Department of Veterans Affairs

**Automated Surgical Risk Calculator (ASRC)**

User Guide



**March 2015**

Version 2.1

Revision History

Note: The revision history cycle begins once changes or enhancements are requested after the document has been baselined.

| Date | Revision | 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 |

**Table of Contents**

[1. Introduction 1](#_Toc417385527)

[1.1. Purpose 1](#_Toc417385528)

[1.2. Overview 1](#_Toc417385529)

[1.2.1. Major Functions 1](#_Toc417385530)

[1.2.2. Characteristics 2](#_Toc417385531)

[1.3. Project References 2](#_Toc417385532)

[1.3.1. Contact Information 2](#_Toc417385533)

[1.3.2. Help Desk 2](#_Toc417385534)

[2. System Summary 3](#_Toc417385535)

[2.1. System Diagram and Data Flows 3](#_Toc417385536)

[2.2. User Access Levels 3](#_Toc417385537)

[3. Getting Started 3](#_Toc417385538)

[3.1. Logging On 3](#_Toc417385539)

[3.1.1. CPRS Patient Context Sharing 4](#_Toc417385540)

[3.2. Select Surgical Specialty Menu 4](#_Toc417385541)

[3.3. Risk Variable Entry 5](#_Toc417385542)

[3.3.1. Pop-up Selection List Variables 5](#_Toc417385543)

[3.3.2. Manual Entry Variables 6](#_Toc417385544)

[3.3.3. Check Box Variables 7](#_Toc417385545)

[3.3.4. Radio Button Variables 8](#_Toc417385546)

[3.3.5. Automatically Retrieved Variables 9](#_Toc417385547)

[3.3.6. Custom Variables 9](#_Toc417385548)

[3.3.7. Running Risk Model Calculations 11](#_Toc417385549)

[3.4. Re-run Calculation with Modified Inputs 13](#_Toc417385550)

[3.5. Signing the Risk Calculation 13](#_Toc417385551)

[3.5.1. Saving the Result as a TIU Note 14](#_Toc417385552)

[3.6. Changing User ID and Password 14](#_Toc417385553)

[3.7. Exit System 14](#_Toc417385554)

**Table of Figures**

[Figure 1 - ASRC System Diagram and Data Flow 3](#_Toc417385472)

[Figure 2 - ASRC Login Screen 4](#_Toc417385473)

[Figure 3 - Select Surgical Specialty 5](#_Toc417385474)

[Figure 4 – Surgical Procedure Popup 6](#_Toc417385475)

[Figure 5 – Manual Entry Variable 7](#_Toc417385476)

[Figure 6 – Check Box Variable 8](#_Toc417385477)

[Figure 7 – Radio Button Variable 9](#_Toc417385478)

[Figure 8 – Administration Link 10](#_Toc417385479)

[Figure 9 – Administration Page 10](#_Toc417385480)

[Figure 10 – Edit Screen 11](#_Toc417385481)

[Figure 11 – Run Calculation 12](#_Toc417385482)

[Figure 12 – Results Page 13](#_Toc417385483)

# 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 sharing with CPRS (Not implemented)
* Authentication with VistA with User Number (otherwise known as DUZ) – (Temporary feature only needed until context sharing with CPRS is available)
* Selection of Surgical Specialties
* Pop-up list selection of Current Procedural Terminology (CPT) codes with long description and Relative Value Unit (RVU)
* 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
* Edit Checkbox Custom Variable Text (Administrator function)
* Automatic retrieval of values from VistA
* TIU Note saved with model calculation inputs and results available in CPRS
* 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.

