Department of Veterans Affairs

**Automated Surgical Risk Calculator (ASRC)**

User Guide



**June 2015**

Version 2.5

Revision History

| Date | Rev | Description | Author |
| --- | --- | --- | --- |
| 11/20/2014 | 1.0 | Creation | B. Frey |
| 11/21/2014 | 1.1 | Tailored for ASRC and provided guidance for:  Login and system exit  Selecting surgical specialty  Manually entering gender  Manually entering age  Selecting a surgical procedure | B. Frey |
| 11/21/2014 | 1.2 | Technical Writer Review | S. Vetzel |
| 12/17/2014 | 1.3 | Updated to include the following:  Pop-up list Variables (e.g., Procedure)  Manual Entry Variables (e.g., Age)  Checkbox Variables (e.g. DNR)  Radio Button Variables (e.g., Functional Status)  Custom Variables | B. Frey |
| 12/17/2014 | 1.4 | Technical Writer Review | S. Vetzel |
| 01/25/2015 | 1.5 | Updated surgical procedure selection screenshot and added a description of the CPT code search feature. | B. Frey |
| 02/23/2015 | 1.6 | Updated to include  launching the ASRC application from the CPRS Tools Menu  Sharing Patient Context with CPRS  Model Calculation | B. Frey |
| 02/24/2015 | 1.7 | Technical Writer Review | S. Vetzel |
| 03/23/2015 | 1.8 | Updated to include automatically retrieved values from VistA. | B. Frey |
| 03/23/2015 | 1.9 | Technical Writer Review | S. Ambrose |
| 04/20/2015 | 2.0 | Updated to include re-run calculation with modified inputs and signing the risk calculation and saving the result as a TIU note | S. Ambrose |
| 04/21/2015 | 2.1 | Technical Writer Review | B. Frey |
| 05/18/2015 | 2.2 | Updated Administrative functions. Added saving calculation results to SURGICAL RISK CALCULATIONS FILE (#136.1). | B. Frey |
| 05/18/2015 | 2.3 | Technical Edit | S. Ambrose |
| 06/15/2015 | 2.4 | Updated to include new Procedure search functions and new administration features | B. Frey |
| 06/15/2015 | 2.5 | Technical Edit | S. Ambrose |

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# Introduction

## Purpose

The ARSC User Guide will provide a reference for users of the “Automated Surgical Risk Calculator Tool” being developed as a Veterans Administration (VA) Innovations program.

The purpose of this document is to provide clear and easy to follow instructions and associated screen shots to facilitate sufficient understanding to effectively use the ASRC tool. The User Guide will reflect updates as new functionality is developed and is accessible to system users.

## Overview

The tool is used at the time the patient is considered for surgical referral by a primary care provider, and when a surgeon is requesting a surgery. This Tool will support clinical decision-making regarding perioperative risk (includes preoperative, intraoperative, and postoperative). Providers will verify patient-specific data that is automatically pulled from available data sources, enter remaining fields, and be provided with a real-time individual risk calculation of perioperative surgical mortality based on historic Veterans Affairs Surgical Quality Improvement Program (VASQIP) data and current VASQIP risk-adjusted models that are specialty-specific. The data entered and the calculated results will be available for viewing in the Computerized Patient Record System (CPRS) as a progress note. The data will also transfer and store as discrete fields in Veterans Health Systems and Technology Architecture (VistA) and a Structured Query Language (SQL) database for use by the National Surgery Office (NSO).

### Major Functions

The ASRC Tool has the following Major Functions/Features

* Accessible through CPRS
* Automatic Patient and User Context (Not implemented) sharing with CPRS
* Selection of Surgical Specialties
* Pop-up list selection of Current Procedural Terminology (CPT) codes with long description and Relative Value Unit (RVU). Search for Procedure includes “All of these words”, “Any of these words”, and “CPT Search”.
* Manual entry of variables such as Age and BMI
* Check Box entry of variables such as DNR
* Radio Button selection of variables such as Functional Status
* Administrator access provided to add and modify surgical risk model variable names, help text, variable grouping, and VistA retrieval
* Automatic retrieval of values from VistA
* TIU Note saved with model calculation inputs and results available in CPRS
* Associated patient, CPT code, date and time of calculation, user, and actual outcome results from the calculation saved as discrete data in SURGICAL RISK CALCULATIONS FILE (#136.1)
* Model Input variable reuse through a button on the Results page

### Characteristics

The Automated Surgical Risk Calculator (under development in the VA’s Future Technology Lab (FTL)) is:

* a web-based application with a simple Graphical User Interface
* Integrated with VistA and CPRS
* a decision support system providing calculated surgical risk using NSO approved and validated risk models

## Project References

The reference document for the ASRC Tool is the VA’s Transformation Twenty-one Total Technology (T4), Automated Surgical Risk Calculator Performance Work Statement (PWS), executed out of the National Surgery Office (NSO) and Dated, 08-31-2014 (TAC-14-16044).

