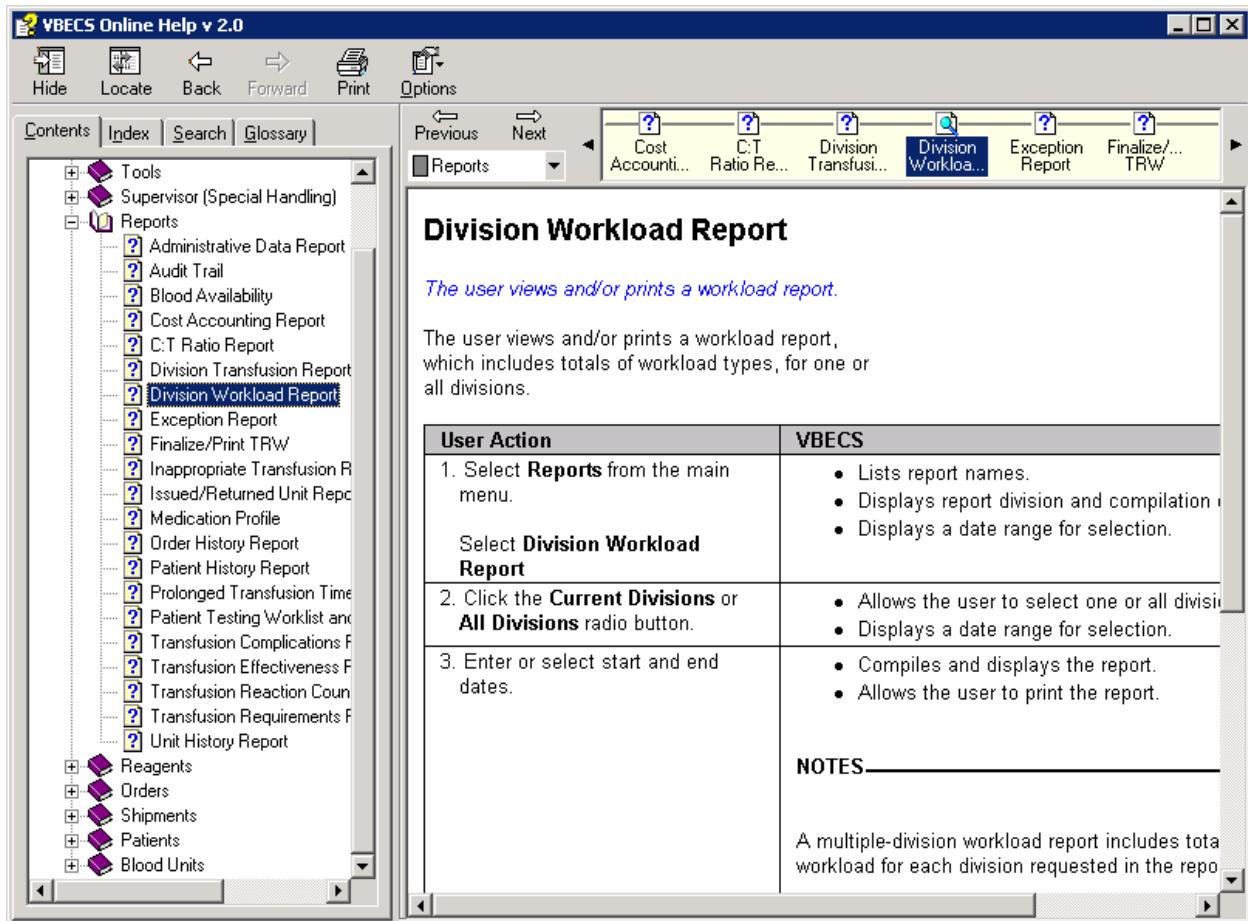


Figure 9: Example of VBECS Online Help Contents



Press the **F1** key to view screen-specific help (Figure 10). Click text in blue to expose more information.

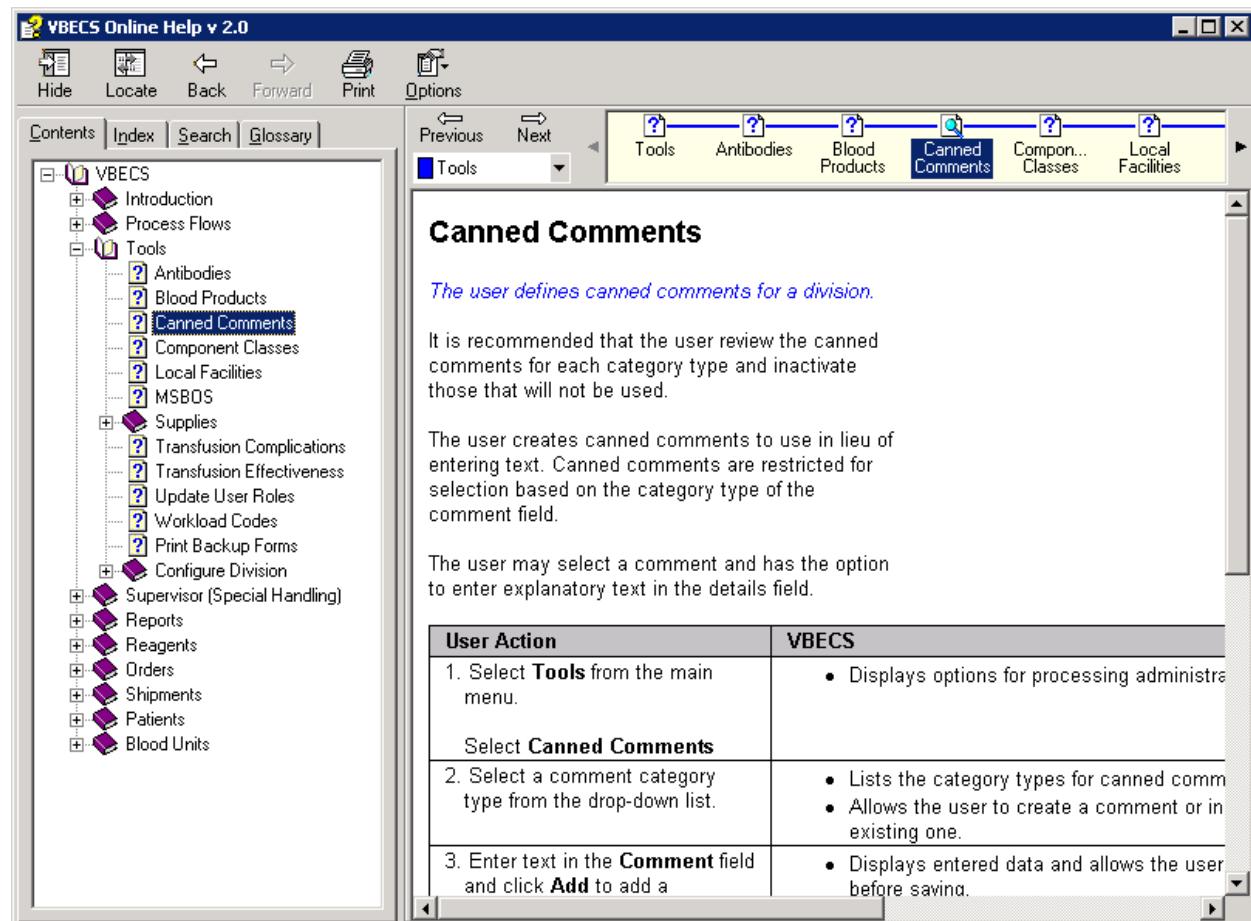
Figure 10: Example of Screen-Specific Online Help



Contents Tab

Click the **Contents** tab in the navigation panel on the left to display categories of VBECS functions. Click a plus sign (+) to view the topics in each category. Click a topic preceded by a question mark to view information on that topic on the right (Figure 11). Click a minus sign (–) to condense a list.

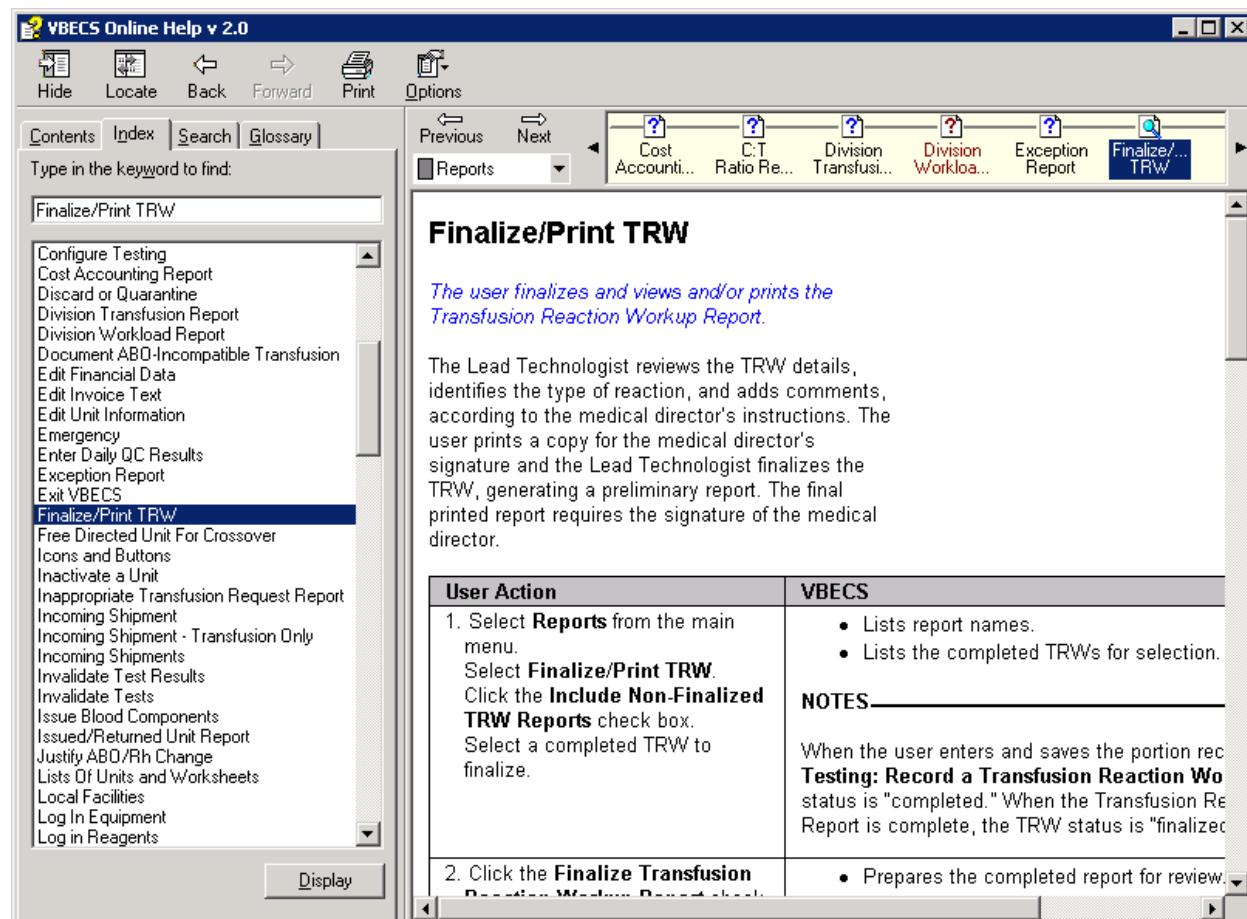
Figure 11: Using the Contents Tab



Index Tab

Enter a keyword (or one or more letters of a keyword) in the text box to find a topic. Double click the topic to view the topic on the right (Figure 12).

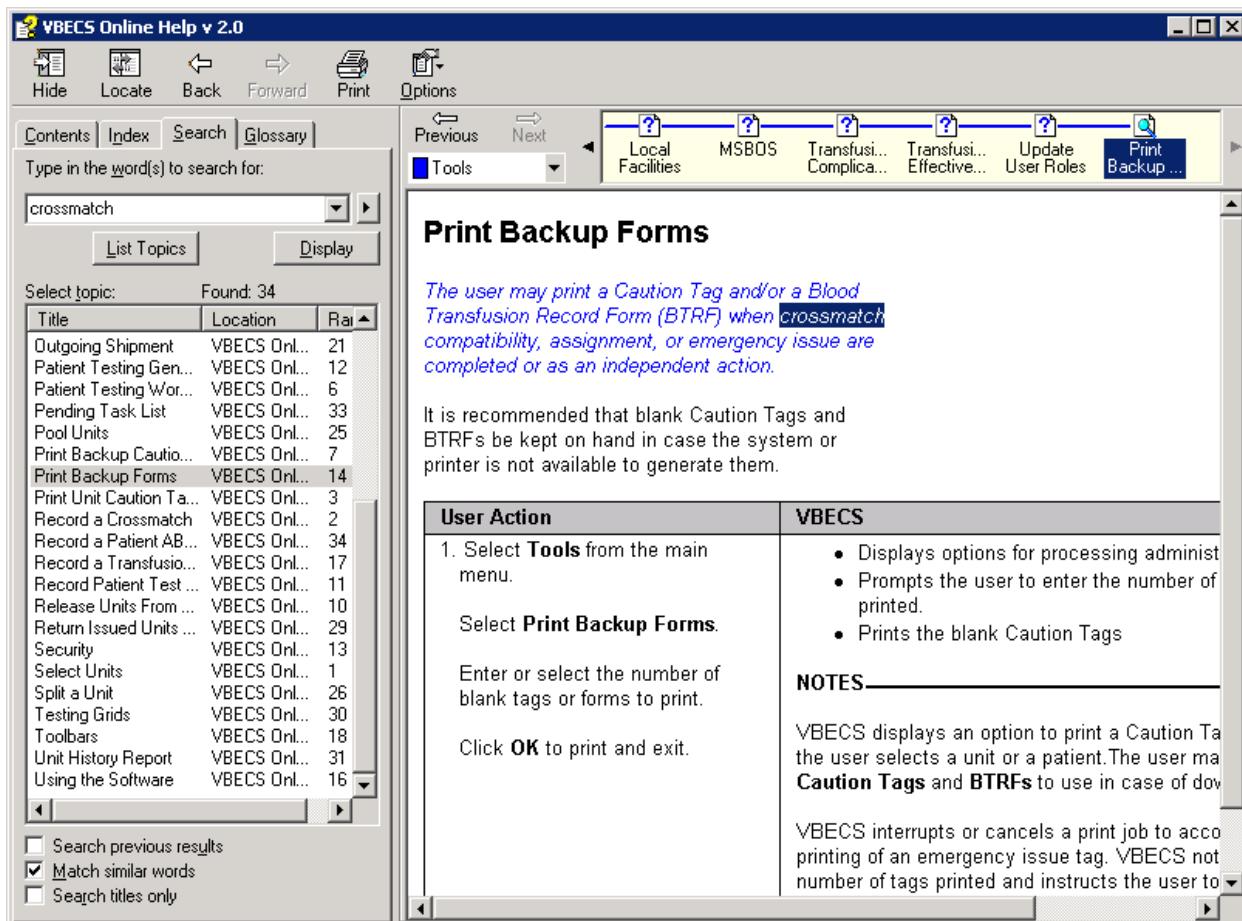
Figure 12: Using the Index Tab



Search Tab

Enter a keyword or phrase in the text box and click **List Topics**. Select a topic and click **Display**, or double click the topic. The topic appears on the right; each instance of the keyword entered is highlighted (Figure 13). (To turn the highlight feature on or off, click **Options** at the top of the screen. Click **Search Highlight On** or **Search Highlight Off**.)

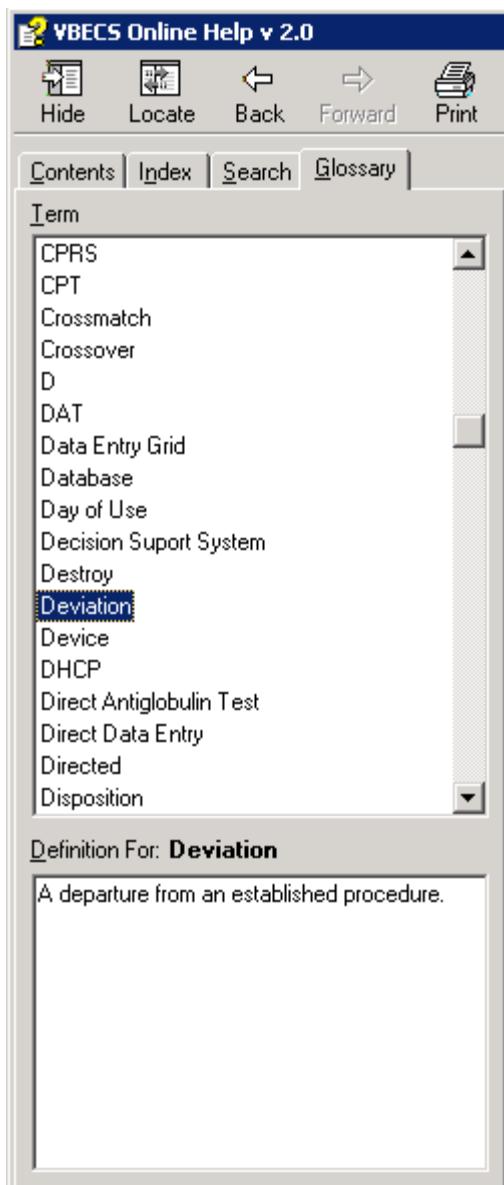
Figure 13: Using the Search Tab



Glossary Tab

Click and drag the scroll bar up or down to find a word or phrase. Click the word or phrase to display a definition at the bottom (Figure 14).

Figure 14: Using the Glossary Tab



VistA Records in VBECS

Local VistA blood bank records were transferred to VBECS during the database conversion. VBECS handles these records in accordance with system rules:

- VBECS may display patient information differently from VistA. For example, VBECS displays patient names as “LAST NAME, FIRST NAME, MIDDLE NAME or INITIAL.”
- VBECS will truncate Special Instructions (SIs) text from the VistA database conversion.
- VBECS displays historic ABO/Rh types from the database conversion, but doesn’t use them for issuing blood or for comparing test results.
- SIs from database conversion entries are labeled as such.
- VistA SIs from the database conversion may include component or antigen negative requirements. The VistA SIs remain SIs and are not enforced unless they are entered in the Transfusion Requirements tab in Special Instructions & Transfusion Requirements.
- Patient antibody identifications from VistA are included in the database conversion.
- Antigen negative requirements properly set in VistA will be transferred to antigen negative requirements in VBECS.
- VBECS informs the user when the displayed historical ABO/Rh, transfusion reaction history, and/or antigen typing result from the database conversion. Transfusion reaction types without their associated units are transferred to VBECS.

Options at a Glance: VBECS and VistA Blood Bank v5.2

VistA and VBECS Functions

Table 3 compares key features of VBECS to equivalent VistA Blood Bank v5.2 option names, where applicable. Some enhanced VBECS functions not available in VistA are also included.

Brackets enclose VistA Blood Bank v5.2 option names. There is no VBECS counterpart to these VistA functionalities:

- BU: Edit blood bank utility file [LRBLSEU]
- D: Donor [LRBLD] (not supported)
- II: Blood bank inventory integrity report [LRBLII]
- PP: Edit previous transfusion record [LRBLSPP]
- PU: Print units with final disposition [LRBLRUF]
- RA: Remove data change audits [LRBLAR] (no deletion option)
- RI: Remove inappropriate transfusion requests [LRBLSRI] (no deletion option)
- RU: Remove units with final disposition [LRBLSER] (no deletion option)
- TR: Unknown unit transfusion reaction [LRBLPTXR] (falls under Patient Testing: Record a Transfusion Reaction Workup)
- VD: Validation documentation [LRBLVALI]
- VistA Blood Bank v5.2 records will be maintained for lookup only.

Table 3: VBECS and VistA Functions

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
ABO/Rh Confirmation	Blood Units or Shipments	The user may process ABO/Rh confirmation results by selecting an invoice or individual units of blood received in a shipment. VBECS records the ABO/Rh test results for the list of blood units tested.	UC: Unit ABO/Rh confirmation [LRBLIUC]
Accept Orders: Accept an Order	Orders	The user accepts the receipt of an order.	Accessioning tests ordered by ward order entry [LROE] CR: Edit Blood Component Request File [LRBLSRQ]
Accept Orders: Cancel a Pending Order	Orders	The user cancels an unaccepted order on the Pending Order List (POL).	Delete test from an accession [LRTSTOUT] Delete entire order or individual tests [LCENDEL]
Accept Orders: Pending Order List	Orders	The Pending Order List (POL) lists pending blood bank orders.	N/A
Add/Remove Units from a Pool*	Blood Units, Modify Units	The user selects a pooled unit to add and/or remove some of the participants. See Frequently Asked Questions (FAQs) to invalidate a pooled unit.	PP: Edit pooled blood product [LRBLJM]
Administrative Data Report	Reports	The user views and/or prints the Administrative Data Report.	AD: Blood Bank Administrative Data [LRBLA]
Antibodies	Tools	The user edits certain fields in the supplied antibody table.	AA: Enter Corresponding Antigen/Antibody [LRBLSNO]
Audit Trail	Reports	The user views and/or prints an Audit Trail Report.	AD: Print Daily Change Audits [LRBLAD]
Blood Availability	Patients (patient specific) or Reports (non-individual)	The user views and/or prints the Blood Availability Report.	UA: Units Available (in date/no disposition) [LRBLRUA] UX: Units on crossmatch by date/time crossmatched [LRBLIX] UP: Phenotyped units available [LRBLIPH]
Blood Products	Tools	The user activates, deactivates, and edits a limited number of variables for an existing blood product site parameter. VBECS provides a Codabar and an ISBT 128 Blood Product reference table to facilitate these and other actions.	BP: Edit blood product file [LRBLSEB]
C:T Ratio Report	Reports	The user views and/or prints the C:T Ratio Report.	CT: Crossmatch: Transfusion report [LRBLRCT]
Canned Comments	Tools	The user defines canned comments for a division.	BD: Edit blood bank descriptions file [LRBLSEF]
Component Classes	Tools	The user configures the component class parameters for the selected division.	BP: Edit blood product file [LRBLSEB]

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
Computerized Patient Record System (CPRS) Orders*	N/A	A clinician uses the Computerized Patient Record System (CPRS) to place an order for any combination of blood products to be available for transfusion and/or diagnostic tests routinely performed in a blood bank.	N/A
Configure Daily QC	Reagents	The user sets up the routine reagent racks and QC template for the division before performing daily reagent QC.	N/A
Configure Division	Tools	A user defines site parameters that affect how VBECS behaves at a specific division. VBECS may be configured to function differently at each division within a consolidated database. Site parameters may be redefined.	SP: Edit blood bank site parameters [LRBLSSP]
Configure Testing*	Tools	The user sets testing preferences according to a division's medical policies.	N/A
Cost Accounting Report	Reports	The user views and/or prints the Cost Accounting Report.	IT: Blood inventory transaction reports [LRBLITX]
Discard or Quarantine	Blood Units or Shipments	The user discards, quarantines, or releases from quarantine one or more units of blood.	DN: Disposition -not transfused [LRBLIDN]
Display Order Alerts		VBECS notifies the user of new and updated patient orders.	N/A
Display Patient Merge Alerts		VBECS notifies the user of patient merges.	N/A
Display Patient Update Alerts		VBECS notifies the user of patient update, death, and merge events.	N/A
Division Transfusion Report	Reports	The user views and/or prints the Division Transfusion Report.	TR: Transfusion data report [LRBLITR] TS: Transfusion by treating specialty/physician [LRBLITS]
Division Workload Report	Reports	The user views and/or prints a workload report.	TC: Test counts by location [LRBLRTC]
Document ABO Incompatible Transfusions	Supervisor	The user enters post-transfusion details from the Blood Transfusion Record Form (BTRF) to document ABO incompatible and other inadvertent transfusions.	PI: Edit unit - patient fields [LRBLSEC]
Edit Financial Data	Blood Units	The user enters and/or edits charges associated with a unit after it is logged into inventory.	LT: Enter blood inventory typing charges [LRBLILS]
Edit Invoice Text	Shipments	The user may edit the explanatory text above the signature on the last page of a shipping invoice.	LL: Edit lab letter file [LRBLSLL]
Edit Unit Information	Blood Units	The user may deactivate unit tests, correct a data entry error from login, and add information about the unit that was not recorded during login.	LI: Edit unit log-in [LRBLSEL]
Enter Daily QC Results	Reagents	The user enters observed serological reactions for all phases of testing and interpretations of the various routine reagents.	N/A

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
Equipment: Log In Equipment*	Tools	The user registers blood bank instruments and other equipment (refrigerators, freezers, thawing bath, incubators, centrifuges, etc.) and records associated maintenance activities.	N/A
Equipment: Maintain Equipment*	Tools	The user maintains an online equipment record to record periodic maintenance. Equipment records are updated and retained according to local procedure and policy.	N/A
Exception Report	Reports	The user views and/or prints an Exception Report.	N/A
Finalize/Print TRW	Reports	The user finalizes and views and/or prints the Transfusion Reaction Workup Report.	N/A
Free Directed Unit For Crossover	Blood Units	The user removes a patient restriction of a directed unit that is eligible for crossover, making that unit available for any patient, according to system rules.	FR: Free autologous/directed donor units [LRBLSEE]
Inappropriate Transfusion Request Report	Reports	The user views and/or prints the Inappropriate Transfusion Request Report.	IT: Inappropriate transfusion requests report [LRBLPRIT]
Incoming Shipment	Shipments	The user may use a barcode scanner to read information from a unit blood bag (recommended) or enter this information. The user reviews and confirms the information (and may rescan any barcode) before adding a unit to the database.	LR: Log-in regular (invoices) [LRBLILR]
Invalidate Test Results	Patients	The user invalidates incorrectly entered patient test results and reenters correct patient test results and interpretations.	ET: Enter test data [LRBLPET]
Issue Blood Components	Patients	The user issues one or more patient-assigned blood units to a transporter for storage in a remote location or for possible transfusion.	DR: Disposition - relocation [LRBLIDR]
Issued/Returned Report	Reports	The user views and/or prints the Issued/Returned Unit Report.	IS: Unit issue book entries [LRBLIRB]
Justify ABO/Rh Change	Supervisor	The user changes a patient's historical blood type only when there is a clinical change in blood type, not to correct an error.	PE: Patient ABO/Rh edit [LRBLPEDIT]
Local Facilities	Tools	The user customizes collection facility information.	BP: Edit blood product file [LRBLSEB]
Log In Reagents	Reagents	The options related to reagent inventory control record the receipt of specific reagents by reagent type for each division.	N/A
Log Into VBECS	N/A	The user logs into VBECS.	N/A
Log Onto Vista	N/A	The user logs onto Vista.	N/A
Login Message*	Tools, Configure Division	The user creates a division-wide VBECS message that appears at login.	N/A
Maintain Minimum Levels	Reagents	The user sets minimum stock levels for reagent types used in the division.	N/A
Maintain Specimen	Orders	A specimen for testing is received in the blood bank and is processed as part of initial order acceptance, as described in Accept Orders: Accept an Order.	SL: Specimen log-in [LRBLPLOGIN]

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
Medication Profile	Patients or Reports	The user views a patient's current medication profile.	PH: Patient Medication List [LRBLPH]
Modify Units	Blood Units	The user modifies a unit, which results in a different blood product (target product) with its own properties. A division's configuration determines the available modification types.	DN: Disposition -not transfused [LRBLIDN]
Modify Units: Pool Units*	Blood Units	The user selects units to be pooled.	DN: Disposition -not transfused [LRBLIDN]
Modify Units: Split a Unit*	Blood Units	The user selects the unit to be split (divided) for transfusion.	DN: Disposition -not transfused [LRBLIDN]
MSBOS	Tools	The user defines parameters for comparing blood component orders placed by a clinician with the Maximum Surgical Blood Ordering Schedule (MSBOS).	MS: Maximum surgical blood order edit [LRBLSMS]
Order Alerts*	Tools	The user configures VistA alerts that appear at login.	N/A
Order History Report	Reports	The users views and/or prints a Single-Order History Report or an Order Summary Report.	Order/test status [LROS]
Order Reflex Tests	Orders	The user may order additional blood bank tests for a complete or incomplete accepted patient specimen to add to the Pending Task List (PTL).	Multipurpose accessioning [LRQUICK]
Outgoing Shipment	Shipments	The user processes and ships available blood units from his division to an outside facility, blood center, or hospital. The user may edit return credits (additional fees or credits may be issued from one site to another) before processing the shipment. VBECS generates a shipping invoice.	DN: Disposition -not transfused [LRBLIDN]
Patient History Report	Reports	The user views and/or prints the Patient History Report.	PR: Previous records [LRBLPER]
Patient Information Toolbar	Not on menu: select icon	The user views: <ul style="list-style-type: none"> • Current (pending and active) order data (including reflex tests), which include clinical data from all divisions within a multidivisional database. • Transfused and currently issued units for a patient. • A snapshot of the patient's transfusion reaction record. 	N/A
Patient Testing Worklist Report	Patients (for a patient) or Reports (by division)	The user views and/or prints the Patient Testing Worklist and Testing Worklist Reports.	AR: Patient antibody report (short list) [LRBLPR] AR: Patient antibody report (long-list) [LRBLPRA] WL: Accession area worklist [LRUW] PL: Patient accession list [LRBLPAL]
Patient Testing: Cancel an Active Order*	Patients	The user cancels an accepted order on the Pending Task List (PTL) and adds a comment to justify the cancellation.	Delete test from an accession [LRTSTOUT] Delete entire order or individual tests [LRCENDEL]

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
Patient Testing: Enter Antibody Identification Results*	Patients	The user records results of reflex tests needed to complete a patient blood bank antibody workup.	ET: Enter test data [LRBLPET]
Patient Testing: Pending Task List*	Patients	The user accesses a Pending Task List (PTL) to select tasks (accepted orders), organize a batch of tests to be performed in a session, process patient component requests, and view and/or print a list of outstanding blood bank tasks.	PL: Patient accession list [LRBLPAL]
Patient Testing: Record a Crossmatch*	Patients	The user records observed results and interpretations when performing a serologic crossmatch (XM) between a patient and one or more units of blood.	XM: Enter crossmatch results [LRBLPX]
Patient Testing: Record a Direct Antiglobulin Test*	Patients	The user records observed results when performing a Direct Antiglobulin Test (DAT).	ET: Enter test data [LRBLPET]
Patient Testing: Record a Patient ABO/Rh*	Patients	The user records observed results when performing ABO/Rh blood typing.	ET: Enter test data [LRBLPET]
Patient Testing: Record a Patient Antibody Screen*	Patients	The user records the serologic results when performing the Antibody Screen Test (ABS).	ET: Enter test data [LRBLPET]
Patient Testing: Record a Patient Antigen Typing*	Patients	The user records observed results when performing a patient antigen typing test other than the ABO/Rh test.	PR: Previous records [LRBLPER]
Patient Testing: Record a Transfusion Reaction Workup*	Patients	The user documents a transfusion reaction workup (TRW).	N/A
Patient Testing: General Instructions*	Patients	The user records a patient's serologic test results.	ET: Enter test data [LRBLPET]
Patient Updates (Patient Merge, Updated Patients, Deceased Patients)	Patients	The user merges duplicate patient records for patients with pending or active orders in VBECS. The user views and/or updates death events for patients with pending or active orders in VBECS.	N/A
Post-Transfusion Information	Patients	The user enters post-transfusion details from the Blood Transfusion Record Form (BTRF).	DT: Blood transfusion results [LRBLPT]
Print Unit Caution Tag & Transfusion Record Form*	Tools, Print Backup Forms (to print blank forms), Patients, or Blood Units	The user may print (and reprint) a Caution Tag and/or a Blood Transfusion Record Form (BTRF) when crossmatch compatibility, assignment, or emergency issue are completed.	CT: Unit CAUTION tag labels [LRBLILA]
Product Modifications*	Tools	The user enables the types of modifications made at a division.	BP: Edit blood product file [LRBLSEB]
Prolonged Transfusion Time Report	Reports	The user views and/or prints the Prolonged Transfusion Time Report.	PT: Prolonged transfusion times [LRBLPIT]
Release Units From Patient Assignment	Blood Units (by unit) or patients (by patient)	The user releases crossmatched and assigned blood units not issued after a period determined by regulatory standards and by internal policy.	UR: Units release to stock (cancel) by patient [LRBLIUR]
Remove Final Status	Supervisor	The user removes a final status from a unit. All other statuses are manipulated through normal system rules and practices.	DI: Edit unit disposition fields [LRBLSED]

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
Restore VistA Connection	N/A	When a user is logged into a VBECS division and a VistA connection is not in place, VBECS attempts to reconnect.	N/A
Return Issued Units To Blood Bank	Blood Units or Patients	An issued was returned to the blood bank in satisfactory condition after issue to a valid hospital location. The user updates VBECS to reflect the change in location.	DR: Disposition - relocation [RBLIDR]
Select Units	Blood Units or Patients, Patient Testing	A user selects a patient component order and assigns one or more products to a patient for possible transfusion.	US: Select units for patients [RBLPIC]
Special Instructions & Transfusion Requirements: Enter a Special Instruction*	Patients	The user enters comments in a patient's file that are not enforced by VBECS.	SI: Special instructions [RBLPSI]
Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement*	Patients	The user enters or inactivates the Transfusion Requirements (TRs) in the patient's record by division.	ET: Enter test data [RBLPET] -Antibodies Identified Field
Supplies: Log In Supplies*	Tools	The user records the receipt of specific supplies by type.	N/A
Supplies: Update Supply Inventory*	Tools	The user changes the number of available items in the supply inventory.	N/A
Supplies: View/Print Supply Inventory*	Tools	The user views inventory online based on various search criteria and prints the search results.	N/A
Transfusion Complications	Tools	The user defines Laboratory tests and threshold values used to generate a report listing patients who were transfused within a specified period and who may have developed a transfusion-associated disease.	TX: Tests for transfusion follow-up [RBLTX]
Transfusion Complications Report	Reports	The user views and/or prints the Transfusion Complications Report.	TX: Transfusion follow-up tests [RBLTXA]
Transfusion Effectiveness	Tools	The user defines Laboratory tests to monitor the effectiveness of transfusions.	TH: Tests for inclusion in transfusion report [RBLSET] LD: Tests for display on patient look-up [RBLST]
Transfusion Effectiveness Report	Reports	The user views and/or prints a Transfusion Effectiveness Report.	TH: Patient transfusions and hematology results [RBLPCH]
Transfusion Reaction Count Report	Reports	The user views and/or prints a Transfusion Reaction Count Report.	TC: Transfusion reaction count [RBLTA] TR: Transfusion reaction report [RBLIPTR]

VBECS Option	Menu Selection	Function	VistA Blood Bank v5.2 Option
Transfusion Requirements Report	Reports	The user views and/or prints a Transfusion Requirements Report.	AP: Antibodies by patient [LRBLPAB] AR: Patient antibody report (short list) [LRBLPR] AR: Patient antibody report (long-list) [LRBLPRA]
Unit Antigen Typing	Blood Units	The user performs antigen typing for one or more of the antigens in a blood unit and records the results in a worklist.	UP: Unit phenotyping [LRBLIUP]
Unit History Report	Reports	The user views and/or prints a Unit History Report.	SU: Single unit (display/print) information [LRBLQSU]
Update Inventory	Reagents	The user changes the number of available items in the reagent inventory.	N/A
Update User Roles	Tools	The user reviews and changes the user roles and associated security levels that determine which options and functions are available to a user in the division.	N/A
View/Print Inventory	Reagents	The user views inventory online based on various search criteria and prints the search results.	N/A
Workload Codes	Tools	The user assigns workload Laboratory Management Index Program/National Laboratory Test (LMIP/NLT) tests to processes performed through VBECS. VBECS test names are associated with VistA workload codes, which VBECS uses when compiling and storing data to provide workload-related reports to VistA.	N/A

*These are not VBECS options: they are decision points within options that cannot be displayed as options.

Accessing the System

Log Into VBECS and VistA

A user may work in only one division at a time. After login², a user with access privileges in several divisions may change divisions. There is no option to change divisions in a single-division installation. A user must have access privileges in at least two divisions to change divisions.

Assumptions

- The user's role is configured in both VistA and VBECS. (See Update User Roles.)
- A user must be associated with at least one division to gain access to VBECS.
- VBECS allows access only to valid divisions associated with the user.

Outcome

- A user is logged into the selected division.

Limitations and Restrictions

- VBECS automatically logs a user with access to only one division into that division.

Additional Information

- It is recommended that local policy limit a user to only one VBECS session per terminal.
- The user may log into multiple terminals simultaneously.
- A user with multidivisional access privileges may change divisions during a VBECS session.
- VBECS provides an interface (VistALink) with VistA to allow the user to log onto VistA (not required for most options; see the list of options that use VistALink in Hardware and Infrastructure Architecture). VBECS checks the characters in the Access and Verify Codes and warns when there are fewer than six characters or when a semicolon (;), colon (:), or caret (^) is entered. VBECS sends the entered Access and Verify Codes to VistA. VistA checks the codes and responds to VBECS with a message stating whether the entered Access and Verify Codes are invalid or valid for the user attempting to log on. VBECS warns when VistA does not accept the Access and Verify Codes entered.
- After a number of unsuccessful attempts to log onto VistA (defined in VistA server settings), the VistA server terminates the logon session and displays a message prompting the user to log onto VistA again.
- The user initially logs onto VistA by entering VistA Access and Verify Codes. The system reuses the security credentials (VistA Access and Verify Codes) initially entered in the user's session to perform VistA logoff and logon without user interaction.
- After 15 minutes of inactivity, VBECS disconnects the user from the server. When the user logs back in, he will see the last screen he worked on. After 30 minutes of inactivity, work done after the last save will be lost. The user must log in and start over.

User Roles with Access to This Option

All users

² There is a slight difference in terminology between VistA and VBECS: VistA uses “log on” and “logon,” and VBECS uses “log in” and “login.” Therefore, both terms are used throughout this guide. “Log in” and “login” are used generically when referring to both systems at one time.

Log Into VBECS

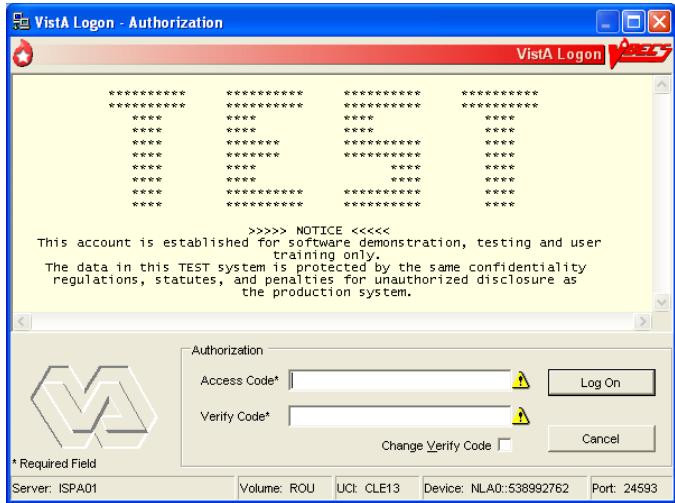
User Action	VBECS
1. To log into VBECS, double click the Remote Desktop Connection icon on the Windows desktop.	<ul style="list-style-type: none"> Displays the Remote Desktop Connection screen.
2. Enter or select the name of the VBECS server on the Remote Desktop Connection (Figure 15) screen and click Connect .	<ul style="list-style-type: none"> Displays Security Warning screen.
3. Click OK on the Security Warning screen.	<ul style="list-style-type: none"> Displays Log On to Windows screen.
4. Enter your user name, password and domain (log on to field) on the Log On to Windows screen. Click OK .	<ul style="list-style-type: none"> Displays VBECS server desktop with VBECS.exe, VBECS Test.exe, VBECS Administrator.exe, and VBECS Administrator Test.exe icons. <p>NOTES</p> <hr/> <p>Users with VBECS Administrator access can select to start VBECS administrator or VBECS.</p>
5. Click on the VBECS.exe or VBECS Test.exe icon to access VBECS.	<ul style="list-style-type: none"> Displays the Select Division screen when the user has access privileges to multiple divisions in a single VBECS installation. <p>NOTES</p> <hr/> <p>A user may exit without logging into a division.</p>
6. Multidivision users will be prompted to select a division from the Select Division list and click OK , or double click the division.	<ul style="list-style-type: none"> Displays an error message to the user when logging into VBECS, or switching divisions, if the default printer for the division was removed. <p>NOTES</p> <hr/> <p>When VBECS is started, the user may have access to more than one division.</p>
7. Continue to the VistA logon screen (Figure 16).	<ul style="list-style-type: none"> Opens the VistA Logon – Authorization screen. The user may log onto VistA or continue and log on as needed. Displays a division login message. <p>NOTES</p> <hr/> <p>VBECS allows the user to log in without establishing a VistALink connection.</p> <p>The division login message allows the display of data as each user logs into his division. When no login message text is entered, VBECS does not display a login message.</p>
8. Log onto VistA at VBECS startup or at the invocation of any option that uses VistALink when VistALink is not connected.	<ul style="list-style-type: none"> Allows a user to log on by entering VistA Access and Verify Codes, separated by a semicolon (;), in the Access Code data entry field. When a user accesses an option that requires a VistALink connection and the connection becomes unavailable, allows the user to restore the connection. When a reconnection attempt is successful, VBECS closes the connection status window and returns to the desktop. The VistALink Connected icon in the status bar indicates a successful connection. When a reconnection attempt is unsuccessful, VBECS attempts to reconnect to VistALink until the user cancels.

User Action	VBECS
	<p>NOTES</p> <p>When a user logs into VBECS, the connection to VistA is established, and the data in the cache tables are out of date, VBECS retrieves the current data from VistA and saves them. This update process may delay user login.</p> <p>When the VistALink connection is not restorable, VBECS displays a message stating that the requested use cannot be executed because VistALink is unavailable.</p>
9. Enter the VistA Access and Verify Codes.	<ul style="list-style-type: none"> Verifies that the user credentials for the VBECS and VistA Access and Verify Codes belong to the same user. Emits a tone to verify that the workstation's sound works.
10. Continue working in VBECS in the selected division.	<ul style="list-style-type: none"> Displays the main menu.
11. Users with multidivisional access: to change division, select File . Select Change Division . Continue at Step 2.	<ul style="list-style-type: none"> Ensures that there are no incomplete activities for the user's session. Displays a division login message. Opens the selected division. <p>NOTES</p> <p>A user may log into or change divisions without being logged onto VistA.</p> <p>VBECS displays a message advising the user to close dialogs and transactions with pending data changes, and closes open dialogs with no pending data changes before the user changes division.</p> <p>VBECS automatically logs onto VistA for the selected division.</p>

Figure 15: Remote Desktop Connection Options



Figure 16: VistA Logon



Restore VistA Connection

When a user is logged into a VBECS division and a VistA connection is not in place, VBECS attempts to reconnect.

Restore VistA Connection

User Action	VBECS
1. Attempt to use a VBECS option that requires a connection to VistA for data retrieval.	<ul style="list-style-type: none"> Displays a message that the VistA connection is not available and asks whether the user wishes to attempt to reconnect. Allows the user to enter his VistA logon information.
2. Enter personal logon information or cancel.	<ul style="list-style-type: none"> Attempts to connect using the user's information when logon information is entered. When a connection is achieved, closes the pop-up and takes the user to the selected option. When a successful connection cannot be achieved, does not allow the user to continue in the option. Closes the pop-up when the user clicks Cancel.
3. Continue in the selected option.	

Exit VBECS

A user may disconnect from or shut down the VBECS session.

Disconnect from VBECS

User Action	VBECS
1. To disconnect from VBECS, minimize the windows of the applications to which you want to return. 2. Select Start, Log Off . At the prompt, select Log Off or Cancel .	<ul style="list-style-type: none">Exposes the server desktop. <ul style="list-style-type: none">Disconnects the session.Allows open applications to run.
	NOTES ————— At the next login, the system returns where it left off in the applications that were open.

Shut Down VBECS

User Action	VBECS
1. To shut down VBECS, select File, Exit VBECS . Click Yes at the prompt.	<ul style="list-style-type: none">Exposes the server desktop.
2. Select Start, Log Off . At the prompt, select Log Off or Cancel .	<ul style="list-style-type: none">Shuts down the session.Terminates open applications.

Screen Settings



VBECS was designed to operate with the settings described in this section to display complete screens. Failure to maintain these settings may result in partial display of safety-critical information.

Local Machine Screen Resolution

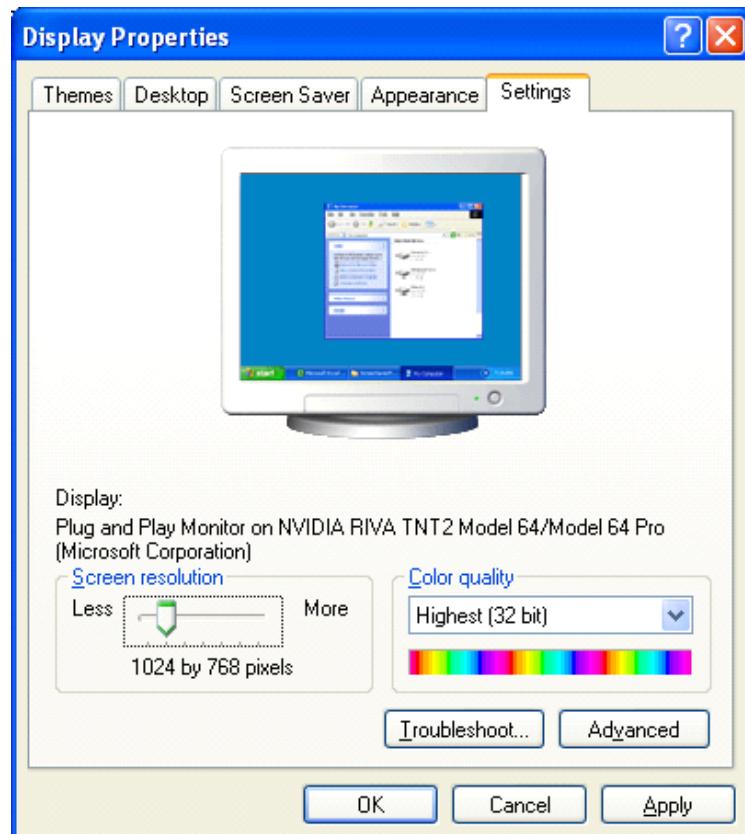


Set the local machine's desktop resolution to 1024 by 768 pixels for optimal display.

To adjust the resolution of the screens that you view:

- 1) Click **Start, Settings, Control Panel**.
- 2) Click **Appearance and Themes**.
- 3) Click **Change the screen resolution**.
- 4) Select the **Settings** tab (Figure 17).
- 5) Click, hold, and slide the pointer to a screen resolution of 1024 by 768 pixels.
- 6) Click **Apply**.
- 7) Click **OK** to save the setting.

Figure 17: Local Machine Screen Resolution



Remote Desktop Connection Screen Size



The Remote Desktop Connection desktop size must be set to “Full Screen.”

To adjust the dimension of the screens that you view:

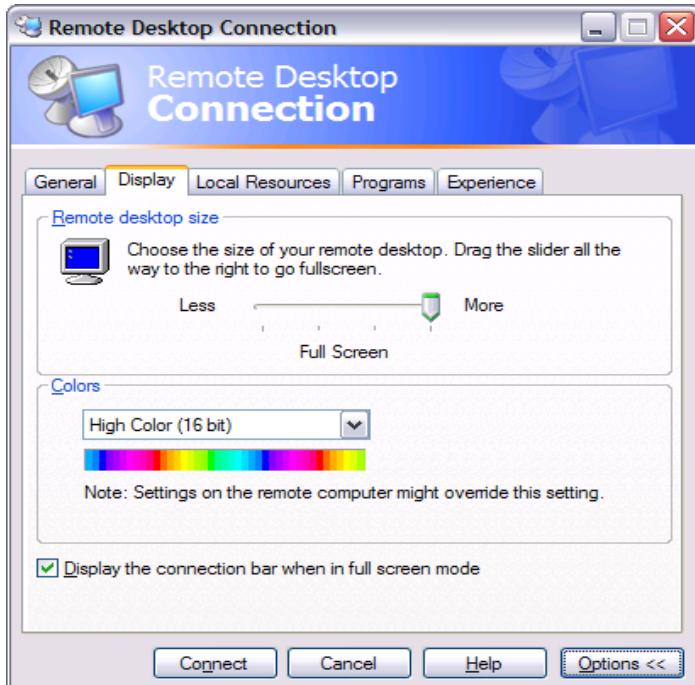
- 1) Double click  (the Remote Desktop Connection icon).
- 2) Click Options (Figure 18).

Figure 18: Remote Desktop Connection Options



- 3) Click the Display tab (Figure 19).

Figure 19: Remote Desktop Connection Remote Desktop Size



- 4) Click, hold, and slide the pointer to the right until “Full Screen” appears.

- 5) Click **OK** to save the setting.

Screen Display

A *window* is the section of the screen that displays the active application or file.

Click the control buttons in the upper right corner of an open file or application window to:

- Minimize: reduce the window to appear as a button (rectangle) at the bottom of the screen. Click the button to enlarge the window to its original size.
- Maximize: enlarge a window to fill the entire screen
- Restore: return a window to a smaller size that can be adjusted
- Close: shut down a document or application quickly

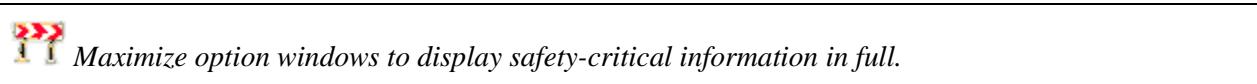


Figure 20: Resize or Close a Window



Figure 21: Restore a Window



When a window is partially displayed or freezes; or when you move from one window to another, enter information, return to the original window, and the entered information is not available, minimize then maximize the window to refresh it.

To resize an open window:

- Make sure the Maximize symbol is visible.
- Change the width: move the mouse cursor to the left or right window border until the pointer changes into a horizontal double-headed arrow, then drag the border to the right or left.
- Change the height: move the mouse cursor to the top or bottom window border until the pointer changes into a vertical double-headed arrow, then drag the border up or down.
- Change the height and width together: move the mouse cursor to any window corner until the pointer changes into a diagonal double-headed arrow, and then drag the border in any direction.

A maximized window cannot be resized or moved.

To move a window, click the dark blue bar at the top of the window. While depressing the mouse button, drag the window to the desired position.

Select **Help**, **VBECS Help**, or press F1 at any time for screen-specific online help.

The first time a user opens a form [such as the Blood Transfusion Record Form (BTRF)], VBECS displays it in cascade style. When a user opens the form again, VBECS displays it in the size and position last selected.

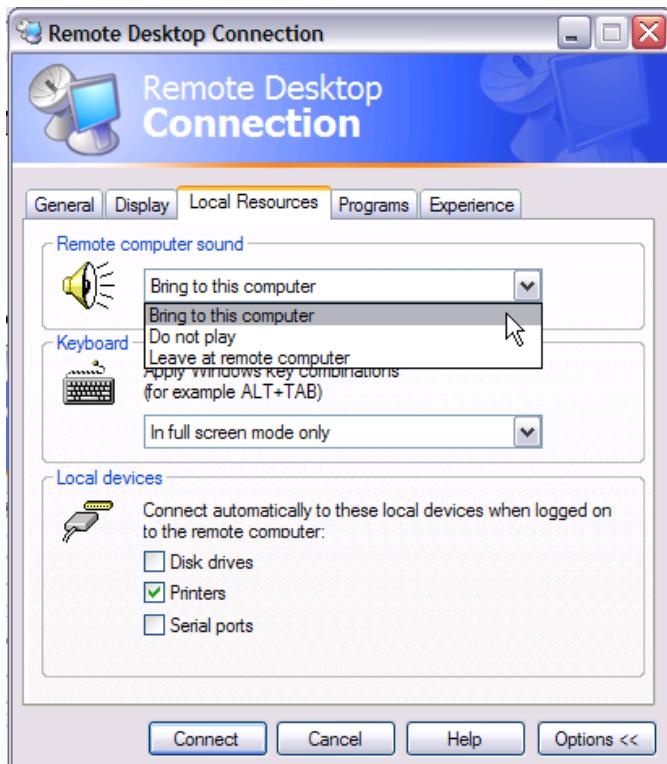
Forms can be resized and moved in the same way that windows are resized and moved.

Sound

To enable sound on Remote Desktop Connection:

- 1) Double click  (the **Remote Desktop Connection icon**).
- 2) Click **Options** (Figure 22).
- 3) Click the **Local Resources tab**.
- 4) Select **Bring to this computer** from the Remote computer sound drop-down list.

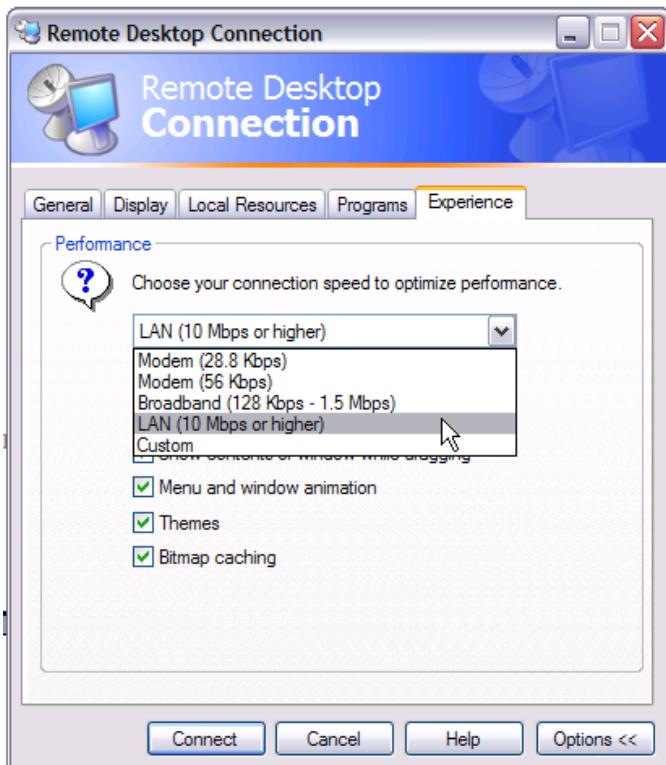
Figure 22: Remote Desktop Connection Remote Computer Sound



- 5) Click the **Experience tab**.

- 6) Select **LAN** from the Choose your connection speed to optimize performance drop-down list (Figure 23).

Figure 23: Remote Desktop Connection Choose Connection Speed



- 7) Click **Connect**.

Volume

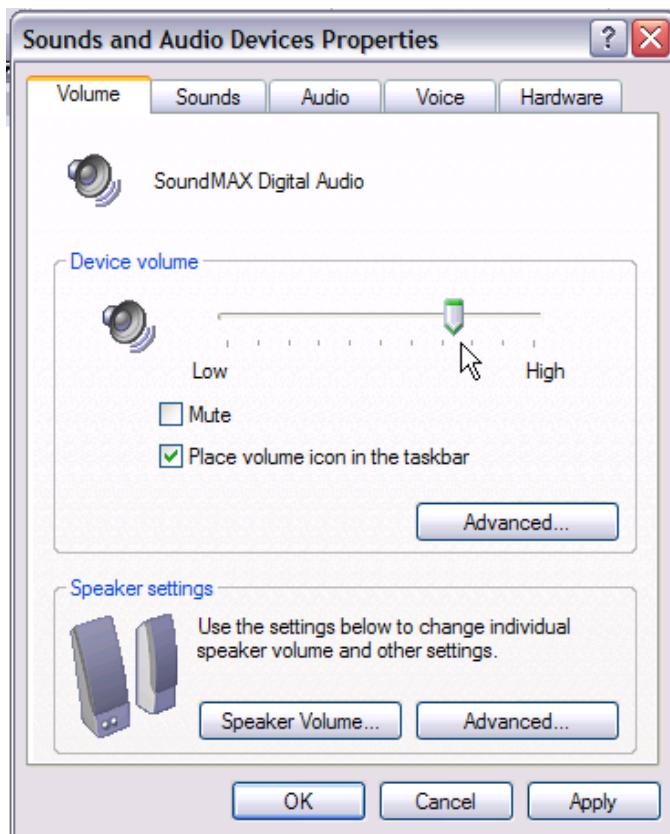


Do not change volume settings unless alerts are inaudible (muted) or low.

VBECS uses sound as one way to alert users. To restore the volume setting on your workstation so that alerts are audible:

- 1) Click **Start, Settings, Control Panel**.
- 2) Click **Sounds, Speech, and Audio Devices**.
- 3) Click **Sounds and Audio Devices**.
- 4) Select the **Volume tab**.
- 5) Click, hold, and slide the pointer to adjust the volume.
- 6) Click **OK** to save the setting.

Figure 24: Sounds and Audio Devices: Volume



Keyboard Shortcuts for Windows

Using a mouse to navigate VBECS requires fewer steps than using the keyboard. A user who prefers using the keyboard may refer to these keyboard shortcuts. Keys preceded and/or followed by “+” indicate that they must be pressed simultaneously:

CPRS and VBECS

- Toggle between VBECS and CPRS or another application: Alt + Tab

Menus

- Display the Start menu (use the arrow keys to select an item): Alt + Home
- Start VBECS online help: F1
- Activate a menu bar option: F10
- Open a menu: Alt + underscored letter
- Move to and select a menu item: Arrow key + Enter
- Open a submenu item: Shift + letter (case insensitive)
- Open a drop-down menu: Alt + down arrow key
- Close a drop-down menu: Alt + up arrow key
- Display a shortcut menu for the selected item: Application key (

Buttons, Check Boxes, and Fields

- Move to and select fields and buttons: Tab + Enter
- Select or clear a check box: Tab, arrow key (or Alt + underscored letter), spacebar
- Select or clear a radio button: Tab, arrow key (or Alt + underscored letter)

Windows

- Display the Control window to restore, move, resize, minimize, maximize, or close the window: Alt + Delete
- Switch between a window and a full screen: Ctrl + Alt + Break
- Close the current window: Alt + F4
- Display the Windows Security dialog box to lock the computer, log off, shut down, change a password, and access Task Manager: Ctrl + Alt + End

Screen Prints

- Place a snapshot of the desktop on the local clipboard and paste it in another application: Ctrl + Alt + Plus (+ on the numeric keypad; Ctrl + V to paste)
- Place a snapshot of the active window on the local clipboard and paste it in another application: Ctrl + Alt + Minus (- on the numeric keypad; Ctrl + V to paste)

Drop-Down Menus

A *drop-down menu* may appear when a button is clicked or text is selected. Click or hold the mouse pointer over an item in a drop-down menu to reveal other items and submenus. Press an underscored letter (mnemonic) to select a menu item. To view underscored letters:

- 1) Click **Start** at the bottom left of the screen.
- 2) Click **Settings**.
- 3) Click **Control Panel**.
- 4) Double click **Display**.
- 5) Click the **Appearance tab**.
- 6) Click **Effects**.
- 7) Clear the **Hide underlined letters for keyboard navigation until I press the Alt key** check box.
- 8) Click **OK** to save the setting.
- 9) Click **OK** to close the Display Properties window.
- 10) Close the Control Panel.

A ▶ (submenu arrow) next to a menu item indicates that a submenu is available. An option that is not available to a user is visible but grayed out.

Tool Tips

A *tool tip* is a description or explanation that appears when the mouse pointer is held over (not selected or highlighted) a tool, button, or other object (without clicking a mouse button).

When a tool tip does not appear, wait a few moments, then reposition the mouse pointer over the tool, button, or other object. If necessary, exit and reenter the window.

Tool tips appear with:

- Some control buttons
- Icons in the Patient Information Toolbar

Text enclosed in angle brackets (< >) in tool tips and messages will change to reflect the current activity.

The user may click column headings in some data displays, such as the Pending Task List, Pending Order List, and Select Units, to sort the information in those columns.

Icons and Buttons

VBECS uses several types of images to help you move through the system:

- *Icons* represent objects (information used in an application). The rectangular area in the lower right corner of the screen (system tray) contains icons of programs that always run in the background, such as the clock.
- *Buttons* are icons that represent tools or commands.
- *Radio buttons* are small circles preceding text. Related radio buttons are grouped together. Only one button in a group may be selected: clicking a button turns the other radio buttons off.

Toolbars

A *tool* is a shortcut button, usually shown on a bar near the top of a window. Tools provide quick access to commonly used functions. A *toolbar* displays groups of tools. Toolbars may contain buttons, menus, or combinations of both. (See also Patient Information Toolbar.)

A toolbar with tools for several options (Main Toolbar) appears near the top of the screen.

Click a tool to open a function quickly.

A function may also be opened by pressing Alt and the key for the underscored letter in the tool name.

Main Toolbar

The *Main Toolbar* appears at the top of the screen. Click the icons in the Main Toolbar to access³:

-  Log In Reagents
-  Enter Daily QC Results
-  Incoming Shipment
-  ABO/Rh Confirmation
-  Modify Units
-  Unit Antigen Typing
-  Outgoing Shipment
-  Accept Orders: Accept an Order
-  Maintain Specimen
-  Patient Testing
-  Select Units

³ Larger versions of these icons appear throughout VBECS in the corresponding option windows. They cannot be used to access options.



Issue Blood Components



Post-Transfusion Information

Clicking an icon in the Main Toolbar saves a step: it's the same as clicking the main menu item, and then on the option.

VBECS uses tree views to displays list items. Click a plus sign (+) to expand a list. Click a minus sign (-) to condense a list.

Patient Information Toolbar

The *Patient Information Toolbar* appears in the active window when a patient record is displayed. VBECS displays only the icons appropriate to the option. Click the icons in the Patient Information Toolbar to display:

- a Blood Availability Report (Blood Availability)
- a patient's current medication profile (Medication Profile)
- a patient's recent orders (Recent Orders)
- a patient's Special Instructions and/or Transfusion Requirements (View Special Instructions and Transfusion Requirements)
- a patient's recent transfusion history (Recent Transfusions/Issued Units)
- a patient's transfusion reaction history (Transfusion Reaction History)

Patient Blood Availability

The user views blood products available to a patient. The Blood Availability Report does not include unassigned, restricted blood products. To view unassigned, restricted blood products and other custom reports, see Blood Availability.

Medication Profile

The user views a patient's current medication profile.

Assumptions

- The connection to VistA is active.

Outcome

- VBECS displays a patient's current medications.

Limitations and Restrictions

- None

Additional Information

- The user may access CPRS for additional information on a patient medication order.
- These data are accessible to the user through the Patient Information Toolbar on all patient-specific screens.

User Roles with Access to This Option

All users

Medication Profile

At the user's request, VBECS queries VistA to search for active prescriptions within a user-specified time frame or a default time frame of six months, regardless of division, in a multidivisional database.

User Action	VBECS
1. Select Reports from the main menu. Select Medication Profile . Select a patient, or Select an option that displays the Patient Information Toolbar. Click  to view a patient's current medication list.	<ul style="list-style-type: none">• Lists report names.• Displays the report date range, sections, and compilation criteria.• Displays options for processing patient-related functions.• Compiles the active patient identification data. <p>NOTES —————</p> <p>The user may edit the default start date (six months before the current date) for the patient medication search.</p>
2. Accept or edit the default start and end dates.	<ul style="list-style-type: none">• Displays each medication name status, order number, and issue/start date returned from the VistA query.• When a query does not return any medications, notifies the user that he may repeat the query with a different date range.
3. View the display. When desired, go to Step 1 to repeat the query,	<ul style="list-style-type: none">• Allows the user to print the displayed patient medication profile.
4. Print the profile or click Cancel to exit.	<ul style="list-style-type: none">• Displays and prints the medication information profile.

View Special Instructions and Transfusion Requirements

The user views patient-specific Special Instructions (SIs) and Transfusion Requirements (TRs).

Assumptions

- SI entries were created through Special Instructions & Transfusion Requirements: Enter a Special Instruction or from database conversion.
- TR entries were entered through Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement or Patient Testing: Enter Antibody Identification Results.

Outcome

- VBECS displays a patient's SIs and TRs.

Limitations and Restrictions

- None

Additional Information

- VBECS displays a patient's known antibodies in all divisions in a multidivisional database. VBECS does not restrict viewing SI and TR entries by division; they are linked to the patient's record and not to an order, a specimen, or a unit.
- VBECS does not enforce SIs; VBECS enforces TRs and persistent antigen negative requirements throughout the database.

User Roles with Access to This Option

All users

View Special Instructions and Transfusion Requirements

The user views a patient record. When SIs and TRs are available for the patient, VBECS activates the Patient Information Toolbar icons. VBECS alerts the user when a patient's record includes SIs and TRs.

 <i>It is highly recommended that the user click every active icon when reviewing patient data.</i>	
User Action	VBECS
1. Select Patients from the main menu. Select Special Instructions & Transfusion Requirements , or Click  in the Patient Information Toolbar, when it is active.	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the option to select a patient, when one is not already selected. <p>NOTES —————</p> <p> When a patient's VBECS record includes an active TR, SI, or antigen negative requirement, VBECS emits an audible alert and notifies the user by enabling the icon.</p>
2. Select a patient and click OK . View the data.	<ul style="list-style-type: none">• Displays the data. <p>NOTES —————</p>

User Action	VBECS
Click OK to continue.	<p>VBECS displays active TRs to all divisions within a multidivisional database.</p> <p>VBECS alerts the user when an active TR, SI, or antigen negative requirement is in a patient's record.</p> <p>VBECS displays component requirements to all divisions in a multidivisional database. No division allows issue until requirements are met.</p> <p>When VBECS displays the Patient Information Toolbar, it calculates the overall compatibility percentage of units to be screened to find compatible units.</p>
3. Select another patient and return to Step 2, if desired.	
4. Click OK to exit.	

View Recent Orders, Recent Transfusions/Issued Units, and Transfusion Reaction History

The user views portions of a patient's data previously recorded in VBECS in three formats: recent orders, recent transfusions/issued units, and transfusion reaction history.

Assumptions

- A VBECS record must be established for a patient in this database in at least one division, if multidivisional.

Outcome

- The user views:
 - A patient's active order data (recent orders).
 - A patient's transfusions and currently issued units (recent transfusion history).
 - A snapshot of the patient's VBECS clinical record (transfusion reaction history).

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

All users

Patient Information Toolbar: Recent Orders

The user views current (pending and active) order data (including reflex tests), which include clinical data from all divisions within a multidivisional database.

User Action	VBECS
1. In the Patient Information Toolbar, click  to view the patient's recent orders.	<ul style="list-style-type: none">• Allows the user to click an icon to view a patient's recent orders. <p>NOTES _____</p> <p>When the user selects , VBECS displays all orders associated with the selected patient, including open orders and orders placed and processed within the last 14 days.</p>
2. View the data and click Close to exit.	

Patient Information Toolbar: Recent Transfusions/Issued Units

The user views transfused and currently issued units for a patient.

User Action	VBECS
1. In the Patient Information Toolbar, click  to view the recent transfusion history.	<ul style="list-style-type: none">• Allows the user to click an icon to view a patient's recent transfusion history.

User Action	VBECS
	NOTES ————— When the user selects  , VBECS displays blood units issued and transfused within the last seven days in reverse chronological order by date and time transfused.
2. View the data and exit.	

Patient Information Toolbar: Transfusion Reaction History

The user views a snapshot of the patient's transfusion reaction record.

User Action	VBECS
1. In the Patient Information Toolbar, click  to view the transfusion reaction history. 2. View the data and exit.	<ul style="list-style-type: none"> Allows the user to click an icon to view a patient's transfusion reaction history. NOTES ————— When the user selects  , VBECS displays all transfusion reaction entries in the database.

Main Status Bar

The following icons are displayed in the main status bar:

-  The Order Alert icon flashes three times and remains displayed when orders are added to the system. Hold the mouse pointer over the icon to see order information. Click the associated button to open the Pending Order List.
-  The Patient Alert icon flashes three times and remains displayed when patient information is updated. Hold the mouse pointer over the icon to see what type of patient change occurred. Click the associated button to view updated patient information.
-  The VistALink icon indicates that the connection to VistA is active.
-  The VistALink Failure icon indicates that the connection to VistA is severed.

Throughout VBECS

-  The Delete/Invalidate icon appears on buttons that cause entries to be deleted or invalidated in the database.
-  Click to select all items in a list.
-  Click to clear all items in list.
-  Click the **ellipsis** button to display a list of items for selection.
-  Click the **Print** icon's associated button to print a document.
-  Click the **Save** icon's associated button to update the database.
-  The Scanner icon indicates which screen prompts permit scanned entries.
-  Click the **Search** icon's associated button to search for entries meeting search criteria entered.
-  Click the **Order Details** icon's associated button to display the full details of a selected order.
-  The Input Error icon indicates that a user made an invalid entry at a screen prompt. The icon appears and flashes next to the invalid entry. Hold the mouse pointer over the icon to see a message explaining the problem. Enter valid information to make the icon disappear.

Other VBECS Functions

Collecting Workload

In some options, VBECS collects workload (statistical data used to calculate productivity) when the user saves data:

- ABO/Rh Confirmation
- Discard or Quarantine
- Document ABO Incompatible Transfusion
- Edit Unit Information
- Enter Daily QC Results

- Finalize/Print TRW
- Free Directed Unit For Crossover
- Invalidate Test Results
- Issue Blood Components
- Modify Units
- Modify Units: Pool Units
- Modify Units: Split a Unit
- Outgoing Shipment
- Patient Testing: Enter Antibody Identification Results
- Patient Testing: Record a Patient Antigen Typing
- Patient Testing: Record a Transfusion Reaction Workup
- Patient Testing: Record Patient Test Results
- Post-Transfusion Information
- Processing Incoming Shipment
- Release Units From Patient Assignment
- Remove Final Status
- Return Issued Units To Blood Bank
- Select Units
- Unit Antigen Typing

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Configuring Site Parameters

Configuration must be done as part of the VBECS installation.

Update User Roles

The user reviews and changes the user roles and associated security levels that determine which options and functions are available to a user in the division.

Assumptions

- The user is logged into VBECS in the division of the users to be edited.
- A VistA System Administrator added the users to the VBECS database and assigned a division-specific role to each user.

Outcome

- A user's role code changed.

Limitations and Restrictions

- One role at a time may be assigned to a user at a division. The role may be reset.
- VBECS does not allow users to edit or delete the sole Administrator/Supervisor.

Additional Information

- An inactivated user remains in the VBECS database.
- There must be at least one Administrator/Supervisor in the division to maintain users.
- A VBECS user ID is the user's NT Logon ID.
- One or more users may be selected for batch update.
- A VistA System Administrator activates and inactivates VBECS users.
- A user may be defined at multiple divisions within a multidivisional database. The settings for a user may differ from division to division and are mutually exclusive.
- See *VistA Blood Establishment Computer Software (VBECS) Technical Manual-Security Guide* to add a user to a mail group that receives messages when VistALink errors occur.

User Roles with Access to This Option

- Administrator/Supervisor
➤➤➤ Lead Technologist

Update User Roles

➤➤➤➤➤ An Administrator/Supervisor maintains assigned user roles, including associated levels of system access and the ability to process system overrides. These roles determine the available options and the ability to override certain warnings.

It is recommended that only one staff member be assigned the role of Administrator/Supervisor: when more than one Administrator/Supervisor updates roles simultaneously, changes made by one user are not visible to the other.

One of six user roles may be assigned to users, by division:

- Level 1: Technologist
- Level 2: Enhanced Technologist
- Level 3: Lead Technologist
- Level 4: Traditional Supervisor
- Level 5: Enhanced Supervisor
- Level 6: Administrator/Supervisor

The functions associated with each user role are described in Table 1: User Roles and Functions.

User Action	VBECS
1. Select Tools from the main menu. Select Update User Roles .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Lists active users and associated information, including user name, ID, role, initials and email address.• Displays an option to print a VBECS User Report. <p>NOTES —————</p> <p>Click Print at any time in this process to print a VBECS User Report.</p>
2. Click one or more check boxes to select users.	<ul style="list-style-type: none">• Allows the assignment of a security level to one or more users at a time. <p>NOTES —————</p> <p>The role that a user selects is assigned to all selected users.</p>
Select a user role from the drop-down list in the Use Role field.	<ul style="list-style-type: none">• Requests confirmation of the names of users to be changed and the role to be assigned.
3. Click OK .	
4. Click Yes to confirm the save or No to change the users selected.	<ul style="list-style-type: none">• Creates an Audit Trail Report entry. <p>NOTES —————</p> <p>See the sample VBECS User Report.</p>
5. Repeat Steps 2–4 to change the roles of additional users.	
6. Click Cancel to exit.	

VBECS User Report

The user may generate a division report that includes the names, VBECS user IDs, and roles of active users. ➤➤➤ A Lead Technologist may generate a report of current VBECS users, by division, that includes the users' name, user ID, division, and role.

Component Classes

The user configures the component class parameters for the selected division.

Assumptions

- The connection to VistA is active.
- The WHOLE BLOOD and RED BLOOD CELLS component classes are deployed as requiring current specimen ABO/Rh results before issue and may not be edited.
- The FFP, PLT, CRYO and OTHER component classes do not have a specimen requirement defined at deployment.

Outcome

- Divisions have local settings for all component classes.

Limitations and Restrictions

- The user may not change the specimen requirement for a component class when there are incomplete orders for that component class.
- There is no retrospective data entry or user selection for this option.

Additional Information

- None

User Roles with Access to This Option

►►►►► Administrator/Supervisor

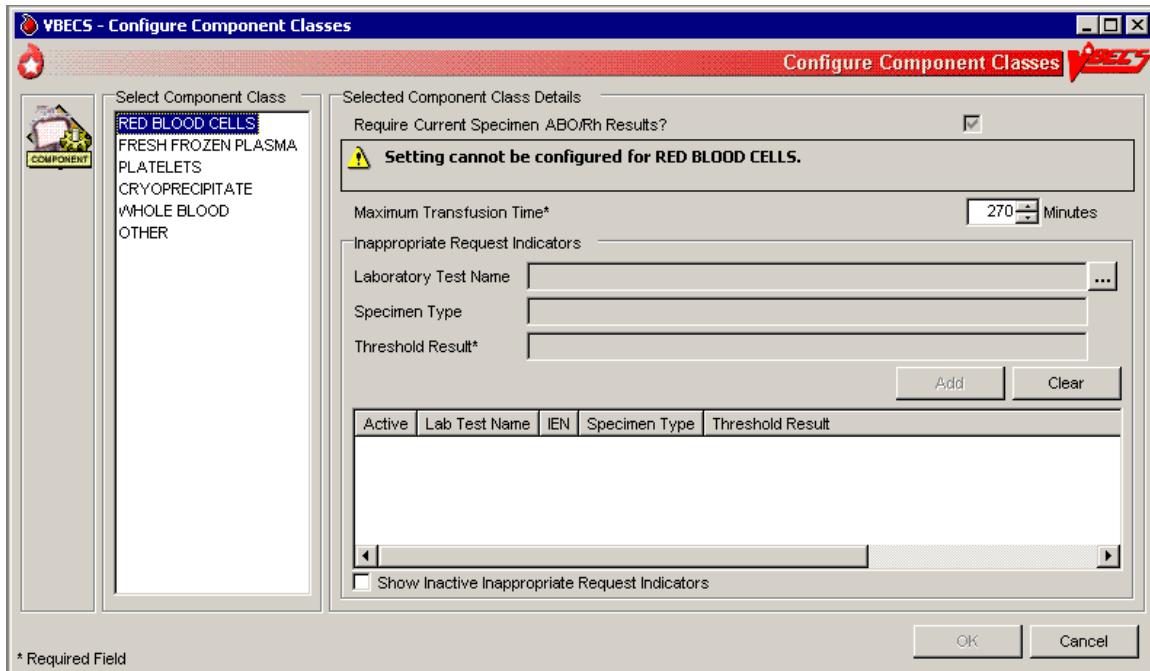
Component Classes

The user configures the parameters for the division's component classes. These parameters are applied to all blood units that descend from this class. Component classes may be reset when business practices affecting the use of component classes change at a division.

User Action	VBECS
1. Select Tools from the main menu. Select Component Classes (Figure 25).	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Lists component classes.• Displays options for configuring division component classes:<ul style="list-style-type: none">◦ Require Current Specimen ABO/Rh Results?◦ Maximum Transfusion Time• Displays options for defining inappropriate request indicators. <p>NOTES —</p> <p>See Appendix B: Table 17: CPRS Orderable Blood Components (Component Classes) Mapped to ICCBBA Component Classes.</p>
2. Select a class from the Select Component Class list. Click OK to accept the list, or click the Require Current Specimen ABO/Rh Results? check box,	<ul style="list-style-type: none">• Requires current specimen ABO/Rh results for issue.• Defines the maximum transfusion times.• Defines inappropriate request indicators.• Allows the user to edit this parameter for component classes that do not contain only red blood cells.• Saves the component to the division list.

User Action	VBECS
when appropriate.	<p>NOTES _____</p> <p>Component class configuration is required. Component classes: RED BLOOD CELLS, FFP, CRYO, PLT, WHOLE BLOOD, and OTHER.</p>
3. Edit the maximum transfusion time.	<p>NOTES _____</p> <p>VBECS records the maximum transfusion time from the transfusion start to the transfusion end time in minutes with a default of 270 minutes. The user may edit the maximum transfusion time to a minimum time of 5 minutes and a maximum time of 999 minutes.</p> <p>VBECS uses the maximum transfusion times in minutes to determine whether the time used to transfuse a unit of blood is inappropriate for a class.</p>
4. Define the inappropriate request indicators. Click the ellipsis button to search for a new laboratory test name. Enter a partial laboratory test name and click Search . Select a laboratory test name and click OK to add it. Click the Show Inactive Inappropriate Request Indicators check box, if desired.	<ul style="list-style-type: none"> • Facilitates data entry of one or more inappropriate request indicators: <ul style="list-style-type: none"> ◦ Laboratory Test Name ◦ Specimen Type ◦ Threshold Result • Uses VistALink to retrieve the laboratory test name and specimen type indicators. The user enters the threshold result indicator. • Displays the entry and allows the user to edit it. • Displays inactive tests and allows the user to reactivate them. <p>NOTES _____</p> <p>VBECS uses the laboratory test name as the only input parameter to search for all possible matches and return the Laboratory Test Name, Specimen Type(s), and VistA Lab Test Internal Entry Number (IEN).</p> <p>A numeric threshold result must include "<" or ">" and a numerical result, e.g., ">8.0."</p> <p>The settings here indicate predetermined levels used to determine the appropriateness of a component order. Settings are different for each component class. The example of a ">8.0" hemoglobin level is set according to local policy.</p> <p>An example of an inappropriate request indicator:</p> <ul style="list-style-type: none"> • The test name is "HGB." • The specimen is entered as "Blood." • The threshold result is set to ">8.0."
5. Click Add to add the VBECS component class site parameters to the database.	<ul style="list-style-type: none"> • Displays the component class parameters and allows the user to edit them before saving.
6. Repeat Steps 2–6 for each component class to be edited.	
7. Click OK to save. Click Yes to confirm changes and exit.	<ul style="list-style-type: none"> • Updates the database and captures changes to previously defined parameters for inclusion in an Audit Trail Report.

Figure 25: Component Classes



Configure Daily QC

The user sets up the routine reagent racks and QC template for the division before performing daily reagent QC.

Assumptions

- The division is “full service.”
- In the first use of this option, there are no defaults or data in place until the user selects the type of QC template (commercial or non-commercial).

Outcome

- A testing template is available for Enter Daily QC Results; reagent racks and identifiers were created.
- Minimum reaction strengths for each reagent type are defined and used by Enter Daily QC Results.
- A historical record for each rack will be maintained.
- Rack names created are available for use by other options.

Limitations and Restrictions

- This option pertains only to routine reagents.
- When there are partially or currently QC'd racks in the system, the user may not change the QC template.

Additional Information

- This option is disabled for transfusion-only facilities.
- The naming convention for the active template is not editable. When fewer racks are indicated, the system will inactivate existing rack names to keep the list in order without skipping a number or letter. Rack names are reusable.
- The daily use field for QC Rack template entries exported as REQUIRED for Daily Use are not editable by the user. The daily use field for entries exported with the daily use as OPTIONAL may be changed to be REQUIRED and remain editable by the user at any time.
- If Screening Cell 3 (SC3) and/or (SC4) are set to “required” as part of the configuration of the antibody screening cell set they are enabled on the antibody screen data grid.
- The user must identify an enhancement media reagent type as the primary. In addition, the user must identify the Anti-Human Globulin serum used during daily quality control testing of the screening cells and primary enhancement media.
- VBECS does not evaluate maximum strength of reaction for daily QC, as required by CAP. Local policy must define maximum strength of reaction.

User Roles with Access to This Option

►►►► Enhanced Supervisor

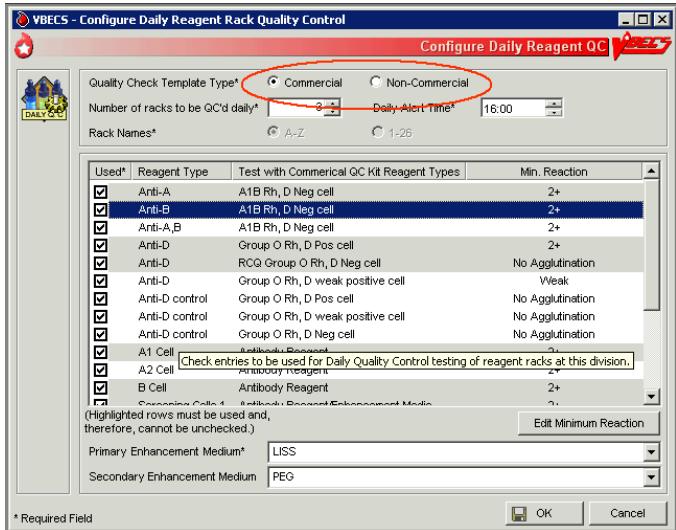
Configure Daily QC

The user sets up the daily reagent QC template for reagent rack testing for the division. In the first use of this option, all fields default to blank with no template preferred. Additional tests are available and may be included in the daily QC testing template in accordance with local practice. When a user changes the

active template, there is no carryover of field settings to the new template. All are set to the default and configuration must be completed.

User Action	VBECS
1. Select Reagents from the main menu. Select Configure Daily QC .	<ul style="list-style-type: none"> • Displays options for processing reagents. • Displays an option to configure online Daily Reagent Rack Quality Control.
2. Click the Commercial or Non-Commercial radio button (Figure 26).	<ul style="list-style-type: none"> • Lists the two system-supplied Daily QC templates. <ul style="list-style-type: none"> o Commercial Daily QC o Non-commercial Daily QC • When there are partially or currently QC'd racks in the system, warns the user to wait until QC expires (passes the daily alert time) and then make the changes.
3. Set the daily alert time.	<ul style="list-style-type: none"> • Asks the user to set the time the daily alert to all users at the site will begin. <p>NOTES</p> <p>The user indicates the local time that defines the start of the 24-hour period (the QC day) during which a rack is considered QC'd. VBECS alerts users when a rack was not performed after this local time passed.</p> <p>The user may test a rack no earlier than the alert time for the next 24 hours.</p>
4. Enter the number of racks at the site. Select a naming convention.	<ul style="list-style-type: none"> • Asks the user to set the number of racks to be QC'd daily at the division. • Asks the user to set the naming convention for racks. <p>NOTES</p> <p>A user may indicate 1–26 racks per site and names them according to the convention selected (A–Z or 1–26).</p>
5. Accept or edit the default settings of the template. Select primary and secondary enhancement medium options from the drop-down menus.	<ul style="list-style-type: none"> • Lists the default reagent types for inclusion in the daily reagent rack quality control and expected minimum reactions for each test type. • Displays changes and edits for review before saving. <p>NOTES</p> <p>One setting covers all racks at the site.</p> <p>Reagent types selected display on the rack lot number template and the reaction result entry worksheet for each rack in Enter Daily QC Results with some exceptions: gel kit, selected AHG, and automated testing lots numbers.</p> <p>When previously entered parameters for daily QC rack definitions are changed, VBECS requires a comment before the user saves the update.</p>
6. Click OK to save.	

Figure 26: Commercial and Non-Commercial Radio Buttons



Configure Division

Configure Division

A user defines site parameters that affect how VBECS behaves at a specific division. VBECS may be configured to function differently at each division within a consolidated database. Site parameters may be redefined.

Assumptions

- The site administrator defines the VBECS configuration, adds users, and assigns privileges for each division so that they mirror the associated VistA database.

Outcome

- Functional parameters are set for divisions that use the VistA database.

Limitations and Restrictions

- None

*It is recommended that users configure a division before configuring testing (click the **Configure Testing tab**).*

Additional Information

- To incorporate changes in division codes and names from VistA to VBECS, and to change time zones, see *VistA Blood Establishment Computer Software (VBECS) Technical Manual-Security Guide*.
- VBECS records configuration changes (such as time zone) on the Audit Trail Report.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

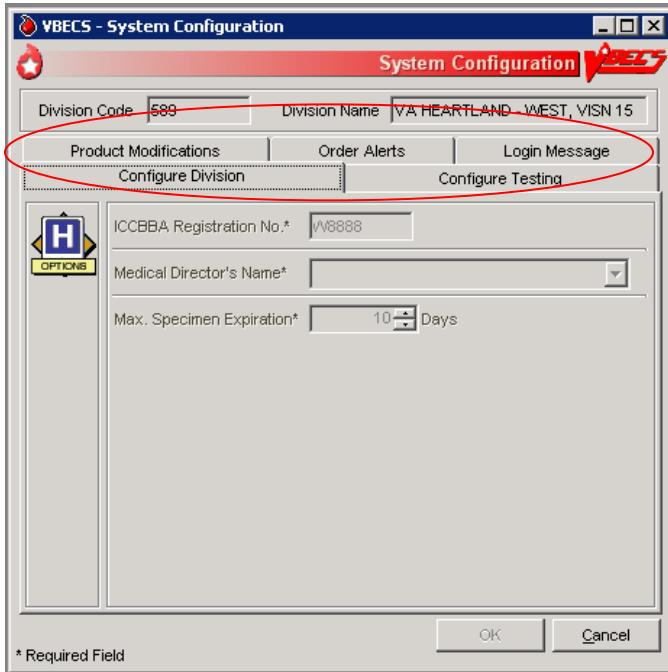
Configure Division

Once VBECS is configured to identify all of the divisions, the user sets up critical fields required for routine use of VBECS.

User Action	VBECS
1. Select Tools from the main menu. Select Configure Division (Figure 27).	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays the Configure Division tab with fields for entering division-specific blood product information.
2. Enter the ICCBBA Registration Number, the medical director's name (or select it from the drop-down list), and the maximum number of days until the specimen expires in their respective fields.	<p>NOTES</p> <p>An ICCBBA Registration Number contains an alphabetical character followed by four numeric characters.</p> <p>A user may enter the name of the blood bank medical director or acting medical director to appear on reports. The user may edit the name and title but may select only one name at a time for</p>

User Action	VBECS
	<p>use. VBECS saves these edits for retrieval.</p> <p>The user may edit the default setting for the maximum number of specimen expiration days from "3" to any value from "3" to "93."</p>
3. Click OK to save and click OK again to confirm the save and exit, or click another tab.	<ul style="list-style-type: none"> • Displays the information entered. • Requests confirmation to update the database. • Updates the database.

Figure 27: Configure Division Tabs



Configure Testing

The user sets testing preferences according to a division's medical policies.

Assumptions

- A division's worksheets affected by the option are not open or incomplete at the time of configuration.

Outcome

- Division testing preferences are configured.

Limitations and Restrictions

- None

*It is recommended that users configure testing before modifying products (click the **Product Modifications** tab).*

Additional Information

- None

User Roles with Access to This Option

>>>> Administrator/Supervisor

Configure Testing

The user sets the system to display testing grids to the users in their division. The user determines whether an autocontrol is used and whether a Direct Antiglobulin Test (DAT) is added as part of the routine Antibody Screen Test (ABS) described in Patient Testing: Record a Patient Antibody Screen.

User Action	VBECS
1. Select Tools from the main menu. Select Configure Division .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays the Configure Division tab with fields for entering division-specific testing information.
2. Click the Configure Testing tab. Click the appropriate radio buttons to determine antibody screen (display antibody screen only, or with a DAT or Autocontrol).	<ul style="list-style-type: none">• Displays the Configure Testing tab with fields for entering division-specific blood product information.• Displays options to set standard operating procedures for a division's laboratory testing.• Displays "Present Antibody Screen Only" (default antibody screen selection).
3. Click OK to save and click OK again to confirm the save and exit, or click another tab.	<ul style="list-style-type: none">• Displays the appropriate testing grids for subsequent patient orders.

Product Modifications

The user enables the types of modifications made at a division.

Assumptions

- An ICCBBA number was entered for the division.
- VBECS locks a user out when the user attempts to change the configuration and there are open or partially completed worksheets or processes in the division.

Outcome

- This option dictates the available modification types displayed in Modify Units: Pool Units, Modify Units: Split a Unit, and Modify Units.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

►►►►► Administrator/Supervisor

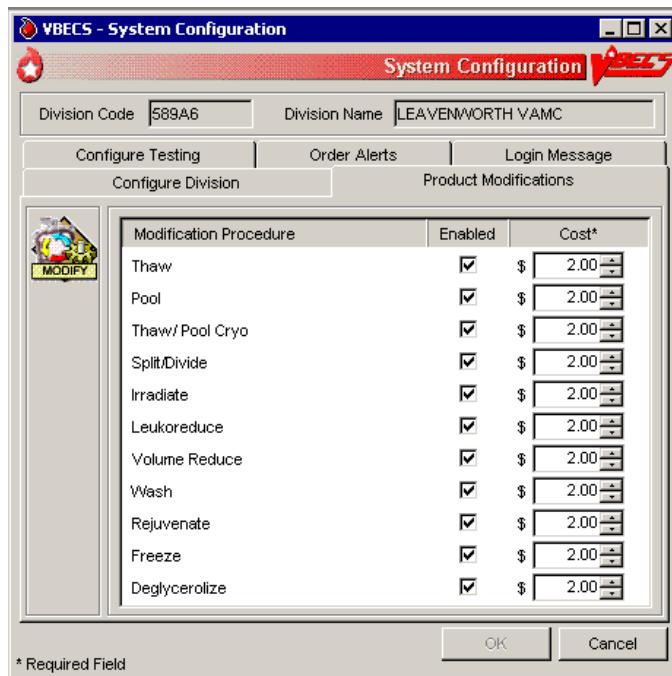
Product Modifications

The user enables specific modification type procedures performed in the blood bank in the hospital division. The user may enable one, all, or some of the modification processes. Once the types of modifications are enabled, individual blood unit modification is controlled by the rules of modification truth tables. VBECS is exported with all modification types disabled. VBECS allows for full customization upon deployment as well as changes to the enabled modifications when a division's capabilities and procedures change.

User Action	VBECS
1. Select Tools from the main menu. Select Configure Division .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays the Configure Division tab with fields for entering division-specific testing information.
2. Click the Product Modifications tab (Figure 28).	<ul style="list-style-type: none">• Lists valid modification procedures. <p>NOTES _____</p> <p>A user may enable one, more, or all modification types.</p>
3. Click one or more check boxes to enable modification types. Enter the processing cost associated with each modification procedure.	<ul style="list-style-type: none">• Lists modification procedures. <p>NOTES _____</p> <p>Modification procedures:</p> <ul style="list-style-type: none">• Thaw• Pool• Thaw/Pool Cryo• Split/Divide

User Action	VBECS
	<ul style="list-style-type: none"> • Irradiate • Leukoreduce • Volume reduce • Wash • Rejuvenate • Freeze • Deglycerolize <p>The modification process fee is added to the base unit cost of the first target unit and special testing costs, creating a patient bill for a transfused blood product, not including on-site antigen typing performed. The modification process fee may be U.S. \$0.00 to \$9,999.99.</p>
4. Click OK to save and click OK again to confirm the save and exit, or click another tab.	<ul style="list-style-type: none"> • Updates the database and captures changes to any previously defined parameters for inclusion in the Audit Trail Report.

Figure 28: Product Modifications Tab



Order Alerts

The user configures VistA alerts that appear at login.

Assumptions

- None

Outcome

- User alerts of physician orders for blood bank diagnostic tests and blood components are configured.

Limitations and Restrictions

- This option does not create a mechanism to accept or reject orders or specimens or define reports for viewing orders.
- The user may select the option to display printer alerts only when the designated printer is configured and available.
- The printer must be configured by the System Administrator.

Additional Information

- A user may review current user alert configurations.
- VBECS uses other alerts (patient update alerts, VistALink status alerts) that do not require configuration.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

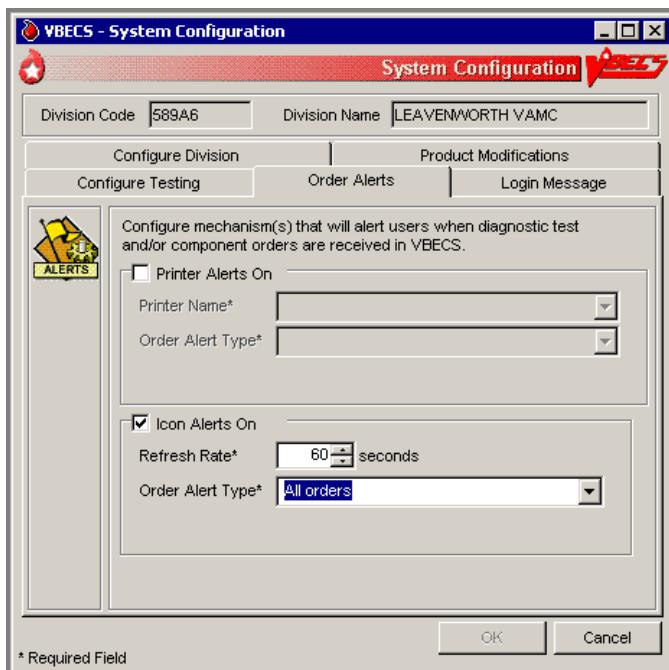
Order Alerts

The user configures diagnostic test or component order alerts, and turns them on or off. The alerts notify users when new orders are entered, updated, or canceled in VistA.

User Action	VBECS
1. Select Tools from the main menu. Select Configure Division.	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays configuration tabs.
2. Click the Order Alerts tab (Figure 29). Click the Printer Alerts On and/or the Icon Alerts On check box. Select the order alert type from the drop-down menus in the Order Alert Type fields.	<ul style="list-style-type: none">• Displays the existing order alert configuration and allows the user to edit it.• Requires the user to select a printer name and to define which orders to print.• Displays the selected printer, the selected order alert type, and the number of hours (default: 48 hours) entered for review. <p>NOTES —————</p> <p>VBECS lists local and network printers.</p> <p>The user must select an order alert type:</p> <ul style="list-style-type: none">• All orders (orders received by VBECS)• Hours limit to fill order (orders received by VBECS needed in the next <i>n</i> hours)• Specimen OK or N/A (orders for which no specimen is

User Action	VBECS
	required or with an acceptable specimen)
3. Enter or select a refresh rate (the interval between searches for new orders) for the order alert in the Refresh Rate field.	<ul style="list-style-type: none"> Requires the user to enter a refresh rate (default: 60 seconds) (Icon Alerts On). Displays the updated refresh rate. Displays the selected order alert type.
4. Click OK to save	Saves the user alert configuration settings.
5. Click Yes to confirm the changes and exit.	

Figure 29: Order Alerts Tab



Login Message

The user creates a division-wide VBECS message that appears at login.

Assumptions

- None

Outcome

- A message was created for display when users log into a VBECS division.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

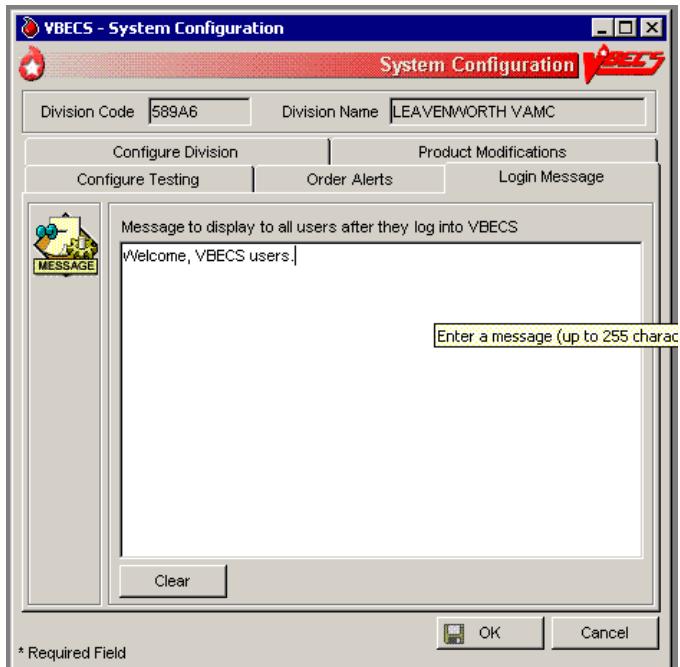
►►► Lead Technologist

Login Message

The user may add, update, or delete a message that VBECS displays to users logging into the division.

User Action	VBECS
1. Select Tools from the main menu. Select Configure Division .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays configuration tabs.
2. Click the Login Message tab (Figure 30). Enter a message in the message field to display at login.	<ul style="list-style-type: none">• Displays the existing login message and allows the user to edit or delete it.• Displays the updated login message. <p>NOTES —————</p> <p>VBECS does not display a blank login message.</p> <p>The user may click Clear to clear the message field and enter a new login message.</p>
3. Click OK to save.	<ul style="list-style-type: none">• Saves the login message changes.
4. Click Yes to confirm the changes and exit.	

Figure 30: Login Message Tab



Local Facilities

The user customizes collection facility information. (A “collection facility” is not a facility for blood collection: it is for blood distribution only.)

Assumptions

- A table of known FDA-registered facilities accompanies VBECS.

Outcome

- The supplier is configured for a division.

Limitations and Restrictions

- A user may:
 - o Activate and edit collection facility records distributed with VBECS.
 - o Add and locally edit active collection facilities.
 - o Activate and/or deactivate local collection facilities.
 - o Edit a division name, which may result in a mismatch between VistA and VBECS division names.

Additional Information

- A user may identify his site as a collection facility through this option.
- An ICCBBA Registration Number has one letter, indicating the country of origin (“W” for the U.S.) and four numbers. The field is five characters long.
- The user may change facility addresses that appear on reports.

User Roles with Access to This Option

All users

Local Facilities

This option allows a user to activate an entry from the national collection facility table, thereby adding it to a division’s local collection facility table, and add or update the facility’s information (except for the FDA Registration Number). A user may select an active collection facility to associate blood products (which makes the facility a shipper).

This option also allows a user to create a collection facility.

Verify that site information entered during installation is correct prior to adding local facilities.

User Action	VBECS
1. Select Tools from the main menu. Select Local Facilities .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays fields for entering facility information.• Allows a user to access an existing facility record.
2. To find a collection facility, scan or enter an FDA Registration Number in the FDA Reg. No. field and go to Step 4 (or click the ellipsis button to open the Facility	<ul style="list-style-type: none">• Displays the collection facilities that match the search criteria.