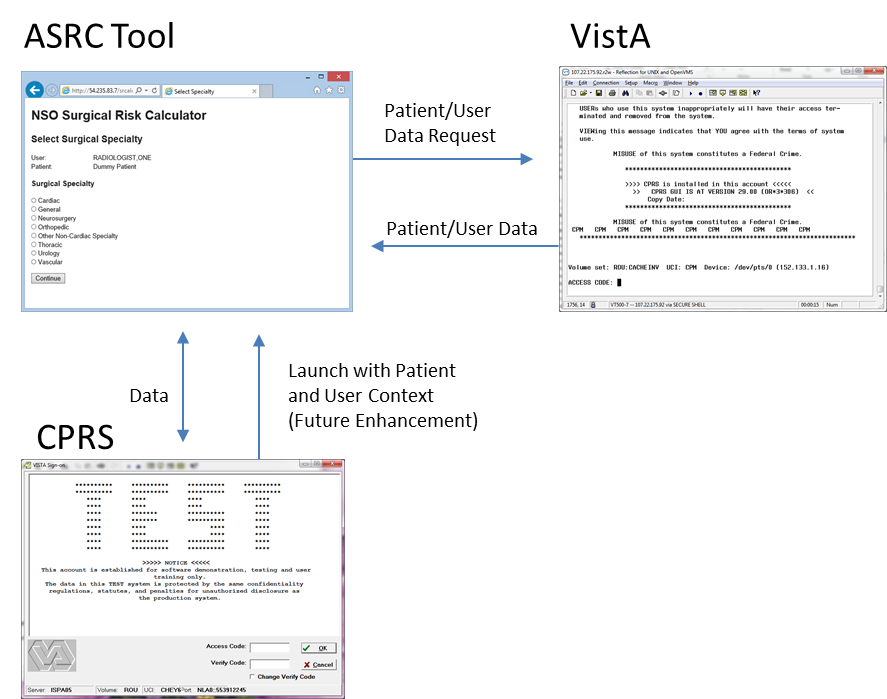


Figure - ASRC System Diagram and Data Flow

## 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.

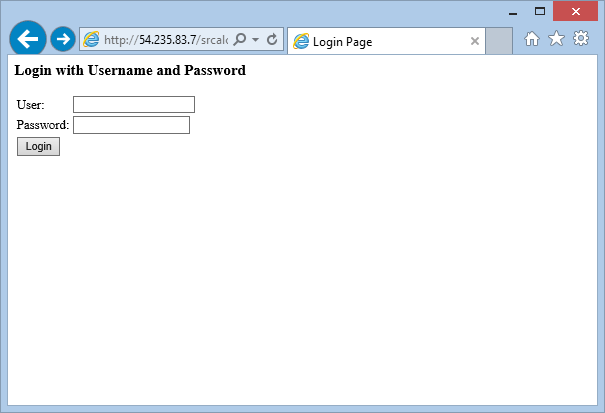


Figure - ASRC Login Screen

### 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.

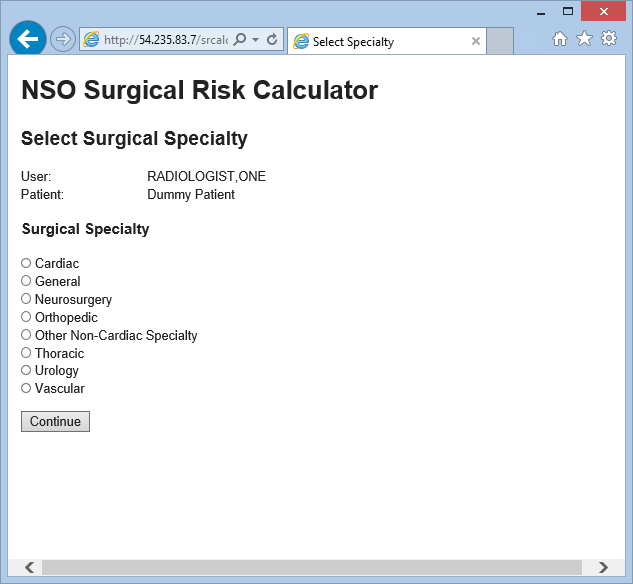


Figure - Select Surgical Specialty

## 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.

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. A CPT Code search feature provides two search methods: Method 1 finds a single CPT code by entering the 5-digit code and method 2 finds a filtered list of CPTs using a “starts with” search. The “Starts with” updates the listed codes as the user enters the search criteria (e.g., a search for “99” returns a list of all codes that start with 99).