### Contact Information

Primary development Team Points of Contact (POC),

* David Tombs, JAVA Developer, 321.608.0919, [David@libertyITS.com](mailto:David@libertyITS.com)
* Jeff Swesky, VistA Developer, 904.207.8560, [Jeff.Swesky@hp.com](mailto:Jeff.Swesky@hp.com)
* Bill Frey, Tester, 321.608.0924, E: [Bill.Frey@libertyITS.com](mailto:Bill.Frey@libertyITS.com)

### Help Desk

Although there is not a Help Desk established for the ASRC Innovations program, members of the development team may be contacted with system operation/function questions. The POC recommended for the initial call is Bill Frey (Tester).

# System Summary

## System Diagram and Data Flows

Figure 1 shows a simplified diagram of the ASRC system components and data flow. Whereas CPRS displays, please note that its integration is a future enhancement.

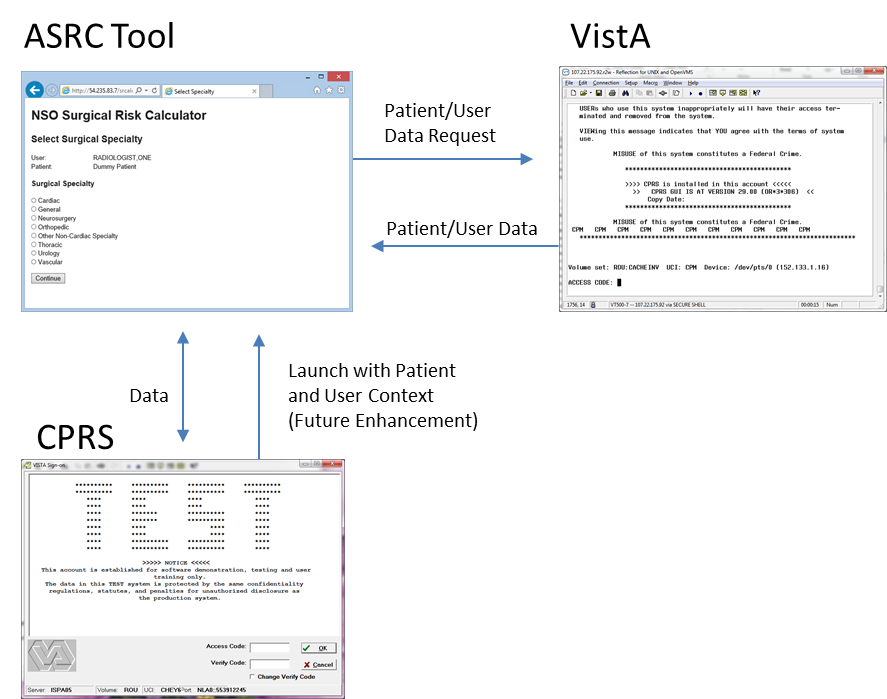


Figure - ASRC System Diagram and Data Flow

## User Access Levels

There is no user access restrictions placed on the ASRC Tool during development. When the tool becomes operational, access will be limited to those that can access CPRS.

# Getting Started

## Logging On

To access the ASRC tool (also referred to as the ASRC application) login into CPRS (as of 2/23/2015 only available in the VA’s Future Technology Lab (FTL)) and launch ASRC from the CPRS Tools Menu. Access to the VA’s FTL is required. During the ASRC program development phase, please contact a representative of the development team as detailed in section 1.3.1 of this manual.

At the ASRC login screen (Figure 2) enter a valid DUZ number (Radiologist = 11716) in the User: field. This is a temporary login approach until User context sharing with CPRS is established.

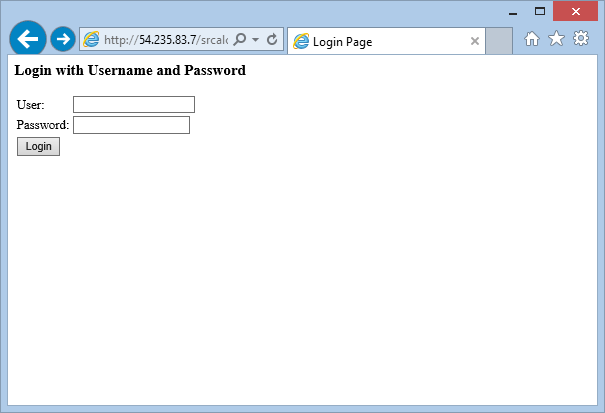


Figure - ASRC Login Screen

### CPRS Patient Context Sharing

The patient selected, as part of the “Login” to CPRS, is automatically shared with the ASRC Application so that the user does not need to look up the patient from within the tool. The patient’s name selected in CPRS is shown as the “Patient” in ASRC and all data retrieved from VistA will be associated with this patient. If a new patient is selected in CPRS while the ASRC tool is already displaying another patient, the previously selected patient (and any already entered data) will be retained. However if ASRC is launched again after the selection of a new patient, that new patient will now be the active, displayed patient.

## Select Surgical Specialty Menu

Select a Surgical Specialty as shown in Figure 3 below. Please note that this screen may reflect updates as the program progresses but should still provide a good reference until the User Guide is updated to support the next version of the tool.