User Action	VBECS
<p>Search window).</p> <p>3. In the Facility Search window, enter a full or partial facility name in the Partial Facility Name field (or enter a full or partial FDA Registration Number in the FDA Reg. No. field), and click Search to view a list of active facilities.</p> <p>Select a facility name from the list and click OK.</p>	<ul style="list-style-type: none"> • Displays properties of the selected collection facility. <p>NOTES</p> <p>The collection facility is tied to the user's current login division.</p> <p>A user may activate a facility. By default, VBECS marks active facilities as collection facilities.</p> <p>➤➤➤➤ The Enhanced Supervisor may enter search criteria that do not exist in the national or the local collection facility tables to add a collection facility to the division's local list. By default, VBECS marks such entries as a collection facility.</p> <p>When a user clears the Active Facility check box for a collection facility in a division, warns the user, and asks whether he wishes to inactivate this facility and continue.</p> <p>Yes allows the action to continue. No leaves the collection facility marked as active for the division.</p> <p>VBECS does not allow inactivation of the product type for a shipper with in-date blood component units. VBECS warns that it is unable to deactivate the product type or shipper as there are in-date products for the shipper.</p>
<p>4. Edit or enter information in the collection facility information fields (for example, address, telephone number, whether the facility is a testing and/or collection facility) (Figure 31) and click OK to save the updated information.</p>	<ul style="list-style-type: none"> • Displays entries for review and acceptance. • Prompts to save. <p>NOTES</p> <p>OK remains disabled until the user edits or enters information or simply clicks in a field or check box.</p> <p>The Codabar eye-readable prefix (when used) is always two characters.</p>
<p>5. Click Yes to confirm the save.</p>	<ul style="list-style-type: none"> • Saves the active collection facility record and prompts to add or edit another facility. <p>NOTES</p> <p>VBECS saves an active collection facility only when it is identified as a collection facility.</p>
<p>6. Repeat these steps to process another facility.</p>	
<p>7. Click Cancel in the Maintain Facility screen to exit.</p>	

Figure 31: Maintain Facility

The screenshot shows the 'VBECS - Maintain Facility' window. The title bar includes the VBECS logo and the window title 'Maintain Facility'. The main area contains the following fields:

- FDA Reg. No.*:** 1472204 (with a browse button ... and a 'Clear' button)
- Facility Name*:** LifeSource - Glenview
- ICCBBA Reg. No.:** W0364
- Facility Address:** 1205 Milwaukee Avenue
- City*:** Glenview
- State*:** IL (dropdown menu)
- Zip Code:** 60025-_____
- Codabar Unit Format:**
 - Unit ID contains alpha characters?
 - 2-digit eye-readable prefix (if applicable)
- Facility Type*:**
 - Collection Facility?
 - Testing Facility?
- Active Facility?**

At the bottom left, a note says: * Required Field. At the bottom right are 'OK' and 'Cancel' buttons.

Blood Products

The user activates, deactivates, and edits a limited number of variables for an existing blood product site parameter. VBECS provides a Codabar and an ISBT 128 Blood Product reference table to facilitate these and other actions.

Assumptions

- The connection to VistA is active.
- The user understands Healthcare Common Procedure Coding System (HCPCS) codes. (See Additional Information.)
- A shipper must be marked as an active collection facility for a division before a user may select it as a valid shipper for a blood product for that division. This includes marking the division facility itself as an active collection facility to accommodate the creation of new blood products through modification.

Outcome

- Blood product codes are activated in the user's division.
- Each product's HCPCS code and its activation and deactivation dates are maintained in a permanent historical record.

Limitations and Restrictions

- Blood product records distributed through VBECS are national standards.
- The division must have activated the valid target blood products for modification.

Additional Information

- HCPCS codes are required for medical and surgical services and supplies for the outpatient setting under the final code set standards for the Health Insurance Portability and Accountability Act of 1996 (HIPAA). See your local Current Procedural Terminology (CPT) coordinator for more information.
- At least one valid shipper and product cost must be defined for each active product code in use in the division; multiple shippers may be associated with a blood product code.

User Roles with Access to This Option

All users

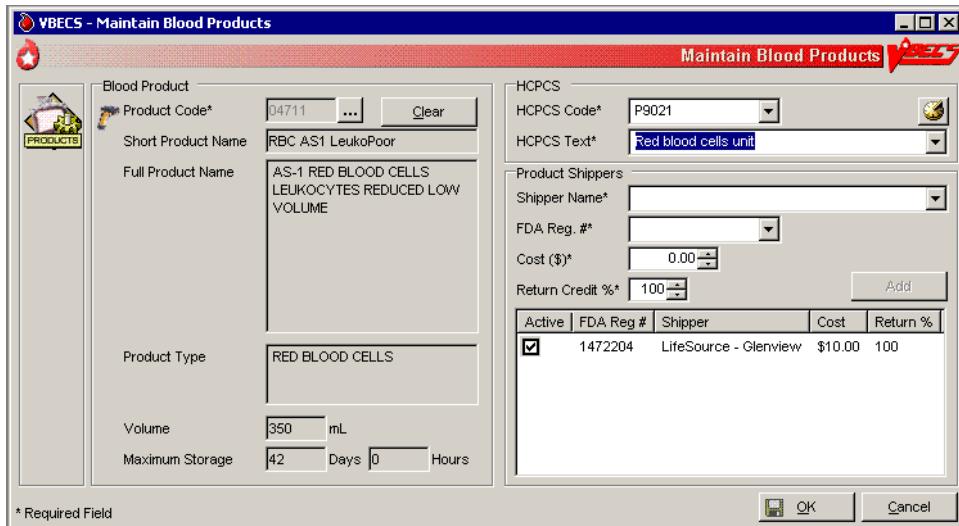
Blood Products

Before processing a blood unit in an incoming shipment, or activating or creating a blood unit in-house, the user identifies the shipper(s), cost, and return credit percentage for each shipper. The user also tags each product as active for use within the division and assigns an HCPCS code to each. These are the only fields the user may edit when maintaining an existing blood product code.

A "shipper" is the collection facility that delivers and bills for the blood product, regardless of the facility named on the unit's label. The collection facility that delivers the product to the shipper is not considered a shipper nor does it have a product cost associated with it, but it needs to be activated in the division for VBECS to interpret the unit ID. When components are modified within the division, the shipper is defined as the division. The cost may be \$0.00 or other U.S. dollar value assigned by the shipper.

User Action	VBECS
1. Select Tools from the main menu. Select Blood Products .	<ul style="list-style-type: none"> Displays options for processing administrative functions. Displays fields for entering blood product information.
2. To identify the product, scan or enter a Codabar or ISBT product code. Click the ellipsis button to search for a product. Select a product type from the drop-down Product Type list or enter a partial product name in the Partial Product Name field. Click Search .	<ul style="list-style-type: none"> Displays current blood product information. <p>NOTES —————</p> <p>When a user enters a product code that VBECS does not recognize, VBECS warns that the blood product was not found and that it does not support entry of new blood products.</p> <p>OK returns the user to a blank screen to enter a different product. VBECS clears the screen. The user may enter a different product code.</p>
3. Select a product from the Search Results list and click OK (Figure 32). Select an HCPCS code from the drop-down HCPCS Code list or enter an HCPCS code.	<ul style="list-style-type: none"> Allows a user to enter the HCPCS code. <p>NOTES —————</p> <p>A blood product may have only one HCPCS code at a time.</p>
4. Select or enter product shipper information: shipper name, FDA Registration Number, cost, and return credit percentage.	<p>NOTES —————</p> <p>Site parameters determine which products are active for a division. Products marked as active can be received in an incoming shipment or created in-house through modification.</p> <p>A user with no increased security can maintain an existing blood product for use only within the user's current division.</p> <p>The return credit default is "100%."</p> <p>VBECS does not allow inactivation of the product type for a shipper with in-date blood component units. VBECS warns that it is unable to deactivate the product type or shipper as there are in-date products for the shipper.</p>
5. Repeat Steps 3 and 4 for each selected product's shipper and for other products.	<ul style="list-style-type: none"> Displays the information entered. Requests confirmation to update the database. Updates the database or warns the user with no override for discrepancies.
6. Click OK to exit.	

Figure 32: Maintain Blood Products



Antibodies

The user edits certain fields in the supplied antibody table.

Assumptions

- VBECS is configured to reflect antibody reference parameters. Only some of these parameters may be changed locally.
- The default settings are enforced without user interaction.

Outcome

- Each division has a populated antibody table whether or not the user makes any edits.

Limitations and Restrictions

- None

Additional Information

- The antibody table defines an antigen negative requirement for all instances of the antibody for all patients in the division. When an antibody specificity does not generally require antigen negative blood but a patient has a unique appearance of that antibody that requires antigen negative blood, the user may enter the antigen negative requirement for that patient in Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Antibodies

The user chooses to edit the system-supplied blood antibody table. The Compatibility Percentage field is fully editable (except for ABO antibodies and anti-D) to allow facilities to reflect local populations. The user may edit only the Clinically Significant entries initially exported as “No.”

User Action	VBECS
1. Select Tools from the main menu. Select Antibodies .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Lists available antibodies based on the system-supplied table. <p>NOTES _____</p> <p>See Appendix B: Table 13: Antibody and Antigen Table: Irregular Antibodies.</p> <p>The table's presentation order is predefined at implementation and may not be sorted.</p>
2. Select the antibody, edit each field, and click Update (Figure 33).	<ul style="list-style-type: none">• Displays data and allows the user to edit them.• Accommodates data entry of whole numbers (0–100) and edit of the Antigen Negative Compatibility Percentage and Higher-Level Override fields. The user may not edit fields displayed on a gray background. <p>NOTES _____</p> <p>When Table 13: Antibody and Antigen Table: Irregular</p>

User Action	VBECS
	Antibodies “antibody sets an antigen negative requirement” field is defined as REQ (required) at installation, it is not editable. When the default settings is OPT (optional), the user may change the name to REQ at any time and it will remain editable.
3. Repeat for each antibody to be edited.	
4. Click OK and Yes to confirm changes and exit.	

Figure 33: Maintain Antibodies

The screenshot shows the 'VBECS - Maintain Antibodies' application window. The main area displays a table titled 'Antibody List' with columns: Antibody Name, Clinically Significant?, AG Neg %, and Higher-Level Override?. The table lists various antibodies with their respective values. The 'Anti-C' row is highlighted. Below the table, a section titled 'Selected Antibody' shows the details for 'Anti-C': Antibody Name (Anti-C), Clinically Significant? (checked), Antigen Negative Compatibility Percentage (53%), and Require high-level user to override antigen negative requirement? (checked). At the bottom right are 'OK' and 'Cancel' buttons, and a note '* Required Field' is visible at the bottom left.

Antibody Name	Clinically Significant?	AG Neg %	Higher-Level Override?
Anti-C	Yes	53	Yes
Anti-E	Yes	75	Yes
Anti-c	Yes	12	Yes
Anti-e	Yes	2	Yes
Anti-f	Yes	N/A	Yes
Anti-G	Yes	N/A	Yes
Anti-K	Yes	91	Yes
Anti-k	Yes	1	Yes
Anti-Kp(a)	Yes	98	Yes
Anti-Kp(b)	Yes	2	Yes
Anti-Jk(a)	Yes	15	Yes
Anti-Jk(b)	Yes	42	Yes
Anti-Jk3	Yes	N/A	Yes
Anti-Ev(a)	Yes	63	Yes

Selected Antibody

Antibody Name	Anti-C
Clinically Significant?	<input checked="" type="checkbox"/>
Antigen Negative Compatibility Percentage	53 %
Require high-level user to override antigen negative requirement?	<input checked="" type="checkbox"/>

Update

* Required Field

OK Cancel

Canned Comments

The user defines canned comments for a division.

Assumptions

- None

Outcome

- Canned comments for a division are available for selection.

Limitations and Restrictions

- The user may not edit comments provided with VBECS but may create additional comments.
- Site personnel must enter comments in accordance with local policy and procedures.

Additional Information

- Canned comments are specific to each division. See Appendix B: Table 16: Canned Comment Category Types and Text defines the category types and comments.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Canned Comments

It is recommended that the user review the canned comments provided with VBECS for each category type and inactivate those that will not be used.

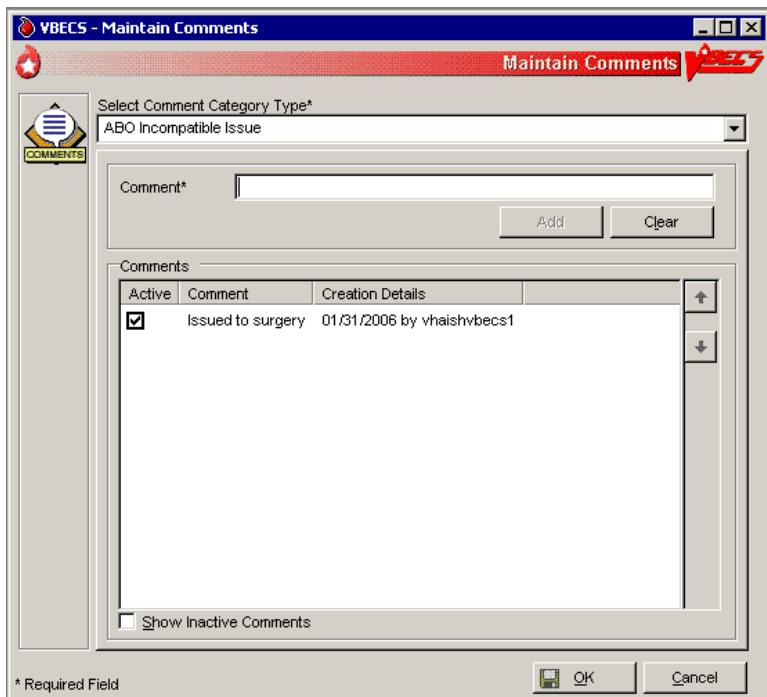
The user creates canned comments to use in lieu of entering text. Canned comments are restricted for selection based on the category type of the comment field.

The user may select a comment and has the option to enter explanatory text in the details field.

User Action	VBECS
1. Select Tools from the main menu. Select Canned Comments .	<ul style="list-style-type: none">• Displays options for processing administrative functions.
2. Select a comment category type from the drop-down list (Figure 34).	<ul style="list-style-type: none">• Lists the category types for canned comments.• Allows the user to create a comment or inactivate an existing one.
3. Enter text in the Comment field and click Add to add a comment. Click one or more check boxes to inactivate existing comments.	<ul style="list-style-type: none">• Displays entered data and allows the user to edit them before saving. <p>NOTES —————</p> <p>A user may:</p> <ul style="list-style-type: none">• Add canned comments.• Inactivate canned comments.• Reactivate inactive comments.• View inactive comments and dates of inactivation.• Control the order in which VBECS displays comments in a context.
4. Click the Show inactive Comments check box to view	<ul style="list-style-type: none">• Displays inactive comments and allows the user to reactivate them.

User Action	VBECS
inactive comments. Click one or more check boxes to reactivate inactive comments.	
5. Repeat Steps 2–4, as needed. Click OK and Yes to save and exit, or Cancel to exit without saving.	<ul style="list-style-type: none"> Updates the database.

Figure 34: Maintain Comments



Setting Transfusion Parameters

Transfusion Complications

The user defines Laboratory tests and threshold values used to generate a report listing patients who were transfused within a specified period and who may have developed a transfusion-associated disease.

Assumptions

- VistA tests are defined.
- The connection to VistA is active.

Outcome

- Parameters are defined for future Transfusion Complication Reports.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

►►►► Enhanced Supervisor

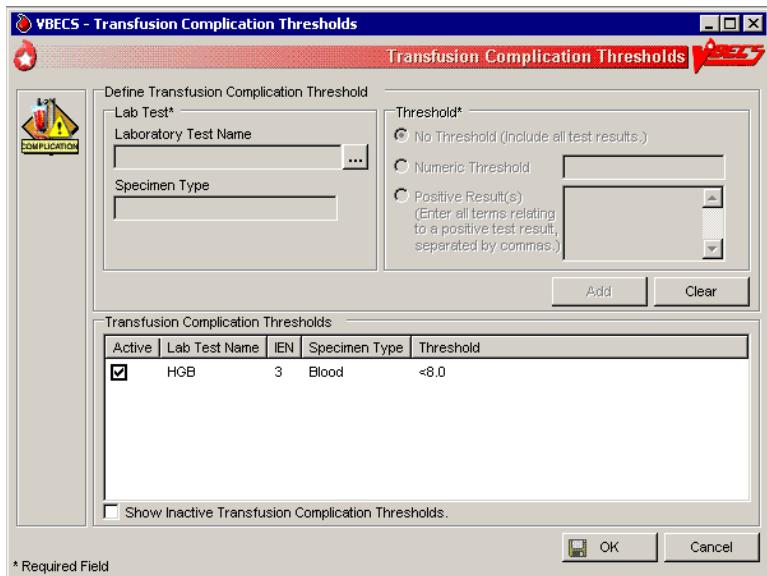
Transfusion Complications

The user defines Laboratory tests for use in the transfusion complication table.

User Action	VBECS
1. Select Tools from the main menu. Select Transfusion Complications .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays fields for entering transfusion complication threshold data.
2. Click the ellipsis button to search for a Laboratory test. Select a test. Click OK .	<ul style="list-style-type: none">• Allows the user to edit or add previously defined tests for use in a Transfusion Complication Report.
3. Click the Numeric Threshold radio button and enter or edit test threshold information (Figure 35). Click Add to add the test to the list, or Click Update to save changes to a previously saved test. Click OK to save and Yes to confirm the save.	<p>NOTES</p> <p>When defining a test reported as a text value, VBECS accommodates the input of specific text (1–255 characters) that will be used to search for matching values.</p>

User Action	VBECS
4. Click OK to save and Yes to confirm the save and exit.	<ul style="list-style-type: none"> Updates the database.
5. Repeat Steps 2–4 for each transfusion complication test to be defined or click Cancel to exit.	

Figure 35: Transfusion Complication Thresholds



Transfusion Effectiveness

The user defines Laboratory tests to monitor the effectiveness of transfusions.

Assumptions

- VistA lab tests are defined.
- The connection to VistA is active.

Outcome

- Parameters are defined for future reports.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

►►►► Enhanced Supervisor

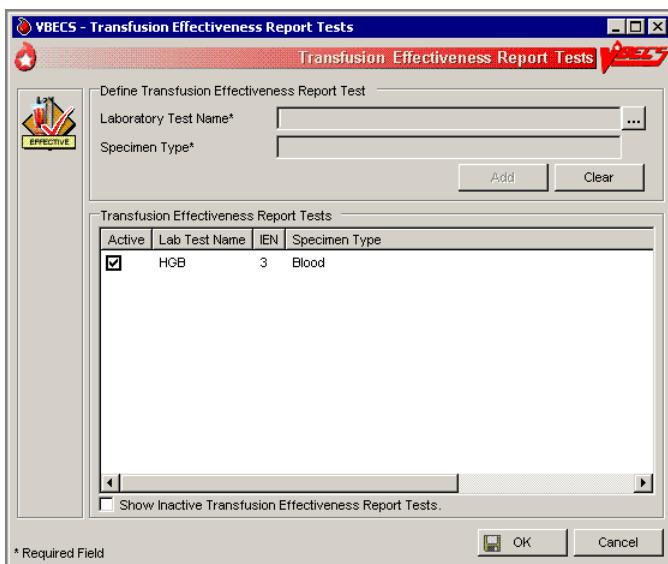
Transfusion Effectiveness

The user enters the tests to be included in the Transfusion Effectiveness Report.

User Action	VBECS
<p>1. Select Tools from the main menu.</p> <p>Select Transfusion Effectiveness.</p> <p>2. Click the ellipsis button to search for a Transfusion Effectiveness Test.</p> <p>Enter part or all of a laboratory test name.</p> <p>Click Search.</p> <p>Click one to four check boxes to select tests.</p> <p>Click OK.</p> <p>Click Add to add the tests (Figure 36), or</p> <p>Click the Show Inactive Transfusion Effectiveness Report Tests check box, if desired.</p> <p>Click Update to edit the tests.</p>	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Allows the user to edit a previously defined Transfusion Effectiveness Tests or add a test. <ul style="list-style-type: none">• Allows the user to enter one or more Transfusion Effectiveness Tests.• Uses VistALink to retrieve Laboratory test data for each of these indicators:<ul style="list-style-type: none">◦ Laboratory test name◦ VistA Laboratory test Internal Entry Number (IEN)◦ Specimen type

User Action	VBECS
3. Repeat Step 2 for each Transfusion Effectiveness Test to be defined, or click Cancel to exit.	
4. Click OK to save and Yes to confirm the save.	<ul style="list-style-type: none"> Updates the database, including the date and time and the technologist ID. Saves changes to previously defined tests for inclusion in an Audit Trail Report.

Figure 36: Transfusion Effectiveness Report Tests



MSBOS

The user defines parameters for comparing blood component orders placed by a clinician with the Maximum Surgical Blood Ordering Schedule (MSBOS).

Assumptions

- A table of generic surgery names is available for MSBOS activation.

Outcome

- CPRS users will see only active surgery names when placing a blood bank order.
- MSBOS will be available to VBECS users to evaluate the appropriateness of pre-op orders.

Limitations and Restrictions

- None

Additional Information

- The maximum number of blood products serves as a guideline. Orders in excess of the MSBOS are not prohibited.
- The VBECS user may view active and inactive surgery names.

User Roles with Access to This Option

►►►► Enhanced Supervisor

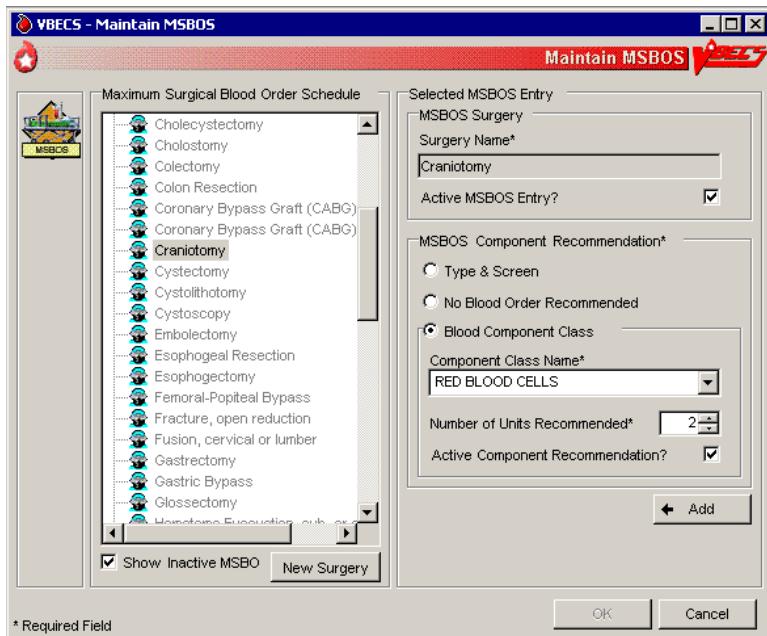
MSBOS

The user selects a surgery name from the generic surgery list or creates a new surgery name, then defines the associated MSBOS recommendation. MSBOS is used when VBECS acknowledges orders from VistA that are written for preoperative patients.

User Action	VBECS
<p>1. Select Tools from the main menu.</p> <p>Select MSBOS.</p> <p>2. To activate an existing surgery name, click the Show Inactive MSBOS entries check box (Figure 37).</p> <p>Select a surgery name.</p> <p>Click the Active MSBOS Entry? check box, or</p> <p>To add and activate a surgery name, click New Surgery and enter a surgery name in the Surgery Name field. Click Add, or</p> <p>To edit and/or deactivate an existing surgery name, click the</p>	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays the schedule and component recommendation options. <p>• Lists active surgery names or allows the user to create an entry.</p> <ul style="list-style-type: none">• Activate, add, or edit a MSBOS entry and its associated data.• Displays surgery names available for activation.• Displays entries for review and acceptance. <p>NOTES</p> <p>MSBOS is specific to the division.</p> <p>See Appendix B: Table 24: VBECS Maximum Surgical Blood Order Schedule (MSBOS).</p> <p>Each surgery name has a Type & Screen (TAS) (no blood order recommended) or one or more component classes defined as recommended orders.</p> <p>The user may select one or more component classes for</p>

User Action	VBECS
appropriate options in the MSBOS Component Recommendation area of the screen edit. Click Update .	MSBOS recommendation. Each defined component class must have an associated maximum number recommended. The user may inactivate previously activated component classes for an MSBOS recommendation. The OTHER component class is not available for selection.
3. Repeat Step 2 until all new entries are created or existing entries are edited. Click OK to save the updated data.	NOTES VBECS does not save changes to the database when the user clicks Cancel without clicking OK .
4. Click Cancel to exit.	

Figure 37: Maintain MSBOS



Workload Codes

The user assigns workload Laboratory Management Index Program/National Laboratory Test (LMIP/NLT) tests to processes performed through VBECS. VBECS test names are associated with VistA workload codes, which VBECS uses when compiling and storing data to provide workload-related reports to VistA.

Assumptions

- The VistA database was updated to include all required workload codes for the VBECS process.
- The VistA database was updated to associate CPT codes and costs with the workload codes to be used by VBECS.
- The connection to VistA is active.

Outcome

- Data are available to the VistA workload package.

Limitations and Restrictions

- Transfusion-only sites must not map workload codes to processes, such as ABO/Rh testing, not performed on site.

Additional Information

- VistALink is required to query VistA files 64 (NLT/LMIP) and 81 (CPT) for appropriate entries.
- The division provides CPT codes and costs associated with the workload codes when they need updating.
- Each site is responsible for notifying users when incorrect CPT codes are used.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

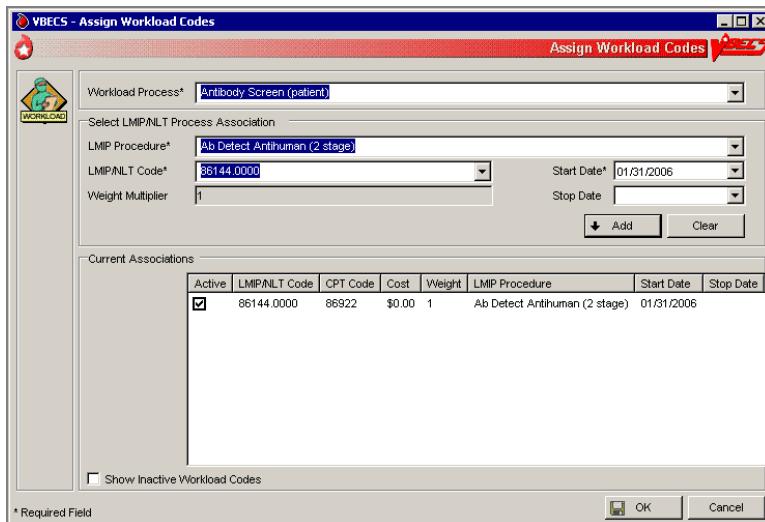
Workload Codes

As part of record-keeping activity, VBECS allows the user to account for workload units associated with each activity and to assign costs incurred by the blood bank due to these activities. Data gathered because of this workload collection are available to VistA, as needed, for various reports.

User Action	VBECS
1. Select Tools from the main menu. Select Workload Codes .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays fields for entering workload-related data.• Lists and retrieves processes that may involve workload.•
2. Select a process for which to define workload codes.	<p>NOTES —————</p> <p>The user may assign multiple LMIP and CPT workload codes to a process.</p> <p>VBECS checks for active and inactive workload associations and does not allow the user to enter a duplicate association. VBECS</p>

User Action	VBECS
	<p>allows the user to reactivate previously inactive entries and add workload associations.</p>
3. Select an LMIP/NLT code. Click Add to add the code, or click Update to select a current association to edit.	<ul style="list-style-type: none"> Lists previously assigned LMIP/NLT codes for the selected process. Allows the user to select an LMIP/NLT code. <p>NOTES</p> <p>VBECS uses VistALink to query the VistA WKLD CODE File (#64) for valid LMIP/NLT codes.</p> <p>VistA uses the LMIP/NLT code to create workload reports as well as reports to patient care encounter (PCE) and the decision support system (DSS) database.</p>
4. Enter the start or stop date (whichever is appropriate) of the workload code association with the VBECS process (Figure 38).	<ul style="list-style-type: none"> Allows the user to enter a date. <p>NOTES</p> <p>The user may enter an inactivation date only when an activation date was previously entered (default start date and time: current date and time).</p> <p>The inactivation date must be later than or the same as the activation date. When the user attempts to enter an inactivation date that is earlier than the activation date, VBECS warns the user. There is no override.</p>
5. Repeat Steps 4–5 for each LMIP/NLT code to be associated with the selected process.	
6. Add the selected parameters to the selected process.	<ul style="list-style-type: none"> Allows the user to add the selected parameters.
7. Repeat Steps 1–8 for to define workload parameters for another process, or exit.	

Figure 38: Assign Workload Codes



Reagents and Supplies

Enter Daily QC Results

The user enters observed serological reactions for all phases of testing and interpretations of the various routine reagents.

Assumptions

- The division is “full service.”
- Site parameters regarding reagent quality control are set up.
- Minimum inventory levels for reagent types are defined.
- Inventory control functionality is in use and reagents are in the inventory of the user’s division.
- Daily QC testing does not include reagents used in special antigen typing.

Outcome

- Routine reagents are available for use, shutting down the alert for the day associated with the rack.
- The user may enter and save reaction results below the minimum expected reaction; an Exception Report may be generated for supervisory review; the rack may or may not be used by the site for routine testing throughout that day.

Limitations and Restrictions

- Additional user-defined reagent types not available in Configure Daily QC or Enter Daily QC Results are not part of a reagent rack’s daily QC testing.

Additional Information

- VBECS allows the user to save a partially filled worksheet for a specific QC rack ID and allows the same or a different user to redisplay the form for the entry of remaining test results at a later time. The user, first or second, may enter new results but may not edit prior entries. VBECS records the ID of each user who enters test observations on a worksheet.
- VBECS issues warnings when they are defined in Maintain Minimum Levels.
- VistALink does not need to be active when a user enters daily quality control results.
- A testing template is generated for daily quality control testing of routine reagents for each rack in a division. (Multiple templates may be used on a given day.)
- System rules determine the validity of the test interpretations and determine if all phases of testing were recorded for both scenarios.
- A user must enter and may view one day’s QC data at a time. The supervisor or administrator must review these entries and the reagent information daily.
- VBECS compares the current rack QC results with the prior day’s QC results.
- Multiple technologists may use the same rack.
- Rack number and reagents used to test a specimen are linked to the lot number, manufacturer, and expiration date of the reagent type as well as the rack identifier.
- A user may use more than one testing method in accordance with local policies and procedures.

User Roles with Access to This Option

All users

Enter Daily QC Results

The American Association of Blood Banks' *Standards for Blood Banks and Transfusion Services* requires that commercial reagents in the blood bank—antisera and routinely-used red cell reagents—must be tested for performance “on the day of use.” As routine reagents are always used, they are tested daily. Records of these reagents, their lot numbers, and their testing results must be stored for reference. VBECS verifies and indicates whether the reagent is satisfactory for use.

This option facilitates the direct entry of reaction results and interpretations, constituting daily reagent quality control testing for a rack of reagents.

VBECS allows the user to change individual reagents without repeating the QC for the full rack during the day.

User Action	VBECS
1. Select Reagents from the main menu. Select Enter Daily QC Results .	<ul style="list-style-type: none">Displays options to perform daily reagent rack QC.
2. Verify the default date tested and tester, and edit them, if needed.	<ul style="list-style-type: none">Displays the date and time the testing was performed; the default is the current date and time, which are editable to allow retrospective entry.Displays the testing technologist's identification; the default is the current user. Lists valid division users for selection.Displays the option to indicate the rack number of the reagents to test, a list of racks to be tested for the current date, and a retest option for the racks with testing completed for the date. <p>NOTES</p> <p>Daily QC testing does not include reagents used in special antigen typing.</p>
3. Select the Test Rack(s), Partially Tested Rack(s), or Retest Rack(s) tab (Figure 39). Click one or more check boxes to select rack numbers. Click OK .	<ul style="list-style-type: none">Displays the lot number verification template for each rack selected. <p>NOTES</p> <p>On occasion, a user may save a partially completed QC worksheet and finish it later. The same user or a different user may complete the testing.</p> <p>The user may retest a rack when a reagent lot number changes after initial testing. VBECS does not allow the user to retest saved valid results.</p> <p>VBECS requires the user to indicate the rack identifier to provide a testing template for each daily reagent rack QC.</p> <p>When a user selects a reagent rack for which quality control (QC) testing was never performed in Enter Daily QC Results, VBECS displays a warning message, clears the selection, and allows the user to select a different rack.</p> <p>Site settings determine reagent types and lot numbers present. VBECS displays only reagent types previously entered for the division using the reagent inventory function. VBECS allows entry of lot numbers only. When VBECS displays lot numbers for selection, it checks the inventory system for the reagent name and lot numbers in use in a rack. VBECS does not offer a reagent with an unsatisfactory value in the “Inspection” field or with a quantity of</p>

User Action	VBECS
	<p>zero as a selectable reagent. The user cannot force the entry of a lot number that VBECS disallowed on the selection list. The user must choose a different reagent.</p> <p> VBECS compares the expiration date of each reagent on the selected rack to the testing date, emits an audible alert, and warns when the reagent is expired.</p> <p>Yes requires a comment and VBECS captures details for inclusion in an Exception Report (exception type: expired reagent QC'd).</p> <p>No removes the unsatisfactory reagent from the daily QC rack. The user must select a new one. VBECS does not display unsatisfactory lot numbers.</p> <p>The user may enter the lot numbers of the reagents used for the daily QC rack and the lot numbers of the enhancement media reagents defined in Configure Daily QC. VBECS does not display these reagents on the reaction results grid for a rack.</p>
<p>4. Select a worksheet to complete the testing (Figure 40), or</p> <p>Click the Rack not in use today check box to indicate that testing of a rack will not be performed.</p>	<ul style="list-style-type: none"> • Displays the selected worksheet. • Displays the selected partially completed worksheet with the option to cancel the worksheet or continue to enter more testing information. <p>NOTES ——————</p> <p>A user may not edit lot numbers associated with a partially completed worksheet.</p> <p> A user may cancel or invalidate a partially completed QC rack worksheet when it is available. VBECS emits an audible alert and warns that invalidating this worksheet will necessitate starting over and asks whether the user wishes to continue.</p> <p>No returns the user to the partially partially-completed worksheet. Yes invalidates the worksheet. VBECS does not delete reaction results from the database.</p> <p>An Exception Report comment documents the invalidation of the rack's worksheet. VBECS does not record workload calculation for invalidated testing. The invalidated reaction results and associated testing information remain in the database for future retrieval (exception type: deletion of partially completed QC).</p> <p> VBECS compares the results entered to those of the previous day for the same rack number and alerts the user when there is a decrease in reactivity of two or more within the acceptable limits for each reagent type by lot number. VBECS emits an audible alert and warns that there is a decrease in reagent reactivity of two or more and asks whether the user wishes to continue to use this vial.</p> <p>Yes allows the user to continue and requires a comment. VBECS captures details for inclusion in an Exception Report and allows this reagent to be used with the change (within acceptable limits)</p>

User Action	VBECS
	<p>(exception type: QC decrease reagent reactivity ≥ 2).</p> <p>No allows the user to return to the lot number entry for this reagent type and approve this lot number (different vial) or enter a new lot number. VBECS returns to the testing worksheet where the user left off. (An individual vial of the same lot number may replace the one losing its reactivity.)</p> <p>The screening cell and reverse typing reagents are delivered in sets and share the same lot number; therefore, VBECS displays only one reagent type on the lot number template.</p>
<p>5. Verify or select from the drop-down menu the reagent type lot number and test method for each rack chosen for processing.</p> <p>Click OK.</p>	<ul style="list-style-type: none"> Displays the lot numbers and expiration dates for verification, if any. Displays each rack in its own tab. <p>NOTES</p> <p>VBECS allows for one lot number entry per reagent type per rack template. When an entry was made, VBECS fills in the reagent type lot number, the expiration date of that lot number, and the manufacturer. The user may edit the lot number. The user must verify the lot numbers of racks in the selected batch before VBECS allows the user to move to the reaction results grids.</p> <p>Each reagent rack has a separate reaction results grid to collect the user's direct observations.</p> <p>VBECS displays reagent types (except for the gel and the instrument lot numbers) listed as REQUIRED (by VBECS or by the user) in the daily use field on the rack lot number template and the reaction result entry worksheet for each rack in Enter Daily QC Results.</p> <p>When a rack is tested, VBECS displays a retest option at the daily reagent QC prompt with the untested rack numbers. When a user requests to retest a rack on a given date, VBECS displays the option to reenter a lot number for reagent types for all or part of the daily QC with a comment. All other reagent type results previously entered are locked and may not be edited. VBECS saves the new information and the original data, then generates a report entry.</p> <p>When a user changes a reagent lot number, VBECS clears the testing template for that reagent type and allows the user to enter new results.</p>
<p>6. Enter the observed serologic reactions (Figure 41).</p> <p>Click OK and Yes to save and exit.</p> <p>Repeat for each rack selected in Step 3.</p>	<ul style="list-style-type: none"> Displays the testing template reaction results grid for each rack selected, when no lot number changes were made. Determines whether the entered results are acceptable and indicates acceptability of the lot number for the reagent type. Verifies (by type and lot number) that the reagent is satisfactory or unsatisfactory for use. Saves the partially or fully completed data. <p>NOTES</p> <p>The user may enter results on multiple reagent racks. VBECS</p>

User Action	VBECS
	<p>displays each rack in its own tab.</p> <p>VBECS verifies satisfactory and unsatisfactory QC testing based on site parameters and user data entry. If the user-entered test results indicate a satisfactory interpretation, VBECS displays "Satisfactory." VBECS saves results that are satisfactory only when the testing for a row is complete and the worksheet is saved. VBECS clears results associated with an unsatisfactory interpretation from the screen/worksheet and the testing for the affected QC rack is considered incomplete until the rack is retested with satisfactory results for the affected row. (Warnings generated by other options when QC testing is incomplete apply).</p> <p>The daily reagent QC for a date requires a valid entry for each reagent displayed on the worksheet. VBECS considers a rack ready and available for patient testing on that date when all reagents on a rack have valid test results.</p>

Figure 39: Enter Daily QC Results

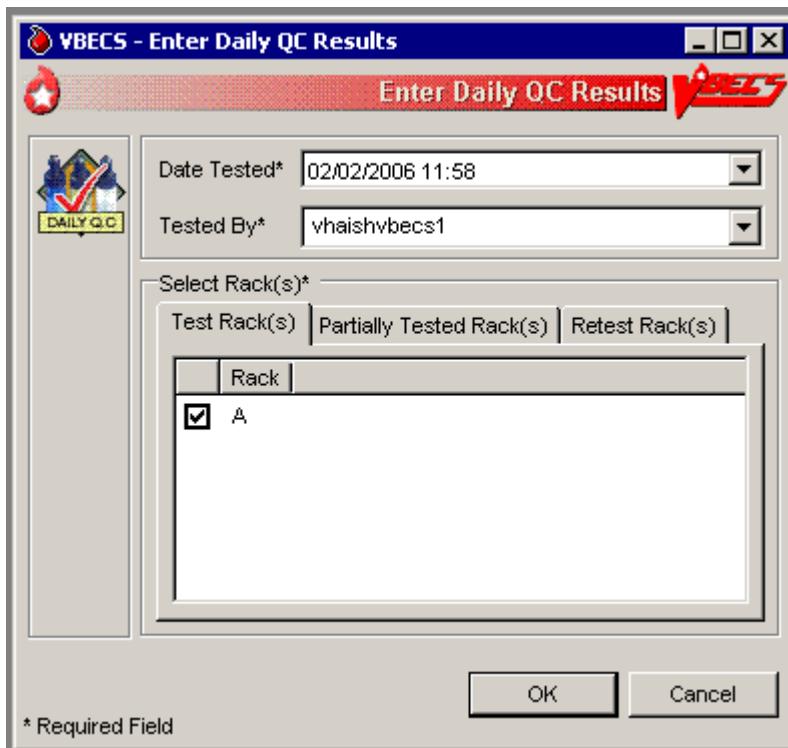


Figure 40: Record Lot Numbers for Daily QC Testing

VBECS - Enter Daily QC Results

Enter Daily QC Results 

A

Record Lot Numbers for Daily QC Testing					Rack not in use today <input type="checkbox"/>
Reagent Type	Lot Number*	Manufacturer	Expiration Date	Test Method*	
Anti-A	1	AAA	02/28/2006 23:59	Tube	
Anti-B	1	AAA	02/28/2006 23:59	Tube	
Anti-D	1	AAA	02/28/2006 23:59	Tube	
Screening Cells	1	AAA	02/28/2006 23:59	Tube	
Reverse ABO Typing Cells	1	AAA	02/28/2006 23:59	Tube	
QC kit	1	AAA	02/28/2006 23:59	Tube	
LISS	1	AAA	02/28/2006 23:59	Tube	
AHG, PS	1	AAA	02/28/2006 23:59	Tube	
CC	1	AAA	02/28/2006 23:59	Tube	

Key

 V	Valid Reagent
 W	Reagent will expire within 24 hours.
 E	Expired Reagent

* Required Field

OK Cancel

Figure 41: Enter Daily QC Results with Serologic Reactions

VBECS - Enter Daily QC Results

DAILY QC

Daily QC - Enter Results

A	Reagent Type	Test With	Min Result	Phase	IS*	IAT*	CC*
S	Anti-A	A1B Rh, D Neg cell	2	IS	2		
S	Anti-B	A1B Rh, D Neg cell	2	IS	2		
S	Anti-D	Group O Rh, D Pos cell	2	IS	2		
S	Anti-D	RCQ Group O Rh, D Neg cell	0	IS/IAT	0	0	2
S	Screening Cells 1	Antibody Reagent/Enhancement Media	2	IAT		2	
S	Screening Cells 2	Antibody Reagent/Enhancement Media	2	IAT		2	
S	A1 Cell 1	Antibody Reagent	2	IS	2		
S	B Cell 2	Antibody Reagent	2	IS	2		

Key

S	Satisfactory
W	Warning
U	Unsatisfactory

Valid Entries

0 = No Agglutination M = Microscopic W = Weak 1 = 1+ 2 = 2+ 3 = 3+ 4 = 4+

* Required Field

Reagents

The options related to reagent inventory control record the receipt of specific reagents by reagent type for each division.

Log In Reagents, Update Inventory, View/Print Inventory, Maintain Minimum Levels

The reagent log is maintained by individual division even in a multidivisional database. Update Inventory allows the user to update reagent inventory by changing the number of vials available. The user may view inventory online using various search criteria and print a copy of the search results.

Assumptions

- The division is “full service.”
- Reagents are in the inventory of the user’s division.

Outcome

- A user may select previously logged-in reagents through Enter Daily QC Results, Patient Testing: Record a Patient Antigen Typing, and Unit Antigen Typing.
- Reagents entered are accessible only within the division in which they were entered.

Limitations and Restrictions

- VBECS does not display a reagent report by invoice number.
- The unsatisfactory portion of a shipment must be recorded individually.
- There is no retrospective data entry or user selection for these options.
- Each site must set a standard for recording quantity: it may use the number of cases or the number of units within the cases.
- When a user enters a lot number in the Lot # field and clicks the **magnifying glass**, VBECS displays only the first instance of a duplicate lot number.

Additional Information

- This option is disabled for transfusion-only facilities.
- VBECS displays alerts, as appropriate, during execution of Enter Daily QC Results to notify the user when reagent inventory levels fall below minimum inventory levels, as defined in Maintain Minimum Levels.
- Local policies and procedures must define the use of patient antisera as reagents.

User Roles with Access to This Option

All users

Log in Reagents

A user records the receipt of specific reagents by type. The reagent record includes the date the shipment was received, reagent name, lot number, expiration date, manufacturer, and number of vials received in a shipment.

User Action	VBECS
1. Select Reagents from the main menu.	<ul style="list-style-type: none"> • Displays options for Quality Control functions. • Displays options for processing reagents.
2. Select Log In Reagents .	<ul style="list-style-type: none"> • Displays fields for entering invoice and reagent information.
3. Invoice Information: Select or edit the date and time in the Date Received field. Enter the invoice number in the Invoice Number field. Enter the name of the manufacturer in the Manufacturer field, or select a name from the drop-down list.	<p>NOTES</p> <p>More than one technologist at a time may process a large shipment of reagents; only one technologist at a time may process individual reagents in the shipment.</p> <p>The default date received is the current date and time. The user may edit it to a past date and time only.</p> <p>When the reagent type and lot number were already entered for this invoice, VBECS warns that the user is trying to enter a reagent that was already logged into the system for this invoice. Yes takes the user to the “Update Reagent Inventory” screen where VBECS displays the reagent type and lot number for update. No clears all fields on the screen, allowing the user to log in another reagent.</p>
4. Reagent Information: Enter the reagent name and reagent type in the Manufacturer Reagent Name and Reagent Type fields, or select from the drop-down lists. Enter the lot number in the Lot Number field. Select or edit the date and time in the Lot Expiration Date field. Enter (or select) a quantity (1–999) in the Vials Received per Lot Number field.	<p>NOTES</p> <p>The default lot expiration date is one minute before midnight (23:59) of the current date.</p>
5. Visual Inspection Information: Click the Satisfactory radio button, or click the Unsatisfactory radio button and select a comment from the drop-down list in the Comment field. Click Add to add the reagents to the inventory list.	<p>NOTES</p> <p>Satisfactory reagents are available for later selection, unsatisfactory reagents are not.</p> <p>When a user selects Other from the drop-down list in the Comment field, entry of additional text in the Details field is required.</p>
6. Repeat Steps 3–5 to log in more supplies, as desired.	<p>NOTES</p> <p>Click Clear to clear all but the Invoice Number, Date Received, Manufacturer, and Lot Expiration Date fields.</p>
7. Click OK to save.	<ul style="list-style-type: none"> • Requests confirmation to update the database.

User Action	VBECS
Click Yes to confirm the save and exit.	

Update Reagent Inventory

The user changes the number of available items in the reagent inventory.

User Action	VBECS
1. Select Reagents from the main menu.	<ul style="list-style-type: none"> Displays options for Quality Control functions. Displays options for processing reagents.
2. Select Update Inventory .	<ul style="list-style-type: none"> Lists existing satisfactory reagents by default.
3. Select a reagent to edit. To view reagents with a specific lot number, enter the lot number in the Lot # field and click the magnifying glass .	NOTES ————— Click a reagent type to reveal manufacturer names. Click a manufacturer name to reveal lot numbers.
4. Click a lot number to enable the Number of Vials Available field. Enter (or select) a quantity that is less than or equal to the current entry in the Quantity Available field. Select or edit the date and time in the Date Changed field (Figure 42).	NOTES ————— The default change date is the current date and time. The user may edit it to a past date and time only. When a user selects Other from the drop-down list in the Reason for Change field, he may enter additional text in the Comments field.
5. Repeat Steps 3 and 4 to edit more reagents, as desired.	
6. Click OK to save. Click Yes to confirm the save and view the updated list.	<ul style="list-style-type: none"> Prompts the user to confirm the save. Saves the record and redisplays current inventory, as in Step 3. Displays an option to exit.
7. Click Close to exit.	

Figure 42: Update Reagent Inventory

* Required Field

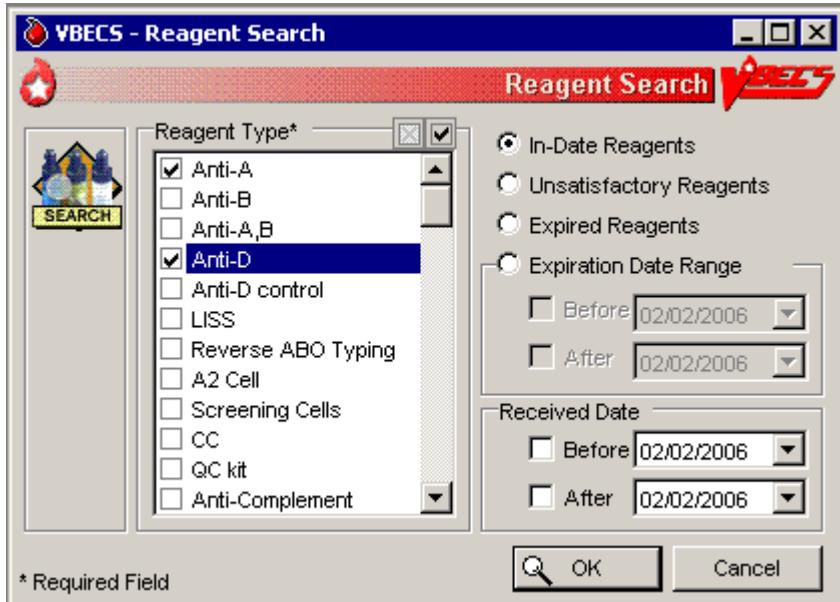
View/Print Reagent Inventory

The user views inventory online based on various search criteria and prints the search results.

User Action	VBECS
1. Select Reagents from the main menu.	<ul style="list-style-type: none"> • Displays options for Quality Control functions. • Displays options for processing reagents.
2. Select View/Print Inventory .	<ul style="list-style-type: none"> • Lists reagent types.
3. Click one or more check boxes in the Reagent Type list to select reagent types.	<ul style="list-style-type: none"> • Displays or allows the user to print a report of all current in-date, unsatisfactory, expired reagent inventory and minimum stock levels as a read-only display based on the selection criteria entered: <ul style="list-style-type: none"> o Reagent type o In-date (active) reagents o Unsatisfactory reagents o Expired (inactive) reagents o Expiration date range (the user enters a date to begin and end the

User Action	VBECS
	<p>search)</p> <ul style="list-style-type: none"> o Date received (the user enters a date to begin and end the search) <hr/> <p>NOTES</p> <p>VBECS display only reagents selected based on search criteria.</p>
4. Click OK to accept the displayed selection criteria (Figure 43).	<ul style="list-style-type: none"> • Compiles the report and displays an option to print or exit the report.
5. Click Print to print the list of reagents.	<ul style="list-style-type: none"> • Sends the report to print on the printer selected by the user.
6. Print another report or click Close to exit.	

Figure 43: Reagent Search



Maintain Minimum Levels

The user sets minimum stock levels for reagent types used in the division.

User Action	VBECS
1. Select Reagents from the main menu.	<ul style="list-style-type: none"> • Displays options for processing reagents.
2. Select Maintain Minimum Levels .	<ul style="list-style-type: none"> • Lists available reagent types and their associated minimum stock levels.
3. Select a Reagent Type to edit the minimum level threshold.	<ul style="list-style-type: none"> • Displays the reagent type selected and allows the user to edit the Minimum Stock Level field or select another reagent. <hr/> <p>NOTES</p> <p>A minimum inventory level (a whole number from 0 to 999) is set for each reagent type. This is related to the reagent type, independent of manufacturer name and lot numbers.</p>

User Action	VBECS
4. Enter (or select) a minimum number of vials in the Minimum Stock Level field.	<ul style="list-style-type: none"> Displays the changes and allows the user to select another reagent to edit. <p>NOTES —</p> <p>When the number of vials in stock is at or is less than the stock minimum, VBECS notifies the user and instructs him to check the inventory.</p> <p>Inventory levels are tied to the reagent type, not to the manufacturer reagent name or the lot number. A particular type may have multiple manufacturer reagent names and multiple lot numbers associated with that manufacturer reagent name, all of which are summed to create the inventory of that reagent type. VBECS tracks the total number of vials in the system for a particular reagent type.</p> <p>Each reagent type has one minimum inventory level established regardless of manufacturer name and lot numbers. Valid entries are whole numbers from 0 to 999.</p>
5. Review the displayed information and click Update (Figure 44).	<ul style="list-style-type: none"> Displays the changes and allows the user to select another reagent to edit. Prompts the user to confirm the save.
6. Repeat Steps 3–5 until all minimum reagent levels are set.	
7. Click OK to save, and Yes to confirm the save.	<ul style="list-style-type: none"> Saves the record and exits.

Figure 44: Maintain Minimum Reagent Levels

VBECS - Maintain Minimum Reagent Levels

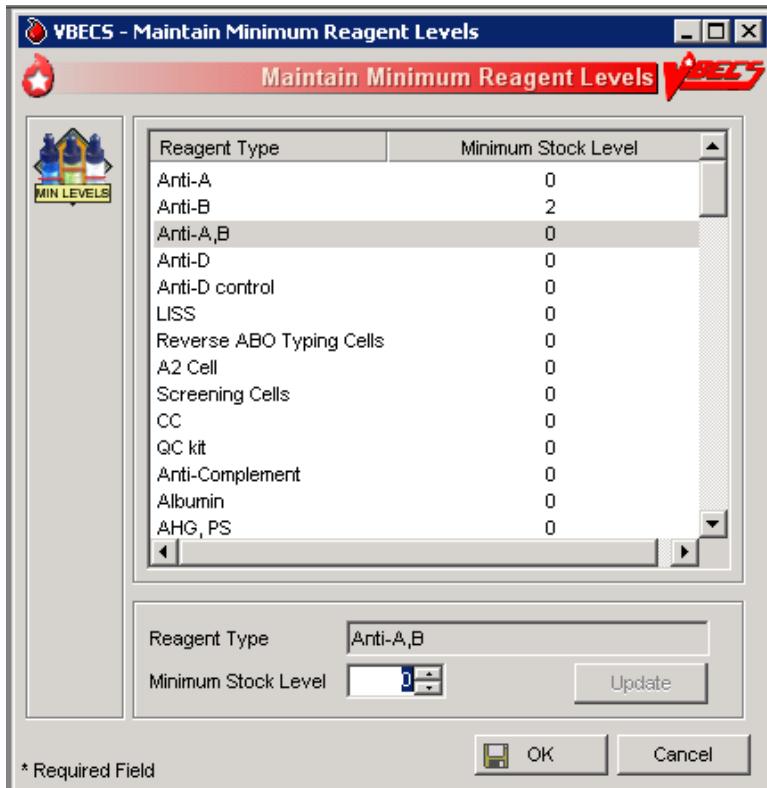
Maintain Minimum Reagent Levels

Reagent Type	Minimum Stock Level
Anti-A	0
Anti-B	2
Anti-A,B	0
Anti-D	0
Anti-D control	0
LISS	0
Reverse ABO Typing Cells	0
A2 Cell	0
Screening Cells	0
CC	0
QC kit	0
Anti-Complement	0
Albumin	0
AHG, PS	0

Reagent Type: Anti-A,B
Minimum Stock Level: 1
Update

* Required Field

OK Cancel



Supplies

The user documents the receipt of supplies, and updates and views the supply inventory.

Assumptions

- A user may maintain supply inventory only in the division logged into.

Outcome

- A supply inventory that is accessible only within the division of entry was established.

Limitations and Restrictions

- The division's modification processes may allow or require the user to select previously entered supplies for association with a blood unit's modification. An inventory of containers (transfer bags) and sterile connection device (SCD) wafers is *required* for various modification processes.
- There is no retrospective data entry or user selection for this option.
- The unsatisfactory portion of a shipment must be recorded individually.
- Each site must set a standard for recording quantity: it may use the number of cases or the number of units within the cases.

Additional Information

- Maintaining Blood Bank Equipment (Equipment: Log In Equipment, Equipment: Maintain Equipment) and Reagents (Log In Reagents, Update Inventory, View/Print Inventory, Maintain Minimum Levels) accommodate the maintenance of reagents and equipment, respectively.
- VBECS saves the lot number, manufacturer name, and expiration date of supplies used in a unit's modification process as part of a unit's modification record when associated during the modification transaction.
- VBECS creates a list of manufacturers as they are entered and makes the list available for selection. Users may not edit entries.

User Roles with Access to This Option

All users

Log in Supplies

The user records the receipt of specific supplies by type. The supply record includes the date the shipment was received, supply name, lot number, expiration date, manufacturer, and number of items received in a shipment.

User Action	VBECS
1. Select Tools from the main menu. Select Supplies .	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Displays options for processing supplies.
2. Select Log In Supplies .	<ul style="list-style-type: none">• Displays fields for entering invoice and supply information.
3. Invoice Information: Enter the invoice number in the Invoice Number field.	NOTES ————— More than one technologist at a time may process a large shipment of supplies; only one technologist at a time may

User Action	VBECS
Select or edit the date and time in the Date Received field. Enter the name of the manufacturer in the Manufacturer field, or select a name from the drop-down list.	process individual supplies in the shipment. The default date received is the current date and time. The user may edit it to a past date and time only. When the supply type and lot number were already entered for this invoice, VBECS warns that the user is trying to enter a supply that was already logged into the system for this invoice. Yes takes the user to the “Update Supply Inventory” screen where VBECS displays the supply type and lot number for update. No clears all fields on the screen, allowing the user to log in another supply.
4. Supply Information: Enter the name of the manufacturer and supply type in the Manufacturer and Supply Type fields, or select from the drop-down lists. Enter the lot number in the Lot Number field. Select or edit the date and time in the Lot Expiration Date field. Enter (or select) a quantity (1–999) in the Quantity Received field.	NOTES The default lot expiration date is one minute before midnight (23:59) of the current date.
5. Visual Inspection Information: Click the Satisfactory radio button, or click the Unsatisfactory radio button and select a comment from the drop-down list in the Comment field. Click Add to add the supplies to the inventory list (Figure 45).	NOTES Satisfactory inventory is available for later selection, unsatisfactory inventory is not. When a user selects Other from the drop-down list in the Comment field, entry of additional text in the Details field is required.
6. Repeat Steps 3–5 to log in more supplies, as desired.	NOTES Click Clear to clear all but the Invoice Number, Date Received, Manufacturer, and Lot Expiration Date fields.
7. Click OK to save. Click Yes to confirm the save and exit.	<ul style="list-style-type: none"> • Requests confirmation to update the database.

Figure 45: Log In Supplies

VBECS - Log In Supplies

Log In Supplies

Invoice

Received Date*: 02/01/2006 10:53

Invoice Number*: 10241

Manufacturer*: Super Supplier

Supply

Manufacturer Supply Name*

Supply Type*

Lot Number*

Lot Expiration Date*: 02/01/2006 23:59

Quantity Received*: 1

Visual Inspection*

Satisfactory

Unsatisfactory

Comment*

Details

Add Clear

Inventory

Supply Name	Lot Number	Expires	Qty	Invoice No.	Manufacturer	Supply Type	Inspection
<input checked="" type="checkbox"/> Gorgeous Gloves	042205	02/01/2007 23:59	200	10241	Super Supplier	Gloves	Satisfactory
<input checked="" type="checkbox"/> Perfect Paper	052154	02/01/2010 23:59	50	10241	Super Supplier	Printer Paper (generic)	Unsatisfactory

* Required Field

OK Cancel

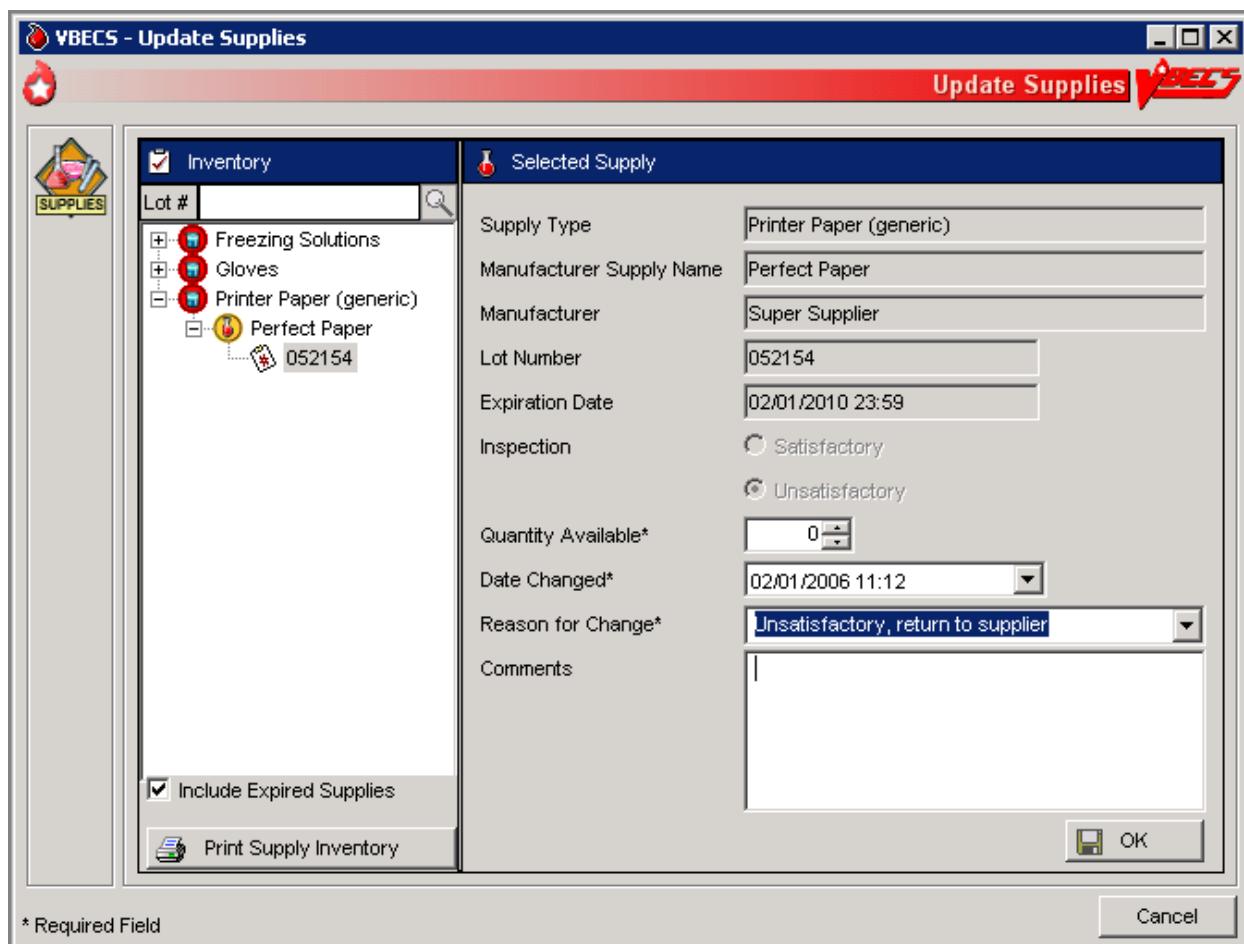
Update Supply Inventory

The user changes the number of available items in the supply inventory.

User Action	VBECS
1. Select Tools from the main menu. Select Supplies .	<ul style="list-style-type: none"> Displays options for processing administrative functions. Displays options for processing supplies.
2. Select Update Supply Inventory . Click the Include Expired Supplies check box to include expired supplies in the list.	<ul style="list-style-type: none"> Lists existing satisfactory supplies by default.
3. Select a supply to edit. To view supplies with a specific lot number, enter the lot number in the Lot # field and click the magnifying glass .	<p>NOTES —</p> <p>Click a supply type to reveal manufacturer supply names. Click a manufacturer supply name to reveal lot numbers.</p>
4. Click a lot number to enable the Quantity Available field. Enter (or select) a quantity that is less than or equal to the current	<p>NOTES —</p> <p>The default change date is the current date and time. The user may edit it to a past date and time only.</p>

User Action	VBECS
entry in the Quantity Available field.	When a user selects Other from the drop-down list in the Reason for Change field, he may enter additional text in the Comments field.
Select or edit the date and time in the Date Changed field (Figure 46).	
5. Repeat Steps 3 and 4 to edit more supplies, as desired.	
6. Click OK to save. Click Yes to confirm the save and view the updated list.	
7. Click Print Supply Inventory to print the list of supplies.	<ul style="list-style-type: none"> Displays the Supply Inventory window (see View/Print Supply Inventory).
8. Click Cancel to exit.	

Figure 46: Update Supplies



View/Print Supply Inventory

The user views inventory online based on various search criteria and prints the search results.

User Action	VBECS
1. Select Tools from the main menu. Select Supplies .	<ul style="list-style-type: none"> • Displays options for processing administrative functions. • Displays options for processing supplies.
2. Select View/Print Supply Inventory .	<ul style="list-style-type: none"> • Lists supply types.
3. Click one or more check boxes in the Supply Type list to select supply types.	<ul style="list-style-type: none"> • Displays or allows the user to print a report of all current in-date, expired, and unsatisfactory supply inventory and minimum stock levels as a read-only display based on the selection criteria entered: <ul style="list-style-type: none"> o Date range (the user enters a date to begin and end the search) o Supply type o In-date (active) Supplies o Expired (inactive) Supplies o Expiration date of the supply o Date received
	NOTES ————— A user may view the supply inventory by one, some, or all of the selection criteria.
4. Click OK to accept the displayed selection criteria.	<ul style="list-style-type: none"> • Compiles the report and displays an option to print or exit the report.
5. Click Print Supply Inventory to print the list of supplies.	<ul style="list-style-type: none"> • Sends the report to print on the printer selected by the user.
	NOTES ————— VBECS displays and prints the report in the supply type order : in-date by lot number in reverse chronological order of expiration date, followed by expired and unsatisfactory supplies. Details included in the report:
	<ul style="list-style-type: none"> • Supply Type (Unit of Measure) • Manufacturer • Manufacturer's Supply Name • Lot Number • Expiration Date • Number Available • Inspection upon receipt • Invoice Number • Received Date/Time • Received by Tech Name • Comments
6. Print another report or click Cancel to exit.	

Equipment

The user registers blood bank instruments and other equipment (refrigerators, freezers, thawing bath, incubators, centrifuges, etc.) and records associated maintenance activities.

Assumptions

- A user may maintain equipment inventory only in the division currently logged into.

Outcome

- An equipment maintenance record, accessible within the division of entry, was established.

Limitations and Restrictions

- VBECS does not check for duplicate entries of equipment names and identifiers.
- There is no retrospective data entry or user selection for this option.

Additional Information

- VBECS does not calculate inventory levels for supplies or equipment.

User Roles with Access to This Option

All users

Equipment: Log In Equipment

A user adds new equipment or maintains existing equipment. After equipment is registered, the user must record periodic maintenance. The equipment records are updated and retained according to local procedure and policy. Once an equipment record is established, it may be selected as equipment used during a blood product modification.

User Action	VBECS
1. To add new equipment, select Tools from the main menu. Select Equipment .	<ul style="list-style-type: none">• Displays options to maintain equipment maintenance.
2. Select Log In Equipment to create an equipment record or Maintain Equipment to record maintenance (see Equipment: Maintain Equipment).	<ul style="list-style-type: none">• Displays an empty equipment property template.• Displays all in-service equipment items for the blood bank associated with the user's division and offers the option to display out-of-service equipment.
3. Equipment Info area: Enter the equipment information in the appropriate fields. Enter or select an equipment type from the drop-down menu. Installation Info area: Select or edit the date and time in the Date Received/Installed field. Click the Expiration/Renewal Date check box when there's an expiration or renewal date, and	<ul style="list-style-type: none">• Displays fields for entering equipment name, ID, serial number, and type in the Equipment Info area.• Displays fields for entering the date the equipment was received or installed, warranty or service contract number, and expiration or renewal service contract date in the Installation Info area.• Displays fields for entering the manufacturer name, address, and phone in the Manufacturer Info area.

User Action	VBECS
edit the date as above.	
Manufacturer Info area: Enter the manufacturer name or select a manufacturer from the drop-down list.	
Enter the manufacturer's contact information in the appropriate fields or click the ellipsis button to select the manufacturer's address.	
Click Add to add the equipment to inventory (Figure 47).	
4. Repeat Step 3 to add new items to the equipment list.	<ul style="list-style-type: none"> • VBECS maintains a historical record for each piece of equipment entered.
Click OK to save.	
5. Click Yes to confirm and exit.	

Figure 47: Log In Equipment

The screenshot shows the 'VBECS - Log In Equipment' window. On the left, there is a vertical toolbar with a red star icon and a 'EQUIPMENT' icon. The main area is divided into several sections:

- Equipment Info:** Contains fields for 'Equipment Name*', 'Local Equipment ID', 'Serial Number*', and 'Equipment Type*'.
- Installation Info:** Contains fields for 'Date Received/Installed*' (set to 02/01/2006 12:00), 'Warranty/Service Contract No.', and 'Expiration/Renewal Date' (checkbox checked).
- Manufacturer Info:** Contains fields for 'Manufacturer Name*', 'Address', 'City', 'State', 'Zip', and 'Phone' (with a telephone icon).
- Equipment Logged In:** A table showing a single entry: Deluxe Cell Washer, CW-09-24-5019, Cell Washer, Little Known Company, 02/01/2006 12:09, SVC 0333-44.
- Buttons:** 'Add', 'Clear', 'OK', and 'Cancel'.

* Required Field

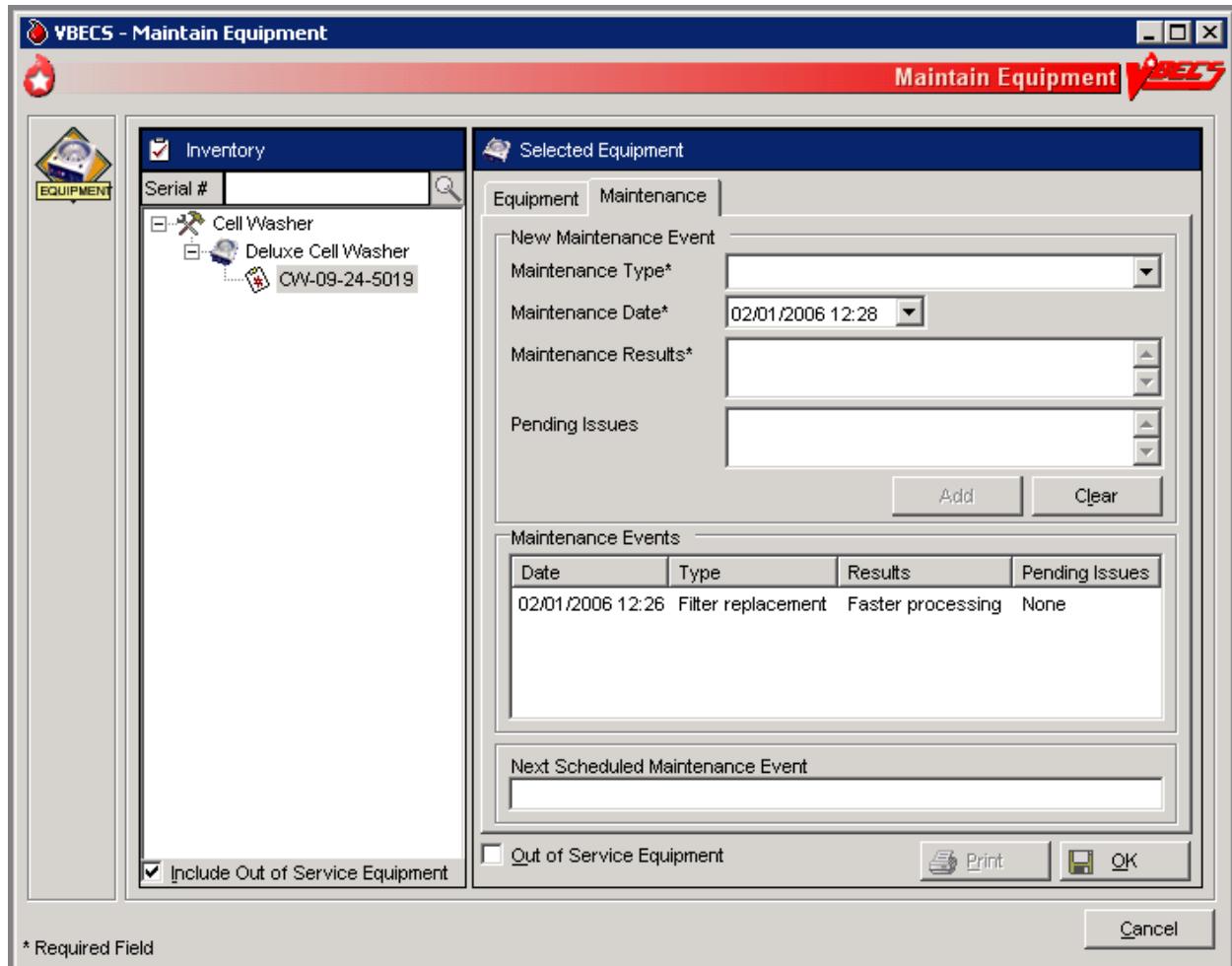
Equipment: Maintain Equipment

The user maintains an online equipment record to record periodic maintenance. Equipment records are updated and retained according to local procedure and policy.

User Action	VBECS
1. To maintain equipment, select Tools from the main menu. Select Equipment .	<ul style="list-style-type: none">Displays options to maintain equipment maintenance.
2. Select Maintain Equipment to record maintenance or Log In Equipment to create an equipment record (see Equipment: Log In Equipment).	<ul style="list-style-type: none">Displays entered in-service equipment items for the blood bank associated with the user's division and offers the option to display out-of-service equipment.
3. In the Equipment tab, enter the equipment serial number (or enter part of the serial number and click the magnifying glass to view serial numbers), or click [+] in front of each equipment type and name to view equipment items. Select the serial number of the item whose record will be maintained. Click the Include Out of Service Equipment check box, if desired.	<ul style="list-style-type: none">Displays fields for entering the type of maintenance event performed, the date the maintenance was performed, the results of the event, the next scheduled event, the next scheduled maintenance date, and pending maintenance issues in the Maintenance tab, and allows the user to select a maintenance event type and event details.Displays entered information.
4. Review and edit the equipment data in the Equipment tab.	<ul style="list-style-type: none">Displays entered information.
5. Select the Maintenance tab . To add a maintenance event, enter the maintenance type or select it from the drop-down list. Select or edit the date and time in the Maintenance Date field. Enter details in the Maintenance Results and Pending Issues fields. Click Add to add the maintenance event to the Maintenance Events list (Figure 48). Click Print to print the record.	<ul style="list-style-type: none">Displays recorded maintenance information and allows the user to update information.Displays an option to print an Equipment Report.
6. Click the Out of Service Equipment check box to remove equipment.	<ul style="list-style-type: none">Removes the equipment from the list of currently maintained equipment.
7. Repeat Steps 3–6, as desired.	
8. Click OK and Yes to save and continue, or No to return to the screen and continue.	<ul style="list-style-type: none">Prompts the user to confirm the save.Saves the updates to the equipment record.

User Action	VBECS
Click Cancel to exit without saving.	

Figure 48: Maintain Equipment



Component Processing

Shipments

Incoming Shipment

A shipment handled in this option contains one or more containers of human blood products.

The user may use a barcode scanner to read information from a unit blood bag (recommended) or enter this information. The user reviews and confirms the information before adding a unit to the database.

Assumptions

- The connection to VistA is active.
- The division is configured.
- The shipper is active.
- Units are inspected and deemed satisfactory for receipt before they are entered in VBECS.

Outcome

- A shipment or partial shipment of blood units was processed and added to the blood bank inventory.
- The initial status for each unit was set in accordance with component class.

Limitations and Restrictions

- VBECS does not compare the ABO/Rh of an autologous unit or display a message when the ABO/Rh is incompatible with the restricted for patient.

When a product type, code, or local code is not in VBECS or a blood supplier creates a product code, contact the Help Desk. See Customer Support for contact information.

- The user must enter the donation type for Codabar-labeled units.
- When a user inadvertently enters a unit ID that is longer than seven characters for a Codabar unit, or 13 characters for an ISBT 128 unit, VBECS accepts the entry but will not associate it with the scanned unit ID.
- When blood products intended for quarantine are scanned, VBECS does not automatically quarantine them: the user must do so.
- The display label that is built when logging a blood product into VBECS does not change from volunteer donor to autologous when the donation type is changed.
- VBECS does not accept scanned information for some modified ISBT 128 blood units. VBECS accepts entered information in these instances.
- VBECS does not recognize scanned labels for para-Bombay or Bombay ISBT units.
- VBECS does not check whether blood products with the same unit ID and different product codes are the same blood type.
- VBECS does not allow duplicate IDs for the same product code.
- VBECS reads Codabar prefixes and translates them into digits. When this results in identical Codabar unit IDs, keep the original unit and return the other unit to the supplier.

- When a user scans a product code or expiration date barcode in the Unit ID field, VBECS does not display the entered information or an error icon.
- When a user scans an ISBT product ID with “0” as the donation type (sixth character), VBECS indicates that the donation type is not specified. When the user selects a donation type from the drop-down menu, VBECS replaces “0” with a recognizable character in the product code text box and stores it as such. When the user rescans the product ID, he must manually replace “0” or search using the unit ID alone, or the unit ID and the first five characters of the product ID.
- Blood product code entries in the blood product table include those from ICCBBA for ISBT 128 and from the AABB Codabar table. Product codes created after the release of VBECS cannot be entered until the updated tables are incorporated through patches to VBECS. Refuse acceptance of the unit, if possible. Users may not edit the blood product table.
- ISBT 128 tables include blood product codes labeled as not for manufacturing or transfusion. VBECS does not restrict such products from being entered, issued, or transferred (local policy controls their use), but does not accommodate blood modification for these products.

Additional Information

- VBECS stores scanned ISBT 128 product codes and displays them as eight characters:
 - Characters 1–5: product type
 - Character 6: donation type
 - Characters 7 and 8: division code (split)
- VBECS may display a scanned Codabar product code as seven characters.
- When ISBT 128 units received during downtime must be issued, it is recommended that the user record the check character. When a blood unit is to be logged in after downtime and the unit is unavailable for scanning, the user must enter the ISBT unit ID and the case-sensitive check character (the character in the square following the unit ID).
- To calculate a check character, see the Quick K Calculator on the ICCBBA Web page under ISBT 128, Other Tools. Follow the instructions to download the application.
- Each division may have only one blood unit record of the same product type, product code, and unit ID. A unit shipped out (transferred) and subsequently shipped to (received by) a division in the same database will maintain individual records of the unit ID and product code for each division.
- Several data elements, including the unit ID and product code, define a blood unit record as unique. The unit record also includes expiration date and time, blood type, and donation type. These data elements are not editable.
- Some suppliers relabel blood products and do not affix their own FDA Registration Number to those units. It is recommended that the user obtain FDA Registration Number barcodes from their suppliers and use them for scanning the shipper.

User Roles with Access to This Option

All users

Incoming Shipment

In a “transfusion-only” facility, units must be restricted for use by a specific patient while an incoming shipment is processed. VBECS identifies the original collection facility to determine the presence of an eye-readable prefix and/or alphabetical characters in a Codabar unit ID. A user may enter unique unit

information regarding special testing and antigen phenotyping. The user confirms that all entered units from the shipment were added to the database in the blood bank.

User Action	VBECS
1. Select Shipments from the main menu. Select Incoming Shipment .	<ul style="list-style-type: none"> • Displays options for processing blood product shipments. • Displays invoice information fields for entering shipment information.
2. Scan the invoice number barcode or enter the invoice number. To search for an existing invoice, click the ellipsis button. Enter an invoice number and/or select a shipper from the drop-down list, then click Search . Click an invoice number to select it and click OK .	<ul style="list-style-type: none"> • When an identified invoice does not exist, asks the user whether he wants to create an invoice and add units to it. • Displays the option to search for existing invoices by invoice number and/or by active shipper. When no match is found, notifies the user. <p>NOTES</p> <p>When a user chooses to select an existing invoice to add units, VBECS ensures that the shipper is marked as active. VBECS displays and allows the user to edit existing invoices associated with active shippers.</p> <p>To correct an invoice associated with an inactive shipper, the user must reactivate the shipper.</p> <p>Multiple users may process different units from a shipment.</p> <p>When more than one user intends to work on an invoice, one user must create the invoice. The other users must select that invoice and add units to it.</p>
3. Select a source from the Source (Shipper) drop-down list. If needed, edit the date received in the Date Received field.	<p>NOTES</p> <p>The date and time a shipment is received cannot be in the future.</p> <p>After a user enters or selects an invoice number, the user may enter information in the shipper, date received, and processing technologist fields.</p> <p>During retrospective entry, the user must enter the shipment date and time before entering any other unit transaction.</p>
4. Click the ISBT or Codabar radio button to select a labeling type, or scan the unit ID barcode. Click OK again to continue.	<ul style="list-style-type: none"> • When the barcode is scanned, determines the labeling type (autodiscriminates).
5. Click Yes to add units to the invoice or click No to select another invoice.	<ul style="list-style-type: none"> • When a user selects an existing invoice, displays the shipment information and blood unit details associated with the invoice.
6. Select a unit to add. For a Codabar-labeled unit, scan the FDA Registration Number barcode or enter the FDA Registration Number. For an ISBT 128-labeled unit, continue at Step 7.	<ul style="list-style-type: none"> • Displays shipment data and prompts the user to scan individual units. • Displays information corresponding to the FDA registration barcode scanned or allows a user to search for the FDA Registration Number and facility information (all users may activate a facility). • When a facility receives a blood product from a shipper for the first time, prompts the user to activate the blood product for that shipper. <p>NOTES</p> <p>VBECS may display a scanned FDA Registration Number with</p>

User Action	VBECS
	<p>two additional characters.</p> <p>For United Blood Services (UBS) facilities other than Scottsdale, see Appendix J: United Blood Services (UBS) Facility Barcodes.</p> <p>When VBECS does not recognize an FDA Registration Number, it warns the user. The user may edit or reenter the number. If VBECS still does not recognize the number, the user must add the unknown facility to continue.</p>
7. For an ISBT 128-labeled unit, scan the label, or enter the unit ID and check character (in that order).	<ul style="list-style-type: none"> • Disables the FDA Registration Number field. • Displays information corresponding to the unit ID barcode scanned. When a user enters an ISBT 128-labeled unit ID, VBECS prompts the user to enter the check character from the blood bag. <ul style="list-style-type: none"> ◦ When a user scans ISBT 128 labels units and the cursor is in an inappropriate field, VBECS warns that the incorrect barcode was scanned. <hr/> <p>NOTES</p> <p>For Codabar-labeled units:</p> <p>VBECS may display a scanned FDA Registration Number with two additional characters.</p> <p>When VBECS does not recognize an FDA Registration Number, it warns the user. The user may edit or reenter the number. If VBECS still does not recognize the number, the user must add the unknown facility to continue.</p> <p>When no FDA Registration Number barcode was scanned, VBECS displays an error message to remind the user to scan it so that VBECS can properly interpret the Codabar unit ID.</p> <p>When a user scans a unit ID barcode but enters other unit information, VBECS marks the unit record as scanned and does not indicate that other data field information was entered during incoming shipment of that unit.</p> <p>When a unit ID or its prefix does not match the format defined for the collection facility, VBECS warns the user.</p> <p>The ID of a unit associated with a local supplier with a facility prefix and alphabetic characters has two numbers for the facility prefix, and one or two alphabetic characters. When there is one alphabetic character, at least six numbers must follow. When there are two alphabetic characters, at least five numbers must follow. Codabar unit IDs cannot contain "A," "B," "D," "I," "O," or "U."</p> <p>For ISBT 128-labeled units:</p> <p>When the user-entered check character from the label does not match the VBECS-generated check character, VBECS warns the user.</p> <p>When VBECS does not find a matching entry for the ICCBBA Registration Number on the local supplier table, the user must</p>

User Action	VBECS
8. Scan the product code barcode or enter the product code.	<p>activate or add a local supplier before continuing.</p> <ul style="list-style-type: none"> • When a user scans a product code barcode that is not activated in the user's division, prompts the user to activate the code. (See Blood Products.) • Displays the corresponding product code, product name, and (for ISBT) donation type (see Step 11). • When a unit ID of the same product type and code exists in a division, the expiration date is in the future, and there is no record of inactivation or transfer of that unit ID and product code in the division's record: <ul style="list-style-type: none"> ◦ Warns that the blood unit already exists in the division. ◦ Clears the data entry fields. The user may enter a different unit ID and product code. • When a unit ID of the same product type and code exists in a division and the unit in the division has an expiration date in the past, warns that the blood unit already exists in the division. • When a unit ID of the same product type and code exists in a division, the unit status is "Transferred," and the ABO/Rh and unit expiration date are identical to the existing unit of record: <ul style="list-style-type: none"> ◦ Makes the existing unit record available. ◦ Warns that the user is attempting to reenter a unit in inventory. No clears the unit. Yes and saves the unit. ◦ Updates the unit status to "Limited" or "Available." ◦ Updates the unit record to reflect the reentry of the unit in the division's inventory. The user may add new information about this unit through Edit Unit Information.

NOTES

Scanned Product Codes

When a unit is transferred between facilities in a consolidated database or is reentered after transfer to an unrelated facility, VBECS records all unit activity.

Codabar units may not be added to an ISBT 128 shipment in the same session and ISBT 128 units may not be added to a Codabar shipment in the same session. However, a completed incoming shipment invoice may contain both types of units.

When a blood product code in the RED BLOOD CELLS, WHOLE BLOOD, or APHERESIS RED BLOOD CELLS ICCBBA component class is entered, VBECS enables data entry of sickle cell negative and antigen typing. The cytomegalovirus (CMV) negative data entry option is always enabled.

When a user enters a product code that VBECS does not recognize, VBECS warns that the blood product was not found and that it does not support entry of new blood products.

OK returns the user to a blank screen to enter a different product. The user may enter a different product code.

VBECS assigns a volume to the unit based on the average volume field from the Blood Product Table entry corresponding to the unit's blood product code.

User Action	VBECS
	<p>For each product type in a shipment, site parameters must indicate that the product is marked as active for the division and that a cost is associated with the shipper. If not, VBECS prompts the user to mark the component as active.</p> <p>For Codabar-labeled units: VBECS displays a scanned Codabar product code as seven characters.</p> <p>In some instances, Codabar product codes are not unique when they are modified.</p> <p>For ISBT 128-labeled units: VBECS stores scanned ISBT 128 product codes and displays them as eight characters:</p> <ul style="list-style-type: none"> • Characters 1–5 are used to search the ISBT Blood Product Table to identify the product type. • Character 6 indicates donation type. • Character 7 indicates a division at the time of collection. • Character 8 indicates an additional aliquot.
<p>9. For Codabar- and ISBT 128-labeled units, scan the ABO/Rh number barcode, enter the ABO/Rh, or select the ABO/Rh from the drop-down list.</p> <p>10. Scan the expiration date barcode or enter the expiration date and time when an expiration time is required.</p>	<ul style="list-style-type: none"> • Displays the corresponding ABO/Rh. • Allows the selection of only ABO/Rh types acceptable for ICCBBA component classes. • Enables the ABO/Rh field when a valid product code is entered. <p>• Displays the corresponding expiration date and time.</p> <p>NOTES —————</p> <p>The default unit expiration time is 23:59.</p> <p>VBECS compares the entered blood product's expiration date to the maximum storage date and time limit for the product type. The date and time of shipment receipt are used as the collection date and time. When the expiration date entered exceeds the defined maximum storage time, VBECS displays an error message and clears the field. The user may reenter an expiration date and time for the product.</p> <p>Products with a maximum expiration date and time of \leq24 hours default to an expiration time \leq24 hours from the time of the incoming shipment. Product types with a maximum expiration date and time of \geq 24 hours have a default expiration time of 23:59.</p> <p> When a unit expiration date precedes the incoming shipment date and time, VBECS emits an audible alert, warns that the user is attempting to enter an expired unit, and asks whether the user wishes to continue.</p> <p>No clears the unit expiration date field. The user must enter a new, acceptable expiration date. Yes requires the user to enter a comment.</p>

User Action	VBECS
11. For Codabar-labeled units, accept “voluntary allogeneic” or select another donation type. For ISBT 128-labeled units, accept the donation type based on character 6 of the product code (cannot be edited) or, when character 6 is “0,” indicate a donation type.	<p>VBECS captures details of this override in an Exception Report.</p> <ul style="list-style-type: none"> Assigns the donation type to the unit or requires user input, as needed. For Codabar, assigns the “voluntary allogeneic” donation type to the unit. Requires data entry of the “reserved for” patient name and/or patient ID and the disease market testing status for “autologous” and “directed” donation types. <p>NOTES</p> <p>For ISBT 128, donation types other than “Special Testing Barcode” and “Not Specified” cannot be edited. When the donation type is “Special Testing Barcode” or “Not Specified,” the user must select a different donation type.</p> <p>Codabar barcodes do not include donation type codes, so a user must select a valid donation type. When a donation type requires restriction (directed or autologous), the user must associate the unit with a patient name.</p> <p>When a site is a transfusion-only facility, each unit processed must be restricted to a specific patient regardless of donation type.</p>
12. Click the ellipsis button next to the Restricted For Patient field to indicate the patient for whom the unit is reserved, as needed.	<ul style="list-style-type: none"> Allows the user to search for active VistA patients to associate with the unit. Requires data entry of a patient name and/or patient ID to associate the unit with that patient when a unit has a “directed” or “autologous” donation type or the receiving facility is a “transfusion-only” facility. When no match exists, warns the user. When the unit is autologous, requires a user to indicate the disease marker testing status: <ul style="list-style-type: none"> NEG: unit fully tested and negative for all disease markers POS: unit tested and positive for one or more disease markers (biohazard) NFT: unit not fully tested for one or more disease markers (biohazard) <p>NOTES</p> <p>The Patient Blood Availability Report does not include restricted units not assigned to a patient. To track such units, the user may enter restricted units’ IDs in the Special Instruction field in Special Instructions & Transfusion Requirements: Enter and Remove Special Instructions. When a user restricts a unit to a patient and VBECS does not find that patient in its database, VBECS searches VistA. When it finds a valid patient, VBECS adds the patient to the database.</p>
13. Do one or more: Accept the blank check boxes or click a check box to indicate that a unit is CMV Negative or Sickle Cell Negative.	<ul style="list-style-type: none"> Displays an option to save or clear unit information. <p>NOTES</p> <p>VBECS accommodates data entry of:</p> <ul style="list-style-type: none"> Special testing results (antigen phenotype results, CMV

User Action	VBECS
Enter an additional cost. Enter an antigen phenotype for a unit (Figure 49).	<p>negative, or sickle cell negative).</p> <ul style="list-style-type: none"> A single special typing cost (the sum of charges from \$0.00 to \$999.00, other than the base unit cost) to associate with a unit. <p>An antigen type may be positive or negative for any antigen listed as a VBECS corresponding antigen in Appendix B: Table 13: Antibody and Antigen Table: Irregular Antibodies. An antigen may not be positive and negative for the same unit.</p>
14. Review and click Save to accept the unit.	<ul style="list-style-type: none"> Asks the user whether he wants to add the unit. Adds the unit to the database. Lists summary information for the accepted unit. Allows the user to begin processing a new unit. <p>NOTES</p> <p>VBECS assigns unit statuses based on a site's configuration in Configure Division. For a:</p> <ul style="list-style-type: none"> "Full-service" facility, VBECS assigns "Limited" status to blood products that contain red cells and "Available" status to all other components. "Transfusion-only" facility, VBECS assigns "Available" status to the units. ABO/Rh confirmation testing is not required. <p>Units are available only to users in the division in which the units were processed (separate inventories are maintained in a multidivisional site).</p> <p>To edit incorrect saved information, deactivate the unit through Edit Unit Information, then reenter unit information in Incoming Shipment.</p>
15. Repeat until all units are entered.	<ul style="list-style-type: none"> Displays all unit data entries.
16. Click Close .	

Figure 49: Process Incoming Shipment

VBECS - Process Incoming Shipment

Process Incoming Shipment

Invoice #	924	Shipper	LifeSource - Glenview	Date Received	02/02/2006 12:56												
FDA Registration #*	1472204	Unit Number	1009261	EXPIRES	02/28/06 11:59PM												
Unit ID*	1009261	 RBC AS1		Donation Type*	Volunteer Allogeneic Donor												
Product Code*	04210	 Rh NEGATIVE		Disease Marker Testing	<input type="checkbox"/> CMV Negative <input type="checkbox"/> Sickle Cell Negative <input checked="" type="checkbox"/> RBC Antigens <input type="checkbox"/> C NEG <input type="checkbox"/> C POS <input type="checkbox"/> E NEG <input type="checkbox"/> E POS												
ABO/Rh*	O Neg	 VOLUNTEER DONOR <small>This product may transmit infectious agents.</small> <small>Rh Only</small> <small>PROPERLY IDENTIFY INTENDED RECIPIENT</small>		Restricted For Patient													
Expiration Date*	02/28/2006 23:59			Special Testing Cost	\$ 0.00												
<input type="button" value="Clear Unit"/> <input type="button" value="Save"/>																	
Shipment Units																	
<table border="1"> <thead> <tr> <th>Unit ID</th> <th>ABO/Rh</th> <th>Product</th> <th>Expires</th> <th>Donation Type</th> <th></th> </tr> </thead> <tbody> <tr> <td>1714418</td> <td>O Neg</td> <td>RBC AS1 , 04210</td> <td>02/28/2006 23:59</td> <td>Volunteer Allogeneic Donor</td> <td></td> </tr> </tbody> </table>						Unit ID	ABO/Rh	Product	Expires	Donation Type		1714418	O Neg	RBC AS1 , 04210	02/28/2006 23:59	Volunteer Allogeneic Donor	
Unit ID	ABO/Rh	Product	Expires	Donation Type													
1714418	O Neg	RBC AS1 , 04210	02/28/2006 23:59	Volunteer Allogeneic Donor													
<small>* Required Field</small> <input type="button" value="Close"/>																	

Outgoing Shipment

The user processes and ships available blood units from his division to an outside facility, blood center, or hospital.

The user may edit return credits (additional fees or credits may be issued from one site to another) before processing the shipment.

VBECS generates a shipping invoice.

Assumptions

- Users are authorized to release units from inventory.
- Blood units being shipped:
 - Were entered in the division.
 - Are available for scanning.
 - Are located in the user's division.

Outcome

- An invoice for a completed shipment is closed and may not be modified.
- An invoice for a shipment that is not confirmed is open and may be edited.
- The units are not available in the division's inventory.
- When a unit is transferred to another division in the database, VBECS displays the history of the unit at both divisions. The unit is active in one division at a time.
- A credit for a returned product may be assigned.

Limitations and Restrictions

- A user may edit only unconfirmed invoices.
- The number of tests displayed on an invoice is limited to 8,000 characters per unit.
- When the user creates an invoice and cancels before saving it, VBECS excludes the invoice number from use.

Additional Information

- None

User Roles with Access to This Option

All users

Outgoing Shipment

A user ships blood units from his division's inventory to a facility that is not a transfusion location of his division. These units were removed from inventory and are available for scanning and packaging.

The user identifies the shipment destination, scans the unit ID and product code for the first unit in the shipment, and repeats this process for each unit added to the shipment. The user completes the data entry and then reviews and accepts the shipment information. When the shipment is confirmed, the user may print a shipping invoice.

VBECS generates an invoice that includes information for the blood units on that invoice.

A user may edit return credits (additional fees or credits may be issued from one site to another) before processing the shipment.

User Action	VBECS
<p>1. Select Shipments from the main menu.</p> <p>Select Outgoing Shipment.</p> <p>2. To process a new invoice, select New Invoice. (To process an existing invoice, continue at Step 3.)</p> <p>Enter the invoice number provided by the outside facility or leave the Invoice Number field blank.</p> <p>Select a shipment destination from the drop-down list.</p> <p>Click the Return to Shipper or Send to Unrelated Shipper radio button to select a shipment type (Figure 50).</p> <p>Continue at Step 4.</p>	<ul style="list-style-type: none">Displays options for processing shipments.Displays options for selecting a new invoice or an existing (recent) invoice. <p>NOTES</p> <p>To select an existing invoice while in the new invoice window, click Use Existing Invoice.</p>
<p>3. To process an existing invoice, select Recent Invoice from the Outgoing Shipment menu.</p> <p>Select an invoice.</p>	<ul style="list-style-type: none">Displays a list of open (unconfirmed) invoices. <p>NOTES</p> <p>To select a new invoice while in the existing invoice window, click Create New Invoice.</p> <p>A user may edit only saved, not confirmed, outgoing shipment invoices.</p> <p>A user may select shipping destination (ship-to) facilities based on site parameters that define a shipper for a division.</p> <p>A shipper must be marked as an active collection facility for a division before a user may select it as a valid shipper for a blood product for that division. This includes marking the division</p>

User Action	VBECS
	<p>facility itself as an active collection facility to accommodate the creation of new blood products through modification.</p> <ul style="list-style-type: none"> • Displays fields for entering unit information.
4. Click OK to save the information entered (Figure 50).	
5. For each unit to be added to the shipping invoice, scan the unit ID and product code barcodes or enter them in the Unit ID and Product fields (Figure 51 and Figure 52). Click OK .	<p>• Displays corresponding unit data.</p> <hr/> <p>NOTES</p> <p>When a unit selected for inclusion in a shipment is quarantined, VBECS warns the user and asks the user whether he wishes to continue.</p> <p>No clears the unit information and allows entry of a new unit or shipment process. Yes adds the unit to the shipment.</p> <p>VBECS allows the shipment or transfer of units located only in the same division as the user and in the blood bank (for “Limited,” “Available,” “Assigned,” and “Crossmatched” unit statuses only).</p> <p>When a unit is expired, VBECS warns the user.</p> <p>When units selected for shipment are assigned or crossmatched to a patient, VBECS warns the user and asks the user whether to release the unit before shipping.</p> <p>Yes releases all patient assignments from the unit prior to adding the unit to the invoice (no assignment information is displayed on the invoice). No indicates that the outgoing shipment invoice must include the unit’s patient association details. VBECS changes the unit status to “transferred” upon invoice confirmation.</p>
6. Respond to warnings, when indicated. Click Select to add the selected unit to the shipping invoice or click Clear to delete a unit (Figure 53).	<ul style="list-style-type: none"> • Adds unit to or removes unit from a temporary list of selected units.
7. Repeat Steps 5 and 6 until all units for outgoing shipment are entered. Click Save to save the information entered (Figure 54) and Yes to confirm the save. To cancel the shipment, click Cancel Shipment , then Yes to delete the invoice and return to Step 1 to begin again, or click No to return to the invoice (Figure 55).	<ul style="list-style-type: none"> • Displays shipment information. • When a user clicks Cancel Shipment, asks whether the user wants to remove all units from the invoice. Yes deletes the invoice. No returns to the invoice. <hr/> <p>NOTES</p> <ul style="list-style-type: none"> • A user may add or delete units from a temporary list before accepting the information entered.
8. To change the return credit amount for a unit in a “Return to Shipper” unconfirmed shipment,	<ul style="list-style-type: none"> • Prompts the user to accept the new amount. • Returns to the invoice and displays the return credit amount on the invoice.

