

**Department of Veterans Affairs**  
**Traumatic Brain Injury Clinical Decision Support**  
**(TBI CDS) Application**  
**User Guide**



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## Revision History

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Figure 1: TBI CDS Logo

## 1. Introduction

### 1.1. Purpose

The purpose of this user guide is to provide prospective users of the TBI CDS application with information necessary for and helpful to its operation. This guide explains the design, navigation, and features of the application.

### 1.2. Overview

The TBI CDS application is being developed for the U.S. Department of Veterans Affairs by Intellica Corporation in order to aid clinicians in assessing and providing treatment for veterans in the VA Polytrauma System of Care (PSC). TBI CDS will be integrated with VA's own Computerized Patient Record System (CPRS) to provide for the completion of forms, review of patient outcomes, writing of comments and notes, and assessment of programmatic results in the form of aggregate reports and statistical analysis.

TBI CDS is a web-based application that users access through a secure web portal. The system controls are designed to be similar to those that are commonly programmed into web pages. Therefore, if users are familiar with navigating through web sites, they will find that TBI CDS has many of the same controls, including tabs, dropdown menus, navigation buttons, and pop-up dialog windows.

### 1.3. Organization of the Manual

This user guide for the TBI CDS Application is comprised of the following sections.

- 1.0 Introduction:** The current section, which provides general information on the TBI CDS application and the user guide.
- 2.0 System Summary:** Information on technical aspects of the TBI CDS application and its configuration.
- 3.0 Getting Started:** Information on accessing and exiting the TBI CDS application.

- 4.0 TBI CDS Graphical User Interface (GUI):** A summary of all functionality contained in the application, organized according to page or screen.
- 5.0 Project-Specific Scenarios:** A small section detailing possible workflows for the TBI CDS application.
- 6.0 Troubleshooting:** Information on errors that may occur and suggestions for remedy.
- 7.0 Appendix:** Additional information on diagnostic instruments and user controls.