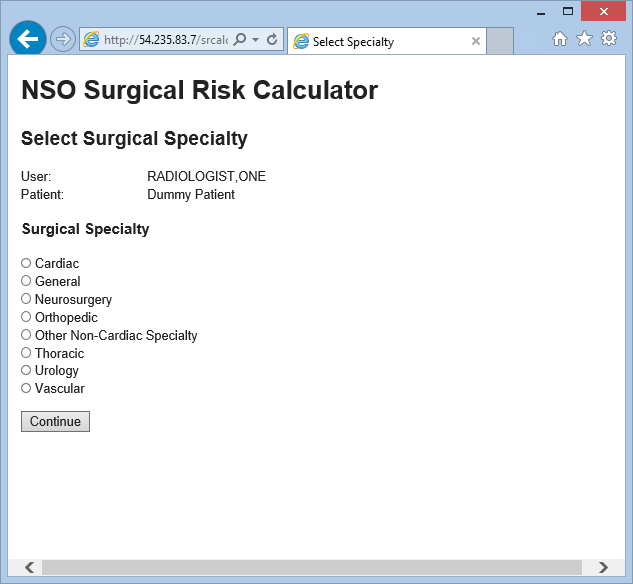


Figure - Select Surgical Specialty

## Risk Variable Entry

In order to run risk calculations there are surgical specialty and risk model dependent variables that need to be entered. This section provides guidance for the different variable types that are available.

### Pop-up Selection List Variables

Currently only the surgical procedure is selectable from a pop-up list. Any future pop-up selection variables will work in the same manner.

#### Surgical Procedure Selection

To select a surgical procedure click on the Procedure “Select” Link (available only on the non-cardiac surgical specialties). The below pop-up window is displayed (Figure 4). Scroll through the available codes, select the CPT code by clicking the “Select” link located to the right of the desired code. The selected CPT code & short description will display on the surgical specialty screen.

#### Procedure Searching

Search for Procedures by using three different methods simultaneously or individually:

* “All of these words” - results include every word entered in the search box that is also in the CPT long description (they do not need to be in the exact order) (for example if “initial exam” was entered then results would include CPTs that had both “initial” AND “exam”)
* “Any of these words” – results include any word entered in the search box that is also in CPT long description (for example if “initial exam” was entered then results would include CPTs with either “initial” OR “exam”)
* “CPT Search” – results include and CPT that starts with the numbers entered up to 5 (5 digits entered would be an exact match)

When the Run Calculation executes, the selected code and long description will display on the results screen. An appropriate error message is displayed if Run Calculation is executed and a procedure is not selected (this is a required entry).

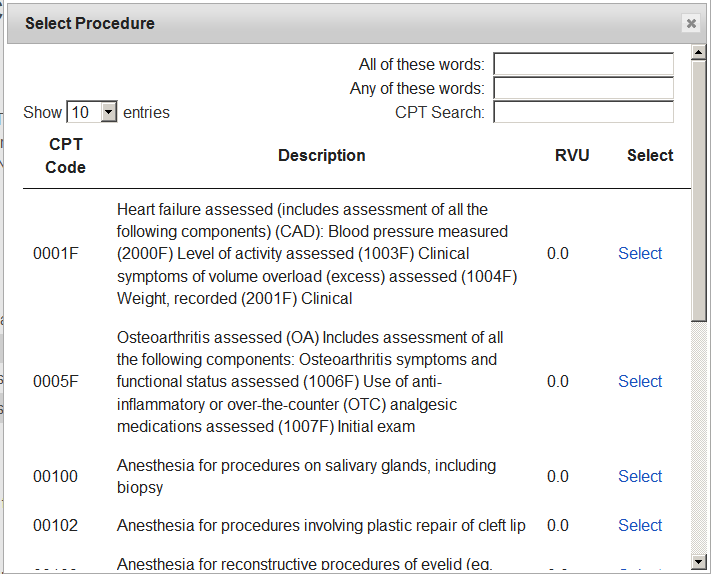


Figure - Surgical Procedure Popup

### Manual Entry Variables

There are variables that are populated from VistA data or manually entered in cases where the data is not available in VistA or the user has information that is more recent. Examples of these variables are “Age:” and “BMI:” and they will all work in the same manner. An editable box will be displayed in which a user will manually enter the desired value (see Figure 5). Click in the entry box and enter the value. An appropriate error message will be displayed if the entry is not valid (e.g., an age of -1) or if a value is not entered. When Run Calculation executes, the entered value will display on the results screen.

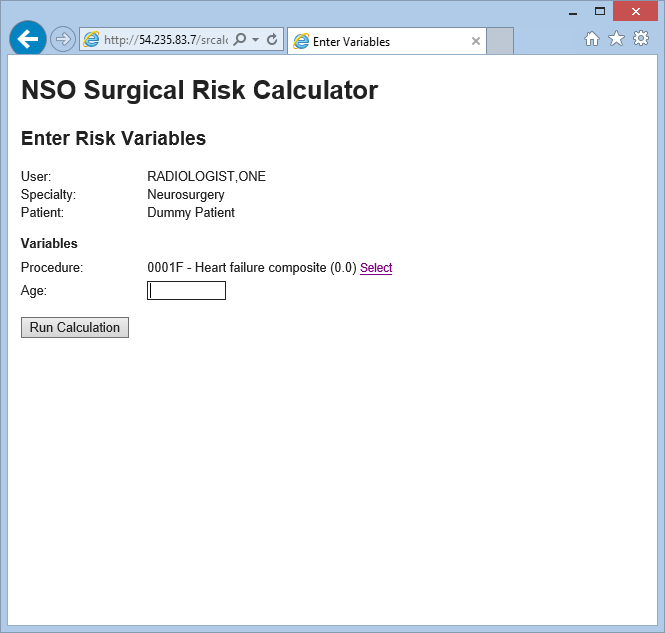


Figure - Manual Entry Variable

### Check Box Variables

There are variables that can be selected by clicking a checkbox. Examples of these variables are “DNR” and “Preop Pneumonia” and they will all work in the same manner. These type of variables are shown as a small box on the display (see Figure 6) that can be left unchecked (indicating a “No” for that variable) or checked (indicating a “Yes” for that variable). When Run Calculation is executed, the corresponding value (“No” if unchecked, “Yes” if checked) will be displayed on the results screen.