User Action	VBECS
<p>select a unit and right-click the mouse. Select Return Credit Update (Figure 56).</p> <p>Enter the return credit amount.</p> <p>Click OK to save the information entered or Cancel to return to the invoice.</p>	<ul style="list-style-type: none"> • Displays the unit's financial information and allows the user to edit the return credit amount. <p>NOTES</p> <p>VBECS applies a return credit (equal to the return credit percentage of the original cost of the unit) to units processed in an outgoing shipment to the original shipper. Users may edit return credits for individual units.</p> <p>Instead of right-clicking the mouse, a user may press the application key () on the keyboard.</p>
<p>9. To confirm the shipment, click Save, then Yes to save the invoice, or Cancel to return to the invoice (Figure 57).</p> <p>Click Print Invoice to generate and view an invoice.</p> <p>Click Printer to print an invoice to send with the shipment or click Close to return to the invoice.</p> <p>Click Cancel to exit or move to Step 9 to change a return credit amount.</p>	
10. Cancel or confirm the shipment as in Step 9.	<ul style="list-style-type: none"> • Displays a "Confirm Shipment" option and stores the open invoice until the user chooses to complete the shipment. <p>NOTES</p> <p>When a shipment is saved but not confirmed, VBECS displays "NOT CONFIRMED" as the shipment date on the print version of the invoice.</p> <p>The shipping invoice includes patient assignment, restriction, quarantine indicator, biohazard information, antigen typing (specificity and interpretation only), special testing information, and (when it is in a unit record) the autologous unit testing status.</p>
<p>11. When the shipment is confirmed, select or edit the date and time in the Shipment Date/Time field.</p> <p>Click OK to save the information entered or Cancel to return to the invoice.</p>	<ul style="list-style-type: none"> • Displays shipment information, including the shipment date and time. When a user accepts the entered date and time, displays the invoice to be printed. • Updates the status of each unit in the shipment to show that each unit was transferred to the ship-to facility and assigns the shipment date and time as the date and time of the transaction. <p>NOTES</p> <p>When VBECS confirms an outgoing shipment, it:</p> <ul style="list-style-type: none"> • Adds the shipment information to the unit record, changes the status of each unit in the shipment to "Transferred," and assigns the date and time of the transaction to the shipment. • Saves the technologist ID, the name of the printing

User Action	VBECS
12. Click Print Invoice to generate and view an invoice as in Step 9, or click Cancel to exit.	<p>technologist, the division, and the date and time the shipment was processed. It also saves the confirmation date and time as the date and time of shipment. The user may accept or edit the current date and time displayed (no future date or time may be entered).</p> <ul style="list-style-type: none"> • Displays the information to be printed on the invoice. • Prints the shipping invoice. <p>NOTES —————</p> <p>When a user prints an invoice and VBECS does not find information to include in the invoice, VBECS notifies the user and asks whether he wants to continue to print. The user may cancel or print the report, which will include "No pending orders found."</p>

Figure 50: Process Outgoing Shipment

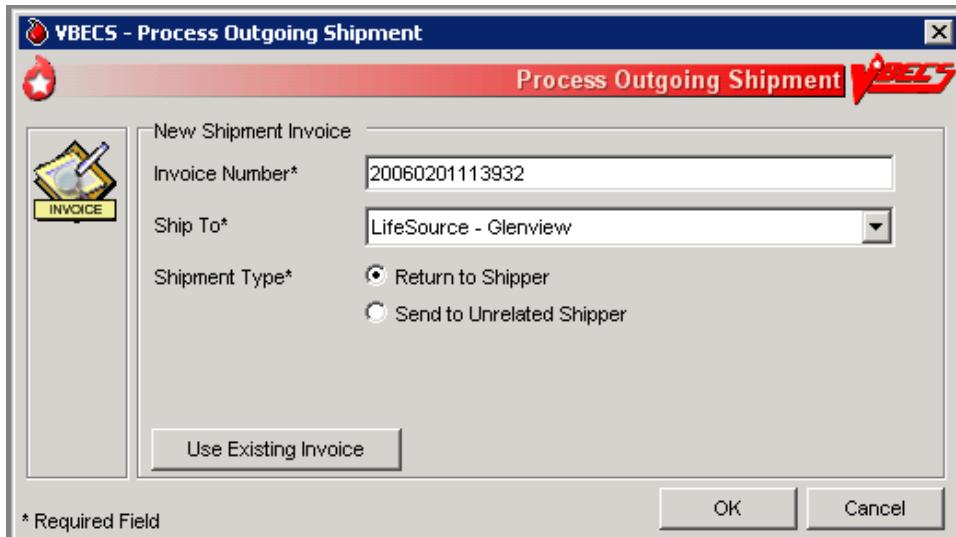


Figure 51: Select Units 1

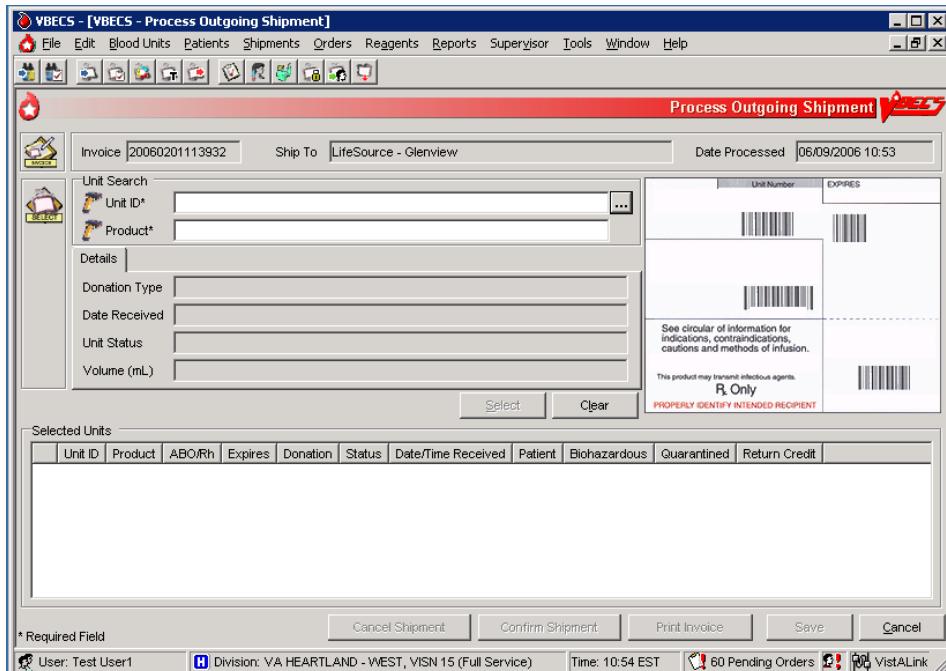


Figure 52: Select Units 2

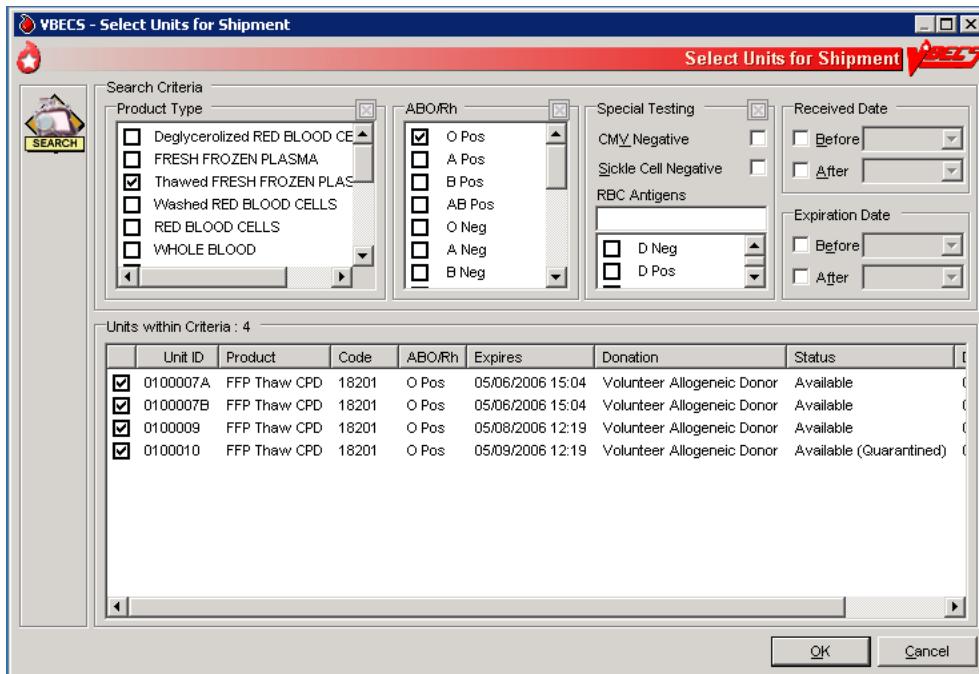


Figure 53: Select Units 3

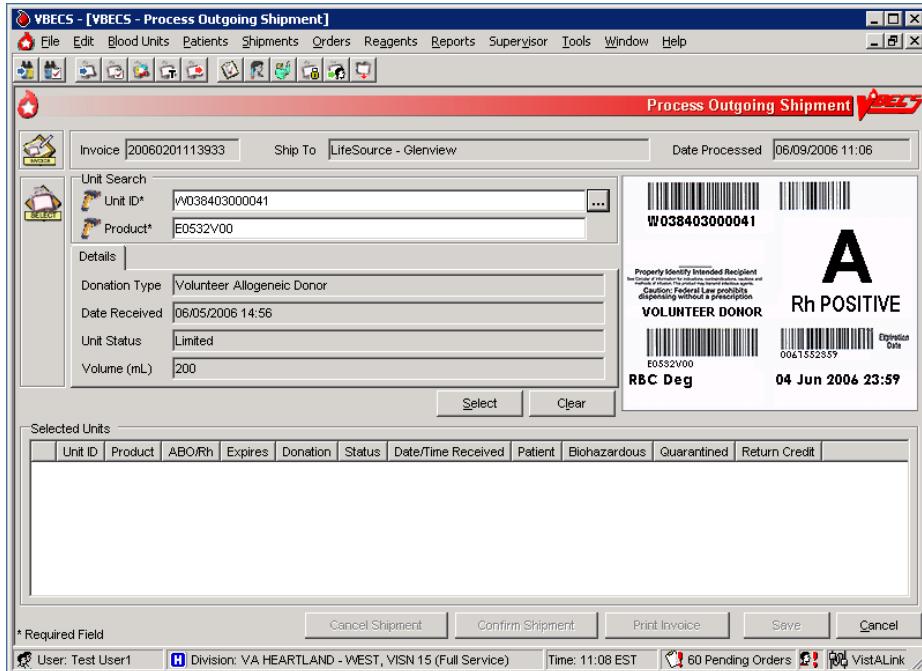


Figure 54: Select Units 4

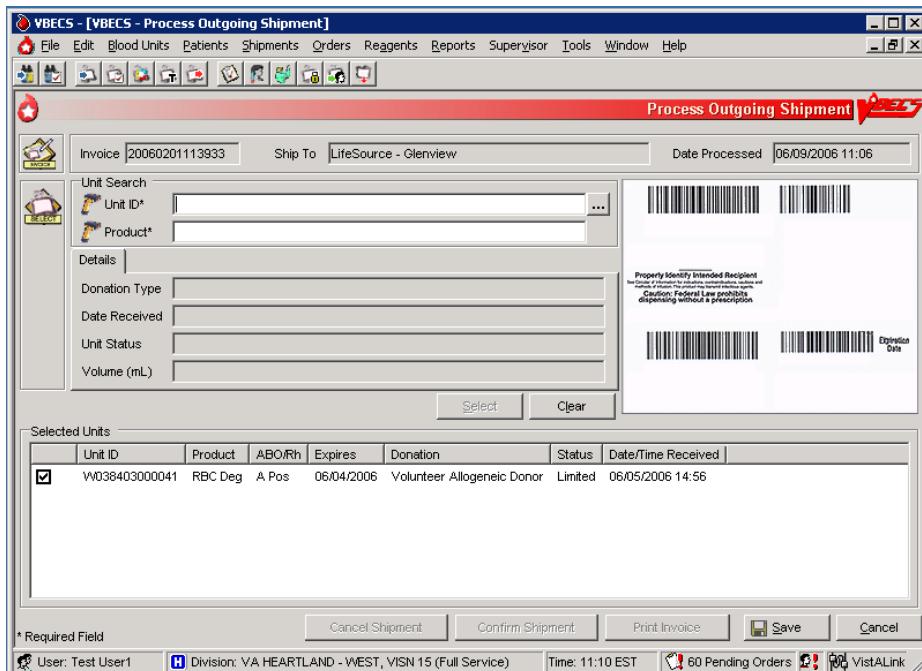


Figure 55: Select Units 5

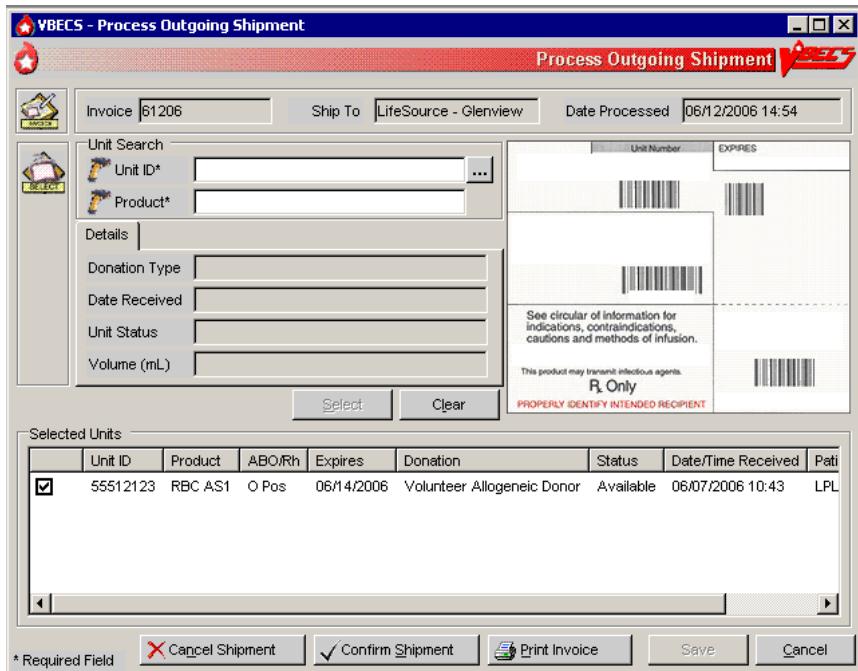


Figure 56: Return Credit Update

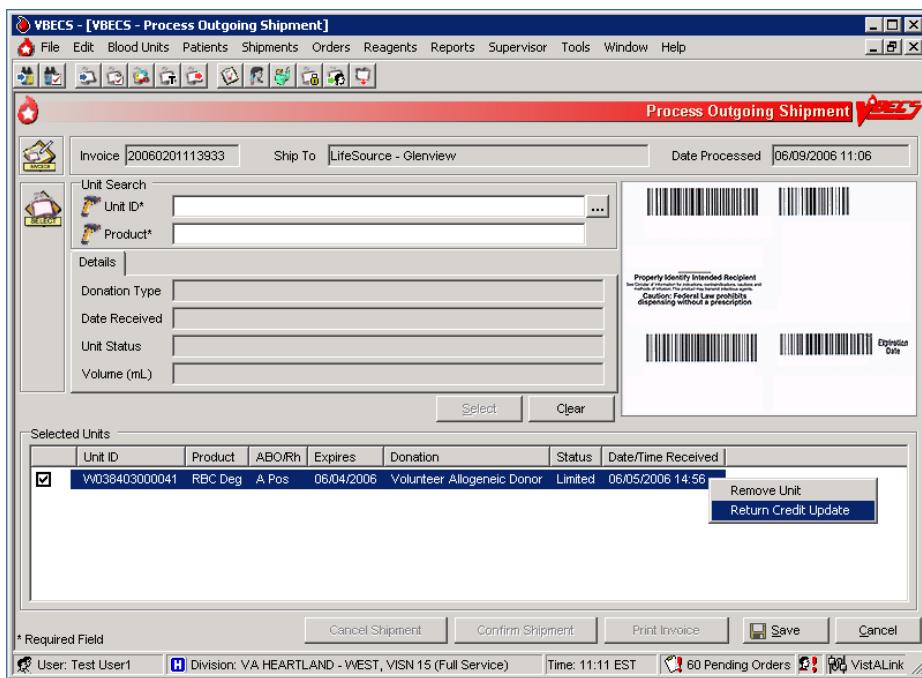


Figure 57: Confirm Invoice

The screenshot shows the 'VBECS - Process Outgoing Shipment' window. At the top, it displays 'Invoice 61206', 'Ship To LifeSource - Glenview', and 'Date Processed 06/12/2006 14:54'. Below this is a 'Unit Search' section with fields for 'Unit ID*' and 'Product*'. To the right is a grid showing unit details like 'Unit Number', 'EXPIRES', and barcode images. A note says 'See circular of information for indications, contraindications, cautions and methods of infusion.' and 'This product may transmit infectious agents. R. Only'. A red warning message 'PROPERLY IDENTIFY INTENDED RECIPIENT' is visible. On the left, there's a 'Details' tab and a 'Selected Units' table listing a single unit: '55512123 RBC AS1 O Pos 06/14/2006 Volunteer Allogeneic Donor Available 06/07/2006 10:43 LPL'. At the bottom are buttons for 'Select', 'Clear', 'Cancel Shipment', 'Confirm Shipment', 'Print Invoice', 'Save', and 'Cancel'.

Figure 58: Modify Return Credit

The screenshot shows the 'VBECS - Return Credit' window titled 'Modify Return Credit'. It features a 'Unit Financials' section with fields for 'Unit ID' (W038403000041), 'Unit Cost' (\$1.00), 'Special Testing Cost' (\$), and 'Return Credit Amount*' (\$2.00). A 'FINANCE' icon is on the left. At the bottom are 'OK' and 'Cancel' buttons, and a note '* Required Field'.

Figure 59: Confirm Shipment

The screenshot shows the 'VBECS - Process Outgoing Shipment' window. At the top, it displays the invoice number (20060612121853), ship-to facility (LifeSource - Glenview), and date processed (06/12/2006 12:19). The main area contains a 'Unit Search' section with fields for Unit ID* and Product*. Below this is a 'Details' section with fields for Donation Type, Date Received, Unit Status, and Volume (mL). To the right is a grid showing Unit Number, EXPIRES, and barcode images. A note at the bottom left says 'See circular of information for indications, contraindications, cautions and methods of infusion.' and a warning at the bottom right says 'This product may transmit infectious agents. R. Only PROPERLY IDENTIFY INTENDED RECIPIENT'. A 'Selected Units' table lists one unit: 06010605 (RBC ACD-A, AB Neg, 06/16/2006, Volunteer Allogeneic Donor, Available, 05/31/2006 14:26). At the bottom are buttons for 'Cancel Shipment', 'Confirm Shipment', 'Print Invoice', 'Save', and 'Cancel'.

Figure 60: Confirm Shipment Date

The screenshot shows the 'VBECS - Process Outgoing Shipment' window with a 'Shipment Date Entry' dialog box overlaid. The dialog box has a title 'Shipment Date Entry' and contains fields for Invoice Number (20060612121853), Ship-To Facility (LifeSource - Glenview), City, State (Glenview, IL), and Shipment Date* (06/12/2006 12:25). The background window shows the same 'Process Outgoing Shipment' interface as Figure 59, with the 'Selected Units' table listing the same unit (06010605). Buttons at the bottom include 'OK' and 'Cancel'.

Figure 61: Confirmation of Invoice



Edit Invoice Text

VBECS includes a shipping invoice. The user may edit the explanatory text above the signature on the last page of a shipping invoice.

Assumptions

- Information on the outgoing shipment invoice is generated during Outgoing Shipment.

Outcome

- A division customized the text displayed on an outgoing shipment invoice.

Limitations and Restrictions

- None

Additional Information

- The default explanatory text reads: "I certify that the blood products listed were properly maintained, in accordance with the Code of Federal Regulations, while in storage at this institution. Components were inspected when packed for shipment and found to be satisfactory in color and appearance."

User Roles with Access to This Option

>>>> Enhanced Supervisor

Edit Invoice Text

The blood bank user needs to edit the shipping invoice text box to conform to changes in regulations or division requirements. When the edit is complete, the user saves the altered text for future shipping invoices. An audit trail of changes is maintained.

User Action	VBECS
1. Select Shipments from the main menu. Select Edit Invoice Text .	<ul style="list-style-type: none">Displays options for processing blood product shipments.Displays the current text for outgoing shipment invoice.
2. Edit the text.	<ul style="list-style-type: none">Displays entered data and changes for review.Prompts the user to save or reject the changes.
3. Review the changes. Click OK to save the text. Click Yes to confirm the save and exit.	<ul style="list-style-type: none">Saves the new text and makes it available for outgoing shipment invoices.

Unit Search Screen

VBECS displays the Unit Search screen (Figure 63) when the user clicks the **ellipsis** button to select a unit through some of the Blood Units, Patients, Shipments, and Supervisor main menu items. The title of the screen may vary (e.g., Select Unit for Printing, Unit ABO/Rh Confirmation, Unit Antigen Typing, Edit Unit Information) depending on the option selected. (The user then selects criteria to continue the search.)

User Action	VBECS
<p>1. Select an item from the main menu and the desired option.</p> <p>Click additional buttons as needed.</p>	<ul style="list-style-type: none"> Displays the Unit Search screen.
<p>2. To search for a unit, enter the full or partial unit ID and click the ellipsis button, or just click the ellipsis button (Figure 62).</p> <p>Click a check box to select a unit.</p> <p>Click OK.</p>	<ul style="list-style-type: none"> Lists units that meet the search criteria. Displays unit-associated data. <p>NOTES</p> <p>To speed the search, enter a full or partial unit ID instead of just clicking the ellipsis button (which causes VBECS to search the entire database and takes longer).</p>

VBECS checks unit IDs and product codes after the user enters the product code. When there is a discrepancy, VBECS displays the Input Error icon and allows the user to edit the data.

Figure 62: Click the Ellipsis Button ...

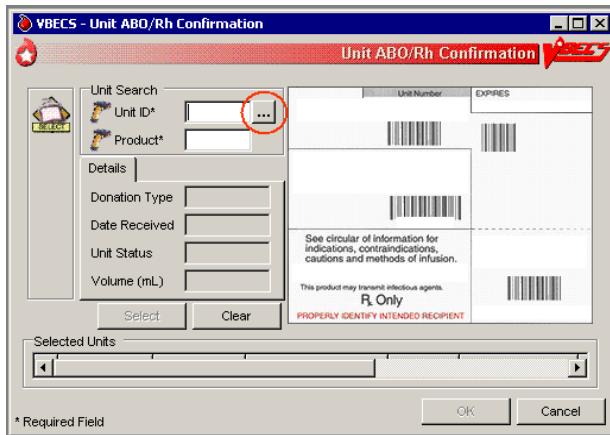
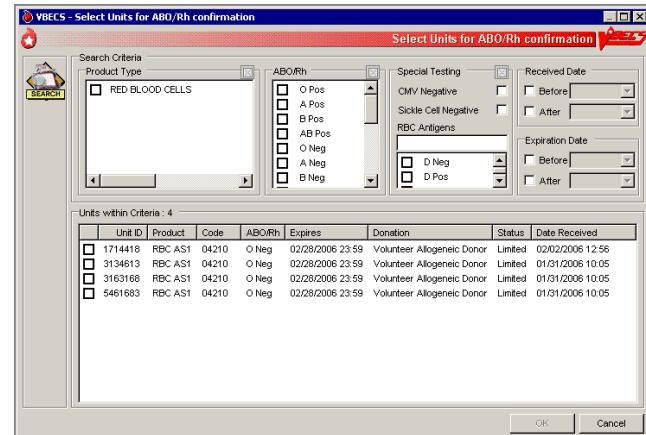


Figure 63: ... to Display a Unit Search Screen



Test Units

ABO/Rh Confirmation

Blood products that contain red blood cells require ABO/Rh confirmation. The user may process ABO/Rh confirmation results by selecting an invoice or individual units of blood received in a shipment. VBECS records the ABO/Rh test results for the list of blood units tested.

Assumptions

- The division is “full service.”
- A unit’s labeled ABO/Rh was entered in the same division as the user during login of an incoming shipment.
- Only invoices processed within a user’s division may be accessed to create an ABO/Rh confirmation worklist.

Outcome

- Unit ABO/Rh observed test results and interpretations are available for selection for patient use.

Limitations and Restrictions

- When the user builds a custom worklist or a worklist by invoice number, VBECS includes only units not previously tested or confirmed, and those not selected on another worklist.
- For batch processing, the user can select incoming shipment invoices from his division, processed within the previous five days.
- VBECS does not display product codes associated with unit IDs in ABO/Rh Confirmation. Therefore, do not create ABO/Rh confirmation worklists containing units with the same unit ID.

Additional Information

- This option is disabled for transfusion-only facilities.
- Within a multidivisional facility when ABO/Rh confirmation is repeated on units from a facility within the same database, both the originating facility ABO/Rh confirmation testing results and the current testing results are stored.
- The ABO/Rh confirmation worklist may be sorted by Unit ID, ABO/Rh, Product Type, Component Type, or Date/Time Received. When displaying the Date/Time Received, seconds are not displayed, but are used to sort the worklist when selecting Date/Time Received for the worklist sort criteria. VBECS uses seconds for calculations, for example in sorting items by time, even though it may not display seconds when time is shown.

User Roles with Access to This Option

All users

ABO/Rh Confirmation Testing

To confirm ABO/Rh testing, the user creates a worklist of individual units from an invoice, or creates a custom worklist. The user records observed test reactions and interpretations. VBECS uses truth tables to verify that user-entered interpretations are consistent with observed reactions. VBECS compares ABO

and/or Rh interpretations to units labeled “ABO/Rh” during login and displays warnings when there are inconsistencies.



When a unit's ABO/Rh confirmation test is repeated after issue to a patient, VBECS does not compare the test results to the patient's blood type at time of issue. The user must detect discrepancies and notify clinical personnel, in accordance with local policy.

User Action	VBECS
<p>1. When processing a shipment, select Shipments from the main menu.</p> <p>When processing selected units, select Blood Units from the main menu.</p> <p>Select ABO/Rh Confirmation.</p> <p>Select an invoice or units.</p> <p>Click OK.</p>	<ul style="list-style-type: none"> Displays options for processing blood product shipments. By default, displays units in the worklist in the order in which they were entered during Incoming Shipment. Lists invoices processed within the last five days in reverse chronological order. Displays fields for entering rack information. Allows units to be deleted from or added to the worklist. <p>NOTES</p> <p>To create a customized list of units:</p> <ul style="list-style-type: none"> Enter a unit ID or click the ellipsis button to search for a unit. VBECS lists units with “limited” status. Select parameters from the options on the Select Units for ABO/Rh Confirmation screen. Select Units within Criteria to work with. Click OK. Repeat this step until all units are included in the Selected Units list on the Unit ABO/Rh Confirmation screen. Click OK.
<p>2. Select a rack.</p> <p>Select a date or accept the default.</p> <p>Select a Tested By name.</p> <p>Click Using Automated Instrument, as appropriate.</p> <p>Click the Perform Anti-D Testing check box, when appropriate.</p> <p>Click OK.</p>	<ul style="list-style-type: none"> Displays the racks available using the pick list provided. Displays the date and time testing was performed. The default is the current date and time. The date may be edited using the pick list provided. Displays the testing technologist’s identification. The default is the current user. Select a name from the pick list of valid division users to show a different testing technologist. Displays warnings and the option to indicate that the user is ready to begin entering results after all warnings are addressed. Generates an Exception Report entry when the user inactivates or deletes the partially completed result grids and enters a comment. <p>NOTES</p> <p>A user may disable the anti-D testing grid column in the ABO/Rh unit confirmation worksheet.</p>
<p>3. Select a unit for which to record test results.</p> <p>Select a cell and enter an observed test result from the legend at the bottom of the screen.</p> <p>Enter a valid interpretation, then</p>	<ul style="list-style-type: none"> Creates a grid for data entry of results and interpretations, displaying units in the order selected. Allows the user to select a blood test type and enter a test result for the unit. Restricts data entry to valid selections for testing results. Displays testing results and interpretations entered. An interpretation indicates that all appropriate test results were entered for the unit.

User Action	VBECS												
<p>press the Enter key to go to the next data grid interpretation or Comment cell.</p> <p>Select enter comments from the Unit Testing for the ABO and Rh interpretations, as needed.</p> <p>Repeat until all test results for the selected unit are entered.</p>	<p>NOTES</p> <p> VBECS emits an audible alert and generates a warning requiring override when the ABO and/or Rh confirmation interpretation does not match the ABO and/or Rh of the unit at initial login. When the user confirms the discrepancy, inventory units whose ABO/Rh confirmation does not match the ABO/Rh at login are marked "Quarantined." VBECS captures details for inclusion in an Exception Report (exception type: Unit ABO/Rh log-in vs. confirmation do not match, unit quarantined).</p> <p>ABO/Rh confirmation testing data grids accommodate uniform data entry for Forward ABO testing.</p> <p>The cursor moves with a single valid keystroke from the top left cell across the row, returning to the leftmost cell in the next row, and so on down the worksheet grid. The cursor stays in the reaction results cells by default (the technologist may use the mouse to click in the interpretation area) until the last entry is made in the reaction result portion of the grid. The cursor then goes to the first (top) interpretation cell.</p> <p>The user may enter free-text comments or comments from the Unit Testing for the ABO and Rh interpretations.</p>												
	<p>Table 4: Valid Interpretations</p> <table border="1"> <thead> <tr> <th>ABO</th><th>Rh</th></tr> </thead> <tbody> <tr> <td>A</td><td>P, POS (positive)</td></tr> <tr> <td>B</td><td>N, NEG (negative)</td></tr> <tr> <td>AB</td><td>I, Inconclusive</td></tr> <tr> <td>O</td><td></td></tr> <tr> <td>I, Inconclusive</td><td></td></tr> </tbody> </table> <p>When a user saves a partially completed ABO/Rh testing worklist, VBECS clears unit entries with incomplete or no results, releases them from the worklist, and makes them available for inclusion in a future worklist.</p> <p>Row validation is established for the interpretation vs. reaction results pattern by system rules.</p> <p>ABO/Rh interpretations are consistent with observed test results based on system rules. Discrepancies are resolved before VBECS can verify ABO/Rh confirmation results and add them to the database. The user may reenter valid results or delete entries and start over.</p>	ABO	Rh	A	P, POS (positive)	B	N, NEG (negative)	AB	I, Inconclusive	O		I, Inconclusive	
ABO	Rh												
A	P, POS (positive)												
B	N, NEG (negative)												
AB	I, Inconclusive												
O													
I, Inconclusive													
4. Confirm that all results were reviewed and are acceptable.	<ul style="list-style-type: none"> Repeats data validation and prompts the user to save. <p>NOTES</p> <p>VBECS warns that it doesn't save partially completed unit ABO/Rh confirmation worksheets.</p>												

User Action	VBECS
	<p> When VBECS verifies that the ABO or Rh interpretation is “Inconclusive,” it assigns the unit a “Quarantine” indicator, emits an audible alert, and captures details for inclusion in an Exception Report (exception type: ABO/Rh confirmation Inconclusive, unit quarantined).</p> <p>Upon successful completion of ABO/Rh confirmation, inventory units are given a status of “available.” Successful completion means that the ABO and Rh (if required) interpretation is consistent with recorded observed results and matches the ABO/Rh at unit login and any repeat ABO/Rh tests on the unit that are not invalidated.</p>
5. Click OK to save the ABO/Rh confirmation testing.	<ul style="list-style-type: none"> Prompts the user to confirm that all results were reviewed and are acceptable.
6. Click OK .	

Unit Antigen Typing

The user performs antigen typing for one or more of the antigens in a blood unit and records the results in a worklist.

Assumptions

- The division is “full service.”
- The units and the user are in the same division.
- Antiserum inventory is entered during Log In Reagents.
- Workload codes are assigned through Workload Codes.

Outcome

- Antigen typing was applied in the unit record for informational purposes in other options.
- VBECS stores the lot number, vial identifier, manufacturer, and expiration date of the positive and negative control cells with the testing record.

Limitations and Restrictions

- Antigen typing applies only to blood products that contain red blood cells. This option does not address platelet, histocompatibility locus antigens (HLAs), or Immunoglobulin A (IgA) antigenicity.
- VBECS does not check whether the lot and vial numbers selected for the positive control cells differ from those of the negative control cells.
- D antigen typing must not be combined in batch testing of Rh positive units.

Additional Information

- This option is disabled for transfusion-only facilities.
- Clinical significance and availability of typing reagents are not implied when antigens are included in the list of antigen type tests.
- A CPRS patient order is not required to perform antigen typing of units.
- A user may query the database for the presence of antigen-typed units and display or print the query results in Blood Availability.
- A user may retrieve evidence of antigen typing for any date or date range. Regulatory agencies require documentation of the reagent name, lot number, reagent expiration date, and positive and negative control.

User Roles with Access to This Option

All users

Unit Antigen Typing

The user performs antigen typing for one or more of the antigens on blood units. VBECS creates a list of available antigen specificities, including weak D, that can be tested. For each antigen tested, the user must select a reagent from available inventory. VBECS will check to see if valid positive and negative controls were tested for the selected reagent on the calendar day of testing. When controls are not tested, VBECS adds tests for the positive and negative controls to the worksheet.

Red cell units prepared for patient transfusion may need to be negative for this antibody specificity based on their setting in the antibody table defined in Antibodies.

User Action	VBECS
<p>1. Select Blood Units from the main menu.</p> <p>Select Unit Antigen Typing.</p> <p>2. Click Create New Worklist.</p> <p>When partially completed worklists exist, click a check box to select an existing worklist and go to Step 5.</p> <p>Click Delete to delete the worklist from the list or OK to continue.</p>	<ul style="list-style-type: none"> Displays options for processing blood units. Displays options for processing antisera.
	<p>NOTES</p> <p>VBECS displays the date and time the testing was performed (default: current date and time). These are editable to allow for retrospective entry.</p> <p>VBECS displays the testing technologist ID (default: current user). A pick list of valid division users is available for the user's selection.</p> <p>When an automated instrument was used for testing, the user enters the name of the instrument and may indicate that successful quality control testing was done for the date.</p>
<p>3. To create a new testing worklist, select a date or accept the default.</p> <p>Select a "Tested By" name.</p> <p>Click a radio button to select Tube, Gel, or Solid Phase.</p> <p>Click Using Automated Instrument, as appropriate.</p> <p>Click OK.</p>	<ul style="list-style-type: none"> Displays an option to select antiserum types. Displays an option to select a lot number for each antiserum type selected. Displays the lot number information. Prompts the user to select the correct antiserum entry for the specificity selected. <p>NOTES</p> <p>VBECS lists available antigen type tests from which the user may select and allows the user to enter the specificity to expedite the search. The list of antigen type tests is derived from the Corresponding Antigens field from Appendix B: Table 13: Antibody and Antigen Table: Irregular Antibodies.</p> <p> VBECS displays data fields for the user to select or enter the lot number, and displays the manufacturer and expiration date of each antiserum to be used in this transaction to allow the user to choose the correct antiserum. VBECS displays in-date antisera and allows the selection of outdated antisera, if needed, emits an audible alert, and requires an override and generation of an Exception Report (exception type: expired antisera used). A comment is required.</p>

User Action	VBECS
	<p> When a user attempts to change the phases of reactivity, VBECS emits an audible alert, warns that the user selected phases that were not used previously for this reagent, and asks whether the user wishes to continue.</p> <p>No returns the user to the screen to select the correct testing phases. Yes requires the user to enter a comment explaining why different testing phases are selected, and captures details for inclusion in an Exception Report (exception type: antigen testing phase change).</p> <p>When the user QC'd the antigen typing reagent lot number and performed patient antigen typing on the same date under different testing phases, VBECS enables the QC grid for the antisera in the phases the user selected.</p>
<p>4. Define the antiserum used.</p> <p>Enter a lot number for each antiserum specificity.</p> <p>Select the testing phase:</p> <ul style="list-style-type: none"> • IS • IS/RT • IS/37 • AHG/CC. <p>Select the rack, if applicable.</p> <p>Select Add.</p> <p>Select additional antisera, if desired.</p> <p>Respond to warnings and enter comments, when indicated.</p> <p>Select OK (Figure 64).</p>	<ul style="list-style-type: none"> • Displays an option to select the testing phases for the antiserum specificity by lot number. • Displays a testing grid disabling the phases not to be entered. • Stores the antiserum information and checks whether the positive and negative controls need to be tested with this batch. • Prompts the user to enter the lot number and vial identifier for the positive and negative control used for each antiserum tested. <hr/> <p>NOTES</p> <p>When VBECS displays lot numbers for selection, it checks the inventory system for the reagent name and lot numbers in a rack. The user cannot force the entry of a lot number that VBECS disallowed on the selection list. The user must choose a different reagent. The user may not select a reagent with an “unsatisfactory” value in the Inspection field or with a quantity of zero.</p> <p>VBECS enables the rack identifier field when a user selects the weak D or AHG/CC phase and disables the field when a user selects other phases.</p> <p>For the weak D test, the testing antiserum is part of the rack selected for the testing (AHG/CC phase). No additional positive and negative controls need to be added to the worksheet.</p> <p>Reagent lot numbers that are selectable for positive and negative control cells:</p> <ul style="list-style-type: none"> • Reverse ABO Typing Cells (set) • A2 cell (vial) • Screening Cells (set) • Check Cells (vial) • Panel (set) • Other (set) <p>VBECS requests information about an antigen lot number only the first time it is used on a specific day.</p> <p>If there are multiple test tabs, VBECS displays a message that</p>

User Action	VBECS
5. Select one or more blood units to add to the worklist. Enter the unit ID and the product code from the inventory, or click the ellipsis button to search for a blood unit and select from the list of available units. Click OK when all units are selected.	<p>may not correspond to the selected tab, but will correspond to information required by one of the requested tests.</p> <ul style="list-style-type: none"> Allows the user to scan or enter units to be included in the worklist or select them from a list. Lists the selected units.
6. Select the lot number for the reagent and the positive and negative control cells. Enter the vial identifiers, if required. Enter "0" when not using panel cells. Verify the reagent type and the positive and negative control cell lot numbers selected and vial identifiers entered, if required.	<ul style="list-style-type: none"> Displays the reagent type and lot numbers, including the vial identifier. <p>NOTES</p> <p>The vial identifier, comprising one or two digits, identifies the vial contained in a kit of reagent red blood cells. A vial contains antigen positive or antigen negative blood cells to be used in quality control of the antisera.</p>
7. Respond to warnings and continue with antigen typing. Review the lot number, manufacturer name, and expiration date for the antiserum and control cells. If they are not correct, start over. Select a control cell or unit to begin entering serologic reactions and interpretations in the data entry grid.	<ul style="list-style-type: none"> Displays each selected unit in a separate tab for each selected specificity with its own grids and quality control. Displays a direct data entry (DDE) grid to enter serologic reaction results for antigen typing of units. This may already be filled with results from a previously saved partially completed worksheet. Allows a user to select a unit or control cell and enter a test result. Allows only valid data entries in the grid reaction result and interpretation cells. Restricts data entry to valid selections for testing results. Keeps all testing results and entered interpretations on the screen until the user saves them. <p>NOTES</p> <p>VBECS displays the worklist for the grids by antiserum types.</p> <p>Valid observed test results entered by a user:</p> <ul style="list-style-type: none"> 1 [1+ (positive)] 2 [2+ (positive)] 3 [3+ (positive)] 4 [4+ (positive)] W [Weak (Inconclusive)] F [Mixed Field (Inconclusive)] M [Microscopic (Inconclusive)] R [rouleaux (negative)] 0 (zero) [No Agglutination (negative)] X (Not Tested) (does not indicate a disabled cell) <p>When the AHG phase is selected for testing, the AHG must be negative and the CC must be at least 1+ positive to consider the test negative for a unit or for the negative control cell.</p>

User Action	VBECS
	<p>The column heading of the data grid specifies the phases of reactivity that may be used in a test selected for the specificity.</p> <p>The row heading of the data grid specifies the unit ID being tested. These fields cannot be edited.</p> <p>The rows for each antiserum type grid display the positive and negative control cells, then units, in the order in which a user added units to the worklist.</p> <p>A comment can be associated with any antigen test performed. A user may select canned comments required by an override from the drop-down list or select Other to enter free-text comments.</p>
8. Enter results for the control cells and for all selected units. Refer to the legend at the bottom of the screen (Figure 65).	<ul style="list-style-type: none"> Prompts the user to confirm that all results were reviewed and are acceptable. <p>NOTES</p> <p>The positive and/or negative control cell test results on the date of testing must be valid positive or negative. When a control cell fails, VBECS warns that one or more control cells is invalid and that it cannot accept testing results, and asks whether the user wishes to continue.</p> <p>No returns a user to the worksheet with the reaction entries cleared. Yes allows a user to enter a comment. VBECS saves individual unit test results but does <i>not</i> apply an antigen type result to the blood unit.</p> <p>When a weak D interpretation is positive and is verified for a tested blood unit that was labeled as (Rh) D negative, VBECS warns the user and adds the quarantine indicator to the unit.</p> <p>VBECS compares the antigen typing interpretation a user enters to previously assigned antigen typings for the same antigen (as assigned during Incoming Shipment, Edit Unit Information, or previous testing). When the previous interpretation was not “inconclusive” and the current interpretation does not match the previously identified antigen type, VBECS warns the user and quarantines the unit.</p> <p>System rules establish row validation for the interpretation vs. reaction results pattern [for all user-indicated phase(s) of reactivity] for blood unit and quality control tests.</p>
9. Repeat Steps 4–8 for each antiserum type.	<ul style="list-style-type: none"> Displays the option to save.
10. Respond to warnings and save.	<ul style="list-style-type: none"> Saves the partially or fully completed data. Reconfirms that all appropriate test results were entered, repeats all data validation, and saves the information on the worksheet displayed. <p>NOTES</p> <p>VBECS saves the testing of one antiserum specificity at a time.</p>

User Action	VBECS
	VBECS stores the lot number, vial identifier, manufacturer, and expiration date of the positive and negative control cells with the testing record.
11. Click OK to exit.	

Figure 64: Unit Antigen Typing

The screenshot shows the 'Unit Antigen Typing' window from the VBECS software. The window title is 'VBECS - Unit Antigen Typing'. It contains several input fields and selection boxes:

- Date Tested***: 02/02/2006 14:00
- Tested By***: vhaishvbecs1
- Testing Method***:
 - Tube
 - Gel
 - Solid Phase
- Using Automated Instrument**:
- Instrument Name***:
- Instrument QC'd?**:
- Define Antiserum Specificity**:
 - Antigen Typing***:
 - Lot Number***:
 - Reagent Type**:
 - Manufacturer**:
 - Expires**:
 - Rack***:
- Testing Phases***:
 - IS
 - IS/RT
 - IS/37
 - AHG/CC
 - 37/AHG/CC
- Selected Specificities**:

	Typing	Reagent	Lot Number	Manufacturer	Expires	Phases	Rack
<input checked="" type="checkbox"/>	AGK	Anti-K	20	AAA	08/20/2006 23:59	AHG/CC	A

* Required Field

Buttons at the bottom right: OK and Cancel

Figure 65: Unit Antigen Typing Serologic Results

VBECS - Unit Antigen Typing

Unit Antigen Typing

AS TYPING

Unit Antigen Typing											
	Control	Reagent	Lot Number	Vial	IS	RT	37	AHG	CC	Interp.	Comment
✓	POS	Screening Cells	1	1				2	X	P	
✓	NEG	Screening Cells	1	2				0	2	N	

Unit ID	Product Name	IS	RT	37	AHG	CC	Interp.	Comment
✓ 1941954	RBC AS1, 04210				0	2	N	

Lot Number Manufacturer Expires

Key
✓ Valid
⚠ Warning
✗ Error

Valid Entries
Any Text

* Required Field

Modify Components

Modify Units

The user modifies a unit, which results in a different blood product (target product) with its own properties. A division's configuration determines the available modification types.

Assumptions

- Product Modifications was executed.
- The division is the active shipper for target blood products.
- A unit may be modified with or without patient assignment or restriction.
- A unit may be modified with or without a patient order.
- Units selected for modification must be in the same division as the user.
- Product labels and unit numbers for modified products are on hand.
- Supplies needed for the unit modification were entered in VBECS.

Outcome

- Data generated for an Exception Report are stored for inclusion in the next Exception Report.
- Workload-related data collected as the result of unit modification are stored for inclusion in Workload Reports.
- At the completion of a unit modification, VBECS assigns the original unit a final status of "modified."
- A permanent virtual link exists between the original unit and target units created.
- The shipper of the target unit created is the division in which the modification was performed. The cost assigned to the target unit is based on what was defined in Blood Products.

Limitations and Restrictions

- VBECS allows modification of units only in limited, assigned, crossmatched, and available statuses.

Additional Information

- VBECS requires the identification of the transferred-to container when using an open method or an sterile connection device (SCD).
- VBECS requires the identification of the SCD wafer data when using an SCD.
- When a user extends an expiration date beyond the default expiration date, the override message displays the original expiration date.
- Due to the variations in supplies and equipment used for other modification types, VBECS does not require supply or equipment entry, but allows entry of those data as part of the modification record.
- During the modification options (Modify Units: Pool Units; Modify Units: Split a Unit; Modify Units), a user may select an assigned blood unit for modification and transfer one patient assignment to the target units created.
- To reverse other modifications, remove the "modified" status from each unit through Remove Final Status.
- To edit the number of units in an existing pool, use Add/Remove Units from a Pool.

User Roles with Access to This Option

All users

Modify Units

The user selects the units to be modified. The user indicates the type of modification to be performed, then enters (preferably by scanning) the unit ID and product code.

VBECS displays a creation date and time (default: current date and time) for the target units, which the user may change to a date and time in the past and not before the login date and time of the original unit. VBECS calculates a new expiration date for the target unit (based on the creation date and time, modification type, method, and original unit product type) and records the date and time the original unit was modified. Some modification procedures require materials in addition to the new container. VBECS requires the entry of a new container lot number and SCD wafer, if indicated.

The modified target unit is now available for use.

User Action	VBECS
1. Select Blood Units from the main menu. Select Modify Units .	<ul style="list-style-type: none">• Displays options for processing blood units.• Displays valid modification options configured for the division and allows the user to select an option.
2. Enter the date and time of the unit modification. Enter the name of the user who modifies the unit.	<ul style="list-style-type: none">• Displays the default (current) date and time as the modification date and time.• Allows the user to change the date and time to a past date and time. <p>NOTES —————</p> <p>The user may not enter a future date and time.</p>
3. Click a radio button to select a modification type: <ul style="list-style-type: none">• Thaw• Pool (See Modify Units: Pool Units.)• Thaw/Pool Cryo (See Modify Units: Pool Units.)• Split/Divide (See Modify Units: Split a Unit.)• Irradiate• Leukoreduce• Volume Reduce• Wash• Rejuvenate• Freeze• Deglycerolize• Add/Remove Units from Pool (See Add/Remove Units from a Pool.)	<ul style="list-style-type: none">• Allows the user to enter data based on the modification type selected.• Allows the user to select a different processing technologist.• Displays only modifications enabled for the division.
4. Click a radio button to select a modification method, if required: <ul style="list-style-type: none">• Open• Closed• Sterile Connection Device (Figure 66)	<ul style="list-style-type: none">• Displays the selected method. <p>NOTES —————</p> <p>VBECS stores the date and time for the original unit when it is modified. The modification date and time are also stored as the creation time for the target unit.</p>

User Action	VBECS
	<p>When the modification method is “Open” or “Sterile Connection Device (SCD),” the user must select a container supply type. When the modification method is “Closed,” VBECS does not allow the user to select a container supply type.</p> <p>For an SCD modification method, the user must indicate the completeness of the weld, in accordance with local policy and procedures. VBECS defines weld status as:</p> <ul style="list-style-type: none"> • Complete: the weld is complete and has no leakage or air bubbles. • Incomplete: the weld has a leak or air bubbles are present. VBECS changes the expiration date and time of the unit to those of an open system for that product type. VBECS stores this weld check with the historic record of the target unit created in the modification.
<p>5. Click OK to accept the selected method, or edit it.</p> <p>6. Scan, enter, or select the ID and product code of the unit to be modified.</p>	<ul style="list-style-type: none"> • Allows the user to scan, enter, or select units to modify. • Displays current data for the selected unit. • Verifies the appropriateness of the selected unit based on system rules and truth tables and displays error and warning messages based on the modification type selected and the user’s security level. • Prompts the user to continue with the selected unit or select a new unit based on the data in the review window.
	<p>NOTES</p> <p>VBECS allows the user to select a product type for the original unit based on the selected modification type.</p> <p>See Appendix B: Table 21: Allowable Product Modifications by Original Product Type.</p> <p>The user may select only active units and those not in a final status.</p> <p>When the user selects a status other than “limited,” “available,” “assigned,” or “crossmatched” for an original unit, VBECS warns the user. There is no override.</p> <p>When the selected unit is not appropriate for the modification type selected, VBECS warns the user and instructs him to verify the selected unit and modification type. There is no override. When the unit is expired or quarantined, VBECS displays an error message.</p> <p>The user may select units containing red blood cells chosen for rejuvenation within three full days past their labeled expiration date. (For example, when a unit’s expiration date is the current day, VBECS counts this day as “day 0,” the next day as “day 1,” etc. The last acceptable date and time for selection is day 3 at 23:59). After this three-day period, VBECS considers the unit to be expired.</p> <p>When the modification type is “volume reduce,” VBECS records</p>

User Action	VBECS
	<p>the discarded plasma volume on the unit record. Otherwise, the user may not edit the Discarded Plasma Volume field. The discarded plasma volume may not be "0" (zero).</p> <p> See Table 5 for alerts that may occur during this option.</p>
7. Click OK to accept the unit for modification.	<ul style="list-style-type: none"> When the modification type is "thaw" or "irradiate," prompts the user to select additional units to process or to continue processing the selected units. Otherwise, go to Step 8. <p>NOTES</p> <p>The user may process multiple products in a batch when the units are thawed or irradiated. The creation date and time apply to all units in the batch.</p>
8. Click the Weld Complete or Weld Incomplete radio button to indicate the integrity of the SCD weld, when indicated. Click the Container, Supplies, Equipment, or SCD Wafer tab and enter another supply and/or equipment lot or ID number (Figure 67).	<ul style="list-style-type: none"> Calculates and displays a default expiration date and time of the target unit based on rules specific to the original blood product, the modification type, and processing conditions (open, closed); prompts the user to accept the date and time; and allows the user to edit them. <p>NOTES</p> <p>VBECS maintains lot and ID numbers entered, the new container lot number in the unit modification record, and the historic record of the target unit.</p> <p>VBECS checks the inventory system for the supply name, lot numbers, expiration date, and a quantity greater than "0" (zero). VBECS does not allow the user to select supplies with an "unsatisfactory" value in the Inspection field. When the user enters an unsatisfactory supply lot number, VBECS warns the user. The user must select a different supply item.</p> <p> See Table 5 for alerts that may occur during this option.</p>
9. Select a target product type from the drop-down list in the Product field.	<ul style="list-style-type: none"> Displays target component types for the modification, conditions selected, and the original unit product type, and allows the user to select a single product type. Verifies that an active target component was selected and warns the user. Allows the user to enter lot and ID numbers (with auto-completion) or select multiple items from the supply and equipment lists. Warns that the target unit is not active and allows the user to activate the target component. <p>NOTES</p> <p>The user must select a modification method (open, closed, Sterile Connection Device) for modification types, as described in Appendix B: Table 21: Allowable Product Modifications by Original Product Type.</p> <p>VBECS displays available target component types based on ISBT 128 modification rules and site parameters for the division.</p>

User Action	VBECS
	<p>When the user selects a target component type not marked as active, VBECS warns the user, allows him to mark the target component as active, and returns him to this step in the modification process. Otherwise, VBECS returns the user to this step and allows him to select another target component type.</p> <p>Site parameters indicate which products in the product code database are marked as active for a division. The user may define fields for a product type at a site:</p> <ul style="list-style-type: none"> • Division shipper (automatically set to the user's division): <ul style="list-style-type: none"> ◦ Cost (U.S. currency) ◦ Return Credit Percentage ◦ Active? <p>These are the only fields in the blood product table that are editable.</p> <p>When the original unit type did not require ABO/Rh confirmation, the target unit, when created, does not either. The target unit is immediately available for assignment, crossmatch, issue, or transfusion on completion of the modification.</p> <p>When ABO/Rh confirmation testing was not performed on the original unit when the target unit was created, VBECS assigns "limited" status to the target unit and saves it for inclusion in an ABO/Rh confirmation worksheet.</p> <p>When the original unit is assigned or crossmatched to a patient at the time of modification, VBECS notifies the user and asks whether he wishes to automatically assign the modified units to the patient. Yes (default) applies the unit's assignment or crossmatch data to the target component. No does not apply the assignment to the target, and changes the target unit status to "available." The original unit retains patient assignment in both cases.</p> <p> See Table 5 for alerts that may occur during this option.</p>
10. Enter the expiration date.	<ul style="list-style-type: none"> • Verifies the validity of the expiration date and warns the user, if indicated. <p>NOTES —</p> <p>When VBECS calculates the expiration date of a unit in days, starting from the date and time of modification, the expiration time is 23:59. When VBECS calculates the expiration date in hours, the unit expires at the specified hour and minute.</p> <p>VBECS calculates an expiration date for the target component. For all modification types except Rejuvenate and Freeze, VBECS compares the calculated expiration date with that of the original unit and displays the earlier of the two as the default. The user may edit the calculated expiration date. (Due to the nature of the process, the calculated expiration date will greatly exceed the original expiration date of the original unit for Rejuvenate and Freeze, and will supersede the unit's original</p>

User Action	VBECS
11. Review the displayed unit data and click OK to confirm the modification. Click Yes to verify the label (Figure 68). Click No to cancel and continue at Step 14.	expiration date.) <ul style="list-style-type: none"> When the original unit is currently assigned to a patient, notifies the user and asks whether he wishes to transfer the status to the target unit. Yes updates the target unit status.
12. Scan the label barcodes to verify the target labels, based on local practice and labeling type of the modified unit. Enter a comment to complete the verification. (This step is optional.)	<ul style="list-style-type: none"> Displays the label verification window. Indicates whether the scanned barcodes match those in the label. For each target created, system prompts user to indicate readiness to verify the labeling of the modified product. No new labels applied to modified product. Proceed to save the unit. Displays a screen to accommodate data entry of the modified unit's: <ul style="list-style-type: none"> ABO/Rh Product Code Expiration Date This step repeats until all targets have been labeled and/or are ready for continued processing.
NOTES —————	
<p>The user may select "Verify modified unit label" to verify the modified unit label. When the user does not verify the label, he clicks Cancel and must enter a comment to exit.</p> <p>When the user does not select "Verify modified unit label," he may continue at Step 14. VBECS bypasses the label verification and does not create an Exception Report.</p> <p>When a component is modified and a new label is applied, American Association of Blood Banks (AABB) standards require the labeling process to include a method to ensure the correctness of the unit number, ABO/Rh, expiration date, and component label.</p> <p>VBECS does not display the modified unit data. VBECS instructs the user to verify the labeling of the target product and notifies him that scanning the barcode is preferred. When no barcode is available, the user may enter the data.</p> <p>To verify the label, VBECS compares the entered data with the data of the target unit from the database. The user may scan or enter:</p> <ul style="list-style-type: none"> Unit ABO/Rh Label Unit Product Code Unit Expiration Date 	
13. Scan or enter each label on the target unit.	<ul style="list-style-type: none"> Compares the data entered in each field to the database. Asks whether the user wishes to save the data. When the user confirms that the data are correct, notifies him that the label verification is complete. Records the modified or restriction-released unit relabeling data as part of the unit record and stores the data for inclusion in the unit

User Action	VBECS
	<p>history report.</p> <ul style="list-style-type: none"> Saves only the technologist name and the date and time the label was verified. When the user indicates that a new label applied fails to complete the verification process, releases the assignment, quarantines the unit, and captures details for inclusion in an Exception Report (exception type: target product label failed checks). When the user confirms that the comparisons are correct, notifies him and asks whether he wishes to continue. <p>NOTES</p> <p> When there is no match, VBECS emits an audible alert, notifies the user, and instructs him to verify the labeling and reenter label data or select Cancel.</p> <p>When there is no previous entry for a field, VBECS notifies the user and instructs him to enter a value or select Cancel.</p> <p>VBECS requires a comment when the user selects Cancel, and captures details for inclusion in an Exception Report (exception type: target product label failed checks).</p>
14. Click OK to confirm the save.	<ul style="list-style-type: none"> Saves the new modified unit data. Updates the status of the original unit to "modified." Records the unit ID of the target unit on the record of the original unit. Prompts the user to modify another unit. <p>NOTES</p> <p>The target unit automatically inherits original unit data, which the user may not edit:</p> <ul style="list-style-type: none"> Unit ABO/Rh (from login) ABO/Rh confirmation testing information (when performed) Unit ID Unit Volume (exception: when a unit is volume reduced, the target unit does not inherit the original unit's volume. The user must enter the target unit's volume.) Donation type Disease marker testing information, when autologous. Restricted for patient name, ID. Current status Biohazard Indicator Quarantine Indicator Division Additional unit testing (CMV, Sickle Cell, antigen typings)
15. Repeat Steps 3–14 to modify another unit or exit.	

Figure 66: Modify Unit(s)

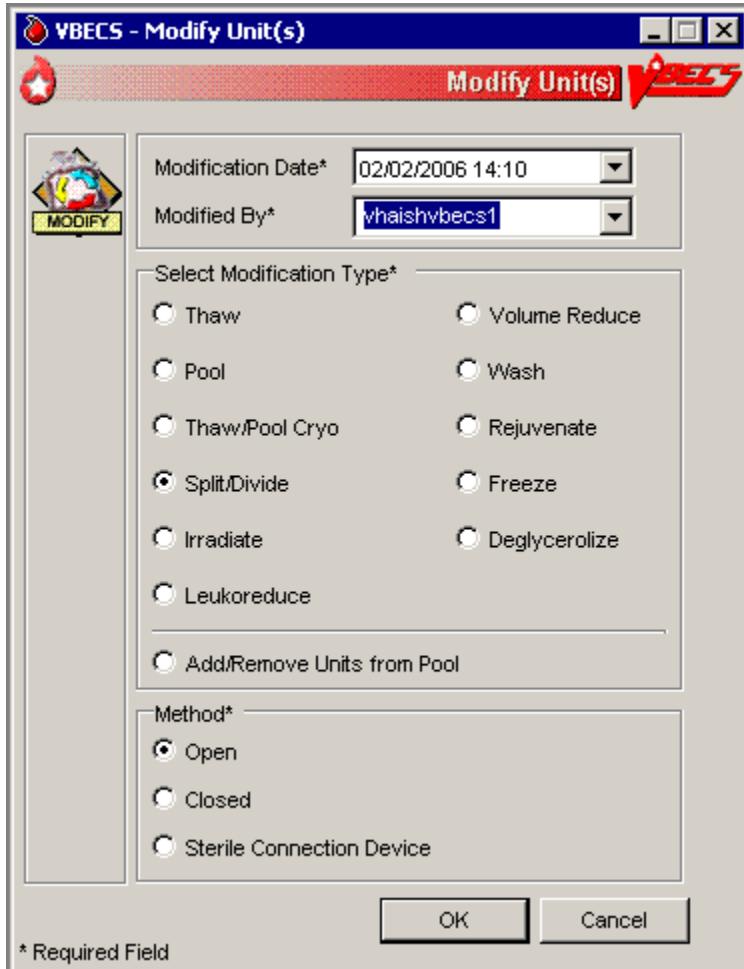


Figure 67: Split/Divide Unit

VBECS - Split/Divide Unit

Split*

Adult Split Pediatric Split

2

Modification

Method: Sterile Connection Device

Modification Date: 02/02/2006 14:10

Weld*

Weld Complete Weld Incomplete

Original Unit

Unit ID	6832766	Donation Type	For Autologous Use Only
Product	04210 - RBC AS1	Patient Name	VBPATIENT, EIGHTYONE
ABO/Rh	O Neg	Patient ID	000-00-0081
Expiration Date	02/28/2006 23:59	Disease Marker Testing	Unit fully tested and neg
Unit Status	Available	Restricted For	Assigned To Special Testing

Target Unit 1 | **Target Unit 2**

Unit ID	6832766A	Donation Type	For Autologous Use Only
Product	04210 - RBC AS1	Patient Name	VBPATIENT, EIGHTYONE
ABO/Rh	O Neg	Patient ID	000-00-0081
Expiration Date*	02/28/2006 23:59	Disease Marker Testing	Unit fully tested and neg
Unit Status	Available	Restricted For	Assigned To Special Testing

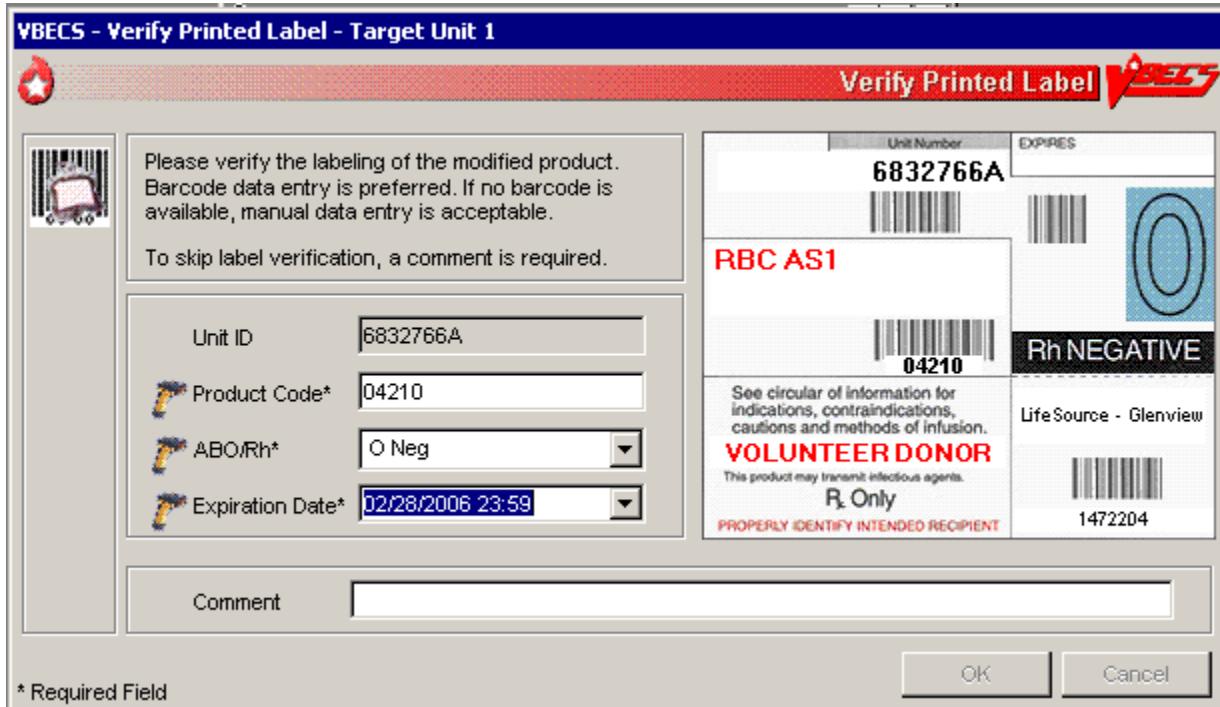
Container | **Supplies** | **Equipment** | **SCD Wafer**

Lot Number	Supply Type	Manufacturer	Expires	Add Container*
553466	Clean Containers	Super Supplier	03/02/2006	<input type="button" value="Add Container*"/>

Original Container

* Required Field

Figure 68: Verify Printed Label



Alerts

Table 5: Alerts That May Occur in Modify Units

Step	Alerts
6	When the unit modification date and time entered are earlier than the date and time the original unit was received in inventory, VBECS warns the user and allows him to reenter the modification date and time.
6	VBECS compares the original unit's expiration date and time to those of the modification to determine whether the selected unit was expired at the time of modification. When the user is a Blood Bank Technologist and the unit selected for modification expired, VBECS emits an audible alert, displays an error message, clears the selected unit, and allows the user to select another unit for modification. ►► When the user is an Enhanced Technologist and the unit selected for modification is expired, VBECS emits an audible alert, notifies the user, and asks him to verify to continue, or cancel to correct the entry data. Override requires a comment and VBECS captures details for inclusion in an Exception Report (exception type: expires unit modified). Cancel clears the selected unit and allows the user to select another unit for modification.
6	When ABO/Rh confirmation testing is required but not performed, VBECS notifies the user that testing must be completed before issuing a target unit. The user may continue with the modification.
6	When a unit has an indicator of "quarantined," VBECS notifies the user that it must be released before processing may continue, clears the selected unit, and allows the user to select another unit. ►► When the user is an Enhanced Technologist and a unit has an indicator of "quarantined," VBECS notifies the user that it must be released before processing may continue and asks whether the user wishes to release the unit. Cancel clears the selected unit and allows the user to select another unit. Override releases the unit through Discard or Quarantine.
6	When the selected unit has a positive biohazard Indicator, VBECS emits an audible alert, warns the

Step	Alerts
	user, and asks whether the user wishes to continue with the modification. Cancel clears the unit and the user may select another unit. Override requires a comment and VBECS captures details for inclusion in an Exception Report (exception type: biohazardous unit modified).
8	When a supply item is expired, VBECS emits an audible alert, warns the user, and asks whether the user still wishes to use the item. Yes requires a comment and VBECS captures details for inclusion in an Exception Report (exception type: expires supply used in unit modification). No requires the user to select another supply lot number.
10	When the user extends the system-recommended expiration date and time, VBECS warns the user, asks him to reenter the unit expiration date, and redisplays the original entry. The user may enter another expiration date and time for the target unit. ►► When an Enhanced Technologist extends the target unit expiration date and time past the system-recommended expiration date and time, VBECS emits an audible alert, warns the user, and asks whether he wishes to continue. Cancel restores the expiration date. Override allows the user to continue with this date, requires a comment, and captures details for inclusion in an Exception Report (exception type: target product outdate extended).

Modify Units: Split a Unit

The user selects the unit to be split (divided) for transfusion.

Assumptions

- See Modify Units.

Outcome

- See Modify Units.

Limitations and Restrictions

- A previously split unit cannot be split again. A pooled unit may not be split.
- This option appends alphabetical characters to the Codabar unit ID of split units created from original units. This prevents scanning the unit ID barcode with the split indicator.
- By ISBT 128 convention, split units created from an ISBT 128 original unit will have identical unit ID and five-digit product codes.

Additional Information

- The user may select blood units from the product types indicated in Appendix B: Table 21: Allowable Product Modifications by Original Product Type for splitting.
- To reverse other modifications, remove the “modified” status from each unit through Remove Final Status.

User Roles with Access to This Option

All users

Modify Units: Split a Unit

The user selects the unit to be split for transfusion. VBECS automatically applies directed and autologous restrictions to aliquots created. The user may or may not maintain patient assignments (usually, these units are crossmatched and available for the patient before the split is made). This section lists only rules unique to the division of a blood unit.

User Action	VBECS
1. Select Blood Units from the main menu. Select Modify Units .	<ul style="list-style-type: none">• Displays options for processing blood units.• Displays valid modification types for selection.
2. Click the Split/Divide radio button. Click OK .	<ul style="list-style-type: none">• Allows the user to search for a unit.
3. Select a unit and click OK . Click Select to confirm the unit selected.	<ul style="list-style-type: none">• Displays data for the original and target units.
4. Edit the number of adult splits to be created, if required (Figure 67).	<ul style="list-style-type: none">• Displays the number of splits to be created (default: 2) for verification.• Requires entry of the number of splits to be created.

User Action	VBECS
Click Split* to verify the number of splits to be created and add the appropriate number of target unit tabs.	<p>NOTES</p> <p>When Adult Split is selected, the user must indicate the number of split units to be created. The user may split a unit into 2 to 26 subunits until the volume of the original container is consumed.</p>
5. Select or confirm the desired target component type. For a Sterile Connection Device modification method, click the Weld Complete or Weld Incomplete radio button to indicate the condition of the weld. Click the Container , Supplies , Equipment , or SCD Wafer tab and enter another supply and/or equipment lot or ID number.	<ul style="list-style-type: none"> Allows the user to enter lot and ID numbers or select multiple items from the supply and equipment lists. <p>NOTES</p> <p>When multiple target units are created, the user must associate a container lot number with each unit created. "Original container" may serve as the lot number for one of the aliquots created.</p> <p>The original blood collection facility must keep a record of the original container lot numbers so that, when a lot number is recalled, it is known which patient was exposed to it.</p> <p>The expiration date and time are the same as the original unit for each split unit created using an SCD or a closed method. This applies to all types of splits.</p>
6. Accept or edit the displayed expiration date.	<ul style="list-style-type: none"> Displays the expiration date. Calculates and displays the volume of each split unit. <p>NOTES</p> <p>The expiration date and time for each split created are 24 hours from the date and time of modification (using an open method).</p> <p>The user may edit the default volumes, which must not equal "0" (zero) or be greater than 2,000 mL. VBECS divides the volume of the original unit evenly among the splits and adds the remainder to the first split.</p>
7. Accept or edit the displayed unit volumes.	<ul style="list-style-type: none"> Displays the original and target unit data for review. <p>NOTES</p> <p>The user may not edit original unit data.</p> <p>The product code of target units created is the same as that of the original unit.</p> <p>Target units inherit the original unit data, except for volume: volume is assigned based on the conditions of modification.</p>
8. Review the displayed data for the target units and confirm the modification type.	<ul style="list-style-type: none"> Displays the target unit's ID number. <p>NOTES</p> <p>VBECS assigns the unit ID of the target units based on the labeling of the original unit:</p> <ul style="list-style-type: none"> Codabar: the ID number comprises the original unit ID number and a suffix (A–Z) for the 2 to 26 target units, beginning with A. The five-digit product code remains the same.

User Action	VBECS
	<ul style="list-style-type: none"> ISBT 128: the unit ID, five-digit product description code, and sixth-character donation code remain the same. Characters 7 and 8 of the ISBT 128 product code barcode reflect the aliquot level: when a previously undivided unit is split, character 7 of the unique eight-digit ISBT 128 product code is incremented alphabetically in uppercase letters, resulting in characters 7 and 8: A0, B0, C0, D0 ... Z0.
9. Click OK to save. Click Yes to verify the label.	<ul style="list-style-type: none"> Prompts the user to save the data, including patient assignment and restriction information, if any. Saves aliquots created from the modified unit. Records the unit ID of the target unit on the record of the original unit. Saves only the technologist name and the date and time the label was verified. When the user indicates that a new label applied fails to complete the verification process, releases the assignment, quarantines the unit, and captures details for inclusion in an Exception Report (exception type: target product label failed checks).
10. Click Yes to save. Repeat Steps 2–9 to split additional units, or return to Step 1 to use a different modification method on another unit.	<ul style="list-style-type: none"> Prompts the user to split or modify another unit.
11. Exit.	

Modify Units: Pool Units

The user selects units to be pooled.

Assumptions

- See Modify Units.

Outcome

- See Modify Units.

Limitations and Restrictions

- VBECS allows modification of units only in limited, assigned, crossmatched, and available statuses.
- When a user adds a biohazardous unit to a pool, VBECS does not designate the pool as biohazardous on the Blood Transfusion Record Form (BTRF) or Caution Tag.
- VBECS does not allow a user to select a pool of mixed ABO/Rh units for a patient. Instead, the user must select random units for the patient and pool the mixed ABO/Rh units to allow issue.

Additional Information

- When autologous or directed units are pooled, the “restricted for” patient must be the same for all units. VBECS assigns the same donation type and applies the “restricted for” patient data to the pool.
- To reverse the pooling of units:
 - o Inactivate the target through Edit Unit Information.
 - o Remove the “modified” status from each unit in the pool through Remove Final Status.
- To edit the number of units in an existing pool, use Add/Remove Units from a Pool.

User Roles with Access to This Option

All users

Modify Units: Pool Units

When the pooling is in process or almost complete, the user records it in VBECS. Data entry may also be completed retrospectively. The user pools units and enters the ID and product code of the original unit and the IDs and product codes for each unit added to the pool.

VBECS records the date and time the units are pooled, uses the date and time to calculate a new expiration date for the pool, and assigns a unit ID and ABO/Rh, as defined by system rules. When an original unit in a pool was previously assigned to a patient, VBECS asks the user whether the entire pool is to be assigned to that patient. VBECS automatically assigns autologous and directed patient restriction data from an individual unit to the pool. VBECS determines the volume of the pool based on the sum of the volumes of the units in the pool.

The new, pooled unit needs a full set of unit properties, some of which were defined by the original units' properties. VBECS assigns new properties such as volume, date and time created, container lot number, and expiration date to the target.

VBECS uses system rules to check pertinent blood bank requirements associated with pooling and displays appropriate target unit information for review. The user reviews and edits the information, as

needed, and completes the transaction. VBECS updates internal records, including the collection of workload and unit statuses, for each unit involved.

The user may now assign the units or print the BTRF and Caution Tag, and notify appropriate personnel that the ordered units are ready for issue.

User Action	VBECS
1. Select Blood Units from the main menu. Select Modify Units .	<ul style="list-style-type: none"> • Displays options for processing blood units. • Displays valid modification types for selection. <p>NOTES —————</p> <p>The >> Enhanced Technologist or above is authorized to modify expired blood products.</p>
2. Click the Pool or Thaw/Pool Cryo radio button. Click OK .	<ul style="list-style-type: none"> • Allows the user to search for a unit.
3. Scan, enter, or select the ID and product code of the most restricted (e.g., biohazardous, autologous, directed) unit to be pooled.	<ul style="list-style-type: none"> • Displays current data for the selected unit. <p>NOTES —————</p> <p>VBECS applies the restriction of the first unit selected to the pool.</p> <p> Based on the product code, VBECS determines the component class of each selected unit to verify that the component class of the selected unit matches that of the first unit selected for the pool (only units from the same component class may be pooled). When they do not match, VBECS warns the user and clears the entry. The user may enter another unit.</p> <p>VBECS automatically “thaws” frozen components when the user selects Thaw/Pool.</p>
4. Enter the ID and product code of another unit of the same donation type for inclusion in the pool.	<ul style="list-style-type: none"> • May warn the user and asks whether to release the unit from “restricted for patient.” <p>NOTES —————</p> <p>When the donation type of a unit selected for inclusion in a pool is restricted, the user may release the directed unit to the general blood supply, if indicated, and complete the pooling process.</p> <p> When a user selects an autologous unit for inclusion in a pool originally intended to be allogeneic or directed based on previously selected units, VBECS warns the user and clears the screen. The user may select another unit.</p> <p>When the first unit entered in a pool is labeled in Codabar, VBECS determines the unit ID of the pool created from Codabar units using the five-character station identifier, two-number year, and sequential number of the pool event at the division, and displays it for acceptance or edit. The user may enter an alphanumeric combination of six to 13 characters, for example, a</p>

User Action	VBECS
	<p>station number of 55555, year 2002, and pool number 0520, so the VBECS-determined unit ID number is 5555502520.</p> <p>When the first unit entered for a pool is labeled in ISBT 128, VBECS determines the unit ID of the pool created from ISBT-labeled units using the country and ICCBBA-assigned facility code (division preparing the pool), two-number year, and six-number sequential number of the pool event at the division, and displays it for acceptance or edit.</p>
5. Click Yes to release the unit from its “restricted for patient” status.	<ul style="list-style-type: none"> Allows the user to release the directed unit and move it to inventory. <p>NOTES</p> <p>When needed, VBECS allows the user to select Free Directed Unit For Crossover.</p>
6. Accept the previously selected unit and repeat Step 4 to select another unit to add to the pool.	<ul style="list-style-type: none"> Displays all data for all original units. <p>NOTES</p> <p>VBECS tallies the number of units pooled. The user may not edit this number. VBECS calculates the pooled unit's cost and passes that amount to the patient billing system in U.S. currency.</p> <p>VBECS does not allow a unit to be entered twice in a pool. A split unit may not be pooled.</p>
7. Accept the displayed units' data for the pool.	<ul style="list-style-type: none"> Displays target component types for the modification, conditions selected, and the original unit product type, and allows the user to select a single modification type.
8. Select or confirm the desired target component type. Click the Container, Supplies, Equipment , or SCD Wafer tab and enter another supply and/or equipment lot or ID number.	<ul style="list-style-type: none"> Verifies that an active target component was selected. Requires activation, as needed. Allows the user to enter lot and ID numbers (with auto-completion) or select multiple items from the supply and equipment lists.
9. Accept the displayed expiration date or edit it.	<ul style="list-style-type: none"> Calculates and displays the expiration date of the pooled unit based on rules specific to the participant blood product. Verifies the validity of the expiration date and warns the user, when indicated. <p>NOTES</p> <p>When using the “Thaw/Pool” option to prepare a pool from frozen components, the units are simultaneously thawed and pooled..</p> <p>VBECS calculates an expiration date for the pool based on the product type, the date and time created, and the expiration dates and times of each pool participant. When one or more participants in the pool have an expiration date that is earlier than the calculated expiration date, VBECS uses the earlier date as the default expiration date for the pool.</p> <p> For each unit in the pool that was previously assigned or crossmatched to a patient, VBECS warns the user and asks</p>

User Action	VBECS
	<p>whether he wishes to assign the entire pool to that patient. Yes applies the patient-assigned data to the pool. No releases the unit from the patient.</p>
10. Click OK to save.	<ul style="list-style-type: none"> Calculates the volume, total number of participants, ID, and ABO/Rh for the pool. Applies CMV negative status to the pool, when indicated. Determines whether any pool participants were previously assigned to a patient and queries the user to maintain the association, when indicated. <p>NOTES —</p> <p>When the ABO/Rh of each unit in a pool is identical, VBECS assigns that ABO/Rh to the pool. When the ABO and/or Rh of the units in a pool are not identical, VBECS assigns “mixed” as the ABO and/or Rh group and type.</p> <p>VBECS determines the volume of the pooled unit based on the sum of the individual volumes of the original units included in the pool and displays that as the default. The user may edit this volume (1–2,000 mL).</p> <p>VBECS labels the pool as CMV negative only when all participant units are CMV negative. There is no override.</p>
11. Click Yes to verify the label. Click OK to save.	<ul style="list-style-type: none"> Saves the new pooled unit. Updates the status of each participant unit to “modified.” Records the unit ID of the target unit on the record of the original unit. Prompts the user to modify another unit. Saves only the technologist name and the date and time the label was verified. When the user indicates that a new label applied fails to complete the verification process, releases the assignment, quarantines the unit, and captures details for inclusion in an Exception Report (exception type: target product label failed checks).
12. Repeat Steps 2–11 to modify another unit, or exit.	

Add/Remove Units from a Pool

The user selects a pooled unit to add and/or remove some of the participants.

Assumptions

- See Modify Units.

Outcome

- See Modify Units.

Limitations and Restrictions

- See Modify Units.

Additional Information

- Units must be in “available” status for data to be inactivated regardless of historic patient associations.
- To edit the number of units in an existing pool, use Add/Remove Units from a Pool.

User Roles with Access to This Option

- Enhanced Technologist (add/remove prior to patient associations)
➤➤➤➤ Traditional Supervisor (add/remove with patient associations)

Add/Remove Units from a Pool

The user adds or deletes units to or from a pool.

User Action	VBECS
1. Select Blood Units from the main menu. Select Modify Units .	<ul style="list-style-type: none">• Displays options for processing blood units.• Displays valid modification types and allows the user to select an option.
2. Click the Add/Remove Units from a Pool radio button. Click OK .	<ul style="list-style-type: none">• Allows the user to search for a pooled unit.
3. Scan, enter, or select the ID and product code for a pooled unit.	<ul style="list-style-type: none">• Displays current data for the selected unit. <p>NOTES —————</p> <p>The user must select a unit that was previously pooled within the user's division.</p> <p>The user may edit a pooled unit only once.</p> <p> VBECS does not list units (for selection) with a final status. When a user enters a unit with a final status, VBECS alerts the user and clears the screen. The user may select another unit.</p>
4. Review the existing pooled unit data. Select one or more units to add to	<ul style="list-style-type: none">• Allows the user to select one or more units to add to or remove from the pool. <p>NOTES —————</p>

User Action	VBECS
the pool. Clear one or more check boxes to remove units from the pool.	The user may not remove all of the original units. The user may add only units with the same product and donation types as those of the previously pooled unit.
5. Confirm to add the selected units to or remove them from the pool (Figure 69).	<ul style="list-style-type: none"> • Displays the updated pooled unit data. • Requires the user to confirm to continue. • Requires a comment. <p>NOTES —————</p> <p>All units in a pool must be of the same donation type (allogeneic, autologous, directed).</p> <p>For each individual unit removed from a pool, VBECS compares the unit's original expiration date and time with the current date and time to determine the status to be assigned to units that are no longer part of the pool.</p> <p>When the unit's original expiration date and time is in the future, VBECS assigns units removed from the pool a status of "available." When the unit's original expiration date and time is in the past, VBECS assigns units removed from the pool a status of "available."</p> <p> When the user adds a unit to a pool and the unit expires before the pool expires, VBECS emits an audible alert, warns the user, and asks the user to continue or cancel. Override requires a comment and VBECS captures details for inclusion in an Exception Report (exception type: expired unit modified). Cancel clears the selected unit data and allows the user to select another unit to modify.</p>
6. Review the entered data and save the updated pool record.	<ul style="list-style-type: none"> • Saves the modified pooled unit. Updates the status of each added unit to "modified." Updates the status of each removed unit. Records the unit ID of the target unit on the record of the original unit.
7. Repeat Steps 1–6 to modify another unit or exit.	<ul style="list-style-type: none"> • Allows the user to modify another unit.

Figure 69: Add/Remove Units from Pool

VBECS - Add/Remove Units from Pool

Add/Remove Unit(s) from Pool

Pooled Unit

Unit ID	589A6061	Expiration Date	02/02/2006 18:36	ABO/Rh	O Neg
Product	12091 - PLT Pool	Modification Date	02/02/2006 14:36	Modified By	vhaishvbecs1

Unit Search

Select	Unit ID*	...
Select	Product*	

Details

Donation Type	
Date Received	
Unit Status	
Volume (mL)	

Selected Units

Unit ID	Product Code	Product	ABO/Rh	Expires	Status	Donation	Date Received
<input checked="" type="checkbox"/> 4654681	12000	PLT	O Neg	02/04/2006 23:59	Modified	Volunteer Allogeneic Donor	01/31/2006 10:05
<input checked="" type="checkbox"/> 34631818	12000	PLT	O Neg	02/04/2006 23:59	Modified	Volunteer Allogeneic Donor	01/31/2006 10:05

* Required Field

OK Cancel

Maintain Unit Records

Edit Unit Information

The user may inactivate unit tests, correct a data entry error from login, and add information about the unit that was not recorded during login.

Assumptions

- The user is logged into the division that contains the unit record.
- The connection to VistA is active.

Outcome

- The unit's new or changed information was saved with its record.

Limitations and Restrictions

- The user may correct a limited amount of unit information.
- VBECS does not limit the discarded plasma volume.
- If errors are found in the unit's product code, division or blood type at login, supplier, or donation type, the user must deactivate the unit and reenter it correctly.
- When a unit does not have a patient association, editable fields are available to an ➤➤ Enhanced Technologist.
- ABO/Rh confirmation and antigen type testing cannot be deactivated when the unit is in a final unit status.

Additional Information

- Units must be in "available" status to have information deactivated regardless of historic patient associations.
- VBECS does not add corrected unit tests to the Pending Task List (PTL): the user simply repeats the unit test.
- Crossmatches are considered a patient test and are deactivated in Invalidate Test Results.

User Roles with Access to This Option

- Enhanced Technologist

Edit Unit Information

The user records additional unit information normally recorded during incoming shipment (login), i.e., CMV negative, sickle cell negative, and antigen typing provided by the supplier.

To deactivate a unit, remove the final status, return the unit from issue, and release it from previous assignment. No changes may be made to units in a final status.

User Action	VBECS
1. Select Blood Units from the main menu.	<ul style="list-style-type: none">• Displays options for processing blood units.• Displays options for selecting and editing a unit.

User Action	VBECS	
Select Edit Unit Information.	<p>2. Scan or enter a unit ID and product code. May cancel and select a different unit.</p> <p>When the unit entered is in a final status, click Clear to clear the Unit ID and Product fields and enter another unit.</p>	<ul style="list-style-type: none"> Allows the user to scan or enter a unit ID and product code or select a unit. Displays the editable unit information based on the user's security level. <p>NOTES</p> <p>VBECS does not allow selection of a unit when it:</p> <ul style="list-style-type: none"> Is currently assigned to a patient. Has a final unit status. Has a previous patient assignment record and the user is a Lead or Enhanced Technologist. <p>There is no override. VBECS clears the screen and allows the user to select a new unit.</p>
3. Review and enter or edit the data (Figure 70), or Go to Inactivate a Unit.	<ul style="list-style-type: none"> Displays tabs to select and edit: <ul style="list-style-type: none"> Unit information Unit ABO/Rh confirmation Antigen typing Displays fields to add or deactivate unit information and an option to deactivate a unit based on the condition of the unit and the user's security level. <p>NOTES</p> <p>The user may add data to a field with no previous entry.</p> <p>When a user enters a blood product code in the RED BLOOD CELLS, WHOLE BLOOD, or APHERESIS RED BLOOD CELLS ICCBBA component classes, VBECS allows the user to enter CMV negative, sickle cell negative and antigen typing.</p> <p>An antigen type may be positive or negative for any antigen listed as a VBECS corresponding antigen in Appendix B: Table 13: Antibody and Antigen Table: Irregular Antibodies. An antigen may not be positive and negative for the same unit.</p> <p>Only unit antigen type results originally entered through Incoming Shipment are available for invalidation. The user must invalidate unit antigen type results originally entered through Unit Antigen Typing by selecting Inactivate Unit Testing.</p> <p>VBECS compares the antigen typing interpretation a user enters to previously assigned antigen typings for the same antigen (as assigned during Incoming Shipment, Edit Unit Information, or previous testing). When the previous interpretation was not "inconclusive" and the current interpretation does not match the previously identified antigen type, VBECS warns the user and quarantines the unit. The user may edit the discarded plasma volume only for units with previously reduced volume.</p> <p>VBECS restricts the editing of disease marker testing to autologous units.</p>	

User Action	VBECS
	<p>When the user changes the disease marker testing to "POS" or "NFT (not fully tested)," VBECS enables the biohazard indicator.</p> <p>The user may not clear the biohazard indicator for a unit when:</p> <ul style="list-style-type: none"> • The disease marker testing is POS or NFT, • The ISBT 128 Donation Type codes are "X, For Autologous Use Only, Biohazardous" or "3, For Directed Donor Use Only, Biohazardous," or • The unit is quarantined. <p>When editing the "restricted for" patient name for a unit, the user may change the name of a restricted patient but may not save the transaction without a new patient name for the restriction.</p> <p>When the user restricts a unit to a patient, the patient ID is the primary identifier of the intended recipient. When VBECS searches the VistA PATIENT File (#2) and finds a match, it populates the VBECS database with the selected patient name. When the intended recipient is not in the VistA database, VBECS warns the user, clears the screen, and does not allow the unit to be further processed.</p> <p>►► The Enhanced Technologist may edit items associated with a unit and add the new data to the unit. VBECS displays only the latest entry for these fields to the Enhanced Technologist before the unit has any patient associations.</p> <p>►►► The Traditional Supervisor may edit items associated with a unit and add the new data when the unit has a history of patient associations.</p>
4. Select a test for inactivation (Figure 71).	<ul style="list-style-type: none"> • Displays the previously recorded results for the selected test. • Requires a comment to process the inactivation. <p>NOTES —————</p> <p>The user may view, not edit, previously entered serologic results and interpretations.</p> <p>When the user selects the unit antigen typing test, VBECS displays antigen typing reagent types and interpretations available for invalidation at the user's division. Inherited testing is not available for invalidation.</p> <p>When the user selects the ABO/Rh confirmation test, VBECS displays the unit confirmation test interpretations available for invalidation at the user's division.</p> <p>When a selected unit has current valid tests or XMs, VBECS warns the user and does not allow him to deactivate the unit. There is no override.</p>
5. Verify the test to be invalidated and enter a comment. Click OK to confirm and exit.	<ul style="list-style-type: none"> • Displays "Test Result Invalidated" in the unit record for the selected test. <p>NOTES —————</p>

User Action	VBECS
	<p>When the last ABO/Rh confirmation testing is invalidated, VBECS returns the unit to a limited status and requires an ABO/Rh confirmation test according to the component class setting in Component Classes.</p> <p>When a unit that requires ABO/Rh confirmation testing no longer has a valid test result in VBECS due to invalidation of previous unit tests, VBECS treats the unit as though no ABO/Rh confirmation testing was performed.</p> <p>VBECS flags invalidated test results as "Test Result Invalidated" and captures details for inclusion in an Exception Report.</p> <p>VBECS does not inactivate workload associated with the invalidated test.</p> <p>Replacement results are entered according to local policy.</p>
6. Return to Step 1 to edit another unit.	
7. Click OK to save.	<ul style="list-style-type: none"> Updates and saves the data.

Figure 70: Edit Unit Information

The screenshot shows the 'Edit Unit Information' dialog box. On the left, there's a sidebar with a red star icon and a 'EDIT UNIT' button. The main area has tabs for 'Unit Information', 'ABO/Rh Confirmation', and 'Antigen Typing'. Under 'Unit Information', there are fields for 'Unit ID*' (1941954) and 'Product*' (04210), both marked with a red asterisk indicating they are required. Below these are labels for 'Unit Number' (1941954), 'EXPIRES' (02/28/06 11:59PM), and 'Barcode'. To the right of the barcode is a blue circle with a white 'O'. Below the barcode, it says 'RBC AS1' and 'Rh NEGATIVE'. There's also a barcode for '04210'. A note below the barcode reads: 'See circular of information for indications, contraindications, cautions and methods of infusion.' and 'VOLUNTEER DONOR'. Another note says 'This product may transmit infectious agents.' and 'Rx Only'. A note at the bottom left says 'PROPERLY IDENTIFY INTENDED RECIPIENT'. On the right side of the dialog, under 'Volume', 'Unit Volume (mL)' is set to 350 and 'Discarded Plasma Volume (mL)' is 0. Under 'Special Testing', 'CMV Negative' and 'Sickle Cell Negative' are unchecked, while 'RBC Antigens' is checked. A list of antigens (C NEG, C POS, E NEG, E POS, c NEG, c POS) is shown with checkboxes. Under 'Donation Details', 'Donation Type' is 'Volunteer Allogeneic Donor'. Under 'Disease Marker Testing', there's a dropdown menu. Under 'Biohazardous?', there's a checkbox which is unchecked. Under 'Restricted For', there's a 'Patient' field containing '1472204'. At the bottom right are 'OK' and 'Cancel' buttons. A note at the bottom left of the dialog says '* Required Field'.

Figure 71: Edit Unit Information Invalidate Test

The screenshot shows the VBECS - Edit Unit Information interface. On the left, there's a unit search panel with fields for Unit ID* (1941954) and Product* (04210), and a barcode scanner icon. Below it is a detailed view of a blood unit with the number 1941954, expiration date 02/28/06 11:59PM, product RBC AS1, and status Rh NEGATIVE. It also includes a barcode, a blue circular logo, and donor information: VOLUNTEER DONOR, R_c Only, and PROPERLY IDENTIFY INTENDED RECIPIENT. On the right, the main panel has tabs for Unit Information, ABO/Rh Confirmation, and Antigen Typing. The Unit Information tab is active, showing a table with Date Tested (02/01/2006 08:54), ABO Interp. (O), and Rh Interp. (N). Below this is a section for Selected Test Details with checkboxes for Anti-A, Anti-B, Anti-AB, Anti-D, and D Control, all of which are checked. Under ABO, the value O is shown with a comment field. Under Rh, the value N is shown with a comment field. At the bottom, there's an Invalidate section with a dropdown for Comment (set to 'Lab equipment failure') and a text input for Details. A large red 'X' button labeled 'Invalidate Test' is prominent. A 'Cancel' button is at the bottom right.

Inactivate a Unit

User Action	VBECS
1. Select Blood Units from the main menu.	<ul style="list-style-type: none"> Displays options for processing blood units. Displays options for selecting and editing a unit.
Select Edit Unit Information .	<p>2. Scan or enter a unit ID and product code. May cancel and select a different unit.</p> <p>NOTES</p> <p>VBECS does not allow selection of a unit when it:</p> <ul style="list-style-type: none"> Is currently assigned to a patient. Has a final unit status. Has a previous patient assignment record and the user is a Lead or Enhanced Technologist. <p>There is no override. VBECS clears the screen and allows the user to select a new unit.</p>
3. Click Inactivate Unit , as desired.	<ul style="list-style-type: none"> Displays fields to add or deactivate unit information and an option to deactivate a unit, based on the condition of the unit and the user's

User Action	VBECS
	<p>security level.</p> <ul style="list-style-type: none"> • Displays unit data. • Requires a comment to process the unit inactivation. <p>NOTES —————</p> <p>►►► When the Traditional Supervisor attempts to inactivate a unit's record, VBECS warns the user.</p> <p>An inactivated unit is not accessible. The record is available in the Audit Trail and Unit History Reports and in division statistical and informational reports. When VBECS inactivates a unit, it also inactivates costs previously associated with that unit.</p> <p>The user may deactivate the unit with prior but no current patient associations. VBECS requires a comment to explain the inactivation.</p> <p>Unit inactivation appears on the Audit Trail Report.</p>
4. Enter a comment. Click OK to save.	<ul style="list-style-type: none"> • Marks the selected unit record "inactive." • Saves the record.

Edit Financial Data

The user enters and/or edits charges associated with a unit after it is logged into inventory.

Assumptions

- The user is logged into the division containing the unit to be edited.

Outcome

- Unit billing information was changed.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

All users

Edit Financial Data

The user adds and/or edits a unit charge. The user confirms the unit selection, enters the dollar amount of the charge, and reviews and accepts the charge entered.

User Action	VBECS
1. Select Blood Units from the main menu. Select Edit Financial Data .	<ul style="list-style-type: none">• Displays options for processing blood units.• Displays fields for selecting a unit and editing its financial data.
2. Scan or enter a unit ID or product code, or click the ellipsis button to select a unit from the drop-down list.	<ul style="list-style-type: none">• Displays unit data.
3. Edit the Base Cost, Special Test Cost, and/or Return Credit fields (Figure 72).	<ul style="list-style-type: none">• Allows the user to edit the fields in the Financial Information area.• Displays the edited data. <p>NOTES</p> <p style="padding-left: 20px;">►► The Enhanced Technologist may edit existing amounts.</p> <p style="padding-left: 20px;">VBECS allows the user to enter a single special typing cost (the sum of charges from \$1.00 to \$999.00, other than the base unit cost, added to a unit by the shipper) to associate with a unit.</p> <p style="padding-left: 20px;">When no special typing costs are entered through Incoming Shipment, a user may enter them in this option until the unit is in a final status.</p> <p style="padding-left: 20px;">►► The Enhanced Technologist may edit a previously entered unit cost (unit base cost, return credit or special testing cost).</p>

User Action	VBECS
	VBECS displays a return credit in U.S. currency (defined by the return credit percentage multiplied by the base unit cost for the blood product type in Blood Products). A user may enter a return credit amount only when VBECS assigned the return credit percentage through Outgoing Shipment or Discard or Quarantine. Otherwise, VBECS disables the Return Credit field.
4. Review the data, click OK to save, and click OK again to confirm the save.	<ul style="list-style-type: none"> • Requests confirmation to update the database. • Saves and updates the unit record.
5. Repeat Steps 2–4, as needed, to update additional unit financial data.	
6. Click Cancel to exit.	

Figure 72: Edit Unit Financial Data

VBECS - Edit Unit Financial Data

Edit Unit Financial Data

Unit Search

Unit ID* 1941954 ...
Product* 04210
Clear

Unit Number: 1941954 EXPIRES: 02/28/06 11:59PM

RBC AS1
04210
Rh NEGATIVE

See circular of information for indications, contraindications, cautions and methods of infusion.
VOLUNTEER DONOR
This product may transmit infectious agents.
R_b Only
PROPERLY IDENTIFY INTENDED RECIPIENT

LifeSource - Glenview
1472204

Details **Testing**

Donation Type: Volunteer Allogeneic Donor
Date Received: 01/31/2006 10:05
Unit Status: Available
Volume (mL): 350

Financial Information

Base Cost: \$ 10.00
Special Test Cost: \$ 0.00
Return Credit: \$ 0.00

OK Cancel

* Required Field

Free Directed Unit For Crossover

The user removes a patient restriction from a directed unit that is eligible for crossover, making that unit available for any patient, according to system rules.

Assumptions

- The division is “full service.”
- The unit and the user are in a blood bank in the same division.
- The unit is restricted for a patient.
- The unit is not autologous.
- The unit is not in a final status.

Outcome

- The unit has no restrictions.
- VBECS documents the restriction and its removal in the unit record.

Limitations and Restrictions

- The unit must not be in a final status to release the restriction.
- This option does not allow the removal of patient restrictions for most of the ISBT donation types that are eligible for crossover.
- This option cannot process multiple directed units simultaneously.

Additional Information

- This option is disabled for transfusion-only facilities.

User Roles with Access to This Option

➤➤ Enhanced Technologist

Free Directed Unit For Crossover

The user releases the restriction on a directed donor unit to make the unit available in general inventory.

User Action	VBECS
1. Select Blood Units from the main menu. Select Free Directed Unit For Crossover .	<ul style="list-style-type: none">• Displays options for processing units.• Prompts the user to scan or enter the unit ID and product code.
2. Scan or enter the unit ID and product code for each unit.	<ul style="list-style-type: none">• Displays the unit information. <p>NOTES —————</p> <p>When a user adds a directed unit to an undirected pool, VBECS queries the user regarding releasing the unit's restriction.</p> <p> The unit must have a donation type of only Volunteer Directed, Eligible for Crossover. If not, VBECS warns that the unit has an invalid donation type and is in a final status."</p>

User Action	VBECS
	<p>The unit must not be assigned to a patient to release the restriction. VBECS warns that the unit is currently assigned and that he must release the assignment before continuing.</p>
3. Enter a date and time and possibly a different user, or accept the defaults (Figure 73). Enter the required comment.	<ul style="list-style-type: none"> • Displays the unit information. • Emits an audible alert, requires a comment, and captures details for inclusion in an Exception Report (exception type: released patient restriction).
4. Click OK to process the unit and add it to available inventory.	<ul style="list-style-type: none"> • Displays the return time, the editable (past date and time) field (default: current date and time), and the list of users for selection. • Saves the information to the database. • Changes the donation type of the unit to "Voluntary Allogeneic" and removes the restriction associated with the unit.
5. Click Yes to confirm the save.	

Figure 73: Free Directed Unit For Crossover

* Required Field

Discard or Quarantine

The user discards, quarantines, or releases from quarantine one or more units of blood.

Assumptions

- The unit of blood is in the same division as the user.

Outcome

- Discarded units are not available.
- Quarantined units are available for limited processing, not for patient assignment.
- Units released from quarantine are available.

Limitations and Restrictions

- When a user retroactively updates a unit status through this option, the Unit History Report displays the updated information, but does not display the date the change was made.

Additional Information

- None

User Roles with Access to This Option

All users

Discard or Quarantine

The user changes the status (discard, quarantine, release from quarantine) of one or more units of blood. The user must indicate the ID and product code of the units to be updated. VBECS also allows batch data entry to process all units from an invoice.

A quarantined unit has limited availability for continued processing. Under certain circumstances, VBECS assigns quarantine status automatically; otherwise, the user determines and enters the status. The user must specify whether a discarded unit is for credit or for waste, which determines whether or not a return credit is assigned to the selected unit.