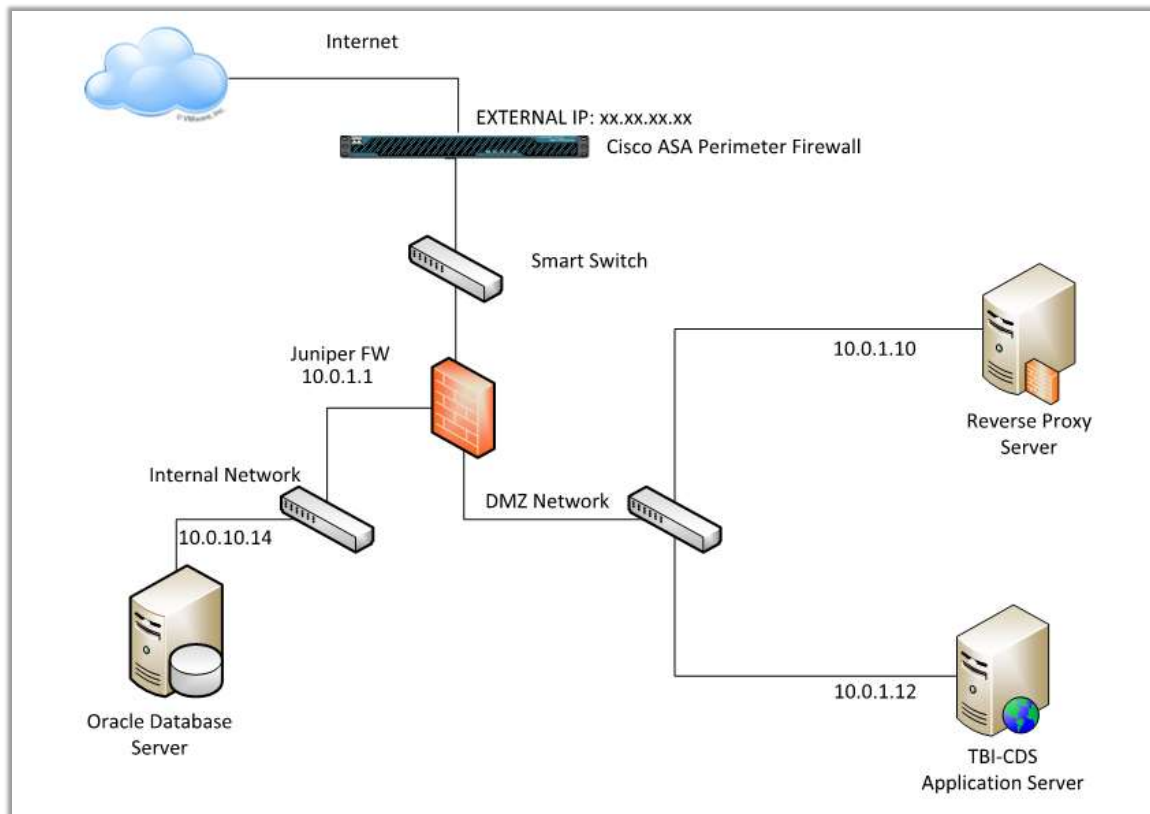
## **1.4. Acronyms and Abbreviations**

- VA = U.S. Department of Veterans Affairs
- TBI = Traumatic Brain Injury
- TBI CDS = Traumatic Brain Injury Clinical Decision Support
- PSC = Polytrauma System of Care
- PRC = Polytrauma Rehabilitation Center
- CPRS = Computerized Patient Record System
- TIU = Text Integration Utilities
- MDWS = Medical Domain Web Services
- GUI = Graphical User Interface
- CSV = Comma-Separated Values File
- PDF = Portable Document Format File
- JPEG = Joint Photographic Experts Group File
- PNG = Portable Network Graphics File
- SVG = Scalable Vector Graphics File
- XSS = Cross-Site Scripting
- VLAN = Virtual Local Area Network
- SSN = Social Security Number
- LSSN = Last Name Initial + Last 4 Digits of Social Security Number
- LOS = Length of Stay
- IEN = Internal Entry Number

## 2. System Summary

### 2.1. System Configuration

The TBI CDS system is hosted in a centralized location while being accessed from various VA PRC sites. In order for a local site to be able to access the application, a TBI CDS application menu item must be added to the users' CPRS Tools Menu.



**Figure 2: TBI CDS System Architecture**

The TBI CDS system is managed by the cloud infrastructure software known as VMware. It is designed to deliver the TBI CDS application as a service by providing an on-demand, configurable pool of shared computing resources that are allocated on its own hardware within the VA environment. The system has been engineered to provide a high level of isolation from the rest of the systems within the VA data center, as well as internal isolation among the TBI CDS system resources. This internal isolation is achieved through the allocation of virtual local area networks (VLAN). The VLANs in the TBI CDS system are:

- **Management VLAN:** The Management VLAN will be used as the network into which all infrastructure management data will flow.
- **Internal VLAN:** The Internal VLAN will be responsible for safeguarding patient information. The TBI CDS Oracle database will reside in this VLAN.

- Demilitarized zone (DMZ) VLAN: The DMZ VLAN is a semi-secure network used to publish the TBI CDS application and to provide proxy services and Secure Shell Protocol connections.

### 2.1.1. System Requirements for End Users

Because TBI CDS is a web-based application, it can be accessed from any computer that runs a compatible web browser. The application is designed to work with Internet Explorer 9, Chrome 21.0.1180, Firefox 3.5, Safari 5, or any more recent version of one of these browsers. It is likely that best results will be achieved using Internet Explorer 9 or Google Chrome.

Users can easily find and download a compatible browser by selecting the desired browser and clicking 'Update' at the bottom of the Login page.