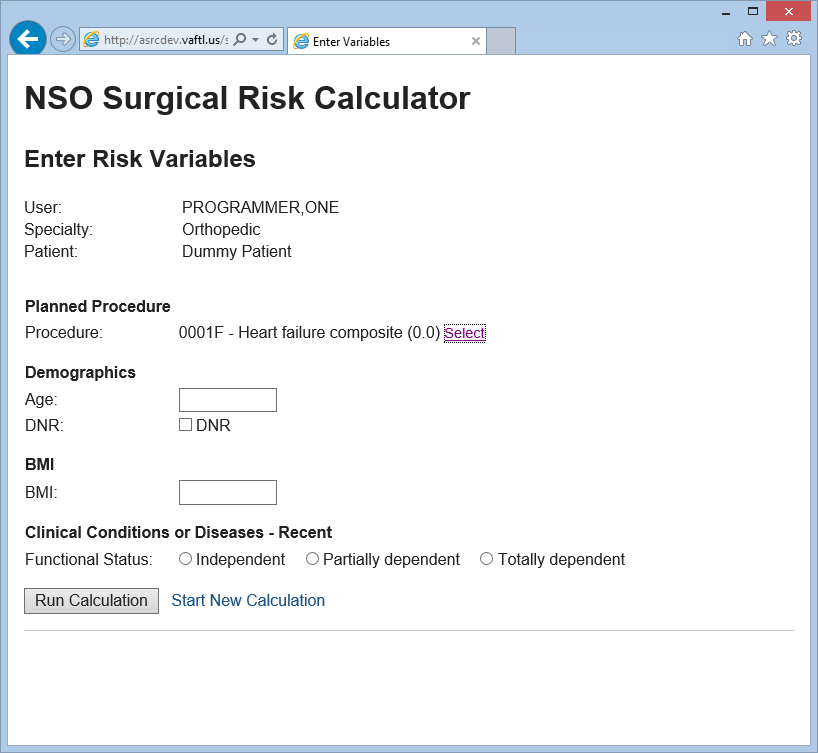


Figure - Check Box Variable

### Radio Button Variables

There are variables that are selected by clicking a Radio Button. Examples of these variables are “ASA Classification” and “Functional Status” and they will all work in the same manner. These types of variables are shown as a small circle next to a selection on the display (see Figure 7) that can be clicked to select (when clicked the circle will fill with black). If a radio button variable is not selected an appropriate error message will be displayed. When Run Calculation executes, the selected value will display on the results screen.

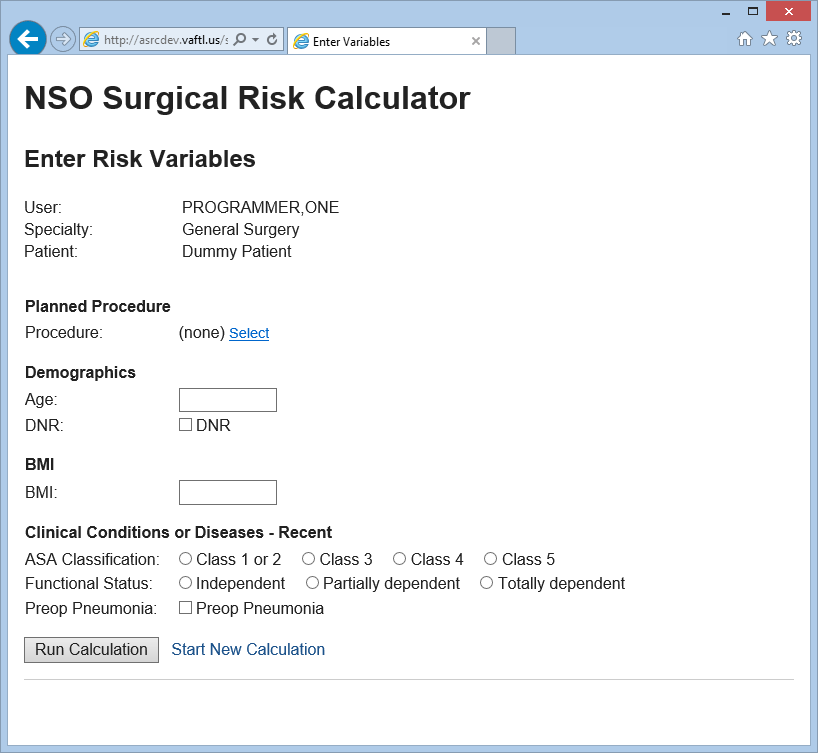


Figure - Radio Button Variable

### Automatically Retrieved Variables

Some Variables’ values are automatically retrieved from VistA if they are available for the selected patient. Examples of these variables are Gender, Age, BMI, Weight, and Weight 6 months prior. The values retrieved from VistA are displayed as the default values. The ASRC user can overwrite any automatically retrieved values if necessary.