Discard or Quarantine Individual Units

User Action	VBECS
1. Select Blood Units from the main menu. Select Discard or Quarantine .	<ul style="list-style-type: none">• Displays options for processing blood units.• Displays fields for entering unit information.• Allows the user to discard or quarantine individual units.
2. Enter an ID and product code for a blood unit.	<ul style="list-style-type: none">• When a unit is appropriate for processing, displays unit information, including the current status. <p>NOTES —————</p> <p>The user may deselect units prior to editing.</p>
3. Click Select to add the selected unit to the worklist, or click Clear to select another unit.	<ul style="list-style-type: none">• Adds the unit to a temporary list of selected units.
4. Repeat Step 3, as needed, to	<ul style="list-style-type: none">• Displays selected units.

User Action	VBECS
process multiple blood units as a single batch. Click OK to continue.	
5. In the Activity area, click the Discard, Quarantine, or Release from Quarantine radio button (Figure 74).	NOTES ►► The Enhanced Technologist may release a unit from quarantine.
6. Select or enter a comment in the Comment field to explain the change in status, when indicated. Enter details, as needed.	<ul style="list-style-type: none"> Displays entered data. NOTES <p>When a status of “Discard” is assigned to a unit, the user must enter a comment.</p> <p>When a blood unit is assigned an indicator of “quarantined,” VBECS emits an audible alert, requires a comment, and captures details for inclusion in an Exception Report (exception type: Quarantine, Discard or Release from Quarantine, depending on the user action).</p> <p> When a unit is released from quarantine, a new status must be assigned. VBECS assigns the previous status as the default status. When the unit expiration date is in the past, VBECS emits an audible alert, warns the user, and asks whether he wishes to continue.</p> <p>Yes accepts the default status, requires a comment, and captures details for inclusion in an Exception Report (exception type: expired unit released from quarantine). No stops the process; the unit remains marked as quarantined.</p> <p>When the user assigns a status of “Discard,” he must indicate whether the discard is waste or credit.</p> <p>When VBECS processes a unit as a discard that is waste, it does not apply a return credit to the discarded unit. (There is no refund of monies from the blood shipper.)</p> <p>When VBECS saves a unit as “discard for credit,” it applies a default return credit. A user may edit the default return credit applied to the unit before updating the database.</p> <p>When a unit was assigned, VBECS releases patient assignments. Patient restrictions associated with the unit remain intact.</p> <p>When a user attempts to release a unit from quarantine and the unit was quarantined because of a data conflict, VBECS checks the inconsistency before allowing the unit to be released. VBECS warns the user. There is no override. The user must invalidate the incorrect information or test to resolve the data conflict.</p>
7. Enter the date and time of the status update. Click the Waste or Credit radio	<ul style="list-style-type: none"> Compares the date and time of the status update to the last record update and warns the user, when indicated. Displays entered data.

User Action	VBECS
button.	<p>NOTES —————</p> <p>The default date and time are the current date and time.</p> <p>When the user updates the status of a unit and enters a date or time in the past, VBECS compares the retrospective date and time with the last record update for the unit. VBECS allows the user to update a unit record with a date and time between the last record update and the current date and time.</p> <p> When the user attempts to update a unit record prior to the last record update, VBECS emits an audible alert, warns the Enhanced Technologist, and instructs him to check the date and time entered. There is no override.</p> <p>►►► When the user is a Lead Technologist, VBECS also requires a comment and asks whether the user wishes to continue. Yes accepts the date and time entered, requires a comment, and captures details for inclusion in an Exception Report (exception type: retrospective update prior to last record update). No allows the user to correct the entry.</p>
8. Review the unit status update information and click Save to save.	<ul style="list-style-type: none"> • Evaluates the unit's current status to determine whether it is eligible for the selected function. • Displays appropriate error messages when the unit cannot be processed. • Prompts the user to confirm the save.
9. Click Yes to confirm the save.	<ul style="list-style-type: none"> • Saves the data. <p>NOTES —————</p> <p>During batch data entry of "Discard," "Quarantine," and "Release from Quarantine," VBECS saves transaction details, including user-entered comments, to each blood unit included in the batch.</p>

Figure 74: Discard or Quarantine Units

VBECS - Discard or Quarantine Units

Discard or Quarantine Units

Unit ID	Product Name	Code	Status	Credit	Quarantined?
1941954	RBC AS1	04210	Available	\$10.00	No

Activity*

Discard
 Quarantine
 Release from Quarantine

Discard Unit(s)

Comment* Incinerated

Details

Discard Date* 02/02/2006 15:21

Reimbursement*

Waste
 Credit

* Required Field

Save Cancel



Discard or Quarantine Units by Invoice

User Action	VBECS
1. Select Shipments from the main menu. Select Discard or Quarantine . Select an invoice and click OK .	<ul style="list-style-type: none"> Displays options for processing blood product shipments. Displays fields for entering shipment information. Allows the user to discard or quarantine units by invoice.
2. Click (clear) one or more check boxes to remove units from the invoice. Click OK .	<ul style="list-style-type: none"> Allows the user to select individual units. Displays unit information, including the current status included in the invoice. Allows the user to deselect units from the batch prior to editing. <p>NOTES</p> <p>For batch processing, the user may select incoming shipment invoices from the previous five days processed in the same division as the user.</p> <p>Only incoming shipment invoices processed within the user's division may be accessed for batch processing.</p>
3. In the Activity area, click the Discard, Quarantine, or Release from Quarantine radio button.	<p>NOTES</p> <p>➤➤ The Enhanced Technologist may release a unit from quarantine.</p>
4. Select or enter a comment in the Comment field to explain the change in status, when indicated. Enter details, as needed.	<ul style="list-style-type: none"> Displays entered data. <p>NOTES</p> <p>When a status of "Discard" is assigned to a unit, the user must enter a comment.</p> <p>When a blood unit is assigned an indicator of "quarantined," VBECS emits an audible alert, requires a comment, and captures details for inclusion in an Exception Report (exception type: Quarantine, Discard or Release from Quarantine, depending on the user action).</p> <p> When a unit is released from quarantine, a new status must be assigned. VBECS assigns the previous status as the default status. When the unit expiration date is in the past, VBECS emits an audible alert, warns the user, and asks whether he wishes to continue.</p> <p>Yes accepts the default status, requires a comment, and captures details for inclusion in an Exception Report (exception type: expired unit released from quarantine). No stops the process; the unit remains marked as quarantined.</p> <p>When the user assigns a status of "Discard," he must indicate whether the discard is waste or credit.</p> <p>When VBECS processes a unit as a discard that is waste, it</p>

User Action	VBECS
	<p>does not apply a return credit if not applied to the discarded unit. (There is no refund of monies from the blood shipper.)</p> <p>When VBECS saves a unit as "discard for credit," it applies a default return credit. A user may edit the default return credit applied to the unit before updating the database.</p> <p>When a unit was assigned, VBECS releases patient assignments. Patient restrictions associated with the unit remain intact.</p> <p>When a user attempts to release a unit from quarantine and the unit was quarantined because of a data conflict, VBECS checks the inconsistency before allowing the unit to be released. VBECS warns the user. There is no override. The user must invalidate the incorrect information or test to resolve the data conflict.</p>
5. Enter the date and time of the status update. Click the Waste or Credit radio button.	<ul style="list-style-type: none"> Compares the date and time of the status update to the last record update and warns the user, when indicated. Displays entered data. <p>NOTES —————</p> <p>The default date and time are the current date and time.</p> <p>When the user updates the status of a unit and enters a date or time in the past, VBECS compares the retrospective date and time with the last record update for the unit. VBECS allows the user to update a unit record with a date and time between the last record update and the current date and time.</p> <p> When the user attempts to update a unit record prior to the last record update, VBECS emits an audible alert, warns the Enhanced Technologist, and instructs him to check the date and time entered. There is no override.</p> <p>>>> When the user is a Lead Technologist, VBECS also requires a comment and asks whether the user wishes to continue. Yes accepts the date and time entered, requires a comment, and captures details for inclusion in an Exception Report (exception type: retrospective update prior to last record update). No allows the user to correct the entry.</p>
6. Review the unit status update information and click Save to save.	<ul style="list-style-type: none"> Evaluates the unit's current status to determine whether it is eligible for the selected function. Displays appropriate error messages when the unit cannot be processed. Prompts the user to confirm the save.
7. Click Yes to confirm the save.	<ul style="list-style-type: none"> Saves the data. <p>NOTES —————</p> <p>During batch data entry of "Discard," "Quarantine," and "Release from Quarantine," VBECS saves transaction details, including user-entered comments, to each blood unit included in the batch.</p>

Select Units

A user selects a patient component order and assigns one or more products to a patient for possible transfusion.

Assumptions

- An appropriate current order was accepted through Accept Orders: Accept an Order.
- The division may or may not allow electronic crossmatch (eXM).
- When a division is “transfusion only,” eXM is not available. The user must enter a serologic crossmatch (XM) interpretation.

Outcome

- The status of the unit and the associated component order task status are updated.
- VBECS indicates that units are available for issue when units do not require XM or other additional testing.
- VBECS allows the user to print a Blood Transfusion Record Form (BTRF) and a Caution Tag for available blood products.
- When serologic XM is required, VBECS automatically adds units to the XM data entry grid when Patient Testing: Record a Crossmatch is accessed.
- When eXM is enabled for the facility, the patient is eligible for eXM in accordance with system rules (see Table 23: Rules for Electronic and Serologic Crossmatch), and the user selects a unit, VBECS assigns the unit to the patient without further testing.

Limitations and Restrictions

- When a user checks the “D Pos” or “D Neg” check box to modify a search for blood, VBECS returns no units, regardless of the availability of units.
- VBECS does not allow a user to select a pool of mixed ABO/Rh units for a patient. Instead, the user must select random units for the patient and pool the mixed ABO/Rh units to allow issue.
- VBECS displays a component order as “filled” when the number of units transfused and the number of units ordered are the same. CPRS displays a component order as “completed” when the number of units ready for issue and the number of units ordered are the same. Therefore, CPRS displays the order as “completed” before VBECS displays the order as “filled.”

Additional Information

- Active component orders and the user must be in the same division.
- The user may select only active units and those not in a final status.
- Multiple users may select units associated with a component order.
- When a user selects a patient order, VBECS searches for available autologous and directed units regardless of the unit’s current division within a multidivisional database, displays the unit information, and allows the user to assign the unit when it is in the user’s division.
- A user may select units for only one ordered component class at a time.
- An existing specimen and/or order remains available to select additional units until its expiration date.
- The selection of blood units does not complete an order.
- A user must accept or cancel each component task in its entirety.

- The user reserves autologous and directed units and all units processed in a “transfusion-only” facility, regardless of donation type, for a specific patient. VBECS displays this information to all divisions in a multidivisional database and accommodates immediate selection of the unit for the patient when the user is in the same division.
- When VBECS compares a patient’s current and previous ABO/Rh results, it does not evaluate previously recorded ABO/Rh results marked “Test Result Invalidated.”
- An ABO/Rh confirmation test interpretation must match the unit ABO/Rh at login and when repeat confirmation tests are not invalidated. A user may not select a unit for a patient based on ABO/Rh at login. The unit must have a satisfactory confirmation result before VBECS considers it available for selection.
- When a user accepts an order without a specimen, he may associate the specimen when he selects units for XM.
- ABO/Rh confirmation testing is not required for components in the OTHER component class that do not traditionally contain red blood cells. A user may request a XM for these components in accordance with local policy.

User Roles with Access to This Option

All users

Select Units

A user selects a patient’s component order and assigns one or more products to a patient. The user may then enter individual units or select units from a list of selectable, potentially compatible units for each component order.

User Action	VBECS
1. Select Patients from the main menu and select Patient Testing , or Select Blood Units from the main menu and select Select Units .	<ul style="list-style-type: none"> Displays options for processing patient-related functions. Displays the Pending Task List (PTL) and PTL search parameters in the Diagnostic Tests tab or in the Component Orders tab.
2. Enter or select PTL search parameters, if appropriate (Figure 75). Click the check boxes in the PTL to select one to four component orders. Click OK to continue (Figure 76).	<ul style="list-style-type: none"> Displays information for each component order. When the selected order class is RED BLOOD CELLS and the division enabled eXM, evaluates the patient for eXM unit processing. <p>NOTES —————</p> <p> See Table 6 for alerts that may occur during this option.</p>
3. To associate a specimen with an emergency-issued unit requiring XM, select (highlight) an issued unit in the Order Group tree view in the left pane (Figure 77).	<ul style="list-style-type: none"> Enables the Associate Specimen check box. <p>NOTES —————</p> <p>If eXM is enabled, complete the TAS prior to associating the specimen UID with the emergency-issued units.</p>
4. Click the Associate with Specimen check box. Click the ellipsis button to select	<ul style="list-style-type: none"> Opens the Select Patient Specimen window.

User Action	VBECS
a specimen UID (Figure 77).	
5. Scan or enter the correct specimen UID and click Search .	<ul style="list-style-type: none"> Displays the selected patient specimen information.
6. Click OK .	<ul style="list-style-type: none"> Saves the specimen information and returns the user to the Select Units window. Displays the associated specimen UID in the Specimen UID field.
7. Repeat Steps 3–6 to associate the sample with other emergency-issued units, or click OK to save.	<ul style="list-style-type: none"> When the user clicks OK, displays a message asking the user if he wishes to complete serologic crossmatch.
8. Click Yes to complete the serologic crossmatch. Click No to return to the VBECS desktop.	<ul style="list-style-type: none"> Allows the user to enter results in the Serologic Crossmatch (XM) cells in the patient testing grid.
9. Click Add Units to add units to the component orders selected.	<ul style="list-style-type: none"> Searches the database and displays available restricted autologous and directed units that the user must select before selecting allogeneic units of the same ICCBBA component class. Displays the unit ID, product type, unit ABO/Rh, unit expiration date, specimen UID, if applicable, of units assigned to the patient in the division's blood bank on a different specimen or order. The user may release and reassign the units to the current order. When eXM was configured for the facility, displays the eXM status (eligible or not eligible) for the patient. <p>NOTES —————</p> <p> See Table 6 for alerts that may occur during this option.</p> <p>Units that are selectable with an override do not appear on the list of available units and must be scanned or entered by the user.</p> <p>When no valid ABO exists for the patient, the user may select components, including autologous units:</p> <ul style="list-style-type: none"> For RBC or WB order: <ul style="list-style-type: none"> Group O, Rh positive or O Rh negative RBC WHOLE BLOOD is not selectable For FFP order only, group AB, Rh positive or Rh negative For PLT, CRYO, or OTHER order, all available units are selectable.
10. Scan or enter allogeneic units, select compatible units from the Order Group list, or click the ellipsis button to select units. Enter or select a date in the Selection Date field. Each unit may have its own selection date and time. Click Add Units to display the unit selection form.	<ul style="list-style-type: none"> Maintains a list of selected units. The user may deselect selected units. Evaluates the selected unit: <ul style="list-style-type: none"> For the ABO/Rh compatibility of each unit and warns the user. Against patient Transfusion Requirements (TRs) and warns the user. For unit antigen negative compatibility and warns the user. Performs additional checks that include days remaining until the unit's expiration date, the current status, assignments to other patients, quarantine and biohazard indicators, when applied, and associated special testing. <p>NOTES —————</p>

User Action	VBECS
	<p> See Table 6 for alerts that may occur during this option.</p> <p><i>When the user selects a unit in the tree view, he may accept or edit the current date and time displayed; the date and time must be in the past.</i></p> <p>Restricted (autologous or directed) unit selection eligibility criteria:</p> <ul style="list-style-type: none"> • Restricted For Patient ID: must match • Restricted For Patient Name: must match • Unit expiration date must be in the future. • Component class (transfusion only requires restriction of all units) <p>The criteria for selecting or including an individual unit in a pick list include evaluating a unit for:</p> <ul style="list-style-type: none"> • Considered substitutable for the order • Same division as the user • Current location is in the blood bank • Has no quarantine indicator • Is not already assigned or crossmatched to the patient • Is not “restricted” for a different patient • Meets ABO/Rh compatibility requirements specific to the component class • Future expiration date <p>VBECS lists only ABO/Rh compatible units for selection.</p> <p>When ABO/Rh results were not created for the specimen associated with the component order and the order is not designated “emergency issue,” VBECS allows the user to select units using historic records, and notifies the user that ABO/Rh testing must be performed at this division on this patient before any selected units can be issued.</p> <p>VBECS displays and allows the user to complete a pending XM associated with a patient order without a final unit status.</p>
11. Repeat Step 4 until all units are selected.	<ul style="list-style-type: none"> • Requests the user to confirm the list of selected blood units. <p>NOTES _____</p> <p>The user may select or deselect additional units.</p>
12. Click OK to confirm the selection of units.	<ul style="list-style-type: none"> • Determines whether the units are available for issue or whether they require additional modification and/or testing based on the component class. • Updates the database, as appropriate. <p>NOTES _____</p> <p>When the total number of blood units eligible for issue, issued, or transfused is greater or equal to the number of ordered units, VBECS sends an order completion message to CPRS.</p> <p> See Table 6 for alerts that may occur during this option.</p>

User Action	VBECS
	<p>When eXM is enabled at the division and blood units require XM, VBECS determines whether the patient and units are eligible for eXM. All parameters listed in Appendix B: Table 23: Rules for Electronic and Serologic Crossmatch must be met. Units not eligible for eXM must have serologic XM performed.</p> <p>When eXM is not enabled, the user must enter serologic XM results for red blood cell classes or when a user orders an optional XM for OTHER component classes. VBECS does not change the unit status to "crossmatched," make units available for issue, or allow the Caution Tag or BTRF to be printed until a user enters a valid XM result, unless an emergency-issued unit is being processed.</p>
13. Select another component order to continue selecting units, or exit.	<ul style="list-style-type: none"> • Displays orders for the next patient.

Figure 75: Pending Task List Component Orders

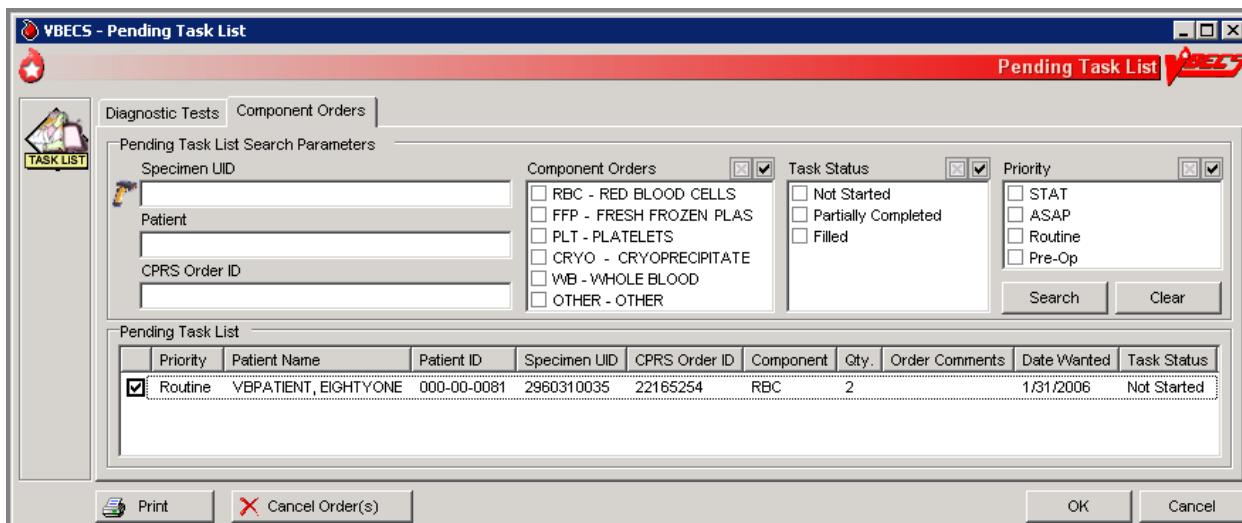


Figure 76: Select Units for a Patient

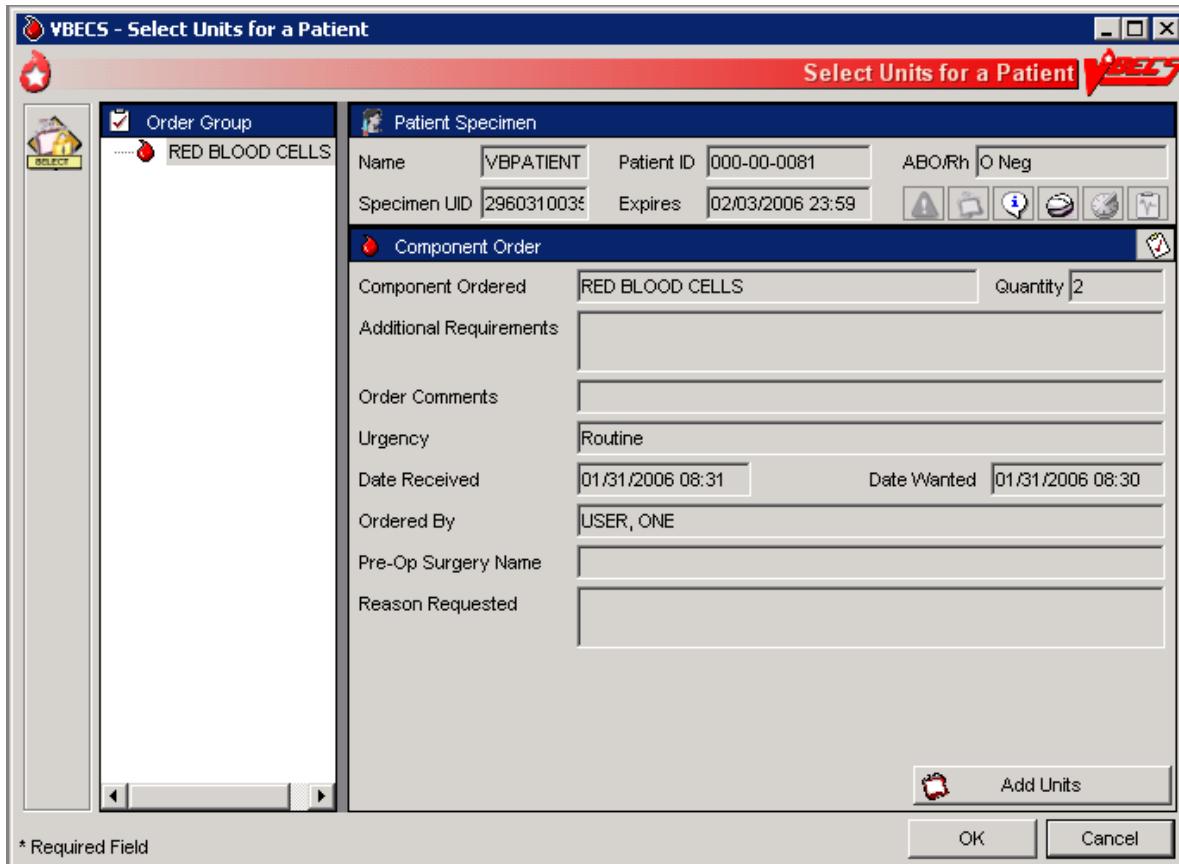
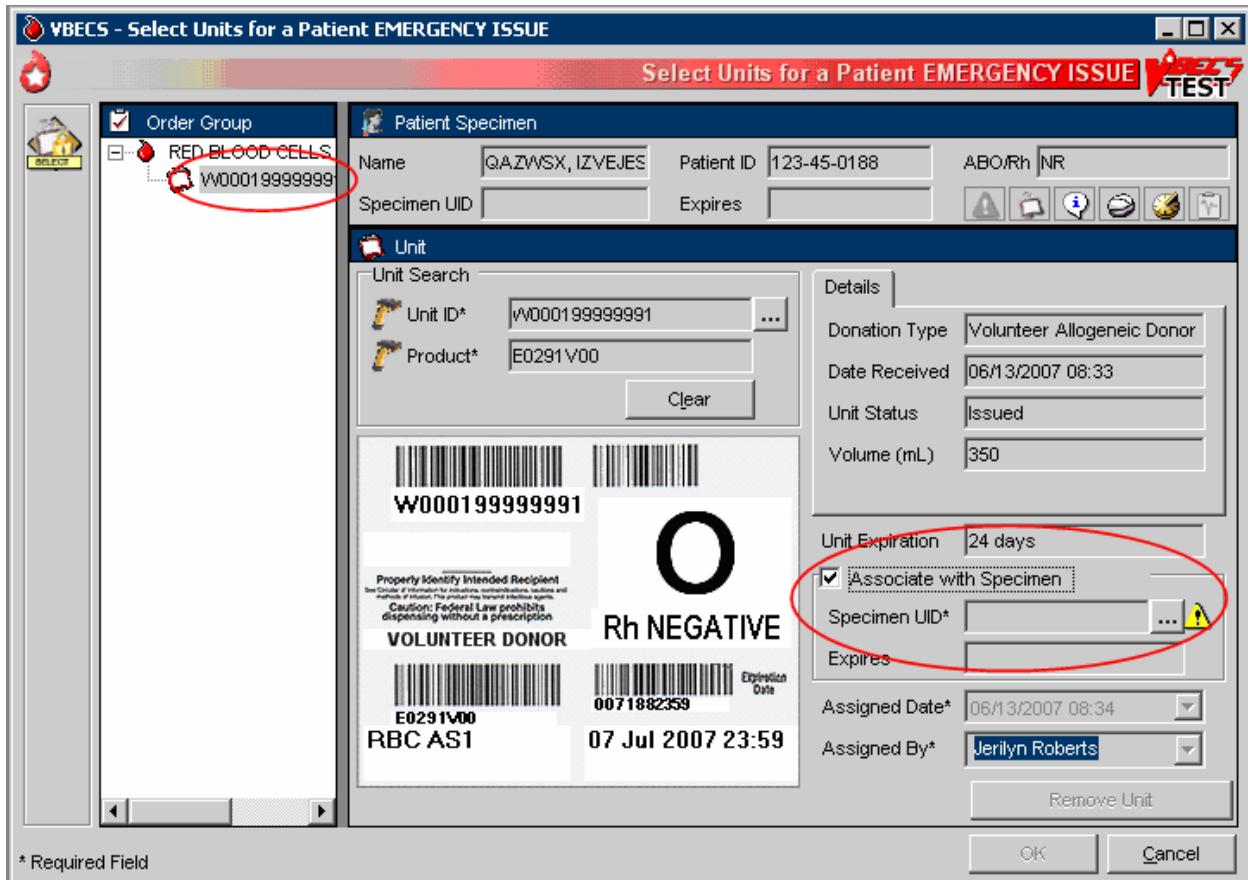


Figure 77: Associate a Specimen with an Emergency-Issued Unit



Alerts

Table 6: Alerts That May Occur in Select Units

Step	Alerts
2	VBECS displays and emits an audible alert when there are Special Instructions (SIs) or TRs for the patient.
2	When the user selects blood units that require XM, and eXM is enabled at the division but the current patient is not eligible for eXMs, VBECS displays a warning that includes the reason for the ineligibility. Selected units must have serologic XM performed. The user may not print the Caution Tag or the BTRF. VBECS does not change the unit status to "crossmatched" until the user enters a valid serologic XM result in Patient Testing: Record a Crossmatch.
2	When the user clicked the Emergency Order check box during specimen acceptance and selects blood units requiring crossmatch, VBECS does not allow the user to perform an electronic or serologic crossmatch.
9	When a current specimen is required for the selected component class based on Component Classes and one does not exist for the patient, the user may not select ABO type-specific blood products. VBECS notifies the user that he is selecting units using the emergency issue compatibility rules.
9	When the patient record is marked as having a previous ABO/Rh discrepancy that was justified, a current specimen is required. The user must select units based on the current specimen ABO/Rh. When the current specimen ABO/Rh was not performed, VBECS warns that the patient had a previous ABO/Rh

Step	Alerts
	discrepancy and instructs the user to perform ABO/Rh on the current specimen to continue using normal rules and policies or follow emergency issue rules and policies.
9	When there is a current specimen and ABO/Rh testing was performed, VBECS compares the ABO/Rh of the current specimen to the historical ABO/Rh. When there is a discrepancy, the ABO type is inconclusive, and there is no previous justification for the discrepancy on the patient record, VBECS notifies the user that the ABO/Rh on the current specimen does not agree with the historical ABO/Rh and instructs the user to resolve the discrepancy to continue using normal rules and policies, and recommends that the user release previously selected units or follow emergency issue rules and local policies.
9	When a repeat ABO/Rh is performed on the patient specimen and the interpretation does not match the original ABO/Rh interpretation, VBECS warns the user to resolve the discrepancy before selecting units using normal or emergency issue rules and policies.
9	When a user selects a blood unit that is evaluated as ABO incompatible (based on comparison of the patient's current ABO/Rh entered by the user with the ABO/Rh on record), VBECS emits an audible alert and warns the user that the unit is not ABO compatible for this patient and that the user may not select the unit. There is no override; VBECS clears the screen and allows the user to select another unit.
10	The user may override the selection of restricted units. VBECS warns that more restricted units were not selected for the patient and asks whether the user wishes to continue. The override requires a comment and captures details for inclusion in an Exception Report (exception type: less restrictive unit issued).
10	VBECS warns the user when he selects type-specific plasma products that do not require a specimen, according to the division configuration of component classes, for a patient with a history of justified ABO/Rh change.
10	Once a valid XM interpretation is verified and the unit is compatible, VBECS does not allow a user to select that unit (ID and product code) for the same specimen. The user may select the unit for a XM with the same patient's new specimen after the unit is released from the current assignment. VBECS warns that the unit has a valid current XM with this patient. The user clears the warning and may continue or enter a new unit number for selection.
10	When a selected unit is currently assigned to another patient, VBECS warns the user and asks whether the user wishes to continue to select for this patient. Yes allows the user to continue. No clears the screen and allows the user to select a new unit.
10	When a user is a Technologist and selects an expired unit, VBECS warns him. There is no override. ►► When the user is an Enhanced Technologist or above, VBECS warns that the unit is expired and asks whether the user wishes to continue to select. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: expired unit selected).
10	When a unit is selected for a patient, VBECS displays a tool tip stating that the unit may not be selected or removed.
10	When the user selects a unit and these conditions exist, VBECS warns the user. There is no override. VBECS clears the screen and the user may select another unit: <ul style="list-style-type: none"> • For XM for the same patient, VBECS warns that the unit was already selected for the patient. • That is not substitutable for the order, VBECS warns that the selected unit is not valid for order. • That is quarantined, VBECS warns that the unit is quarantined and may not be selected. • That is on a pending outgoing shipment list, VBECS warns that the unit is currently included on a pending outgoing shipment invoice and must be removed from the shipment invoice before it can be selected. • That is not in the blood bank or is issued to another patient, VBECS warns that the unit is not in the blood bank and may not be selected. • That is restricted for a different patient, VBECS warns that the unit is restricted for a different patient and may not be selected. • The confirmation is not performed or is incomplete, VBECS emits an audible alert and warns that the unit ABO/Rh confirmation was not performed or is incomplete and that the unit may not be selected.
10	When the selected unit had an incompatible crossmatch result with the current patient in the past,

Step	Alerts
	VBECS warns the user. The user may continue with this unit and proceed with electronic or serologic crossmatch testing.
10	When the user selects an antigen positive (or inconclusive for testing) unit and the patient has the corresponding antigen negative requirement, VBECS warns the user and requires action determined by the user's security level.
10	►► When the user is an Enhanced Technologist or below, VBECS emits an audible alert and warns that the patient has a history of an antibody, that the unit does not have a negative test for the corresponding antigen, and that the user does not have the proper security level to select the unit. There is no override.
10	►►► When the user is a Lead Technologist or above, VBECS emits an audible alert, warns that the patient has a history of an antibody and that the unit is positive or inconclusive for the corresponding antigen, and asks whether the user wishes to continue to select the unit. No allows the user to continue to select units for the patient. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: antigen positive units selected).
10	When a unit was not antigen typed for the corresponding antigen, VBECS emits an audible alert, warns that the unit must be typed and found negative to be available for this patient, and asks whether the user wishes to continue to select this unit. The user may continue to select units for the patient. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: antigen positive units selected). See Appendix B: Table 13: Antibody and Antigen Table: Irregular Antibodies.
10	When an Rh negative patient has a previously identified antibody of anti-D, VBECS verifies the presence or absence of the corresponding antigen based on the ABO/Rh of the selected blood unit. When a user selects an Rh positive blood unit for a patient with anti-D, VBECS warns the user and requires action based on the user's security level. The antigen negative requirement for anti-D is D, not AGwD. AGwD and D are not selectable antigen negative requirements in Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement.
10	For an Rh negative, unknown, or inconclusive patient and the selection of Rh positive units from the WHOLE BLOOD, RED BLOOD CELLS, PLATELETS, and OTHER VBECS component classes (within OTHER, the Granulocytes, Pooled Granulocytes, Apheresis Granulocytes, Apheresis Granulocytes-Platelets, Leukocytes, Apheresis Leukocytes, Platelet Rich Buffy Coat, Pooled Platelet Rich Buffy Coat, Apheresis Lymphocytes, Apheresis Monocytes, and Platelet Rich Plasma ICCBBA component classes only), VBECS emits an audible alert, warns that the patient is Rh negative and the selected unit is Rh positive, instructs the user to check the patient sex and hospital policy before continuing, and asks whether the user wishes to continue to select the unit. No clears the unit data and allows the user to select a different unit. Yes requires additional comment and captures details for inclusion in an Exception Report (exception type: Rh positive units selected).
10	When a user selects blood units to fill an OTHER component order, VBECS allows him to order an optional XM. When the user requests an optional XM order, he must specify a specimen UID to associate with the XM. When the selection process is complete and eXM is enabled at the site or added to the serologic XM data grid, VBECS evaluates the units for eXM. See Appendix B: Table 20: Enable Crossmatch Option for OTHER Product Types.
10	When a patient has TRs other than CMV negative, VBECS verifies whether the selected unit satisfies the requirement based on system rules TT_3.04 Blood Unit Substitution and the Fulfillment of Transfusion Requirements. When the TR is not satisfied, VBECS emits an audible alert, warns that the unit does not satisfy all of the patient's TRs, and asks whether the user wishes to continue to select the unit. No clears the screen. Yes allows the user to continue without comment.
10	When a patient has a TR of CMV negative, VBECS verifies the selected unit for compliance. When the selected unit does not fit the criteria, VBECS emits an audible alert and warns the user: <ul style="list-style-type: none">• ►► Enhanced Technologist or below: VBECS warns that the patient requires CMV negative blood,

Step	Alerts
	<p>that the selected unit is not CMV negative, and that the user does not have the proper security level to select the unit. There is no override. VBECS clears the screen, and the user must select another unit.</p> <ul style="list-style-type: none"> ►►► Lead Technologist or above: VBECS warns that the patient requires CMV negative blood, that the selected unit is not CMV negative, and asks whether the user wishes to continue to select. No clears the screen and the user must select a new blood unit. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: Transfusion Requirement incompatible unit selected).
10	<p>When a user selects a unit with a biohazardous indicator for a patient, VBECS emits an audible alert, warns the user, and asks whether the user still wishes to select the unit.</p> <p>No clears the entry and allows the user to select a new unit. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: biohazardous unit selected).</p>
10	<p>When the user selects blood components from the frozen product types for a patient, VBECS emits an audible alert and warns that the selected blood unit must be thawed and may require additional processing prior to issue. The unit is not eligible for printing the BTRF or Caution Tag. VBECS updates the blood unit status to "assigned" and the unit is no longer available for issue.</p>
10	<p>When a user selects a unit requiring XM, eXM is enabled, and the patient is eligible, the selected unit ABO/Rh must be compatible with the patient ABO/Rh. VBECS displays a message based on Appendix B: Table 23: Rules for Electronic and Serologic Crossmatch. If the user continues to select that unit in which VBECS requires a serologic XM, VBECS does not allow the Caution Tag or BTRF to be printed, and does not update the unit status to "crossmatched" under normal system rules and policies. When the selected unit is available for emergency issue to the patient, VBECS allows the Caution Tag and BTRF to be printed.</p>
12	<p>When eXM is enabled and the patient and selected units are eligible, VBECS notifies the user and asks whether he wishes to continue with eXM.</p> <p>Yes assigns a XM result of "Compatible: Electronically Crossmatched." VBECS updates the database with the XM result, date and time of XM, XM technologist, division, specimen UID, specimen phlebotomist, and specimen expiration date and time. VBECS allows a Caution Tag and BTRF to be printed and the unit is ready for issue and transfusion. VBECS changes the unit status to "crossmatched."</p> <p>No keeps the unit assigned to the patient and available for data entry of serologic XM. VBECS does not allow the Caution Tag or BTRF to be printed and does not change the unit status to "crossmatched." When a division is "transfusion only," the unit remains assigned to the patient and is available for the user to enter the serologic XM interpretation, VBECS does not allow the Caution Tag or BTRF to be printed, and the unit is not crossmatched.</p>
12	<p>When the user selects a unit requiring XM, the division is defined as "full service," eXM is enabled, and the patient is not eligible for eXM, VBECS warns the user that the selected units require serologic XM and asks whether he wishes to continue.</p> <p>Yes adds the units to the XM data entry grid and transfers the user to Patient Testing: Record Patient Test Results to begin the XM process. No records that a serologic XM test is needed. The user may not print a Caution Tag or Blood Transfusion Record Form; the unit status does not change to "crossmatched."</p>

Issue Blood Components

The user issues one or more patient-assigned blood units to a transporter for storage in a remote location or for possible transfusion.

Assumptions

- The facility has a procedure for the emergency issue of blood products.
- The unit and the user are in the same division.
- The unit is assigned and/or crossmatched for the patient currently selected for issue.
- VistA is available for the user to choose a physician and valid hospital locations.

Outcome

- The unit status was updated to “issued.”
- The unit’s current location was updated to the “issue-to” location.

Limitations and Restrictions

- VBECS does not check for restricted units (not assigned to the patient) received between selection and issue.
- All issue-to locations must be valid entries in the VistA hospital location file, including home transfusion.
- ISBT 128 tables include blood product codes labeled as not for manufacturing or transfusion. VBECS does not restrict such products from being entered, issued, or transferred (local policy controls their use) and does not accommodate blood modification for these products.
- When a site has configured subservient VistA institutions to the VBECS division, users can only issue units to locations in the primary VistA. Sites may add locations to VistA to account for the relocations to the subservient VistA institutions.

Additional Information

- When no VistA order is available, the user must process the request manually until VistA provides them to VBECS. The user must print blank Caution Tags and Blood Transfusion Record Forms (BTRFs) to accommodate this rare occurrence. When VistA does not provide a pseudonym or associated pseudo-ID for the patient that allows placement of a VistA order, VBECS cannot create a patient order for emergency issue of blood.
- “Issue with Medical Director Approval” components must be approved prior to this option and do not require special handling by VBECS.
- Emergency issue processing accommodates the issue of blood to patients without completed specimen testing, as required.
- Sites may enter the lot number of blood administration sets and leukoreducing filters when they enter the name of the individual picking up the blood product. VBECS retains this information in the unit history record.

User Roles with Access to This Option

All users

To correct issue time and other errors, return the unit from issue and reissue it with the correct information.

Issue Blood Components (Routine)

The user issues assigned or crossmatched blood to a transporter for patient transfusion at valid inpatient and outpatient hospital locations, and records issue details, including the transporter's name or identifier.

User Action	VBECS
1. Select Patients from the main menu. Select Issue Blood Components .	<ul style="list-style-type: none"> Displays options for processing patient-related functions. Displays an option to scan the Caution Tag or enter a patient name or ID. <p>NOTES —————</p> <p>The user must verify the correct patient selection.</p> <p>The >> Enhanced Technologist or above is authorized to issue expired blood products.</p> <p>The >>> Lead Technologist or above is authorized to issue antigen positive and untyped red blood cells.</p>
2. Select a patient.	<ul style="list-style-type: none"> Displays patient data, including entries that meet the entered patient criteria, and allows the user to select the correct patient. <p>NOTES —————</p> <p> See Table 7 for alerts that may occur during this option.</p>
3. Click OK to verify that the correct patient was selected.	<ul style="list-style-type: none"> Displays fields for the user to enter data for the issue transaction. <p>NOTES —————</p>
4. Enter the required data in the transporter name, issue-to location, and date and time fields (Figure 78). Click OK .	<p>The user may edit the transfusion-ordering clinician, which does not change the blood-ordering clinician.</p> <p>When the user updates the transfusion-ordering-clinician field, VistALink queries VistA for valid providers only. The user may narrow the search by entering the provider's name.</p> <p>The user may edit the issue date and time (default: current date and time) to allow retrospective data entry; no future issue date or time is allowed. When the issue time is incorrect, the user must undo the issue and reissue the unit with the correct date and time.</p> <p>A remote storage indicator is optional (default: No).The transporter name field allows free text and does not display a selection list. The issue-to location lists current hospital locations provided by VistALink, including the inpatient or outpatient location indicator (VistA refers to this as a "patient class"). This is related to billing reimbursement and is not an enabled field in the issue option.</p>

User Action	VBECS
5. Scan the unit ID and product code, or click one or more check boxes to select units for issue to the selected patient (Figure 79).	<p>When a remote storage location indicator is checked, the user may select from a list of previously entered locations or enter a new, free-text location. Each location entered and saved is available for future selection as a remote location.</p> <ul style="list-style-type: none"> Displays the option to select units from the Assigned Units or Emergency Issue Units tabs. Lists the selected units, allows the user to select additional units or deselect units, and prompts the user to indicate that the selections are complete. <p>NOTES</p> <p> See Table 7 for alerts that may occur during this option.</p> <p>When the user attempts to issue a unit with an inconclusive crossmatch result, VBECS warns the user that the repeat crossmatch is required before the unit can be issued.</p> <p>When the user attempts to issue a unit that is not assigned or crossmatched to the patient, VBECS warns the user that the unit is not assigned to the patient and allows the user to enter another unit number.</p> <p>When required by the component, the unit must have a satisfactory ABO/Rh confirmation result before it is considered available for issue (emergency or routine) and the Caution Tag and BTRF may be generated.</p> <p>When a current specimen is required, VBECS compares the current and previous ABO/Rh results. It does not evaluate results marked "Test Result Invalidated."</p> <p>To issue blood components that require a crossmatch, the TAS must be completed and the unit status must be crossmatched to the patient.</p>
6. Click OK to save and complete the unit issue.	<ul style="list-style-type: none"> Displays entries for review and editing. <p>NOTES</p> <p>When the user selects multiple units for a patient and creates a batch for issue, all units in the batch are issued simultaneously to the same location. VBECS assigns the issue information to all units in the batch. The user may not enter different information, including any override comment, for an individual unit in the batch.</p>
7. Click Yes when the unit is satisfactory to save, or No when the unit is unsatisfactory.	<ul style="list-style-type: none"> Saves the data. Displays the unit inspection indicator (satisfactory or unsatisfactory) listing each selected unit. Allows the user to select the unsatisfactory unit and edit its issue selections. <p>NOTES</p>

User Action	VBECS
	 See Table 7 for alerts that may occur during this option.
8. Exit.	

Figure 78: Issue Blood Components (1)

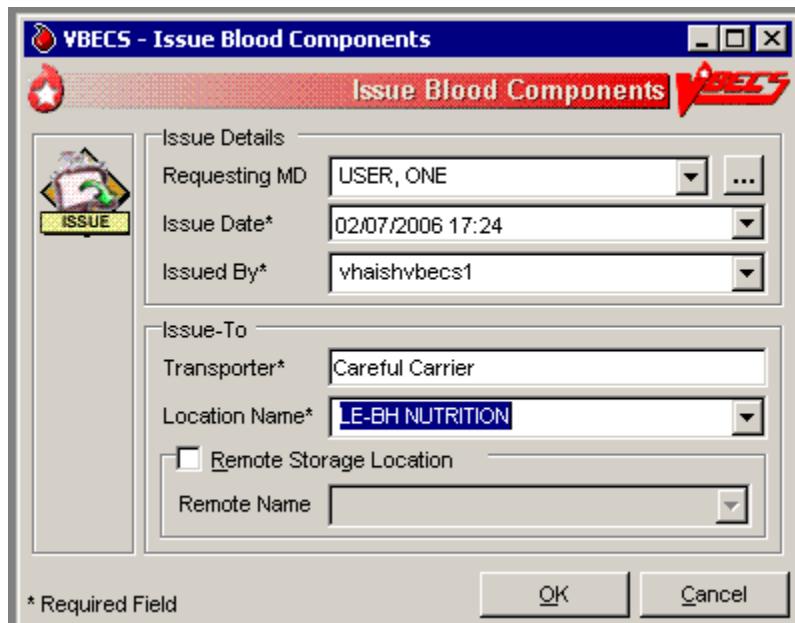
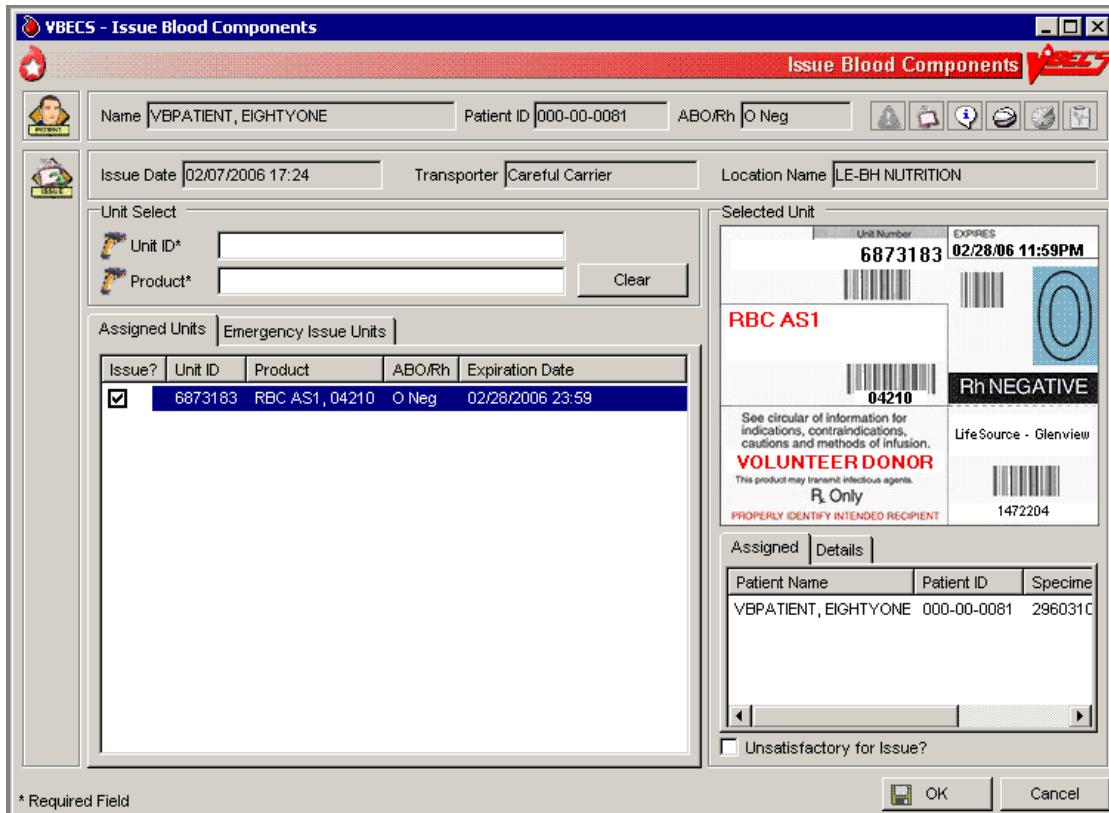


Figure 79: Issue Blood Components (2)



Issue Blood Components (Emergency)

The user issues assigned or crossmatched blood to a transporter for patient transfusion that does not meet routine issue conditions at valid inpatient and outpatient hospital locations, and records issue details, including the transporter's name or identifier.

User Action	VBECS
1. Select Patients from the main menu. Select Issue Blood Components .	<ul style="list-style-type: none"> Displays options for processing patient-related functions. Displays an option to scan the Caution Tag or enter a patient name or ID.
2. Select a patient.	<ul style="list-style-type: none"> Displays patient data, including entries that meet the entered patient criteria, and allows the user to select the correct patient. <p>NOTES</p> <p> See Table 8 for alerts that may occur during this option.</p>
3. Click OK to verify that the correct patient was selected.	<ul style="list-style-type: none"> Displays fields for the user to enter the data for the issue transaction.
4. Enter the required data.	<ul style="list-style-type: none"> Displays the option to select units from the Assigned Units or Emergency Issue Units tabs.
5. Click the Emergency Issue Units	<ul style="list-style-type: none"> Lists the selected units, allows the user to select additional units or

User Action	VBECS
tab.	deselect units, and prompts the user to indicate that the selections are complete.
Scan or click one or more check boxes to select units for issue to the selected patient (Figure 80).	NOTES ————— See Table 8 for alerts that may occur during this option.
Click OK .	<ul style="list-style-type: none"> Displays entries for review and editing.
6. Click OK to accept the entries and complete the unit issue.	<ul style="list-style-type: none"> Saves the data. Displays the unit inspection indicator (satisfactory or unsatisfactory) listing each selected unit. Allows the user to select the unsatisfactory unit and edit its issue selections.
7. Click Yes when the unit is satisfactory or No when the unit is unsatisfactory.	NOTES ————— See Table 8 for alerts that may occur during this option.
8. Exit.	

Figure 80: Issue Blood Components Emergency Issue Units Tab

The screenshot shows the 'Issue Blood Components' window with the 'Emergency Issue Units' tab selected. The top header includes the title 'Issue Blood Components' and the VBECS logo. The main interface has several input fields and a preview panel.

Top Input Fields:

- Name: VBPATIENT, EIGHTYONE
- Patient ID: 000-00-0081
- ABO/Rh: O Neg

Unit Select:

- Issue Date: 02/07/2006 17:46
- Transporter: Care
- Location Name: A2 GEM-LE
- Unit ID*: 1941954
- Product*: RBC AS1
- Expiration Date: 02/28/06 11:59PM

Assigned Units:

Issue?	Unit ID	Product	ABO/Rh	Expiration Date
<input checked="" type="checkbox"/>	1941954	RBC AS1, 04210	O Neg	02/28/2006 23:59

Selected Unit Preview:

Unit Number: 1941954 | EXPIRES: 02/28/06 11:59PM
 Product: RBC AS1 | Expiration Date: 04210
 Blood Type: Rh NEGATIVE
 Notes: See circular of information for indications, contraindications, cautions and methods of infusion.
VOLUNTEER DONOR
 This product may transmit infectious agents.
 Rx Only
 PROPERLY IDENTIFY INTENDED RECIPIENT
 LifeSource - Glenview
 1472204

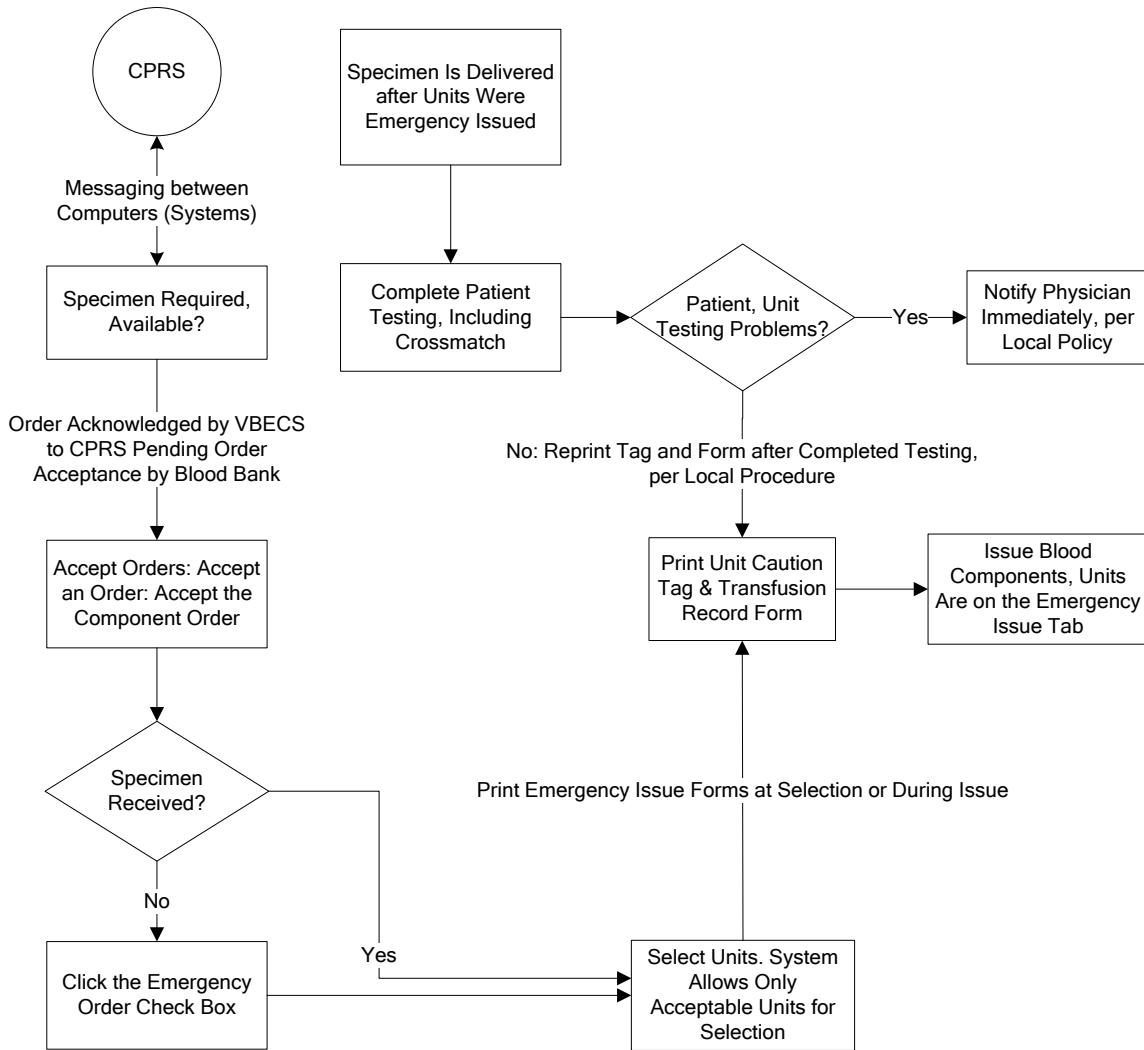
Buttons:

- Assigned | Details | Testing
- Patient Name: VBPATIENT, EIGHTYONE | Patient ID: 000-00-0081 | Specime
- OK | Cancel

Footnote:

* Required Field

Figure 81: Emergency Issue



Emergency issue in VBECS requires a CPRS order and a VistA Laboratory specimen UID. VBECS allows a user to bypass this requirement to issue units when a specimen is not received.

 **Alerts**
Table 7: Alerts That May Occur in Issue Blood Components (Routine)

User Action Step	Alerts
2	VBECS displays  and emits an audible alert when there are Special Instructions (SIs) or Transfusion Requirements (TRs) for the patient.
2	When no patient is found, VBECS warns the user and does not allow the user to continue.
2	When the patient has no components available for issue, VBECS warns the user and does not allow the user to continue.
2	When required testing is incomplete at issue, VBECS emits an audible alert, warns the user, and asks whether to emergency issue the unit in accordance with hospital policy. No stops the user from issuing the unit and requires selection of another unit. Yes creates an Exception Report entry for the issue, indicates on the unit record that the unit was issued emergently, and asks whether the user wishes to print the Caution Tags and Blood Transfusion Record Forms. No allows the user to continue with the emergency issue. Yes prints a Caution Tag and/or Blood Transfusion Record Form and proceeds with the issue.
5	When the user attempts to issue a unit located in a different division, VBECS warns him that the unit cannot be issued and does not allow him to continue.
5	When autologous or directed, or designated or dedicated blood units of the same component class are available in the same division as the user, VBECS requires blood units to be issued in this order: 1. Autologous units 2. Restricted units 3. Voluntary allogeneic units When the user attempts to issue a unit out of order, VBECS warns him that more restrictive units are available for issue and asks whether he wishes to continue. No allows the user to enter another unit number. Yes allows the user to continue and captures transaction details for inclusion in an Exception Report (exception type: less restrictive unit issued).
5	When a user indicates that the inspected unit is unsatisfactory, VBECS does not allow the unit to be issued, releases it from assignment, and warns the user that the unit is unacceptable for transfusion. VBECS allows the user to enter another unit number.
5	When the user attempts to select frozen blood components, VBECS emits an audible alert and warns the user. Units selected in their frozen state must be thawed before issue.
5	When the patient has TRs, the user attempts to issue (including emergency issue) red blood cells that do not satisfy the TR, and the user is: <ul style="list-style-type: none">• >> An Enhanced Technologist or below, VBECS emits an audible alert and warns the user that he is not authorized to issue untyped red blood cells (for the clinically significant antibodies in the table). VBECS does not allow an override.• >>> A Lead Technologist or above, VBECS emits an audible alert and warns the user. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: unit issued with unsatisfied TR).
5	When a repeat ABO/Rh performed on the patient specimen does not match the original ABO/Rh interpretation and the unit doesn't qualify for emergency issue, VBECS warns the user and instructs him to resolve the discrepancy before issuing the unit. There is no override. Emergency issue may continue for qualifying units.
5	When a unit is issued for a patient with a specimen expiration date more than three days in the future, VBECS changes the expiration date to three days from the date of issue of the unit.
5	When a unit has a biohazard indicator, VBECS emits an audible alert, warns the user, and asks whether he still wishes to issue the unit. No clears the entry and allows the user to select a new unit. Yes requires a comment and captures details of the transaction for inclusion in an Exception Report (exception type: biohazardous unit issued).

User Action Step	Alerts
5	For an Rh negative, unknown, or inconclusive patient, the user may enter and confirm Rh positive units from the WHOLE BLOOD, RED BLOOD CELLS, PLATELETS, and OTHER VBECS component classes. VBECS emits an audible alert, warns the user, and asks whether he wishes to issue the unit. No clears the unit data and allows the user to select a different unit. Yes requires additional comment and captures details for inclusion in an Exception Report (exception type: antigen positive/untested units issued).
5	When a user attempts to issue units assigned and/or crossmatched or that require an ABO/Rh associated with an expired specimen when compared to the issue date and time, VBECS emits an audible alert and warns the user. There is no override. ►► When the user is an Enhanced Technologist or above, VBECS emits an audible alert, warns the user, and asks whether he wishes to continue to issue. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: unit issued on expired specimen).
5	When the user attempts to issue an expired unit, VBECS emits an audible alert and warns him. There is no override. ►► When the user is an Enhanced Technologist or above, VBECS emits an audible alert, warns him, and asks whether he wishes to continue to issue. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: issued expired unit).
5	When the user selects units from the WHOLE BLOOD, RED BLOOD CELLS, or APHERESIS RED BLOOD CELLS ICCBBA component classes, VBECS determines when the patient has a calculated or a persistent antigen negative requirement. This does not apply when selecting autologous (ISBT 128 units with an autologous donation type). When the selected unit was antigen typed and is positive for the corresponding antigen or is untested for the antigen, VBECS warns the user and requires action based on his security level. ►► When the user is an Enhanced Technologist or below, VBECS emits an audible alert and warns that he does not have the proper security level to issue the unit. There is no override. ►►► When the user is a Lead Technologist or above, VBECS emits an audible alert, warns him, and asks whether he wishes to continue to issue. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report entry (exception type: antigen-positive/untested units issued).
5	VBECS compares the ABO/Rh of the current specimen to the historic ABO/Rh. When the unit was electronically crossmatched, the current and historic ABO/Rh results must have been recorded in the login user's division. When there is a discrepancy, there is no previous justification for the discrepancy on the patient record, as described in Justify ABO/Rh Change, and the unit does not qualify for emergency issue, VBECS warns the user and instructs him to resolve the discrepancy before issuing the unit. There is no override. VBECS exits the option, clears the screen, and returns the user to the point of entry. Emergency issue may continue for qualifying units.
5	When no valid ABO exists for the patient, the user may select components, including autologous units: <ul style="list-style-type: none">• For RBC or WB order: group O, Rh positive or O Rh negative RBC. WHOLE BLOOD is not selectable.• For FFP order only: group AB, Rh positive or Rh negative.• For PLT, CRYO, or OTHER order, all available units are selectable.
5	When the division is "transfusion only" and a blood unit is ABO incompatible at issue based on the interpretation of the current patient specimen's ABO test, VBECS emits an audible alert and warns the user that the unit is not ABO compatible for the patient's current specimen and may not be issued. The user must resolve pending ABO discrepancies before issuing the unit.
7	When the division is "full service" and a blood unit is ABO incompatible at issue based on the system interpretation of the current patient specimen's ABO test result, VBECS emits an audible alert, warns that the unit is not ABO compatible with the patient's current specimen results, and asks whether he wishes to continue. No clears the screen and allows the user to select another unit. Yes requires a

User Action Step	Alerts
	comment and captures details for inclusion in an Exception Report (exception type: ABO discrepant unit issue).

Table 8: Alerts That May Occur in Issue Blood Components (Emergency)

User Action Step	Alerts
2	VBECS displays  and emits an audible alert when there are Special Instructions (SIs) or Transfusion Requirements (TRs) for the patient.
2	When no patient is found, VBECS warns the user and does not allow the user to continue.
2	When the patient has no components available for issue, VBECS warns the user and does not allow the user to continue.
2	When required testing is incomplete at issue, VBECS emits an audible alert, warns the user, and asks whether to emergency issue the unit in accordance with hospital policy. No stops the user from issuing the unit and requires selection of another unit. Yes creates an Exception Report entry for the issue, indicates on the unit record that the unit was issued emergently, and asks whether the user wishes to print the Caution Tags and Blood Transfusion Record Forms. No allows the user to continue with the emergency issue. Yes prints a Caution Tag and/or Blood Transfusion Record Form and proceeds with the issue.
5	When the user attempts to issue a unit located in a different division, VBECS warns him that the unit cannot be issued and does not allow him to continue.
5	When a user indicates that the inspected unit is unsatisfactory, VBECS does not allow the unit to be issued, releases it from assignment, and warns the user that the unit is unacceptable for transfusion. VBECS allows the user to enter another unit number.
5	When the user attempts to select frozen blood components, VBECS emits an audible alert and warns the user. Units selected in their frozen state must be thawed before issue.
5	When the patient has TRs, the user attempts to issue (including emergency issue) red blood cells that do not satisfy the TR, and the user is: <ul style="list-style-type: none">• ➤ An Enhanced Technologist or below, VBECS emits an audible alert and warns the user that he is not authorized to issue untyped red blood cells (for the clinically significant antibodies in the table). VBECS does not allow an override.• ➤ A Lead Technologist or above, VBECS emits an audible alert and warns the user. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: unit issued with unsatisfied TR).
5	When a repeat ABO/Rh performed on the patient specimen does not match the original ABO/Rh interpretation and the unit does not qualify for emergency issue, VBECS warns the user and instructs him to resolve the discrepancy before issuing the unit. There is no override. Emergency issue may continue for qualifying units.
5	When a unit is issued for a patient with a specimen expiration date more than three days in the future, VBECS changes the expiration date to three days from the date of issue of the unit.
5	When a unit has a biohazard indicator, VBECS emits an audible alert, warns the user, and asks whether he still wishes to issue the unit. No clears the entry and allows the user to select a new unit. Yes requires a comment and captures details of the transaction for inclusion in an Exception Report (exception type: biohazardous unit issued).
5	For an Rh negative, unknown, or inconclusive patient, the user may enter and confirm Rh positive units from the WHOLE BLOOD, RED BLOOD CELLS, PLATELETS, and OTHER VBECS component classes. VBECS emits an audible alert, warns the user, and asks whether he wishes to issue the unit. No clears the unit data and allows the user to select a different unit. Yes requires additional comment and captures details for inclusion in an Exception Report (exception type: antigen positive/untested units issued).
5	When the user attempts to issue an expired unit, VBECS emits an audible alert and warns him. There is no override.

User Action Step	Alerts						
	<p>►► When the user is an Enhanced Technologist or above, VBECS emits an audible alert, warns him, and asks whether he wishes to continue to issue. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: issued expired unit).</p>						
5	<p>When the user selects units from the WHOLE BLOOD, RED BLOOD CELLS, or APHERESIS RED BLOOD CELLS ICCBBA component classes, VBECS determines when the patient has a calculated or a persistent antigen negative requirement. This does not apply when selecting autologous (ISBT 128 units with an autologous donation type). When the selected unit was antigen typed and is positive for the corresponding antigen or is untested for the antigen, VBECS warns the user and requires action based on his security level.</p> <p>►► When the user is an Enhanced Technologist or below, VBECS emits an audible alert and warns that he does not have the proper security level to issue the unit. There is no override.</p> <p>►►► When the user is a Lead Technologist or above, VBECS emits an audible alert, warns him, and asks whether he wishes to continue to issue. No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report entry (exception type: antigen-positive/untested units issued).</p>						
5	VBECS compares the ABO/Rh of the current specimen to the historic ABO/Rh. When the unit was electronically crossmatched, the current and historic ABO/Rh results must have been recorded in the login user's division. When there is a discrepancy, there is no previous justification for the discrepancy on the patient record, as described in Justify ABO/Rh Change, and the unit does not qualify for emergency issue, VBECS warns the user and instructs him to resolve the discrepancy before issuing the unit. There is no override. VBECS exits the option, clears the screen, and returns the user to the point of entry. <u>Emergency issue may continue for qualifying units.</u>						
5	<p>When no valid ABO exists for the patient, the user may select components, including autologous units:</p> <ul style="list-style-type: none"> • For RBC or WB order: group O, Rh positive or O Rh negative RBC. WHOLE BLOOD is not selectable. • For FFP order only: group AB, Rh positive or Rh negative. • For PLT, CRYO, or OTHER order, all available units are selectable. 						
5	<p>When the user selects blood components from the frozen product types for a patient, VBECS emits an audible alert and warns that the selected blood unit must be thawed and may require additional processing prior to issue. The unit is not eligible for printing the BTRF or Caution Tag. VBECS updates the blood unit status to "assigned" and the unit is no longer available for issue.</p>						
5	<p>When a Caution Tag or BTRF is printed for an emergency-issued unit, "Emergency Issue" is included on the form.</p> <p>The recipient ABO/Rh prints as "Unk" or "Unknown" during emergency issue when no current specimen results are on file; VBECS may not use a historic record blood type (from any source) for the typing printed on the tag/form.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Compatibility Interpretation</th> <th>Text on BTRF</th> </tr> </thead> <tbody> <tr> <td>Crossmatch</td> <td>TESTING INCOMPLETE</td> </tr> <tr> <td>Crossmatch Not Required</td> <td>Not Required</td> </tr> </tbody> </table> <p>VBECS prints "Emergency Issue" in the TR section of the form.</p>	Compatibility Interpretation	Text on BTRF	Crossmatch	TESTING INCOMPLETE	Crossmatch Not Required	Not Required
Compatibility Interpretation	Text on BTRF						
Crossmatch	TESTING INCOMPLETE						
Crossmatch Not Required	Not Required						
5	<p>When blood products are emergency issued (units has an emergency issue" order indicator, or the testing is incomplete or inconclusive on the current specimen), the remarks section of the Blood Transfusion Record Form includes "This unit is issued for transfusion BEFORE the completion of required compatibility testing. The blood bank staff will continue to test the compatibility of the unit using the current patient specimen. If you are alerted to a unit's incompatibility by the blood bank, stop the transfusion immediately."</p>						

User Action Step	Alerts
	When “***” prints for the patient ABO/Rh and crossmatch, the form includes “Specimen testing incomplete at time of issue.”
5	When a unit was emergency issued and a conflicting test result found that indicates a potential unit incompatibility with the patient, such as a patient ABO/Rh discrepancy, the unit XM is incompatible with the patient, the patient ABS is positive, the patient DAT is positive, or the unit is antigen positive where antigen negative is required on the tested specimen, VBECS warns the user and instructs him to notify the physician of this potential problem immediately, according to hospital policy. VBECS warns the user during the execution of the various tests related to the compatibility of a blood unit and captures details for inclusion in an Exception Report (exception type: unit ER issued, testing problem).
7	When the division is “full service” and a blood unit is ABO incompatible at issue based on the system interpretation of the current patient specimen’s ABO test result, VBECS emits an audible alert and warns that the unit is not ABO compatible with the patient’s current specimen results and asks whether he wishes to continue. No clears the screen and allows the user to select another unit. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: ABO discrepant unit issue).

Return Issued Units To Blood Bank

An issued unit was returned to the blood bank in satisfactory condition after issue to a valid hospital location.

Assumptions

- The user is logged into the division that contains the unit.
- The blood unit is in the “issued” status.
- The connection to VistA is active.

Outcome

- The unit is returned to a hospital location of a blood bank.
- The unit retains its patient assignment at the time of issue when returned in satisfactory condition.
- The user may mark the unit “unsatisfactory” and quarantine the unit to generate an Exception Report, if needed per hospital policy.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

All users

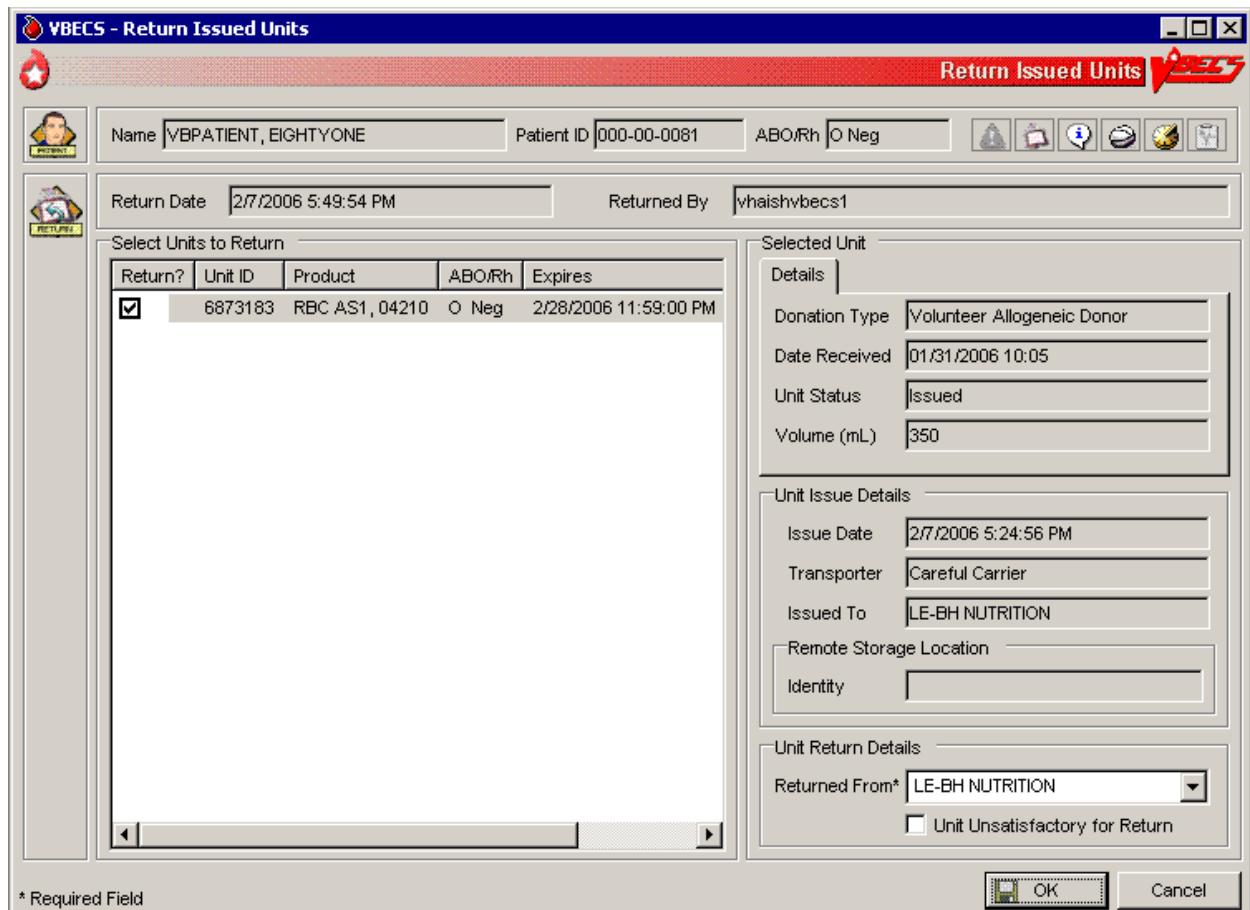
Return Issued Units To Blood Bank

An issued unit was returned to the blood bank in satisfactory condition after issue to a valid hospital location. The user updates VBECS to reflect the change in location.

User Action	VBECS
1. Select Blood Units or Patients from the main menu. Select Return Issued Units To Blood Bank .	<ul style="list-style-type: none">• Displays options for processing blood units or for processing patient-related functions.• Displays the return date and time and the name of the user who returned the issued unit. <p>NOTES —————</p> <p>The user may edit the return date and time (default: current date and time) to a past date and time.</p> <p>VBECS assigns the same return date and time to all units processed in a batch.</p>
2. Enter or edit the date and time and/or select a user, or click OK to accept the default data.	
3. Enter the patient data.	<ul style="list-style-type: none">• Prompts the user to enter the unit ID and product code or enter patient data to retrieve the records for the units issued.• Displays an option to search for or enter a patient or unit based on the

User Action	VBECS
	<p>original menu option selected.</p>
4. Select a patient or unit.	<ul style="list-style-type: none"> Lists the units in "issued" status that are assigned to the patient.
5. Select one or more units to return from issue.	<ul style="list-style-type: none"> Displays the units selected for return for review and allows the user to select or deselect additional units.
6. Scan the unit ID and product code, or click one or more check boxes to select units to return from issue.	<ul style="list-style-type: none"> Displays the data entered and allows the user to enter additional units and indicate that he completed the entry for this transaction. Displays data for each unit entered. <p>NOTES</p> <p>When a selected unit is not in "issued" status, VBECS warns the user, clears the unit field, and allows the user to enter a different unit number.</p> <p>VBECS allows the user to select multiple units to create a worklist for simultaneous processing.</p> <p>VBECS requires the user to enter a "returned-from" location (default: "issue-to" location) and allows the user to change this location to a different valid hospital location. To do this, click the ellipsis button and select a hospital location.</p>
7. Respond to the warnings and messages (Figure 82).	<ul style="list-style-type: none"> Compares the issue time of each unit with the return time and warns the user when a unit is out of controlled storage for more than 30 minutes (not issued to a remote storage location). Allows the user to indicate that each unit or batch of units was visually inspected and marked satisfactory or unsatisfactory. <p>NOTES</p> <p> When the user indicates that the unit is unsatisfactory, VBECS emits an audible alert and quarantines the unit, relocates it to the hospital location of the blood bank, and captures details for inclusion in an Exception Report (exception type: unit unsatisfactory upon return from issue). Upon quarantining the unit, VBECS releases it from assignment and requires a comment regarding the return.</p> <p>When a unit was returned and had a quarantine indicator assigned, VBECS releases patient assignments. Patient restrictions associated with the unit remain intact.</p> <p>VBECS places units returned from issue to the blood bank in satisfactory condition in the status they had prior to issue.</p> <p>When the unit returned and/or the specimen used for assignment or crossmatch is expired, VBECS warns the user.</p>
8. Click OK to accept the entries, and complete the unit return. Exit.	<ul style="list-style-type: none"> Saves the data. <p>NOTES</p> <p>VBECS returns units to the blood bank location within the division.</p>

Figure 82: Return Issued Units



Release Units From Patient Assignment

The user releases crossmatched and assigned blood units not issued after a period determined by regulatory standards and by internal policy.

Assumptions

- The blood unit is assigned or crossmatched to at least one patient.

Outcome

- Patient restrictions still apply to a unit even after it is released from assignment and made available.

Limitations and Restrictions

- This option does not apply to the release of patient restrictions (autologous and directed).
- When a patient, specimen ,or blood unit expires, VBECS does not automatically release an assigned blood unit: a user must release the unit.

Additional Information

- A user may release units from assignment as a group or individually from a patient's list of units.

User Roles with Access to This Option

All users

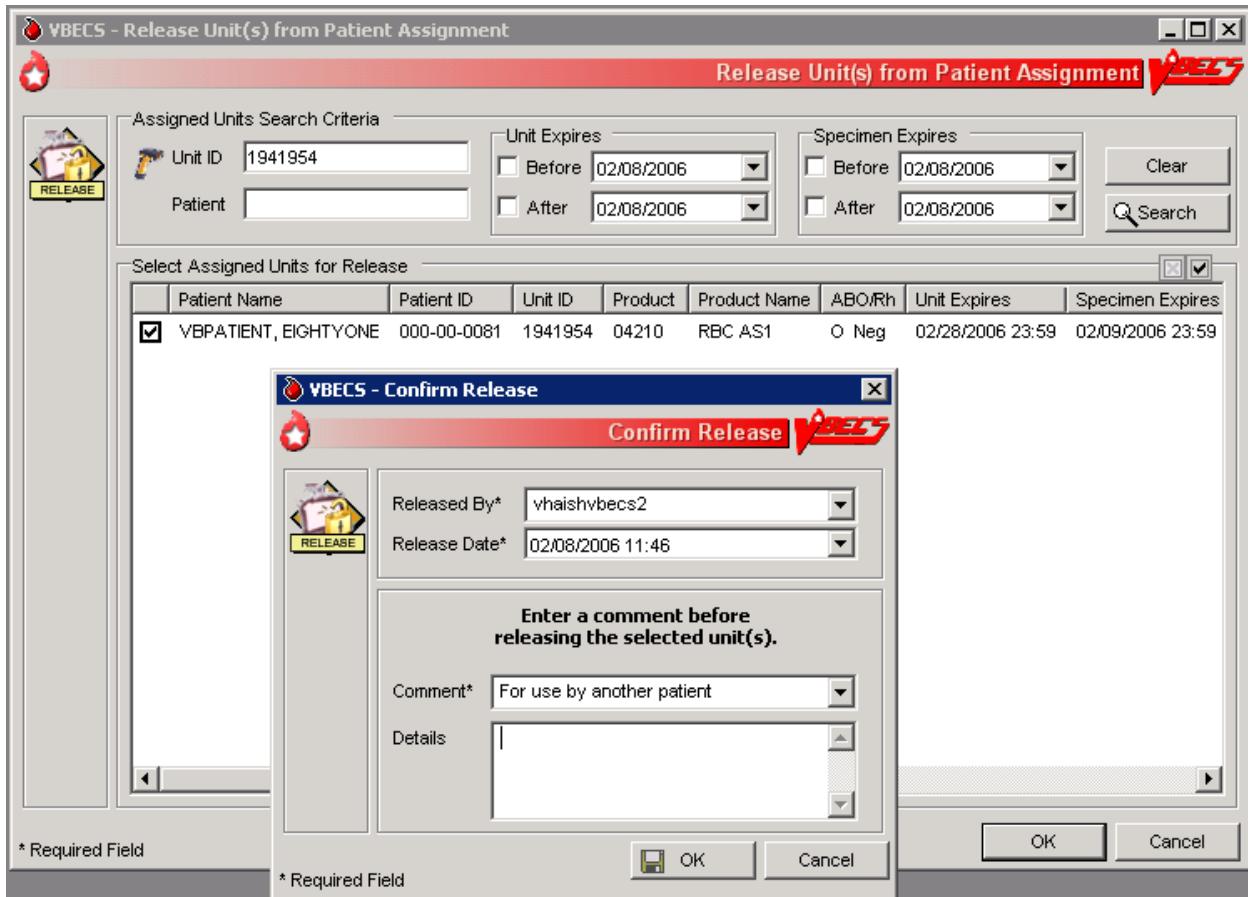
Release Units From Patient Assignment

A user may select one or more blood units for release from patient assignment and return to “available” status. A user may release one of multiple patient assignments without affecting other patient assignments on a unit.

User Action	VBECS
1. To release units by patient, select Patients from the main menu. To release units by unit, select Blood Units from the main menu. Select Release Units From Patient Assignment .	<ul style="list-style-type: none">• Displays options for processing patient-related functions or for processing units.
2. Scan or enter a unit ID or select a patient to release units from patient assignment and/or crossmatch (XM).	<ul style="list-style-type: none">• Allows the user to edit the date and time and the user who released the units.• Lists currently assigned units.• Allows the user to list assigned units by patient, by unit ID, or by unit expiration date. <p>NOTES —</p> <p>VBECS indicates which specimens and units are expired.</p> <p>VBECS displays a unit's donation type only when it is restricted.</p> <p>VBECS displays all currently assigned/crossmatched units</p>

User Action	VBECS
	<p>located in the blood bank. When the user enters a unit ID that is not currently in the blood bank location, VBECS warns the user, clears the unit ID entry, and allows the user to enter another unit or patient.</p>
<p>3. Indicate which units to release. Click OK. Indicate a reason for release of units (Figure 83).</p>	<ul style="list-style-type: none"> • Allows the user to enter a reason for releasing for an individual unit. • Allows the user to review the selections, select additional units, and deselect units before saving. <p>NOTES —————</p> <p>VBECS allows the user to select no units or one or more units for each patient on the list.</p>
<p>4. Review the entered information and click OK to save. Click OK to exit.</p>	<ul style="list-style-type: none"> • Updates the patient record, the unit record, and the status. <p>NOTES —————</p> <p>When a unit has a future expiration date and holds no other assignments, VBECS updates the unit to “available” status. When a unit is assigned to a different patient, it remains assigned to that patient.</p> <p>VBECS alerts the user when the unit is expired and reminds him to remove additional patient assignments and the unit from the available inventory according to local policies. VBECS instructs the user to release the unit from all assignments and remove it from the available inventory, according to local policy.</p>

Figure 83: Confirm Release



Print Unit Caution Tag & Transfusion Record Form

The user may print a Caution Tag and/or a Blood Transfusion Record Form (BTRF) when crossmatch compatibility, assignment, or emergency issue are completed or as an independent action.

Assumptions

- The blood unit, patient order, and user are in the same division.
- There is a current component class or emergency issue order for the patient, and the blood unit printed on the Caution Tag fulfills the patient order requirements.
- When the blood unit belongs to a component class that does not require crossmatch, it has a status of “assigned” (non-emergency issue only).
- For non-emergency issue, the blood unit meets all patient Transfusion Requirements (TRs).

Outcome

- The barcode generated on the Caution Tag may be used in bedside verification procedures, in accordance with local policy and procedures.
- A user may reprint a BTRF and Caution Tag.

Limitations and Restrictions

- VBECS cannot reprint a Caution Tag on an expired unit or expired patient order.
- VBECS does not print a unit’s biohazardous status on the BTRF or Caution Tag.

Additional Information

- The informational barcode printed on the Caution Tag includes only the patient and unit IDs and the unit product code.
- A user may print multiple Caution Tags and BTRFs for a blood unit when it is assigned to multiple patients.
- Attach the Caution Tag labels to blood bags in accordance with local policy and procedures.

User Roles with Access to This Option

All users

Print Backup Caution Tags and Blood Transfusion Record Forms

It is recommended that blank Caution Tags and BTRFs be kept on hand in case the system or printer is not available to generate them.

User Action	VBECS
<p>1. Select Tools from the main menu.</p> <p>Select Print Backup Forms.</p> <p>Enter or select the number of blank tags or forms to print (Figure 84).</p> <p>Click OK to print and exit.</p>	<ul style="list-style-type: none">• Displays options for processing administrative functions.• Prompts the user to enter the number of Caution Tags to be printed.• Prints the blank Caution Tags. <p>NOTES —————</p> <p>VBECS displays an option to print a Caution Tag or a BTRF when the user selects a unit or a patient.</p> <p>The user may print 1 to 99 blank Caution Tags and BTRFs to</p>

User Action	VBECS
	<p>use in case of downtime.</p> <p>VBECS interrupts or cancels a print job to accommodate the printing of an emergency issue tag. VBECS notifies the user of the number of tags printed and instructs the user to enter a new request to print more tags.</p>

Figure 84: Print Backup Forms



Print Unit Caution Tag & Transfusion Record Form

The user may need to generate Caution Tags when they were not printed immediately after unit selection and crossmatch data entry, emergency issue, or when there is a problem with the printed Caution Tag. According to local policy, the user selects a current patient order and one or more units to print from the VBECS-generated list of units eligible for immediate transfusion.

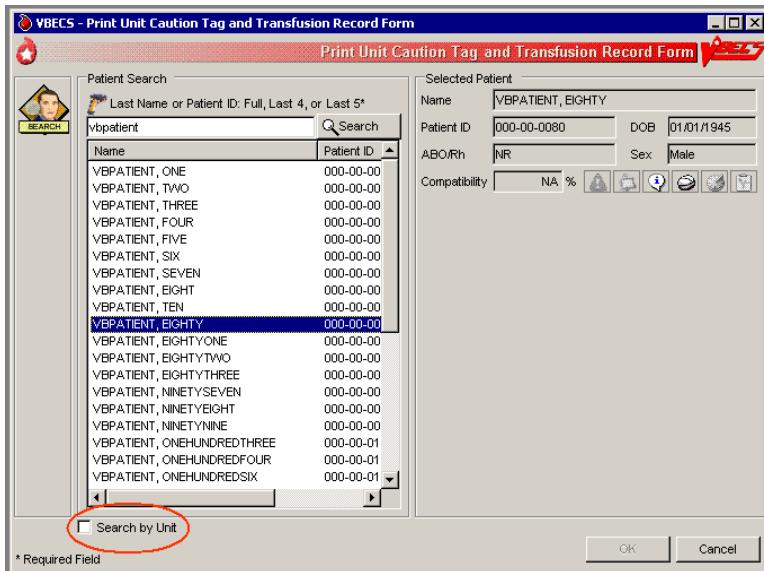
VBECS does not allow a user to print a Caution Tag unless the unit is satisfactory for immediate issue.

User Action	VBECS
<p>1. Select Patients or Blood Units from the main menu.</p> <p>Select Print Unit Caution Tag & Transfusion Record Form.</p>	<ul style="list-style-type: none"> Displays options for processing patient-related functions or for processing units. Displays the option to select a patient, if one is not already selected.
<p>2. Enter the patient name or ID and click Search to select a patient, or</p> <p>Click Search by Unit(Figure 85).</p> <p>Enter the unit ID and/or product.</p>	<ul style="list-style-type: none"> Requests that the user select a Caution Tag and/or a BTRF to print by unit ID or by patient. Displays an informational message, when appropriate.
<p>3. Select a patient, or</p> <p>Select or scan a blood unit.</p>	<ul style="list-style-type: none"> Compiles and displays the information associated with the user's selection. Displays the patient's name, ID, date of birth, the unit ID, and the long product name of units to appear on the Caution Tags. Prompts the user to select the units when selecting by patient. Allows the user to select and deselect blood units to print. See Table 9 for alerts that may occur during this option.

User Action	VBECS														
	<p>NOTES</p> <p>VBECS retrieves the most recent crossmatch result (original or repeat) to determine unit availability and compatibility status to allow printing the Caution Tag and/or BTRF and to allow the unit to be issued.</p> <p>When no valid ABO exists for the patient, the user may select components, including autologous units:</p> <ul style="list-style-type: none"> • For RBC order: group O, Rh positive or O Rh negative RBC. • For FFP order: group AB, Rh positive or Rh negative. • For PLT order, all available units are issuable. <p>When a user selects a Caution Tag and/or BTRF by blood unit and the units are assigned and/or crossmatched on multiple patients, the selected form may be printed for only one patient during a session.</p> <p>When VBECS searches for units available for a patient name, it makes available for printing only units considered available for issue (standard processing or emergency issue).</p> <p>See Appendix B: Table 23: Rules for Electronic and Serologic Crossmatch. The user may select only active units and those not in a final status. See Appendix B: Figure 118: Unit Status Flowchart.</p>														
<p>4. Acknowledge the selected patient and blood units for printing.</p> <p>Click Print Unit Caution Tag, Print Transfusion Record Form, or Print Both.</p> <p>Click OK to confirm and exit.</p>	<ul style="list-style-type: none"> • Displays an option to print the Caution Tag and BTRF for units with a patient assignment. • Generates a separate Caution Tag and BTRF for each blood unit. <p>NOTES</p> <p>When a Caution Tag or BTRF is printed for an emergency-issued unit, “Emergency Issue” is included on the form.</p> <p>The recipient ABO/Rh prints as “Unk” or “Unknown” during emergency issue when no current specimen results are on file; VBECS may not use a historic record blood type (from any source) for the typing printed on the tag/form.</p> <table border="1"> <thead> <tr> <th>Compatibility Interpretation</th><th>Text on BTRF</th></tr> </thead> <tbody> <tr> <td>Crossmatch</td><td>TESTING INCOMPLETE</td></tr> <tr> <td>Crossmatch Not Required</td><td>Not Required</td></tr> </tbody> </table> <p>VBECS prints “Emergency Issue” in the TR section of the form.</p> <p>The text that appears in the compatibility section is based on the crossmatch interpretation applied.</p> <table border="1"> <thead> <tr> <th>Compatibility Interpretation</th><th>Text on BTRF</th></tr> </thead> <tbody> <tr> <td>Crossmatch Compatible</td><td>Compatible</td></tr> <tr> <td>Compatible: Electronically Crossmatched</td><td>Compatible</td></tr> <tr> <td>Crossmatch Not Required</td><td>Not Applicable</td></tr> </tbody> </table>	Compatibility Interpretation	Text on BTRF	Crossmatch	TESTING INCOMPLETE	Crossmatch Not Required	Not Required	Compatibility Interpretation	Text on BTRF	Crossmatch Compatible	Compatible	Compatible: Electronically Crossmatched	Compatible	Crossmatch Not Required	Not Applicable
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Crossmatch Not Required	Not Required														
Compatibility Interpretation	Text on BTRF														
Crossmatch Compatible	Compatible														
Compatible: Electronically Crossmatched	Compatible														
Crossmatch Not Required	Not Applicable														

User Action	VBECS
	Crossmatch Incompatible: Give only with Medical Director Approval
5. Print and exit.	Incompatible: Given with Medical Director Approval

Figure 85: Print Unit Caution Tag and Transfusion Record Form



 **Alerts**
Table 9: Alerts That May Occur in Print Unit Caution Tag & Transfusion Record Form (Step 3)

User Action Step 3: When This Condition Exists  VBECS Emits an Audible Alert and Warns the User:	User Role
VBECS determines whether the patient has a calculated or persistent antigen negative requirement (except when selecting autologous units). The selected unit was antigen typed and is positive for the corresponding antigen or is untested for the antigen.	The patient has a history of a clinically significant antibody, the unit is positive or untested for the corresponding antigen, the user does not have the proper security level. There is no override.	Enhanced Technologist or below
	The patient has a history of an antibody(s) and the unit ID is positive or untested for the corresponding antigen(s). Continue to print Caution Tag or BTRF? No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: Caution Tag or BTRF printed for antigen positive or untested unit).	Lead Technologist
When the patient has TRs, VBECS evaluates the selected unit to see whether a TR was satisfied based on system rules, including emergency issue.	The patient has at least one TR that is not satisfied, the user does not have the proper security level to print the Caution Tag or BTRF for this unit. Further processing is needed and must be documented in VBECS. There is no override.	Enhanced Technologist or below
	The patient has at least one TR that is not satisfied. Continue to print Caution Tag or BTRF? No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: Caution Tag printed with unsatisfied TR).	Lead Technologist
The patient specimen is expired.	The patient specimen is expired. There is no override.	Technologist
	The patient specimen is expired. Continue to print the Caution Tag and/or the BTRF? No clears the screen. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: Caution Tag printed on expired specimen).	Enhanced Technologist
<p>The user attempts to print Caution Tags for emergency issue and:</p> <ul style="list-style-type: none"> • The current specimen has an “Emergency Issue” order. • The patient has no record of ABO/Rh typing. • The required ABO/Rh specimen testing is incomplete. <p>The user may select:</p> <ul style="list-style-type: none"> • For WB or RBC order only: group O, Rh positive or O Rh negative (WHOLE BLOOD is not available). • For FFP order only: group AB, Rh positive or Rh negative. • For PLT order: all available units are 	<p>The unit does not meet these requirements. Testing is incomplete and this unit is not eligible for emergency issue. The Caution Tag cannot be printed. There is no override.</p>	All users

User Action Step 3: When This Condition Exists  VBECS Emits an Audible Alert and Warns the User:	User Role
issuable. VBECS determines whether a blood unit that does require crossmatch (electronic or serologic) is ready for issue based on the following rules: <ul style="list-style-type: none">• Unit is not in a frozen state.• The unit is crossmatched to the patient (eXM, or serologic XM).• TAS Specimen testing is complete and valid (ABO/Rh and ABS results are entered). One of these crossmatch interpretations was entered: <ul style="list-style-type: none">• Crossmatch Compatible• Compatible: Electronically crossmatched• Crossmatch Incompatible: Give only with Medical Director approval	All of the conditions for the unit are met but an emergency issue order indicator is in place or the testing is incomplete or inconclusive on the current specimen and units were selected. Do you want to print emergency issue tags/forms for the unit/patient? Yes prints the emergency issue tags and forms. No does not allow the user to continue.	All users
For blood units that do not require crossmatch when the unit is assigned to the patient and is not in a frozen state, VBECS determines when a blood unit is ready for issue.	All of the conditions for the unit are not met. The Caution Tag and/or the BTRF cannot be printed at this time and the reason they cannot be printed. Additional patient testing or unit processing must be performed.	All users

Figure 86: Caution Tag

VA Logo Division Name, City, State	
Patient ID:	
Patient Name:	Recipient Blood Type:
Unit/Pool ID:	Donor Blood Type:
Compatibility Interpretation:	
CAUTION: Before transfusing this blood component, perform bedside verification of the patient's identity by matching the patient identification on this tag with the patient wristband and the Blood Transfusion Record Form.	
Assigned Date/Time:	Tech ID:
Informational barcode	

Figure 87: Blood Transfusion Record Form

Blood Transfusion Record Form (revision no.)					
VA Logo Division Name, City, State			Transfusion Requirements <Insert applicable Transfusion Requirements and antigen negative requirements.>		
Patient Name:					
Patient ID:		Patient Blood Type:	Blood Component Information		
Unit/Pool ID:		Unit Blood Type:	Blood Component: Component Expiration Date/Time: Number of Units/Pool:		
Compatibility Interpretation:			Additional Patient Information		
Assigned Date/Time:		Technologist Initials:	Specimen UID: Location:		
Remarks					
This section should contain useful information. Examples: Unexpected antibodies. Additional units MAY NOT be available in an emergency! Premedicate patient, per MD orders. Blood warmer required. Patient requires leukocyte-reduced products. Do you have the correct filter? Crossmatch by Transfusion Centers of America.					
Pretransfusion Data					
Inspected and issued by:					
Issued to:		Issue-to location:			
I have verified and compared, AT THE BEDSIDE, the transfusion recipient's identity (i.e., wristband), the unit ID tag, the blood component container label, and this form. I verify that all information matches and is consistent ITEM for ITEM. I verify that the intended recipient is the same person named on this form and on the unit ID tag. Furthermore, I verify that there is a current, valid informed consent, and a physician's order for this transfusion.					
<input type="checkbox"/> Verified informed consent for transfusion.		First identifier (signature):		Second identifier (signature):	
Transfusion Data					
	Date/Time	Temperature	Pulse	Blood Pressure	Respiration
Start					
15 minutes					
Mid (optional)					
Stop					
Amount given (mL):		<input type="checkbox"/> Completed		<input type="checkbox"/> Interrupted	
		<input type="checkbox"/> No reaction		<input type="checkbox"/> Reaction suspected (Complete Transfusion Reaction)	
Data section.)					
Other difficulties (equipment, clots, etc.): <input type="checkbox"/> No <input type="checkbox"/> Yes (Specify.)			Transfusion Data section completed by (signature):		

Transfusion Reaction Data

Patient identity match with unit compatibility tag and this form reverified by (initials):

Description of reaction: Urticaria Chill Pain Fever Dyspnea Other (Specify.)

Transfusion Reaction Data section completed by (signature):

Suspected Transfusion Reaction: Immediate Response

If a reaction is suspected, **IMMEDIATELY**:

1. Interrupt the transfusion. Give emergency treatment. Keep the intravenous line open.
2. Reverify patient and blood product identification.
3. Notify Physician and Transfusion Service.
4. Follow transfusion reaction procedures.
5. Do **NOT** discard the component. Return the blood component bag, filter set, and attached solutions to Transfusion Service. Collect patient specimens, as required.
6. Order a Transfusion Reaction Workup.

Blood Transfusion Record
Form, Version 1.0

Patient name: _____ Patient ID: _____ Date of birth:_____

Invalidate Test Results

The user invalidates incorrectly entered patient test results and reenters correct patient test results and interpretations.

Assumptions

- A completed patient order exists in VBECS.

Outcome

- Test results are invalidated.
- VBECS may assign “correction” status to a task to allow the user to repeat a test and add it to the Pending Task List (PTL).

Limitations and Restrictions

- A user may not deactivate a component task in this option.
- This option does not release units from patient assignment. The user must release “assigned” units before invalidating the test results.
- To maintain a clear record and system checks, the user must invalidate both original and repeat ABO/Rh tests.

Additional Information

- VBECS invalidates the entire test group during this option. The user must reenter results to replace the invalidated results.
- Workload and billing are deactivated or rescinded from the deactivated testing.
- VBECS invalidates transfusion reaction workups (TRWs) in total and crossmatches (XMs) by unit.
- Deactivation of an antibody identification (ABID) task invalidates all antibody specificities entered in that task..
- VBECS displays results and interpretations of the tests but not any QC performed with the tests.
- VBECS displays “Test Result Invalidated” to indicate invalidated test results.

User Roles with Access to This Option

- Enhanced Technologist

Invalidate Test Results

The user may invalidate one or more previously entered test results and replace them with corrected results.

User Action	VBECS
1. Select Patients from the main menu. Select Invalidate Test Results .	<ul style="list-style-type: none">• Displays options for processing patient-related functions. <p>NOTES —————</p> <p>Click the Component Orders tab to view its PTL.</p>
2. Enter the patient name and/or specimen UID.	<ul style="list-style-type: none">• Displays an option to enter a specimen UID or a patient for a specific date or for a range of dates.• Displays the complete diagnostic tests associated with the entry.

User Action	VBECS
Edit the "expires after" date, if required. Click Search , if needed.	<ul style="list-style-type: none"> • Displays the original results for the user to review.
3. Select a test result from the Specimen Test Results list.	<p>NOTES</p> <p>When the user chooses to invalidate an ABID, VBECS warns that the invalidation of the antibody specificity also invalidates the corresponding calculated antigen negative requirements. No user action is required.</p> <p>►►► When the user is a Traditional Supervisor and the selected specimen is the most recent specimen tested for the selected patient, the user may invalidate a previously justified ABO/Rh test result. When the specimen ABO/Rh test associated with a justification is invalidated, VBECS removes the justification information from the patient record.</p> <p>When the user attempts to invalidate a non-XM test for a patient specimen and blood units are currently associated with the specimen (assigned, electronically or serologically crossmatched, issued or transfused), VBECS warns that blood components are associated to this specimen and that the associated units must be removed before testing can be invalidated. The user may not continue to invalidate the test.</p> <p>When the user attempts to invalidate a XM test for a patient specimen and the associated blood units are currently issued or transfused, VBECS warns the user that the selected test cannot be invalidated because the unit was issued based on the XM result. The user may not continue to invalidate the XM test.</p>
4. Verify the accuracy of the selected patient specimen and patient information (Figure 88). Click OK to accept the results.	<ul style="list-style-type: none"> • Marks these test results as "invalid" and asks the user whether he needs to replace the invalidated results with new test results. <ul style="list-style-type: none"> ○ Yes (test result replacement is needed) changes the task status to "correction" to return the task to the PTL for completion. ○ No (test replacement is not needed) marks the erroneous test results as "Test Result Invalidated"; the task status does not change. • When the user selects all the diagnostic tests associated with a specimen, displays an option to mark the specimen unacceptable and invalidate the tests.
5. Select the test to invalidate from the Patient Test Results list. Click Invalidate Results (Figure 89). Enter a comment. Click the Add test to the Pending Task List to allow for replacement results check box, if appropriate.	<ul style="list-style-type: none"> • Asks the user whether he wishes to change the specimen status to "unacceptable." <p>NOTES</p> <p>To maintain a clear record and system checks, invalidate both original and repeat ABO/Rh tests.</p> <p>When the user invalidated all of the diagnostic tests associated with a given specimen, VBECS asks whether the user wishes to change the specimen to "unacceptable." No allows the user to invalidate the test results without making the specimen</p>

User Action	VBECS
Click OK .	unacceptable. Yes changes the specimen to “unacceptable” and requires a comment.
6. Click OK to exit.	