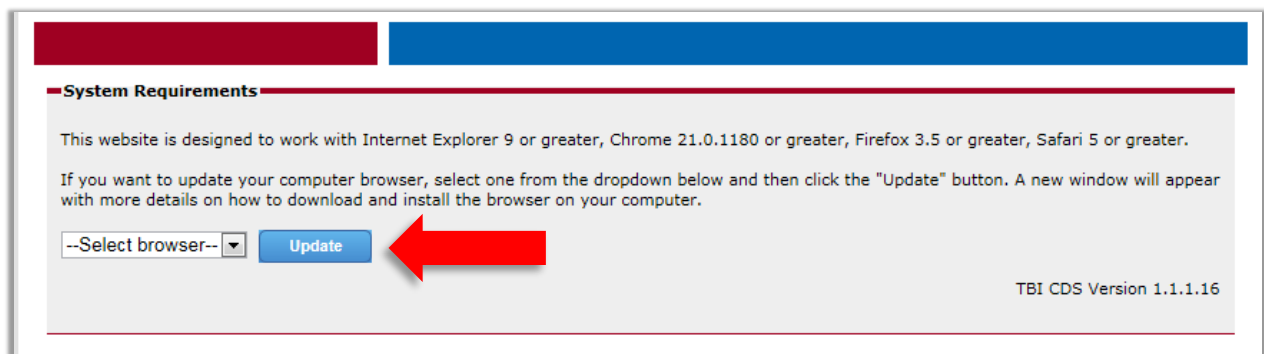


Figure 3: Login Page System Requirements with Update Button

## 2.2. User Access Levels

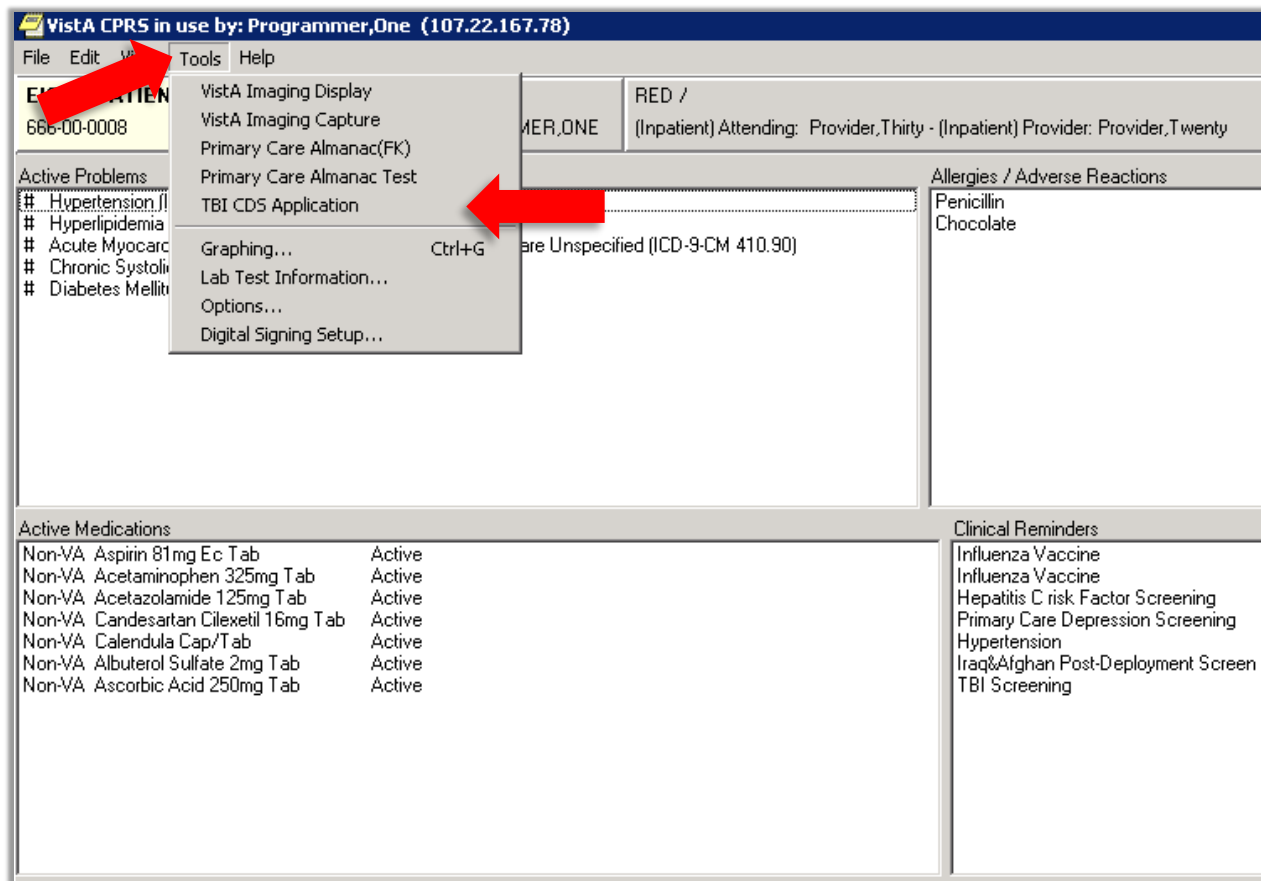
The TBI CDS application has only one user access level, which is available to any provider with the TBI CDS shortcut on his or her CPRS Tools menu. This user type enables the provider to access all of the functionality described in this manual.