### Customizable Variables

Most variables will allow a tool administrator to modify the variables within the tool. In order to do this the user must login as a user with Administrator privileges. Access <http://asrcdev.vaftl.us/srcalc/admin> (Figure 8) and login as administrator to modify or add surgical model variables. Administrator usernames and passwords are required.

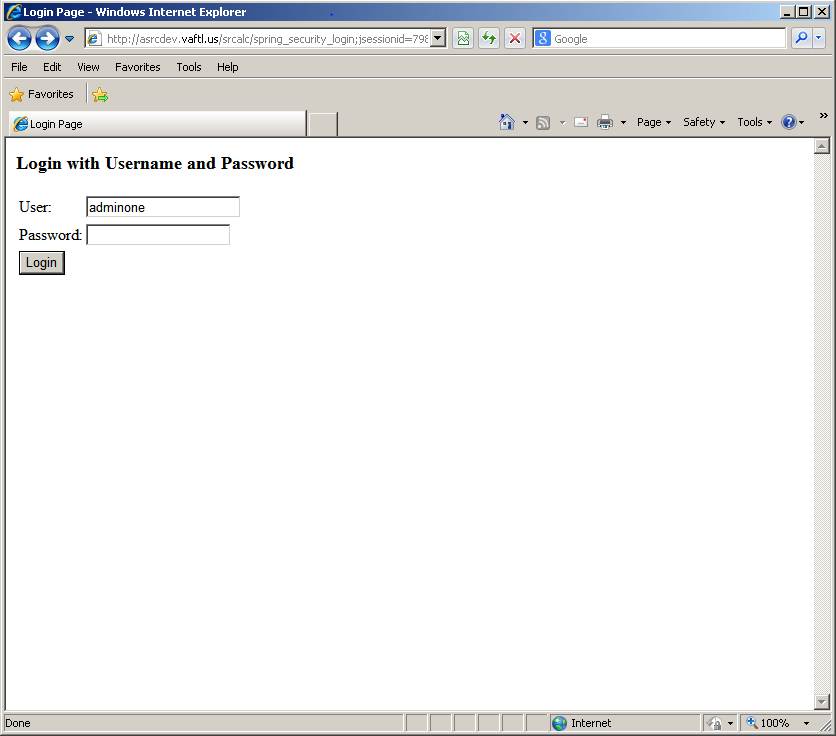


Figure - Administrator Login

The ASRC administrator is provided a list of variables that can be “edited” (Figure 9). To edit a custom variable such as Functional Status click the Edit Button.

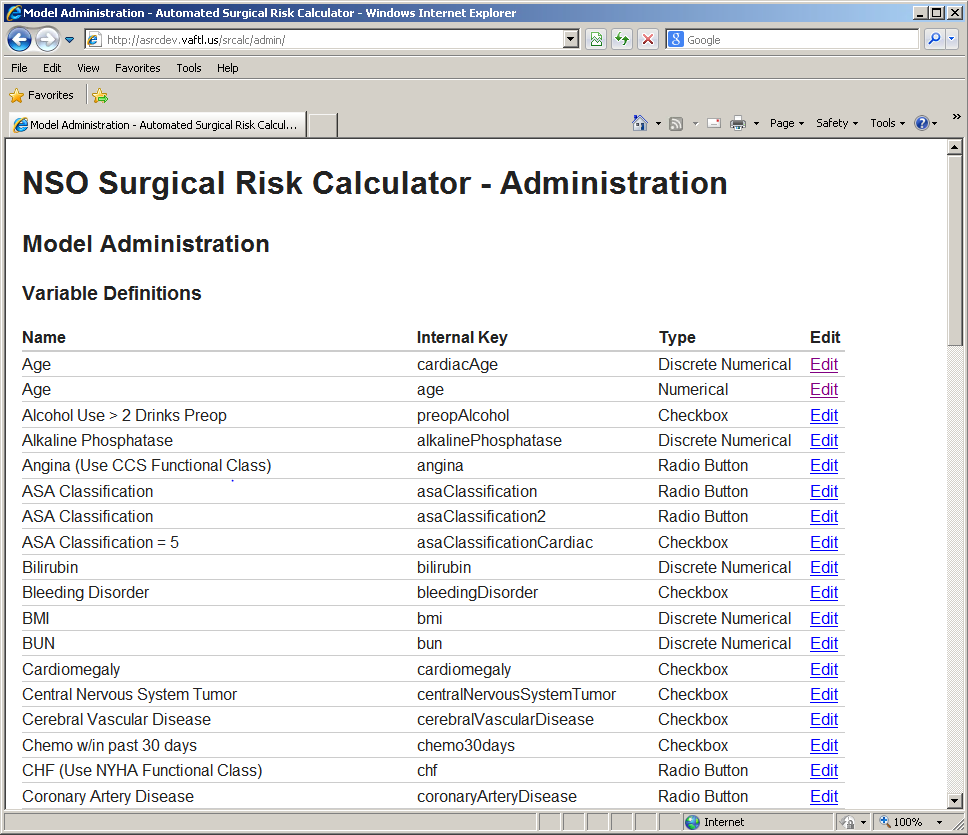


Figure - Administration Page

#### Variable Edit items

* *Display Text:* Name displayed on the Model input page. This name can be up to 80 characters in length.
* *Help Text:* Help text provided for the variable. The help text can be up to 4000 characters in length.
* *Group:* Select the variable group from the Group pick list.
* *VistA Value*: Indicate if the variable can be automatically loaded from VistA (if appropriate)
* *Option*: Option Name (Radio Button – up to 20)
* *Units*: Units in text (Discrete Numerical)
* *Valid Range*: Lower and upper bounds of the variable range (Discrete Numerical)
* *Category*: Category name (Discrete Numerical – up to 20)