Figure 88: Invalidate Patient Test Results

VBECS - Invalidate Patient Test Results

Specimen Search Criteria*

Patient	vbpa
Specimen UID	
Expires After	02/08/2006

Specimen Search Results

Specimen UID	Expires	Patient Name	Patient ID
2960310037	02/10/2006 23:59	VBPATIENT, EIGHTYTWO	000-00-0082
2960310035	02/09/2006 23:59	VBPATIENT, EIGHTYONE	000-00-0081

Include Unacceptable Specimens

Selected Patient Specimen

Specimen UID	2960310037
Collection Date	02/07/2006 08:42
Received Date	02/07/2006 10:58
Expiration Date	02/10/2006 23:59
Phlebotomist	Kevin
Visual Inspection	Acceptable
Comment	

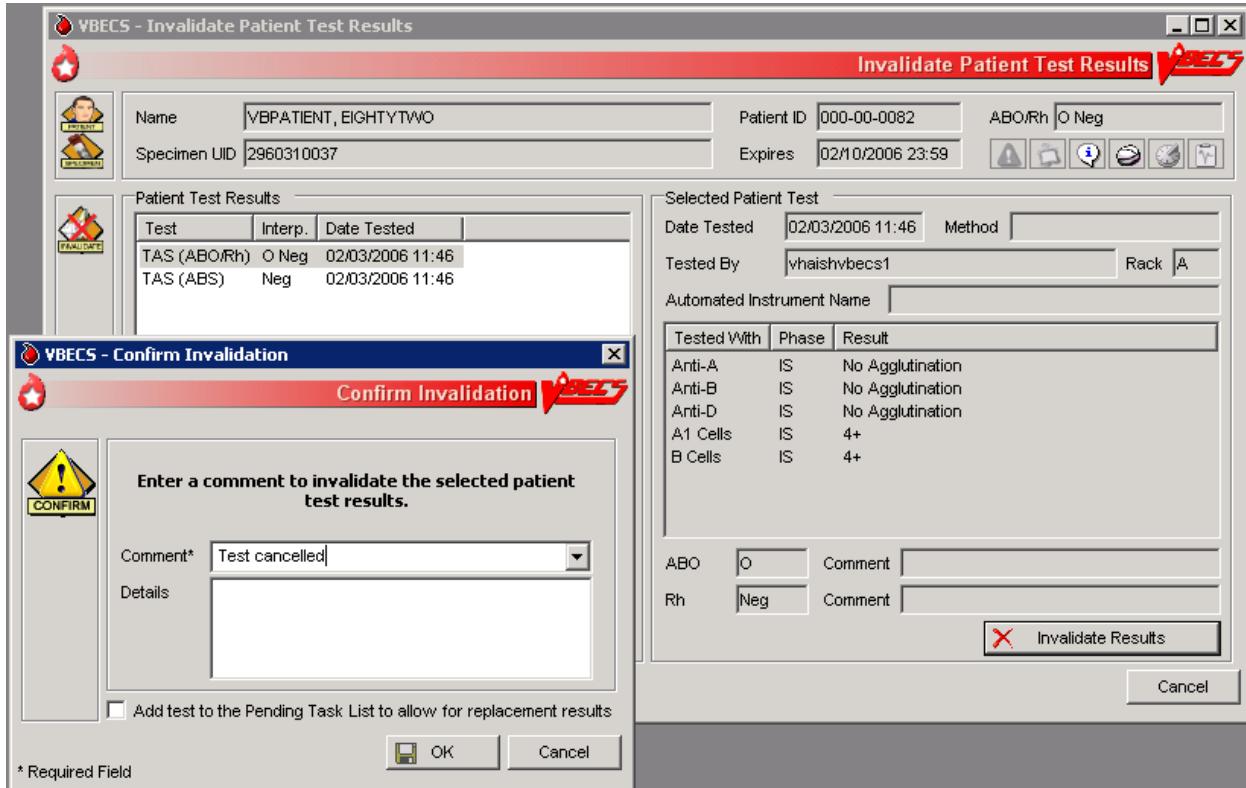
Selected Patient

Patient Name	VBPATIENT, EIGHTYTWO
Patient ID	000-00-0082
Patient Sex	Male
Date of Birth	01/01/1945
ABO/Rh	O Neg

Buttons: OK, Cancel

* Required Field

Figure 89: Confirm Invalidation



Remove Final Status

The user removes a final status from a unit. All other statuses are manipulated through normal system rules and practices.

Assumptions

- The user is logged into the division containing the unit record.
- The unit is in a final (transfused, transferred, modified, discarded) status.
- The user must invalidate the modification status of the split or pooled units, and then the original unit or pool.

Outcome

- The new information was saved with the unit's historic record.
- The unit is in the status immediately prior to the final status.

Limitations and Restrictions

- This option applies only to the release of units in final statuses.

Additional Information

- This option allows a user to restore a unit to inventory from a final status. It may be used to begin undoing a transfusion episode (step by step in reverse order) or correct a unit modification record.
- “Issued” is not a final unit status.
- This option is not used to add units to or remove them from a pool.

User Roles with Access to This Option

►►► Traditional Supervisor

Remove Final Status

The user corrects a clerical error: a unit was processed and moved to a final status in the computer incorrectly.

User Action	VBECS
1. Select Supervisor from the main menu. Select Remove Final Status .	<ul style="list-style-type: none">• Displays options available to supervisors..• Displays fields for selecting a unit and removing its final status.
2. Scan or enter a unit ID or product code, or click the ellipsis button to select a unit from the drop-down list.	<ul style="list-style-type: none">• Displays unit data, including the previous and current unit statuses.• Warns the user to proceed with caution. <p>NOTES —————</p> <p>VBECS warns the user when the unit does not have a final status or was not modified (other than pool, thaw/pool, and split). The user may select another unit.</p> <p>When the final status is “modified” (pooled, thaw/pooled, or split), VBECS verifies that the target unit is invalidated. When the target unit was not invalidated, the user may not continue.</p>

User Action	VBECS
<p>3. Verify that the unit selected is the desired unit.</p> <p>Click OK.</p> <p>Enter a comment (Figure 90).</p>	<ul style="list-style-type: none"> Asks the user if he would like to remove the final status. Requires the user to enter an explanatory comment. <p>NOTES</p> <p>VBECS updates the unit status to the previous status and maintains restrictions on the original unit.</p>
<p>4. Review the data, click OK to save, and click OK again to confirm the save.</p>	<ul style="list-style-type: none"> Displays the unit data and asks the user to verify the return to the previous status. Allows the user to review his entries and choices and save the correction to the unit record or exit without saving. Updates the unit record. <p>NOTES</p> <p>When VBECS removes a final status of "discard" or "transfer," it also removes return credits previously assigned to the unit.</p>

Figure 90: Remove Final Unit Status

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Processing Orders

Accept Orders: Accept an Order

The user accepts the receipt of an order.

Assumptions

- Orders were placed in CPRS for a patient and a VBECS order number was generated.
- When a specimen is required, the user located it.
- Inappropriate Transfusion Request parameters are defined for orderable component classes.
- The connection to VistA is active.

Outcome

- Ordered tests may be processed and are available to various worklists.

Limitations and Restrictions

- When no CPRS order exists, the user processes the specimen offline.
- The user must accept the Type & Screen (TAS) before he accepts other diagnostic tests or component orders.
- The user cannot click  (Restricted or Assigned Units) to access information on autologous or directed units that may be restricted to a patient.

Additional Information

- VBECS automatically cancels orders the day after they expire.
- The user may investigate patient clinical information using VistA and CPRS.
- A facility may capture the phlebotomist's signature and the date and time of specimen collection on a printed order from CPRS. [Local IRM personnel may configure CPRS to print the blood bank order: refer to *Setup Guide* (August 2000) in VistA Document Library, Computerized Patient Record System (CPRS)].

User Roles with Access to This Option

All users

Accept Orders: Accept an Order

The user reviews the list of pending orders and the specimen, determines that local policy requirements are satisfied, and accepts all or part of a routine order. The user accepts the VBECS order and associates the Laboratory generated specimen UID number with the order.

The user uses the Pending Order List (POL) to view additional details, print outstanding orders, and to select, accept, and add orders to the Pending Task List (PTL).



Changes made in the VBECS Administrator option mapping orders to another VBECS division do not effect delivered orders. Orders delivered to a VBECS division must be completed, rejected, or canceled in that division. Resubmit orders after mapping is completed to send an order to another VBECS division.

User Action	VBECS
<p>1. Select Orders from the main menu.</p> <p>Select Accept Orders.</p> <p>2. Select an order to accept from the POL (Figure 91), or</p> <p>In the Pending Order List Search Criteria area, enter the known data, including the date wanted.</p> <p>Click Search to find an order.</p>	<ul style="list-style-type: none">• Displays options for processing orders.• Displays the POL and POL search criteria. <p>NOTES</p> <p>Select an order for TAS before selecting a corresponding order for diagnostic tests or components.</p> <p> VBECS emits an audible alert when there are patient Special Instructions or Transfusion Requirements.</p> <p>VBECS alerts the user when the component class ordered requires a specimen. The status may be REQ (specimen required) or NRQ (no specimen required). The user may not continue until specimen information is added. When modifiers are included in the physician's component order, VBECS provides visual and audible alerts to remind the user to evaluate the request. VBECS does not monitor subsequent action.</p> <p>VBECS alerts the user when units (autologous, directed, or assigned/crossmatched) with a future expiration date are associated with the patient in any division in the database.</p>
<p>3. Scan or enter the specimen UID in the Specimen UID field. (See Maintain Specimen.) (Figure 92)</p> <p>When the component requires a current specimen and a valid sample is not available, click the Emergency Order check box.</p> <p>Click Accept to accept the order without an associated specimen.</p>	<ul style="list-style-type: none">• Allows the user to enter new specimen information or correct problems with an existing specimen with the current VBECS order.• Allows the user to process an order without an associated specimen for emergency issue and retroactively associate a specimen with the order. <p>NOTES</p> <p>Alphabetical characters in specimen UIDs must be capitalized: VBECS recognizes only uppercase letters.</p> <p>Specimens collected for diagnostic tests only are to be used for</p>

User Action	VBECS
	<p>performing the specifically ordered tests and are not available for processing blood component orders.</p> <p>For all orders requiring a specimen, VBECS queries VistALink to verify that the lab order numbers are consistent with the specimen. If they are not consistent, VBECS notifies the user that the specimen's lab number does not match the number associated with the order. VBECS does not accept the order until the user identifies a specimen with a matching lab order number.</p> <p>When the order status is "In Blood Bank," a specimen was associated with the order; when the status is "Specimen Required," the user must identify a specimen by its UID and enter specimen details according to Maintain Specimen.</p> <p>When an order for a component class requires a specimen (WHOLE BLOOD and RED BLOOD CELLS component classes, and, optionally, based on Setting Component Classes) the user must select this function and replace the existing specimen with a new one. However, when VBECS displays the "emergency issue" order indicator, the user may continue without identifying an associated specimen. VBECS captures details for inclusion in an Exception Report [exception type: Emergency order accepted (no specimen)].</p> <p>Within an order group containing orders for blood components and the Type & Screen (TAS) test, the specimen associated with the TAS test applies to the TAS test and to all blood component orders contained in the order group.</p>
<p>4. Click  to review order details.</p> <p>5. When the urgency is "Pre-Op," click  in the Patient Information Toolbar to review the MSBOS information for the division.</p> <p>View and/or search entries in the MSBOS for possible matches with the patient surgery.</p>	<ul style="list-style-type: none"> Displays order details that may not be edited. Allows the user to review current MSBOS settings. Lists the current MSBOS site parameters, based on generic surgery types. <p>NOTES</p> <p>When the pre-op indicator is "Yes," the user may access the MSBOS to determine whether to include details of the order in the Inappropriate Request Report.</p>
<p>6. Based on the review of the MSBOS parameter associated with the surgery type and the details of the current order, click the Include In Inappropriate Transfusion Request Report check box, according to local policy.</p>	<ul style="list-style-type: none"> Adds the details of the order to the Inappropriate Transfusion Request Report when the user completes Accept Orders: Accept an Order. <p>NOTES</p> <p>To display a list of available autologous and/or directed units in the system for the selected patient, see Blood Availability.</p>
<p>7. Click  in the Patient Information Toolbar to review patient data, Transfusion Requirements and Special Instructions.</p>	<ul style="list-style-type: none"> Displays read-only TR and SI patient VBECS data.
8. Click Accept or Reject for each order.	<ul style="list-style-type: none"> For each order accepted, updates the: <ul style="list-style-type: none"> Status to "accepted" and adds it to the PTL for further processing. Existing lab accession number to collect data associated with

User Action	VBECS
	<p>every order.</p> <p>NOTES</p> <p>When a user rejects an order, VBECS acknowledges the order and cancels it through Accept Orders: Cancel a Pending Order.</p> <p>When no specimen is required, VBECS assigns an order expiration date to three days in the future at 23:59 (the date of acceptance of the component order acceptance is day "0").</p> <p>When a specimen is required, the order expiration date is the same as the associated specimen. VBECS automatically expires the associated component order when the specimen is expired. (See Appendix B: Figure 117: Order Status Flowchart.)</p> <p>The user evaluates each diagnostic test and component order separately.</p> <p>When the pre-op indicator is "No," VBECS compares the Laboratory test values included in the order message from CPRS to the threshold values defined for the ordered component class requirements in Configure ICCBBA Component Classes Inappropriate Request Parameters setting (see Component Classes). When the threshold values were exceeded for one or more ordered component classes, VBECS notifies the user that the Laboratory test value exceeds site parameters for the component class orders and asks whether to add the order to the Inappropriate Transfusion Request report. Yes adds the details of the order to the Inappropriate Request Report. No requires a comment to be associated with the order.</p> <p>The user may cancel one or more components of an order through Accept Orders: Cancel a Pending Order to cancel while working in Accept Orders: Accept an Order. When this occurs, VBECS sends a message to CPRS and notifies the VistA Laboratory application that the order was canceled.</p>
9. Repeat Steps 2–9 to accept another order, or click Close to exit.	

Figure 91: Accept Orders

VBECS -Accept Orders

Pending Order List Search Criteria

Specimen UID Patient
 Date Wanted 02/03/2006 To 02/03/2006 Lab Order No.

Pending Order List

Patient Name	Patient ID	Lab Order No.	Urgency	Specimen	Request	Ordered By	Patient Location
VBPATIENT, EIGHTYTWO	000-00-0082	65028	Routine	Required	TAS	USER, ONE	VBEC LEAVENW
VBPATIENT, EIGHTYTHREE	000-00-0083	65060	Routine	Required	TAS	USER, ONE	VBEC LEAVENW

Order Group Selected Order

VBPATIENT, EIGHTYTWO
 TAS
 RED BLOOD CELLS
 FRESH FROZEN PL.

Patient Name ABO/Rh
Patient ID Patient Location
Ordered By Lab Order No.
Request Order Status
Comments Requirements
Specimen UID Quantity
Emergency Order

* Required Field

Figure 92: Maintain Specimen

VBECS - Maintain Specimen

Maintain Specimen

Name: VBPATIENT, EIGHTYTWO Patient ID: 000-00-0082 ABO/Rh: NR

Patient Specimen

Specimen UID*: 2960310037

Collection Date*: 01/31/2006 08:42

Received Date*: 02/03/2006 10:31

Expiration Date*: 02/03/2006 23:59

Phlebotomist ID*:

Processing Tech*: vhaishvbecs2

Acceptable Specimen

Unacceptable Specimen

Comment*:

Details:

Associated Orders

Order Status Date Wanted

* Required Field

OK Cancel

This screenshot shows the 'Maintain Specimen' dialog box from the VBECS software. The top bar includes the title 'VBECS - Maintain Specimen' and a red header bar with the text 'Maintain Specimen'. The main area is divided into two sections: 'Patient Specimen' on the left and 'Associated Orders' on the right. In the 'Patient Specimen' section, fields include 'Specimen UID*' (2960310037), 'Collection Date*' (01/31/2006 08:42), 'Received Date*' (02/03/2006 10:31), 'Expiration Date*' (02/03/2006 23:59), 'Phlebotomist ID*' (empty), and 'Processing Tech*' (vhaishvbecs2). There are radio buttons for 'Acceptable Specimen' (selected) and 'Unacceptable Specimen'. Below these are 'Comment*' and 'Details' input fields. The 'Associated Orders' section contains tabs for 'Order', 'Status', and 'Date Wanted', all currently empty. At the bottom, there are 'OK' and 'Cancel' buttons, and a note indicating '* Required Field'.

Accept Orders: Pending Order List

The Pending Order List (POL) lists pending blood bank orders.

Assumptions

- A CPRS order is acknowledged by VBECS.
- An order is printed or an alert is issued per site parameters.
- The connection to VistA is active.

Outcome

- A list of pending orders is printed or displayed.

Limitations and Restrictions

- None

Additional Information

- This option is used for diagnostic and blood component test orders.

User Roles with Access to This Option

All users

Accept Orders: Pending Order List

VBECS displays the POL with search criteria, which allows the user to limit the number of viewable items. The user may review details of an order without taking action on it.

User Action	VBECS
1. Select Orders from the main menu. Select Accept Orders , or Click the Pending Orders alert icon , if available, in the status bar at the bottom of the screen (Figure 91).	<ul style="list-style-type: none">• Displays options for processing orders.• Displays the Pending Order List and Pending Order List search criteria.• Allows the user to search for specific orders.• Provides the criteria to limit the search and subsequent presentation and processing.• Allows acceptance of an order. <p>NOTES</p> <p>VBECS displays orders directed to the division by a user during system configuration.</p> <p>See Appendix B: Figure 117: Order Status Flowchart.</p> <p>When searching for pending orders based on patient name, the system displays all pending and current accepted orders for the patient. A current order is a previously accepted order with a future order/specimen expiration date.</p>
2. Change the selection criteria, as needed, to prepare the list or to accept the default presentation.	<ul style="list-style-type: none">• Displays the POL requested by user's selection(s). <p>NOTES</p> <p>The POL can be sorted by Patient, Procedure, Urgency, Date/time received or date/time wanted.</p>

User Action	VBECS
	<p>The user may select an entry on the POL to view additional details for the order, including:</p> <ul style="list-style-type: none"> • Patient Name • Patient ID • Additional component class or diagnostic tests included in the same order group as the selected order. (These are displayed whether they are “in progress” or still on the POL. There should be some indication to distinguish those that are already in progress.) • Order comments (additional requirements from CPRS) • Quantity (component class orders only) • Patient hospital location • Lab order # • Patient ABO/Rh (if known)
3. To continue processing the POL, review the displayed list, print the list, or go to Accept Orders: Accept an Order.	<ul style="list-style-type: none"> • Allows the user to return to Step 1 to change the presentation of the list, review details of pending orders, print the list, or select an order or proceed to Accept Orders: Accept an Order. <p>NOTES —————</p> <p>When a user requests a POL report and VBECS does not find any information, VBECS notifies the user and asks whether he wishes to continue to print. The user may cancel or print the report, which will include “No pending orders found.”</p>
4. Exit.	

Display Order Alerts

VBECS notifies the user of new and updated patient orders.

Assumptions

- VBECS receives a new order or an order update message from VistA for the user's division.

Outcome

- VBECS displays notification icons only to users logged into VBECS. The status bar displays a count of orders pending acceptance.

Limitations and Restrictions

- VBECS issues no notifications for order cancellations.
- VBECS displays the Order Alert icon only when the number of pending orders is fewer than 1,000.

Additional Information

- The user may set VBECS to automatically print an order alert on the designated printer when VBECS acknowledges the order.

User Roles with Access to This Option

All users

Display Order Alerts

VBECS notifies the user that order updates occurred and allows him to accept the new orders.

User Action	VBECS
<p>1. Hold the mouse over the icon to view a tool tip, or</p> <p>Click  to view a panel showing new or updated orders and hide the icon.</p> <p>Click  again to hide the panel.</p>	<ul style="list-style-type: none">• Acknowledges a new or updated patient order.• Displays a order notification icon in the status bar when new orders are received, according to local settings.• Displays the total number of orders pending acceptance to the right of the icon.• Displays information regarding new orders and order updates and allows the user to accept them. <p>NOTES</p> <p>When the division is configured to alert the user of orders received by VBECS, VBECS notifies the user of ordered components or ordered tests that were:</p> <ul style="list-style-type: none">• Directed to the user's division.• Added or updated in VistA. <p>When the division is configured to alert the user of orders needed in the next specified number of hours, VBECS also notifies the user of ordered components or ordered tests with a required time less than a specified number of hours in the future.</p>

Display Patient Update Alerts

VBECS notifies the user of patient update, death, and merge events.

Assumptions

- A patient demographic update is received from VistA for the user's division for a VBECS patient with an active order.

Outcome

- The patient demographics are updated in VBECS.

Limitations and Restrictions

- VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed VistA patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor updates the patient records and clears the icon.

Additional Information

- None

User Roles with Access to This Option

All users

Display Patient Update Alerts

VBECS notifies the user that patient updates occurred and allows him to view additional details.

User Action	VBECS
<p>1. Hold the mouse over the Patient Alert icon to view a tool tip, or</p> <p>Click  to view a menu and select Updated Patients, Deceased Patients, or Patient Merge to view the updates.</p> <p>Click  again to hide the menu.</p>	<ul style="list-style-type: none">• Displays a Patient Alert icon in the status bar when it receives a patient update or death event message and the patient has active or pending orders in the user's VBECS division.• Displays a Patient Alert icon in the status bar when it receives a merge event message from VistA. <p>NOTES —————</p> <p>The user may also select Patients from the main menu, Patient Updates, and Updated Patients, Deceased Patients, or Patient Merge to view the updates.</p>

Display Patient Merge Alerts

VBECS notifies the user of VistA patient merges.

Assumptions

- A patient demographic merge alert is received from VistA for the user's division for a VBECS patient.

Outcome

- VBECS notified the user that patient records were merged in VistA and that the user must take action to match the records in VBECS.

Limitations and Restrictions

- VBECS notifies users of VistA patient merges when both merged patients are known to VBECS.
- VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed VistA patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor updates the patient records and clears the icon.

Additional Information

- VBECS notifies users of VistA patient merges until a Traditional Supervisor clears the Patient Alert icon. See Patient Merge for instructions.

User Roles with Access to This Option

All users

Display Patient Merge Alerts

VBECS notifies the user that patient merges occurred in VistA and allows him to view additional update details.

User Action	VBECS
<p>1. Hold the mouse over the Patient Alert icon to view a tool tip, or</p> <p>Click  to view a menu and select Updated Patients, Deceased Patients, or Patient Merge to view the updates.</p> <p>Click  again to hide the menu.</p>	<ul style="list-style-type: none">• When it receives a patient update or death event message and the patient has active or pending orders in the user's VBECS division, displays a Patient Alert icon in the status bar.• When it receives a merge event message from VistA, displays a Patient Alert icon in the status bar. <p>NOTES —</p> <p>The user may also select Patients from the main menu, Patient Updates, and Patient Merge to view the updates.</p> <p>VBECS displays a patient update or merge icon alert to all users until all merge events are cleared and all updates, including death notices are viewed.</p>

Maintain Specimen

A specimen for testing is received in the blood bank and is processed as part of initial order acceptance, as described in Accept Orders: Accept an Order.

Assumptions

- Pending CPRS orders and active orders require an acceptable specimen.
- A specimen was collected and previously accessioned in the VistA Laboratory system, which generated the specimen's universal ID (UID).

Outcome

- The user accepted or rejected a specimen.

Limitations and Restrictions

- When a search by UID causes VBECS to time out, repeat the search by UID and patient name or by patient name only.
- Specimen recollection requests must be made offline.
- Designating a specimen as “unacceptable” after accepting a CPRS order closes that order and requires a new CPRS order and sample.

Additional Information

- A specimen may be marked unsuitable for use after its acceptance.
- A specimen expiration date may be edited after acceptance.
- A specimen may be recollected without canceling or reordering the VistA order. This practice is dictated by local policy and procedures.
- Specimens marked as originally associated with diagnostic tests only or unacceptable are not considered available specimens when CPRS is queried for specimen availability.

User Roles with Access to This Option

All users

Maintain Specimen

A specimen for testing is received in the blood bank and is processed as part of initial order acceptance, as described in Accept Orders: Accept an Order.

Information about a previously accepted specimen may be updated. The user may verify whether an active specimen is currently in the blood bank or update the information concerning a previously accepted specimen. After the user checks the physician's order against the specimen requirement, the user verifies the specimen's condition, labeling, and accompanying paperwork, according to local policy. The user verifies the specimen information and acceptability and prepares the specimen for testing.

The user may edit specimen information, such as extending the expiration time according to local policy, and marking a specimen as unsatisfactory or expired so that future orders require that a new specimen be collected.

When a specimen is required, the user must find that specimen before acknowledging that order, as described in Accept Orders: Accept an Order.

User Action	VBECS
1. Select Orders from the main menu. Select Maintain Specimen .	<ul style="list-style-type: none"> • Displays options for processing orders. • Displays fields for entering patient specimen information.
2. Scan or enter the specimen's UID.	<ul style="list-style-type: none"> • Displays a field to enter the specimen UID and allows the user to search for existing specimens. • Displays previously entered information for the specimen and accommodates data entry of new specimen information. <p>NOTES</p> <p>The user may:</p> <ul style="list-style-type: none"> • Create and/or maintain a specimen associated with an order from Accept Orders: Accept an Order. • Update specimen information from a previously received specimen. <p>Specimens associated with blood bank diagnostic tests are not available in Maintain Specimen. Specimens collected for diagnostic tests only are to be used for performing the specifically ordered tests and are not available for processing blood component orders.</p> <p>The orders and associated specimens are maintained for three days before the order or specimen expires: Type & Screen (TAS), component orders (RBC, FFP, CRYO, PLT, WB, OTHER).</p> <p>The list of orderable and reflex tests below may be added to a specimen maintained for a component order, but may not have a component order added to them: they do not have maintained specimens.</p> <p>These tests have a specimen drawn and used for their ordered test. The specimens are not maintained for component preparation:</p> <ul style="list-style-type: none"> • DAT • ABS • ABO/Rh • Transfusion Reaction Workup (TRW) <p>VBECS allows the user to search all existing patient specimens associated with a specific patient. The user may enter the patient name or a specimen UID to access the list.</p>
3. Enter new specimen information or edit previously entered information (Figure 92).	<ul style="list-style-type: none"> • Displays uneditable patient demographic information. • Displays an option to edit. <p>NOTES</p> <p>When the user extends the specimen expiration date and time, VBECS calculates the number of days by which the specimen was extended (based on the originally calculated expiration date)</p>

User Action	VBECS
	<p>and the newly entered expiration date. VBECS compares the difference to the site parameter for the maximum number of extension days allowed for a specimen. When the entered expiration date exceeds the parameter, VBECS warns the user. There is no override.</p> <p>The default expiration date is calculated as three days in the future with the day of the original specimen collection as "0." For example, a specimen collected on September 16, 2007 (regardless of the time), is day "0" and the calculated expiration date and time are September 19, 2007 @ 23:59 (midnight).</p> <p>When a new or existing specimen is being associated with a pending component order during Accept Orders: Accept an Order, the specimen must be acceptable.</p> <p>When there is a specimen requirement for orders, each order must be evaluated for a valid specimen before it can be accepted.</p> <p>VBECS displays specimen UIDs for selection by CPRS-associated maintainable specimen and then by acceptable and unexpired maintainable specimens, in reverse chronological order.</p> <p>VBECS allows the user to include expired and unacceptable specimens.</p> <p> When the user attempts to save an expiration date past the default of three days, VBECS checks the patient's record for evidence of transfusion within the previous three months and the history of antibody identification, regardless of the division. If either is found, VBECS emits an audible alert, warns that the patient has evidence of transfusion within previous three months and/or antibody formation, and instructs the user to enter a comment to extend the specimen expiration date beyond three days. The user must enter a canned comment (with the specimen extension) and/or free-text comment to continue. VBECS captures details for inclusion in an Exception Report (exception type: expiration date extended).</p> <p>When the specimen is deemed unacceptable, the status of the orders associated with the specimen remains "pending" or "active."</p> <p> When a user attempts to reactivate a previously expired or unacceptable specimen, VBECS emits an audible alert, warns that this is a previously expired or unacceptable specimen, and instructs the user to enter a comment to make it available. A comment is required to continue. VBECS captures details for inclusion in an Exception Report (exception type: unacceptable/expired specimen used).</p> <p>VBECS requires the date and time a specimen was collected</p>

User Action	VBECS
	<p>and the phlebotomist ID.</p> <p>When a specimen is processed, VBECS displays the details of associated orders (read only).</p> <p>The user must enter a comment when marking a specimen as unacceptable.</p>
4. Enter or verify specimen-related information from Step 3.	<ul style="list-style-type: none"> • Allows the user to review and edit previously entered information.
5. Review the entered information and click OK to save.	<ul style="list-style-type: none"> • Saves the data for use in further specimen order processing and subsequent retrieval. <p>NOTES —</p> <p>When saving or updating an expired specimen, VBECS warns the user and asks whether he wishes to continue. The user may continue without entering a comment.</p> <p>The UID initially used to identify the specimen becomes the VBECS specimen number, which VBECS retains and uses to process subsequent orders during the life of the specimen, including CPRS, VBECS, and Laboratory orders, and UIDs associated with the specimen. A historical record lists changes made to the specimen and is available for review.</p> <p>A permanent link remains between an exhausted or unacceptable specimen UID and its order, which allows the user to document the recollection of a new specimen, according to local policy.</p>
6. Click OK to exit.	

Patient Testing: Cancel an Active Order

The user cancels an accepted order on the Pending Task List (PTL) and adds a comment to justify the cancellation.

Assumptions

- The order and the user are in the same division.
- A user accepted an order that originated in CPRS through Accept Orders: Accept an Order, or created a reflex test order through Order Reflex Tests.
- The connection to VistA is active.

Outcome

- The order was removed from the PTL.
- An order update message was sent to CPRS.

Limitations and Restrictions

- Cancellation of one order does not affect other orders placed with it.
- Before a user may cancel a partially completed task, he must invalidate the results for that task, thereby changing its status to “not started.”

Additional Information

- None

User Roles with Access to This Option

All users

Patient Testing: Cancel an Active Order

The user selects one or more tasks to cancel from the PTL, cancels the accepted order from within VBECS, and adds a comment regarding the cancellation.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List in the Diagnostic Tests tab. <p>NOTES —</p> <p>Click the Component Orders tab to view its PTL.</p>
2. Click one to four check boxes in the PTL in the Diagnostic Tests tab or the Component Orders tab to select tasks (Figure 93). Click OK to continue, or click Cancel Order(s) to cancel the selected tasks. Select or enter a comment.	<ul style="list-style-type: none">• Deletes the selected tasks from the PTL and sends a message to CPRS with an order status update. <p>NOTES —</p> <p>Select a canned comment and/or free-text comment VBECS allows a user to cancel only tasks that are not started.</p> <p>See Appendix B: Figure 117: Order Status Flowchart.</p>

User Action	VBECS
Click OK to confirm the cancellation.	

Figure 93: Pending Task List Diagnostic Tests

The screenshot shows the 'Pending Task List' window for VBECS. The window title is 'VBECS - Pending Task List'. It has tabs for 'Diagnostic Tests' and 'Component Orders', with 'Diagnostic Tests' selected. On the left, there's a 'TASK LIST' icon. The main area contains search parameters for 'Specimen UID' (Patient), 'CPRS Order ID', 'Diagnostic Tests' (TAS, XM, Repeat XM, ABO/Rh, Repeat ABO/Rh, ABS), 'Task Status' (Not Started, In Progress, Partially Completed, Results Corrected), and 'Priority' (STAT, ASAP, Routine, Pre-Op). Below these are two tables: 'Pending Task List' and 'Component Orders'. The 'Pending Task List' table shows two entries:

Priority	Patient Name	Patient ID	Specimen UID	CPRS Order ID	Diagnostic Test	Order Comments	Date Wanted	Task Status
Routine	VBPATIENT, EIGHTY	000-00-0080	2960310033	22165251	TAS		1/31/2006	Not Started
Routine	VBPATIENT, EIGHTYTWO	000-00-0082	2960310037	22165259	TAS		1/31/2006	Not Started

At the bottom are buttons for 'Print', 'Cancel Order(s)', 'OK', and 'Cancel'.

Patient Testing: Pending Task List

The user accesses a Pending Task List (PTL) to select tasks (accepted orders), organize a batch of tests to be performed in a session, process patient component requests, and view and/or print a list of outstanding blood bank tasks.

Assumptions

- CPRS orders were accepted or a reflex order was placed within the VBECS division.

Outcome

- The task is available for further processing.

Limitations and Restrictions

- This option is for diagnostic, blood component, and reflex test orders placed in or directed to the user's division.
- The PTL does not include daily quality control, equipment maintenance schedules, or pending ABO/Rh confirmation and auxiliary tests on red blood cell units.

Additional Information

- This is the main entry point for other testing options.
- The PTL does not display completed diagnostic tests.
- VBECS cancels accepted orders (tasks) the day after they expire.
- Multiple users are prohibited from performing the same task on the same unit of blood for the same patient.
- The task may be selected and assigned to a technologist, preventing duplicate selection by another technologist.

User Roles with Access to This Option

All users

Patient Testing: Pending Task List

The user accesses a list of pending tasks. VBECS displays the PTL with search criteria to allow the user to limit the number of items viewed.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing (Figure 93).	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the PTL and PTL search parameters in the Diagnostic Tests tab or in the Component Orders tab.
2. Click the check boxes in the PTL to select one to four tasks for processing and click OK , or Click Print to print the list.	<ul style="list-style-type: none">• Allows the user to limit the search and display.• Prompts the user to select a task for continued processing, print a task list, or return to Step 1 to change the display of the list. <p>NOTES _____</p> <p>The user may click Cancel Order(s), select a comment, and click OK to exit.</p>

User Action	VBECS
	<p>The user may select one to four tasks for testing at a time. The tasks may be component class order tasks, diagnostic test tasks, or a combination of both.</p> <p>VBECS displays “NRQ” (not required) when the task does not require a specimen for processing.</p> <p>For each order, VBECS displays the specific diagnostic test or component order. The default searches for the current date’s tasks, then yesterday’s tasks, and so on until the task status is “completed.” The display includes the task’s status and a user name, when applicable.</p> <p>VBECS alerts the user when he attempts to select multiple tasks of the same type for a patient, and does not allow the selection of two or more tasks of the same type ordered for a patient during a testing session. Tasks are considered to be of the same type when they need to accommodate the use of the same testing grid in Patient Testing: Record Patient Test Results. For example, a user may not select a TAS task and one of its subtests that is ordered in a testing session. VBECS provides for one testing grid display per patient per test, not per specimen UID. If the user selected a TAS and an ABS, VBECS displays only the first one selected for result entry.</p> <p>Task and order statuses and functions that are displayed on the PTL:</p> <ul style="list-style-type: none"> • Not Started: the order was not selected. • Partially Completed <user ID>: allows selection by another user for a diagnostic test to complete, invalidate, or delete the work on this specimen. <i>Component orders remain in this status until the specimen and order expire.</i> • Filled: This order status is assigned when the total number of units ordered is updated to a unit status of “issued” or “transfused.” • Correction: previous results were invalidated; a corrected entry is required. <p>Task and order statuses that are not displayed for selection on the PTL:</p> <ul style="list-style-type: none"> • Completed: applies to diagnostic tests • Expired: applies to component orders at expiration of the associated specimen. <p>See Appendix B: Figure 117: Order Status Flowchart for the transmission of orders between CPRS and VBECS.</p> <p>When a user prints a PTL and no pending tasks are found, VBECS asks whether the user wishes to continue to print. The user may cancel or print the report, which states that no pending orders were found.</p>
3. Click OK or Cancel to exit.	

Accept Orders: Cancel a Pending Order

The user cancels an unaccepted order on the Pending Order List (POL).

Assumptions

- An order was not accepted by a user.
- The connection to VistA is active.

Outcome

- An order update message was sent to CPRS.
- The order was removed from the POL.

Limitations and Restrictions

- Cancellation of one order does not affect other orders placed with it.

Additional Information

- Each pending order is managed individually.

User Roles with Access to This Option

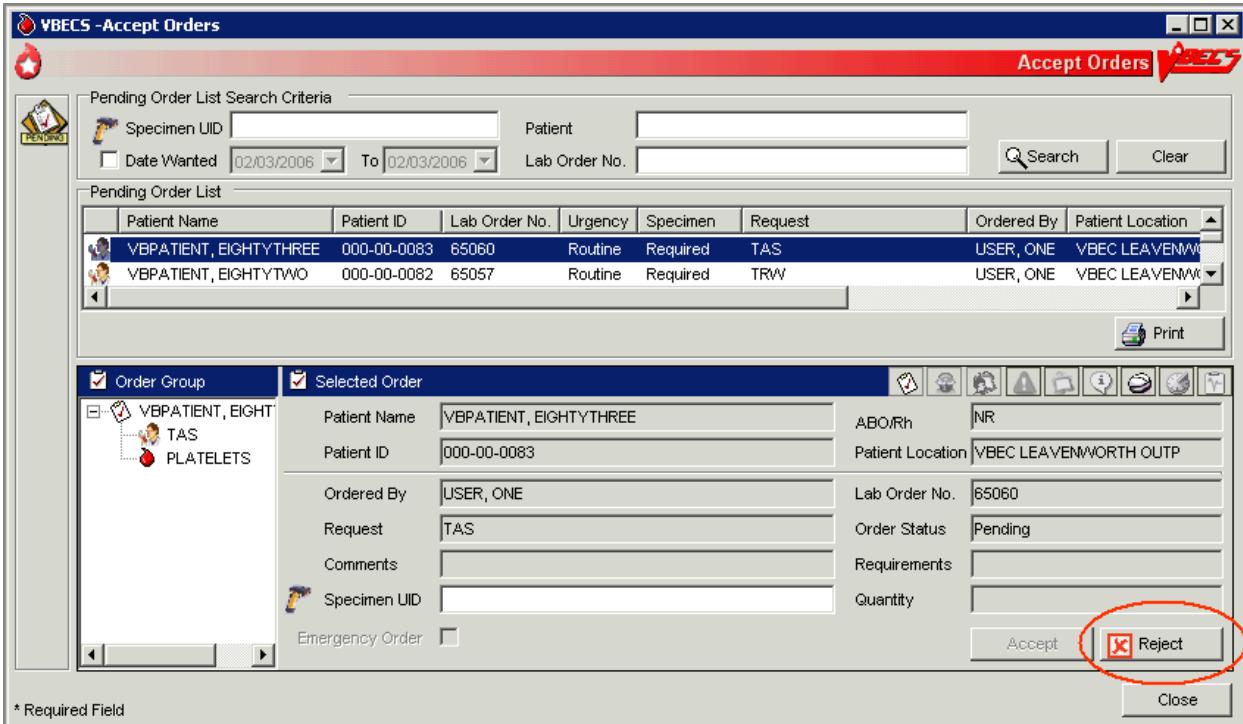
All users

Accept Orders: Cancel a Pending Order

The user selects an unaccepted order for cancellation.

User Action	VBECS
1. Select Orders from the main menu. Select Accept Orders .	<ul style="list-style-type: none">• Displays options for processing orders.• Displays the Pending Order List and Pending Order List search criteria.
2. Select an order to cancel from the Pending Order List (Figure 94). Click Reject .	<ul style="list-style-type: none">• Requires the user to enter a comment.• Requires the user to confirm the cancellation of the pending order.
3. Enter or select a comment in the Comment field. Enter details in the Details field, if desired. Click OK and Close to confirm the order cancellation.	<ul style="list-style-type: none">• Removes the order from the Pending Order List and sends a message to CPRS with an order status update.

Figure 94: Accept Orders: Reject an Order



Order Reflex Tests

The user may order additional blood bank tests for a complete or incomplete accepted patient specimen to add to the Pending Task List (PTL). The ordered test or test group limits the type of reflex and repeat test order that may be associated with a specimen.

Assumptions

- A patient's test result requires further investigation or repetition of a diagnostic test.

Outcome

- One or more reflex orders are in the PTL with a "routine" urgency.

Limitations and Restrictions

- A crossmatch (XM) and a repeat XM cannot be ordered unless they are associated with a specimen with a future expiration date and a phlebotomist is associated with that specimen.
- When a user selects weak D for the antigen typing test and the selected patient is Rh positive, VBECS warns that weak D testing cannot be performed. There is no override and VBECS does not add the test.

Additional Information

- Unlimited repeat tests may be ordered and completed, but are not available to CPRS or to billing.

User Roles with Access to This Option

All users

Order Reflex Tests

The user orders additional blood bank tests for a patient specimen that was already accepted and that may or may not be completed. The ordered reflex test(s) are added to the PTL.

User Action	VBECS
1. Select Orders from the main menu. Select Order Reflex Tests .	<ul style="list-style-type: none">• Displays options for processing orders.• Displays specimen search criteria and search results. NOTES ————— The user may also access Order Reflex Tests by clicking Order Reflex Tests when executing Patient Testing or by right-clicking the testing grid that generates the reflexive order.
2. Enter the patient name and/or the specimen UID. Click Search , if necessary.	NOTES ————— The user may identify specific specimen for reflex test ordering by scanning or by manual data entry of the UID on the specimen.
3. Select an item from Specimen Search Results. Review the information in the Selected Patient Specimen area and in the Patient Details and Order Details tabs (Figure 95).	<ul style="list-style-type: none">• Displays an option to search for specimens currently available (in-date) for a patient by standard patient search conventions.• Accommodates direct selection of a specimen by scanning or by entering a specimen UID.• Displays available (in-date) patient specimens or orders in reverse chronological order within a date range defined by the site parameter. Only one patient specimen may have reflex tests added in one

User Action	VBECS
Click OK to accept the order. Respond to messages, as required.	<p>session. The expired and unacceptable specimens will follow.</p> <ul style="list-style-type: none"> • Displays a message directing the user to complete Patient Testing when the selected test is not completed. User returns to Patient Testing. • Displays a message when a specimen is expired or unacceptable. User may click Yes to continue with the order or No to select or request another specimen, as appropriate. • Displays the date/time/division of the specimen collection when selecting a specimen for ordering reflex tests. <p>NOTES</p> <p> VBECS emits an audible alert, warns that the specimen is expired, and instructs the user to enter a comment to continue. When a user enters or scans an expired specimen, VBECS requires a comment and captures details for inclusion in an Exception Report (exception type: reflex test ordered on an expired specimen).</p>
4. When a specimen is already selected, go to Step 5. Select or enter a patient specimen that requires the additional test.	<ul style="list-style-type: none"> • Displays all orders associated with a specimen that can be used to request reflex tests for an existing diagnostic test order within an order group. • Automatically associates the reflex test with the order when there is only one order associated with the specimen.
5. Click one or more check boxes to select reflex tests from the Order Reflex Test(s) list.	<ul style="list-style-type: none"> • Displays the selected tests for review. • Allows the user to select or to deselect reflex tests.
6. Click OK to save and exit. Enter a comment, if required. cancellation.	<ul style="list-style-type: none"> • Adds the ordered patient reflex tests to the PTL.

Figure 95: Order Reflex Test(s)

VBECS - Order Reflex Test(s)

Order Reflex Test(s)

Name	VBPATIENT, EIGHTYONE	Patient ID	000-00-0081	ABO/Rh	O Neg
Specimen UID	2960310035	Expires	02/03/2006 23:59		

Order Reflex Test(s)

Order	Test Code	Reflex Test Name
<input type="checkbox"/>	Repeat ABO/Rh	Repeat ABO/Rh
<input type="checkbox"/>	Repeat ABS	Repeat ABS
<input checked="" type="checkbox"/>	DAT	DAT
<input type="checkbox"/>	ABID	ABID
<input type="checkbox"/>	AGwD	Weak D Typing
<input type="checkbox"/>	AGC	C Typing
<input type="checkbox"/>	AGE	E Typing
<input type="checkbox"/>	AGc	c Typing
<input type="checkbox"/>	AGe	e Typing
<input type="checkbox"/>	AGK	K Typing
<input type="checkbox"/>	AGk	k Typing
<input type="checkbox"/>	AGKp(a)	Kp(a) Typing
<input type="checkbox"/>	AGKp(b)	Kp(b) Typing
<input type="checkbox"/>	AGJk(a)	Jk(a) Typing
<input type="checkbox"/>	AGJk(b)	Jk(b) Typing

* Required Field

OK Cancel

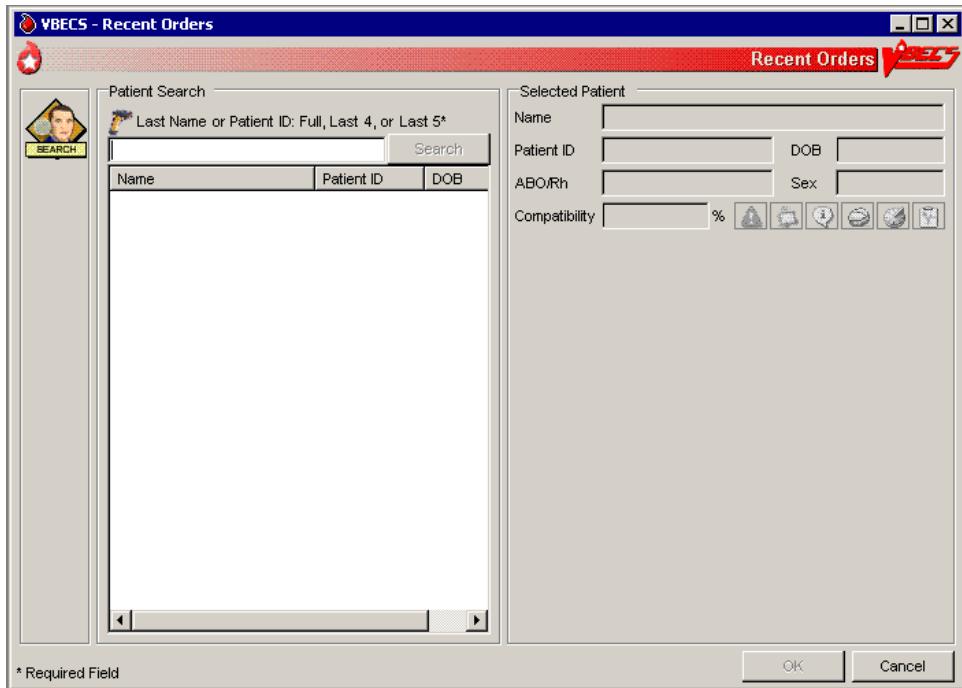
Patient Services

Patient Search Screen

VBECS displays the Patient Search screen to search for a specific patient in VBECS. For the Edit Unit Information, Incoming Shipment, and Document ABO Incompatible Transfusion options, VBECS searches VistA.

User Action	VBECS
<p>1. To access the Patient Search screen, open one of the options listed in Notes. To search for a patient, enter the patient's full name (last name first) or ID (Figure 96), or</p> <p>Enter the last four digits of the ID, or the initial of the last name and the last four digits of the ID, and click Search.</p>	<ul style="list-style-type: none">• Displays the Patient Search screen.• Lists patients that meet the search criteria. <p>NOTES —————</p> <p>Options that allow the user to search for a patient:</p> <ul style="list-style-type: none">• Blood Units from the main menu. Select Edit Unit Information (for restricted units only).• Patients from the main menu. Select:<ul style="list-style-type: none">○ Recent Orders○ Blood Availability○ Recent Transfusions/Issued Units○ Patient Testing Worklist Report○ Print Unit Caution Tag & Transfusion Record Form○ Issue Blood Components○ Post-Transfusion Information○ Return Issued Units To Blood Bank and click OK.○ Special Instructions & Transfusion Requirements○ Transfusion Reaction History○ Patient History Report• Shipments from the main menu. Select Incoming Shipment (for restricted units only).• Orders from the main menu. Select Recent Patient Orders.• Reports from the main menu. Select:<ul style="list-style-type: none">○ Blood Availability (for individual patient only)○ Medication Profile○ Patient History Report○ Transfusion Effectiveness Report (for individual patient report only)• Supervisor from the main menu. Select:<ul style="list-style-type: none">○ Document ABO Incompatible Transfusion○ Justify ABO/Rh Change
2. Select a patient from the list.	<ul style="list-style-type: none">• Displays patient-associated data.• Displays the Patient Information Toolbar.• Displays Special Instructions (SIs) and Transfusion Requirements (TRs), when appropriate.

Figure 96: Patient Search



Patient Merge

VBECS notifies the user of VistA patient merges and displays details for his review.

Assumptions

- The connection to VistA is active.
- VBECS received the message about a VistA patient merge.
- The affected patient's records are in the VBECS database.

Outcome

- VBECS notified the user that patient records were merged in VistA.

Limitations and Restrictions

- The Traditional Supervisor or above must update patient records manually.
- VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor completes the update and clears the icon.

Additional Information

- If more than two records are merged in VistA, VBECS will receive a corresponding number of merge messages.

User Roles with Access to This Option

All users

Patient Merge

The VBECS user examines records that were merged in VistA and decides whether to update them.

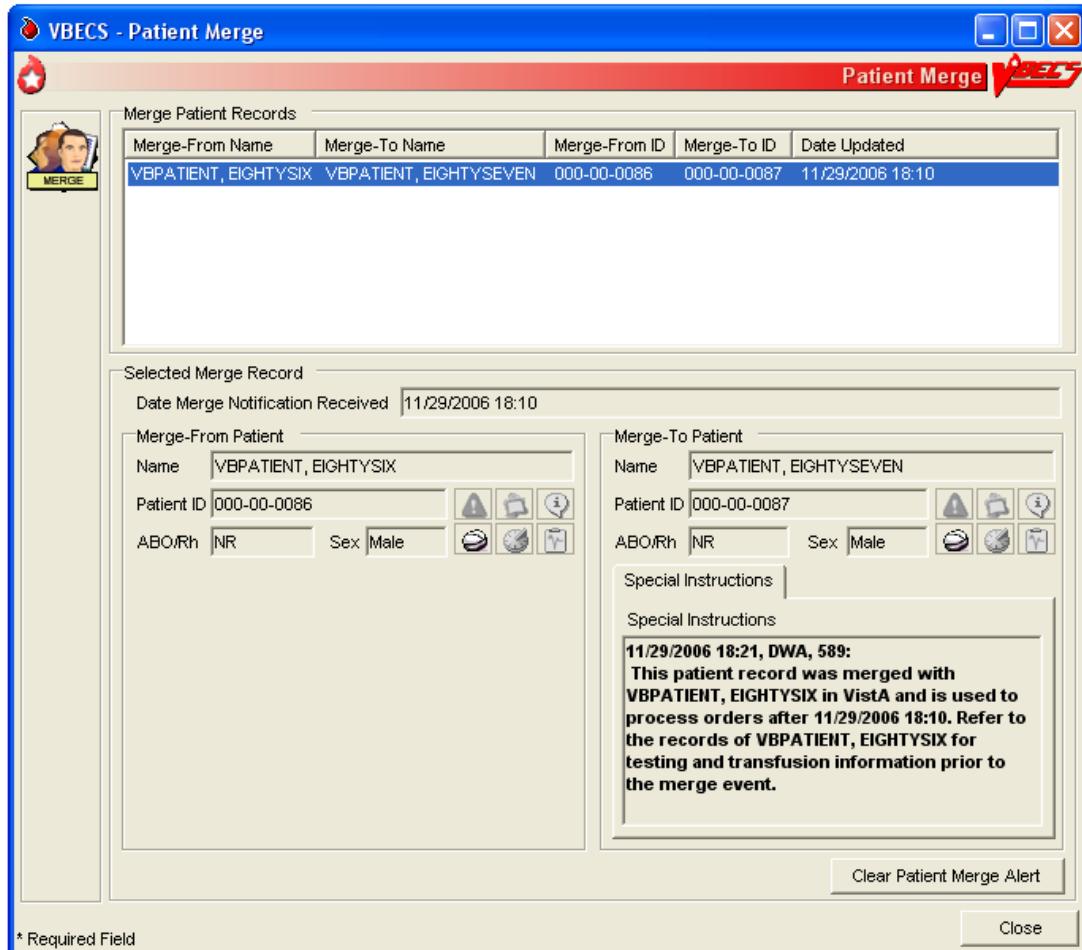
 VBECS does not create links for merged records. Users must update patient information and Special Instructions to show the merged-patient relationship.

User Action	VBECS
<p>1. Select Patients from the main menu. Select Patient Updates. Select Patient Merge, or Click  in the Patient Information Toolbar.</p>	<ul style="list-style-type: none">• Displays  and notifies the user of the VistA patient merge.• Lists the patient records to be updated.• Displays limited merge-from and merge-to patient information for evaluation, including:<ul style="list-style-type: none">◦ Patient name◦ Patient ID◦ Date and time the merge message was received from VistA <p>NOTES —————</p> <p>VBECS displays  at the first instance of a Vista patient update or merge. The icon remains on the screen until the Traditional Supervisor clears the patient merge alert.</p>

User Action	VBECS
	<p>The list of patient records is sorted in chronological order: the oldest received updated record appears at the top of the list.</p> <p>The user may update both patients' VBECS files in accordance with local policy and procedure.</p>
2. Select a VistA patient merge event from the list and review the data (Figure 97).	<ul style="list-style-type: none"> • Displays data about merged VistA patient records: <ul style="list-style-type: none"> ○ Patient name ○ Patient ID ○ Patient sex ○ Date and time the merge message was received from VistA ○ Patient ABO/Rh ○ Patient Transfusion Requirements (TRs) and Special Instructions (SIs) ○ Recent orders and recent transfusion records for the patient (available only by clicking Patient Information Toolbar icons)
Merge-to Patients	<p>NOTES</p> <p>The merge-to patient record is the active record in VBECS.</p> <p>Use Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement, and Special Instructions & Transfusion Requirements: Enter and Remove Special Instructions to enter, update, or delete relevant component requirements, antibodies, or antigen requirements.</p> <p>Enter an SI comment in the merge-to patient record, for example, “This patient record was merged with <insert merge-from patient name> in VistA and is used to process orders after <insert merge date and time>. Refer to the records of <insert merge-from patient name> for testing and transfusion information prior to the merge event.”</p>
3. Update the merge-to patient record to include SIs and TRs from the merge-from patient record. Insert a comment in the Special Instruction field to note that a merge occurred.	
4. Resolve ABO/Rh discrepancies among patients.	<p>NOTES</p> <p>Use Justify ABO/Rh Change to finalize blood type changes for the merge-to patient.</p>
5. Complete pending orders for the merge-to patient.	
Merge-from Patients	<p>NOTES</p> <p>The merge-from patient record is the inactive record in VBECS</p> <p>Use Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement, and Special Instructions & Transfusion Requirements: Enter and Remove Special Instructions to enter, update, or delete relevant component requirements, antibodies, or antigen requirements.</p> <p>Enter an SI comment in the merge-from patient record, for example, “This patient record was merged with <insert merge-to patient name> in VistA and must not be used to process orders after <insert merge date and time>. Refer to the records of <insert merge-to patient name> for testing and transfusion</p>
6. Update the merge-from patient record to include SIs and TRs from the merge-to patient record Insert a comment in the Special Instruction field to note that a merge occurred.	

User Action	VBECS
7. Cancel pending orders on the merge-from patient. Request replacement orders for the merge-to patient, as appropriate.	information after the merge event."
8. To confirm that the merge-from and merge-to patient SIs and TRs match on the Patient Merge display.	
9. Click Clear Patient Merge Alert .	<ul style="list-style-type: none"> • When there are no pending patient updates, clears  (the Patient Alert icon) from the main status bar. • Displays an information message stating that the user viewed the record. <p>NOTES —————</p> <p>►►►► The Clear Patient Merge Alert function is available only to the Traditional Supervisor and above.</p>
10. Click OK to acknowledge the message.	<ul style="list-style-type: none"> • Clears the icon when the user acknowledges the message.
11. Click Close to exit, or return to Step 2.	

Figure 97: Patient Merge



Updated Patients and Deceased Patients

The user views patient updates and death events for patients with pending or active orders in VBECS.

Assumptions

- The connection to VistA is active.
- The patient record was updated in VistA.
- VBECS received a message from VistA about a patient record update or death.
- The affected patient's records are in the VBECS database.
- The affected patient has a pending or active order in VBECS for updates and/or death event.

Outcome

- The user reviews updated patient records.

Limitations and Restrictions

- Demographic and death event updates do not display information for patients without pending or active orders in VBECS. Updates will occur without user input.
- VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor completes the update and clears the icon.
- When VBECS notifies a user of an update to a patient's prefix or suffix, VBECS does not display the updated information: the user must access VistA to view the updated information.

Additional Information

- None

User Roles with Access to This Option

All users

Updated Patients and Deceased Patients

The user views updated patient records.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Updates . Select Updated Patient or Deceased Patient , or Click  in the Patient Information Toolbar, when it is active.	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Lists updated or deceased patients (also lists these data after the update if they changed), including:<ul style="list-style-type: none">◦ Patient name◦ Patient ID◦ Patient date of birth◦ Date and time of the update, or date of death
2. Click Close to exit, or return to Step 1 to view another patient's data.	

Patient Testing: General Instructions

The user records a patient's serologic test results.

Assumptions

- The patient specimen and order were processed and found satisfactory for testing.
- The user selected one to four diagnostic and/or component tasks for testing from the Pending Task List (PTL).
- The patient may or may not have a previous blood bank record. Previously saved VBECS data related to this patient are available for comparison with the user's test results and interpretations.

Outcome

- The test record was filed, is unique, and is retrievable for the life of VBECS.
- Partially completed testing is available for completion or invalidation but is not available to the patient record or reports.
- Completed, current specimen test results are available for inclusion in various reports.
- VBECS changes the task status to "completed" and triggers the generation of a message to CPRS that the order is complete.
- The test record includes the details of the verified, completed testing.

Limitations and Restrictions

- This test record is not editable after the user completes a test and saves it to the database. When a correction needs to be filed, a corrected report must be generated, as described in Invalidating Patient Test Results.

Additional Information

- Partially completed tests may be invalidated within the testing option.

User Roles with Access to This Option

All users

Patient Testing: General Instructions

A user records a patient's test results: Type & Screen (TAS), ABO/Rh, Antibody Screen Test (ABS), Direct Antiglobulin Test (DAT), and crossmatches (XMs) on units selected for a patient. This option describes the configuration of reflex or repeat testing and patient antigen typing.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES —————</p> <p>A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click one to four check boxes in the Pending Task List to select tasks for testing (Figure 93).	<ul style="list-style-type: none">• Displays patient names and associated task information.

User Action	VBECS
<p>Click OK.</p> <p>3. Click a check box to select a reagent rack.</p> <p>In the ABS or XM Testing Phases area, click the All Phases or AHG Only radio button (Figure 98).</p> <p>Click OK to continue with testing.</p>	<ul style="list-style-type: none"> Allows the user to select the All Phases or AHG Only radio buttons only when applicable. Displays reagent rack names and associated information. Requires the user to select the rack name and indicate the grid configuration to apply to this group of tasks for serologic testing, and allows the user to indicate whether an automated instrument was used. Displays the date and time testing was performed. Displays the testing technologist name. <p>NOTES</p> <p>When the testing method selected is AHG only, VBECS disables the data grid boxes for phases IS, 37, and CC.</p> <p>Rack configuration of AHG applies only to the antibody screen and crossmatch testing grids.</p> <p>The user may select another user's name from the list, as appropriate.</p> <p>The user may indicate that testing was performed at a past date and time.</p> <p> See Table 10 for alerts that may occur during this option.</p>
<p>4. Respond to warnings, which may include entering a comment and details, and click OK to continue.</p>	<ul style="list-style-type: none">  Displays  and emits an audible alert when there are SIs or TRs for the patient. Prepares a direct data entry (DDE) grid for the user to enter the serologic reaction results for testing associated with the selected tasks. Displays testing results and entered interpretations until the user saves them.
<p>5. Select a patient to begin entering his serologic reactions (Figure 99).</p> <p>Repeat this step for each selected patient until all test results and interpretations are entered in the test grid.</p>	<ul style="list-style-type: none"> Allows the user to select one patient at a time and enter a test result for that patient. Allows only valid data entries in the grid reaction result and interpretation cells. Allows a user to save or deactivate partially completed tests. When the user enters interpretation data, allows the save with or without warnings and overrides based on the test results entered for the patient and the user's security level. <p>NOTES</p> <p>The user may order a reflex test and may update the patient's TRs and SIs.</p>
<p>6. Respond to warnings for the selected patient and confirm that appropriate test results were entered.</p> <p>Repeat Steps 5–6 for each patient</p>	<ul style="list-style-type: none"> When a user enters a valid interpretation and saves it for a test, updates the order status to "completed." Displays each patient's data for review before allowing the user to save them. Saves patient testing results for retrieval from completed tests. Saves only the patient testing displayed.

User Action	VBECS
until all patient work is saved.	<p>NOTES —</p> <p>The user may save part or all of one patient's testing results at a time. When all data for a patient are saved, the patient tab is no longer visible.</p> <p>When a user saves a test with a "correction" task status, VBECS saves the results and interpretations and adds a comment to the Testing Worklist Report.</p> <p>VBECS sends an order completion message to CPRS when the user enters and successfully saves all test results and interpretations for a diagnostic test.</p> <p> May display multiple warning and override messages for the user's response.</p>
7. When the selected patient testing is complete, click OK and Yes to confirm changes and continue to the next patient, or exit.	

Figure 98: Testing Details

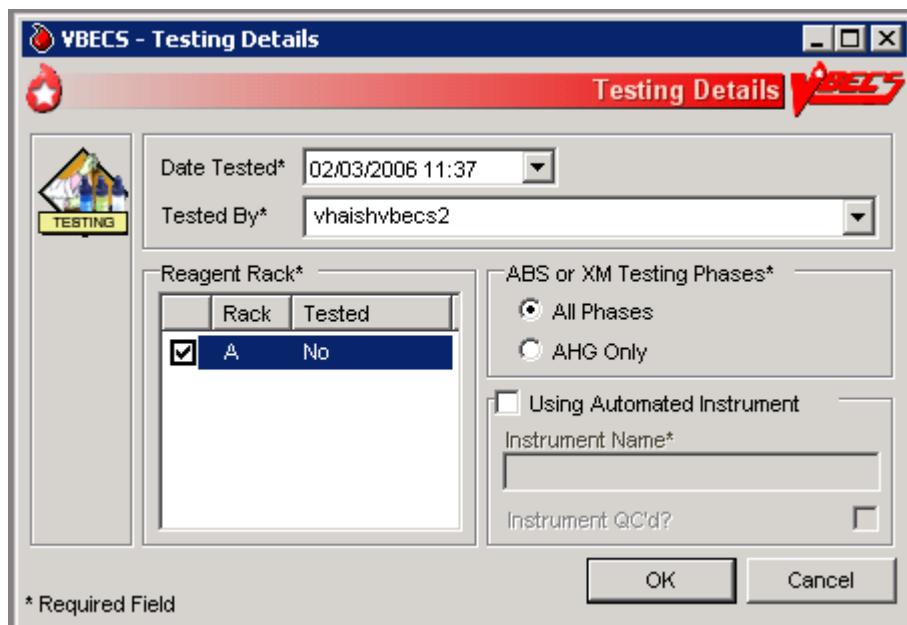


Figure 99: Patient Testing

The screenshot shows the VBECS - Patient Testing interface. At the top, there is a header bar with the title "VBECS - Patient Testing" and a logo. Below the header, the patient information is displayed: Name (VBPATIENT, EIGHTY), Patient ID (000-00-0080), ABO/Rh (NR), Specimen UID (2960310033), and Expires (02/03/2006 23:59). There are also buttons for various actions like Print, Save, and Cancel.

The main area contains several data grids:

- Patient ABO/Rh (ABORH)**: A grid for ABO/Rh typing results. It has columns for Anti-A, Anti-B, Anti-A,B, A1 Cells, B Cells, Anti-D, D Control, ABO Interp., Rh Interp., ABO Comments, and Rh Comments. The grid is currently empty.
- Antibody Screen (ABS)**: A grid for antibody screening. It has columns for SC, IS, 37, AHG, CC, ABS Interp., and ABS Comment. It contains two rows: SC1 and SC2.
- Serologic Crossmatch (XM)**: A large grayed-out area representing the crossmatch results.
- Direct Antiglobulin Test (DAT PS)**: A large grayed-out area representing DAT results.

At the bottom of the main window, there is a key for error codes (Valid, Warning, Error), a "Valid Entries..." button, and buttons for "Order Reflex" and "New SI or TR".

A modal dialog box is open in the foreground, titled "Required Field". It contains fields for Lot Number, Manufacturer, and Expires, each with a corresponding input field. The "Expires" field is highlighted in red, indicating it is a required field.

Alerts

Table 10: Alerts That May Occur in Patient Testing: General Instructions

User Action Step	Alerts
4	When the division is configured as “full service” in Configure Division, VBECS displays data fields for the user to select or enter the lot number, and displays the manufacturer and expiration date of each antiserum to be used in this transaction to allow the user to choose the correct antiserum. VBECS displays in-date antisera and allows the user to select outdated antisera, if needed, emits an audible alert, and requires an override. VBECS captures details for inclusion in an Exception Report (exception type: expired antisera used).
5	The user may cancel or delete a partially completed grid. VBECS: <ul style="list-style-type: none"> Emits an audible alert and requires a comment. Clears previously entered observed results from the data grid and allows the user to enter new data. Captures details for inclusion in an Exception Report (exception type: previously recorded results invalidated).
6	Warns that the user is saving the first instance of a historic ABO/Rh.

User Action Step	Alerts
6	When the ABO/Rh interpretation matches observed results, is not inconclusive, and does not match the patient's historic ABO/Rh (if any, including from database conversion), VBECS emits an audible alert, warns that the current ABO/Rh does not match previous results, and instructs the user to enter a comment to continue, or click Cancel to clear the ABO/Rh testing results and interpretation from the screen. VBECS captures details for inclusion in an Exception Report (exception type: ABO/Rh discrepancy).
6	When the interpretation of a repeat ABO/Rh does not match the original interpretation, VBECS: <ul style="list-style-type: none"> • Verifies the retest results. • Emits an audible alert and warns the user. • Instructs the user to resolve the discrepancy before the specimen may be used. • Asks whether the user wishes to continue to save. No clears the ABO/Rh testing results and interpretation from the screen. Yes requires a comment and captures details for inclusion in an Exception Report (Exception type: ABO/Rh discrepancy).
6	When a user documents an ABO/Rh discrepancy, VBECS releases units with "assigned" and "crossmatched" statuses associated with this specimen from the patient.
6	When a unit was emergency issued and a conflicting test result found that indicates a potential unit incompatibility with the patient, such as a patient ABO/Rh discrepancy, the unit XM is incompatible with the patient, the patient ABS is positive, the patient DAT is positive, or the unit is antigen positive where antigen negative is required on the tested specimen, VBECS warns the user and instructs him to notify the physician of this potential problem immediately, according to hospital policy. VBECS warns the user during the execution of the various tests related to the compatibility of a blood unit and captures details for inclusion in an Exception Report (exception type: unit ER issued, testing problem).

Patient Testing: Record a Patient ABO/Rh

The user records observed results when performing ABO/Rh blood typing.

Assumptions

- A CPRS order exists that includes an ABO/Rh typing [ABO/Rh Test or Type & Screen (TAS)].
- The user accesses patient ABO/Rh grids through Patient Testing: Record Patient Test Results.

Outcome

- The ABO/Rh result is used to determine overall blood component compatibility.
- When ABO/Rh is ordered as a stand-alone test, VBECS changes the task status to “completed” and triggers the generation of a message to CPRS that the order is completed.

Limitations and Restrictions

- None

Additional Information

- When an ABO/Rh discrepancy exists, VBECS releases assigned and crossmatched units. These units are then available for emergency issue based on system rules.
- VBECS does not enforce local policies that require running a D control for AB positive patients.
- The most recent instance of ABO/Rh testing in the database serves as the historic ABO/Rh record.

User Roles with Access to This Option

All users

Patient Testing: Record a Patient ABO/Rh

This option describes a test to determine the patient’s ABO/Rh typing from a blood specimen. The user enters the serologic reaction results in the data entry grid using the instructions and rules in this option. The grid is used for the Confirm Patient ABO/Rh reflex test as part of a TAS and crossmatch (XM) test battery. VBECS monitors the user’s entries and interpretations and maintains the records for patient reports.

These steps describe the entry of data for a patient ABO/Rh test when the test is ordered individually or as part of a TAS.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES —————</p> <p>A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click one to four check boxes in the Pending Task List to select tasks for testing. Click OK .	<ul style="list-style-type: none">• Displays patient names and associated task information.

User Action	VBECS
3. Enter patient ABO/Rh testing results.	<ul style="list-style-type: none"> Displays a direct data entry (DDE) grid for entering serologic reaction results for ABO/Rh patient testing. <p>NOTES</p> <p>The user may reenter valid results or delete entries and start over before saving the results. The user may invalidate, but not edit, data in a grid from a previous session by clicking the red "X" in the upper right corner of the testing grid, as described in Invalidate Test Results.</p> <p>VBECS determines the validity of the user-entered patient ABO/Rh interpretation by comparing the reaction results pattern of the row with the truth table and with the previous ABO/Rh entries for the patient.</p>
4. Select a patient to begin entering his serologic reactions.	<ul style="list-style-type: none"> Allows the user to select one patient at a time and enter a test result for that patient. Allows only valid data entries in the grid reaction result and interpretation cells. <p>NOTES</p> <p>When A,B or D control is not part of the daily QC configuration, VBECS disables it in the ABO/Rh test grid.</p> <p>When an AB Positive patient requires the performance of a control cell, the user must order a repeat ABO/Rh test.</p> <p>When A,B is enabled, the user enters a result for Anti-A,B as part of the patient test, it is included in determining the interpretation for that patient test. "X" is an acceptable entry.</p> <p>A,B and D control are always enabled for the repeat ABO/Rh test grid, regardless of the QC configuration.</p> <p>Reflex testing grid fields are available for data entry regardless of QC rack configuration.</p> <p>See Table 4: Valid Interpretations. Row validation is established for the interpretation vs. reaction results pattern defined by system rules.</p>
5. Repeat Steps 2–4 until some or all portions of the test grid for the selected patient are entered. Enter the interpretation for the patient ABO/Rh typing, if appropriate.	<ul style="list-style-type: none"> Prompts the user to confirm that all results were reviewed and are acceptable. <p>NOTES</p> <p>When the ABO/Rh interpretation matches observed results, is not inconclusive, and does not match the patient's historic ABO/Rh (if any, including from database conversion), VBECS emits an audible alert, warns that the current ABO/Rh does not match previous results, and instructs the user to enter a comment to continue, or click Cancel to clear the ABO/Rh testing results and interpretation from the screen. VBECS captures details for inclusion in an Exception Report (exception type: ABO/Rh discrepancy).</p>

User Action	VBECS
	 >> VBECS allows the Enhanced Technologist to enter an ABO/Rh interpretation that matches the patient's previously recorded (historic) ABO/Rh interpretation when the system interpretation is inconclusive. This allows unit selection to continue based on the patient's ABO/Rh interpretation entered by the user. VBECS requires the user to document the findings of any offline investigation, alerting the reviewer to appropriately follow up, according to local policy. VBECS emits an audible alert and warns the user. VBECS allows an override with comment and captures details for inclusion in an Exception Report (exception type: discrepant ABO/Rh override) that includes all interpretations and historic patient information.
6. When all required fields are complete, click OK to save and continue to the next patient, or exit.	<ul style="list-style-type: none"> • Saves the data.

Patient Testing: Record a Patient Antibody Screen

The user records the serologic results when performing the Antibody Screen Test (ABS).

Assumptions

- The user accesses patient ABO/Rh grids through Patient Testing: Record Patient Test Results.
- A CPRS order exists that includes an ABO/Rh typing [ABO/Rh Test or Type & Screen (TAS)]. An ABS may also be ordered as a reflex patient test.
- Configure Daily QC and Configure Testing are complete.

Outcome

- When an ABS is ordered as a stand-alone test, VBECS changes the task status to “completed” and triggers the generation of a message to CPRS that the order is complete.

Limitations and Restrictions

- This option is for patient testing only.

Additional Information

- The user performs lab tests and enters data simultaneously.

User Roles with Access to This Option

All users

Patient Testing: Record a Patient Antibody Screen

The user tests the patient’s specimen for the presence of antibodies-to-irregular red cell antigens. The user may perform this test alone or as part of a battery of tests.

The user accesses patient antibody screen grids through Patient Testing: Record Patient Test Results and enters observations of the serologic reactions in the data entry grid during testing. VBECS makes the interpretation available to CPRS and patient reports.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES —————</p> <p>A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click one to four check boxes in the Pending Task List to select tasks for testing. Click OK .	<ul style="list-style-type: none">• Displays patient names and associated task information.
3. Click a check box to select a reagent rack. In the ABS or XM Testing Phases area, click the All Phases or AHG	<p>NOTES —————</p> <p>When the testing method selected is AHG only, VBECS disables the data grid boxes for phases IS, 37, and CC.</p>

User Action	VBECS
<p>Only radio button.</p> <p>Click OK to continue with testing.</p>	
<p>4. When processing more than one patient, select a name from the drop-down list in the Name field (or click the right or left arrow) to record testing for that patient.</p>	<ul style="list-style-type: none"> Allows the user to select a patient and enter a test result for the patient. Allows only valid data entries in the grid reaction result and interpretation cells. <p>NOTES —————</p> <p>The logic described in Appendix B: Table 15: Antibody Screen Test Interpretation is an integral part of the configuration of the reaction result grid developed for Patient Testing: Record a Patient Antibody Screen.</p> <p>There may be two to five rows of screening cells to be validated as a group (the ABS). The user enters only one interpretation for the combination of cells tested.</p> <p>Valid interpretations of an ABS Test are positive or negative.</p>
<p>5. Repeat Step 4 until results are entered in some or all portions of the test grid for the selected patient. Enter the interpretation for the patient ABS Test, if desired.</p>	<ul style="list-style-type: none"> Verifies that appropriate tests are entered. Prompts the user to confirm that results were reviewed and are acceptable. <p>NOTES —————</p> <p>When the ABS Test interpretation must be consistent with observed test results based on Table 15: Antibody Screen Test Interpretation, discrepancies must be resolved before VBECS verifies the results and adds them to the database. The user may reenter valid results or delete the entries and start over before saving.</p>
<p>6. Enter test results in preparation for updating the database.</p>	<ul style="list-style-type: none"> Saves the data.
<p>7. Click OK to save, and OK to confirm and exit.</p>	

Patient Testing: Record a Direct Antiglobulin Test

The user records observed results when performing a Direct Antiglobulin Test (DAT).

Assumptions

- A CPRS order exists that includes a DAT, which the user may also order as a reflex patient test.
- The user is testing a patient specimen in Patient Testing: Record Patient Test Results.
- VBECS is configured to accommodate the DAT as part of a Type & Screen (TAS).

Outcome

- When a DAT is ordered as a stand-alone test, VBECS changes the task status to “completed” and triggers the generation of a message to CPRS that the order is complete.

Limitations and Restrictions

- VBECS does not check whether the lot and vial numbers selected for the positive control cells are different from those of the negative control cells.

Additional Information

- The site settings determine which reagent types and lot numbers are available.
- VBECS checks the rack for the DAT reagents in use. When the rack testing does not include Poly AHG, Anti-IgG, or anti-complement, VBECS displays additional positive and negative control rows with the test grid for the DAT sera.
- The user may select reagent lot numbers for positive and negative control cells: Reverse ABO Typing Cells (Set), A2 cell (vial), Screening Cells (set), Check Cells (vial), Panel (set), and Other (set).

User Roles with Access to This Option

All users

Patient Testing: Record a Direct Antiglobulin Test

The user performs a DAT on a patient sample.

The DAT may generate additional reflex test orders such as elution and antibody identification. VBECS saves the reactions and interpretation in the database as part of the patient’s record.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES —————</p> <p>A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click one to four check boxes in the Pending Task List to select tasks for testing. Click OK .	<ul style="list-style-type: none">• Displays patient names and associated task information.
3. When QC was not performed,	<ul style="list-style-type: none">• Displays reaction result grids for DAT tests for each patient.

User Action	VBECS
enter a lot number for the antiserum.	<p>• Lists the AHG antisera related to the test.</p> <p>• Displays information about the lot number, including the manufacturer and expiration date.</p> <p>• Prompts the user to select the correct antisera and possibly the control cell entry.</p> <p>NOTES</p> <p>VBECS lists the AHG antisera related to the test from previously entered inventory. When VBECS displays multiple DAT tests or the full battery, the user selects each DAT serum separately by repeating this step until all are selected.</p> <p>Each positive and negative control cell requires the user to select a lot number.</p> <p>VBECS displays options to select the lot number of the antisera and check cells used for QC of the antiglobulin sera. The user must select complement check cells for Anti-Complement AHG tests.</p> <p> VBECS compares the control cell results entered to those of the previous day for the same rack number and alerts the user when there is a decrease in reactivity of 2 or more within the acceptable limits for each reagent type by lot number. VBECS emits an audible alert, warns that there is a decrease in reagent reactivity of two or more, and asks whether the user wishes to continue to use this vial.</p> <p>Yes allows the user to continue, with comment. VBECS captures details for inclusion in an Exception Report (exception type: QC decrease reagent reactivity ≥ 2).</p> <p>No allows the user to reenter the lot number for this reagent type and allows the approval of this same lot number (different vial) or the entry of a new lot number, returning to the testing worksheet where the user left off. (The user may replace an individual vial that is losing its reactivity with one of the same lot number.)</p> <p>When the user-entered test results indicate a satisfactory interpretation, VBECS indicates that testing is satisfactory and allows the user to save the results. VBECS considers the affected QC incomplete until it is retested with satisfactory results. VBECS generates warnings through other options when QC testing is incomplete.</p> <p> VBECS compares the expiration date of the reagent on the selected reagent to the testing date. When the reagent is expired, VBECS emits an audible alert, warns the user and asks whether he still wishes to use this reagent. Yes requires a comment and captures details for inclusion in an Exception Report (exception type: expired reagent QC'd).</p> <p>No removes the unsatisfactory reagent and requires the user to</p>

User Action	VBECS
	<p>enter a new one. Unsatisfactory lot numbers are never displayed. VBECS captures details for inclusion in an Exception Report (exception type: Expired reagent QC'd).</p> <p>When the antisera QC is required, the user verifies the lot numbers, manufacturer name, and expiration date and saves them as part of the QC record for the associated test.</p>
4. Review and accept the selected reagent information.	<ul style="list-style-type: none"> Displays the previously entered information for user review.
5. Respond to warnings and continue with DAT testing.	<ul style="list-style-type: none"> Displays a direct data entry (DDE) grid for the user to enter serologic reaction results for DAT testing.
6. Enter valid test serologic reactions in the data entry grid.	<ul style="list-style-type: none"> Allows the user to enter valid data and test results in the interpretation cells. <p>NOTES —————</p> <p>Row validation is established for the interpretation vs. reaction results pattern as defined by system rules .</p>
7. Repeat Step 4 until some or all portions of the test grid for the selected patient are entered. When appropriate, enter the interpretation for the patient DAT testing.	<ul style="list-style-type: none"> Prompts the user to confirm that all results were reviewed and are acceptable.
8. Enter test results in preparation for updating the database.	
9. Click OK to exit.	

Patient Testing: Record a Crossmatch

The user records observed results and interpretations when performing a serologic crossmatch (XM) between a patient and one or more units of blood.

Assumptions

- A CPRS order exists for a blood component that requires a serologic XM. The patient order and the selected units are in the same division as the user.
- A blood unit that contains red blood cells, selected in Select Units, is acceptable for testing, according to the patient's current or historic records and ABO/Rh.
- A current specimen was accepted and is in process for ABO/Rh and Antibody Screen Test (ABS), or was previously completed and is not expired.

Outcome

- When patient Transfusion Requirements (TRs), if any, are fulfilled and a user enters a compatible XM interpretation, VBECS makes units available for generating the Blood Transfusion Record Form (BTRF), for printing the Caution Tag, and for issue to the patient.
- When a user enters an unacceptable XM interpretation, VBECS releases the selected units from the patient.

Limitations and Restrictions

- The specimen associated with testing must have an expiration date and time that are later than the testing date and time entered in Patient Testing: Record Patient Test Results. When this is not the case, VBECS warns that the patient specimen expired. There is no override.
- This option does not include electronic crossmatch (eXM).

Additional Information

- When the user saves a partially completed XM testing worklist, VBECS does not clear patient entries without results or release them from the worklist, which VBECS saves for completion later.
- When VBECS saves a partially completed XM worksheet, it maintains a status of "assigned" for selected units until the serologic XM is complete. When VBECS saves the XM test, including interpretation, to the database, it assigns "crossmatched" status to the unit. The user may correct verified patient data only through Invalidate Test Results.
- Units that require antigen typing and/or modification to fulfill a component requirement and/or Sickle Cell testing may be crossmatched pending the completion of further processing of the unit.
- VBECS does not allow users in a transfusion-only facility to save partially completed worksheets. The user must enter interpretations for all selected units before VBECS enables the OK button.
- XM compatibility is one aspect of blood unit compatibility. VBECS takes into account the known requirements for compatibility is taken into account when the user prints Caution Tags and BTRFs, and includes such issues as antigen negative requirements and component requirements.

User Roles with Access to This Option

All users

Patient Testing: Record a Crossmatch

During Select Units, the user selects a blood unit to fill a patient order. If the unit selected contains red blood cells and eXM is not enabled, or the patient or unit does not qualify, VBECS directs the user to enter serologic XM results. (When eXM is enabled, the user may select serologic XM.)

The user performs the serologic XM test and records results in VBECS. VBECS monitors the user's entries and interpretations to determine (with the user) compatibility for each crossmatched unit.

User Action	VBECS
1. Select Patients from the main menu and select Patient Testing , or Select Blood Units from the main menu and select Select Units .	<ul style="list-style-type: none"> Displays options for processing patient-related functions. Displays the Pending Task List (PTL) and PTL search parameters in the Diagnostic Tests tab or in the Component Orders tab.
2. Enter or select PTL search parameters, if appropriate. Click the check boxes in the PTL to select one to four component orders. Click OK to continue.	<ul style="list-style-type: none"> Displays information for each component order. When the selected order class is RED BLOOD CELLS and the division enabled eXM, evaluates the patient for eXM unit processing. <p>NOTES —————</p> <p> See Table 11 for alerts that may occur during this option.</p>
3. Click Add Units to add units to the component orders selected (Figure 76).	<ul style="list-style-type: none"> Searches the database and displays available restricted autologous and directed units that the user must select before selecting allogeneic units of the same ICCBBA component class. Displays the unit ID, product type, unit ABO/Rh, unit expiration date, specimen UID, if applicable, of units assigned to the patient in the division's blood bank on a different specimen or order. The user may release and reassign the units to the current order. When eXM was configured for the facility, displays the eXM status (eligible or not eligible) for the patient. <p>NOTES —————</p> <p> See Table 11 for alerts that may occur during this option.</p> <p>When no valid ABO exists for the patient, the user may select components, including autologous units:</p> <ul style="list-style-type: none"> For RBC or WB order: <ul style="list-style-type: none"> Group O, Rh positive or O Rh negative RBC WHOLE BLOOD is not selectable For FFP order only, group AB, Rh positive or Rh negative For PLT, CRYO, or OTHER order, all available units are selectable.
4. Scan or enter allogeneic units, select compatible units from the Order Group list, or click the ellipsis button to select units. Enter or select a date in the Selection Date field. Each unit may have its own selection date and time.	<ul style="list-style-type: none"> Maintains a list of selected units. The user may deselect selected units. Evaluates the selected unit: <ul style="list-style-type: none"> For the ABO/Rh compatibility of each unit and warns the user. Against patient Transfusion Requirements (TRs) and warns the user. For unit antigen negative compatibility and warns the user. Performs additional checks that include days remaining until the unit's expiration date, the current status, assignments to other patients,

User Action	VBECS
<p>Click Add Units to display the unit selection form.</p> <p>To change the Assigned Date and Assigned By fields, click a unit in the Order Group list.</p>	<p>quarantine and biohazard indicators, when applied, and associated special testing.</p> <p>NOTES</p> <p> See Table 11 for alerts that may occur during this option.</p> <p>The user may accept or edit the current date and time displayed; the date and time must be in the past.</p> <p>Restricted (autologous or directed) unit selection eligibility criteria:</p> <ul style="list-style-type: none"> • Restricted For Patient ID: must match • Restricted For Patient Name: must match • Unit expiration date must be in the future. • Component class (transfusion only requires restriction of all units) <p>The criteria for selecting or including an individual unit in a pick list include evaluating a unit for:</p> <ul style="list-style-type: none"> • Considered substitutable for the order • Same division as the user • Current location is in the blood bank • Has no quarantine indicator • Is not already assigned or crossmatched to the patient • Is not “restricted” for a different patient • Meets ABO/Rh compatibility requirements specific to the component class • Future expiration date <p>VBECS lists only ABO/Rh compatible units for selection.</p> <p>When ABO/Rh results were not created for the specimen associated with the component order and the order is not designated “emergency issue,” VBECS allows the user to select units using historic records, and notifies the user that ABO/Rh testing must be performed at this division on this patient before any selected units can be issued.</p> <p>VBECS displays and allows the user to complete a pending XM associated with a patient order without a final unit status.</p>
5. Repeat Step 4 until all units are selected.	<ul style="list-style-type: none"> • Requests the user to confirm the list of selected blood units. <p>NOTES</p> <p>The user may select or deselect additional units.</p>
6. Click OK to confirm the selection of units.	<ul style="list-style-type: none"> • Determines whether the units are available for issue or whether they require additional modification and/or testing based on the component class. • Updates the database, as appropriate. <p>NOTES</p>

User Action	VBECS
	<p> See Table 11 for alerts that may occur during this option.</p> <p>When eXM is enabled at the division and blood units require XM, VBECS determines whether the patient and units are eligible for eXM. All parameters listed in Appendix B: Table 23: Rules for Electronic and Serologic Crossmatch must be met. Units not eligible for eXM must have serologic XM performed.</p> <p>When eXM is not enabled, the user must enter serologic XM results for red blood cell classes or when a user orders an optional XM for OTHER component classes. VBECS does not change the unit status to "crossmatched," make units available for issue, or allow the Caution Tag or BTRF to be printed until a user enters a valid XM result, unless an emergency-issued unit is being processed.</p>
7. Select another component order to continue selecting units, or exit.	<ul style="list-style-type: none"> Displays orders for the next patient.
8. Select a unit to begin entering serologic reactions. Enter valid text, then press the Enter key to move to the next data grid comment cell.	<ul style="list-style-type: none"> Allows only valid data entries in the grid reaction result and interpretation cells. Restricts data entry to valid selections for testing results. All testing results and entered interpretations remain on the screen. <p>NOTES —————</p> <p>During XM result data entry within a given row, the IS phase result must be entered first. Once the IS phase has been entered, data entry may progress and an observed result or NT entered in each phase before the XM interpretation is validated by VBECS.</p> <p>XM interpretations must be consistent with observed test results based on system rules for the testing method. Discrepancies must be resolved before VBECS can verify results and add them to the database. The user may reenter valid results or delete entries and start over.</p> <p>If the patient has a history of a clinically significant antibody or a persistent antigen negative requirement, VBECS warns that the patient is not eligible for IS XM and instructs the user to perform the antiglobulin transaction XM on the patient. There is no override. The user must complete all phases of the XM test.</p>
9. Repeat Step 3 until the test grid for the selected patient is complete. Enter the interpretation for the patient XM test, if desired. Respond to warnings and enter comments, when indicated.	<ul style="list-style-type: none"> Verifies that all appropriate test results have been entered for the patient and the selected unit(s). Displays various warnings based on rules. Prompts the user to confirm that results were reviewed and are acceptable. <p>NOTES —————</p> <p> When VBECS emits an audible alert and requires a comment, it captures details for inclusion in an Exception Report (exception type: inconclusive crossmatch).</p>

User Action	VBECS
	<p>A user may enter a “Compatible” XM interpretation only after entering an observed test result for the IS phase (other phases are NT) when the antibody screen on the current specimen is complete and negative <i>and</i> when the patient has no calculated or persistent antigen negative requirement.</p> <p>When observed test result patterns are invalid, VBECS warns that test results are invalid and that the user must repeat tests. VBECS stores these results as documentation and clears the grid for the user to begin again.</p> <p> VBECS emits an audible alert and requires a comment documenting medical director approval, according to site policy. VBECS captures details for inclusion in an Exception Report (exception type: Crossmatch Incompatible: Give Only with Medical Director Approval).</p>
10. Enter test results in preparation for saving.	<ul style="list-style-type: none"> • Saves data. • Prompts the user to generate a BTRF and a Caution Tag during Patient Testing: Record Patient Test Results when the crossmatched unit is acceptable for issue.
11. Click OK to exit.	

Crossmatch Interpretations

In all cases, VBECS saves the crossmatch information to the database.

Table 11: Crossmatch Interpretations for Print Unit Caution Tag & Transfusion Record Form

User Entry	Crossmatch Interpretation	VBECS Updates the Unit Status to:	Is Information Available to CPRS?	May User Print the BTRF and Caution Tag?	Other
C	Crossmatch Compatible	Crossmatched	Yes (unit is available)	Yes	
D	Crossmatch Compatible: Don't Transfuse	Available	No	No	
G	Crossmatch Incompatible: Give Only with Medical Director Approval	Available	Yes (unit is available)	Yes	
I	Crossmatch Incompatible	Available	No	No	
V	Inconclusive	Available	No	No	

Patient Testing: Record a Patient Antigen Typing

The user records observed results when performing a patient antigen typing test other than the ABO/Rh test.

Assumptions

- Patient antigen typing is ordered through Order Reflex Tests.
- The user accesses patient antigen typing grids through Patient Testing: Record Patient Test Results.
- Reagent inventory was entered in Maintain Minimum Levels.

Outcome

- The testing record includes the patient's antigen typing and the control cell information.

Limitations and Restrictions

- Antigen typing applies only to red blood cell antigens. (This option does not address platelet, HLA, or IgA antigens.)
- VBECS does not check:
 - The patient antigen typing with the specificity of any patient's antibodies entered.
 - Whether the lot and vial numbers selected for the positive control cells differ from those of the negative control cells.
- The patient antigen typing result is not available to CPRS.

Additional Information

- Clinical significance and availability of typing reagents are not implied when antigens are included in the list of antigen type tests.
- Unit antigen tests may be added through Incoming Shipment and Edit Unit Information.
- The patient antigen typing test is associated with a CPRS patient order.
- The patient's antigen typing information does not appear as part of the Transfusion Requirements or Special Instructions in the Patient Information Toolbar.
- When VBECS displays lot numbers for selection, it checks the inventory for the reagent name and lot numbers in use in a rack. VBECS does not offer reagents with an "unsatisfactory" value in the Inspection field or with a quantity of zero as a selectable reagent. The user may not enter a lot number that VBECS disallowed on the selection list. The user must choose a different reagent.
- When a user selects a reagent rack that was never QC'd, VBECS warns the user, clears the selection, and allows the user to select a different rack.
- VBECS stores the lot number, vial identifier, manufacturer, and expiration date of the positive and negative control cells with the testing record.
- The user may not enter "H" (hemolysis) in antigen typing testing.

User Roles with Access to This Option

All users

Patient Testing: Record a Patient Antigen Typing

This option describes a test to determine the patient antigen typing from a blood specimen.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none"> • Displays options for processing patient-related functions. • Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES —————</p> <p>A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click one to four check boxes in the Pending Task List to select tasks for testing. Click OK .	<ul style="list-style-type: none"> • Displays patient names and associated task information. • Displays a direct data entry (DDE) grid for entering serologic reaction results for antigen typing testing. This grid may be partially populated from a previous session. • Allows the user to select a unit and enter a test result for the unit. • Displays options for finding and selecting tests to process. <p>NOTES —————</p> <p>When the user selects a partially completed worksheet, he must verify the lot numbers, manufacturer name, and expiration date of the antiserum and control cells previously selected. These fields may not be edited. (A user who finds a discrepancy must delete the worksheet and start over.)</p>
3. Confirm the selected patient. When control cells were tested for the antiserum, go to Step 7.	<ul style="list-style-type: none"> • Displays an option to select a lot number for each of the antiserum types selected. <p>NOTES —————</p> <p>VBECS displays grids and quality control cells for each antiserum type.</p>
4. Select a lot number for each antiserum specificity.	<ul style="list-style-type: none"> • Allows the user to select or enter the lot number and displays the manufacturer and expiration date of each antiserum to be used in this transaction so the user can select the correct antiserum. VBECS displays in-date antisera. When the user selects outdated antisera, VBECS emits an audible alert and requires a comment and an override. VBECS captures details for inclusion in an Exception Report (exception type: expired antisera used). • Prompts the user to select the correct antiserum entry for the specificity selected. • Displays the lot number information. <p>NOTES —————</p> <p>VBECS requests information about an antigen lot number only the first time it is used on a specific day.</p> <p>If there are multiple test tabs, VBECS displays a message that may not correspond to the selected tab, but will correspond to information required by one of the requested tests.</p>
5. Verify the antiserum lot number selected (Figure 100).	<ul style="list-style-type: none"> • Allows the user to select the testing phases for the antiserum specificity by lot number. • Displays a testing grid and disables the phases that are not to be completed. • Stores the antiserum information and checks whether the positive and negative controls are needed.

User Action	VBECS
	<p>NOTES —————</p> <p>The user must indicate the phases of reactivity for each antiserum specificity:</p> <ul style="list-style-type: none"> • IS • IS/RT • IS/37 • AHG/CC <p>VBECS enables the Rack Identifier field when the user selects the weak D or AHG/CC phase. VBECS disables the rack identifier field when the user selects other phases.</p> <p>When the user QC'd the antigen typing reagent lot number and performed patient antigen typing on the same date under different testing phases, VBECS enables the QC grid for the antisera in the phases the user selected.</p> <p> When the user attempts to change the phases of reactivity previously recorded for the lot number, VBECS emits an audible alert, warns that the user selected phases that were not used previously for this reagent, and asks whether the user wishes to continue. No requires the user to select the correct testing phases. Yes requires the user to enter a comment explaining why he is selecting different testing phases. VBECS captures details for inclusion in an Exception Report (exception type: antigen testing phase change). VBECS requires a comment and captures details for inclusion in an Exception Report. Antigen testing phase change</p>
6. Select the lot number for the reagent and the positive and negative control cells. Enter the vial identifiers, if required. Enter "0" when not using panel cells. Verify the reagent type and the positive and negative control cell lot numbers selected and vial identifiers entered, if required (Figure 101).	<ul style="list-style-type: none"> • Displays the lot number information, including the vial identifier. <p>NOTES —————</p> <p>Selectable reagent lot numbers for positive and negative control cells are:</p> <ul style="list-style-type: none"> • Reverse ABO Typing Cells • A2 cell • Screening Cells • Check Cells • Panel • Other (set) <p>The vial identifier, comprising one or two digits, identifies the vial contained in a kit of reagent red blood cells. A vial contains antigen positive or antigen negative blood cells to be used in quality control of the antisera.</p>
7. Respond to warnings and continue with antigen typing.	<ul style="list-style-type: none"> • Displays a DDE grid for entering serologic reaction results for antigen typing testing. This grid may be partially populated with results from a previous session. <p>NOTES —————</p> <p>VBECS organizes the worklist for the grids by antiserum types.</p>

User Action	VBECS																																	
	<p>The row title of the data grid specifies the positive and negative control cells; the column title specifies the phases of reactivity that may be used in the test. VBECS fills in this information; the user may not edit it.</p>																																	
8. Select one control cell or patient to begin entering serologic reactions and interpretations.	<ul style="list-style-type: none"> Allows the user to select a patient or control cell and enter test results. <p>NOTES</p> <p>Valid observed test results include:</p> <table border="1"> <thead> <tr> <th>Entry</th> <th colspan="2">VBECS Translation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1+</td> <td>Positive</td> </tr> <tr> <td>2</td> <td>2+</td> <td>Positive</td> </tr> <tr> <td>3</td> <td>3+</td> <td>Positive</td> </tr> <tr> <td>4</td> <td>4+</td> <td>Positive</td> </tr> <tr> <td>W</td> <td>Weak</td> <td>Inconclusive</td> </tr> <tr> <td>F</td> <td>Mixed Field</td> <td>Inconclusive</td> </tr> <tr> <td>M</td> <td>Microscopic</td> <td>Inconclusive</td> </tr> <tr> <td>X</td> <td>Not Tested X (Not Tested) (does not indicate a disabled cell)</td> <td>Not Tested</td> </tr> <tr> <td>0</td> <td>No Agglutination</td> <td>Negative</td> </tr> <tr> <td>R</td> <td>Rouleaux, No Agglutination</td> <td>Negative</td> </tr> </tbody> </table> <p>System rules establish row validation for the interpretation vs. reaction results pattern [for all user-indicated phase(s) of reactivity] for blood unit and quality control tests.</p> <p>When completing previously saved partially completed testing, the user may not change the antiserum lot number, manufacturer name, or expiration date. The user must invalidate the antiserum testing and start over.</p>	Entry	VBECS Translation		1	1+	Positive	2	2+	Positive	3	3+	Positive	4	4+	Positive	W	Weak	Inconclusive	F	Mixed Field	Inconclusive	M	Microscopic	Inconclusive	X	Not Tested X (Not Tested) (does not indicate a disabled cell)	Not Tested	0	No Agglutination	Negative	R	Rouleaux, No Agglutination	Negative
Entry	VBECS Translation																																	
1	1+	Positive																																
2	2+	Positive																																
3	3+	Positive																																
4	4+	Positive																																
W	Weak	Inconclusive																																
F	Mixed Field	Inconclusive																																
M	Microscopic	Inconclusive																																
X	Not Tested X (Not Tested) (does not indicate a disabled cell)	Not Tested																																
0	No Agglutination	Negative																																
R	Rouleaux, No Agglutination	Negative																																
9. Enter results for selected patients and control cells.	<ul style="list-style-type: none"> Prompts the user to confirm that results were reviewed and are acceptable. <p>NOTES</p> <p> VBECS searches the current order and the patient's historical record for previously entered red cell antigen results for each specificity within the user's division and compares the results to prevent a discrepancy with previous test entries. When a discrepancy is found, VBECS emits an audible alert, notifies the user that the current specimen and a previously entered antigen typing on this patient do not match, and asks whether the user wishes to save the current result.</p> <p>No closes the form and returns to the grid. Yes allows the user to update the conflicting results in the database and/or enter a comment explaining why he is accepting this result. VBECS captures details for inclusion in an Exception Report (exception type: discrepant patient antigen typing).</p>																																	
10. Repeat Steps 5–9 for each antiserum type.	<ul style="list-style-type: none"> Allows the user to save. <p>NOTES</p>																																	

User Action	VBECS
	<p>When an associated control cell testing results in an inconclusive interpretation and the user attempts to save test interpretations, VBECS warns that one or more control cells is invalid and that it will mark all associated test interpretations as inconclusive, and asks whether the user wishes to continue.</p> <p>Yes causes VBECS to replace patient or unit test interpretations with "Inconclusive" before saving the test record. No returns the user to the testing screen.</p>
11. Respond to warnings and click OK to save the data.	<ul style="list-style-type: none"> Reconfirms that all appropriate test results are entered, repeats all data validation, and saves the data.
12. Click OK to exit.	<ul style="list-style-type: none"> Saves the data.