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).

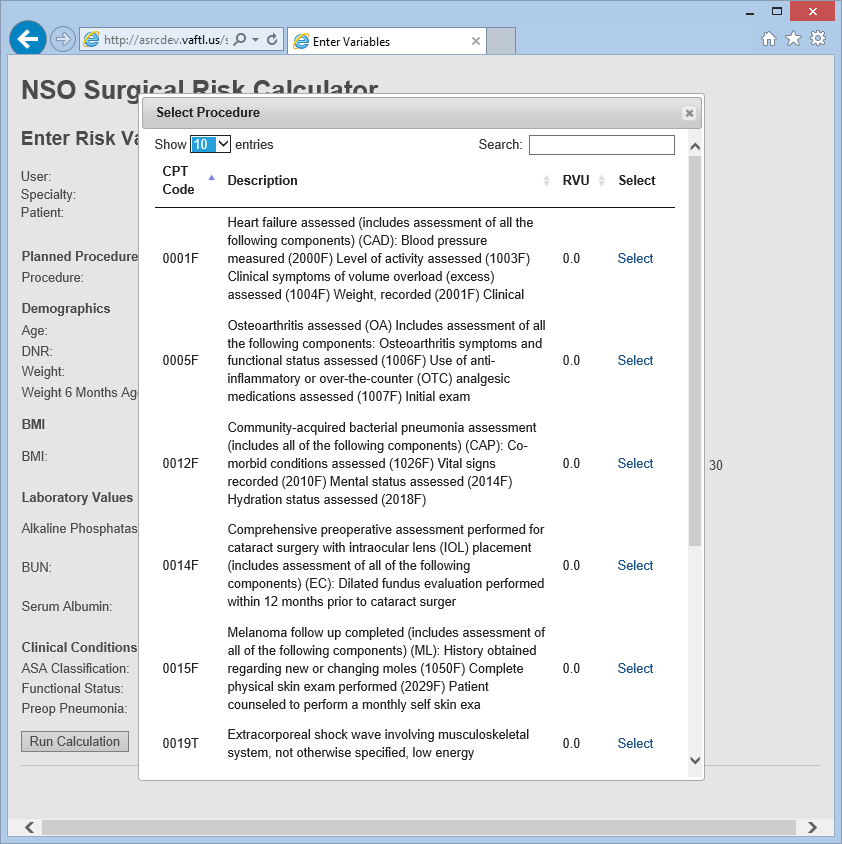


Figure – Surgical Procedure Popup

### Manual Entry Variables

There are variables that are populated from VistA data (future enhancement) or manually entered in case 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. These type of variables are shown as an editable box on the display (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.