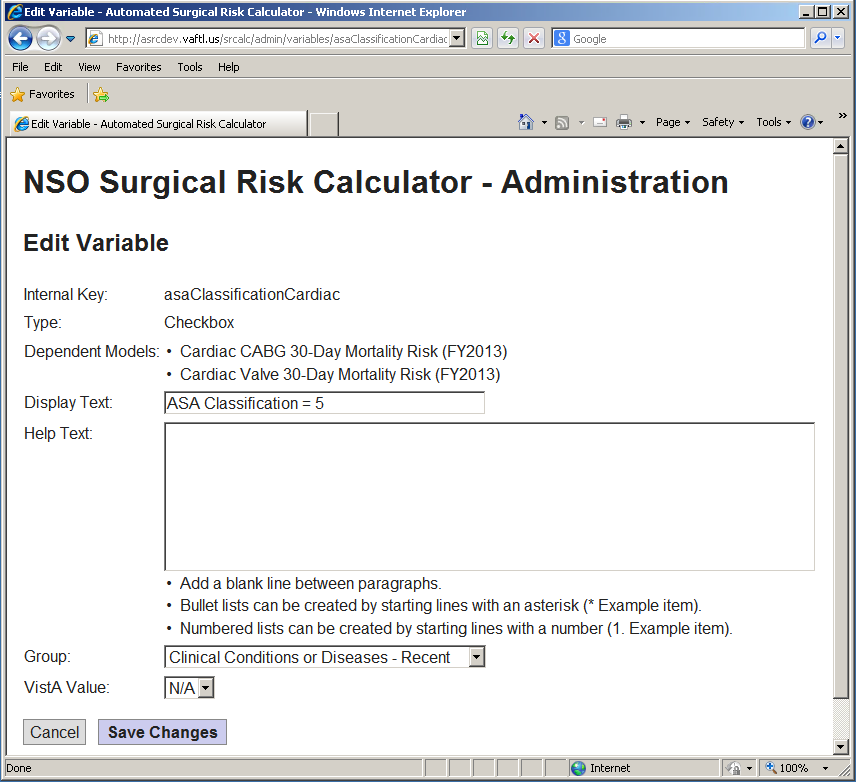


Figure - Edit Variable Page

#### Adding new Variables

New variables are added by clicking the “Add New” button for the following variable types at the bottom of the ASRC Administration window (Figure 11):

* Checkbox variables
* Radio Button variables
* Discrete Numerical variables

After the new variable type is selected the Administrative user then enters the required information:

* *Internal Key*: Internal Database key for variable (This must be unique – the tool will validate on Save)
* *Display Text:* Name displayed on the Model input page. This name can be up to 80 characters in length.
* *Help Text:* Help text provided for the variable. The help text can be up to 4000 characters in length.
* *Group:* Select the variable group from the Group pick list.
* *VistA Value*: Indicate if the variable can be automatically loaded from VistA (if appropriate)
* *Option*: Option Name (Radio Button – up to 20)
* *Units*: Units in text (Discrete Numerical)
* *Valid Range*: Lower and upper bounds of the variable range (Discrete Numerical)
* *Category*: Category name (Discrete Numerical – up to 20)