Figure 100: Patient Testing Antigen Typing (1)

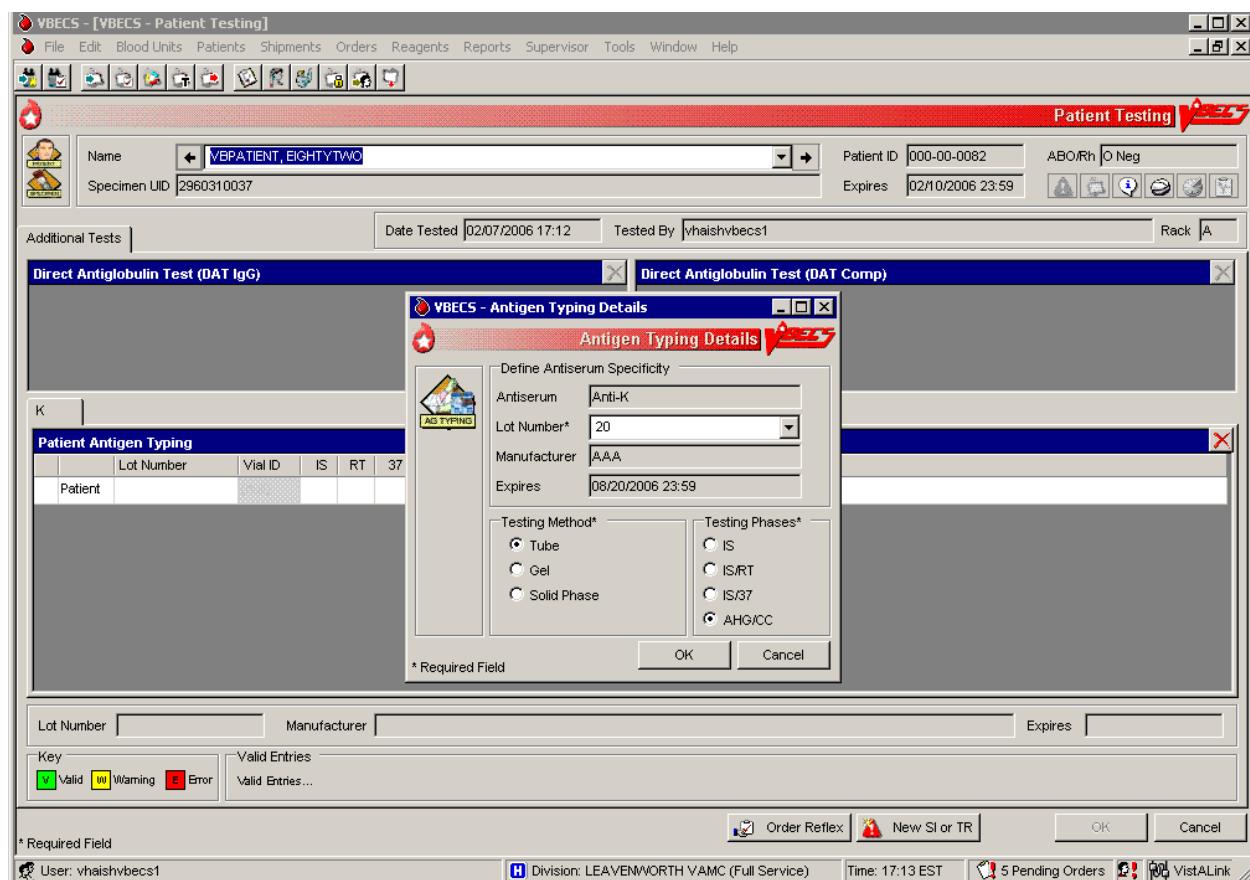


Figure 101: Patient Testing Antigen Typing (2)

The screenshot shows the VBECS - Patient Testing software interface. At the top, there is a header bar with the title "VBECS - Patient Testing" and a red banner with the text "Patient Testing". Below the header, there is a patient information section with fields for Name ("VBPATIENT, EIGHTYTWO"), Patient ID ("000-00-0082"), ABO/Rh ("O Neg"), Specimen UID ("2960310037"), and Expires ("02/03/2006 23:59"). There are also buttons for "Additional Tests", "Date Tested" ("02/03/2006 11:48"), "Tested By" ("vhaishvbecs2"), and "Rack" ("A").

Below this, there are two tabs: "Direct Antiglobulin Test (DAT IgG)" and "Direct Antiglobulin Test (DAT Comp)". Both tabs are currently inactive, indicated by a grey background.

A modal dialog box titled "Patient Antigen Typing" is open in the foreground. It contains a table with columns: Lot Number, Vial ID, IS, RT, 37, AHG, CC, Interp., and Comment. The table has three rows:

	Lot Number	Vial ID	IS	RT	37	AHG	CC	Interp.	Comment
POS									
NEG									
Patient	20								

Below the table, there are input fields for "Lot Number", "Manufacturer", and "Expires". A "Key" section includes icons for "Valid" (green), "Warning" (yellow), and "Error" (red). A "Valid Entries..." button is also present. At the bottom of the dialog are "Order Reflex" and "New SI or TR" buttons, along with "OK" and "Cancel" buttons. A note at the bottom left says "* Required Field".

Patient Testing: Enter Antibody Identification Results

The user records results of reflex tests needed to complete a patient blood bank antibody workup.

Assumptions

- An order for an antibody identification (ABID) was placed and is opened in the Pending Task List (PTL).

Outcome

- VBECS displays the ABID in the patient's record, which the user may review by clicking an icon in the Patient Information Toolbar.
- Entry of antibody specificity through this option may automatically set an antigen negative requirement [Transfusion Requirement (TR)] based on the division-specific parameters.

Limitations and Restrictions

- When an antigen negative requirement is not configured for an antibody, the user may enter the requirement for a patient through Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement.

Additional Information

- Correction to verified patient data may be accessed only through Invalidate Test Results.
- Only one technologist at a time can enter test results for a selected PTL task.
- Patient antigen testing is not included in this option.

User Roles with Access to This Option

All users

Patient Testing: Enter Antibody Identification Results

The user may select workload codes for work performed on-site during the ABID workup. When the ABID is performed off-site, the user enters the associated charges.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES —————— A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click one to four check boxes in the Pending Task List to select tasks for testing. Click OK .	<ul style="list-style-type: none">• Displays patient names and associated task information.
3. Click a check box to select a reagent rack. Click OK to continue with testing.	<p>NOTES —————— No serologic testing is recorded for ABID.</p>

User Action	VBECS
4. Select antibodies. Enter associated testing details. Respond to comments and continue. Verify Patient information. Click OK .	<ul style="list-style-type: none"> Displays the list of antibodies and allows the user to select from the identified specificities and to add antibodies or to indicate that no antibody was identified. <p>NOTES —————</p> <p>Multiple workload codes may apply when work is performed on-site.</p>
5. Review the selections displayed. Return to Step 1 to change selections when necessary. Accept the reviewed entries.	<ul style="list-style-type: none"> Displays applicable data fields for the ordered ABID. Allows the user to indicate the testing site and associated billing from outside sources.
6. Enter the location where testing was performed and cost, when off-site.	<ul style="list-style-type: none"> Requires the user to indicate whether the ABID was performed at the division and/or off-site and saves that information with the ABID. Allows the user to enter a charge, but not the workload, when the ABID work was performed off-site. Allows the user to indicate multiples of any processes when a test was performed on-site. Allows the user to enter comments.
7. Review the antibody tests entered and comments selected and, when necessary, change them before accepting (Figure 102).	<ul style="list-style-type: none"> Displays the requirements for antigen negative blood components, if any, based on the antibody entered.
8. Click OK to save the information to the database.	<ul style="list-style-type: none"> Saves the data.
9. Click OK to exit.	

Figure 102: Patient Testing Antibody Identification

The screenshot shows the VBECS - Patient Testing application interface. At the top, the menu bar includes File, Edit, Blood Units, Patients, Shipments, Orders, Reagents, Reports, Supervisor, Tools, Window, and Help. Below the menu is a toolbar with various icons. The main window displays patient information: Name (VBPATIENT, EIGHTYTWO), Specimen UID (2960310037), Patient ID (000-00-0082), ABO/Rh (O Neg), and Expires (02/10/2006 23:59). The 'Antibody ID' tab is selected, showing a list of antibodies identified for the patient. The 'Anti-K' checkbox is checked and highlighted in blue. Other listed antibodies include Anti-C, Anti-E, Anti-c, Anti-e, Anti-f, Anti-G, Anti-N, Anti-S, Anti-Xg(a), Anti-M(g), Anti-Mi(a), Anti-P, Anti-A1, Anti-H, Anti-I, Anti-i, Warm auto-antibody, Cold auto-antibody, Anti-Le(ab), Anti-Di(a), Anti-Di(b), Anti-Do(a), and Anti-Do(b). There are also checkboxes for 'No antibody was identified.' and 'Test Performed Off-Site'. On the right side, there is a section for 'Workload Process' with a dropdown menu set to 'Antibody Identification panel, standa', a multiplier input field (set to 1), and an 'Add' button. The bottom of the window includes buttons for Order Reflex, New SI or TR, OK, and Cancel, along with status indicators for User (vhaishvbecs1), Division (LEAVENWORTH VAMC (Full Service)), Time (17:16 EST), and Pending Orders (5).

Patient Testing: Record a Transfusion Reaction Workup

The user documents a transfusion reaction workup (TRW).

Assumptions

- A TRW is ordered and is “not started” or “in progress” on the Pending Task List (PTL).

Outcome

- The user views or prints a preliminary TRW report of findings.
- Preliminary report findings are available for display in CPRS.

Limitations and Restrictions

- Adverse reactions to transfusion detected at a later time (disease transmission) are not recorded through this option. Refer to Transfusion Complications Report.

Additional Information

- All implicated units are added to data grids.
- Testing is based on local policies.
- VBECS allows the user to invalidate previously entered and saved information. When the user invalidates specimen data entered, VBECS invalidates the TRW.
- A delayed hemolytic transfusion reaction is typically identified about 7 to 10 days post-transfusion. It may be addressed in this option or as an antibody identification. (See Patient Testing: Enter Antibody Identification Results.)
- This test record is not editable after the user saves it to the database. When a correction needs to be filed, a corrected report must be generated, as described in Invalidate Test Results.
- See the printed chart copy for the medical director’s signature and TRW interpretation, as described in Finalize/Print TRW.
- A user may order a TRW prior to the completion of a unit’s transfusion record.
- The user must complete the unit’s transfusion record prior to implicating a unit in a TRW.
- These data remain encapsulated as part of the TRW and are not saved, compared to the patient record, or associated with other pre-transfusion grid testing.
- TRW ABO/Rh typing results are not saved as historical ABO/Rh typing results. These test records are maintained as part of the TRW only.

User Roles with Access to This Option

All users

Patient Testing: Record a Transfusion Reaction Workup

The user accepts the TRW order, inspects the sample for hemolysis, and performs implicated clerical checks. The TRW may require entry of patient data, including vital signs and serologic test results. A signed, printed TRW report must be filed with the patient's chart.

Transfusion reactions may be worked up in stages depending on patient symptoms and serologic findings. The first stage includes the initial clerical and specimen checks. The second stage includes serologic test interpretations, including pre- and post-patient testing, ABO/Rh, ABS, XM, and DAT.

User Action	VBECS
1. Select Patients from the main menu. Select Patient Testing .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays the Pending Task List (PTL) in the Diagnostic Tests tab. <p>NOTES</p> <p>A user may search for specific tasks using search criteria detailed in Pending Task List.</p>
2. Click a check box in the PTL to select a task. Click OK .	<ul style="list-style-type: none">• Displays TRW patient order information and allows the user to indicate which portion of the TRW to perform (initial clerical and specimen checks). <p>NOTES</p> <p>The TRW patient name and patient ID are visible at all times.</p> <p>Initial clerical and specimen checks must be performed before TRW serologic testing is available.</p>
3. Enter the date the transfusion reaction was noted and the date it was investigated.	<ul style="list-style-type: none">• Allows the user to document observations about the pre- and post-transfusion specimens.
4. Click a radio button in the Specimen Checks tab to indicate whether pre- and post-transfusion specimens are available (Figure 103). Scan or enter specimen UIDs in the Specimen UID fields and enter comments, as required. Select an item from the drop-down menu in the Hemolysis Inspection field.	<ul style="list-style-type: none">• Allows the user to enter the date and time the transfusion reaction was noted (provided by the clinician) and the date and time of the investigation (default: current date and time). <p>NOTES</p> <p>When the pre- and/or post-transfusion samples are available to perform the clerical check, VBECS requires the user to indicate whether the clerical check is okay.</p> <p>VBECS allows the user to scan or enter the pre- and post-transfusion specimen UIDs. VBECS compares the patient name and ID associated with each specimen UID to those associated with the TRW workup.</p> <p> When the patient name does not match VBECS data for the TRW patient, VBECS emits an audible alert, warns the user, and instructs him to notify the physician immediately. VBECS allows the user to reenter the specimen UID or verify that the data are correct. VBECS requires a comment when there is no match and captures details for inclusion in an Exception Report (exception type: Transfusion Reaction Workup Specimen).</p>

User Action	VBECS
	The user may enter "icteric," "absent," "1+," "2+," "3+," or "4+" in the Hemolysis Inspection field to identify the presence or absence of hemolysis in the pre- and post-transfusion patient specimens or blood container, when available.
5. Click the Clerical Check OK or Clerical Check Failed radio button to perform initial clerical and identification checks (Figure 104).	
6. Click OK to save, and Yes to confirm the save.	<p>NOTES</p> <p>When the user exits and saves the data, VBECS changes the task status of the TRW to "partially completed."</p> <p>A partially completed TRW may be corrected only by invalidating and reentering the TRW.</p>
7. Enter the date and time of the transfusion reaction noted by the clinician and the date and time of the reaction investigation.	<p>NOTES</p> <p>VBECS allows the user to enter the date and time of the reaction noted by the clinician.</p> <p>When the implicated unit is unknown, VBECS allows the user to continue without identifying a unit or entering implicated unit information.</p> <p>VBECS requires the user to enter the date and time of the TRW investigation (default: current date and time), including a date and time in the past for retrospective data entry. The user may not enter a future date and time.</p> <p>If the user indicates that implicated units are unknown, he continues at Step 10.</p>
8. In the Implicated Units tab, click the Implicated Unit(s) Identified radio button to select an implicated unit. Scan or enter the unit ID and product code. Click the Blood Bag Returned or Blood Bank Not Returned radio button. Select an item from the drop-down menu in the Hemolysis Inspection field. Click the Clerical Check OK or Clerical Check Failed radio button to perform initial clerical and identification checks. Enter a comment and details, as	<ul style="list-style-type: none"> • Allows the user to: <ul style="list-style-type: none"> ○ Enter implicated unit information. ○ Indicate whether the bag and infusion set were returned. ○ Review and/or edit the entered information. <p>NOTES</p> <p>When the user indicates that the blood bag was not returned, VBECS disables the hemolysis and clerical checks.</p> <p>All implicated units entered are available for TRW ABO/Rh and TRW crossmatching. Actual data entry of test results for any entries is optional, based on a facility's local policies and procedures.</p> <p>The user may enter a free-text comment to document site-specific information such as other solutions or additives, urinary hemoglobin checks, and whether the product was warmed during transfusion.</p>

User Action	VBECS
<p>required (Figure 105).</p> <p>Click Add to add the unit.</p> <p>or</p> <p>Click the No Implicated Units radio button.</p> <p>Click OK to save, and Yes to confirm the save.</p>	
9. Repeat Step 8 for each implicated unit.	<ul style="list-style-type: none"> Allows the user to enter the patient's symptoms. <p>NOTES —</p> <p>VBECS accepts data for multiple implicated units and stores and reports them as part of the clerical check. When the user enters implicated unit data, VBECS adds the unit to TRW serologic testing.</p>
<p>10. In the Symptoms tab, click the Patient Symptoms Identified radio button.</p> <p>Click the check boxes to select one or more patient symptoms (Figure 106),</p> <p>or</p> <p>Click the No Patient Symptoms Identified radio button.</p> <p>Click OK to save, and Yes to confirm the save.</p>	<ul style="list-style-type: none"> Allows the user to review and/or edit the entered data before it saves the record. Allows the user to indicate that the TRW is complete.
<p>11. In the Serologic Tests tab, click a check box to select which tests to perform.</p> <p>Select a rack from the drop-down list in the Rack field.</p> <p>Click the Using Automated Instrument check box, as required.</p> <p>Enter the name of the instrument in the Name field.</p> <p>Click the Instrument QC'd? check box, as appropriate.</p> <p>Enter interpretations for TRW testing (Figure 107).</p>	<ul style="list-style-type: none"> Allows the user to enter one or more additional TRW test interpretations: <ul style="list-style-type: none"> TRW ABO/Rh testing TRW ABS testing TRW DAT testing TRW XM testing Requires the user to enter the rack name and test method to be applied to the specimens selected in this testing group for serologic testing. The user must also indicate whether an automated instrument was used in testing. Displays the date and time the testing was performed (default: current date and time), which the user may edit retrospectively. Displays the testing technologist's identification (default: current user). Lists valid division users for the user's selection. <p>NOTES —</p> <p>When no units were implicated or no pre- or post-transfusion specimens are available, VBECS disables those portions of the grid.</p>

User Action	VBECS
	<p>VBECS displays the standard TRW tests for the user to select to perform some or all.</p> <p>When a facility is “full service” and an automated instrument was used for testing, a user must enter the name of the instrument and may indicate that successful quality control testing was done for the testing date.</p> <p>For implicated units, the ABO/Rh TRW, ABS TRW, DAT TRW, and Crossmatch TRW testing data grids are pre-populated with pre- and post-specimen data. Data entry of test results is optional, based on a facility’s local policies and procedures.</p>
12. Review the entries. Click OK to save, and Yes to confirm the save.	<ul style="list-style-type: none"> • Stores data for retrieval. • Makes the findings viewable through a CPRS query. <p>NOTES —————</p> <p>VBECS allows the user to indicate that the TRW is complete, then updates the TRW task status to “complete.”</p> <p>Once the TRW is completed, the summary of results and observations includes the comment, “Final report to follow in hard copy with medical director evaluation of the transfusion reaction workup.”</p> <p>VBECS indicates on the implicated unit’s patient transfusion record that it was implicated in a transfusion reaction and notes the patient’s name and ID and the date and time.</p> <p> VBECS saves the record and one or more clerical checks are marked “failed,” VBECS emits an audible alert, requires a comment, and captures details for inclusion in an Exception Report (exception type: Transfusion Reaction Workup).</p>
13. Click Finalize/Print TRW and continue at Finalize/Print TRW to finalize the TRW (Figure 108), or Click Cancel to complete the TRW and exit.	<p>NOTES —————</p> <p>A completed TRW indicates that serologic testing was completed. A finalized TRW indicates that the medical director reviewed the TRW, classified the reaction, and may make recommendations for future transfusions.</p>

Figure 103: Transfusion Reaction Workup: Specimen Check

VBECS - Transfusion Reaction Workup

Name: VBPATIENT, NINETY Patient ID: 000-00-0090 ABO/Rh: O Neg

Date Transfusion Reaction Noted: 02/23/2006 16:10 Date Transfusion Reaction Investigated: 02/23/2006 16:10

Specimen Checks

Pre-Transfusion Specimen Availability*

- Pre-Transfusion Specimen Available
- Pre-Transfusion Specimen Not Available

Post-Transfusion Specimen Availability*

- Post-Transfusion Specimen Available
- Post-Transfusion Specimen Not Available

Pre-Transfusion Specimen Checks

Specimen UID*: [] Hemolysis Inspection*: [] Clerical Check*: Clerical Check OK Clerical Check Failed Comment: [] Details: []

Post-Transfusion Specimen Checks

Specimen UID*: [] Hemolysis Inspection*: [] Clerical Check*: Clerical Check OK Clerical Check Failed Comment: [] Details: []

OK Cancel Finalize/Print TR/W Invalidate TR/W * Required Field

Figure 104: Transfusion Reaction Workup: Clerical Check

VBECS - Transfusion Reaction Workup

Name: VBPATIENT, NINETY Patient ID: 000-00-0090 ABO/Rh: O Neg

Date Transfusion Reaction Noted: 02/23/2006 16:10 Date Transfusion Reaction Investigated: 02/23/2006 16:10

Specimen Checks

Pre-Transfusion Specimen Availability*

- Pre-Transfusion Specimen Available
- Pre-Transfusion Specimen Not Available

Post-Transfusion Specimen Availability*

- Post-Transfusion Specimen Available
- Post-Transfusion Specimen Not Available

Pre-Transfusion Specimen Checks

Specimen UID*: 2960540153 Hemolysis Inspection*: Absent Clerical Check*: Clerical Check OK Clerical Check Failed Comment: [] Details: []

Post-Transfusion Specimen Checks

Specimen UID*: 2960540156 Hemolysis Inspection*: Absent Clerical Check*: Clerical Check OK Clerical Check Failed Comment: [] Details: []

OK Cancel Finalize/Print TR/W Invalidate TR/W * Required Field

Figure 105: Transfusion Reaction Workup: Implicated Units

The screenshot shows the 'Transfusion Reaction Workup' window with the 'Implicated Units' tab selected. At the top, there are fields for 'Name' (VBPATIENT, NINETY), 'Patient ID' (000-00-0090), and 'ABO/Rh' (O Neg). Below these are two date/time fields: 'Date Transfusion Reaction Noted' (02/23/2006 16:10) and 'Date Transfusion Reaction Investigated' (02/23/2006 16:10). A toolbar with various icons is visible above the main form.

The 'Implicated Units' section contains a radio button group for 'Implicated Unit(s)?*' where 'Implicated Unit(s) Identified' is selected. It also includes sections for 'Implicated Unit Checks' (Unit ID: 6167616, Product: 04210, Blood Bag? (Returned)), 'Blood Bag Checks' (Hemolysis Inspection: Absent), and 'Clerical Check?' (OK selected). A 'Comment' and 'Details' text area is also present.

A table for 'Implicated Unit(s)' lists columns for Unit ID, Product, ABO/Rh, Expires, and Hemolysis. The 'OK' and 'Cancel' buttons are located at the bottom right.

* Required Field

Figure 106: Transfusion Reaction Workup: Symptoms

The screenshot shows the 'Transfusion Reaction Workup' window with the 'Symptoms' tab selected. The top fields and toolbar are identical to Figure 105.

The 'Symptoms Identified?' section has 'Patient Symptoms Identified' selected. The 'Patient Symptoms*' section contains a list of symptoms with checkboxes, many of which are checked. These include: Urticaria (Rash), Pruritis (Itching), Wheezing, shortness of breath, Dyspnea (difficulty breathing), Tachypnea (rapid respiration), Hypoxemia, Chills (rigors), Fever (>1C or 2F increase), Flushing, Pain at infusion site, Pain in Flanks, Pain in Chest, Pain in Abdomen, and Localized edema (angioedema). Other symptoms listed without checkboxes include: Oozing or bleeding associated with consumptive coagulopathy, Nausea, with or without vomiting, Darkened urine, Bleeding or other manifestations of consumption coagulopathy, Anxiety, Circulatory shock, and Other.

An 'Other Details' text area and the 'OK' and 'Cancel' buttons are at the bottom right.

* Required Field

Figure 107: Transfusion Reaction Workup: Serologic Tests

The screenshot shows the 'Transfusion Reaction Workup' window with the following details:

- Name: VBPATIENT, NINETY
- Patient ID: 000-00-0090
- ABO/Rh: O Neg
- Date Transfusion Reaction Noted: 02/23/2006 16:10
- Date Transfusion Reaction Investigated: 02/23/2006 16:10
- Specimen Checks, Implicated Units, Symptoms, and Serologic Tests tabs are visible.
- Using Automated Instrument checkbox is checked.
- Test User1 is listed under Tested By.
- Rack A is listed under Rack.
- Instrument QC'd? checkbox is unchecked.
- Comment and Details fields are present.
- ABO/Rh section shows results for Pre (2960540153) and Post (2960540156) samples, and a sample labeled 6167616. All are O Neg.
- XM section shows results for sample 6167616, which is Compatible - Sa.
- ABS section shows results for Pre (2960540153) and Post (2960540156) samples, both Neg.
- DAT section shows results for Pre (2960540153) and Post (2960540156), both blank.
- Buttons at the bottom include OK, Finalize/Print TRW, Invalidate TRW, and Cancel.

Figure 108: Transfusion Reaction Workup Report

The screenshot shows the 'Transfusion Reaction Workup Report' window with the following details:

- Title: Transfusion Reaction Workup Report
- Patient Name: VBPATIENT, NINETY
- Patient ID: 000-00-0090
- Reaction Type: Undetermined
- Specimen Checks: Specimen UID, Hemolytic, Checks OK?, Comments
- Pre-Transfusion: Specimen UID 2960540153, Absent, Yes
- Post-Transfusion: Specimen UID 2960540156, Absent, Yes
- Reported Symptom: Wheezing, shortness of breath, Flushing, Anxiety
- Serologic Test: Specimen UID, Unit ID, Product, Interp., Comments
- Pre ABO Interp: Specimen UID 2960540153, Unit ID 2960540153, Product O, Interp. O, Comments Neg
- Pre Rh Interp: Specimen UID 2960540153, Unit ID 2960540153, Product Neg, Interp. Neg, Comments Neg
- Pre Antibody Screen Interp: Specimen UID 2960540153, Unit ID 2960540153, Product Neg, Interp. Neg, Comments Neg
- Post ABO Interp: Specimen UID 2960540156, Unit ID 2960540156, Product O, Interp. O, Comments Neg
- Post Rh Interp: Specimen UID 2960540156, Unit ID 2960540156, Product Neg, Interp. Neg, Comments Neg
- Buttons at the bottom include Current Page No: 1, Total Page No: 1, Zoom Factor: Page Width, Schedule Print, Print Now, and Close.

Finalize/Print TRW

The user finalizes and views and/or prints the Transfusion Reaction Workup Report.

Assumptions

- Patient Testing: Record a Transfusion Reaction Workup was completed.

Outcome

- The Transfusion Reaction Workup Report is available for printing and signing.
- Final report findings are available for display in CPRS.

Limitations and Restrictions

- The user cannot invalidate or change a finalized TRW.
- Transfusion reaction reports are not available to clinicians through CPRS: they must be printed and filed with patient charts.
- VBECS displays these default values for transfusion reactions converted from VistA to VBECS. They do not reflect actual interpretations or results:

Converted Transfusion Reaction	Default
Pre-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Post-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Symptoms	No symptoms identified.
Implicated units	No units implicated in reaction.
Serologic tests	No serologic tests performed.

Additional Information

- The medical director's signature is on the patient's printed chart.
- If a report needs to be replaced, the user may retrieve this report after it is complete. The final report is a printed document with the medical director's signature.

User Roles with Access to This Option

All users

Finalize Transfusion Reaction Workup Report

►►► The Lead Technologist reviews the TRW details, identifies the type of reaction, and adds comments, according to the medical director's instructions. The user prints a copy for the medical director's signature and the Lead Technologist finalizes the TRW, generating a preliminary report. The final printed report requires the signature of the medical director.

User Action	VBECS
1. Select Reports from the main menu.	<ul style="list-style-type: none">Lists report names.Lists the completed TRWs for selection.
Select Finalize/Print TRW .	NOTES _____
Click the Include Non-Finalized TRW Reports check box (Figure 109).	When the user enters and saves the portion recorded in Patient Testing: Record a Transfusion Reaction Workup, the TRW status is "completed." When the Transfusion Reaction Workup Report is complete, the TRW status is "finalized."
Select a completed TRW to	

User Action	VBECS
finalize. Click OK .	
2. Click the Finalize Transfusion Reaction Workup Report check box.	<ul style="list-style-type: none"> • Prepares the completed report for review. • Displays the name of the blood bank medical director to sign the final report. • VBECS recreates the final report for viewing or printing in the future.
3. Select the Transfusion Reaction Type and complete the Transfusion Reaction Comments required fields (Figure 110).	<ul style="list-style-type: none"> • Displays the selected Transfusion Reaction Workup Report data. • Requires the user to select a transfusion reaction type listed in Table 12: Transfusion Reaction Types. • Allows the user to enter a TRW comment. • Allows the user to save the data entered. <p>NOTES</p> <p>The user must indicate one transfusion reaction type. Entry of a comment is optional for all types except O (other), which requires details to be entered.</p>
4. Click OK and Yes to save.	<ul style="list-style-type: none"> • Updates the transfusion reaction to “finalized” in the database and prints a report for the medical director’s signature. <p>NOTES</p> <p>VBECS notifies the user when DSS updates cannot be sent because VistALink is not active. Updates to DSS are queued and sent when any user with a VistALink connection accesses the post-transfusion Information option.</p>
5. Select Schedule Print or Print Now and follow the instructions to print.	<ul style="list-style-type: none"> • Prints the report on the selected printer.
6. Click Close to exit.	

Figure 109: Select Transfusion Reaction Workup

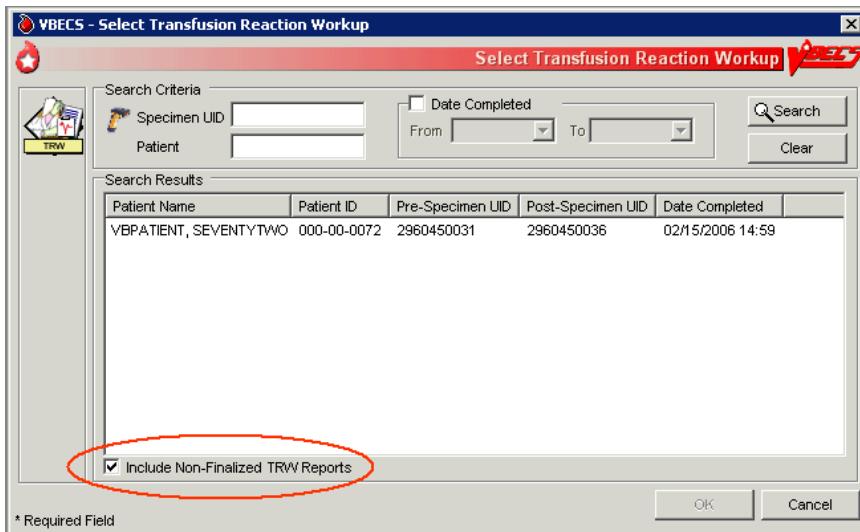
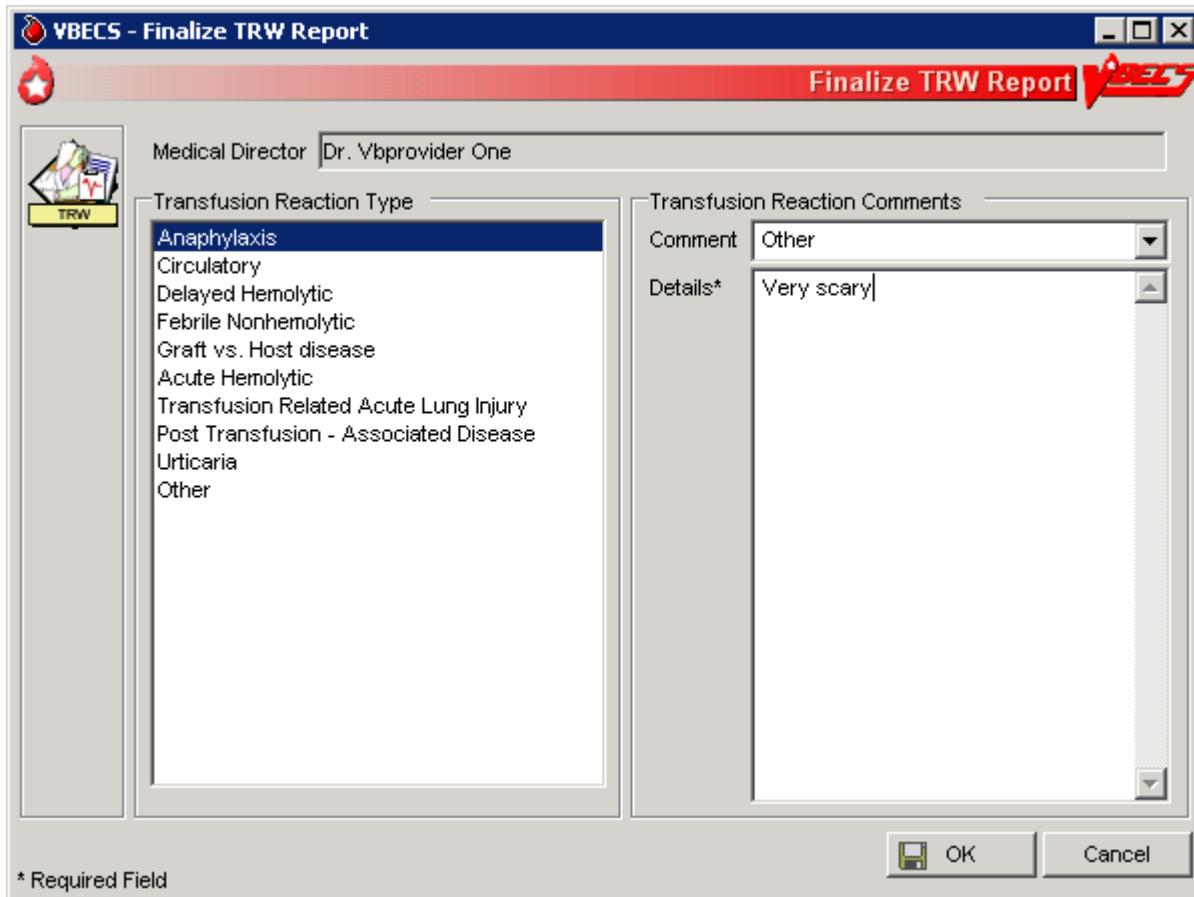


Figure 110: Finalize TRW Report



View/Print a Finalized Transfusion Reaction Workup Report

The user views and/or prints the finalized Transfusion Reaction Workup Report.

User Action	VBECS
1. Select Reports from the main menu. Select Finalize/Print TRW. Select a completed TRW (Figure 108).	VBECS <ul style="list-style-type: none"> Lists report names. Displays the selected Transfusion Reaction Workup Report data. Displays an option to view and/or print a finalized TRW by selecting a patient. <p>NOTES —————</p> <p>The user finalizing the report may not edit previously entered TRW data.</p>
2. Select a patient.	<ul style="list-style-type: none"> Compiles the report and displays an option to print the report or exit. <p>NOTES —————</p> <p>Details included in the finalized TRW report:</p> <ul style="list-style-type: none"> Patient name Patient ID

User Action	VBECS
	<ul style="list-style-type: none"> • Specimen UID • Reported symptoms • Specimen clerical checks (pre-, post-, and unit) • Serologic testing (if performed, interpretations only) • Transfusion reaction type • Comment • Implicated units (include from Patient Testing: Record a Transfusion Reaction Workup) • TRW report completed by: <ul style="list-style-type: none"> ◦ Date and time the report was completed ◦ Signature line for the medical director ◦ Line for the date and time the medical director completed the review ◦ Finalized by ◦ Finalized date and time
3. Select Schedule Print or Print Now and follow the instructions to print.	<ul style="list-style-type: none"> • Prints the report on the selected printer.
4. Click Close to exit.	

Table 12: Transfusion Reaction Types

Transfusion Reaction Type Text
Anaphylaxis
Circulatory
Delayed Hemolytic
Febrile Nonhemolytic
Graft vs. Host Disease
Acute Hemolytic
Transfusion Related Acute Lung Injury
Post-Transfusion: Associated Disease
Urticaria
Other: free-text data required on new entries

Maintain Patient Records

Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement

The user enters or inactivates the Transfusion Requirements (TRs) in the patient's record by division.

Assumptions

- The patient exists in the VBECS database.

Outcome

- VBECS displays TRs to all divisions within a multidivisional database. The division in which they were entered maintains and controls them.
- VBECS maintains a historic record of changes to the patient's TRs.

Limitations and Restrictions

- Inactivation is defined and restricted by security level.
- VistA Special Instructions (SIs) from database conversion do not become TRs: they remain SIs. SIs are information only and are not enforced unless entered in the Component Requirements tab in Special Instructions & Transfusion Requirements.

Additional Information

- No current patient specimen or order is required to access this option.
- When TRs are not met, VBECS prohibits the printing of the Caution Tag and Blood Transfusion Record Form (BTRF) and prevents issue of the blood unit.
- User-entered antigen negative requirements are persistent. VBECS enforces them even when they are in conflict with the division's antibody table settings.
- Patient antibody identifications from VistA are included in the database conversion.
- By default, inactivation of an antibody removes requirements for antigen negative blood derived from the antibody entry.

User Roles with Access to This Option

All users

Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement

The user assigns patient blood component requirements or indicates the need for antigen negative blood to be applied during blood component selection and issue.

VBECS displays TR data and applies requirements during blood unit selection.

All items in these TR categories indicate the need for pre-transfusion processing of a unit before the unit may be issued to the patient. All users may activate entries. ►►► Only a Traditional Supervisor may inactivate a component requirement for a patient. A patient may have one or more TRs:

- Irradiate cellular products
- Leukoreduce cellular products

- Washed RBC products
- Washed PLT products
- Sickle Cell Negative RBC products
- CMV negative cellular products
- Antibodies Identified
- Antigen Negative Requirements: A user or VBECS may create an antigen negative requirement.

User Action	VBECS
<p>1. Select Patients from the main menu.</p> <p>Select Special Instructions & Transfusion Requirements, or Click  in the Patient Information Toolbar, when it is active.</p>	<ul style="list-style-type: none"> • Displays options for processing patient-related functions. • Displays the option to select a patient, if one is not already selected. <p>NOTES</p> <p>The user may also click New SI or TR in Patient Testing to access this option.</p>
<p>2. Select the Antigen Negative RBCs, Component Requirements, or Antibodies Identified tab (Figure 111).</p>	<ul style="list-style-type: none"> • Displays the patient's TRs. • Allows the user to add or inactivate information based on his security level. <p>NOTES</p> <p>When a user accesses antigen negative requirements, VBECS displays and enforces the antigen negative requirement for the patient, regardless of the division setting for the antibody.</p> <p>When a user accesses the Antibodies Identified tab, VBECS compares the patient's antibodies with the division's antibody table setting. When the antibody is set to require antigen negative blood at issue, VBECS displays and enforces the antigen negative requirement.</p>
<p>3. Select a TR from the pick list, or enter an antigen or antibody, as the tab allows.</p> <p>Click Add to move the selection to the patient's record.</p> <p>Click OK when all TRs are selected to save them to the patient's record.</p> <p>Click Yes to confirm changes and exit.</p>	<ul style="list-style-type: none"> • Allows multiple selections from the Component Requirements, Antibodies Identified, and Antigen Negative tabs. <p>NOTES</p> <p>VBECS applies the TR to component classes, as indicated.</p> <p>The user may not add duplicate SIs or TRs in the same session, but may duplicate them in another session.</p> <p>The division code and date of entry are associated with the entered component or antigen negative requirement, or antibody specificity so that other divisions will know whom to contact for further information, when needed. The original entries may have been made through Patient Testing (associated with an antibody identification) or TRs from any division within a multidivisional database.</p>
<p>4. Select the TR to be inactivated (Figure 112).</p> <p>Select and/or enter an explanatory comment and click</p>	<ul style="list-style-type: none"> • Allows the user to enter a comment. <p>NOTES</p> <p>When a TR is inactivated, the user must enter a comment.</p>

User Action	VBECS
OK.	<p>For inactivation of an item:</p> <ul style="list-style-type: none"> • >>> A Traditional Supervisor from any division may inactivate TRs and persistent antigen negative requirements in a multidivisional database regardless of the source of the TR. • When an antibody specificity is inactivated, VBECS inactivates the corresponding calculated (VBECS-generated) antigen negative requirement. • For antibodies identified, VBECS displays a summary of antibodies currently associated with the patient and identifies their source. Additional antibodies may be added and previously identified antibodies may be inactivated.
5. Return to Step 2 to continue editing the patient's TRs.	
6. Accept entries and exit, or Return to Step 1 to make entries for a different patient.	

Figure 111: Enter Patient Special Instructions and Transfusion Requirements

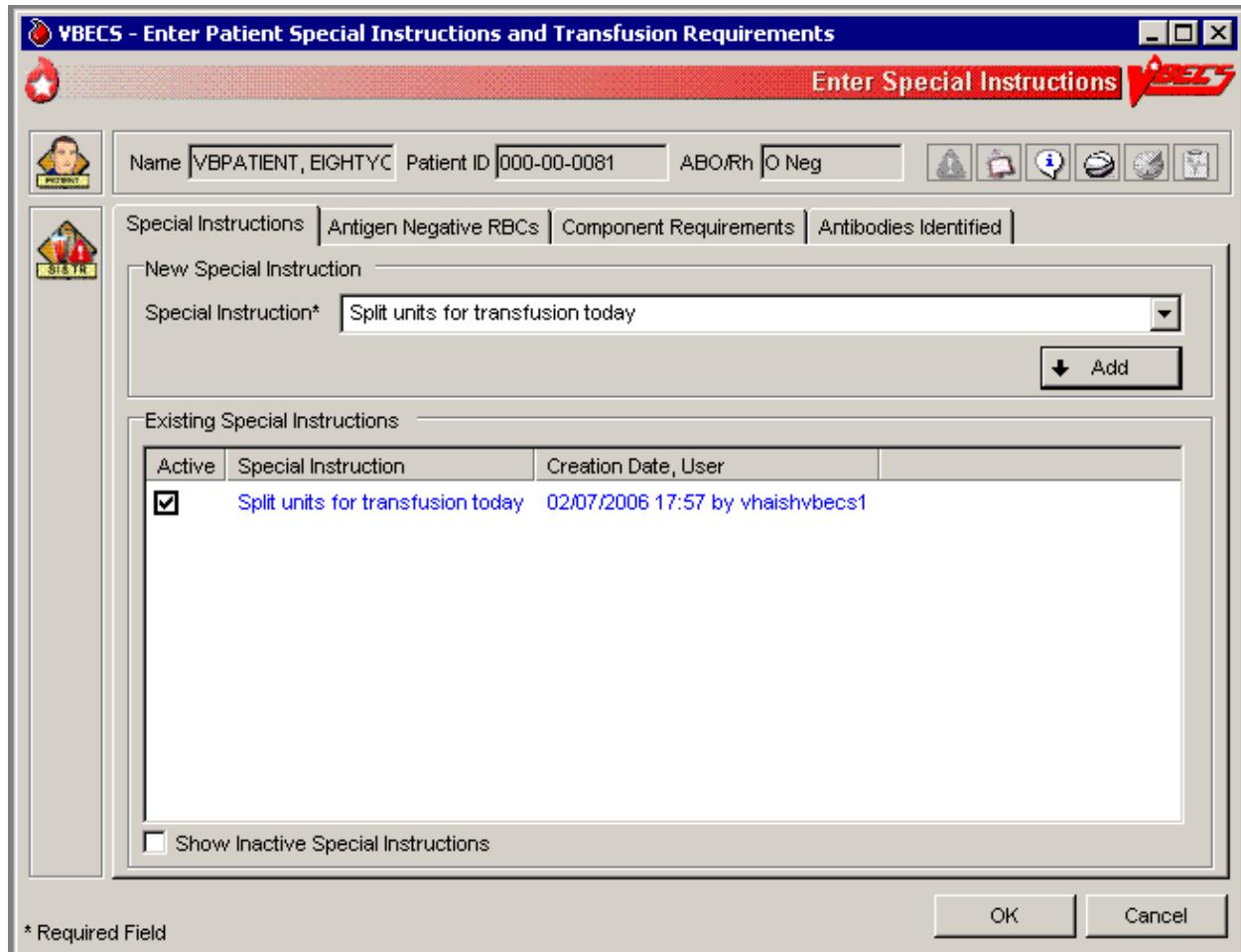
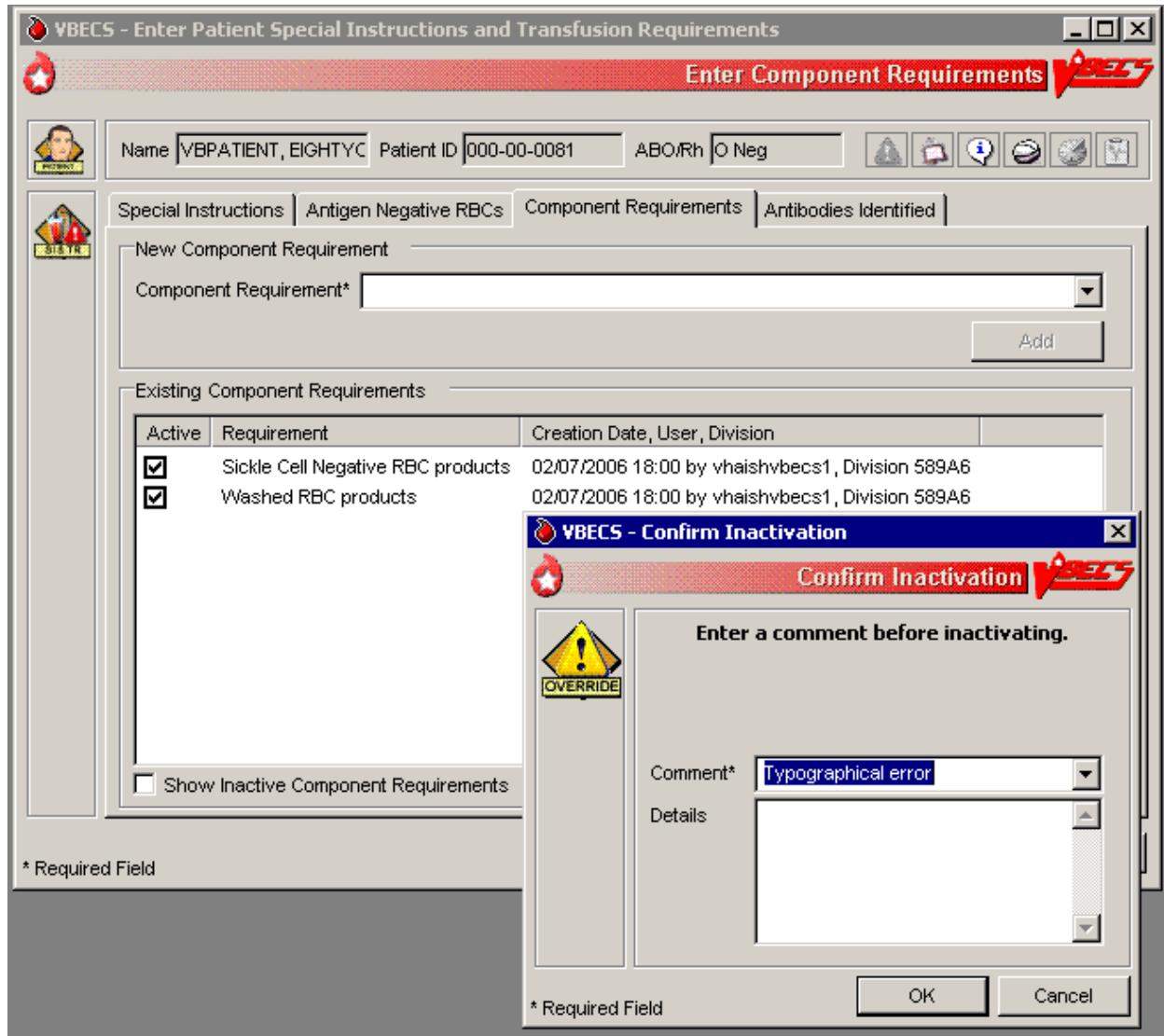


Figure 112: Inactivate Component Requirements



Special Instructions & Transfusion Requirements: Enter and Remove Special Instructions

The user enters comments in a patient's file that are not enforced by VBECS.

Assumptions

- Fields containing Special Instructions (SIs) may be populated during database conversion.

Outcome

- When the user searches for a patient or when the Patient Information Toolbar is displayed, VBECS displays  to alert the user to view the patient's SI entries.
- When a user retrieves a patient record and is in a multidivisional setting, he may view SIs created in all divisions within the database.

Limitations and Restrictions

- VBECS does not enforce Transfusion Requirements (TRs) or antigen negative requirements entered through this option.
- SIs moved to VBECS during the database conversion may contain information that must be entered as TRs in VBECS. Inactivate the old SI and create a TR and new updated SI: the database conversion software cannot automatically translate the SI from database conversion into a rule-based TR.
- VBECS will truncate SI text from the VistA database conversion.

Additional Information

- Inactivation of patient SI entries is allowed only in the division of entry.
- Only currently active SIs at a division will automatically display via the database to all divisions.
- Inactive SIs are not deleted from the VBECS database. They may not be reactivated but may be viewed in the maintenance fields when requested.
- Canned comments in the Special Instructions context must be entered by the division before they can be selected for use.
- Previously saved Special Instructions that require editing due to context or spelling errors must be inactivated and reentered in total.
- Database conversion entries are labeled as such.
- SIs from database conversion may include component or antigen negative requirements that must be entered in TRs so that VBECS can enforce them.

User Roles with Access to This Option

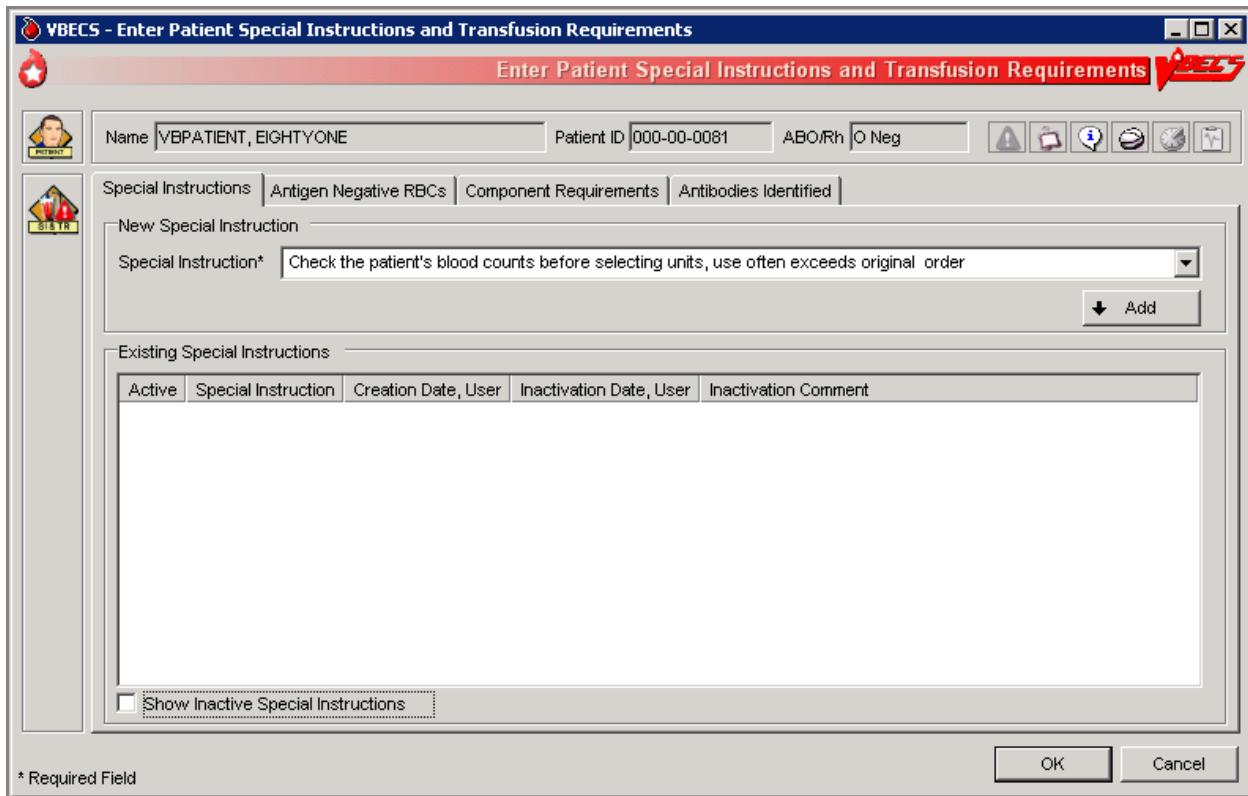
All users

Special Instructions & Transfusion Requirements: Enter a Special Instruction

A user may add to and deactivate SI comments in a patient's blood bank record. Users in all divisions in a multidivisional database may view these comments.

User Action	VBECS
<p>1. Select Patients from the main menu.</p> <p>Select Special Instructions & Transfusion Requirements, or Click  in the Patient Information Toolbar, when displayed.</p>	<ul style="list-style-type: none"> • Displays options for processing patient-related functions. • Displays the option to select a patient, if one is not already selected. <p>NOTES</p> <p>The user may also click New SI or TR in Patient Testing to access this option.</p>
<p>2. Select a patient.</p> <p>Click OK.</p>	<ul style="list-style-type: none"> • Displays options to select a patient. • Displays the option to enter a new comment or remove an existing comment in the division. • Displays the active SI entries in reverse chronological order with all active SIs first, along with date, division code, and text of the entry. <p>NOTES</p> <p>The need for SIs is usually temporary and may not be required for all transfusions.</p> <p>The user may choose to display inactivated SI comments.</p>
<p>3. Select the Special Instructions tab (Figure 113).</p> <p>Click the Show inactive special instructions check box to display inactivated SI entries.</p>	<ul style="list-style-type: none"> • Allows the user to enter or inactivate comments. • Displays inactive Special Instructions but does not allow the user to reactivate them. <p>NOTES</p> <p>A user may add or inactivate a patient-specific comment at any time in the division in which it was entered.</p> <p>►►►► A Traditional Supervisor may inactivate SIs from database conversion.</p>
<p>4. Confirm the activation of the entry and enter a comment.</p> <p>Click OK.</p> <p>Return to Step 2 to add more SIs for this patient.</p> <p>Select another patient and return to Step 1, if desired.</p> <p>Exit.</p>	<ul style="list-style-type: none"> • Saves the entry in the database.

Figure 113: Enter Patient Special Instructions and Transfusion Requirements



Post-Transfusion Information

The user enters post-transfusion details from the Blood Transfusion Record Form (BTRF).

Assumptions

- The BTRF is returned and completed for each unit.
- The unit status is “issued” or “presumed transfused” in VBECS.

Outcome

- The unit status is updated to “transfused.”
- The VBECS patient record includes the blood transfusion information.

Limitations and Restrictions

- VBECS cannot update a unit record to presumed transfused when a user has that unit record open (locked) in Enter Post Transfusion Information. VBECS will attempt to update the unit the next time the presumed transfused background routing runs if the unit remains in an issued status.

Additional Information

- The user may enter bedside verification information unless it is retrieved from another application.
- The user may indicate that a transfusion reaction and symptoms were noted on the BTRF as free text. Noting a transfusion reaction does not create an order for a transfusion reaction workup (TRW).
- Remove a “transfused” status through Remove Final Status.
- A user with the appropriate security level may edit “Transfused” unit information.

User Roles with Access to This Option

All users

Post-Transfusion Information

The user verifies the date and time transfused with a returned BTRF, adds other transfusion details, initiates a system check of the bedside verification information, enters that information, and indicates whether a reaction occurred during or immediately after the transfusion, as documented on the BTRF. VBECS does not require entry of post-transfusion information: once a day, without user input, VBECS moves units 48 hours after issue to “presumed transfused” status.

User Action	VBECS
1. Select Patients from the main menu. Select Post-Transfusion Information .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays an option to scan the Caution Tag or enter a patient name or ID.
2. Select a patient and click OK .	<ul style="list-style-type: none">• Lists the units issued to the selected patient.• Displays the issue date and time.• Displays the units one at a time for update in the order in which the user selected them. <p>NOTES —————</p> <p>VBECS displays an option to obtain a list of transfused units for</p>

User Action	VBECS
3. Click one or more check boxes to select units (Figure 114). Click OK .	<p>the patient when the user has the proper security level.</p> <ul style="list-style-type: none"> Allows the user to select units for which to enter post-transfusion information. <p>NOTES</p> <p> VBECS does not list units (for selection) with a final status. When a user enters a unit with a final status, VBECS alerts the user and clears the screen. The user may select another unit.</p>
4. Enter transfusion details for a blood unit. Verify the unit selection.	<ul style="list-style-type: none"> Displays the unit information entered by the bedside verification check and allows the user to enter to edit the information. Displays an option to enter or edit unit data. <p>NOTES</p> <p>When no bedside verification information is available and a VBECS user enters the information, VBECS flags the bedside verification record as manually entered.</p> <p>►►► A user with a security setting of Traditional Supervisor may edit previously entered bedside verification, transfusion reaction, or post-transfusion detail information.</p> <p>VBECS displays an option to edit or enter information for each unit. This information is available for patient record retrieval.</p>
5. Select one or more units. Enter or edit the bedside verification check information with the proper security level.	<ul style="list-style-type: none"> Displays the entries for review, including the comment, until all details are entered. Displays an option to save the data and exit. <p>NOTES</p> <p>Upon data entry and saving of the post-transfusion information, VBECS assigns a status of "transfused" for the unit of blood assigned to the indicated patient.</p> <p>When user saves the post-transfusion details for a unit with a presumed transfused indicator, VBECS removes the indicator from the unit.</p>
6. Enter post-transfusion details, including: <ul style="list-style-type: none"> Transfusion start and end dates and times Transfusionist ID Location of transfusion Whether the transfusion was completed or interrupted If interrupted, the amount transfused Whether there was a transfusion reaction If there was a reaction, symptoms (Figure 115) Click OK to save.	<ul style="list-style-type: none"> Displays an option to enter unit data. Warns the user or allows the user to continue to the next selected unit. <p>NOTES</p> <p>When a user indicates that a transfusion reaction occurred, VBECS does not automatically order a TRW.</p> <p>VBECS warns when the transfusion end date and time is earlier than the start or issue time. The user may correct the entry.</p> <p>When the unit was not issued to a remote storage location, VBECS compares the date and time the unit was issued to the start transfusion time entered.</p> <p>When the difference is greater than 30 minutes, VBECS notifies</p>

User Action	VBECS
	<p>the user that this is a delayed start time and allows the user to edit the transfusion start date and time. No allows the user to continue. Yes allows the user to edit the date and time the transfusion ended. When the user edits the date and time transfused, VBECS repeats this process until the user stops editing and chooses to continue.</p> <p>When the unit was not issued to a remote storage location, VBECS compares the date and time recorded as the transfusion end time to the start date, calculates the transfusion time in minutes, and compares this period to the maximum transfusion time for the component class. When the calculated transfusion time for this unit exceeds the defined maximum transfusion time for the component class, VBECS notifies the user that this is a prolonged transfusion and allows the user to edit the transfusion end date and time. No allows the user to continue. Yes allows the user to edit the date and time the transfusion ended. When the user edits the date and time transfused, VBECS repeats this process until the user stops editing and chooses to continue.</p>
7. Respond to warnings or continue to enter data for the next unit.	<ul style="list-style-type: none"> • Allows the user to repeat for subsequent selected units until all details are entered. • Displays an option to save the data and exit. <p>NOTES —————</p> <p>VBECS saves all transfusion information for future retrieval and reporting as part of the patient and unit historic records. VBECS notifies the user when DSS updates cannot be sent because VistALink is not active. Updates to DSS are queued and sent when any user with a VistALink connection accesses the post-transfusion Information option.</p>
8. Exit.	

Figure 114: Post-Transfusion Information

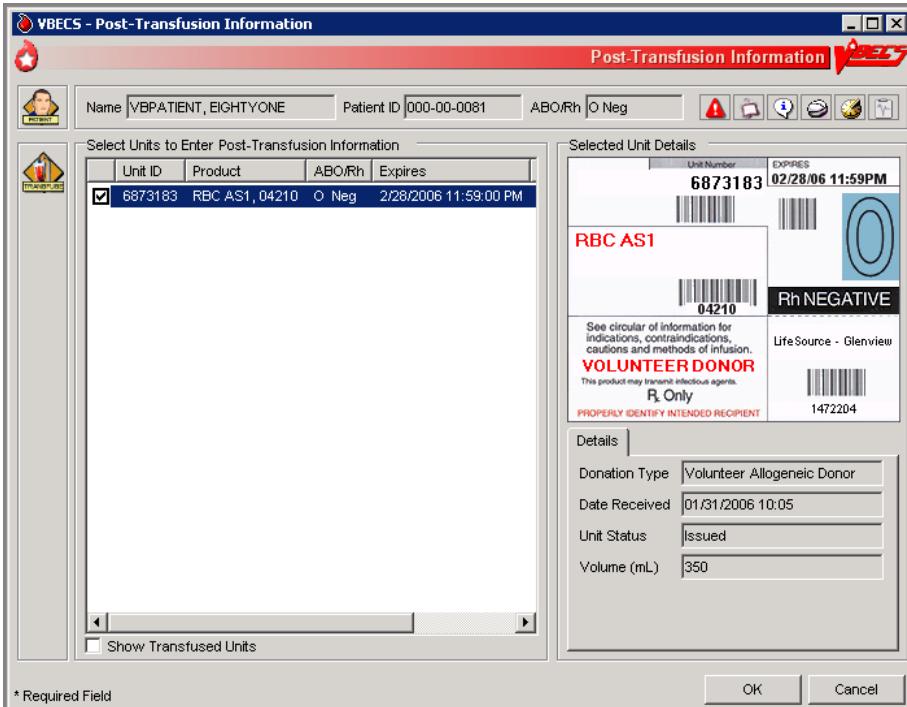


Figure 115: Post-Transfusion Information Details

The screenshot shows the 'VBECS - Post-Transfusion Information' window with the unit details filled in. It includes sections for Issue Details, Bedside Verification Check, and Post-Transfusion Information.

Issue Details:

- Date Issued: 02/09/2006 10:45
- Issued By: vhaishvbecs1

Bedside Verification Check:

- Verification Date: [empty]
- Unit ID: 6873183
- Product Code: 04210V
- Patient Name: VBPATIENT, EIGHTYONE
- Patient ID: 000-00-0081
- Transfusion Start Date: 02/09/2006 10:45
- Transfusionist ID #1: Cupid
- Transfusionist ID #2: [empty]

Post-Transfusion Information:

- Transtfusion End Date: 02/13/2006 16:22
- Patient Location at Transfusion: A2MED IM-LE
- Transfusion Completed?:
 - Tranfusion Completed
 - Tranfusion Interrupted
- Amount Transfused:
 - 1/4
 - 1/2
 - 3/4
 - Volume: 0 mL
- Transfusion Reaction Noted?:
 - No Reaction
 - Reaction Noted: Symptoms: goofy smile
- Comments: [empty]

* Required Field OK Cancel

Document ABO Incompatible Transfusions

The user enters post-transfusion details from the Blood Transfusion Record Form (BTRF) to document ABO incompatible and other inadvertent transfusions.

Assumptions

- A unit was transfused to a patient other than the intended recipient.
- The connection to VistA is active.

Outcome

- The unit status is updated to “transfused.”
- The patient record includes the blood transfusion information.

Limitations and Restrictions

- VBECS does not enforce compatibility checks between the patient and the unit.

Additional Information

- FDA guidances govern when to file blood product deviation reports.
- Follow local policy and procedures for additional reporting requirements.
- VBECS requires a specimen and an order placed through CPRS to process transfusions. When a patient was transfused and no specimen was collected or order placed for blood components, the user may record the transfusion using this option.

User Roles with Access to This Option

►►► Traditional Supervisor

Document ABO Incompatible Transfusions

When a unit is transfused to the incorrect patient, the user enters transfusion details for that unit.

 *VBECS does not enforce compatibility checks to allow consistent and accurate online availability of a unit's final disposition. Use of this option is restricted to supervisory blood bank personnel who have thoroughly investigated the transfusion and documented the inability to use normal VBECS business processes to enter the transfusion documentation.*

User Action	VBECS
1. Select Supervisor from the main menu. Select Document ABO Incompatible Transfusion .	<ul style="list-style-type: none">• Displays options for processing patient-related functions.• Displays an option to scan the Caution Tag or enter a patient name or ID.
2. Select a patient and click OK .	<ul style="list-style-type: none">• Displays an option to select a patient that may not be available from the VBECS files.
3. Select a unit for which to document a transfusion that does not follow system rules.	<ul style="list-style-type: none">• Displays an option to enter a unit ID and product code or search for one.
NOTES _____	

User Action	VBECS
	<p>VBECS does not enforce compatibility checks in this option.</p> <p>VistALink allows the user to select any patient in the hospital, including those with no VBECS records (required for units transfused in error to a patient who never had VBECS orders).</p> <p> VBECS does not list units (for selection) with a final status. When a user enters a unit with a final status, VBECS alerts the user and clears the screen. The user may select another unit.</p>
4. Enter post-transfusion details and a comment.	<ul style="list-style-type: none"> • Displays an option to enter or edit unit data. See Post-Transfusion Information. •  VBECS emits an audible alert, requires a comment, and captures the transaction details for inclusion in an Exception Report (exception type: ABO incompatible unit transfused). • Displays the entries for review, including the comment, until all details are entered.
5. Click OK and Yes to save.	<ul style="list-style-type: none"> • Saves the data. • Allows the user to enter comments and details.
6. Enter or select a comment and details, in accordance with local policy and procedures. Click OK .	<p>NOTES —————</p> <p>Upon data entry and saving of the post-transfusion information, VBECS assigns a status of “transfused” to the unit of blood for the indicated patient.</p> <p>VBECS saves transfusion information for future retrieval and reporting as part of the patient and unit historic records.</p> <p>VBECS captures details of this override in an Exception Report.</p>
7. Exit.	

Justify ABO/Rh Change

The user changes a patient's historical blood type only when there is a clinical change in blood type, not to correct an error. (See Invalidate Test Results.)

Assumptions

- The patient has a previous ABO/Rh on record from the user's current division, from a different division within the database, or from the database conversion.
- The patient has a current specimen test result with an ABO/Rh interpretation that does not match the historical record. Both previous and current specimen test results are valid.

Outcome

- VBECS permanently marks the patient record and the specimen test to indicate that the patient has a justified ABO/Rh change, regardless of the user's division.
- The justified ABO/Rh on the patient record forces the user's selection to be used as the new historical record, replacing the current test result as the historic record. VBECS does not check for ABO/Rh discrepancies with tests entered for this patient prior to the justified test result.
- VBECS permanently disallows electronic crossmatch (eXM) for this patient.

Limitations and Restrictions

- VBECS does not allow the selection or issue of certain blood components that may appear ABO/Rh compatible when discrepant ABO/Rh results are not justified.

Additional Information

- When the discrepant ABO/Rh tests are on the same specimen, the user may not justify the patient's ABO/Rh.
- Do not use this option for ABO/Rh discrepancies that occur because the patient had a recent transfusion of a component of a type other than his own.
- ABO/Rh discrepancies that occur because the previously tested or current specimen was tested in error are handled by inactivating the previously recorded test results through Invalidate Test Results.
- Subsequent specimens may need to be justified in the presence of continued discrepant ABO results.
- This option is used in rare clinical situations such as following bone marrow transplant.

User Roles with Access to This Option

►►► Traditional Supervisor

Justify ABO/Rh Change

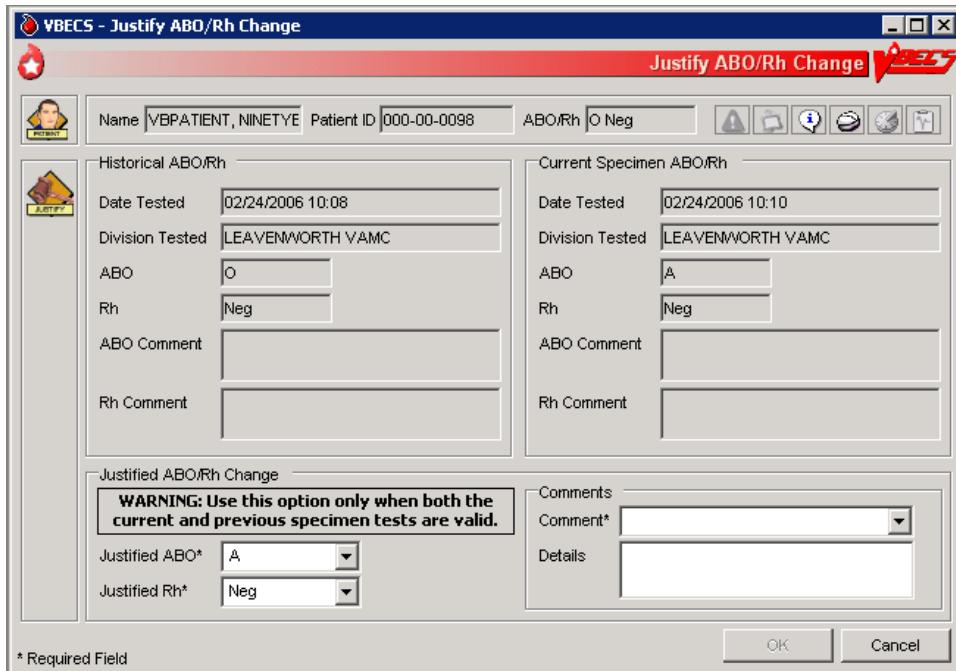
The user determines that the patient's current ABO/Rh testing results are valid, although they differ from previously recorded results, and that the patient requires a justification indicator on his record.

This option is used only when both the previous specimen testing and the current specimen testing are considered valid. There is a valid explanation for why the ABO/Rh interpretations do not match and invalidation of the test result is not appropriate. Once the current patient ABO/Rh result change is justified, VBECS marks the patient's record so that special handling for component orders for the patient

apply from this point forward and remain in effect until the patient record is inactivated by the recording of his death in VBECS or by removing the justification.

User Action	VBECS
1. Select Supervisor from the main menu. Select Justify ABO/Rh Change .	<ul style="list-style-type: none"> Displays options available to supervisors.
2. Enter a patient name in the Patient field and click Search to select a patient. Select a patient. Click OK .	<ul style="list-style-type: none"> Displays a screen for patient selection. Disallows the justification or allows the user to continue. <p>NOTES</p> <p>VBECS compares the results of the current ABO/Rh with the previous ABO/Rh results. When there is no discrepancy, VBECS warns that no justification is required. There is no override. VBECS clears the screen and the user may select another patient.</p> <p>VBECS warns the user to use this option only when both the current and previous specimen tests are valid, otherwise, use Invalidate Patient Test Results.</p>
3. Select an ABO/Rh interpretation as the patient's justified historical record (Figure 116).	<ul style="list-style-type: none"> Displays details of the historic and current ABO/Rh testing for comparison and a list of available ABO and Rh types for user selection. Requires a comment to continue. <p>NOTES</p> <p>The user may select one ABO group and one Rh type for the patient to serve as the justified ABO/Rh typing in the historic record. VBECS displays the current ABO and Rh interpretations as the defaults.</p> <p>VBECS requires a comment to continue.</p>
4. Confirm the update of the database with the justified ABO/Rh. Exit.	<ul style="list-style-type: none"> Updates the patient record.

Figure 116: Justify ABO/Rh Change



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Reports

Administrative Data Report

The user views and/or prints the Administrative Data Report.

Assumptions

- Data are available for inclusion in the report.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- None

Additional Information

- The report is available as a single-division or multidivisional (all divisions) report.

User Roles with Access to This Option

All users

Administrative Data Report

The user views and/or prints the Administrative Data Report, which includes blood product transactions for a given date range.

User Action	VBECS
1. Select Reports from the main menu. Select Administrative Data Report .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. Click the Current Divisions or All Divisions radio button.	<ul style="list-style-type: none">• Allows the user to select one or all divisions. <hr/> <p>NOTES</p> <p>For each component class and its subdivisions, VBECS tallies:</p> <ul style="list-style-type: none">• Products received• Products modified/prepared• Units transfused• Units shipped• Outdated units• Discarded credit units• Discarded waste units
3. Enter or select start and end dates.	
4. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or	<ul style="list-style-type: none">• Compiles and displays the report.

User Action	VBECS
Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	
5. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Audit Trail

The user views and/or prints an Audit Trail Report.

Assumptions

- Data are available for inclusion in the report.
- The user must be logged into the division in which the report is to be generated.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- VBECS does not accommodate online review (verification, signature) of reports.

Additional Information

- Audit trail entries reflect the actual date and time the change was made.

User Roles with Access to This Option

All users

Audit Trail

The user views and/or prints an Audit Trail Report, which lists changes to specific patient, unit, and division configuration settings. It is a regulatory requirement to maintain documentation proving that these changes were reviewed. Modify local record retention policy to instruct users to print, review, document, and save these reports. The Audit Trail Report contains only data changes generated in the user's login division.

User Action	VBECS
1. Select Reports from the main menu. Select Audit Trail .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. Enter or select start and end dates.	<p>NOTES —————</p> <p>The parameter table and Transfusion Requirements Report sections include changes from no previous entry to an entry and from an entry to no entry.</p> <p>Each entry includes an area for supervisor acknowledgement (signature or initials and date of review) and comment.</p>
3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer	<ul style="list-style-type: none">• Compiles and displays the report.

User Action	VBECS
name. Click OK to view and print the report.	
4. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer. • See Appendix B: Table 18: Details in Audit Trail Report.

Blood Availability

The user views and/or prints the Blood Availability Report.

Assumptions

- A blood unit is logged into a division in the database.

Outcome

- VBECS users may view available blood unit data in several formats.

Limitations and Restrictions

- Users may not view these reports outside VBECS.

Additional Information

- VBECS displays the defined reports and allows the user to view an individual Patient Blood Availability Report or to create a custom report.
- The report is available as a single-division or multidivisional (all divisions) report.

User Roles with Access to This Option

All users

Blood Availability

The user may check the blood availability for a specific patient and view and/or print a variety of Blood Inventory Reports from the user's and other divisions, as available. Blood Availability Reports include the product's unit status, indicators, patient information for units in the "assigned" and "issued" statuses, restrictions, and special testing or handling of a unit.

User Action	VBECS
1. For a non-individual report, select Reports from the main menu. Select Blood Availability , or For a patient-specific report, select Patients from the main menu. Select Blood Availability .	<ul style="list-style-type: none">• Displays options for generating, viewing, and printing blood reports.• Displays non-individual report type and compilation criteria.• Displays options for generating a patient-specific report. <p>NOTES</p> <p>The "issued to" location for an issued unit, special testing associated with a unit, disease marker testing, and comments are printed in the additional information area of the report.</p>
2. Click a radio button to select a report format: <ul style="list-style-type: none">• Daily Inventory (All Units)• Daily Inventory (Available Units)• Antigen Typed Inventory (Available Units)• Units with No Disposition (Available Expired)• Units with Final Disposition (Not Transfused)	<ul style="list-style-type: none">• Displays a print preview of the report. <p>NOTES</p> <p>The user may click the Custom Report radio button and OK, and then click the appropriate check boxes in the Component Class, Testing, Donation Type, Unit Status, Date Range, ABO/Rh, Product Attributes, and Division tabs to customize the report.</p> <p>The user may view individual patient Blood Availability Reports, including only blood units currently assigned, crossmatched, or</p>

User Action	VBECS
<ul style="list-style-type: none"> • Custom Report • Individual Patient Blood Availability 	<p>issued for a patient, online only.</p> <p>When a user selects Units with Final Disposition, the report includes units with a status of "discarded," "modified," or "transferred."</p> <p>When a user selects Units with No Disposition, the report includes expired units with a status of "limited" or "available."</p>
<p>3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or</p> <p>Click the Schedule Print Job radio button and OK, then enter or select a print date and printer name. Click OK to view and print the report.</p>	<ul style="list-style-type: none"> • Compiles and displays the report.
<p>4. Select Print to print the report and exit, or click Close to exit without printing.</p>	<ul style="list-style-type: none"> • Prints the report on the selected printer.
<p>5. Return to Step 1 or exit.</p>	<ul style="list-style-type: none"> • Allows the user to print the report, perform a new search, and exit. <p>NOTES —————</p> <p>The user may print the report without previewing it.</p>

Cost Accounting Report

The user views and/or prints the Cost Accounting Report.

Assumptions

- Data for the report were saved in VBECS.

Outcome

- The report is viewable or printed.

Limitations and Restrictions

- None

Additional Information

- The report is for a single division.

User Roles with Access to This Option

All users

Cost Accounting Report

The user views and/or prints the Cost Accounting Report for a division. The Cost Accounting Report itemizes incoming and outgoing shipments, modifications of blood products, and patient testing costs for a given period. The report includes base cost, special testing, modifications, and return credits for units, as applicable.

User Action	VBECS
1. Select Reports from the main menu. Select Cost Accounting Report .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. Enter or select start and end dates.	<ul style="list-style-type: none">• Compiles and displays the report. <p>NOTES —————</p> <p>Final calculations appear at the end of the report:</p> <ul style="list-style-type: none">• Subtotal of base cost per invoice (Incoming Shipment section only)• Subtotal of special testing cost (Incoming Shipment section only)• Subtotal of return credit for an invoice (Outgoing Shipment section only)• Total base cost of all units• Total return credits of all units• Total special testing cost of all units• Total off-site antibody identification testing cost• Total number of units received• Total number of units transferred• Total number of units modified• Total cost of modifications

User Action	VBECS
	<ul style="list-style-type: none"> • Total number of units discarded
<p>3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or</p> <p>Click the Schedule Print Job radio button and OK, then enter or select a print date and printer name. Click OK to view and print the report.</p>	<ul style="list-style-type: none"> • Compiles and displays the report.
4. Select Print to print the report and exit, or click Close to exit without printing.	Prints the report on the selected printer.

C:T Ratio Report

The user views and/or prints the C:T Ratio Report.

Assumptions

- Data for the report are available.

Outcome

- The report is viewed or printed.

Limitations and Restrictions

- None

Additional Information

- This calculation does not include component classes that do not require XMs (FRESH FROZEN PLASMA, PLATELETS, CRYOPRECIPITATE) and component types in the OTHER component class (when no crossmatch is performed).
- The report is available as a single-division or multidivisional (all divisions) report.

User Roles with Access to This Option

All users

C:T Ratio Report

This option compiles and calculates the crossmatch-to-transfusion ratio. The user may select one of five report formats.

User Action	VBECS
1. Select Reports from the main menu. Select C:T Ratio Report .	<ul style="list-style-type: none"> Lists report names. Displays report type and compilation criteria. Displays a crossmatched date range for selection.
2. Enter a crossmatched date range.	<ul style="list-style-type: none"> Displays an option to compile the report for one or all divisions in the database.
3. Click the Current Division or All Divisions radio button.	<ul style="list-style-type: none"> Allows the user to select a report format. <p>NOTES</p> <p>The user may request the Detailed Report, Physician Summary Report, Treating Specialty Summary Report, Detailed Report with Physician Summary, or Detailed Report with Treating Specialty Summary.</p>
4. Click a radio button to select a report format: <ul style="list-style-type: none"> Detailed Report Physician Summary Report Treating Specialty Summary Report Detailed Report with Physician Summary Detailed Report with Treating Specialty Summary 	<ul style="list-style-type: none"> Compiles the report and displays an option to print the report or exit. <p>NOTES</p> <p>The physician included in this report is the ordering physician. VBECS compiles the C:T ratio report as a summary or detailed report. All versions include a single C:T ratio for the division.</p> <p>VBECS determines the C:T ratio for a division by dividing the number of units crossmatched (electronically or serologic) during the period selected by the number of units transfused at the division.</p> <p>This calculation does not include units with a XM result of "Compatible - Don't Transfuse" or "Incompatible - Unsafe to Transfuse."</p> <p>The detailed C:T ratio report includes a list of units crossmatched (electronically or serologic) for a patient during the selected date range. The report includes the unit ID, physician name, treating specialty, XM interpretation, date and time the XM was completed, product short name, and an indication as to whether the unit was transfused or presumed transfused.</p> <p>VBECS determines the C:T ratio for a physician by dividing the number of units that were crossmatched (electronically or serologic) during the period selected by the number of transfused units.</p> <p>VBECS determines the C:T ratio for a treating specialty by dividing the number of units crossmatched (electronically or serologic) for all patients listed in that treating specialty by the number of units transfused to all patients listed for that specialty.</p>
5. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the	<ul style="list-style-type: none"> Compiles and displays the report.

User Action	VBECS
report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	
6. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Division Transfusion Report

The user views and/or prints the Division Transfusion Report.

Assumptions

- Transfused unit data for the report were saved in VBECS.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- None

Additional Information

- VBECS compiles data for the report from the user's login division.
- Appendix B: Table 22: National Treating Specialty Table defines the treating specialty.

User Roles with Access to This Option

All users

Division Transfusion Report

The user views and/or prints a Division Transfusion Report, which lists details of units transfused during a selected period.

User Action	VBECS
1. Select Reports from the main menu. Select Division Transfusion Report .	<ul style="list-style-type: none">• Lists report names.• Displays fields for entering a report date range.
2. Enter or select start and end dates. In the Report Type area, select the Issuing Physician Report , Treating Specialty Report , or Issued-To Location Report radio button.	<ul style="list-style-type: none">• Allows the user to compile the report by issuing physician, by treating specialty, or by issued-to location.• Allows the user to include some or all physicians, treating specialties, or issued-to locations. <p>NOTES ——————</p>
3. Click OK to compile the report.	<ul style="list-style-type: none">• Compiles and displays the report. <p>NOTES ——————</p> <p>The report displays tallies of units transfused by component class within the date range, by:</p> <ul style="list-style-type: none">• Physician name• Treating specialty• Issued-to location• Number of units transfused• Number of units presumed transfused

User Action	VBECS
	<ul style="list-style-type: none"> • Total number of patients transfused • Total number of units transfused and presumed transfused <p>Reports include:</p> <ul style="list-style-type: none"> • Patient name • Patient ID • Unit ID • Product short name • If pooled, number of participants in pool • Date and time Issued • Issued-to location • Physician • Treating specialty • Transfused or presumed transfused indicator, if present • Transfusion comments, if any
4. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Division Workload Report

The user views and/or prints a workload report.

Assumptions

- VistA workload codes were assigned to VBECS processes through Workload Codes.
- Data for the report were saved in VBECS.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- None

Additional Information

- The report is available as a single-division or multidivisional (all divisions) report.

User Roles with Access to This Option

All users

Division Workload Report

The user views and/or prints a workload report, which includes totals of workload types, for one or all divisions.

User Action	VBECS
1. Select Reports from the main menu. Select Division Workload Report .	<ul style="list-style-type: none">• Lists report names.• Displays report division and compilation criteria.• Displays a date range for selection.
2. Click the Current Divisions or All Divisions radio button.	<ul style="list-style-type: none">• Allows the user to select one or all divisions.• Displays a date range for selection.
3. Enter or select start and end dates.	<ul style="list-style-type: none">• Compiles and displays the report.• Allows the user to print the report.
	<p>NOTES —————</p> <p>A multiple-division workload report includes totals for each type of workload for each division requested in the report.</p> <p>VBECS searches its workload file for entries within the selected date range.</p>
4. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer	<ul style="list-style-type: none">• Compiles and displays the report.

User Action	VBECS
name. Click OK to view and print the report.	
5. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Exception Report

The user views and/or prints an Exception Report.

Assumptions

- Data are available for inclusion in the report.
- The user must be logged into the division in which the report is to be generated.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- VBECS does not accommodate online review (verification, signature) of reports.

Additional Information

- A supervisor may use a printed report to document the review.
- Exception Report entries reflect the actual date and time an exception occurred.

User Roles with Access to This Option

All users

Exception Report

The user views and/or prints an Exception Report. Exception Reports list details of transactions that involve overrides to warnings and selected transactions of interest to the supervisor (for example, quarantined units).

User Action	VBECS
1. Select Reports from the main menu. Select Exception Report .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. Enter or select start and end dates.	<p>NOTES —————</p> <p>The report is sorted by exception type. Exception types are in chronological order.</p>
3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	<ul style="list-style-type: none">• Compiles and displays the report.
4. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none">• Prints the report on the selected printer.• See Appendix B: Table 19: Details in Exception Report.

Finalize/Print TRW (See Patient Services, Finalize/Print TRW.)

Inappropriate Transfusion Request Report

The user views and/or prints the Inappropriate Transfusion Request Report.

Assumptions

- The order is flagged as an inappropriate transfusion request during Accepting an Order.
- Setting Component Requirements was processed and there are inappropriate test indicators associated with the component classes in the login division.
- Data for the report were saved in VBECS.

Outcome

- The user view or prints the report.

Limitations and Restrictions

- None

Additional Information

- None

User Roles with Access to This Option

All users

Inappropriate Transfusion Request Report

The user views and/or prints the Inappropriate Transfusion Request Report, which includes inappropriate transfusion orders determined by the division's configuration of each component class.

User Action	VBECS
1. Select Reports from the main menu. Select Inappropriate Transfusion Request Report .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. Enter or select start and end dates.	<ul style="list-style-type: none">• Compiles and displays the report. <p>NOTES —————</p> <p>See Appendix B: Table 22: National Treating Specialty Table.</p>
3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	<ul style="list-style-type: none">• Compiles and displays the report.

User Action	VBECS
4. Select Print to print the report and exit, or click Close to exit without printing.	Prints the report on the selected printer.

Issued/Returned Unit Report

The user views and/or prints the Issued/Returned Unit Report.

Assumptions

- Data for the report were saved in the VBECS database.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- None

Additional Information

- The report is compiled for one division.
- Pooled units include the number of participants in the pool.

User Roles with Access to This Option

All users

Issued/Returned Unit Report

The user views and/or prints a report of units issued and/or returned to patients within a specified date range for a division.

User Action	VBECS
1. Select Reports from the main menu. Select Issued/Returned Report .	<ul style="list-style-type: none">• Lists report names.• Displays fields for entering a report date range.
2. Enter or select start and end dates.	<ul style="list-style-type: none">• Allows the user to sort the report by issued date range or by patient name.
3. In the Report Sort Order area, select the Issue/Return Date or Patient Name radio button.	<ul style="list-style-type: none">• Compiles the report and, for each unit issued and when units are returned, includes return information. <p>NOTES —</p> <p>The report includes a unit that is issued or returned within the entered date range. When a unit is identified as issued or returned during the entered date range, the report also includes unit return and issuance data, respectively, even when they fall outside the date range of the report.</p>
4. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none">• Prints the report on the selected printer.

Medication Profile (See Patient Information Toolbar.)

Order History Report

The user views and/or prints a Single-Order History Report or an Order Summary Report.

Assumptions

- Data for the report are available.

Outcome

- The user may view and/or print a report.

Limitations and Restrictions

- None

Additional Information

- Test counts and workload information for other VBECS processes are in the Workload Report.

User Roles with Access to This Option

All users

Order History Report

The user views and/or prints an Order History Report. The user may retrieve a report for a single order or a summary report for all VBECS orders within a date range. The user may sort the Order Summary Report by treating specialty or by patient location.

User Action	VBECS
1. Select Reports from the main menu. Select Order History Report .	<ul style="list-style-type: none">• Lists report names.• Displays options for generating, viewing, and printing reports.• Displays report type and compilation criteria.
2. Click the Order Summary Report or Single-Order History Report radio button to select a report type.	
3. For an Order Summary Report, create a report date range: Select or edit the dates and times in the Start Date and End Date fields. In the Report Sort Order area, click the Treating Specialty or Ordering Location radio button and continue at Step 5.	<ul style="list-style-type: none">• Displays the option to enter a date range for the report based on the date and time VBECS acknowledged the order.• Displays an option to sort the report by treating specialty or by ordering location. The report tallies orders in a given date range by ordering location and treating specialty.
4. For a Single-Order History Report:	<ul style="list-style-type: none">• Displays the Select Patient Order window.
NOTES _____	

User Action	VBECS
Enter the search criteria and/or click the ellipsis button to select an order from the list.	<p>The user enters a date or a specimen UID, or selects a patient to locate an order. VBECS displays the following information based on the selected search option:</p> <ul style="list-style-type: none"> • When a user enters a date, VBECS displays orders accepted or canceled by VBECS on that date. • When the specimen UID is entered, VBECS displays only orders associated with that specimen. • When a patient name is selected, VBECS displays the patient's orders listed in reverse chronological order for the last 90 days with an option to display all of the patient's accepted and canceled orders.
<p>5. In the Report Compilation area, click the Create Report Now radio button and OK to view the report, or</p> <p>Click the Schedule Print Job radio button and OK, then enter or select a print date and printer name, then click OK to view and print the report.</p>	<ul style="list-style-type: none"> • Compiles and displays the report. <p>NOTES —</p> <p>The Order Summary Report includes a section for each treating specialty or ordering location, including accepted and canceled VBECS orders and the Diagnostic Test or Component Orders for the selected date range. The report lists individual orders by order type, including the Patient Name, ID, CPRS and Lab Order Numbers, and Date.</p> <p>The Single-Order History Report contains details of an individual order.</p>
6. Click Close to exit.	

Patient History Report

The user views and/or prints the Patient History Report.

Assumptions

- VBECS displays the report header even when there is no information in the report.

Outcome

- The user views and prints a patient's VBECS record.

Limitations and Restrictions

- When units are restricted for a patient during Incoming Shipment, VBECS does not display them on the Patient History Report..
- VBECS displays these default values for transfusion reactions converted from VistA to VBECS. They do not reflect actual interpretations or results:

Converted Transfusion Reaction	Default
Pre-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Post-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Symptoms	No symptoms identified.
Implicated units	No units implicated in reaction.
Serologic tests	No serologic tests performed.

Additional Information

- The patient record report is divided into sections for report retrieval.
- This report includes:
 - o Post-transfusion details.
 - o Data from all divisions within the database.

User Roles with Access to This Option

All users

Patient History Report

The user views and/or prints the patient's VBECS record.

User Action	VBECS
1. Select Patients or Reports from the main menu. Select Patient History Report .	<ul style="list-style-type: none">• Displays options for processing patient-related functions, or for generating, viewing, and printing reports.• Displays report sections and compilation criteria.
2. Enter the patient name and/or ID, or click the ellipsis button to search for patient data. Click OK .	<ul style="list-style-type: none">• Allows the entry or selection of a patient.• Displays the patient report section types for selection:<ul style="list-style-type: none">o Patient Demographic Historyo Transfusion Requirementso Testing Detailso Unit Assignment Historyo Transfusion Historyo Specimen Detailso Special Instructions

User Action	VBECS
	<ul style="list-style-type: none"> o Transfusion Reaction Details o Exception Report Entries o Assignments/Releases o Audit Trail Report
<p>3. Select one or more sections to include in the report.</p> <p>4. Click the Schedule Print Job radio button and OK, then enter or select a print date and printer name. Click OK to view and print the report.</p>	<ul style="list-style-type: none"> • Compiles and displays the report. • Allows the user to print the report.
5. Click Close to exit.	<p>NOTES —————</p> <p>When the patient has an ABO/Rh as the result of a conversion, VBECS displays a message in the Transfusion History section instructing the user to check the legacy records for additional information.</p>

Prolonged Transfusion Time Report

The user views and/or prints the Prolonged Transfusion Time Report.

Assumptions

- Data for the report were saved in VBECS.

Outcome

- The user views and prints the report.

Limitations and Restrictions

- This report does not include presumed transfused units or units issued to a remote storage location.

Additional Information

- This option uses the Appendix B: Table 22: National Treating Specialty Table, not a local list.

User Roles with Access to This Option

All users

Prolonged Transfusion Time Report

The user views and/or prints the Prolonged Transfusion Time Report, which shows transfusions started more than 30 minutes after issue and units transfused for more than the maximum transfusion time set by each division.

User Action	VBECS
1. Select Reports from the main menu. Select Prolonged Transfusion Time Report .	<ul style="list-style-type: none">• Displays options for generating, viewing, and printing reports.• Displays a date range for selection.• Displays report sort order and compilation criteria.
2. Enter a date range. Click the Transfusion Date (Reverse Chronological) or Issue-To Location radio button to select a sort order.	
3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	<ul style="list-style-type: none">• Compiles and displays the report. <p>NOTES —————</p> <p>The report includes:</p> <ul style="list-style-type: none">• Issue-to location• Unit ID• Product short name• Issue Date/time• Start Date/time• End Date/time• Number of minutes elapsed between unit issue and start time, when exceeds 30 minutes

User Action	VBECS
	<ul style="list-style-type: none"> • Number of minutes elapsed between the unit start and end dates and times, when they exceed the maximum transfusion setting for the component class. • Patient Name • Patient ID • Treating Specialty <p>The report includes instances of a prolonged start time and/or the prolonged transfusion time.</p> <p>A prolonged transfusion time is the number of minutes elapsed between the transfusion start and end times and the maximum transfusion time setting for the component class. When the number of minutes exceeds the maximum transfusion time setting for the component class, the unit and its transfusion data are included in the report.</p> <p>A delayed start of transfusion is the number of minutes elapsed between the issue time and the transfusion start time. When the start time of the unit's transfusion is greater than 30 minutes from the unit's issue time, the unit and its transfusion data are included in the report. When no start time is entered, VBECS records the issue time as the start time; it does not calculate a delayed start time.</p> <p>The total transfusion time is the number of minutes elapsed between the issue and end times.</p> <p>The report includes:</p> <ul style="list-style-type: none"> • Issue-To Location • Unit ID • Product Short Name • Issue Date/Time • Start Date/Time • End Date/Time • Delayed start interval (the number of minutes elapsed between unit issue and start times, when it exceeds 30 minutes) • Prolonged transfusion interval (the number of minutes elapsed between unit start and end dates and times, when they exceed the maximum transfusion setting for the component class) • Patient Name • Patient ID • Treating Specialty
4. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Patient Testing Worklist and Testing Worklist Reports

The user views and/or prints the Patient Testing Worklist and Testing Worklist Reports.

Assumptions

- The user must be logged into the division in which the report is to be generated.

Outcome

- The user views and/or prints a report, or schedules a report for future compilation and printing.

Limitations and Restrictions

- Reports do not include Transfusion Reaction Workup (TRW) test results.
- VBECS does not accommodate online review (verification, signature) of reports.

Additional Information

- In a transfusion-only facility, VBECS does not populate the test cell or phase results sections.
- VBECS collates complete, incomplete, and invalidated unit test results entered in the user's division when the date tested falls within the supplied date range for the unit testing, reagent QC, and patient testing sections of the report.
- VBECS includes test results on all units, regardless of status, for the unit testing section. CMV and Sickle Cell test results are not included in the report.
- VBECS includes the results of the daily rack QC and patient and unit control testing for the reagent QC section.
- For the patient testing section:
 - VBECS collates as above for the selected patient specimens within a specified date range.
 - The report does not include TRW test results.
 - VBECS includes XMs only in the patient testing section.
 - VBECS displays individual tests within the TAS and a statement in the Additional Information Column to this effect.
 - When Antibody Identification (ABID) testing was performed at an outside facility, VBECS prints the name of the outside facility in the Additional Information column.

User Roles with Access to This Option

All users

Patient Testing Worklist and Testing Worklist Reports

The user views and/or prints a Patient Testing Worklist Report for a specific patient or a Testing Worklist Report for a division. The reports contain both partially completed and completed testing data entries on patients, units, and reagents created in the same division as the user generating the report.

User Action	VBECS
<p>1. For a Patient Testing Worklist Report (for a single patient, select Patients from the main menu.</p> <p>Select Patient Testing Worklist Report.</p> <p>For a Testing Worklist Report for a division, go to Step 5.</p>	<ul style="list-style-type: none"> Displays options for processing patient-related functions. Displays patient search criteria.
<p>2. Enter the patient name or identification number.</p> <p>Click Search, as required.</p> <p>Select a patient and click OK.</p>	<ul style="list-style-type: none"> Requires the user to select a patient. Displays specimen search criteria.
<p>3. Select or edit the dates and times in the Specimen Received Start Date and End Date fields.</p> <p>Click Search, as required.</p>	<ul style="list-style-type: none"> Allows the user to indicate a date range and patient specimens to include in the report. Displays specimens with associated testing for the selected patient. <p>NOTES</p> <p>The individual Patient Testing Worklist Report includes VBECS specimen UIDs from the last 90 days, by default. The user may remove one or more specimen UIDs and/or edit the default date range.</p> <p>When the patient record is not found, VBECS notifies the user that no matching patients were found.</p> <p>When the selected patient has no specimen on file within the division, VBECS warns the user and asks the user to select a different patient.</p> <p>Requires the user to indicate the format of the report:</p> <ul style="list-style-type: none"> Patient Testing Unit Testing Daily QC Miscellaneous Reagent QC
<p>4. Click one or more check boxes to select specimens.</p> <p>Click OK.</p> <p>Go to Step 8.</p>	<ul style="list-style-type: none"> Displays the report. Allows the user to print the report.
<p>5. For a Testing Worklist Report for a division, select Reports from the main menu.</p>	<ul style="list-style-type: none"> Lists report names. Displays the report date range, sections (Patient Testing, Unit Testing, Rack QC, and Miscellaneous Reagent QC), and compilation criteria.

User Action	VBECS
Select Testing Worklist Report .	
6. Select or edit the dates and times in the Start Date and End Date fields.	<ul style="list-style-type: none"> • Displays the option to enter a date range for the report based on the date and time VBECS acknowledged the order.
7. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	<ul style="list-style-type: none"> • Compiles and displays the report.
8. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Transfusion Complications Report

The user views and/or prints the Transfusion Complications Report.

Assumptions

- VistA tests are defined in Transfusion Complications.
- The connection to VistA is active.
- Transfusion Complications was processed and post-transfusion complication tests are defined.
- Units have a status of presumed transfused or transfused for the patient.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- The report does not include units in an issued status.

Additional Information

- The report searches for evidence of a transfusion in VBECS only. If the user enters a start date that requires a search of VistA records to check back a full 12 months, the report includes a message indicating that only transfusions documented in VBECS are included in the report and that the user needs to run a supplementary report in VistA.
- The report searches for VistA tests defined in Transfusion Complications when the report is requested.
- If threshold values are words, they are case insensitive.
- A patient's test results and transfusions are not directly linked by date, episode, or admission event.
- Lab test data retrieved for the report are not saved in VBECS.
- The report is not saved in VBECS.