If the TBI CDS Patient Portal is activated, a second user type will be available. Accounts of this user type are created for patients by providers in the Patient Portal Account tab of TBI CDS and are only used to log into the TBI CDS Patient Portal. A patient with this account type would be able to access the full functionality of the Patient Portal.

## 3. Getting Started

### 3.1. Logging On

#### 3.1.1. Launching the TBI CDS Application



**Figure 4: Accessing TBI CDS from CPRS Tools Menu**

The TBI CDS Application is launched from the CPRS system operated by VA. In order to launch TBI CDS, the user must follow the protocol below.

1. Log into CPRS using access and verify codes.
2. Open a patient record in CPRS.
3. Go to the Tools menu at the top of the screen.
4. Click the item named 'TBI CDS Application'.

The Login page of the application will then open in Internet Explorer. The same access and verify codes used to log into CPRS will be used on the TBI CDS Login page. After the user logs in with these codes, the patient whose record was open in CPRS will be automatically loaded in TBI CDS.

### **3.1.2. Application Disclaimer**

The following disclaimer is presented to all users who access the TBI CDS application webpage. It will appear as a pop-up dialog when the user lands on the Login page.

Warning:

This system is intended to be used by [authorized VA network users] for viewing and retrieving information only except as otherwise explicitly authorized.

VA information resides on and transmits through computer systems and networks funded by VA; all use is considered to be understanding and acceptance that there is no reasonable expectation of privacy for any data or transmissions on Government Intranet or Extranet (non-public) networks or systems.

All transactions that occur on this system and all data transmitted through this system are subject to review and action including (but not limited to) monitoring, recording, retrieving, copying, auditing, inspecting, investigating, restricting access, blocking, tracking, disclosing to authorized personnel, or any other authorized actions by all authorized VA and law enforcement personnel. All use of this system constitutes understanding and unconditional acceptance of these terms.

Unauthorized attempts or acts to either (1) access, upload, change, or delete information on this system, (2) modify this system, (3) deny access to this system, or (4) accrue resources for unauthorized use on this system are strictly prohibited. Such attempts or acts are subject to action that may result in criminal, civil, or administrative penalties.

The user must click the button that states, 'I accept the above terms and conditions,' at the bottom of the pop-up dialog in order to proceed to the application.

### 3.1.3. Login Page



**Figure 5: TBI CDS Login Page Launched from CPRS**

When navigating to TBI CDS for the first time in a session, the user is directed to the Login page and prompted to log in with his or her CPRS access and verify codes. The user will also need to select the Clinical Program Area in which he or she is working for the session.