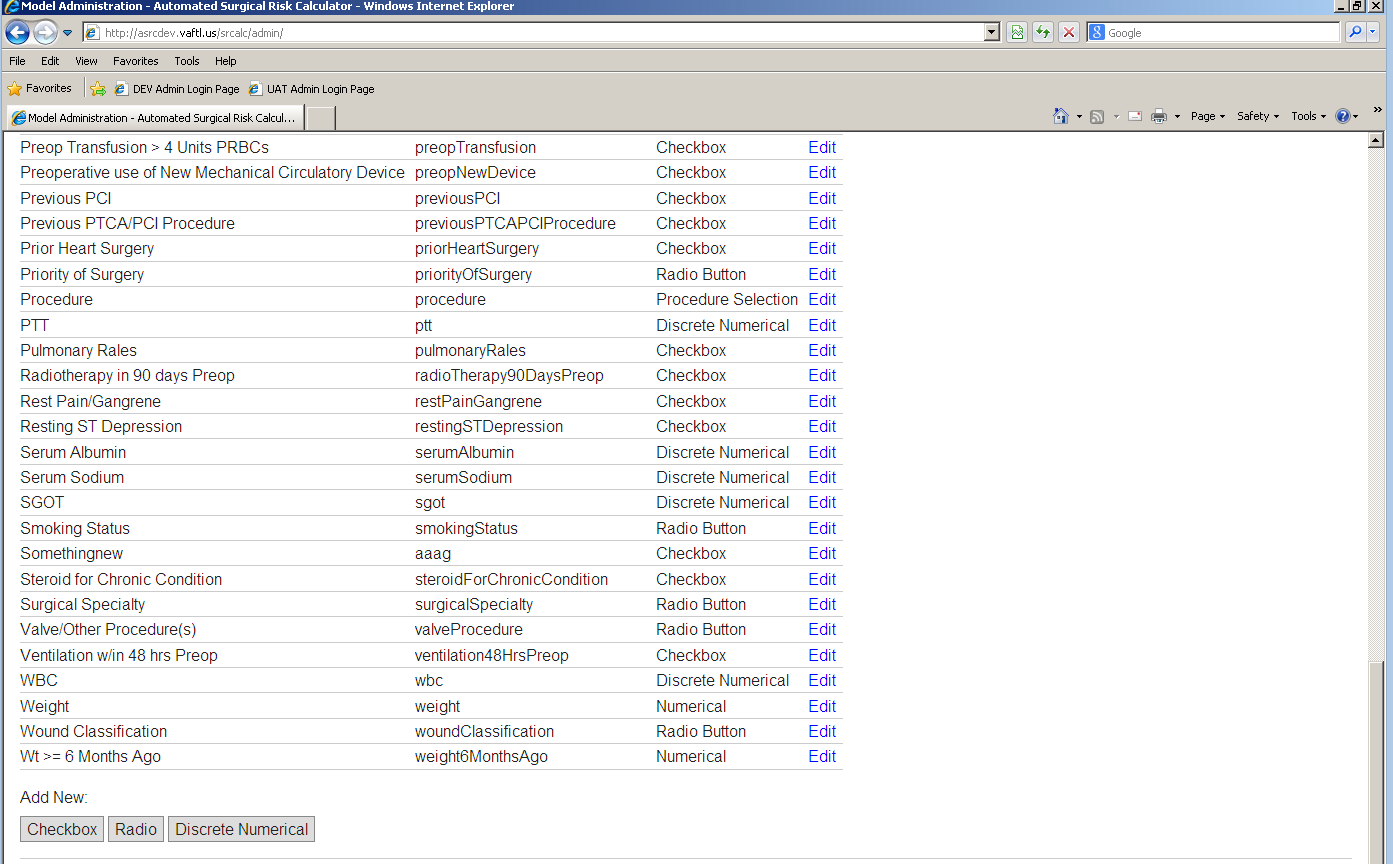


Figure - Adding new variables

### Running Risk Model Calculations

To run a calculation for a specialty risk model, enter all information displayed for that specialty and click “Run Calculation” (Figure 11). The instructions for each variable type entry are in Sections 3.3.1-3.3.5.

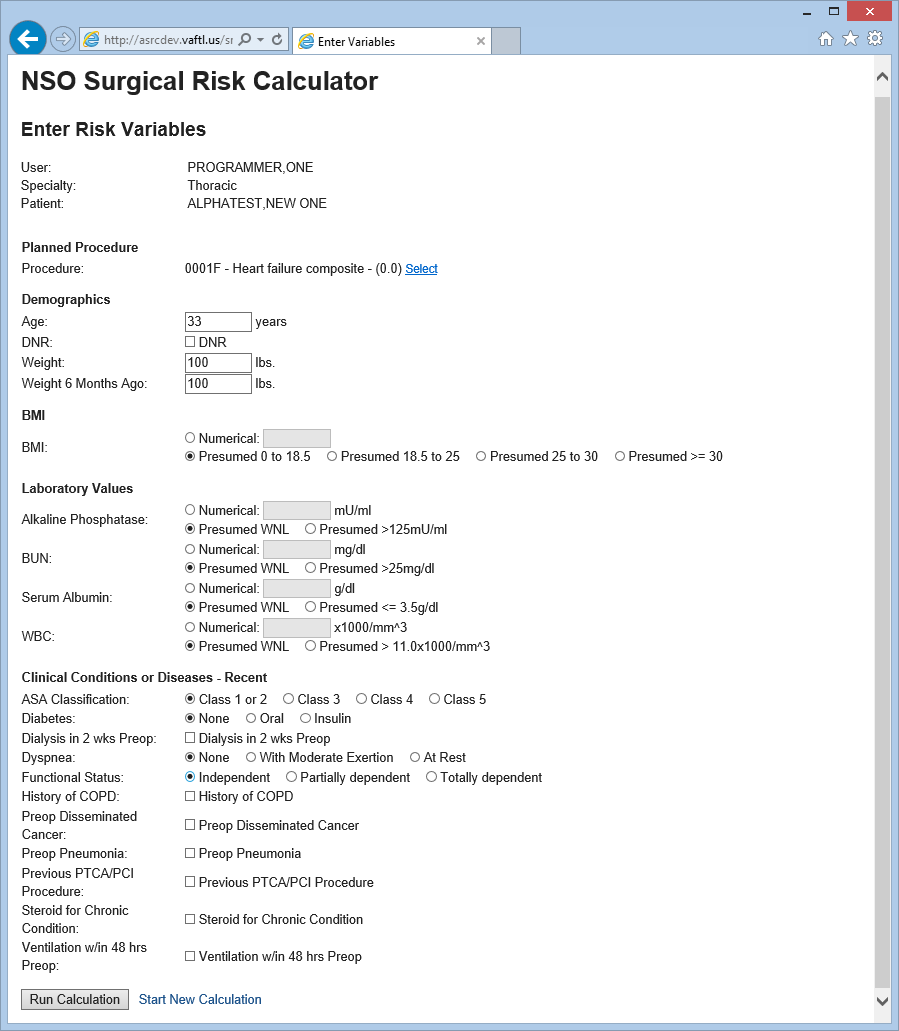


Figure - Run Calculation

A results page (Figure 12) displays with all of the entered variables and the calculated risk shown as a percentage (%).