User Roles with Access to This Option

All users

Transfusion Complications Report

The user views and/or prints the Transfusion Complications Report, which includes patients transfused in his division with a test result that exceeds the threshold set in Transfusion Complications for that test. Tests associated with possible post-transfusion complications are gathered by searching for results in a user-defined date range for the report. The report also includes the documented patient transfusions from 12 months prior to the start date of the report through the end date of the report.

User Action	VBECS
1. Select Reports from the main menu. Select Transfusion Complications Report .	<ul style="list-style-type: none">• Lists report names.• Displays fields for entering a report date range.
2. Enter or select start and end dates.	<ul style="list-style-type: none">• Compiles and displays the report and allows the user to print it.

User Action	VBECS
	<p>VBECS searches the Laboratory files (VistALink) and gathers instances of tests that exceed the threshold result of the tests set in Transfusion Complications within the specified date range. Retrieved test results are then filtered so that the report includes results only for patients who have transfusions documented in VBECS within the last 12 months prior to the start date of the report through the end date.</p> <p>VBECS includes the evaluated tests and their threshold values in the report criteria section.</p> <p>Details of the report include:</p> <ul style="list-style-type: none"> • Patient name • Patient ID • Current hospital location • Date of death (in lieu of location if patient died) • Unit ID • Unit short name • End date and time of the unit's transfusion, if available <p>From VistA for each patient's tests:</p> <ul style="list-style-type: none"> • Test name • Associated test result • Date and time recorded
3. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Transfusion Effectiveness Report

The user views and/or prints a Transfusion Effectiveness Report.

Assumptions

- VistA tests are defined in Transfusion Effectiveness.
- The connection to VistA is active.
- Units have a status of presumed transfused or transfused for the patient.
- Data for the report were saved in VBECS and in VistA.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- The report does not include VBECS diagnostic tests.

Additional Information

- Only verified Laboratory test results are available from VistA.
- Laboratory test data retrieved for the report from VistA are not saved in VBECS.
- A new page is started for each patient in the report.
- Test results in the report do not include units of measure or normal ranges.

User Roles with Access to This Option

All users

Transfusion Effectiveness Report

The user views and/or prints the Transfusion Effectiveness Report, which contains transfusion episodes and Laboratory results for patients for a selected period.

User Action	VBECS
1. Select Reports from the main menu. Select Transfusion Effectiveness Report .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. Enter or select start and end dates.	
3. In the Report Type area, select the All Patients radio button, or Click the Individual Patient Report radio button and the ellipsis button to search for a patient.	<ul style="list-style-type: none">• Compiles and displays the report.
4. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or	<ul style="list-style-type: none">• Compiles and displays the report.

User Action	VBECS
Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	
5. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Transfusion Reaction Count Report

The user views and/or prints a Transfusion Reaction Count Report.

Assumptions

- Data for the report were saved in VBECS.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- None

Additional Information

- The report is available as a single-division or multidivisional (all divisions) report.

User Roles with Access to This Option

All users

Transfusion Reaction Count Report

The user views and/or prints the Transfusion Reaction Count Report for a single division or for all divisions in the database.

User Action	VBECS
1. Select Reports from the main menu. Select Transfusion Reaction Count Report .	<ul style="list-style-type: none">• Lists report names.• Displays report division, format, and compilation criteria. <p>NOTES —————</p> <p>The report includes transfusion reactions that are ordered, pending, completed, or finalized, and those indicated during Post-Transfusion Information.</p>
2. Enter or select start and end dates.	<ul style="list-style-type: none">• Compiles and displays the report.• Allows the user to print the report.
3. Click the Current Divisions or All Divisions radio button.	<ul style="list-style-type: none">• Allows the user to select one or all divisions.• Displays a date range for selection. <p>NOTES —————</p> <p>The Transfusion Reaction Count Report by type includes specific patient information indicated by the user. The default report setting excludes patient names.</p>
4. Click the Detailed Report or Summary Report radio button.	<ul style="list-style-type: none">• Displays an option to compile the report as detailed or summary.• Compiles and displays the report.• Allows the user to print the report. <p>NOTES —————</p> <p>The Transfusion Reaction Count Report prints the implicated unit numbers or "no implicated units," as appropriate.</p>

User Action	VBECS
	VBECS reports the total number of patient transfusion reactions in the selected date range.
5. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report, or click Close to exit without printing.	<ul style="list-style-type: none"> Compiles and displays the report.
6. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> Prints the report on the selected printer.

Transfusion Requirements Report

The user views and/or prints a Transfusion Requirements Report.

Assumptions

- The database conversion of VistA patient files is complete.
- Data for the report were saved in VBECS.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- The cumulative report includes all patients (except those marked as deceased) in the database.

Additional Information

- When a Transfusion Requirements report is compiled from multiple divisions, the report notes this in the report header.
- VBECS does not allow a report to be printed when no data are available.
- When the date range includes a future date and time, VBECS displays “Partial” in the report header on each page of the report.
- Each page containing patient information includes the patient name.
- Divisions in a multidivisional database may view each other’s Special Instructions (SI) comments.

User Roles with Access to This Option

All users

Transfusion Requirements Report

The user views and/or prints the Transfusion Requirements Report for a division. This option describes the continuous compilation of the complete file of patients in the VBECS database for historic record checking during downtime.

User Action	VBECS
1. Select Reports from the main menu. Select Transfusion Requirements Report .	<ul style="list-style-type: none">• Lists report names.• Displays report compilation criteria.• Displays a date range for selection.
2. In the Report Type area, select the Cumulative Report radio button, or Click the Partial Report radio button and enter or select start and end dates.	<ul style="list-style-type: none">• Compiles and displays the report.
3. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or	<ul style="list-style-type: none">• Compiles and displays the report.

User Action	VBECS
Click the Schedule Print Job radio button and OK , then enter or select a print date and printer name. Click OK to view and print the report.	
4. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

Unit History Report

The user views and/or prints a Unit History Report.

Assumptions

- The unit exists in the user's division.

Outcome

- The user views and/or prints the report.

Limitations and Restrictions

- The report is not multidivisional.
- When a user retroactively updates a unit status through Discard or Quarantine, the Unit History Report displays the updated information, but does not display the date the change was made.

Additional Information

- There may be multiple instances of the same unit number and product code in the same division. Inactivated unit records may have a unit ID and product code that duplicate an active unit ID and product code.
- VBECS always displays the current unit status when the user selects a blood unit, so there is no need for a separate report option, as is possible in VistA.
- Unit testing details are included in Testing Worklist Report.

User Roles with Access to This Option

All users

Unit History Report

The user views and/or prints the complete record for a blood unit, from incoming shipment through final status, including unit activities saved in the VBECS database. VBECS compiles data for that unit for one division.

User Action	VBECS
1. Select Reports from the main menu. Select Unit History Report .	<ul style="list-style-type: none">• Lists report names.• Allows the user to scan or enter a unit ID and product code.• Displays compilation criteria.
2. Scan or enter the unit ID and product code, or click the ellipsis button to search for and select a unit.	<p>NOTES —</p> <p>The user may select any unit (active or inactive) in a division. VBECS marks the units so that the active ones are distinct from the inactive ones.</p>
3. In the Include Report Sections area, click one or more check boxes to select report sections.	<ul style="list-style-type: none">• Displays the unit report section types for selection:<ul style="list-style-type: none">o Incoming Shipmento Outgoing Shipmento Unit Quarantine Informationo Unit Financialso Patient Associations History

User Action	VBECS
	<ul style="list-style-type: none"> ○ Issue Information ○ Testing ○ Crossmatch ○ Modification ○ Transfused To ○ Exception Report
<p>4. In the Report Compilation area, click the Create Report Now radio button. Click OK to view the report, or</p> <p>Click the Schedule Print Job radio button and OK, then enter or select a print date and printer name. Click OK to view and print the report.</p>	<ul style="list-style-type: none"> • Compiles and displays the report for the user's login division. <p>NOTES —</p> <p>The page header includes the standard VBECS header, the unit ID, product, donation type, expiration date, restricted for patient, status, ABO/Rh, division, product long name, and user.</p> <p>VBECS displays entries from only the related reports (Audit Trail and Exception Reports) specific to the selected unit or patient.</p> <p>Audit Trail and Exception Reports that record only unit override information are linked to the unit's historic record. Those that record only patient override information are linked to the patient's historic record. Those that record both are accessible in unit and patient historic records.</p> <p>See Appendix B: Table 18: Details in Audit Trail Report and Table 19: Details in Exception Report.</p> <p>The report displays the product long name.</p> <p>The report displays "CMV neg" and/or "SC neg" in the "Special Testing" column when a unit qualifies.</p> <p>The report displays the unit's quarantine indicator in the "Quarantined" column: blank when never quarantined, "Yes" when quarantined, and "No" when released from quarantine.</p> <p>The report displays the unit's biohazardous indicator in the "Biohazard" column: blank when never marked as biohazardous, "Yes" when biohazardous, and "No" when the biohazard indicator was removed.</p>
5. Select Print to print the report and exit, or click Close to exit without printing.	<ul style="list-style-type: none"> • Prints the report on the selected printer.

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Glossary

Acronym, Term	Definition
AABB	American Association of Blood Banks.
ABID	Antibody identification.
ABO	A group for classifying human blood, based on the presence or absence of specific antigens in the blood, which contains four blood types: A, B, AB, and O. The ABO group is the most critical of the human blood systems. It is used to determine general compatibility of donor units to a recipient.
ABS	Antibody screen, Antibody Screen Test.
Access Code	A field in the VistA New Person file used to uniquely identify a user on the VistA system.
Accessioned	Describes an order when a specimen has been collected or has been placed on a current collection list by the VistA Laboratory software. <i>A mechanism for accessioning orders for blood components that do not require a specimen needs to be designed.</i>
Active order	A patient order for blood product(s) that is not completed or expired. Depending on the component class, an accompanying specimen may be required.
Active user	A user with a setting in VistA that allows him to access VBECS. Inactive users may no longer access VBECS.
Activities	Business processes that the product supports.
Activity	An identified verification and validation task.
ADPAC	Automated Data Processing Application Coordinator.
AHG	Anti-Human Globulin.
Aliquot	A sample/portion divided off or separated as a part of a whole.
Allogeneic	See "Homologous."
Antibody	A protein in the serum of some people that will react to a specific antigen on the blood cells. <i>In the case of a red blood cell transfusion, a patient with a clinically significant (leading to a transfusion reaction and possible patient harm) identified antibody must receive only red cells that are typed and found negative for the associated antigen. Once a clinically significant antibody is identified, antigen-negative cells must always be transfused even if a current specimen no longer shows the presence of the antibody. The antibody table in VBECS addresses the antibodies associated with red cell antigens. Though many antibodies are considered clinically significant, some are more of a nuisance to testing than a problem for transfusion. Many antibodies have documentation that defines their clinical significance; that information is used to define the VBECS table system warnings and overrides.</i>
Antigen	A substance on the surface of a red cell that stimulates an immune response (formation of an antibody).

Acronym, Term	Definition
Antigen negative requirement	A prerequisite that specified blood product categories must not contain stated characteristics.
Antigen typing	Testing for the presence or absence of an antigen on a red blood cell.
Antiglobulin	An antibody that combines with a specific protein on a different type of antibody.
Anti-Human Globulin	A commercial reagent that binds to immunoglobulin molecules attached to the surface of a red blood cell.
Antisera	Plural of "antiserum."
Antiserum	Blood serum (human, animal, monoclonal) containing antibodies that are specific for one or more antigens.
Assigned	Describes a unit of blood in a state that can be issued for transfusion and assigned to a patient. See "Selected."
Attribute	ISBT 128 term that describes a property of a collected blood product. <i>Examples include "Irradiated" and "Residual Leukocyte Content" (Leukopoor).</i>
Audit Trail Report	The report of changes made to previously verified data. <i>Regulations require that a mechanism be in place to prevent "electronic white-out." An audit report contains details of the change, before and after data, date, and who made the change.</i>
Autocontrol	A test using a patient's serum (plasma) and cells under the same conditions as the accompanying test.
Autodiscriminate	Describes the ability of a barcode scanner to identify and interpret more than one barcode symbology without having to adjust any software or hardware parameters.
Autologous	Describes blood donated in advance for use by the donor in the future, often for elective surgery. <i>Regulations allow for processing patients with diseases that otherwise would preclude them from donating blood to donate for themselves autologously. It is imperative that software guarantee that such blood is never available for use by anyone other than the intended recipient.</i>
Automated problem-reporting system (also referred to as the problem-reporting system)	See "Remedy."
Barcode scanner	An electronic device that uses a finely focused beam of light to sense and transmit the data in a barcode image.
Billable	A characteristic of an LMIP workload code that determines if statistics gathered as a result of that workload code should be included in the monthly report to the Austin Automation Center.
Blood product	See "Component Type."
Blood Transfusion Record Form (BTRF)	A form printed in the blood bank used to record the actual events of a transfusion. <i>Examples: start/stop time, transfusionists, vitals, reaction information. Formerly "SF 518 equivalent" (VistA nomenclature).</i>
Blood type (blood group)	The ABO and Rh type of blood determined by testing.

Acronym, Term	Definition
Canned comment	Defined comments, entered in abbreviated form and displayed as expanded text, used to enter supporting information at a variety of data entry points.
Category type	When used in relation to the file of canned comments, the category of the comment that determines in which functionality the comment may be selected and associated with other data.
Caution Tag	A blood bank-generated form attached to a unit of blood when the unit is assigned or crossmatched.
CC	Check Cell.
Check Cell (CC)	A type of reagent red cell used in the blood bank to verify the reactivity of antiglobulin antisera when the results of an antiglobulin test are negative. <i>Also referred to as "Coombs Control cells."</i>
Check character	A character used to check the integrity of a barcode symbol.
Clinically significant antibodies	If there is a chance of an adverse reaction to a transfusion, the antibodies associated with the antigens in that unit are considered clinically significant. <i>Only clinically significant antibodies require that the patient receive red cells that have been phenotyped as negative for the associated antigen.</i>
CMS	Centers for Medicare and Medicaid Services. The federal agency responsible for administering the Medicare and Medicaid programs as well as certain other healthcare entitlement programs. "CMS" is the new name for HCFA (Health Care Financing Administration) under the Bush administration.
CMV	Cytomegalovirus. Some patients should receive only blood units that have been tested and found negative for CMV.
Codabar	Standard symbology used to define the format of barcode labels used to label all blood units. <i>ISBT 128 will replace Codabar.</i>
Compatibility testing	Tests performed in the blood bank to determine the suitability of a unit of blood for a patient. <i>Depending on the component class, compatibility testing can be as limited as comparing donor and patient ABO/Rh or as complex as requiring crossmatch.</i>
Completed TRW	A completed TRW indicates that serologic testing was completed.
Component	Any raw material, substance, piece, part, software, firmware, labeling, or assembly that is intended to be included as part of the finished, packaged, and labeled device.
Component class	The general form of a specific product produced by a blood supplier. <i>Example: Red Blood Cells, Fresh Frozen Plasma, and Platelets. (Product Type in VBECS model)</i>
Coombs test	See "Anti-Human Globulin."
CPRS	Computerized Patient Record System. A VistA software application that provides an integrated patient record system for use by clinicians, managers, quality assurance staff, and researchers.

Acronym, Term	Definition
CPT	Current Procedural Terminology. A proprietary terminology system owned by the AMA that enumerates medical and surgical services typically provided by physicians. <i>Although CPT is proprietary, CMS (formerly HCFA) includes it in HCPCS and requires its use for outpatient claims submitted for Medicare and Medicaid beneficiaries.</i>
Crossmatch	A procedure that demonstrates ABO compatibility and the absence of clinically significant antibody reactions between a patient and a unit of blood. <i>Traditionally, a crossmatch consists of a serological test between the patient's blood and a sample of the blood unit to be transfused. New regulations allow for what is called "computer/electronic crossmatch" in defined circumstances.</i>
Crossover	A process by which an autologous or directed donor unit is released from the intended recipient and made available for general transfusion. <i>VBECS supports only directed unit crossover.</i>
D	The major antigen of the Rh system. Also "Rh _o ." <i>The presence of this antigen on red blood cells determines if a patient or donor is Rh Pos or Rh Neg. A weak expression of the D antigen, referred to as "Du" or "weak D," may require additional testing to determine its presence. "D negative" is another term for "Rh negative"; "D control" is another term for "Rh control." The convention for VBECS GUIs is D control.</i>
Data entry grid	A grid that contains observations and interpretations of observations.
Database	A collection of data arranged for ease and speed of retrieval that may or may not contain data from multiple VBECS divisions.
Day of use	The calendar date times (0000–2359) a reagent is used.
DDE	Direct data entry.
Decision support system (DSS)	A financial/cost tracking system for VA hospitals.
Delete	Remove a VBECS record from user access and keep it in the database.
Direct Antiglobulin Test (DAT)	A laboratory test performed in a blood bank in conjunction with pre-transfusion testing or as a diagnostic test. <i>A positive DAT indicates that an antibody-antigen reaction may have occurred in vivo, which may be related to medications or previous transfusions. "Direct Coombs" and "DAT" are used interchangeably.</i>
Direct data entry (DDE)	The process of entering test results in a computer rather than recording them on paper.
Directed	Blood that is donated in advance to be set aside for a specific patient. <i>Directed donation units must meet all of the requirements of any regular unit of donated blood (all disease marker testing must be negative). If not needed by the intended recipient, a directed unit may be released for general use.</i>
Disposition	The recorded final state of a blood unit. <i>A blood unit with a disposition is no longer available for routine processing.</i>

Acronym, Term	Definition
Edit	To enter or change previously saved information. <i>VistA overwrites the data and does not create an audit trail. VBECS overlays the data and creates an audit trail.</i>
Elution	A procedure performed by a blood bank technologist to investigate a positive DAT. <i>A positive eluate is further tested to determine the specificity of the antibody, which has been eluted from the patient's red cells.</i>
Emergency issue	The release of blood prior to pre-transfusion testing and crossmatch.
Exception Report	A report that details a user deviation from a standard process. <i>Example: a user overrides a warning and is required to enter a justification for continuing.</i>
eXM	Electronic crossmatch.
Expiration date	The last date during which a blood component can be considered safe for transfusion. <i>If the expiration date does not include a time, the time is assumed to be midnight.</i>
Eye-readable prefix	Two non-scannable numbers appended to a Codabar Unit ID label by some collection facilities. <i>Most Red Cross blood suppliers use eye-readable prefixes; not all private blood suppliers do. Eye-readable prefixes correlate with collection facilities.</i>
Facility (see "Site")	A blood bank laboratory where a blood unit is located.
FDA	Food and Drug Administration.
File	Source code, data, and documentation.
Finalized TRW	A finalized TRW indicates that the medical director reviewed the TRW, classified the reaction, and may make recommendations for future transfusions.
FOIA	Freedom of Information Act.
HCPCS	Healthcare Common Procedure Coding System. Codes used to enumerate medical and surgical services and supplies in the outpatient setting. <i>CMS (formerly HCFA) uses HCPCS for Medicare and Medicaid reimbursement. HCPCS are the required code set for medical and surgical services and supplies for the outpatient setting under the final code set standards for HIPAA. There are three levels of HCPCS codes: level I are CPT codes from AMA; level II are additional codes developed by HCFA for services and supplies not covered by CPT; level III are local codes assigned by individual state Medicare carriers. Level III codes are scheduled to be phased out under HIPAA.</i>
HIPAA	Health Insurance Portability and Accountability Act of 1996.
Historical ABO/Rh	The most recent valid entry entered in the same division as the current order/treatment record, not from the database conversion.
Historical record	Cumulative, redundant data, referenced continually throughout VBECS.
HL7	Health Level 7. An international messaging standard used predominantly in the healthcare industry.

Acronym, Term	Definition
HLA (histocompatibility locus antigens)	Antigens associated with cellular immunity.
Homologous (also “allogeneic”)	The standard type of blood donation: a volunteer donor reports to a blood collection facility and donates a unit of blood. The blood is tested and released for general use.
ICCBBA	International Council for Commonality in Blood Banking Automation, Inc. The governing body that developed and maintained the database that governs the ISBT 128 blood labeling system.
IEN	Internal Entry Number.
IgA (Immunoglobulin A)	Immune protein usually associated with tissue response (hypersensitivity).
In-date	Describes the state of a unit of blood when the expiration date/time of the unit is in the future.
Interpretation	The evaluation of serologic test reactions.
IRM	Information Resource Management.
Irradiate	To expose blood products to radiation to damage white cells and avoid graft-versus-host disease.
ISBT	International Society of Blood Transfusion.
ISBT 128	New standardized method for labeling blood units. <i>It includes much more information within the barcodes than is possible with Codabar. Its rules are much more structured than Codabar. It is not backwards compatible with Codabar.</i>
Leukopoor	See “leukoreduce.”
Leukoreduce	To remove white cells from a cellular product through filtration. The resulting product is considered “leukoreduced” or “leukopoor.”
ListServ	An email distribution list to manage discussion groups.
LMIP	Laboratory Management Index Program. Coding system used by the College of American Pathologists (CAP) to describe various procedures performed in a clinical laboratory with the purpose of assisting in calculating productivity.
Medical device	An instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent, or other similar or related article, including a component part, or accessory that is intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease.
Modifier	An ISBT 128 term that describes a characteristic of a donated unit of blood that distinguishes it from other members of the component class. <i>The VBECS application is concerned with the modifiers “Washed,” “Thawed,” “Liquid,” “Frozen,” “Rejuvenated,” and “Deglycerolized.”</i>

Acronym, Term	Definition
Modifier (order)	Component requirements associated with a specific component order. <i>Example: a component order where red blood cells must be leukoreduced. When a component order is accompanied by special requirements, units issued for transfusion must meet specific criteria that translate into “Modifiers” or “Attributes” in ISBT 128.</i>
MSBOS	Maximum Surgical Blood Ordering Schedule. The appropriate number of specific blood components to be ordered for selected surgeries at a facility. <i>Preoperative blood component orders are compared with this list and details of orders falling outside of these established criteria are recorded and reportable.</i>
Multidivisional database	More than one separate transfusion services share a database.
Negative control	The negative control cell is known to lack the antigen the antiserum type is to detect. This cell should demonstrate negative serologic reaction, and, therefore, have a valid negative interpretation.
	The positive and negative control cells must demonstrate a valid positive or negative set of serologic reactions and interpretations for the test of the unit or patient to be considered valid, regardless of the row validation of the unit test itself. (See “Positive control.”)
NFT	Not fully tested.
NLT	National Laboratory Test code. Coding schema used by the VistA Laboratory software to assign numeric identifier code to specific tests. Also known as Workload Code (WKLD CODE).
OI NT&EO	Office of Information National Training and Education Office.
Order	<i>Request for a service. The request may specify when the order is to be completed, e.g., immediately (STAT). VBECS acts on the order when it has been “accessioned.”</i>
Original unit	A unit before modification.
Outdated	Describes the state of a unit of blood that has passed the expiration date/time.
Patch	Software developed and released to correct a defect, or change or enhance existing functionality; usually a modified subset or small addition to existing software.
Patient care encounter (PCE)	A contact with a patient documented in the patient's record.
PCE	Patient care encounter.
Pending Order List (POL)	A list of orders transmitted from CPRS waiting to be processed.
Pending Task List (PTL)	A list of tasks to be processed in the blood bank.
Phenotype	Describes the presence or absence of specific antigens.
Phenotyping	Testing for the presence or absence of specific antigens. See “Antigen typing.”
Pick list	A system-generated list that allows a user to select one or more entries.
POL	Pending Order List.
Pool	A blood product from many donors stored for later use.

Acronym, Term	Definition
Positive control	<p>The positive control cell is known to have the antigen that the reagent antiserum type is to detect. This cell should demonstrate positive serologic reaction and, therefore, have a valid positive interpretation.</p>
	<p>The positive and negative control cells must demonstrate a valid positive or negative set of serologic reactions and interpretations for the test of the unit or patient to be considered valid, regardless of the row validation of the unit test itself. (See “Negative control.”)</p>
Potential hazard	An event that compromises the safety of the patient or blood supply.
Pre-transfusion testing	A group of tests, including ABO/Rh and an antibody screen, that must be performed on a sample of blood prior to crossmatching red cells for transfusion.
Product	Components, manufacturing materials, in-process devices, finished devices, and returned devices.
Product type	See “Component class.”
Presumed transfused	Unit status that VBECS assigns 48 hours after issue of a blood product.
QC	Quality control. Testing routinely performed to ensure the proper functioning of materials, equipment, and methods.
Quality	The totality of features and characteristics that affect the ability of a device to satisfy fitness-for-use, including safety and performance.
Reagent rack (also “rack”)	A group of reagents used in routine blood bank testing.
Reagent red blood cells	Non-patient testing materials, usually from a commercial source.
Reflex order	An order for additional testing to be performed resulting from observations of previous testing.
Reflex test	A laboratory test not ordered by a physician but performed in response to results of other laboratory tests.
Remedy	A computer application for reporting, logging, and tracking problems associated with the daily operation of computer systems within VistA.
Rh (also “Rh factor”)	Rhesus factor. The major antigen of the Rh system. Also “D.” <i>The presence of this antigen on red blood cells determines if a patient or donor is Rh Pos or Rh Neg. A weak expression of the D antigen, referred to as “Du” or “weak D,” may require additional testing to determine its presence.</i>
SC	Screening cells.
SCD	Sterile connection device.
Screening cell (SC)	Antigenically defined cells used to detect alloantibodies.
Selected	<p>Status of a unit of red cells when the blood bank technician selects it from available inventory to be crossmatched with a patient specimen. <i>A unit in “selected” state is not available to be issued for transfusion. By entering a crossmatch result of “compatible,” the state changes from “selected” to “assigned.”</i></p>

Acronym, Term	Definition
Serologic crossmatch	Performance of a laboratory test to predict post-transfusion survival of transfused blood.
Serum	The liquid portion of blood used to detect antibodies.
Server	A computer system in a network shared by multiple users.
SF 518 equivalent	See "Blood Transfusion Reaction Form."
Site (see also "Facility")	A blood bank laboratory where a blood unit is located.
SME	Subject matter expert.
Software	Computer programs and associated documentation pertaining to the operation of a system.
Special Instructions (SIs)	Free-text or canned comments entered by the Blood Bank Technologist to communicate problems, restrictions, and considerations not otherwise documented in a patient's record.
Status	The disposition of a unit of blood.
Sterile connection device	An instrument that connects two plastic tubes while maintaining sterility.
Target unit	A unit formed as a result of a pool or split.
TAS	Type & Screen.
TCP/IP	Transmission Control Protocol/Internet Protocol.
Test (in general and laboratory contexts)	A means of examination to determine a property. In the context of the VBECS database, the contents of a single grid entry (test cell).
Test cell	In the context of the VBECS database: A grid space. In a laboratory: Red cells, in a reagent vial, used in a test.
Testing phase	1. The portion of a laboratory test in which an interpretation is recorded. 2. The phase of the development process in which the functionality is available for testing.
TIU	Text Integration Utility.
Transfusion Requirements (TRs)	Mandatory blood product attributes applied to every transfusion.
Truth table	A table, specific to a test or action, listing all possible combinations of user inputs and the corresponding acceptable results and/or interpretations. It allows the system to verify user input based on established parameters.
TRW	Transfusion reaction workup.
UBS	United Blood Services.
UID	Universal ID. An eye-readable and barcode-scannable coded representation of the Accession Number assigned by the laboratory package. <i>UID is unique to the generating information system where the specimen was received.</i>
Unit	A single example of a blood component type. Example: a single unit of red cells, a unit of plasma, a unit of platelets.
Unit ID	The label identifier, consisting of a string of characters, of the unit of blood, barcoded on the blood bag label and scanned when a blood unit is received in the blood bank in a shipment.

Acronym, Term	Definition
Unit status	<p>The state of a unit of blood at any given time.</p> <ul style="list-style-type: none"> • Available: Required processing is complete. • Crossmatched/Assigned: The unit is immediately available for transfusion. All required compatibility testing, including crossmatch if indicated, is performed. • Discarded: The unit has been destroyed and is no longer available. • Issued: The unit is not currently located in the blood bank. • Limited: Required processing is complete, except for ABO/Rh confirmation. If a limited unit is selected, a warning message is displayed. • Quarantine: The unit cannot be selected. A warning message is displayed. • Selected: The unit is reserved for one or more patients. Additional compatibility testing is required, such as antigen phenotype, crossmatch, and unit ABO/Rh confirmation. • Transferred: The unit has been returned to the original supplier or transferred to a different facility. • Transfused: The unit has been infused into a patient and is no longer available.
Validation	Establishment by objective evidence that a specific process or device specification conforms to user needs and intended use.
VASD	VA Service Desk (formerly National Help Desk).
VBECS specimen number	A blood bank-specific identifier for specimens.
VDL	VistA Documentation Library.
Verification	Confirmation by examination and provision of objective evidence that requirements were fulfilled.
Verify Code	A field in the VistA New Person file used to verify the identity of a user associated with an Access Code.
Vial identifier	A one- or two-character number that identifies a specific vial contained within a kit of reagents. <i>A vial contains antigen positive or antigen negative blood cells to be used in quality control of antisera. Also referred to as "cell identifier."</i>
VISN	Veterans Integrated Services Network.
VistA	Veterans Health Information Systems and Technology Architecture.
VistALink	A real-time communication link that provides connectivity and utilities for data exchange between VistA and VBECS.
WAN	Wide Area Network.
Worklist	A list detailing work to be performed.
Workload	Statistical data used to calculate productivity.
XM	Crossmatch.
XML	Extensible Markup Language.

Appendices

Appendix A: Downtime Forms and Instructions

Each site establishes its own policies, procedures, and processes to address unexpected VBECS downtime issues such as:

- The interface is unavailable. It is recommended that blood bank staff notify clinicians when messaging between CPRS and VBECS fails during order completion: clinicians may need to know that blood units are ready for pickup and transfusion.
- Test order handling and completion when the serologic testing is performed off-site or in a non-VA facility. The CPRS test order must be processed and completed even when testing is done off-site.
- The physical handling of a blood unit when it can't be logged into inventory because VistALink is down and the patient is not in the VBECS database. The unit does not exist in VBECS until it is logged in, but is physically available.
- Manual blood labeling, verification of labels, and tracking documentation of the downtime labeling.
- Some Special Instructions (SIs) that were moved to VBECS during the database conversion must be entered as Transfusion Requirements (TRs) in VBECS. Inactivate the old SI and create a TR and new updated SI: the database conversion software cannot automatically translate the SI from database conversion into a rule-based TR.
- Creating the Audit Trail, Exception, and Testing Worklist Reports.
- Mitigation of the risk of patient identification conflicts due to patient merge issues (changing patient name or ID). It is recommended that staff submit the patient name and ID in writing to the blood bank when picking up blood products.
- VBECS is unavailable. To ensure accurate entry of information when VBECS is running, users must record the unit number and ID on their downtime form.

It is recommended that each site have available:

- Antibody Workup Forms
- Antigen Typing Forms (for patient)
- Antigen Typing Forms (for unit)
- Blood Transfusion Record Forms
- Caution Tags
- Daily QC Forms
- Emergency Issue Forms: developed by each site to reflect site-specific emergency issue policies and procedures
- Reagent Receipt Log
- Supply Receipt Log
- Transfusion Reaction Forms
- Transfusion Requirements Report: current printed version must be available at all times for users to check patient historic records and Transfusion Requirements. (See Appendix H: Table 35: Recommended Report Usage.)

Each site may use and modify (included in this appendix):

- Patient Testing Forms
- Unit ABO/Rh Confirmation Forms

- Unit Issue and Inspection Logs
- Unit Modification Forms

The information on these forms matches information to be input in VBECS.

Patient Testing Form

Facility Name:						
Address:						
City, State, Zip Code:						
Patient Name	Patient Identification Number	Location	CPRS Order Number	Lab Order Number	Urgency	Appropriate? (Yes, No)
Specimen UID	Date and Time Collected	Phlebotomist Name		Date and Time Received	Processed By:	Acceptable? (Yes, No)
Ordered Tests:						
Comments:				Entered By:	Date and Time:	

Reagent Rack		Date and Time		Tech Name				
Historic ABO/Rh Check	Forward ABO Grouping			Rh Typing		Reverse ABO Grouping		ABO/Rh Interpretation
	Anti-A	Anti-B	Anti-A,B	Anti-D	Rh Control	A1 Cell	B Cell	

Antibody Screening																
Screen Cell 1				Screen Cell 2				Screen Cell 3				Screen Cell 4				Screen Interpretation
RT/IS ⁴	37°	AHG ⁵	CC ⁶	RT/IS	37°	AHG	CC	RT/IS	37°	AHG	CC	RT/IS	37°	AHG	CC	
Comments:																

Patient Name	Patient Identification Number				Location		Specimen UID		
Compatibility Testing									
Unit Identification Number	Product Code	ABO/Rh	RT/IS	37°	AHG	CC	Interpretation		Tech Name

⁴ Room Temperature/Immediate Spin

⁵ Anti-Human Globulin

⁶ Coated cell

Direct Antiglobulin Test					
Reagent Antiserum	Lot Number	AHG	CC	Interpretation	Tech Name
Polyspecific					
Anti-IgG					
Anti-C3d					

Direct Antiglobulin QC									
Reagent Antiserum	Lot Number	Expiration Date	Reagent Red Cells	Lot Number	Expiration Date	AHG	CC	Interpretation	Tech Name
Polyspecific									
Anti-IgG									
Anti-C3d									

Test Results: Positive, Graded = M, F, W, 1+, 2+, 3+, 4+; Negative = 0; NT = Not Tested

Unit ABO/Rh Confirmation Form

Facility Name:				
Address:				
City, State, Zip Code:				
Invoice Number	Source (Shipper) Name	Reagent Rack	Date and Time	Tech Name

Unit Identification Number	Product Code	Unit ABO/Rh	Anti-A	Anti-B	Anti-A,B	Anti-D	Rh Control	ABO/Rh Interpretation

Unit Issue and Inspection Log

Facility Name:										
Address:										
City, State, Zip Code:										
Patient Last Name, Last Four Digits of SSN	Unit Number	Product Code	Date	Time Issue	Time Return	Unit Satisfactory? (Yes, No)	Ward	Tech	Issued To:	

Unit Modification Form

Facility Name:				
Address:				
City, State, Zip Code:				
Modification Date and Time	Modification Type	Method (Open, Closed, SCD)	Modified By:	
Unit Assigned? (Yes, No)	Patient Name	Patient Identification Number	Specimen UID	

Unit(s) to Be Modified				
Unit Identification Number	Product Code	ABO/Rh	Container Lot Number	Expiration Date and Time

Unit(s) to Be Modified				
Unit Identification Number	Product Code	ABO/Rh	Container Lot Number	Expiration Date and Time

Unit Assigned? (Yes, No)	Patient Name	Patient Identification Number	Specimen UID

Modified Unit(s)				
Unit Identification Number	Product Code	ABO/Rh	Container Lot Number	Expiration Date and Time

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Appendix B: Database Table Information

Table 13 and Table 14: Antibody and Antigen Tables

Table 13: Antibody and Antigen Table: Irregular Antibodies

VBECS creates a division-specific copy in each division in the database. Setting Antibody Parameters allows the division to reset the calculated antigen negative requirement of antibodies to its medical director's policy. Each orderable test name has a corresponding repeat test.

Clinical significance of antibody specificity is set using the 14th edition of the AABB Technical Manual. A specific instance of an antibody for certain patients or different treatment conditions may behave quite differently, requiring antigen negative or crossmatch-compatible blood for the patient. The user may edit these settings for an individual patient.

The antigen negative required settings apply to all instances of the antibody. Individual hospital policy may indicate that a setting of "OPT" should be made "REQ." A policy of a global OPT may remain in the event of a specific clinically significant instance of a specificity in a particular patient. The individual patient's antigen negative requirement may be set for the specificity in Entering and Removing Transfusion Requirements. In the Antigen Negative Requirement column:

- "REQ" sets an antigen negative requirement that is not editable because these are generally considered to require the provision of antigen negative blood for patient transfusion.
- "NO" does not set an antigen negative requirement and is not editable.
- "OPT" in the Antibody sets an antigen negative requirement is editable and may be reset repeatedly on the division's copy of the table.

Informational comment text is available when an antibody specificity of this table is added to the patient's record.

Table 13: Antibody and Antigen Table: Irregular Antibodies

VBECS*	Antibody Name	VistA†	Clinically Significant?§	Does Antibody Set an Antigen Negative Requirement?	Associated Antigen		VBECS Antigen Typing Orderable Test
					VBECS	VistA†	
Anti-D	Anti-D	Yes	Yes	D	D	13	AGD
N/A	N/A	N/A	N/A	N/A	N/A	N/A	AGwD
Anti-C	Anti-C	Yes	Yes	C	C	53	AGC
Anti-E	Anti-E	Yes	Yes	E	E	75	AGE
Anti-c	Anti-c	Yes	Yes	c	c	12	AGc
Anti-e	Anti-e	Yes	Yes	e	e	2	AGe
Anti-f	Anti-f	Yes	Yes	c and e	f	N/A	AGc AGe
Anti-G	Anti-G	Yes	Yes	C and D	G	N/A	AGD AGC
Anti-K	Anti-K	Yes	Yes	K	K	91	AGK
Anti-k	Anti-k	Yes	Yes	k	k	1	AGk
Anti-Kp(a)	Anti-Kp(a)	Yes	Optional	Kp(a)	Kp(a)	98	AGKp(a)
Anti-Kp(b)	Anti-Kp(b)	Yes	Optional	Kp(b)	Kp(b)	2	AGKp(b)
Anti-Jk(a)	Anti-Jk(a)	Yes	Yes	Jk(a)	Jk(a)	15	AGJk(a)
Anti-Jk(b)	Anti-Jk(b)	Yes	Yes	Jk(b)	Jk(b)	42	AGJk(b)
Anti-Jk3	Anti-Jk(a)Jk(b)	Yes	Yes	Jk(a) and Jk(b)	None	N/A	AGJk(a) AGJk(b)
Anti-Fy(a)	Anti-Fy(a)	Yes	Yes	Fy(a)	Fy(a)	63	AGFy(a)
Anti-Fy(b)	Anti-Fy(b)	Yes	Yes	Fy(b)	Fy(b)	47	AGFy(b)
Anti-M	Anti-M	No	Optional	M	M	26	AGM
Anti-N	Anti-N	No	Optional	N	N	27	AGN
Anti-S	Anti-S	Yes	Yes	S	S	58	AGS
Anti-s	Anti-s	Yes	Yes	s	s	7	AGs
Anti-U	Anti-U	Yes	Optional	U	U	0	AGU
Anti-P1	Anti-P1	No	Optional	P1	P1	21	AGP1
Anti-Le(a)	Anti-Le(a)	No	Optional	Le(a)	Le(a)	78	AGLe(a)
Anti-Le(b)	Anti-Le(b)	No	Optional	Le(b)	Le(b)	37	AGLe(b)
Anti-Js(a)	Anti-Js(a)	Yes	Optional	Js(a)	Js(a)	90	AGJs(a)
Anti-Js(b)	Anti-Js(b)	Yes	Optional	Js(b)	Js(b)	10	AGJs(b)
Anti-Lu(a)	Anti-Lu(a)	No	Optional	Lu(a)	Lu(a)	92	AGLu(a)
Anti-Lu(b)	Anti-Lu(b)	No	Optional	Lu(b)	Lu(b)	2	AGLu(b)
Anti-Lu3	Anti-Lu(a)Lu(b)	No	Optional	Lu (a) and Lu(b)	None	N/A	AGLu(a) AGLu(b)
Anti-C(w)	Anti-Cw	Yes	Optional	C(w)	Cw	99	AGC(w)
Anti-Ce	Anti-Ce	Yes	Yes	C and e	Ce	N/A	AGC AGe
Anti-C(x)	Anti-Cx	Yes	Optional	C(x)	Cx	99	AGC(x)
Anti-E(w)	Anti-E(w)	Yes	Optional	E(w)	E(w)	99	AGE(w)
Anti-V	Anti-V	Yes	Optional	V	V	85	AGV
Anti-Xg(a)	Anti-Xg(a)	No	Optional	Xg(a)	Xg(a)	25	AGXg(a)
Anti-M(g)	Anti-M(g)	No	Optional	M(g)	M(g)	99	AGM(g)
Anti-Mi(a)	Anti-Mi(a)	No	Optional	Mi(a)	Mi(a)	99	AGMi(a)
Anti-P	Anti-P	No	Optional	P	P (not otherwise specified)	25	AGP
Anti-A1	Anti-A-1	No	Optional	A1	A-1	10	AGA1

VBECS*	VistA†	Clinically Significant?§	Does Antibody Set an Antigen Negative Requirement?	Associated Antigen		Antigen Negative Compatibility Percentage	VBECS Antigen Typing Orderable Test
				VBECS	VistA†		
Anti-H	Anti-H	No	Optional	H	H	0	AGH
Anti-I	Anti-I	No	No	None	None	0	None
Anti-i	Anti-i	No	No	None	None	99	
Warm autoantibody	Warm autoantibody	Unknown§	No	None	None	0	
Cold autoantibody	Cold autoantibody	No	No	None	None	0	
Anti-Le(ab)	Anti-Le(x)	No	Optional	Le(a) and Le(b)	None	N/A	AGLe(a) AGLe(b)
Anti-Di(a)	Anti-Di(a)	No	Optional	Di(a)	Di(a)	0	AGDi(a)
Anti-Di(b)	Anti-Di(b)	No	Optional	Di(b)	Di(b)	99	AGDi(b)
Anti-Do(a)	Anti-Do(a)	No	Optional	Do(a)	Do(a)	33	AGDo(a)
Anti-Do(b)	None	No	Optional	Do(b)	None	17	AGDo(b)
Anti-Co(a)	None	No	Optional	Co(a)	None	33	AGCo(a)
Anti-Co(b)	None	No	Optional	Co(b)	None	17	AGCo(b)
Anti-LW(a)	None	No	Optional	LW(a)	None	0	AG LW(a)
Anti-LW(b)	None	No	Optional	LW(b)	None	99	AG LW(b)
Anti-Sc1	None	No	Optional	Sc1	None	0	AGSc1
Anti-Sc2	None	No	Optional	Sc2	None	99	AGSc2
Anti-Sd(a)	None	No	Optional	Sd(a)	None	1	AGSd(a)
Anti-Au(a)	Anti-Au(a)	No	Optional	Au(a)	Au(a)	20	AGAu(a)
Anti-Au(b)	None	No	Optional	Au(b)	None	50	AGAu(b)
Anti-Ch	None	No	Optional	Ch	None	2	AGCh
Anti-Rg	None	No	Optional	Rg	None	3	AGRg
Anti-Cs(a)	None	No	Optional	Cs(a)	None	4	AGCs(a)
Anti-Yk(a)	None	No	Optional	Yk(a)	None	4	AGYk(a)
Anti-Kn(a)	None	No	Optional	Kn(a)	None	1	AGKn(a)
Anti-McC(a)	None	No	Optional	McC(a)	None	1	AGMcC(a)
Anti-JMH	None	No	Optional	JMH	None	1	AGJMH
Anti-Yt(a)	None	No	Optional	Yt(a)	None	1	AGYt(a)
Anti-Yt(b)	None	No	Optional	Yt(b)	None	92	AGYt(b)
HTLA (probable)	None	No	No	None	None	0	None
Antibody, No Specificity Identified	Antibody (not otherwise specified)	Unknown§	No	None	None	0	
Antibody to Low-Incidence Antigen	Antibody, private (not otherwise specified)	Unknown§	No	None	None	99	
Antibody to	Antibody,	Unknown§	No	None	None	0	

Antibody Name	VistA†	Clinically Significant?§	Does Antibody Set an Antigen Negative Requirement?	Associated Antigen		Antigen Negative Compatibility Percentage	VBECS Antigen Typing Orderable Test
				VBECS	VistA†		
VBECS*	VistA†			VBECS	VistA†		
High-Incidence Antigen	public (not otherwise specified)						

*Specificities written as superscript or subscript letters in blood bank literature are shown as letters enclosed in parentheses in VBECS (the GUI cannot display superscript or subscript letters). Specificities written as subscript characters in blood bank literature are shown as numbers or letters not enclosed in parentheses.

†Examples of common VistA antibody and antigen terminology. Individual sites may vary. Refer to division-specific mapping documents.

‡The user will order the tests for each antigen separately; VBECS does not display a duplicate antigen typing for this combination antibody specificity.

§When the clinical significance is unknown, it is displayed as "No" due to the limitations of the system.

Table 14: Antibody and Antigen Table: Database Conversion

Users cannot set antigen negative requirements for these antibodies in VBECS. Clinical significance of antibody specificity is set using the 14th edition of the AABB Technical Manual.

Table 14: Antibody and Antigen Table: Database Conversion

Antibody Name		Associated Antigen	
VBECS*	VistA†	VBECS*	VistA†
Anti-P1+P+P(k)	Anti-PP1	P1+P+P(k)	PP1
Anti-Pk	Anti-p(k)	P(k)	p(k)
Anti -M, other	Anti-M, other	None	None
Anti-LW	Anti-LW	None	LW
Anti-Lu	Anti-Lu	None	Lu
Anti-Le, other	Anti-Le, other	None	None
Anti-N, other	Anti-N, other	None	None
Anti-I(int)	Anti-I(int)	None	I(int)
Anti-rhesus (not otherwise specified)	Anti-rhesus (not otherwise specified)	None	None

*Specificities written as superscript or subscript letters in blood bank literature are shown as letters enclosed in parentheses in VBECS (the GUI cannot display superscript or subscript letters). Specificities written as subscript characters in blood bank literature are shown as numbers or letters not enclosed in parentheses.

†Examples of common VistA antibody and antigen terminology. Individual sites may vary. Refer to division-specific mapping documents.

Table 15: Antibody Screen Test Interpretation

For an Antibody Screen Test (ABS) to be correctly interpreted, the system must take the row validation (Table 15) for each screening cell and test method and determine whether the screening in total is positive or negative. This table is the input from the Blood Bank Technologist. Interpreting the ABS: The Blood Bank Technologist does not enter an interpretation for each row/cell of the antibody screen. The technologist enters an interpretation for the combination of screening cells including the autocontrol when tested. The system must correlate the information from the rows in the test, as described in system rules , to determine the proper interpretation for the ABS. Valid interpretations are positive or negative. A technologist may enter an antibody screen comment with the interpretation.

- SR 1: Valid interpretation. Update database.
- SR 2: Warning message. No override. Do not update database at this time.
- SR 3: Valid interpretation. Update database. Collect comment and exception.
- EM 1: "Interpretation does not match your results."
- EM 2: "You are attempting to file an invalid antibody screen. This is not allowed."

Table 15: Antibody Screen Test Interpretation

Antibody Screen Test Interpretation					
Antibody Screen Interpretation: includes all cells tested; might be SC 1 and SC 2 only, or SC 1, 2, 3, or SC 1, 2, 3, 4, as indicated by site parameter in Configure Daily QC. Method of Tube, Gel, or Solid Phase	SC 1, SC 2, SC 3, SC 4, Autocontrol Interpretation	Tech Entry	System Interpretation of Screening Cell Test	System Response	Error Message
	System interpretation if all individual row validations are negative.	Negative	Negative (N)	SR 1	N/A
		Positive	Negative (N)	SR 2	EM 1
	System interpretation if all individual row validations are negative and indicates that a comment is required.	Negative	Negative (N)	SR 3	N/A
		Positive	Positive (P)	SR 1	N/A
	System interpretation if one, several, or all rows are positive (P).	Negative	Positive (P)	SR 2	EM 1
		Positive	Positive (P)	SR 3	N/A
	System interpretation if one, several, or all rows are invalid (I).	Invalid, Positive or Negative	Invalid (I)	SR 2	EM2

Table 16: Canned Comment Category Types and Text

Canned comments are defined comments that can be inserted in a record during execution of a variety of functions. The canned comments available in a function are restricted to the category type associated with that function. Table 16 lists the category types available when defining canned comments.

Table 16: Canned Comment Category Types and Text

Text	Category Types																																				
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal
Other	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
24 hour post-op												X																									
ABO inconclusive					X					X																											
Biohazardous											X																										
Blood shortage	X																																				
Broken during processing																																					
Broken upon receipt											X							X																			

Text	Category Types																																										
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal	Unit Testing					
Check the patient's blood counts before selecting units, use often exceeds original order														X																													
Clerical error														X																													
Contaminated													X																														
Counts or levels exceed transfusion trigger													X																														
Critical need																																											
Disposition for research													X																														
Expired													X																														
For use by another patient													X																														
Improperly stored													X																														

Text	Category Types																																								
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal	Unit Testing			
Inappropriate blood component ordered				X																																					
Inappropriate test ordered				X																																					
Incinerated								X																																	
Incomplete donor screening tests								X																																	
Incomplete label																	X			X	X																X				
Incomplete or unreadable Phlebotomist ID																	X																								
Incorrectly labeled																	X			X	X																				
Issued to ER	X																																					X			
Lab equipment failure								X																															X		
Massive transfusion	X			X																																X	X	X			

Text	Category Types																																				
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal
Max time for active orders exceeded						X																															
New lot numbers in use							X																														
New specimen required							X																														
No longer applied								X																							X						
No longer applies								X				X																									
No phlebotomist ID																			X																		
Order cancelled												X																									
Patient deceased						X						X																			X						
Patient discharged or transferred						X						X																			X						
Patient eligible for specimen extension													X	X																							

Text	Category Types																																						
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal	Unit Testing	
Patient has rouleaux; saline replacement crossmatches are needed														X																									
Patient refuses treatment						X																																	
Patient unavailable					X																																		
Positive donor screening test(s)							X																														X		
Pre-op Workup												X				X																							
Product shortage										X																													
Prolonged storage outside of monitored storage area					X																																		
Punctured							X												X																		X		
QNS (quantity not sufficient)																																							

Text	Category Types																																				
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal
Remote storage cooler A																																					
Resetting due to policy change						X																															
Rh mismatch selection necessary																														X							
Ruptured during thaw							X																														
Specimen and paperwork do not match																			X	X	X																
Specimen expired								X																													
Specimen hemolyzed																	X	X																			
Specimen misplaced																X	X			X	X																
Specimen not received																X	X																				
Specimen recollected																X	X																				

Text	Category Types																																				
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal
Specimen ruined during test process			X																																		
Spiked or damaged	X																																		X		
Spilled								X																													
Split units for transfusion today															X																						
Surgery rescheduled															X																						
Test cancelled								X																											X		
Test complete, results inconclusive								X																													
Test compromised									X																												
Testing inconclusive									X																												
Testing interrupted								X																													
Transfusion reaction									X																											X	

Text	Category Types																																				
	ABO Incompatible Issue	Crossmatch	Incoming Shipment	Justify ABO/Rh Change	Justify ABO/Rh Discrepancy	Order Cancellation	Order Processing	Parameter Setting Change	Patient Testing	Quarantine/Discard	Reagent and Supply	Release from Quarantine	Reason for Release	Special Instruction Inactivation	Special Instructions	Specimen Extension	Specimen General	Specimen Processing	Specimen Unacceptable	Transfusion Processing	Transfusion Reaction Workup	Specimen Required	Pre-Transfusion Specimen Checks	Post-Transfusion Specimen Checks	Implicated Units	Symptom Details	Transfusion Blood Bag Not Returned	Transfusion Clerical Checks Failed	Transfusion Requirement Inactivation	Unit Inactivation	Unit Data Validation	Unit Issue	Unit Modification	Unit Return	Unit Restriction	Unit Selection	Unit Status Removal
Trauma	X																																				
Typographical error																																					
Unit expired																																					
Unit returned unused		X																																			
Unit test cancelled																																					
Unsatisfactory, return to supplier																																					
Updated inventory																																					
Verbal order						X																															
Visual inspection unsatisfactory		X								X																											
Volume reduce platelet pools over 300 mL			X																																		
Wrong specimen type collected															X																						

Table 17: CPRS Orderable Blood Components (Component Classes) Mapped to ICCBBA Component Classes

Table 17 is used to map the CPRS/VistA orderables available to clinicians to the ICCBBA component classes.

Table 17: CPRS Orderable Blood Components (Component Classes) Mapped to ICCBBA Component Classes

VBECS Component Class	Code	Short Name	Product Type Name (ICCBBA Component Class)
RED BLOOD CELLS	E002	RBC	RED BLOOD CELLS
	E003	RBC_Wash	Washed RED BLOOD CELLS
	E004	RBC_Froz	Frozen RED BLOOD CELLS
	E005	RBC_Froz_Rej	Frozen Rejuvenated RED BLOOD CELLS
	E006	RBC_Deg	Deglycerolized RED BLOOD CELLS
	E007	RBC_Deg_Rej	Deglycerolized Rejuvenated RED BLOOD CELLS
	E008	RBC_Rej	Rejuvenated RED BLOOD CELLS
	E009	RBC_AFR	Apheresis RED BLOOD CELLS
	E049	RBC_AFR_Wash	Washed Apheresis RED BLOOD CELLS
	E050	RBC_AFR_Froz	Frozen Apheresis RED BLOOD CELLS
	E051	RBC_AFR_Deg	Deglycerolized Apheresis RED BLOOD CELLS
	E052	RBC_AFR_Rej	Rejuvenated Apheresis RED BLOOD CELLS
	E053	RBC_AFR_Froz_Rej	Frozen Rejuvenated Apheresis RED BLOOD CELLS
	E054	RBC_AFR_Deg_Rej	Deglycerolized Rejuvenated Apheresis RED BLOOD CELLS
WHOLE BLOOD	E001	WB	WHOLE BLOOD
PLATELETS	E020	PLT	PLATELETS
	E021	PLT_Wash	Washed PLATELETS
	E022	PLT_Pool	POOLED PLATELETS
	E023	PLT_Pool_Wash	Washed POOLED PLATELETS
	E024	PLT_AFR	Apheresis PLATELETS
	E025	PLT_AFR_Froz	Frozen Apheresis PLATELETS
	E026	PLT_AFR_Thaw	Thawed Apheresis PLATELETS
FRESH FROZEN PLASMA	E027	PLT_AFR_Wash	Washed Apheresis PLATELETS
	E010	FFP	FRESH FROZEN PLASMA
	E011	FFP_Thaw	Thawed FRESH FROZEN PLASMA
	E012	FFP_AFR	Apheresis FRESH FROZEN PLASMA
	E013	FFP_AFR_Thaw	Thawed Apheresis FRESH FROZEN PLASMA
	E014	PLASMA_AFR	Apheresis PLASMA
	E015	PLASMA_AFR_Thaw	Thawed Apheresis PLASMA
	E016	PLASMA_Liq	Liquid PLASMA
	E017	PLASMA	PLASMA
	E018	PLASMA_Thaw	Thawed PLASMA
CRYOPRECIPITATE	E041	PLASMA_AFR_Liq	Liquid Apheresis PLASMA
	E028	CRYO	CRYOPRECIPITATE
	E029	CRYO_Thaw	Thawed CRYOPRECIPITATE
	E030	CRYO_Pool	POOLED CRYOPRECIPITATE
	E031	CRYO_Pool_Thaw	Thawed POOLED CRYOPRECIPITATE
OTHER	E032	CRYO_AFR	Apheresis CRYOPRECIPITATE
	E033	CRYO_AFR_Thaw	Thawed Apheresis CRYOPRECIPITATE
OTHER	E019	PLASMA_PlRch	PLATELET RICH PLASMA
OTHER	E034	GRAN	GRANULOCYTES

VBECS Component Class	Code	Short Name	Product Type Name (ICCBBA Component Class)
	E035	GRAN_AFR	Apheresis GRANULOCYTES
	E036	GRAN_Pool	POOLED GRANULOCYTES
	E037	GRAN-PLT_AFR	Apheresis GRANULOCYTES-PLATELETS
	E038	LEUK	LEUKOCYTES
	E039	LEUK_AFR	Apheresis LEUKOCYTES
	E040	PLASMA_Pool	POOLED PLASMA
	E042	BUFFY_Pltrch	PLATELET RICH BUFFY COAT
	E043	BUFFY_Pltrch_Pool	POOLED PLATELET RICH BUFFY COAT
	E044	LYMPH_AFR	Apheresis LYMPHOCYTES
	E045*	MONO_AFR	Apheresis MONOCYTES
	E046	SERUM	SERUM
	E047*	SERUM_Pool	POOLED SERUM
	E048	SERUM_Pool_Froz	Frozen POOLED SERUM

*This product type currently has no ICCBA assigned product codes.

Table 18: Details in Audit Trail Report

Changes include the date and time of the change, ID of the user who made the change, and required comments.

Table 18: Details in Audit Trail Report

Report Section	Generating Options	GUI Fields Monitored	Accessible in:	
			Unit History Report?	Patient History Report?
Blood Unit Changes	Modify Units: Pool Units (when a previously pooled unit is edited)	For each pooled unit edited (unit ID, long name, product code): <ul style="list-style-type: none"> • Added or Removed Unit IDs and Product Codes • Comment 	Yes	No
	Editing A Unit	For each unit edited (unit ID, long name, product code): <ul style="list-style-type: none"> • Unit Antigen Information • Special Testing Information • Discarded Plasma Volume • Unit Volume • Biohazardous Indicator • Unit ABO/Rh Confirmation Test, Invalidation Indicator • Unit Antigen Typing Test, Invalidation Indicator • Unit Record Inactivation Indicator • Restricted For Patient Name and Patient ID • Comment 	Yes	No
Blood Unit Financial Changes	Edit Financial Data	For each unit edited (unit ID, long name, product code): <ul style="list-style-type: none"> • Unit Base Cost • Special Test Cost • Return Credit 	Yes	No
Patient Testing	Invalidate Test Results	For each patient (name, ID): <ul style="list-style-type: none"> • Ordered Test Original Results, 	No	Yes

Report Section	Generating Options	GUI Fields Monitored	Accessible in:	
			Unit History Report?	Patient History Report?
Changes		<ul style="list-style-type: none"> Invalidation Indicator • VBECS Order Number • Comment 		
	Justify ABO/Rh Change	<p>For each patient (name, ID):</p> <ul style="list-style-type: none"> • Patient ABO/Rh • Comment 	No	Yes
Patient Transfusion Requirements	Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement Patient Testing: Record Patient Test Results (new TR created from ABID data entry)	For each Transfusion Requirement category or Special Instruction: <ul style="list-style-type: none"> • Status Indicator • Comment 	No	Yes
Maintenance: Local Facilities	Local Facilities	<p>For each facility name and FDA Registration Number:</p> <ul style="list-style-type: none"> • Eye-readable prefix • ICCBBA Registration Number • Alpha Characters Indicator • Active Facility Indicator • Collection Facility Indicator • Testing Facility Indicator • Address Line 1 • Address Line2 • Address Line 3 • City • State • Zip • Phone • Fax 	No	No
Maintenance: Blood Product	Blood Products	<p>For each blood product (name, code):</p> <ul style="list-style-type: none"> • HCPCS Code and Text <p>For each shipper of this product code (name, ID):</p> <ul style="list-style-type: none"> • Cost • Return Credit Percentage • Status Indicator 	No	No
Maintenance: Division Configuration	Configure Division	<p>For each Division (Name and Code):</p> <ul style="list-style-type: none"> • Full Service, Transfusion Only Indicator • Facility Name • Active Status • Full-Face-Label Printer Status • Full-Face-Label Printer Port Number • Full-Face-Label Printer IP address • Full-Face-Label Printer COM • Report Printer Name • Accession Area Name 	No	No

Report Section	Generating Options	GUI Fields Monitored	Accessible in:	
			Unit History Report?	Patient History Report?
		<ul style="list-style-type: none"> • Lock Inactivity Timeout Setting • Time Zone Setting • Daylight savings time Setting • Daylight savings time start date • Daylight savings time end date <p>For each Associated Institution (Division Code)</p> <ul style="list-style-type: none"> • Status indicator 		
Maintenance: Division Configuration	Configure Division	<p>For each division (name, code):</p> <ul style="list-style-type: none"> • Electronic Crossmatch Enabled Indicator • ICCBBA Registration Number • Maximum Specimen Expiration Days • Blood Bank MD 	No	No
Maintenance: Division Configuration	Edit Invoice Text	<p>For each division (name, code):</p> <ul style="list-style-type: none"> • Invoice Text 	No	No
Maintenance: Division Configuration	Configure Testing	<p>For each division (name, code):</p> <ul style="list-style-type: none"> • Antibody Screen Indicator 	No	No
Maintenance: Division Configuration	Order Alerts	<p>For each division (name, code):</p> <ul style="list-style-type: none"> • Login Message 	No	No
Maintenance: Modifications Configuration	Product Modifications	<p>For each modification type:</p> <ul style="list-style-type: none"> • Enabled or Disabled Indicator • Cost 	No	No
Maintenance: User Role Changes	Update User Roles	<p>For each user:</p> <ul style="list-style-type: none"> • User Role Security Setting 	No	No
Maintenance: User Role Changes	Configure Users	<p>For each NT user (name, ID):</p> <ul style="list-style-type: none"> • VistA DUZ • VistA User Name • Email Address • User Initials • Active VBECS User Indicator • Active Division Indicator 	No	No
Maintenance: Antibody Configuration	Antibodies	<p>For each antibody specificity:</p> <ul style="list-style-type: none"> • Compatibility Percentage • Higher Level Override Required Indicator 	No	No
Maintenance: Workload Configuration	Workload Codes	<p>For each workload process and for each LMIP procedure and LMIP/NLT code:</p> <ul style="list-style-type: none"> • Start Date • Stop Date • Status Indicator 	No	No
Maintenance: MSBOS Configuration	MSBOS	<p>For each surgery name:</p> <ul style="list-style-type: none"> • Surgery Status Indicator <p>For each MSBOS recommendation:</p> <ul style="list-style-type: none"> • TAS Indicator • No Blood Required Indicator <p>For each selected component class:</p>	No	No

Report Section	Generating Options	GUI Fields Monitored	Accessible in:	
			Unit History Report?	Patient History Report?
		<ul style="list-style-type: none"> • Number of Units • Recommendation Status Indicator 		
Maintenance: Transfusion Effectiveness Changes	Transfusion Effectiveness	For each Laboratory test name, for each VistA Laboratory test Internal Entry Number (IEN), and for each specimen type: <ul style="list-style-type: none"> • Status Indicator 	No	No
Maintenance: Transfusion Complications Changes	Transfusion Complications	For each Laboratory test name, for each VistA Laboratory test IEN, and for each specimen type: <ul style="list-style-type: none"> • Threshold Result • Threshold Setting Status • Status indicator 	No	No
Maintenance: Component Class	Component Classes	For each component class configured: <ul style="list-style-type: none"> • Current ABO/Rh Specimen Results Required Indicator • Maximum Transfusion Time • For each Laboratory Test Name, for each VistA Laboratory Test Internal Entry Number (IEN), and for each Specimen Type: Lab Test Status • Threshold Result 	No	No
Maintenance: Daily QC Configuration	Configure Daily QC	For each daily QC setup changed: <ul style="list-style-type: none"> • Commercial or Non-Commercial QC Indicator • Rack Name Indicator (A through Z or 1 through 26) • Number of Racks to Test • Daily Alert Time • Primary Enhancement Media • Secondary Enhancement Media • Comment For each reagent type and test with combination: <ul style="list-style-type: none"> • Status Indicator • Minimum Reaction Entry 	No	No
Maintenance: Minimum Reagent Inventory Levels	Maintain Minimum Levels	For each reagent type: <ul style="list-style-type: none"> • Minimum Inventory Level 	No	No
Maintenance: User Alert Configuration	Order Alerts	For each division (name, code): <ul style="list-style-type: none"> • Printer Alerts On • Printer Name • (Printer) Order Alert Type • (Printer) Orders Needed In • Icon Alerts On • Refresh Rate • (Icon) Order Alert Type • (Icon) Orders Needed In 	No	No
Maintenance:	Configure Interfaces	<ul style="list-style-type: none"> • VistA TCP/IP Address 	No	No

Report Section	Generating Options	GUI Fields Monitored	Accessible in:	
			Unit History Report?	Patient History Report?
Interface Control		<ul style="list-style-type: none"> • VistA TCP Port Number • VistA Domain 		
Maintenance: Interface Control	Configure Interfaces	<p>For each interface defined:</p> <ul style="list-style-type: none"> • Interface IP Address • Interface Domain • Interface Port Number • Interface Facility ID • VBECS IP Address • VBECS Port Number • VBECS Facility ID • Completed Messages • Messages in Error • Log Events and HL7 Messages to Event • Log Indicator • Ack Timeout • Retransmit Attempts • Interface Administrator Email 	No	No

Table 19: Details in Exception Report

Table 19 lists exception types and the reports in which they appear.

Table 19: Details in Exception Report

Exception Type	Available to Role	Available in Option	Accessible in:	
			Unit History Report?	Patient History Report?
ABO discrepant unit issue	All	Issue Unit	No	Yes
ABO incompatible unit selected	None	Select Unit	No	Yes
ABO Incompatible Unit Transfused	\geq Traditional Supervisor	Document ABO Incompatible Transfusion	No	Yes
Antigen positive unit crossmatched	\geq Lead Tech	Select Unit (when crossmatched)	No	Yes
Antigen positive unit selected	$>$ Lead Tech	Select Unit	No	Yes
Antigen testing phase change	All	Unit or Patient Antigen typing	Yes (Antigen Typing)	Yes (Patient Testing: Record a Patient Antigen Typing)
Antigen-positive/untested units issued	\geq Lead Tech	Issue Blood	No	Yes
Biohazardous unit issued	All	Issue Blood	No	Yes
Biohazardous unit modified	All	Modification	Yes	No
Biohazardous unit selected	All	Select Unit	No	Yes
Caution Tag or Blood Transfusion Record Form printed for antigen positive or untested unit	\geq Lead Tech		No	Yes
Caution Tag or Blood Transfusion Record Form printed on expired specimen	\geq Enhanced Tech		No	Yes
Caution Tag or Blood Transfusion Record Form printed on expired unit	\geq Enhanced Tech		No	Yes
Caution Tag or Blood Transfusion Record Form printed with unsatisfied Transfusion Requirement	\geq Lead Tech		No	Yes
Crossmatch incompatible: Give only with MD approval	All		No	Yes
Deletion of partially completed QC	All	Enter Daily QC	No	No
Discrepant ABO/Rh override	\geq Enhanced Tech	Patient Testing	No	Yes
Discrepant patient antigen typing	All	Patient Testing	No	Yes
Emergency issue request (no specimen)	All	Accept Order	No	Yes
Emergency issue, require testing incomplete	All	Patient Testing	No	Yes

Exception Type	Available to Role	Available in Option	Accessible in:	
			Unit History Report?	Patient History Report?
Expired antisera used	All	Enter Rack QC, Patient and Unit Antigen typing	Yes (Antigen Typing)	Yes (Patient Testing: Record a Patient Antigen Typing)
Expired reagent QC'd	All	Enter Daily QC	No	No
Expired supply used in modification	All	Modify Units	No	No
Expired task processed	All	Pending Task List	No	Yes
Expired unit modified	> Enhanced Tech	Modify Units	Yes	No
Expired unit received	All	Incoming Shipment	Yes	No
Expired unit released from quarantine	> Enhanced Tech	Release from Quarantine	Yes	No
Expired unit selected	> Enhanced Tech	Select Unit	No	Yes
Final unit status or modification removed	> Traditional Supervisor	Remove Final Status	Yes	No
Inconclusive crossmatch	All	Patient Testing, serologic crossmatch grid	No	Yes
Issued expired unit	> Enhanced Tech	Issue Blood	No	Yes
Less restrictive unit issued	All	Issue Blood	No	Yes
Less restrictive unit selected	All	Select Unit	No	Yes
Non-standard test procedure	All	Patient Testing, Antibody screen, serologic crossmatch	No	Yes
(Patient) ABO/Rh discrepancy	All	Patient testing, ABO/Rh test	No	Yes
Previously recorded results inactivated	All	All testing grids where the red x is used to clear a grid.	No	Yes
Previously recorded results invalidated	All	Invalidate Patient Testing	Yes	No
QC decrease reagent reactivity ≥ 2	All	All testing where Rack is selected	No	No
QC not performed on rack used for testing	All	All testing where Rack is selected	No	Yes
Reflex test ordered on expired specimen	All	Order Reflex Test	No	Yes
Released patient restriction	> Enhanced Tech	Free Directed Donor	No	Yes
Retrospective update prior to last record update	> Lead Tech	Discard/Quarantine	Yes	No
Rh positive units selected	All	Select Units	No	Yes
Specimen expiration date extended	All	Maintain Specimen	No	Yes
Target product label failed checks	All	All modification processes	Yes	No
Target product outdate extended	> Enhanced Tech	All modification processes	Yes	No
Transfusion Reaction Workup	All	Transfusion Reaction Workup	No	Yes
Transfusion Requirement incompatible unit selected	> Lead Tech	Select Unit	No	Yes

Exception Type	Available to Role	Available in Option	Accessible in:	
			Unit History Report?	Patient History Report?
Unacceptable/expired specimen used	All	Patient Testing	No	Yes
Unit ABO/Rh confirmation inconclusive, unit quarantined	All	ABO/Rh Confirmation	Yes	No
Unit ABO/Rh log-in vs. confirmation do not match, unit quarantined	All	ABO/Rh Confirmation	Yes	No
Unit discarded	All	Discard	Yes	No
Unit ER issued, testing problem	All	Patient testing, unit antigen typing	No	Yes
Unit issued on expired specimen	> Enhanced Tech	Issue Unit	No	Yes
Unit issued with unsatisfied Transfusion Requirement	> Lead Tech	Issue Unit	No	Yes
Unit out of controlled storage for more than 30 minutes found acceptable	All	Return Issued Unit to Blood Bank	Yes	No
Unit quarantined	All	Quarantine	Yes	No
Unit released from quarantine	> Enhanced Tech	Release Unit from Quarantine	Yes	No
Unit unsatisfactory upon return from issue	All	Return Issued Units to Blood Bank	Yes (quarantined)	No
			Yes (quarantined with patient assignment)	Yes

Table 20: Enable Crossmatch Option for OTHER Product Types

During the execution of Select Units, the user has the option to request a crossmatch test for the OTHER component class. Table 20 indicates which of the OTHER product types must have the crossmatch test enabled.

Table 20: Enable Crossmatch Option for OTHER Product Types

Component Class	ICCBBA Component Class Allowed	Allow XM Order
OTHER	PLATELET-RICH PLASMA	No
OTHER	GRANULOCYTES	Yes
OTHER	APHERESIS GRANULOCYTES-PLATELETS	Yes
OTHER	LEUKOCYTES	Yes
OTHER	POOLED PLASMA	No
OTHER	PLATELET-RICH BUFFY COAT	Yes
OTHER	APHERESIS LYMPHOCYTES	Yes
OTHER	APHERESIS MONOCYTES	Yes

Table 21: Allowable Product Modifications by Original Product Type

ICCBBA provides a comprehensive database with every known blood product type that includes a five-digit product code, Product Type classification, and the Product Attribute for each blood product. The VBECS Blood Product Table combines this ICCBBA ISBT 128 blood product database and the known Codabar blood products. Each Codabar blood product was assigned a Product Type and the Product Attribute Form column populated with a core condition and some basic attributes.

Calculation of the Expiration Date

VBECS calculates the expiration date of the new unit based on system rules specific to the blood product and modification types, and on whether the system is open or closed. The user may accept or edit this expiration date.

Table 21 shows which kind of modifications are allowed for a specific product type. The first column contains product types; the second set of columns contains allowable modifications. Blank cells indicate that a modification type cannot be performed on an original product type. Modifications are not allowed for product types not listed.

Table 21: Allowable Product Modifications by Original Product Type

Original Product Type	Modification Type Allowed on Original Product Type									
	Split/Divide	Thaw	Pool	Thaw/Pool	Irradiate	Leukoreduce	Volume Reduce	Wash	Rejuvenate	Freeze
E001 WHOLE BLOOD	X				X	X	X	X	X	X
E002 RED BLOOD CELLS	X				X	X	X	X	X	X
E003 Washed RED BLOOD CELLS	X				X	X			X	X
E049 Washed APHERESIS RED BLOOD CELLS	X				X	X			X	X
E004 Frozen RED BLOOD CELLS										X
E050 Frozen APHERESIS RED BLOOD CELLS										X
E005 Frozen Rejuvenated RED BLOOD CELLS										X
E053 Frozen Rejuvenated APHERESIS RED BLOOD CELLS										X
E051 Deglycerolized APHERESIS RED BLOOD CELLS	X				X	X	X			
E006 Deglycerolized RED BLOOD CELLS	X				X	X	X			
E054 Deglycerolized Rejuvenated APHERESIS RED BLOOD CELLS	X				X	X				
E007 Deglycerolized Rejuvenated RED BLOOD CELLS	X				X	X	X			
E008 Rejuvenated RED BLOOD CELLS	X				X	X	X	X		X
E052 Rejuvenated APHERESIS RED BLOOD CELLS	X				X	X		X		X
E009 APHERESIS RED BLOOD CELLS	X				X	X	X	X	X	X
E010 FRESH FROZEN PLASMA		X								
E011 Thawed FRESH FROZEN PLASMA	X				X	X				
E012 APHERESIS FRESH FROZEN PLASMA		X								
E013 Thawed APHERESIS FRESH FROZEN PLASMA	X				X	X				
E014 APHERESIS PLASMA			X							
E015 Thawed APHERESIS PLASMA	X				X	X				
E016 Liquid PLASMA		X			X	X				
E017 PLASMA		X								

Original Product Type	Modification Type Allowed on Original Product Type									
	Split/Divide	Thaw	Pool	Thaw/Pool	Irradiate	Leukoreduce	Volume Reduce	Wash	Rejuvenate	Freeze
E018 Thawed PLASMA	X				X	X				
E019 PLATELET-RICH PLASMA	X									
E020 PLATELETS	X		X		X	X	X	X		
E021 Washed PLATELETS	X		X		X	X				
E022 POOLED PLATELETS			X		X	X	X	X		
E023 Washed POOLED PLATELETS			X		X	X				
E024 APHERESIS PLATELETS	X				X	X	X	X		
E025 Frozen APHERESIS PLATELETS		X								
E026 Thawed APHERESIS PLATELETS	X				X	X				
E027 Washed APHERESIS PLATELETS	X				X	X				
E028 CRYOPRECIPITATE		X		X						
E029 Thawed CRYOPRECIPITATE	X		X		X					
E030 POOLED CRYOPRECIPITATE		X		X						
E031 Thawed POOLED CRYOPRECIPITATE			X		X					
E032 APHERESIS CRYOPRECIPITATE		X								
E033 Thawed APHERESIS CRYOPRECIPITATE	X				X					
E034 GRANULOCYTES		X		X						
E035 APHERESIS GRANULOCYTES	X				X					
E036 POOLED GRANULOCYTES			X		X					
E037 APHERESIS GRANULOCYTES – PLATELETS	X				X					
E038 LEUKOCYTES		X			X					
E039 APHERESIS LEUKOCYTES	X				X					
E040 POOLED PLASMA		X			X					
E041 Liquid APHERESIS PLASMA	X				X					
E042 PLATELET - RICH BUFFY COAT	X				X					
E043 POOLED PLATELET - RICH BUFFY COAT					X					
E044 APHERESIS LYMPHOCYTES	X				X					
E045 APHERESIS MONOCYTES*	X				X					
E046 SERUM										
E047 POOLED SERUM*										
E048 Frozen POOLED SERUM										

*This product type has no ICCBBA assigned product codes.

Table 22: National Treating Specialty Table

Table 22: National Treating Specialty Table

PT_105.01 National Treating Specialty Table	
Treating Specialty Code	Treating Specialty Name
VA1	ALLERGY
VA2	CARDIOLOGY
VA3	PULMONARY, TUBERCULOSIS
VA4	PULMONARY, NON-TB
VA5	GERONTOLOGY
VA6	DERMATOLOGY
VA7	ENDOCRINOLOGY
VA8	GASTROENTEROLOGY
VA9	HEMATOLOGY/ONCOLOGY
VA10	NEUROLOGY
VA11	EPILEPSY CENTER
VA12	MEDICAL ICU/CCU
VA14	METABOLIC
VA15	GENERAL (ACUTE MEDICINE)
VA16	CARDIAC-STEP DOWN UNIT
VA17	TELEMETRY
VA18	NEUROLOGY OBSERVATION
VA19	STROKE UNIT
VA20	REHABILITATION MEDICINE
VA21	BLIND REHAB
VA22	SPINAL CORD INJURY
VA23	SPINAL CORD INJURY OBSERVATION
VA24	MEDICAL OBSERVATION
VA25	PSYCH RESID REHAB TRMT PROG
VA26	PTSD RESIDENTIAL REHAB PROG
VA27	SUBSTANCE ABUSE RES TRMT PROG
VA28	HOMELESS CWT/TRANS RESID
VA29	SUBST ABUSE CWT/TRANS RESID
VA31	GEM ACUTE MEDICINE
VA32	GEM INTERMEDIATE CARE
VA33	GEM PSYCHIATRIC BEDS
VA34	GEM NEUROLOGY
VA35	GEM REHABILITATION MEDICINE
VA36	BLIND REHAB OBSERVATION
VA37	DOMICILIARY CHV
VA38	PTSD CWT/TR
VA39	GENERAL CWT/TR
VA40	INTERMEDIATE MEDICINE
VA41	REHAB MEDICINE OBSERVATION
VA42	NH LONG STAY DEMENTIA CARE
VA43	NH LONG STAY SKILLED NURSING
VA44	NH LONG STAY MAINTENANCE CARE
VA45	NH LONG STAY PSYCHIATRIC CARE
VA46	NH LONG STAY SPINAL CORD INJ
VA47	NH RESPITE CARE (NHCU)
VA50	GENERAL SURGERY
VA51	GYNECOLOGY
VA52	NEUROSURGERY
VA53	OPHTHALMOLOGY
VA54	ORTHOPEDIC

PT_105.01 National Treating Specialty Table	
Treating Specialty Code	Treating Specialty Name
VA55	OTORHINOLARYNGOLOGY
VA56	PLASTIC SURG, INC HEAD/NECK
VA57	PROCTOLOGY
VA58	THORACIC SURGERY, INC CARDIAC
VA59	UROLOGY
VA60	ORAL SURGERY
VA61	PODIATRY
VA62	PERIPHERAL VASCULAR
VA63	SURGICAL ICU
VA64	NH SHORT STAY REHABILITATION
VA65	SURGICAL OBSERVATION
VA66	NH SHORT STAY RESTORATIVE
VA67	NH SHORT STAY MAINTENANCE
VA68	NH SHORT STAY PSYCHIATRIC CARE
VA69	NH SHORT STAY DEMENTIA CARE
VA70	ACUTE PSYCHIATRY (<45 DAYS)
VA71	LONG-TERM PSYCHIATRY (>45 DAYS)
VA72	ALCOHOL DEPENDENCE TRMT UNIT
VA73	DRUG DEPENDENCE TRMT UNIT
VA74	SUBSTANCE ABUSE TRMT UNIT
VA75	HALFWAY HOUSE
VA76	PSYCHIATRIC MENTALLY INFIRM
VA77	PRRTP
VA79	SIPU (SPEC INPT PTSD UNIT)
VA80	NHCU
VA81	NH GEM NURSING HOME CARE
VA83	RESPITE CARE (MEDICINE)
VA84	SUBSTANCE ABUSE INTERMED CARE
VA85	DOMICILIARY
VA86	DOMICILIARY SUBSTANCE ABUSE
VA87	GEM DOMICILIARY
VA88	DOMICILIARY PTSD
VA89	STAR I, II & III
VA90	SUBST ABUSE STAR I, II & III
VA91	EVAL/BRF TRMT PTSD UNIT(EBTPU)
VA92	GEN INTERMEDIATE PSYCH
VA93	HIGH INTENSITY GEN PSYCH INPAT
VA94	PSYCHIATRIC OBSERVATION
VA95	NH SHORT STAY SKILLED NURSING
VA96	NH HOSPICE
VA98	NON-DOD BEDS IN VA FACILITY
VA99	DOD BEDS IN VA FACILITY

Figure 117: Order Status Flowchart

Figure 117: Order Status Flowchart

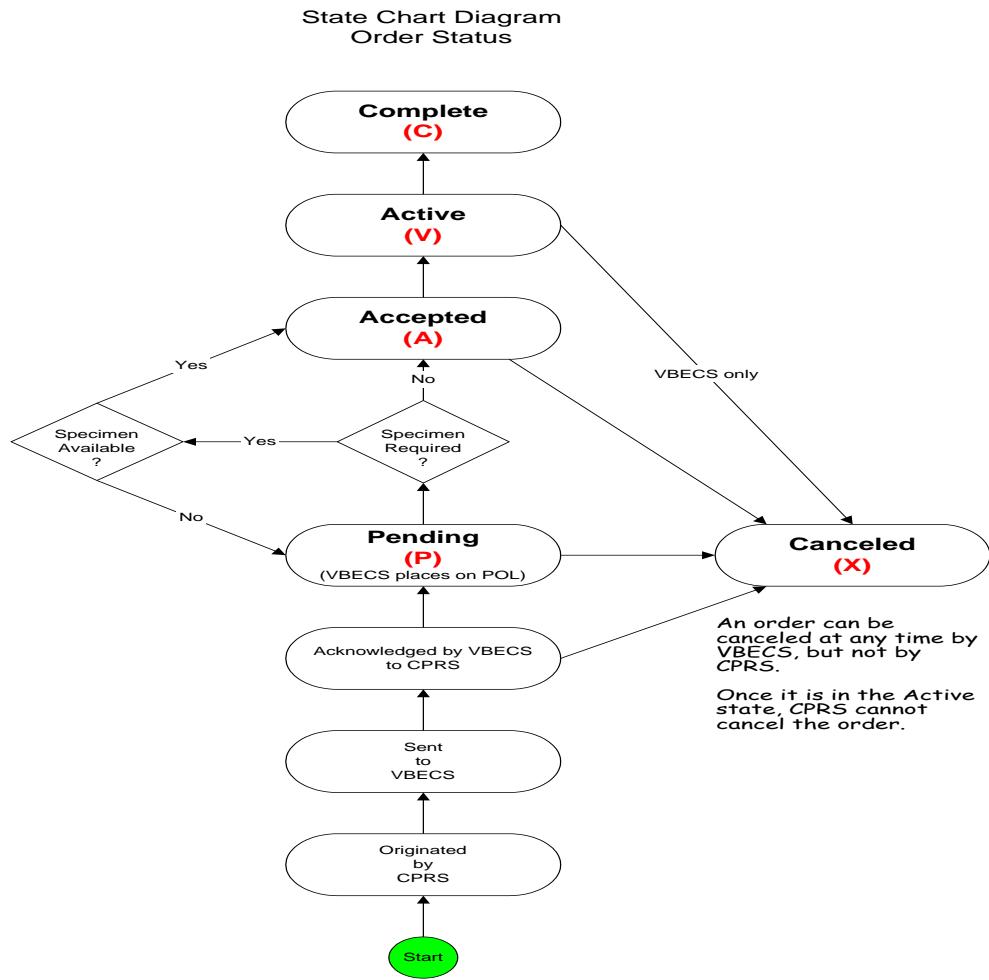


Table 23: Rules for Electronic and Serologic Crossmatch

The WHOLE BLOOD, RED BLOOD CELLS, and APHERESIS RED BLOOD CELLS ICCBBA component classes require crossmatch evaluation, serologic or electronic (when enabled). For the OTHER ICCBBA component class, a reflex crossmatch test was ordered based on the technologist's evaluation of the unit itself. Each collection is different and the technologist must evaluate the red blood cell content of the unit at the time of selection.

When electronic crossmatch is enabled at a division and units that require crossmatch (WHOLE BLOOD, RED BLOOD CELLS, and APHERESIS RED BLOOD CELLS ICCBBA component classes or a reflex crossmatch test was ordered) are selected, the system performs a comprehensive set of data validation, which does not include inactivated patient or unit tests. This patient and unit data validation is to ensure that the combination of patient and blood unit testing allows the unit to be eligible for electronic crossmatch. When the combination does not allow for electronic crossmatch, VBECS warns the user that the electronic crossmatch will not be applied.

Table 23 provides the mapping for the actual parameters verified and associated error messages. All parameters must comply in order for the unit to be eligible for electronic crossmatch: there are no exceptions or overrides. The parameters are checked in the order listed and once a parameter fails, VBECS displays the appropriate error message, no further checking occurs, and the selected unit must have serologic crossmatch performed.

 To use the electronic crossmatch function, sites must perform additional validation of electronic crossmatch to meet regulatory requirements. See Guidelines for Implementing the Electronic Crossmatch (Bethesda, MD: American Association of Blood Banks, 2003).

Table 23: Rules for Electronic and Serologic Crossmatch

Parameter Checked	Error Message When Parameter Fails
Current specimen ABO/Rh and Antibody Screen testing must be complete.	Patient not eligible for eXM. Current specimen not fully tested.
Current specimen Antibody Screen interpretation must be negative. VBECS checks only the last Antibody Screen entered.	Patient not eligible for eXM due to positive Antibody Screen.
Patient must have no history of previously identified antibodies, regardless of clinical significance based on system rules or division (or from conversion) of the antibody ID.	Patient not eligible for eXM due to previous antibody history.
Patient cannot have a persistent antigen negative requirement regardless of the division of the requirement entry.	Patient not eligible for eXM due to transfusion antigen negative requirement.
The patient's current ABO/Rh must match the historical record; there must be no previous justifications. An ABO/Rh marked "entered in error" is not considered part of the patient's record.	Patient not eligible for eXM due to ABO/Rh discrepancy from previous record.
The patient cannot have a documented instance of current or previous serologic problems, such as a valid Inconclusive ABO/Rh typing.	Patient not eligible for eXM due to ABO/Rh typing difficulty.
There must be at least two valid instances of ABO/Rh typing performed in the same division for the patient. One instance must be a valid ABO/Rh on the current specimen and not "unknown" or "inconclusive"; the other may be from a previous typing episode or a repeat ABO/Rh performed on the current specimen. The patient ABO/Rh interpretations must match in all instances. The user must enter valid forward and reverse typing for the system to use as the second test performed in the division.	Patient not eligible for eXM: he must have two instances of ABO/Rh typing at the division for eXM, including the current specimen.
Selected unit must be ABO compatible based on system rules.	Unit not eligible for eXM. Unit is ABO incompatible with the patient.

Parameter Checked	Error Message When Parameter Fails
Selected Rh negative units must have ABO and Rh confirmation results entered. The ABO and Rh confirmation interpretation must match the unit ABO/Rh at login.	Unit not eligible for eXM. ABO/Rh confirmation not performed.
Selected Rh positive units must have ABO confirmation results entered. The ABO confirmation interpretation must match the unit ABO at login.	Unit not eligible for eXM. ABO confirmation not performed.

Figure 118: Unit Status Flowchart

Types of Unit Statuses

- Temporary: awaiting ABO/Rh confirmation (lime green on the flowchart)
- Adjustable: may move in and out of the status as part of normal processing
- Issued: pending an update to transfusion or return (bright green in the flowchart)
- Final: the unit is no longer available for most processes in the division; the unit record remains active (pink and stop signs in the flowchart)

Indicators Associated with Units

- Quarantined: attaches to the unit record and status when the unit is quarantined. Removed by releasing the unit from quarantined.
- Presumed: attaches to the unit record only when the unit is in an issued unit status for more than 48 hours. Remains on the unit record if no transfusion information is entered through Post-Transfusion Information and Document ABO Incompatible Transfusion.

Figure 118: Unit Status Flowchart

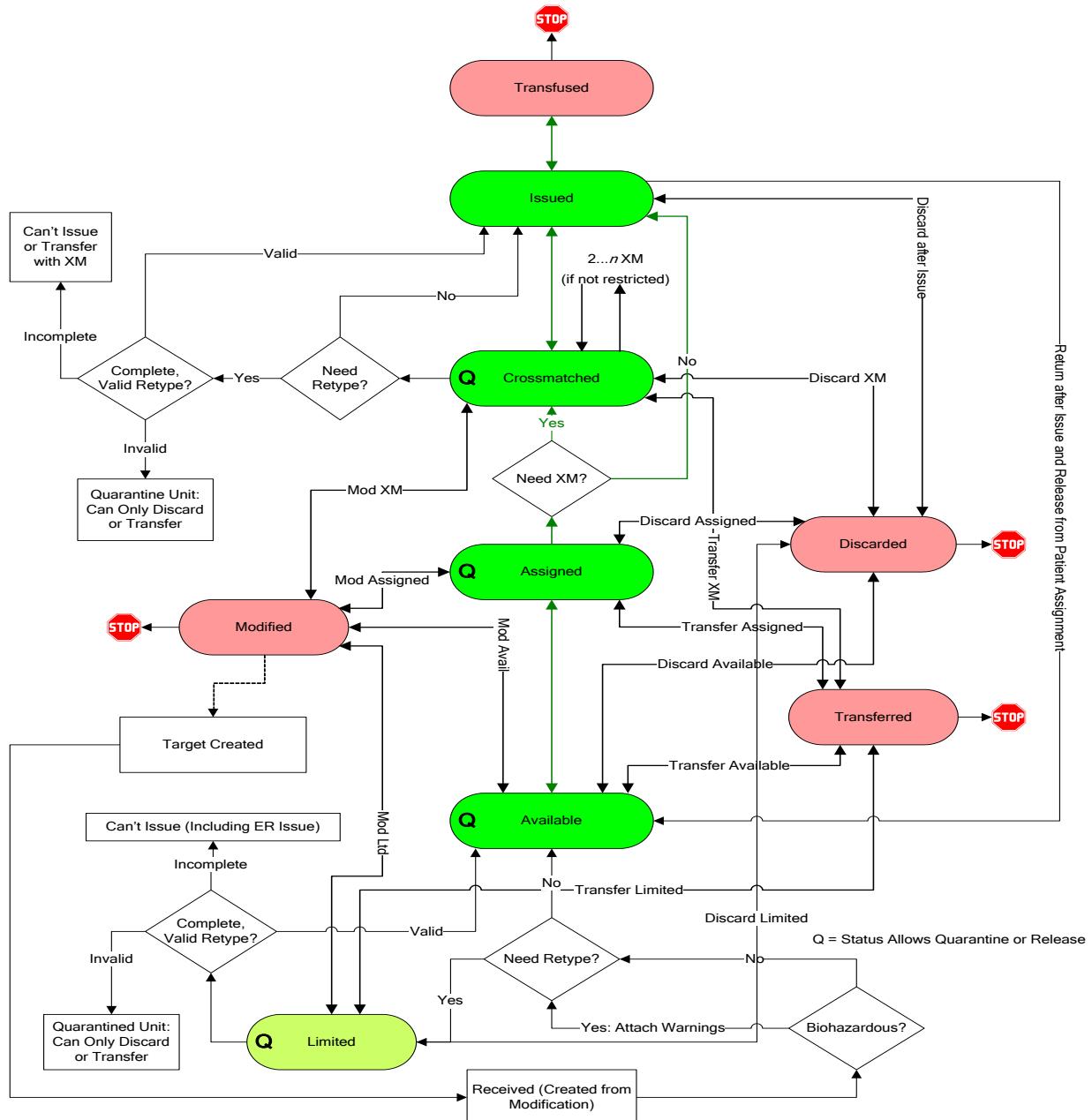


Table 24: VBECS Maximum Surgical Blood Order Schedule

Table 24: VBECS Maximum Surgical Blood Order Schedule (MSBOS)

VBECS Maximum Surgical Blood Order Schedule (MSBOS)	
Abdominal-Perineal resection	Keratectomy
Adrenalectomy	Hernia repair
Amputation (A/K, B/K)	Hip Replacement, total
Aneurysm, aortic	Hip Replacement, revision
Aneurysm, abdominal	Knee Replacement, total
Aneurysm, thoracic	Laminectomy, cervical, thoracic, or lumbar
Aneurysm, cranial	Laminectomy, disk repair
Aorto-Femoral Bypass	Laparotomy, exploratory
Appendectomy	Laryngectomy
Coronary Bypass Graft (CABG)	Lobectomy, pulmonary
Coronary Bypass Graft (CABG), redo	Mandibulectomy
Carotid Endarterectomy	Mastectomy, radical
Cervical Discectomy	Maxillectomy
Cervical Fusion	Nephrectomy
Cholecystectomy	Pancreatectomy
Cholostomy	Parathyroidectomy
Colectomy	Portocaval Shunt
Colon Resection	Prostatectomy
Craniotomy	Prostatectomy, total
Cystectomy	Radical Neck Dissection
Cystolithotomy	Renal Transplant
Cystoscopy	Skin Flap
Embolectomy	Skin Graft
Esophageal Resection	Splenectomy
Esophogectomy	Thyroidectomy
Femoral-Popliteal Bypass	Tracheostomy
Fracture, open reduction	Transurethral Resection (TURP)
Fusion, cervical or lumber	Vagotomy
Gastrectomy	Valve replacement, aortic or mitral
Gastric Bypass	Other*
Glossectomy	
Hematoma Evacuation, sub- or epidural	

*Other surgeries entered in the Surgery Name field during order entry. (Local facilities may add surgeries to this list.) Entries made during order entry will not have MSBOS component order recommendations. VBECS does not display “Other” in MSBOS.

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Appendix C: VBECS Work Flow

Each of the six user roles is associated with a security level (see Table 1). Privileges accumulate as the security level increases. For example, a Lead Technologist's privileges include those of a Blood Bank Technologist and Enhanced Technologist.

Figure 119: VBECS Work Flow (left)

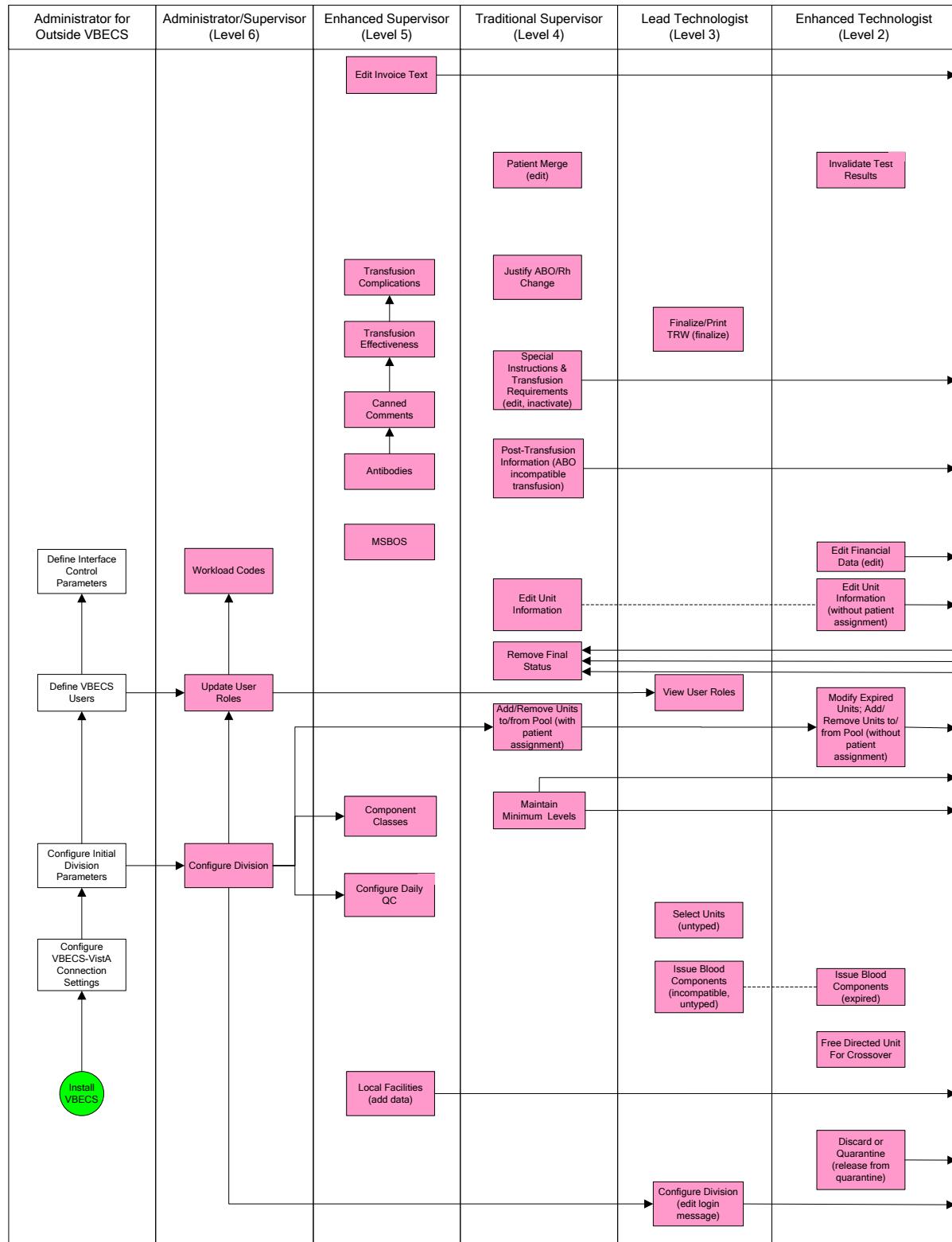
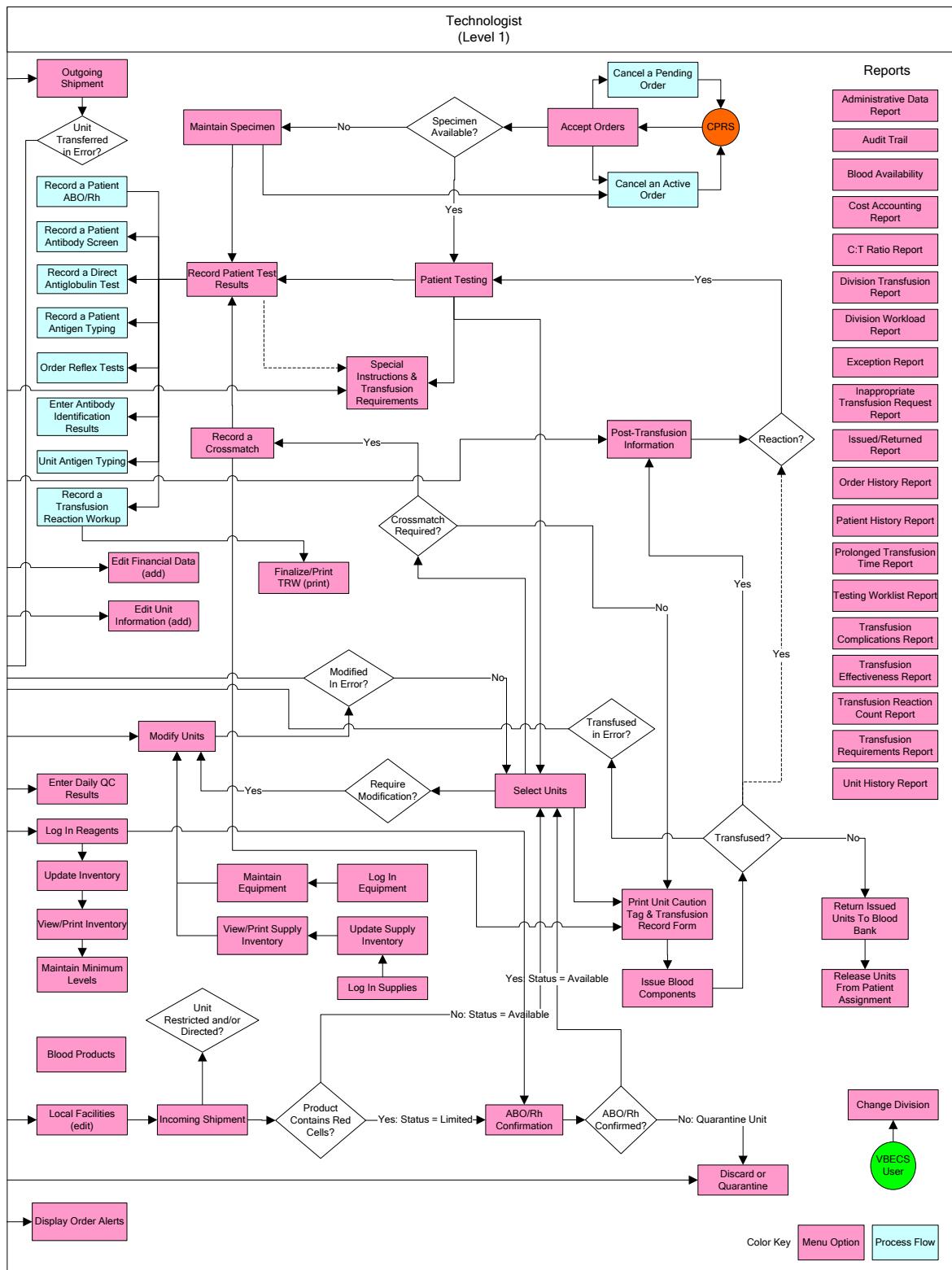


Figure 120: VBECS Work Flow (right)



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Appendix D: Limitations and Restrictions

Limitations and restrictions are listed by the options in which they occur.