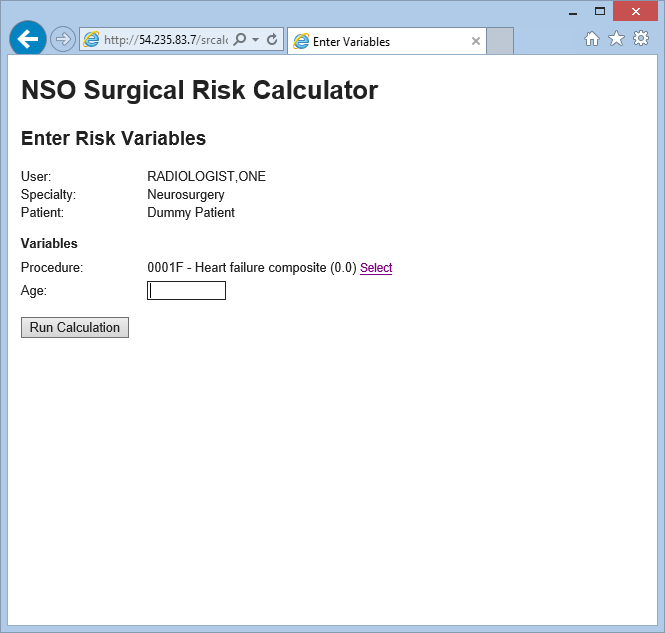


Figure – Manual Entry Variable

### 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.

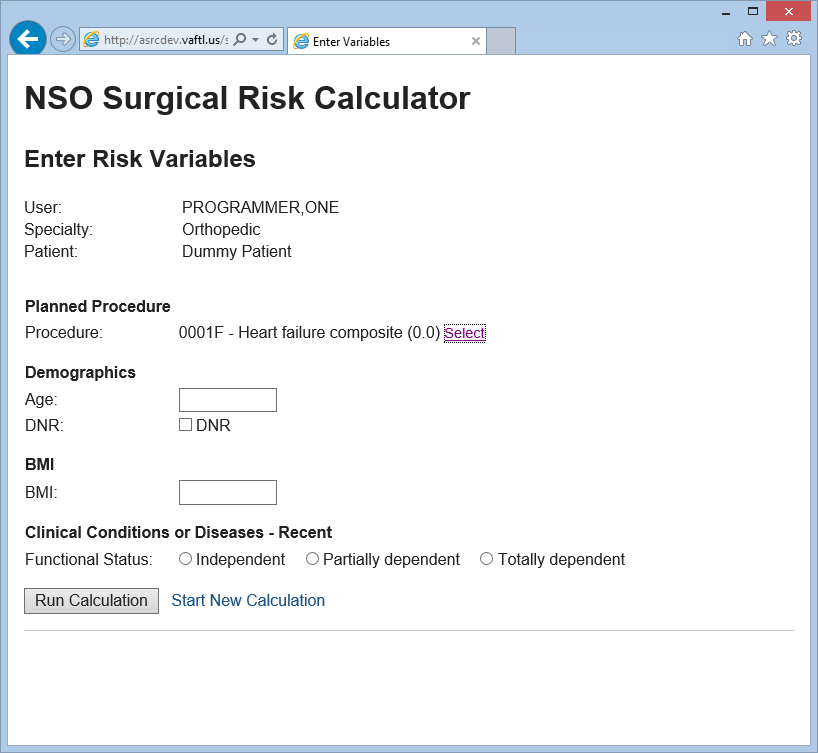


Figure – Check Box Variable

### 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.

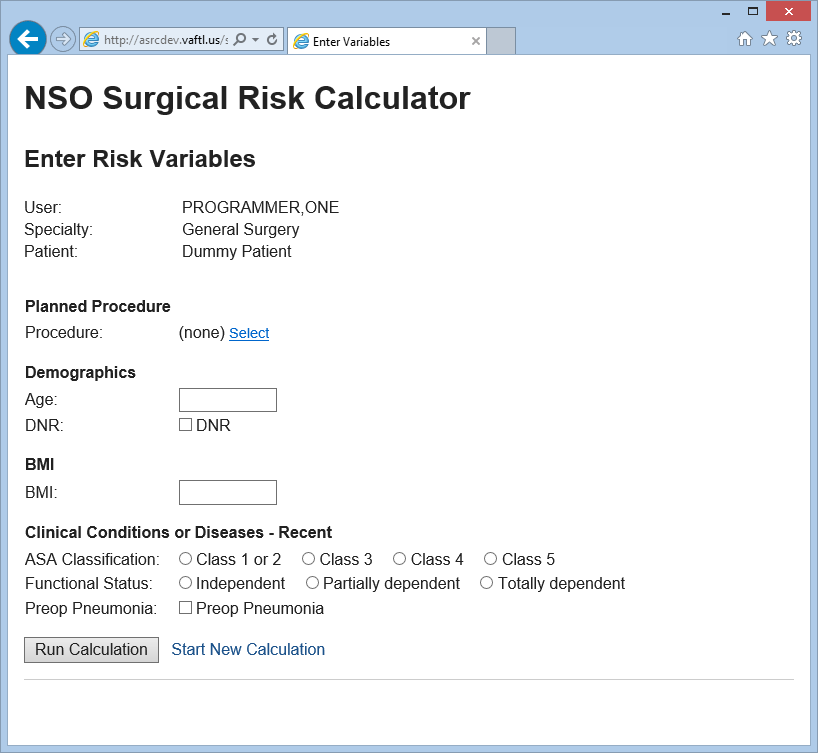


Figure – Radio Button Variable

### 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.

### Custom Variables

Most variables will allow a tool administrator to change the variable name within the tool. In order to do this the user must login as a User with Administrator privileges. As a temporary solution, there is only one Administrator account that is available by logging in with a User Number (DUZ) of “1.”