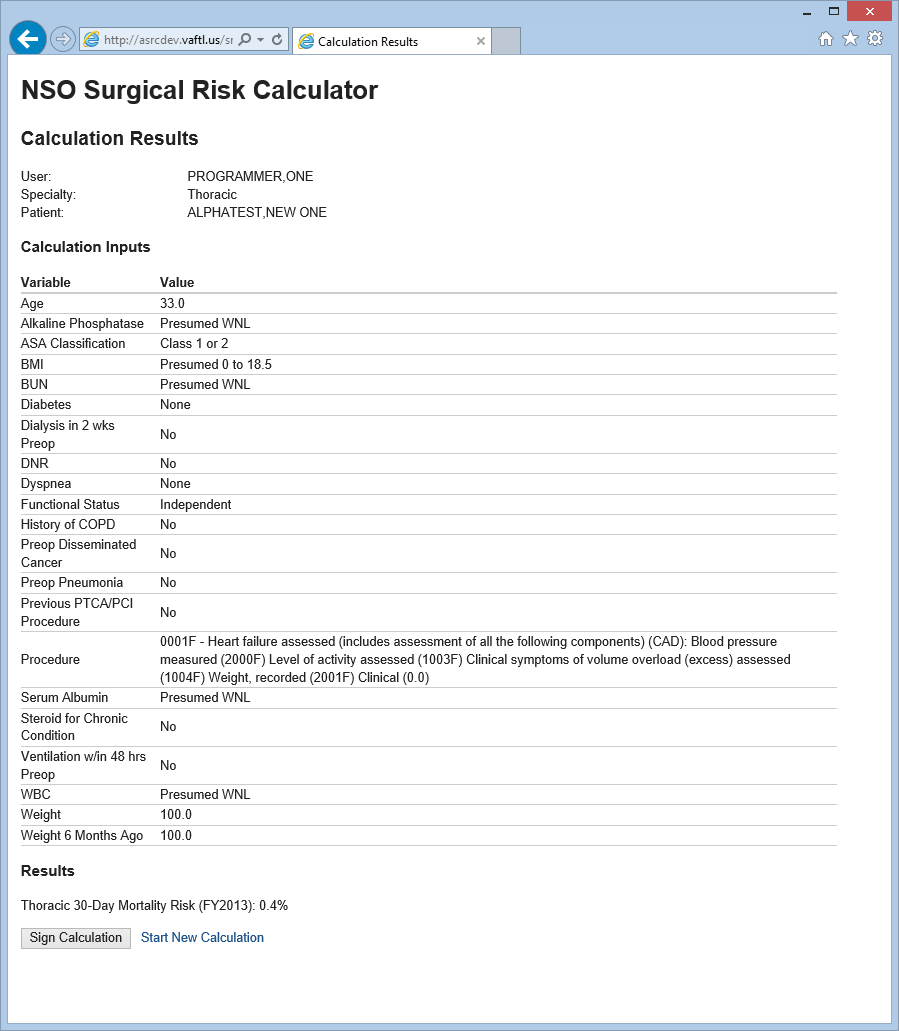


Figure - Results Page

## Re-run Calculation with Modified Inputs

To re-run the calculation with modified inputs, click the “Return to Variable Input Form” button located on the results page. Clicking the back button does not display any inconsistent data to the user. The “Return to Variable Input Form” button returns to the variable input page, which preserves the current values.

## Signing the Risk Calculation

To sign the risk calculation for a specialty risk model, click the “Sign Calculation” button located on the results page (Figure 13). The tool will warn the user before signature that the data will be saved in EHR. When signing the risk calculation the signature must be via the users electronic signature code. If the user signs the risk calculation with an invalid signature code, an appropriate error message will appear. When successfully signed, the tool brings the user to a success page indicating that the calculation has been saved as a note and they may close the browser window.

### Saving the Result as a TIU Note

After signing the risk calculation, the TIU Note with input values and outcomes is visible in the CPRS Notes tab. The calculation can easily be seen in the patient’s EHR. Once signed, a calculation may not be altered.

### Saving the Results as Discrete Data in VistA

After signing the risk calculation, the associated Patient, CPT code, date and time of calculation, user, and actual outcome results from the calculation are saved as discrete data to the SURGICAL RISK CALCULATIONS FILE (#136.1).

## Changing User ID and Password

There will be no need to change User ID and Password specifically for the ASRC Tool. Either a DUZ number will be used (provided in the login section) or will be accessible through CPRS with provided test accounts.

## Exit System

To exit the system, simply close the browser window.