Table 25: Limitations and Restrictions

Throughout VBECS
After entering a canned or free-text comment in the testing comment field of the testing grid, the user must press Enter to store the comment.
Although the copy-and-paste function is enabled, do not use it to enter patient identification information. It is highly recommended that the user scan this information when possible; otherwise, enter it .
Collection of blood products (donor module) is not supported.
Data retrieval from VBECS is available only by approved database integration agreement.
Direct data entry of antibody identification and transfusion reaction workups are not supported.
Information may not be transferred from one window to another without refreshing the screen. When a window is partially displayed or freezes; or when you move from one window to another, enter information, return to the original window, and the entered information is not available, minimize then maximize the window to refresh it.
Initial blood orders must be placed in CPRS. Tests and products may be added to existing orders in VBECS.
Maximize option windows to display safety-critical information in full.
Patient testing, transfusions, and blood components recorded in legacy VistA are not available in VBECS.
Pediatric blood product preparation is not supported.
The date and time displayed in VBECS depend on the date and time set on the server. Sites are not notified when an administrator changes the date or time on the server. Users must contact their System Administrator when the date or time is incorrect.
The search functionality (binoculars icon) may not work in a displayed report.
Users cannot define customized queries or reports.
Users cannot edit blood product, antigen, antibody, or transfusion reaction tables.
Users may perform testing for no more than four patients in one VBECS session.
Validation records are not stored in VBECS.
VBECS depends on a connection to VistA and CPRS to retrieve patient information and orders, respectively.
When a message window requires a user response and VBECS displays it behind the active window, the user must minimize the active window or click and drag dialog boxes to expose the message window.
When the default screen resolution is changed, division or VistALink information may not be entirely visible.
When the user does not enter a full or partial unit ID and clicks the ellipsis button in the Unit Search Screen, response time will vary based on the size of the database.

ABO/Rh Confirmation
When the user builds a custom worklist or a worklist by invoice number, VBECS includes only units not previously tested or confirmed, and those not selected on another worklist.
For batch processing, the user can select incoming shipment invoices from his division, processed within the previous five days.
VBECS does not display product codes associated with unit IDs in ABO/Rh Confirmation. Therefore, do not create ABO/Rh confirmation worklists containing units with the same unit ID.

Accept Orders: Accept an Order
When no CPRS order exists, the user must process the specimen offline.
The user must accept the Type & Screen (TAS) before he accepts other diagnostic tests or component orders.
The user cannot click  (Restricted or Assigned Units) to access information on autologous or directed units that may be restricted to a patient.
Accept Orders: Cancel a Pending Order
Cancellation of one order does not affect other orders placed with it.
Add/Remove Units from a Pool
See Modify Units.
Audit Trail
VBECS does not accommodate online review (verification, signature) of reports.
Blood Availability
Users may not view these reports outside VBECS.
Blood Products
Blood product records distributed through VBECS are national standards.
The division must have activated the valid target blood products for modification.
Canned Comments
The user may not edit comments provided with VBECS, but may create additional comments.
Site personnel must enter comments in accordance with local policy and procedures.
Component Classes
The user may not change the specimen requirement for a component class when there are incomplete orders for that component class.
There is no retrospective data entry or user selection for this option.
Configure Daily QC
This option pertains only to routine reagents.
When there are partially or currently QC'd racks in the system, the user may not change the QC template.

Discard or Quarantine

When a user retroactively updates a unit status through this option, the Unit History Report displays the updated information, but does not display the date the change was made.

Display Order Alerts

VBECS issues no notifications for order cancellations.

VBECS displays the Order Alert icon only when the number of pending orders is fewer than 1,000.

Display Patient Merge Alerts

VBECS notifies users of VistA patient merges when both merged patients are known to VBECS.

VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed VistA patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor updates the patient records and clears the icon.

Display Patient Update Alerts

VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed VistA patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor updates the patient records and clears the icon.

Document ABO Incompatible Transfusions

VBECS does not enforce compatibility checks between the patient and the unit.

Edit Unit Information

The user may correct a limited amount of unit information.

VBECS does not limit the discarded plasma volume.

If errors are found in the unit's product code, division or blood type at login, supplier, or donation type, the user must deactivate the unit and reenter it correctly.

When a unit does not have a patient association, editable fields are available to an ►► Enhanced Technologist.

ABO/Rh confirmation and antigen type testing cannot be deactivated when the unit is in a final unit status.

Enter Daily QC Results

Additional user-defined reagent types not available in Configure Daily QC or Enter Daily QC Results are not part of a reagent rack's daily QC testing.

Equipment

VBECS does not check for duplicate entries of equipment names and identifiers.

There is no retrospective data entry or user selection for this option.

Exception Report

VBECS does not accommodate online review (verification, signature) of reports.

Finalize/Print TRW	
The user cannot invalidate or change a finalized TRW.	
Transfusion reaction reports are not available to clinicians through CPRS: they must be printed and filed with patient charts.	
VBECS displays these default values for transfusion reactions converted from VistA to VBECS. They do not reflect actual interpretations or results:	
Converted Transfusion Reaction	Default
Pre-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Post-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Symptoms	No symptoms identified.
Implicated units	No units implicated in reaction.
Serologic tests	No serologic tests performed.

Free Directed Unit For Crossover	
The unit must not be in a final status to release the restriction.	
This option does not allow the removal of patient restrictions for most of the ISBT donation types that are eligible for crossover.	
This option cannot process multiple directed units simultaneously.	

Incoming Shipment	
VBECS does not compare the ABO/Rh of an autologous unit or display a message when the ABO/Rh is incompatible with the restricted for patient.	
When a product type, code, or local code is not in VBECS or a blood supplier creates a product code, contact the Help Desk. See Customer Support for contact information.	
The user must enter the donation type for Codabar-labeled units.	
When a user inadvertently enters a unit ID that is longer than seven characters for a Codabar unit, or 13 characters for an ISBT 128 unit, VBECS accepts the entry but will not associate it with the scanned unit ID.	
The display label that is built when logging a blood product into VBECS does not change from volunteer donor to autologous when the donation type is changed.	
When blood products intended for quarantine are scanned, VBECS does not automatically quarantine them: the user must do so.	
VBECS does not accept scanned information for some modified ISBT 128 blood units. VBECS accepts entered information in these instances.	
The user may not scan labels for para-Bombay or Bombay ISBT units.	
VBECS does not check whether blood products with the same unit ID and different product codes are the same blood type.	
A site may receive duplicate unit IDs. VBECS cannot ensure that these IDs represent products from the same donor.	
VBECS reads Codabar prefixes and translates them into digits. When this results in identical Codabar unit IDs, keep the original unit and return the other unit to the supplier.	

Incoming Shipment
When a user scans a product code or expiration date barcode in the Unit ID field, VBECS does not display the entered information or an error icon.
When a user scans an ISBT product ID with "0" as the donation type (sixth character), VBECS indicates that the donation type is not specified. When the user selects a donation type from the drop-down menu, VBECS replaces "0" with a recognizable character in the product code text box and stores it as such. When the user rescans the product ID, he must manually replace "0" or search using the unit ID alone, or the unit ID and the first five characters of the product ID.
Blood product code entries in the blood product table include those from ICCBBA for ISBT 128 and from the AABB Codabar table. Product codes created after the release of VBECS cannot be entered until the updated tables are incorporated through patches to VBECS. Refuse acceptance of the unit, if possible. Users may not edit the blood product table.
ISBT 128 tables include blood product codes labeled as not for manufacturing or transfusion. VBECS does not restrict such products from being entered, issued, or transferred (local policy controls their use) and does not accommodate blood modification for these products.

Invalidate Test Results
A user may not inactivate a component task in this option.
This option does not release units from patient assignment. The user must release "assigned" units before invalidating the test results.
To maintain a clear record and system checks, the user must invalidate both original and repeat ABO/Rh tests.

Issue Blood Components
VBECS does not check for restricted units (not assigned to the patient) received between selection and issue.
All issue-to locations must be valid entries in the VistA hospital location file, including home transfusion.
ISBT 128 tables include blood product codes labeled as not for manufacturing or transfusion. VBECS does not restrict such products from being entered, issued, or transferred (local policy controls their use), but does not accommodate blood modification for these products.
When a site has configured subservient VistA institutions to the VBECS division, users can only issue units to locations in the primary VistA. Sites may add locations to VistA to account for the relocations to the subservient VistA institutions

Justify ABO/Rh Change
VBECS does not allow the selection or issue of certain blood components that may appear ABO/Rh compatible when discrepant ABO/Rh results are not justified.

Local Facilities
A user may:
<ul style="list-style-type: none"> • Activate and edit collection facility records distributed with VBECS. • Add and locally edit active collection facilities. • Activate and/or deactivate local collection facilities. • Edit a division name, which may result in a mismatch between VistA and VBECS division names.

Log In Reagents, Update Inventory, View/Print Inventory, Maintain Minimum Levels
VBECS does not display a reagent report by invoice number.
The unsatisfactory portion of a shipment must be recorded individually.
There is no retrospective data entry or user selection for these options.
Each site must set a standard for recording quantity: it may use the number of cases or the number of units within the cases.
When a user enters a lot number in the Lot # field and clicks the magnifying glass , VBECS displays only the first instance of a duplicate lot number.

Log Into VBECS and VistA
VBECS automatically logs a user with access to only one division into that division.

Maintain Specimen
When a search by UID causes VBECS to time out, repeat the search by UID and patient name or by patient name only.
Specimen recollection requests must be made offline.
Designating a specimen as “unacceptable” after accepting a CPRS order closes that order and requires a new CPRS order and sample.

Modify Units
VBECS allows modification of units only in limited, assigned, crossmatched, and available statuses.

Modify Units: Pool Units
VBECS allows modification of units only in limited, assigned, crossmatched, and available statuses.
When a user adds a biohazardous unit to a pool, VBECS does not designate the pool as biohazardous on the Blood Transfusion Record Form (BTRF) or Caution Tag.
VBECS does not allow a user to select a pool of mixed ABO/Rh units for a patient. Instead, the user must select random units for the patient and pool the mixed ABO/Rh units to allow issue.

Modify Units: Split a Unit
A previously split unit cannot be split again. A pooled unit may not be split.
This option appends alphabetical characters to the Codabar unit ID of split units created from original units. This prevents scanning the unit ID barcode with the split indicator.
By ISBT 128 convention, split units created from an ISBT 128 original unit will have identical unit ID and five-digit product codes.

Order Alerts
This option does not create a mechanism to accept or reject orders or specimens or define reports for viewing orders.
The user may select the option to display printer alerts only when the designated printer is configured and available.
The printer must be configured by the System Administrator.

Order Reflex Tests

A crossmatch (XM) and a repeat XM cannot be ordered unless they are associated with a specimen with a future expiration date and a phlebotomist is associated with that specimen.

When a user selects weak D for the antigen typing test and the selected patient is Rh positive, VBECS warns that weak D testing cannot be performed. There is no override and VBECS does not add the test.

Outgoing Shipment

A user may edit only unconfirmed invoices.

The number of tests displayed on an invoice is limited to 8,000 characters per unit.

When the user creates an invoice and cancels before saving it, VBECS excludes the invoice number from use.

Patient History Report

When units are restricted for a patient during Incoming Shipment, VBECS does not display them on the Patient History Report.

VBECS displays these default values for transfusion reactions converted from VistA to VBECS. They do not reflect actual interpretations or results:

Converted Transfusion Reaction	Default
Pre-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Post-Transfusion Specimen Checks, Hemolysis Checks OK?	Yes
Symptoms	No symptoms identified.
Implicated units	No units implicated in reaction.
Serologic tests	No serologic tests performed.

Patient Merge

The Traditional Supervisor or above must update patient records manually.

VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor completes the update and clears the icon.

Patient Testing: Cancel an Active Order

Cancellation of one order does not affect other orders placed with it.

Before a user may cancel a partially completed task, he must invalidate the results for that task, thereby changing its status to "not started."

Patient Testing: Enter Antibody Identification Results

When an antigen negative requirement is not configured for an antibody, the user may enter the requirement for a patient through Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement.

Patient Testing: General Instructions

This test record is not editable after the user completes a test and saves it to the database. When a correction needs to be filed, a corrected report must be generated, as described in Invalidating Patient Test Results.

Patient Testing: Pending Task List

This option is for diagnostic, blood component, and reflex test orders placed in or directed to the user's division.

The PTL does not include daily quality control, equipment maintenance schedules, or pending ABO/Rh confirmation and auxiliary tests on red blood cell units.

Patient Testing: Record a Crossmatch

The specimen associated with testing must have an expiration date and time that are later than the testing date and time entered in Patient Testing: Record Patient Test Results. When this is not the case, VBECS warns that the patient specimen expired. There is no override.

This option does not include electronic crossmatch (eXM).

Patient Testing: Record a Direct Antiglobulin Test

VBECS does not check whether the lot and vial numbers selected for the positive control cells are different from those of the negative control cells.

Patient Testing: Record a Patient Antibody Screen

This option is for patient testing only.

Patient Testing: Record a Patient Antigen Typing

Antigen typing applies only to red blood cell antigens. [This option does not address platelet, histocompatibility locus antigen (HLA), or Immunoglobulin A (IgA) antigens.]

VBECS does not check:

- The patient antigen typing with the specificity of any patient's antibodies entered.
- Whether the lot and vial numbers selected for the positive control cells differ from those of the negative control cells.

The patient antigen typing result is not available to CPRS.

Patient Testing: Record a Transfusion Reaction Workup

Adverse reactions to transfusion detected at a later time (disease transmission) are not recorded through this option. Refer to Transfusion Complications Report.

Patient Testing Worklist and Testing Worklist Reports

Reports do not include Transfusion Reaction Workup (TRW) test results.

VBECS does not accommodate online review (verification, signature) of reports.

Post-Transfusion Information

VBECS cannot update a unit record to presumed transfused when a user has that unit record open (locked) in Enter Post Transfusion Information. VBECS will attempt to update the unit the next time the presumed transfused background routing runs if the unit remains in an issued status.

Print Unit Caution Tag & Transfusion Record Form

VBECS cannot reprint a Caution Tag on an expired unit or expired patient order.

Print Unit Caution Tag & Transfusion Record Form

VBECS does not print a unit's biohazardous status on the BTRF or Caution Tag.

Prolonged Transfusion Time Report

This report does not include presumed transfused units or units issued to a remote storage location.

Release Units From Patient Assignment

This option does not apply to the release of patient restrictions (autologous and directed).

When a patient, specimen, or blood unit expires, VBECS does not automatically release an assigned blood unit: a user must release the unit.

Remove Final Status

This option applies only to the release of units in final statuses.

Screen Settings

VBECS was designed to operate with the settings described in this section to display complete screens. Failure to maintain these settings may result in partial display of safety-critical information.

Select Units

When a user checks the "D Pos" or "D Neg" check box to modify a search for blood, VBECS returns no units, regardless of the availability of units.

VBECS does not allow a user to select a pool of mixed ABO/Rh units for a patient. Instead, the user must select random units for the patient and pool the mixed ABO/Rh units to allow issue.

VBECS displays a component order as "filled" when the number of units transfused and the number of units ordered are the same. CPRS displays a component order as "completed" when the number of units ready for issue and the number of units ordered are the same. Therefore, CPRS displays the order as "completed" before VBECS displays the order as "filled."

Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement

Inactivation is defined and restricted by security level.

VistA Special Instructions (SIs) from database conversion do not become Transfusion Requirements (TRs): they remain SIs. SIs are information only and are not enforced unless entered in the Component Requirements tab in Special Instructions & Transfusion Requirements.

Special Instructions & Transfusion Requirements: Enter and Remove Special Instructions

VBECS does not enforce Transfusion Requirements (TRs) or antigen negative requirements entered through this option.

SIs moved to VBECS during the database conversion may contain information that must be entered as TRs in VBECS. Inactivate the old SI and create a TR and new updated SI: the database conversion software cannot automatically translate the SI from database conversion into a rule-based TR.

VBECS will truncate SI text longer than 255 characters from the VistA database conversion.

Supplies

Supplies
The division's modification processes may allow or require the user to select previously entered supplies for association with a blood unit's modification. An inventory of containers (transfer bags) and sterile connection device (SCD) wafers is <i>required</i> for various modification processes.
There is no retrospective data entry or user selection for this option.
The unsatisfactory portion of a shipment must be recorded individually.
Each site must set a standard for recording quantity: it may use the number of cases or the number of units within the cases.
Transfusion Complications Report
The report does not include units in an issued status.
Transfusion Effectiveness Report
The report does not include VBECS diagnostic tests.
Transfusion Requirements Report
The cumulative report includes all patients (except those marked as deceased) in the database.
Unit Antigen Typing
Antigen typing applies only to blood products that contain red blood cells. This option does not address platelet, HLAs, or IgA antigenicity.
VBECS does not check whether the lot and vial numbers selected for the positive control cells differ from those of the negative control cells.
D antigen typing must not be combined in batch testing of Rh positive units.
Unit History Report
The report is not multidivisional.
When a user retroactively updates a unit status through Discard or Quarantine, the Unit History Report displays the updated information, but does not display the date the change was made.
Update User Roles
One role at a time may be assigned to a user at a division. The role may be reset.
VBECS does not allow users to edit or delete the sole Administrator/Supervisor.
Updated Patients and Deceased Patients
Demographic and death event updates do not display information for patients without pending or active orders in VBECS. Updates will occur without user input.
VBECS does not notify users of additional VistA patient updates or merges while the icon is displayed. When a user views an update and there is an unprocessed patient merge, the Patient Alert icon remains on the screen until the Traditional Supervisor completes the update and clears the icon.
When VBECS notifies a user of an update to a patient's prefix or suffix, VBECS does not display the updated information: the user must access VistA to view the updated information.

Workload Codes

Transfusion-only sites must not map workload codes to processes such as ABO/Rh testing not performed on site.

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Appendix E: Known Defects and Anomalies

Copies of *Known Defects and Anomalies* may be obtained from VDL: VistA Documentation Library (VDL), VHA OI – Health Systems Design & Development Web page.

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Appendix F: System Validation

Introduction

Each facility is responsible for validating the VBECS installation, operation, and performance before using VBECS in a live (production) environment. This includes evaluating local intended uses of the software and changing settings to conform to the facility's procedures, processes, and policies. Use internal operating procedures and policies to validate that the software performs in accordance with your site's parameters. Determine the level of validation required for changes to hardware and software.

This section describes only basic system validation. Sample test scripts are available from the National Training & Education Office (NT&EO).

Validation Plan

Write a validation plan with clearly stated goals and strategies to demonstrate that the system hardware, application, new features, and software patches function as expected in your facility's environment. Include descriptions of documents, hardware and software Verification & Validation (V&V) tools, techniques, methods, and operating and test environments to be used. Determine and document when an option is not applicable to your facility and does not require testing.

You may separate this plan into three major sections:

Installation Qualification

The Installation Qualification (IQ) section includes system identification, definition of physical properties, interfaces and peripheral devices, and general functionality. Determine what types of testing must be done. Create test cases in accordance with your internal procedures and intended use.

Apply review, analysis, and testing techniques to determine whether VBECS hardware and peripheral components comply with requirements, including functionality and attributes such as consistency, safety, and security.

Operational Qualification

The Operational Qualification (OQ) section includes testing the software (the primary validation activity). Use your OQ to challenge VBECS and the connection to VistA. Base the number and types of tests on the criticality of the software function. The focus of this validation is to test the limits of what the system allows you to do, not how the system will be used. Each facility will have a different level of validation based on local practices.

Analyze risks to ensure that the scope and degree of validation are appropriate. (A system error that may result in direct and severe patient harm requires more detailed and rigorous testing than one that may have minor consequences.)

Create a testing environment as much like the production environment as possible. Design test cases to:

- Address critical software functions.
- Detect failures and flaws.
- Verify and challenge system functions and limitations, and user documentation.

Verify data from VistA displayed in VBECS and data from VBECS displayed in VistA. (Results will vary based on your VBECS settings.) Evaluate the output of the testing and determine whether the test passed or failed.

Maintain evidence of software testing, as part of the validation record, in accordance with standards established by accrediting agencies associated with the blood bank and laboratory. Include, at minimum, your inputs, outputs, and evidence that tests performed were satisfactory or unsatisfactory. (You may record input manually, make copies of unit labels or patient information, capture screen shots⁷ from VistA and VBECS, print various reports, etc.)

Performance Qualification

The Performance Qualification (PQ) section focuses on the integration of the application and processes into your facility. This begins with the revision of Standard Operation Procedures (SOPs) and policies to include the proper use of the new system. Once the SOPs are in place and validated, train the users. Ensure that training materials and records are complete before allowing users to operate the system. Document the validation, including:

- Personnel participating in validation activities
- Hardware and software change controls
- Testing results
- SOP reviews, training plans, installation and implementation
- Evaluation and acceptance
- Review and approval authority and dates

Prerequisites

Perform these tasks for test and production environments in VBECS before you test the application:

- Install required patches in your VistA test and production environments.
- Install VBECS.
- Complete the database conversion.
- Record system settings.

⁷ To make a copy of the active window, press **Alt+Print Screen**. To copy the entire screen as it appears on your monitor, press **Print Screen**. To paste the image into a file in an Office program, open the file you want to paste the image into, click **Edit**, and then click **Paste**.

Record System Settings

These sections describe how to capture system settings in preparation for validation.

Configure Division

A user defines site parameters that affect how VBECS behaves at a specific division. VBECS may be configured to function differently at each division within a consolidated database. Site parameters may be redefined.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

Preparation for Testing

- 1) Select **Configure Division**.
- 2) Record:
 - ICCBBA registration number: _____
 - Blood Bank Medical Director's name as you want it to appear on reports: _____
 - Latest expiration date (default: three days) for specimens, in accordance with local policies and procedures: _____
- 3) Is your division full service (FS) or transfusion only (TO)? _____
- 4) If your site does not perform on-site testing, continue at Order Alerts.
- 5) If your division is full service, do you want to enable electronic crossmatch? _____
- 6) Print, sign, date, and save an Audit Trail Report for your validation record.

Configure Testing: Full Service

The user sets testing preferences in accordance with a division's medical policies.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

Preparation for Testing

- 1) Set testing preferences.
- 2) Capture and save a screen shot of each piece of information.
- 3) Print, sign, date, and save an Audit Trail Report for your validation record.

Product Modifications: Full Service

The user enables the types of modifications made at a division.

User Roles with Access to This Option

►►►►►► Administrator/Supervisor

Preparation for Testing

Modification processes are disabled by default. You must activate modification types performed at your facility. You may select none, some, or all. Enter a processing cost for each modification type, as applicable. You may update these settings later.

Table 26: Modification Types and Costs

Modification Type	Modification Processes		Processing Cost
	Enabled	Disabled	
Thaw			
Pool			
Thaw/Pool Cryo			
Split/Divide			
Irradiate			
Leukoreduce			
Volume Reduce			
Wash			
Rejuvenate			
Freeze			
Deglycerolize			

- 1) Capture and save a screen shot of each piece of information.
- 2) Print, sign, date, and save an Audit Trail Report for your validation record.

Order Alerts

The user configures diagnostic test or component order alerts that appear at login, and turns them on or off. The alerts notify users when new orders are entered, updated, or canceled in VistA.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

Preparation for Testing

- 1) Capture and save a screen shot of each piece of information.
- 2) Print, sign, date, and save an Audit Trail Report for your validation record.

Configure Daily QC: Full Service

The user sets up the routine reagent racks and QC template for the division before performing daily reagent QC.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

- 1) If you perform daily reagent rack quality control using a commercial kit, select the commercial kit template. If not, select the non-commercial kit template. Template selected: _____
- 2) Daily alert time at which users will be prompted to perform QC: _____
- 3) Do you want to use letters or numbers as rack names? _____
- 4) Maximum number of reagent racks for daily use: _____
- 5) Primary enhancement medium: _____
- 6) Secondary enhancement medium: _____

The template contains the minimum number of tests required to test the reagents. Select additional tests that are part of your daily reagent rack QC, in accordance with local policies and procedures.

- 7) Capture and save a screen shot of each piece of information.
- 8) Print, sign, date, and save an Audit Trail Report for your validation record.

Maintain Minimum Levels: Full Service

The user sets minimum stock levels for reagent types used in the division.

User Roles with Access to This Option

►►►► Traditional Supervisor

Preparation for Testing

You may enter the minimum number of vials for each reagent type that your blood bank stocks to alert staff when it reaches a critical level.

- 1) Capture and save a screen shot of each piece of information.
- 2) Print, sign, date, and save an Audit Trail Report for your validation record.

Log In Reagents: Full Service

A user records the receipt of specific reagents by type. The reagent record includes the date the shipment was received, reagent name, lot number, expiration date, manufacturer, and number of vials received in a shipment.

User Roles with Access to This Option

All users

Preparation for Testing

- 1) Enter reagent types and quantities used. (For QC validation, enter a lot number that was received and found unsatisfactory, and a lot number that expires at 23:59 on the day that you test the reagent rack QC.)
- 2) Capture and save a screen shot of all entries.
- 3) Print, sign, date, and save the View/Print Inventory (Reagent) Report for your validation record.

Blood Products

The user activates, deactivates, and edits a limited number of variables for an existing blood product site parameter. VBECS provides a Codabar and an ISBT 128 Blood Product reference table to facilitate these and other actions.

User Roles with Access to This Option

All users

Preparation for Testing

Activate blood products here or during incoming shipment. It may be helpful to set up your most common products before entering blood inventory in the system.

Healthcare Common Procedure Coding System (HCPCS) codes are provided by your hospital's VistA file. Select the code that is associated with the blood product.

- 1) Use the sample worksheet to record information.
- 2) Capture and save a screen shot of each piece of information before continuing.
- 3) Print, sign, date, and save an Audit Trail Report for your validation record.

Table 27: Sample Blood Products Worksheet

Blood Product		HCPCS	Product Shippers			
Product Code	Short Product Name	HCPCS Code	Shipper Name	FDA Reg. #	Cost (\$)	Return Credit %
04020	RBC ACD-A	P2028	Abington Memorial Hospital	2577690	\$150.00	0

Table 28: Blood Products Worksheet

Blood Product		HCPCS	Product Shippers			
Product Code	Short Product Name	HCPCS Code	Shipper Name	FDA Reg. #	Cost (\$)	Return Credit %

Local Facilities

The user customizes collection facility information.

User Roles with Access to This Option

All users (activate a facility)

►►►► Enhanced Supervisor (add a facility)

Preparation for Testing

- 1) Use the sample worksheet to record information.
- 2) Capture and save a screen shot of each piece of information.
- 3) Print, sign, date, and save an Audit Trail Report for your validation record.

Table 29: Sample Local Facilities Worksheet

FDA Reg. No.	Facility Name	ICCBBA Reg. No.	Facility Type		Active Facility?
			Collection Facility?	Testing Facility?	
2577690	Abington Memorial Hospital	W0002	✓		✓

Table 30: Local Facilities Worksheet

FDA Reg. No.	Facility Name	ICCBBA Reg. No.	Facility Type		Active Facility?
			Collection Facility?	Testing Facility?	

Component Classes

The user configures the component class parameters for the selected division.

User Roles with Access to This Option

>>>> Enhanced Supervisor

Preparation for Testing

- 1) Use the sample worksheet to record information.
- 2) Capture and save a screen shot of each piece of information.
- 3) Print, sign, date, and save an Audit Trail Report for your validation record.

Table 31: Component Class Requirements Worksheet

Component Class	Require Current Specimen ABO/Rh Results?	Maximum Transfusion Time ⁸	Laboratory Test Name	Specimen Type	Threshold Result
RED BLOOD CELLS	✓ (uneditable)				
FRESH FROZEN PLASMA					
PLATELETS					
CRYOPRECIPITATE					
WHOLE BLOOD	✓ (uneditable)				
OTHER					

⁸ Default is 270 minutes (4 hours, 30 minutes).

Transfusion Complications

The user defines Laboratory tests and threshold values used to generate a report listing patients transfused within a specified period who may have developed a transfusion-associated disease.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

- 1) Use the sample worksheet to record information.
- 2) Capture and save a screen shot of all entries.
- 3) Print, sign, date, and save an Audit Trail Report for your validation record.

Table 32: Transfusion Complications Worksheet

Laboratory Test Name	Specimen Type	Threshold Result

Transfusion Effectiveness

The user defines Laboratory tests to monitor the effectiveness of transfusions.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

- 1) Use the sample worksheet to record information.
- 2) Capture and save a screen shot of all entries.
- 3) Print, sign, date, and save an Audit Trail Report for your validation record.

Table 33: Transfusion Effectiveness Worksheet

Laboratory Test Name	Specimen Type	Threshold Result

Workload Codes

The user assigns workload Laboratory Management Index Program/National Laboratory Test (LMIP/NLT) tests to processes performed through VBECS. VBECS test names are associated with VistA workload codes, used when compiling and storing data to provide workload-related reports to VistA.

User Roles with Access to This Option

►►►►► Administrator/Supervisor

Preparation for Testing

Print, sign, date, and save an Audit Trail Report for your validation record.

Canned Comments

The user defines canned comments, by category, for a division.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

Print, sign, date, and save an Audit Trail Report for your validation record.

MSBOS

The user defines parameters for comparing blood component orders placed by a clinician with the Maximum Surgical Blood Ordering Schedule (MSBOS).

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

Print, sign, date, and save an Audit Trail Report for your validation record.

Edit Invoice Text

The user may edit the explanatory text above the signature on the last page of a shipping invoice.

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

Print, sign, date, and save an Audit Trail Report for your validation record.

Antibodies

The user may edit certain fields in the supplied antibody table (Table 13). Use Table 34 (extracted from Table 13) to document local decisions on antigen-negative settings.

Table 34: User-Defined Antigen Negative Requirements

VBECS	Antibody Name VistA	Clinically Significant?	VBECS Antigen Negative Setting Default	Local comments and decisions on antigen-negative settings.
Anti-Kp(a)	Anti-Kp(a)	Yes	No	
Anti-Kp(b)	Anti-Kp(b)	Yes	No	
Anti-M	Anti-M	No	No	
Anti-N	Anti-N	No	No	
Anti-U	Anti-U	Yes	No	
Anti-P1	Anti-P1	No	No	
Anti-Le(a)	Anti-Le(a)	No	No	
Anti-Le(b)	Anti-Le(b)	No	No	
Anti-Js(a)	Anti-Js(a)	Yes	No	
Anti-Js(b)	Anti-Js(b)	Yes	No	
Anti-Lu(a)	Anti-Lu(a)	No	No	
Anti-Lu(b)	Anti-Lu(b)	No	No	
Anti-Lu3	Anti-Lu(a)Lu(b)	No	No	
Anti-C(w)	Anti-Cw	Yes	No	
Anti-C(x)	Anti-Cx	Yes	No	
Anti-E(w)	Anti-E(w)	Yes	No	
Anti-V	Anti-V	Yes	No	
Anti-Xg(a)	Anti-Xg(a)	No	No	
Anti-M(g)	Anti-M(g)	No	No	
Anti-Mi(a)	Anti-Mi(a)	No	No	
Anti-P	Anti-P	No	No	
Anti-A1	Anti-A-1	No	No	
Anti-H	Anti-H	No	No	
Anti-Le(ab)	Anti-Le(x)	No	No	
Anti-Di(a)	Anti-Di(a)	No	No	
Anti-Di(b)	Anti-Di(b)	No	No	
Anti-Do(a)	Anti-Do(a)	No	No	
Anti-Do(b)	None	No	No	
Anti-Co(a)	None	No	No	
Anti-Co(b)	None	No	No	
Anti-LW(a)	None	No	No	
Anti-LW(b)	None	No	No	
Anti-Sc1	None	No	No	
Anti-Sc2	None	No	No	
Anti-Sd(a)	None	No	No	
Anti-Au(a)	Anti-Au(a)	No	No	
Anti-Au(b)	None	No	No	
Anti-Ch	None	No	No	
Anti-Rg	None	No	No	
Anti-Cs(a)	None	No	No	
Anti-Yk(a)	None	No	No	
Anti-Kn(a)	None	No	No	
Anti-McC(a)	None	No	No	
Anti-JMH	None	No	No	
Anti-Yt(a)	None	No	No	
Anti-Yt(b)	None	No	No	

User Roles with Access to This Option

►►►► Enhanced Supervisor

Preparation for Testing

- 1) Change the antigen negative requirement setting on those currently not invoked. Change the percent compatible for your donor population.
- 2) Print, sign, date, and save an Audit Trail Report for your validation record.

Update User Roles

The user reviews and changes the user roles and associated security levels that determine which options and functions are available to a user in the division.

User Roles with Access to This Option

►►►►►► Administrator/Supervisor (change user roles)
►►► Lead Technologist (view user roles)

Preparation for Testing

- 1) It is recommended to assign one Lead Technologist on each shift to respond to system overrides.
- 2) Print, sign, date, and save an Audit Trail Report for your validation record.

Testing

Sample test scripts will be provided during the implementation of VBECS. Each site must evaluate the intended uses of the software and make appropriate changes (additions or deletions) to the facility's procedures, processes, policies, and test scripts.

You are required to validate your process and how you use the software. You must also validate the software itself. Training users is an integral part of the validation process.

VBECS Forms and Reports

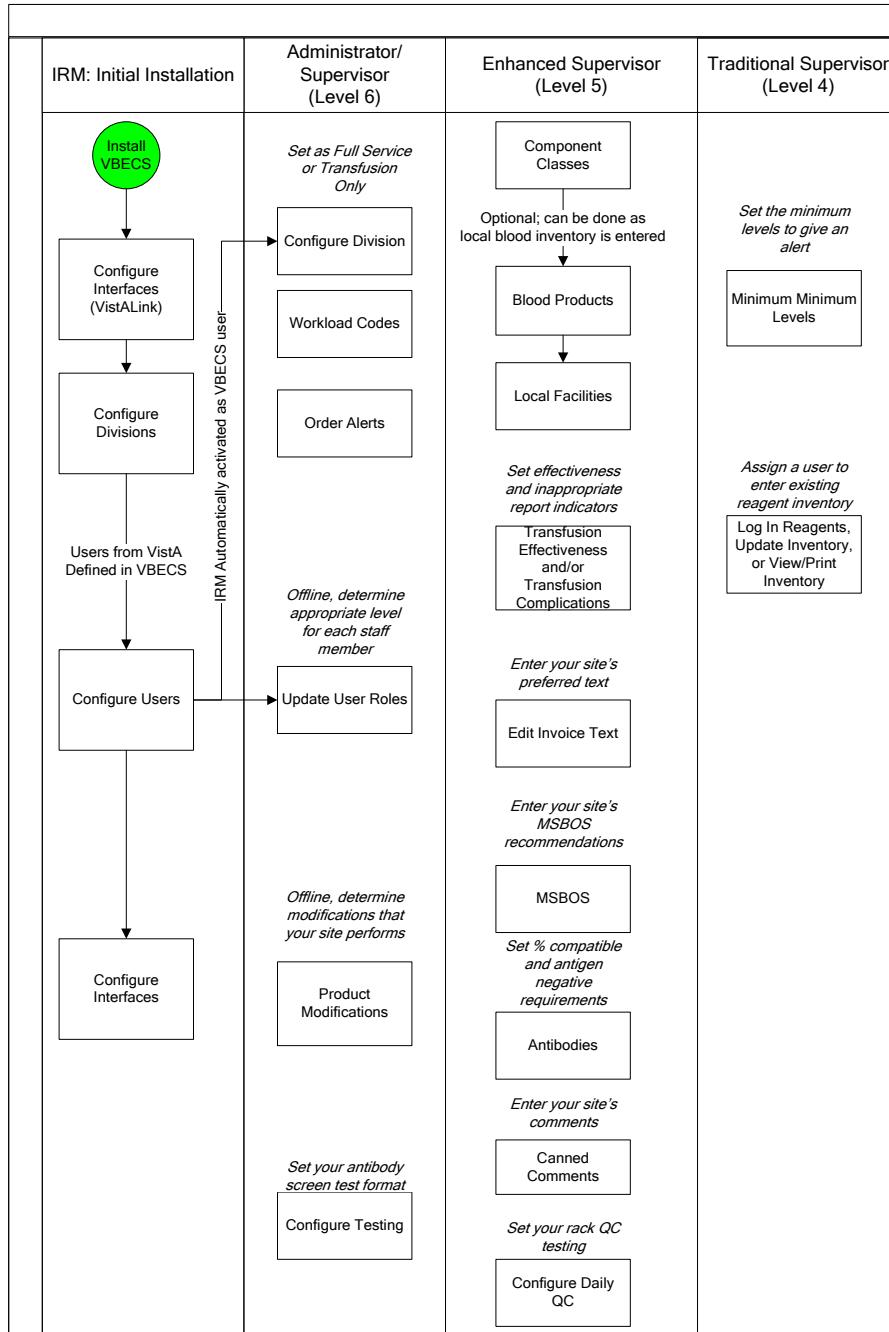
Print and review these reports and forms at the end of validation testing.

- Administrative Data
- Audit Trail
- Blood Availability
- Cost Accounting
- C:T Ratio
- Division Transfusion
- Division Workload
- Exception
- Finalize/Print TRW
- Inappropriate Transfusion Request
- Issued/Returned
- Maintain Equipment (Print)
- Order History
- Patient History
- Print Unit Caution Tag & Transfusion Record Form
- Prolonged Transfusion Time
- Testing Worklist
- Transfusion Complications
- Transfusion Effectiveness
- Transfusion Reaction Count
- Transfusion Requirements
- Unit History
- View/Print Equipment Inventory
- View/Print Inventory (Reagent)
- View/Print Supply Inventory

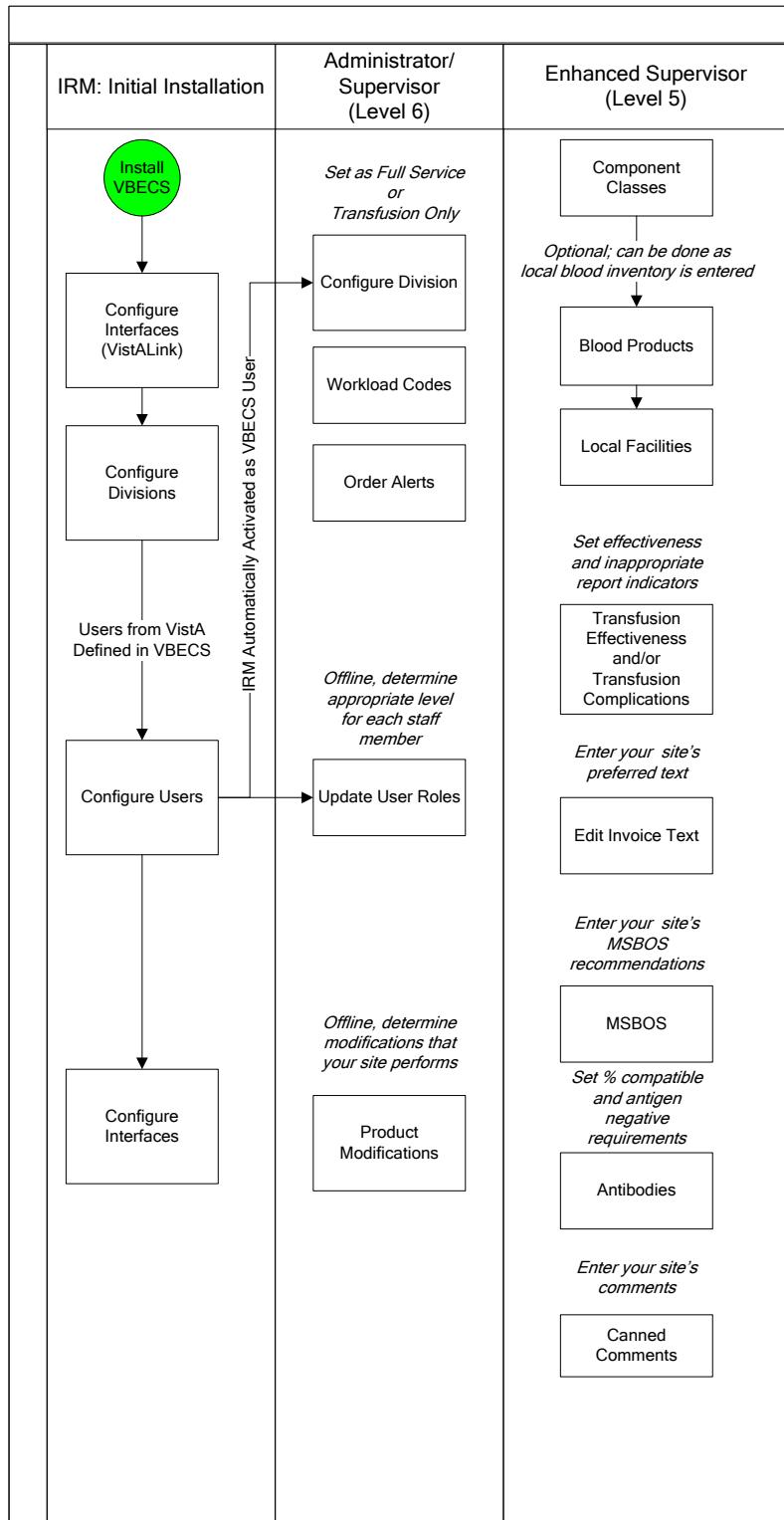
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Appendix G: Work Process Flowcharts

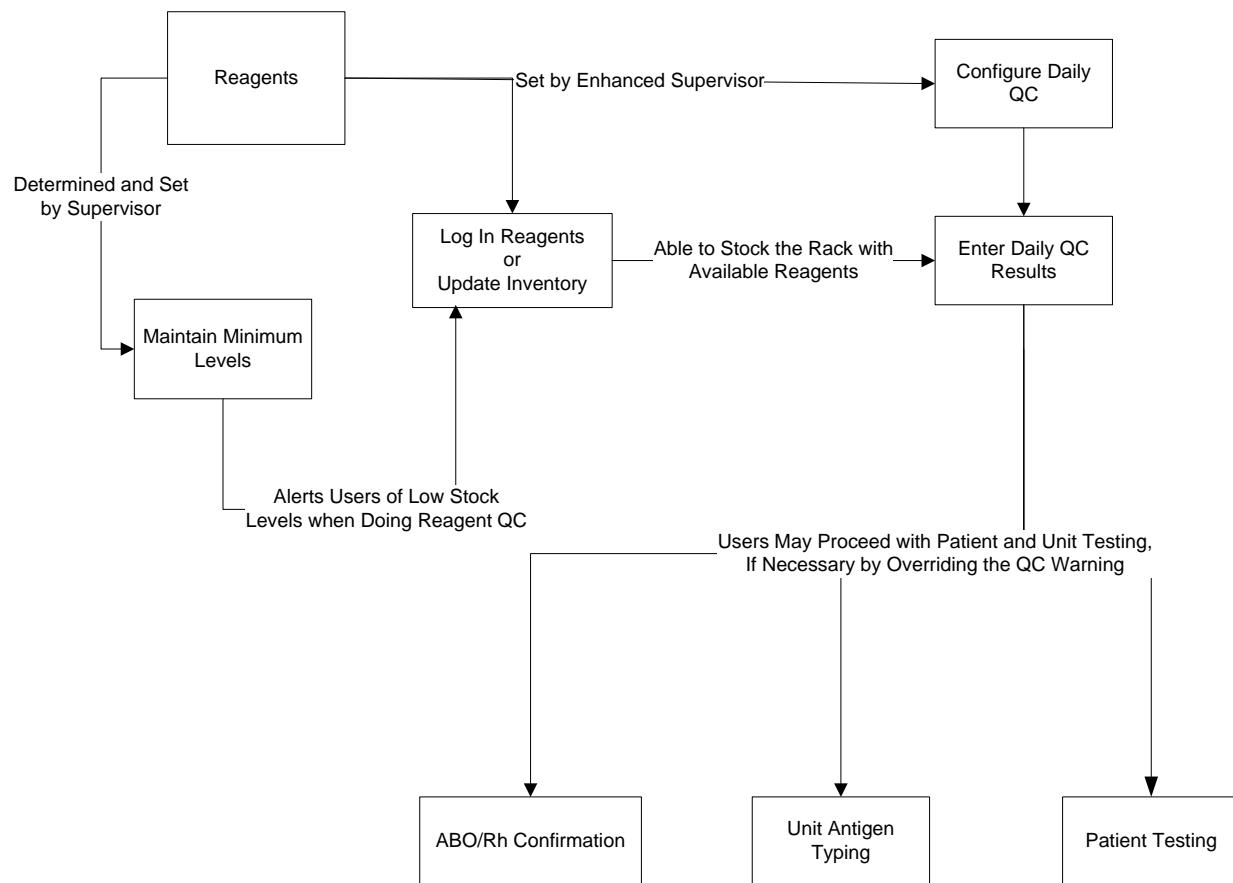
Configure Division Settings: Full-Service Divisions



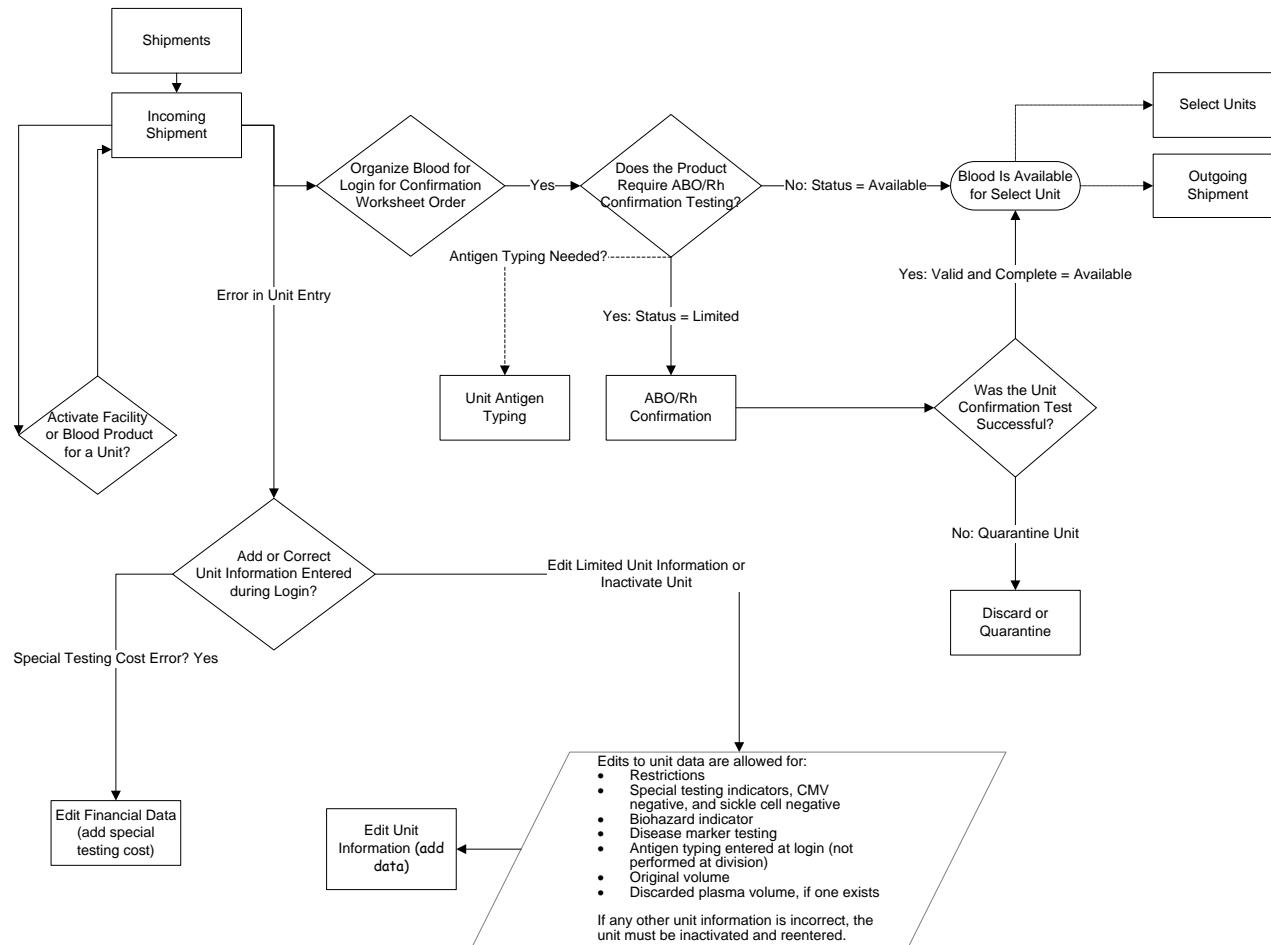
Configure Division Settings: Transfusion-Only Divisions



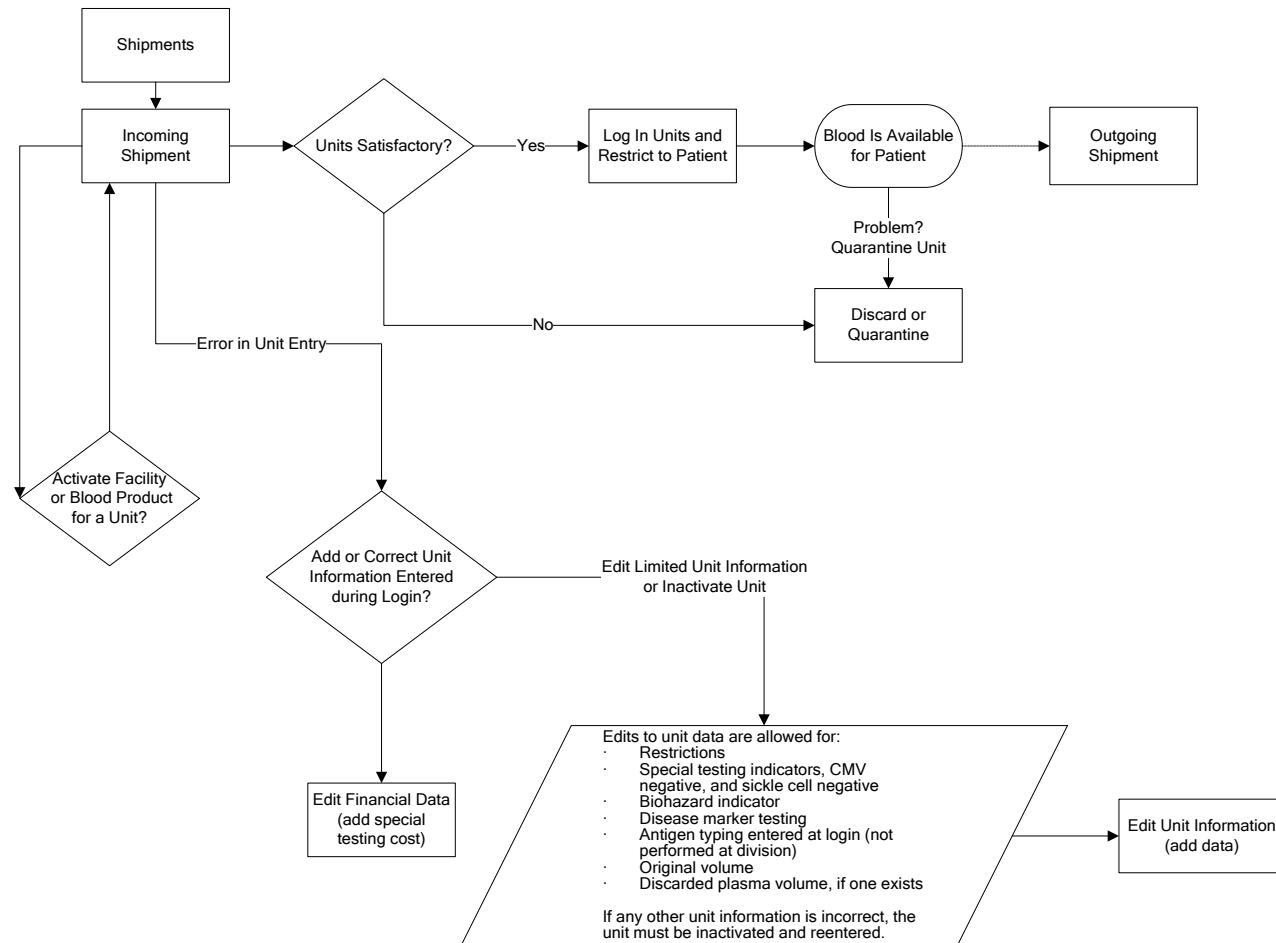
Maintain Reagents and Daily QC: Full-Service Divisions



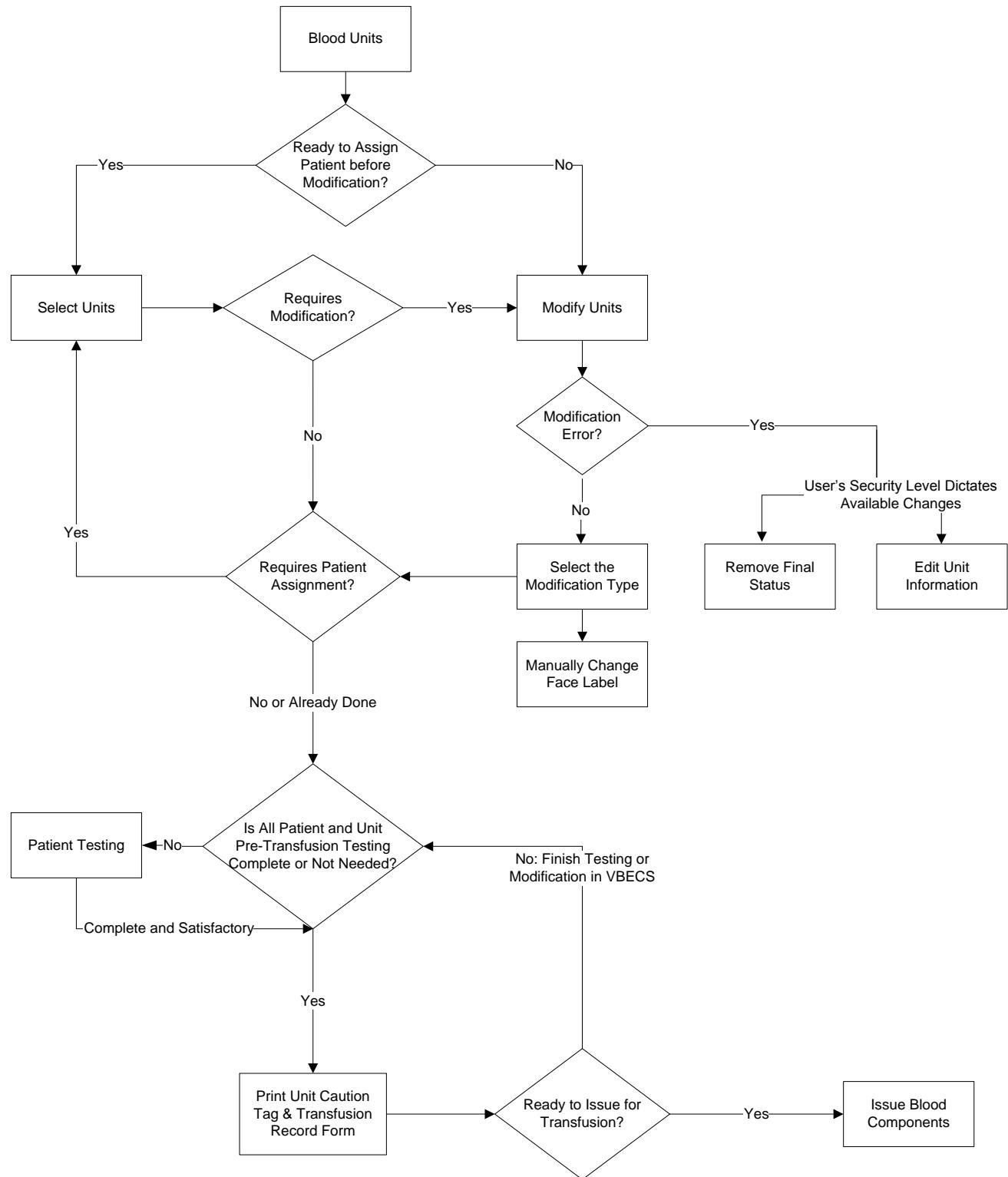
Process Incoming Shipment: Full-Service Divisions



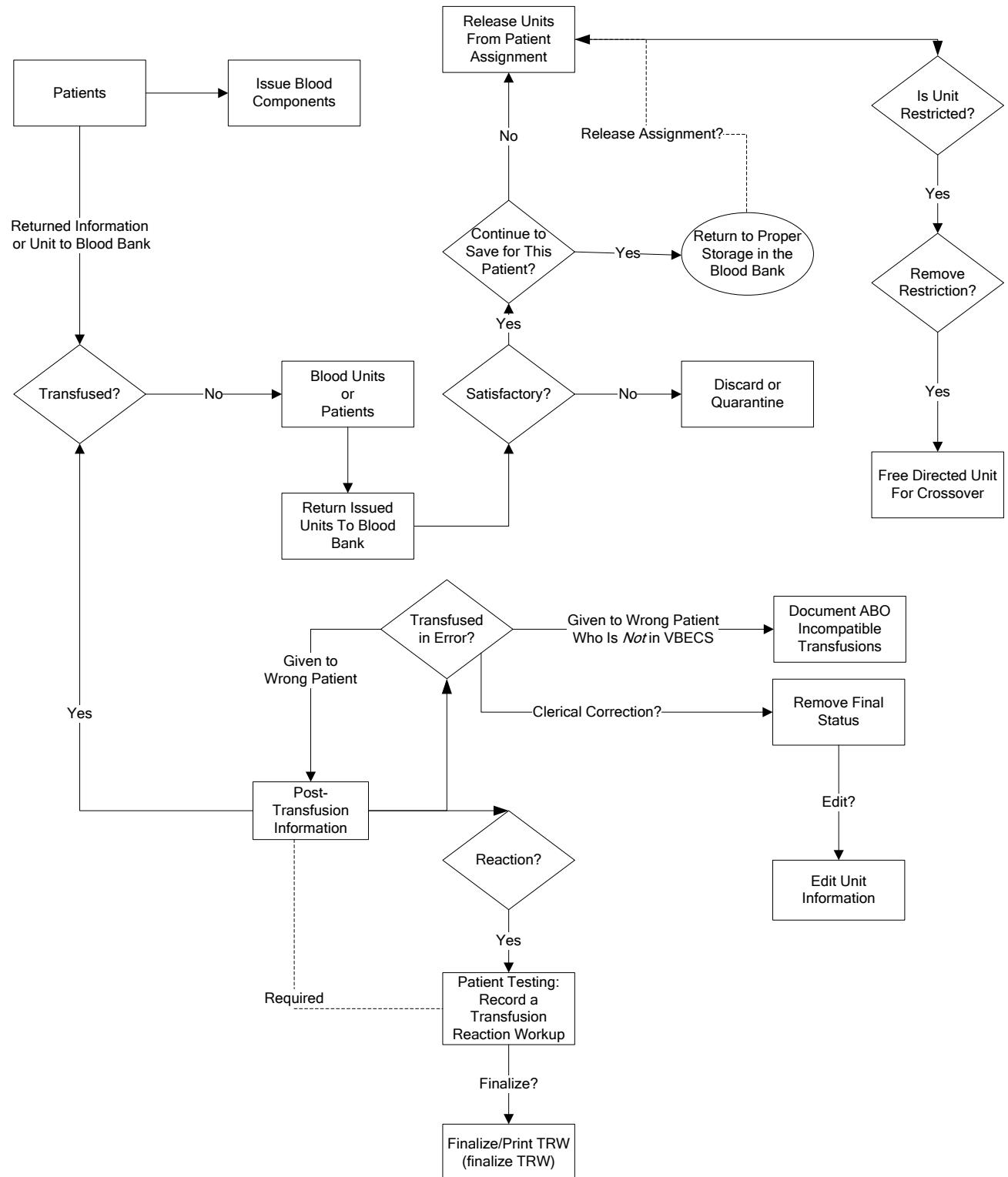
Process Incoming Shipment: Transfusion-Only Divisions



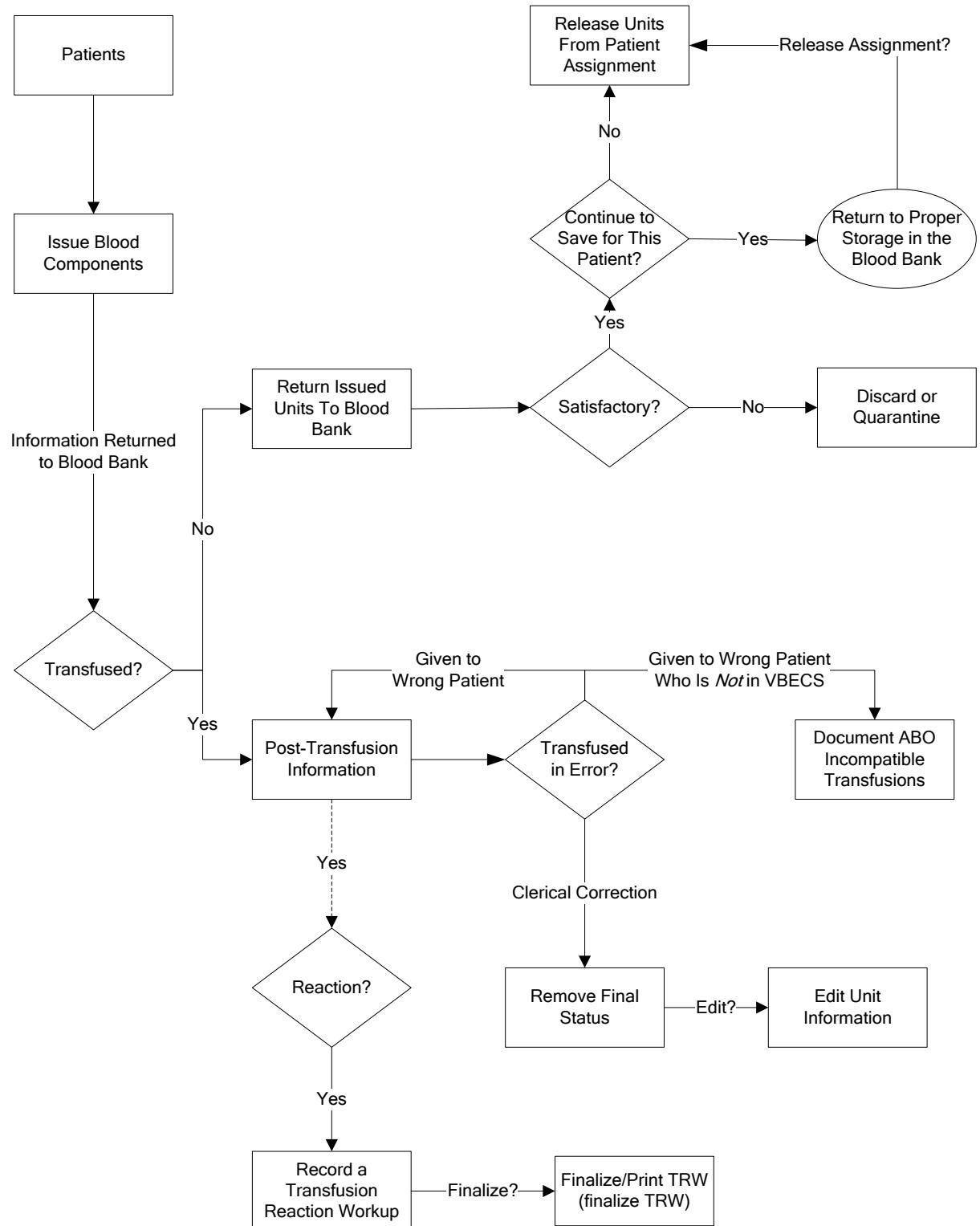
Modify Units



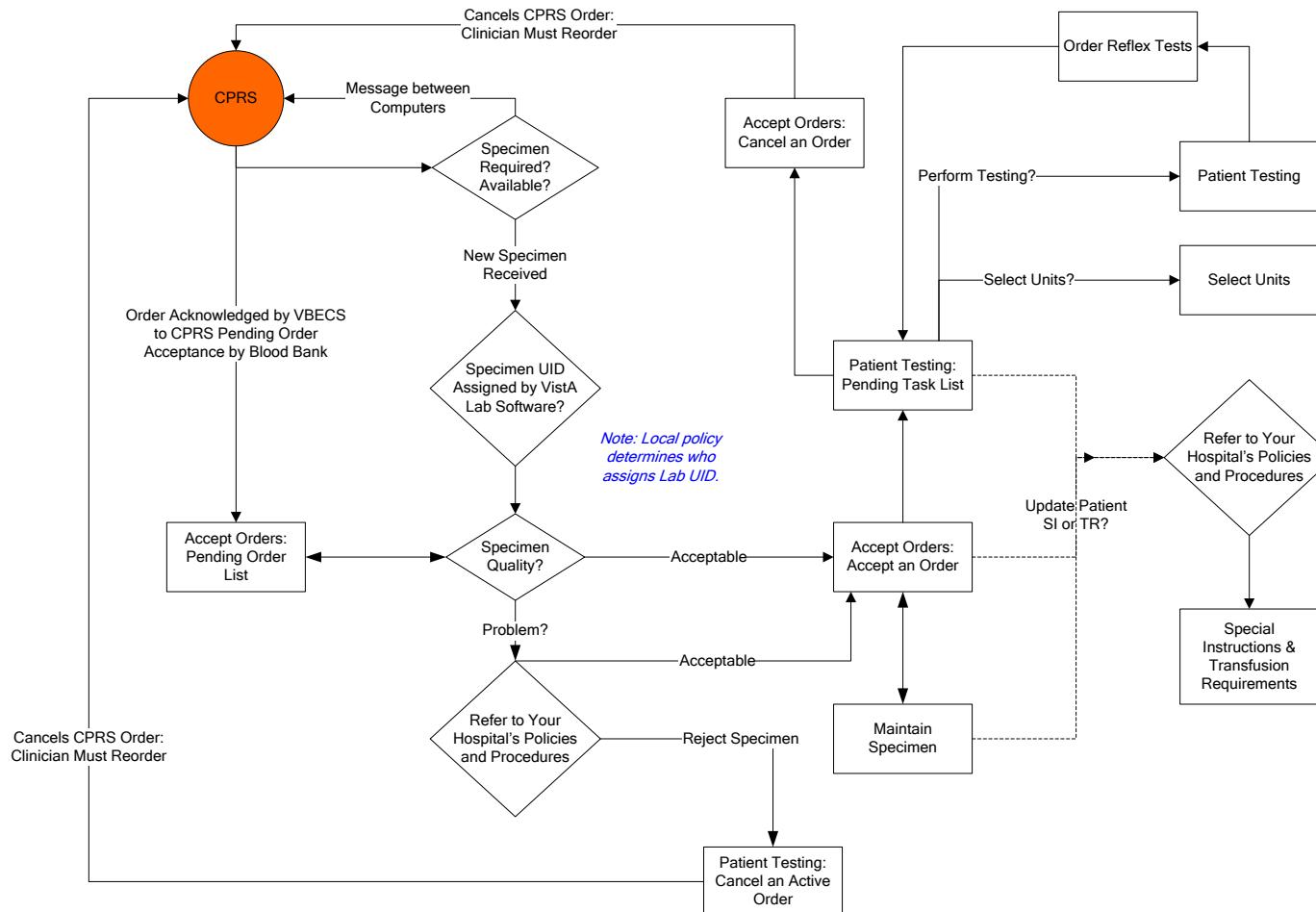
Issue, Return, or Transfuse Units: Full-Service Divisions



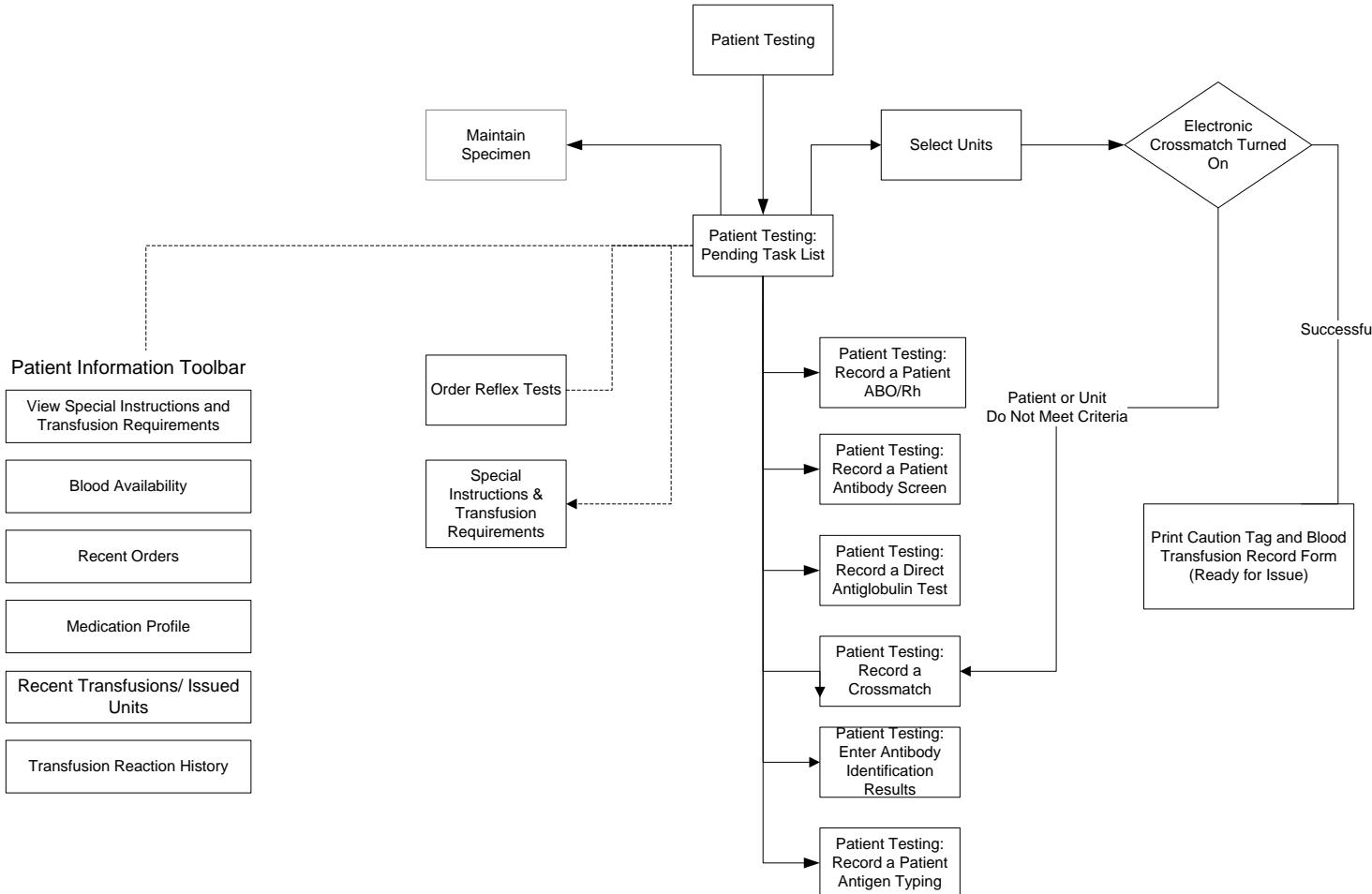
Issue, Return, or Transfuse: Transfusion-Only Divisions



Process a Patient Order



Patient Testing



Appendix H: Recommended Report Usage

Table 35 lists reports, how often to run them, and how to use them. These are recommendations for meeting regulatory requirements. Reports, including the non-individual Blood Availability Report, are available through the Reports menu item. The patient-specific Blood Availability Report is available through the Patients menu item.

Table 35: Recommended Report Usage

Run This Report:	Report Option	Purpose	To Meet Regulatory Requirements:
Daily	Audit Trail	Quality assurance (QA) report details data changes in system.	Print, review, sign, date, and save hard copy.
	Blood Availability	Inventory report	This report may not be needed by transfusion-only or other sites.
	Exception Report	QA report details overrides of system rules processed by users.	Print, review, sign, date, and save hard copy.
	Testing Worklist Report	QA report displays all testing within a division.	Print Patient Testing, Unit testing, Rack QC and miscellaneous reagent QC. Print, review, sign, date, and save hard copy.
Daily or Weekly	Issued/Returned Report	QA report displays all relocation transactions.	Review for anomalies and take corrective action.
Daily, Weekly, and Monthly	Transfusion Requirements Report	A compendium of patient blood types, SIs, and TRs are printed for use during downtime.	<ul style="list-style-type: none"> • Days 1–6: print report daily. • Day 7: print report for previous week; discard daily reports. • Start of month: print report for previous month; discard weekly reports. • Start of year: print report for previous year; discard monthly reports. <p>Generate cumulative reports starting with the date of first data entry through the current date to include all patient records. Store reports so that they are easily accessible.</p>
Weekly	Prolonged Transfusion Time Report	Details units that were not infused within the required time frame.	Generate these reports for blood utilization committee and other quality management activities.
	Transfusion Effectiveness Report	Compares transfusions with user-configured lab data indicators to monitor appropriate blood usage.	
Weekly or Monthly	C:T Ratio Report	Details crossmatch-to-transfusion ratio by physician or treating specialty.	
	Transfusion Complications Report	Compares transfusions with user configured lab data indicators to monitor adverse affects from transfusion.	
	Inappropriate Transfusion Request Report	Details requests for blood products that did not meet the facility's transfusion criteria.	

Run This Report:	Report Option	Purpose	To Meet Regulatory Requirements:
Monthly	Administrative Data Report	Management report details products received, transfused, and returned.	Generate these reports for administrative purposes.
	Cost Accounting Report	Management report of expenditure by invoice number.	
	Division Transfusion Report	Details of units transfused during a selected period.	
	Division Workload Report	Totals workload types for one or all divisions.	
	Transfusion Reaction Count Report	Details transfusion reactions that are ordered, pending, completed, or finalized for one or all divisions.	Generate this report for blood utilization committee and other quality management activities.
As needed	Finalize/Print TRW	Patient Transfusion Reaction Report details a transfusion reaction episode.	Print, review, sign, date, and save hard copy.

Appendix I: Barcode Scanner Configuration and Troubleshooting

Make sure the cord is plugged into the scanner and the computer. Point the scanner at a piece of white paper and squeeze the trigger to verify that the laser works.

For correct barcode scanning results, the Caps Lock key must not be engaged.

 *Never look directly at the laser. Never direct the laser beam toward yourself or another person. Avoid mirror-like surfaces such as glass, metal, watches, jewelry, and other highly reflective materials when directing the laser beam.*

To configure a barcode scanner, scan the barcode in Figure 121. Repeat this process if scanned data are incorrectly displayed on the terminal. Consult the product reference guide or call the VA Service Desk for further assistance.

If your site uses barcode symbology for specimens not covered in these instructions, use the configuration barcodes in the manual included with the scanner.

Figure 121: Barcode Scanner Configuration



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Appendix J: United Blood Services (UBS) Facility Barcodes

The FDA Registration Number barcode on blood unit bags is specific to Scottsdale. When a facility receives blood units from a UBS blood center other than Scottsdale, scan the corresponding barcode in the FDA Registration Number field to record the appropriate information.

Albuquerque (1671462)



Lubbock (1671458)



Billings (1771461)



McAllen (1671454)



Bismarck (1776389)



Meridian (1071460)



El Paso (1671451)



Rapid City (1771468)



Cheyenne (1771470)



Reno (2971465)



Ft. Smith (2371453)



Tupelo (1044534)



Lafayette (2371456)



Ventura (2077574)



Las Vegas (2971457)



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Appendix K: Alerts and Warnings

Message text is listed by the options in which the messages occur. Some messages begin with “{0},” “{1},” etc., placeholders for text that varies. Such messages are listed at the beginning of each option.

Table 36: Alerts and Warnings

Throughout VBECS
{0} appears more than once.
{0} cannot be greater than {1}.
{0} cannot be less than {1}.
{0} is a required field and cannot be left blank.
{0} must be from {1} to {2} characters.
{0} must be from {1} to {2}.
{0} not found.
{0} was not saved: another user may have updated this record. Please exit and reenter this form to refresh the data.
A free-text comment must be entered for {0}.
A valid zip code contains 5 or 9 digits.
An inactivated {0} may not be reactivated.
Cannot create search tool: {0}.
Column {0} was not found in supplied DataRow during a data mapping operation.
Could not connect to the application's database: {0}. Please contact your system administrator.
Could not connect to the application's database: it was not available (unable to retrieve error message; please check application's error log). Please contact your system administrator.
Data error while attempting save: {0}. {1}, {2}.
Data error while attempting update {0} for {1}. {2}.
Data were not saved: another user updated the data in the database. Please open the dialog again to see the updated data.
Database null value cannot be converted to Boolean value.
Error attempting to {0}.
Failure while creating security descriptor for new Win32 mutex.
Global application logon user division code is not set (null or empty).
Insufficient columns for {0}.
Internal error. Unrecognized exception occurred: {0}.
Invalid {0} format.
Invalid {0}: {1}.
Invalid argument value for {0}.
Invalid data loaded from DataRow into business object of type {0} via {1} method. Some business rules are broken.
Invalid ISBT product code.

Throughout VBECS
Invalid key pressed. Please enter a valid choice from the legend at the bottom.
Invalid key pressed. Valid entries are displayed in the legend below.
Lock cannot be processed. The code is missing a LockFunction set in the form's constructor.
More than one table returned {0}.
New instance of {0} class that was never saved cannot be restored from the database.
No records returned {0}.
No tables returned {0}.
Null value was found in cell {0} in a supplied DataRow.
OK to save {0} changes to file?
Please enter valid IP address in 4-octet notation (e.g., 127.0.0.1).
Primary VistA server connection information was not supplied.
Reagent ({0} {1} {2}) was recorded as unsatisfactory during shipment receipt. You are not allowed to use this reagent.
Record already locked by {0} at {1}.
Recoverable exception that should close active dialog/form (e.g. caused by poor VistALink connectivity or DB concurrency violation) occurred when there was no main application window available.
Recoverable exception that should close active dialog/form (e.g., caused by poor VistALink connectivity or DB concurrency violation) occurred when there were no active forms other than the main application window.
Required value with {0} key was not found in application configuration file.
State must be 2 characters.
Stored procedure {0} returned {1} data rows: 1 data row was expected.
Supplied daylight saving type ID ({0}) cannot be converted to enumerated value (value out of range).
System error while attempting retrieve: {0}. {1}, {2}.
System error while attempting save: {0}. {1}, {2}.
System error while attempting to connect to database.
System error while attempting to inactivate tests for unit: {0}. {1}.
System error while attempting to inactivate unit: {0}. {1}.
System error while attempting to inactivate user: {0}. {1}.
System error while attempting update {0} for {1}. {2}.
System failed to schedule the report. This may be a user privilege problem. Please contact your system administrator.
Table Schema mismatch: Initial and Selected tables.
Testing status list: {0}.
The {0} may not be set in the future.
The collection facility with FDA and/or ICCBBA Registration Number {0} is not active. Please activate or re-enter the entry.

Throughout VBECS
The problem occurred while running a report. The Crystal Reports license could not be obtained in a timely manner. Please try running a report again. If the problem persists, contact a System Administrator.
The report is not scheduled to print.
The supplied division code was invalid. Division code must consist of 1 to 6 alphanumeric characters.
The supplied division name was invalid. Division name must contain at least one alphanumeric character.
The unit is in a final status and may not be selected.
The user role for division {0} is already in the collection.
The value entered is invalid. Please enter an integer from {0} to {1}.
The value entered is invalid. Please enter an integer.
There was a network failure that disrupted the VistALink connection. The last form you were working on will be closed. Please reopen the form.
This requirement is a duplicate and will not be added.
Too many records returned {0}.
Unable to create or open Win32 mutex.
Unable to export VistALink configuration from {0} business object: the configuration is invalid.
Unable to generate report: some business rules are broken (count: {0}) for an instance of {1}.
Unable to obtain global synchronization lock: timed out when trying to lock on the Win32 mutex.
Unable to release invalid Win32 mutex.
Unable to save or export to DataRow invalid business object of type {0} (some business rules are broken).
Unexpected exception occurred: {0}. Please refer to application log for more information.
Unit not found. Please reenter unit information.
VistALink connection was closed.
VistALink data access failure: {0}.
You do not have the proper security level to {0}.
You locked this record in another area {0}.
Your lock has expired. The form will now close, please write down any important unsaved data.

ABO/Rh Confirmation
The product type of unit {0}, {1} is not appropriate to perform ABO/Rh confirmation. Please select another unit.

Add/Remove Units from a Pool
{0} not entered. Enter a value or select Cancel.
ABO/Rh confirmation testing not performed on unit {0}, {1}. Testing must be completed before ISSUING any target unit.
Cannot {0} {1}, {2}. Please verify the selected unit and modification type selected.
Cannot modify {0}, {1}. Unit status is {2}.
Failed to match {0} of record. Please verify labeling and reenter, or select Cancel.

Add/Remove Units from a Pool
Modification date/time prior to unit initial receipt date/time; please reenter unit modification date/time.
The original unit is currently assigned to the following patients. To automatically assign the modified unit, select a patient from the list. Unselected patients will be released from the unit.
The original units are currently assigned to the following patients. To automatically assign the pooled unit, select a patient from the list. Unselected patients will be released from the unit.
This supply item was recorded as unsatisfactory during shipment receipt. You are not allowed to use this supply.
Unit {0}, {1} expired: cannot modify.
Unit {0}, {1} is biohazardous. Do you wish to continue with the modification?
Unit {0}, {1} is expired. Please verify to continue, or cancel to correct the entry information.
Unit {0}, {1} must be released from quarantine before proceeding. Do you wish to release the unit from quarantine?
Unit {0}, {1} must be released from quarantine before proceeding: cannot modify.
Unit {0}, {1} out date is out of approved range for this blood product, do you wish to continue?
Unit {0}, {1} outdate is out of the approved range for this blood product. Please re-enter the unit expiration date.
Unit is unacceptable for transfusion. Releasing all patient assignments and quarantining the unit.
Unit not found. Please reenter unit information.

Blood Products
{0} must be activated for your division to make it an active product supplier.
Unable to inactivate the product type or supplier: there are in-date products for the supplier.

CPRS, HL7
Data error while trying to retrieve {0}, {1}, {2}.

Discard or Quarantine
{0} was updated {1}. Please check the date/time you have entered as it is before this action and disallowed.
{0} was updated {1}. Please check the date/time you have entered as it is before this action and normally disallowed. To continue requires a comment and will generate an exception report entry. Continue, yes or no?</value>
Unable to quarantine unit {0}: already in quarantine.
Unable to release from quarantine: unit {0} not in quarantine.
Unit {0} has an antigen typing conflict on file. This must be resolved before the unit can be released from quarantine.
Unit {0} has an inconsistent ABO/Rh confirmation on file. This must be resolved before the unit can be released from quarantine.
Unit {0} is in final status and cannot be selected.
Unit not found. Please reenter unit information.

Document ABO Incompatible Transfusions

The amount transfused may not exceed original unit volume of {0} mL.

The amount transfused must be greater than 0 mL.

Unit not found. Please reenter unit information.

Edit Invoice Text

Invoice text update failed. Please retry.

Edit Unit Information

Current antigen type does not match previously recorded antigen type (login, update, or test). This must be resolved before this unit can be used. Unit has been quarantined.

Inactivate active unit tests before you deactivate the unit.

Inactivation comment is required.

Unit currently assigned to a patient. You must release unit from the patient before proceeding.

Unit has been assigned a final status. Cannot edit/inactivate information.

Unit has previous history of patient assignment. You cannot modify this unit.

Unit not found. Please reenter unit information.

Equipment: Maintain Equipment

System error while trying to save {0}.

Finalize Transfusion Reaction Workup Report

System error while trying to save {0}.

Finalize/Print TRW

Transfusion Reaction Workup Reports cannot be finalized until the Medical Director name is entered in the system.

Free Directed Unit For Crossover

Unit not found. Please reenter unit information.

Incoming Shipment

ABO/Rh code not found.

At least 8 characters must be entered for an ISBT product code.

Blood unit {0}, {1}, already exists in the division. Please enter a different unit ID.

Click to add unit to list.

Invalid ABO/Rh

Invalid Codabar product code.

Invalid date.

Incoming Shipment
Product barcode type does not match shipment type.
Product not active for shipper.
Select disease marker testing status.
Select donation type of the selected unit.
The blood unit already exists in the division.
The collection facility with FDA and/or ICCBBA Registration Number {0} does not exist. Please create new collection facility or reenter the data.
The unit cannot be added: ABO/Rh and/or expiration dates do not match.
The unit ID entered is not correct.
The unit ID is not consistent with the check character.
Unit cannot be processed: no patient found.
Unit expiration date post-dates acceptable maximum storage time for this product. Correct the entry.
You do not have the proper security level to add a blood product. Enter an existing product code or contact your system administrator.
You do not have the proper security level to add a new collection facility.
You must supply a valid unit ID and product code before selecting a patient.
Your site was changed to "transfusion only." A "restricted for" patient is required.

Issue Blood Components
ABO/Rh on current specimen does not agree with historical ABO/Rh.
ABO/Rh testing must be performed on the current specimen before any selected units can be issued.
More restricted units were not selected for the patient.
Patient is Rh negative and the selected unit is Rh positive. Check patient sex and hospital policy before continuing.
Patient requires CMV Negative blood. Selected unit is not CMV Negative. You do not have proper security to select this unit.
Patient requires CMV Negative blood. Selected unit is not CMV Negative.
Selected blood unit must be thawed and may require additional processing prior to issue.

Justify ABO/Rh Change
ABO/Rh on current specimen does not agree with historical ABO/Rh.
An error occurred while trying to update {0}.
This patient had a previous ABO/Rh discrepancy of {0}. Perform ABO/Rh on the current specimen to continue using normal rules and policies or follow emergency issue rules and policy as related to patient ABO/Rh retrieval and blood compatibility.

Local Facilities
Unable to inactivate the product type or supplier: there are in-date products for the supplier.

Log Into VBECS and VistA
Active security roles are not configured for you for any VBECS division. This may occur when division is inactivated. Please contact your system administrator.
Another instance of VBECS is already running. User is allowed to run only one instance of the application in session.
At least one application dialog cannot be closed. Please close all application dialogs before changing division.
New Verify and/or Access Codes do not match. Please reenter codes.
Only one {0} may be entered to separate Access and Verify Codes.
Security roles are not configured for you for any VBECS division. Please contact your system administrator.
The operation could not be completed: VistALink was unavailable. Please try again later.
User is not authorized to access division with code {0} or division does not exist.
VBECS cannot be started: a VBECS Administrator application is running in single-user mode (Configure Interfaces and Configure Divisions options). Please contact your system administrator to shut down VBECS Administrator.
VBECS division you are logged into (code {0}) is not available for you in VistA: unable to perform VistA logon. Please contact your system administrator.
VBECS logon error occurred: {0}{1}.
VistA server was locked out: too many logon attempts (server message: {0}). If you forgot your Access or Verify Code, please contact your system administrator. If this happened by accident, please wait a few minutes and try again. (VistALink logon will be invoked when you try to access a function using VistALink.)
You cannot log on: application's {0} Windows user group does not exist on the server. Please contact your system administrator to create the group and add your account to it.
You cannot log on: you are not a member of the {0} Windows user group. Please contact your system administrator to add your account to the group.
Your role within the division {0} was inactivated. Please contact your system administrator.
Your user record was inactivated. Please contact your system administrator.
Your user record was not found in the VBECS database. Please contact your system administrator.
Your VistA user DUX reported by the VistA server ({0}) does not match the DUX in the VBECS database ({1}). This may happen when you log onto VistA with another user's Access and Verify Codes. Please try your own Access and Verify Codes and contact your system administrator if you receive another error message.

Maintain Specimen
The selected specimen is for {0}, {1} and may not be associated with {2}, {3}.
The selected specimen is not maintainable.

Medication Profile
End date cannot precede start date. Please select a start date that precedes the end date.

Modify Units
A unit matching {0}, {1} already exists in the system. The pooled unit ID changed to {2}.
Blood unit {0}, {1}, already exists in the division. Selected unit cannot be modified at this time.
Invalid product code.

Modify Units
To modify units, a local supplier must be associated with your current division. Please contact your system administrator.
Your division is not defined as a facility. Please contact your system administrator.

Modify Units: Pool Units
{0} not entered. Enter a value or select Cancel.
Blood unit {0}, {1}, already exists in the division. Please enter a different unit ID.
Cannot {0} {1}, {2}. Please verify the selected unit and modification type selected.
Cannot modify {0}, {1}. Unit status is {2}.
Failed to match {0} of record. Please verify labeling and reenter, or select Cancel.
Modification date/time prior to unit initial receipt date/time; please reenter unit modification date/time.
Selected unit expiration date is earlier than the pool creation date. Please verify to continue or cancel.
Selected unit expiration date is earlier than the pool expiration date. Please verify to continue or cancel.
This supply item was recorded as unsatisfactory during shipment receipt. You are not allowed to use this supply.
Unit {0}, {1} expired: cannot modify.
Unit {0}, {1} is biohazardous. Do you wish to continue with the modification?
Unit {0}, {1} is directed to a patient different from the other members of the pool and cannot be selected for pooling.
Unit {0}, {1} is donation type Autologous and cannot be selected for this pool.
Unit {0}, {1} is expired. Please verify to continue, or cancel to correct the entry information.
Unit {0}, {1} is not a type of {2}. Please enter a new unit.
Unit {0}, {1} is not of the same donation type and may not be selected for pooling.
Unit {0}, {1} must be released from quarantine before proceeding. Do you wish to release the unit from quarantine?
Unit {0}, {1} must be released from quarantine before proceeding: cannot modify.
Unit {0}, {1} out date is out of approved range for this blood product, do you wish to continue?
Unit {0}, {1} outdate is out of the approved range for this blood product. Please reenter the unit expiration date.
Unit {0}, {1} was already split and cannot be pooled.
Unit {0}, {1} will cause the pooled units' product type to change and cannot be selected for this pool.
Unit is unacceptable for transfusion. Releasing all patient assignments and quarantining the unit.
Unit not found. Please reenter unit information.
Unit was already edited.
You cannot remove all the original pooled units.

Modify Units: Split a Unit
{0} not entered. Enter a value or select Cancel.
ABO confirmation testing is required for unit {0}.

Modify Units: Split a Unit
ABO/Rh confirmation testing not performed on unit {0}, {1}. Testing must be completed before ISSUING any target unit.
Cannot modify {0}, {1}. Unit status is {2}.
Failed to match {0} of record. Please verify labeling and reenter, or select Cancel.
Modification date/time prior to unit initial receipt date/time; please reenter unit modification date/time.
Rh confirmation testing is required for unit {0}.
The original unit is currently assigned to the following patients. To automatically assign the modified unit, select a patient from the list. Unselected patients will be released from the unit.
The original units are currently assigned to the following patients. To automatically assign the pooled unit, select a patient from the list. Unselected patients will be released from the unit.
The selected blood unit was split and cannot be split again.
The selected unit does not have enough volume to split.
This supply item was recorded as unsatisfactory during shipment receipt. You are not allowed to use this supply.
Unit {0}, {1} expired: cannot modify.
Unit {0}, {1} is biohazardous. Do you wish to continue with the modification?
Unit {0}, {1} is expired. Please verify to continue, or cancel to correct the entry information.
Unit {0}, {1} must be released from quarantine before proceeding. Do you wish to release the unit from quarantine?
Unit {0}, {1} must be released from quarantine before proceeding: cannot modify.
Unit {0}, {1} out date is out of approved range for this blood product, do you wish to continue?
Unit {0}, {1} outdate is out of the approved range for this blood product. Please re-enter the unit expiration date.
Unit is unacceptable for transfusion. Releasing all patient assignments and quarantining the unit.
Unit not found. Please reenter unit information.

MSBOS
The {0} surgery has component classes defined and, therefore, cannot be changed to Type & Screen. To change to Type & Screen, inactive and create a new Type & Screen surgery with the same name.

Order History Report
End date cannot be earlier than start date.
Start date cannot be later than end date.

Order Reflex Tests
Cannot perform weak D testing on an Rh positive patient.
Crossmatch test must be associated with an unexpired specimen with a valid phlebotomist.

Outgoing Shipment
Confirm shipment attempt when "ready" not indicated.
Invalid data present on this invoice. Item is not selectable.

Outgoing Shipment
Invoice {0}.
Required data not present in selected item.
Unit could not be added due to a system error.
Update failed: another user already updated these items.
User does not have the proper security level.

Patient Merge
Acknowledgment of this message means you viewed the patient merge records. The alert for this merge event will not be shown again.
There are blood units assigned to the merged patients. Release all unit assignments prior to merging the patient records.

Patient Testing
Units were emergency issued. Notify the physician of this potential problem IMMEDIATELY, per hospital policy!

Patient Testing: Pending Task List
The last two ABO/Rh test results for this patient don't match. To proceed with a new ABO/Rh test, justify the patient's ABO/Rh or invalidate one of the discrepant test results.
You cannot select two tasks of the same type for the patient.

Patient Testing: Record a Crossmatch
Interpretation does not match your results. Please correct.
Patient is not eligible for IS-only crossmatch. Enter test results for other phases.

Patient Testing: Record a Direct Antiglobulin Test
Invalid entries. Repeat your test or correct entries.

Patient Testing: Record a Patient ABO/Rh
Test results do not create a valid ABO/Rh typing and interpretation. Enter a comment to keep these results or click Cancel to reenter your interpretation. Refer to local policy.

Patient Testing: Record a Transfusion Reaction Workup
Invalid Codabar product code.
Unit not found. Please reenter unit information.

Print Unit Caution Tag & Transfusion Record Form
At least one form could not be printed. Please make sure the printer is configured and running.
The IP address and port number for the label printer were not specified.
This unit cannot be issued normally, but does not qualify for emergency issue.

Remove Final Status

The following target unit(s) must be invalidated prior to removing the modified status of this unit: {0}.

The unit has no previous unit status on file and cannot be selected.

The unit is not in a final status, has not been modified, and cannot be selected.

Unit not found. Please reenter unit information.

Return Issued Units To Blood Bank

Unit has been out of controlled storage for more than 30 minutes. Check division policy for unit acceptability.

Unit is not currently issued.

Unit not found. Please reenter unit information.

Select Units

A valid, unexpired specimen for compatibility testing is required to fill this order.

ABO/Rh justification. Type specific appropriate? Consult local policy and possibly Medical Director.

ABO/Rh on current specimen does not agree with historical ABO/Rh.

ABO/Rh testing must be performed on the current specimen before any selected units can be issued.

ABO/Rh testing must be performed on this patient before any selected units can be issued. If this is an emergency, use the emergency issue option.

ABO/Rh testing was not performed on this patient.

An autologous, directed, or allogeneic unit may not be removed before all others are removed.

More restricted units were not selected for the patient.

Original and repeat ABO/Rh interpretations do not match.

Patient has history of {0} negative requirement. Unit {1} does not have a negative test for this antigen. You do not have the proper security to select this unit.

Patient has history of {0} negative requirement. Unit {1} is positive or inconclusive for this antigen.

Patient has history of {0}. Unit {1} does not have a negative test for the corresponding antigen. You do not have the proper security to select this unit.

Patient has history of {0}. Unit {1} is positive or inconclusive for the corresponding antigen.

Patient is Rh negative and the selected unit is Rh positive. Check patient sex and hospital policy before continuing.

Patient requires CMV Negative blood. Selected unit is not CMV Negative. You do not have proper security to select this unit.

Patient requires CMV Negative blood. Selected unit is not CMV Negative.

Selected blood unit must be thawed and may require additional processing prior to issue.

Selected unit is biohazardous.

Selected unit not in same division.

Selected unit not valid for order.

This order must be emergency issued. This unit doesn't qualify for emergency issue and may not be selected.

Select Units
This patient had a previous ABO/Rh discrepancy of {0}. Perform ABO/Rh on the current specimen to continue using normal rules and policies or follow emergency issue rules and policy as related to patient ABO/Rh retrieval and blood compatibility.
This unit does not currently satisfy all of the patient's {0} Transfusion Requirements. Further processing is needed. Continue to select this unit?
This unit has a status of {0} and cannot be selected.
This unit is currently assigned to one or more patients.
Unit ABO/Rh confirmation was not performed or is incomplete. Unit may not be selected.
Unit already selected for this patient.
Unit does not satisfy the patient's antigen negative requirements for {0}. Unit must be typed and found negative to be available for the patient.
Unit is currently included on a pending outgoing shipment invoice. It must be removed from this shipment invoice before it can be selected.
Unit is expired.
Unit is expired. You do not have the proper security to select this unit.
Unit is not ABO compatible for this patient.
Unit is not ABO compatible for this patient. You do not have the proper security level to select this unit.
Unit is not in blood bank. This unit cannot be selected.
Unit is quarantined. This unit cannot be selected.
Unit is reserved for a different patient. This unit cannot be selected.
Unit not compatible for this patient and may not be selected.
Unit not found. Please reenter unit information.
Unit was previously incompatible with this patient.

Special Instructions & Transfusion Requirements: Enter a Transfusion Requirement
This Special Instruction originated in another division and may not be inactivated.
This Transfusion Requirement is the result of a test and may not be inactivated here.

Unit Antigen Typing
An error occurred while the user was trying to invalidate {0}.
An error occurred while trying to update {0}.
Cannot create {0} search tool.
Cannot perform weak D testing on Rh positive units.
Only WHOLE BLOOD, RED BLOOD CELLS, and APHERESIS RED BLOOD CELLS may be selected.
Unit was issued and results indicate a possible patient conflict. Notify the physician of this potential problem IMMEDIATELY, per hospital policy!

Unit History Report

Unit not found. Please reenter unit information.

Update User Roles

You are trying to remove the last Administrator/Supervisor for your division, which would disallow system configuration in the future. You may not proceed.

View Special Instructions and Transfusion Requirements

The patient information you requested is currently in use by {0} and cannot be viewed.

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