To access the Administration function click on the Administration Link on the bottom of the Select Surgical Specialty screen (see Figure 8).

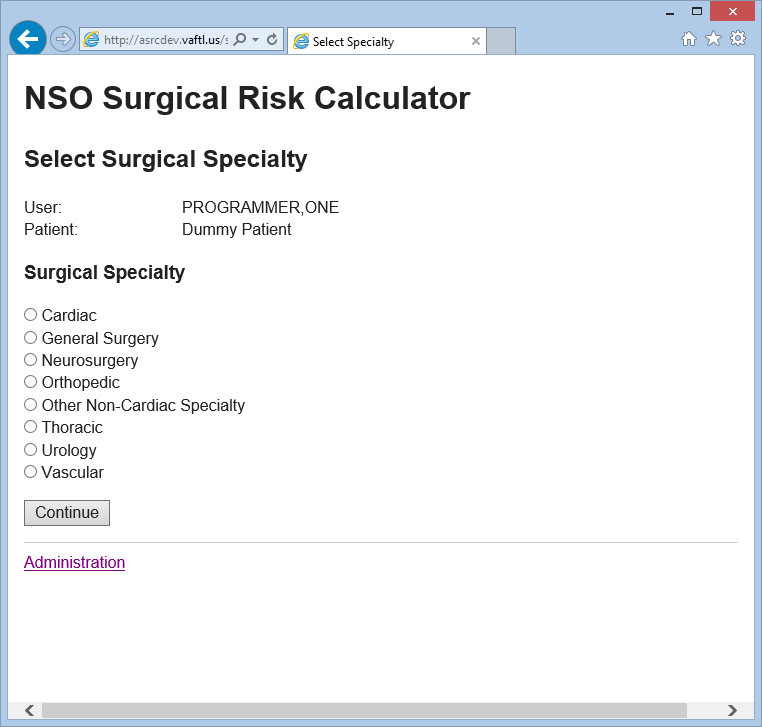


Figure – Administration Link

The ASRC administrator is provided a list of variables that can be “edited” (Figure 9). Some variables that are populated with data from VistA or manually entered (e.g., Age) are not editable and the user will be notified when that is the case. To edit a custom variable such as Functional Status click the Edit Button (Figure 9).

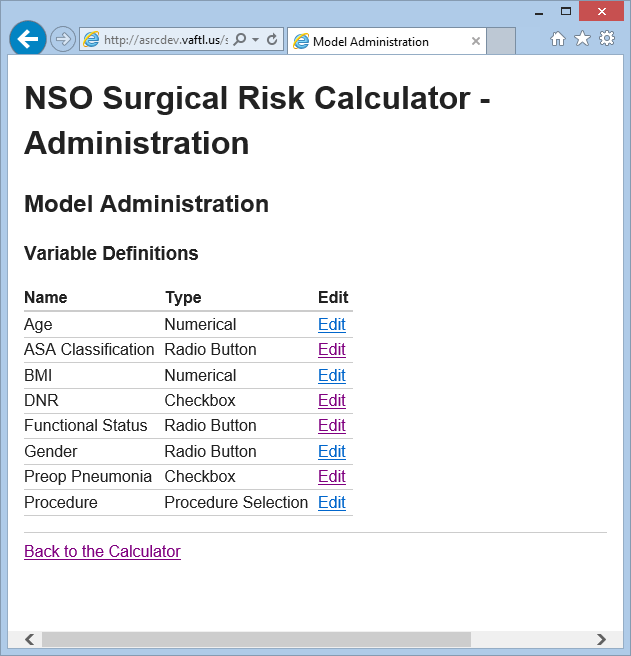


Figure – Administration Page

To Edit a variable that has been selected to Edit click in the editable box (Figure 10) and enter the desired text. Note that there is limit of 80 characters and must be Alpha/Numeric (a future enhancement will allow other special characters). Also if a very long variable is entered the text will wrap and the screen will adjust to accommodate as best is possible.

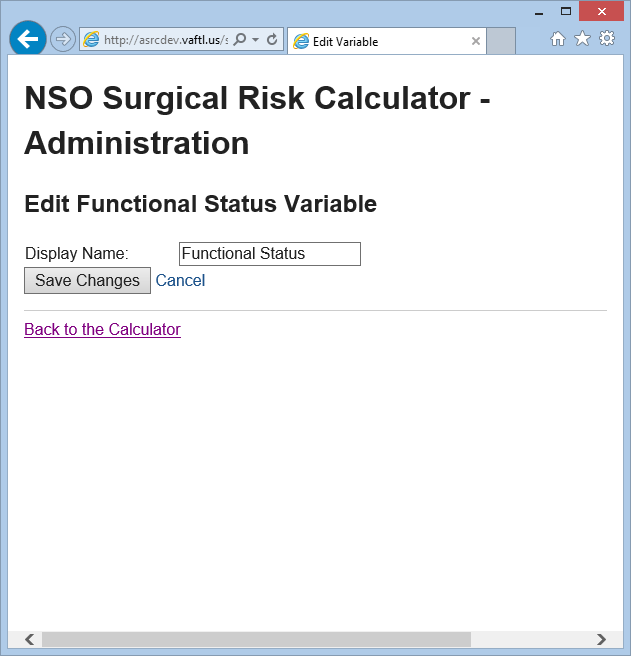


Figure – Edit Screen

### 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.

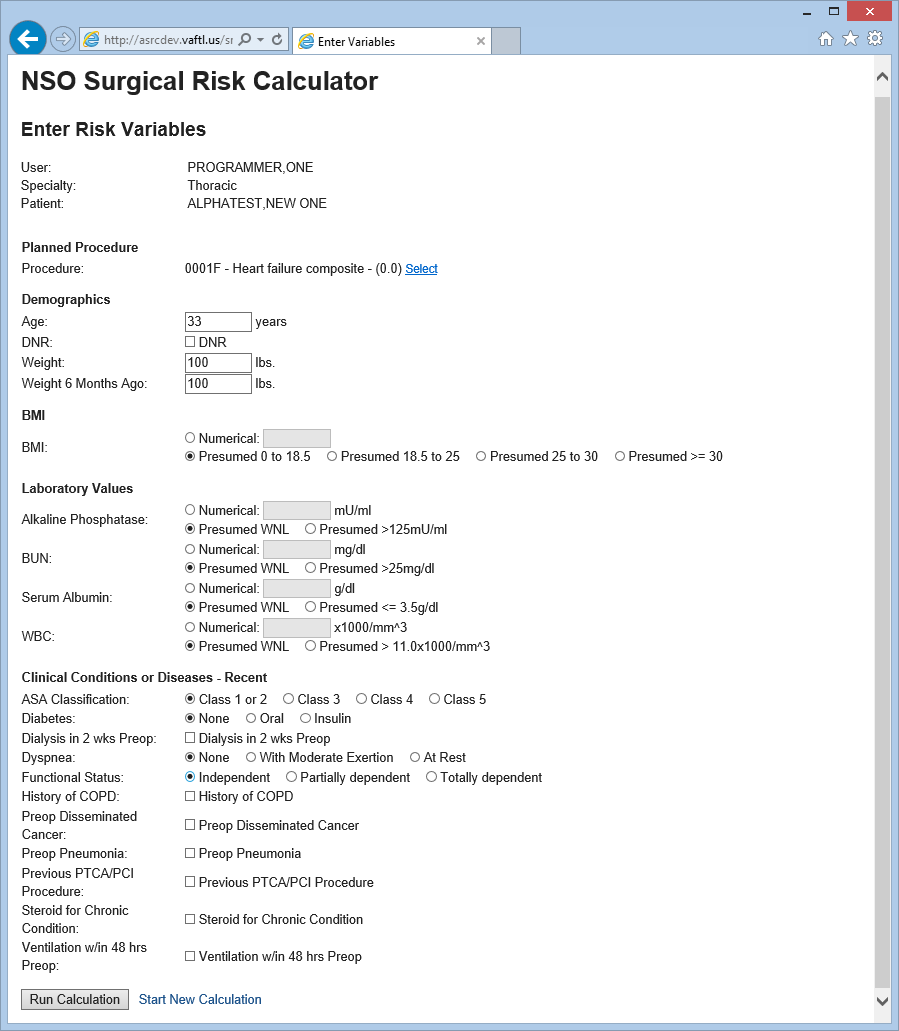


Figure – Run Calculation

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

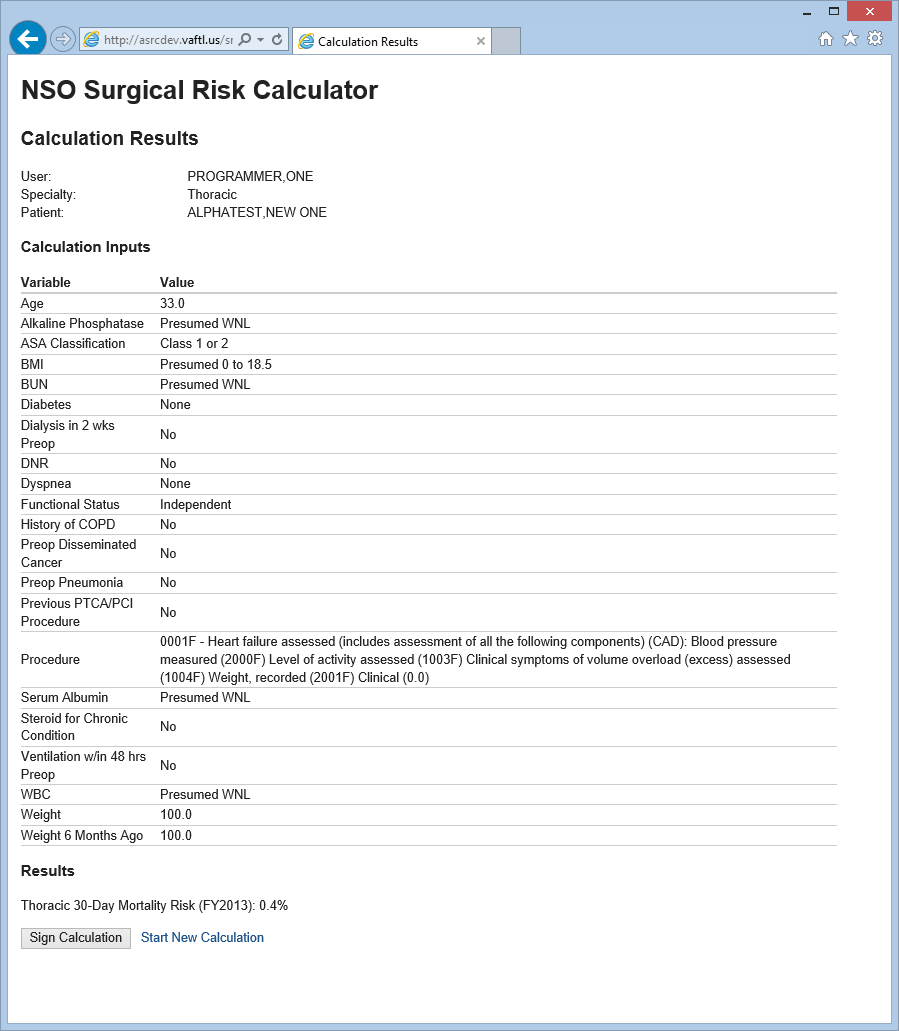


Figure – Results Page

## 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.

## 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.