When TBI CDS is not launched from the CPRS Tools menu, the user will also need to select a Region and Site to log into. Otherwise, this information will be obtained automatically from the user's location on the VA network.

This screenshot shows a login form with a 'LOGIN' header. It includes dropdown menus for 'REGION', 'SITE', and 'CLINICAL PROGRAM AREA'. Below these are text input fields for 'USERNAME' and 'PASSWORD'. A blue 'Login' button is positioned at the bottom of the form.

**Figure 6: TBI CDS Login Not Launched from CPRS**

At the bottom of the Login page are the System Requirements and the browser update helper. The number of the current version of the TBI CDS application software is also shown in the bottom right corner.

After the user logs in, he or she will be directed to the Patient Summary page.

## 3.2. Exit System

### 3.2.1. Logoff Button

The user can exit the TBI CDS application at any time by clicking the Logoff button located in the Icon Bar near the top of the right side of the screen. Doing this will take the user to the Login page.

### 3.2.2. Application Timeout

For information security reasons, the TBI CDS application has a timeout period of 15 minutes, which means that the user will be logged off automatically after 15 minutes of inactivity. The number next to the alarm clock icon in the Icon Bar (🕒) tells the amount of time remaining in the session.

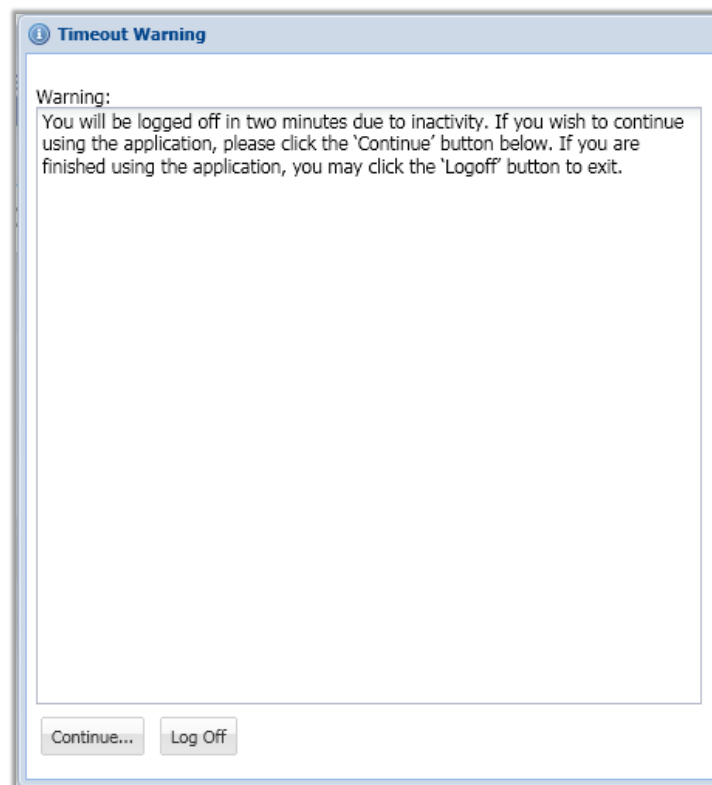


Figure 7: TBI CDS Timeout Warning

After 13 minutes of inactivity, a warning will appear notifying the user that his or her session will expire in two minutes. The user can click the 'Continue' button at the bottom of the dialog to reset the remaining time to 15 minutes. If the user wishes to end his or her session, he or she can do so by clicking the 'Log Off' button at the bottom of the dialog. If the user does not make any selections once the timeout warning appears, the application will automatically log the user off after two minutes.

### **3.3. Changing User ID and Password**

Because the TBI CDS application is accessed with the user's CPRS credentials, the user must follow standard procedures for changing a CPRS access code or verify code. Typically a Clinical Coordinator will issue these codes. Please consult VA guidelines for more information.

## 4. TBI CDS Graphical User Interface (GUI)

### 4.1. GUI Summary

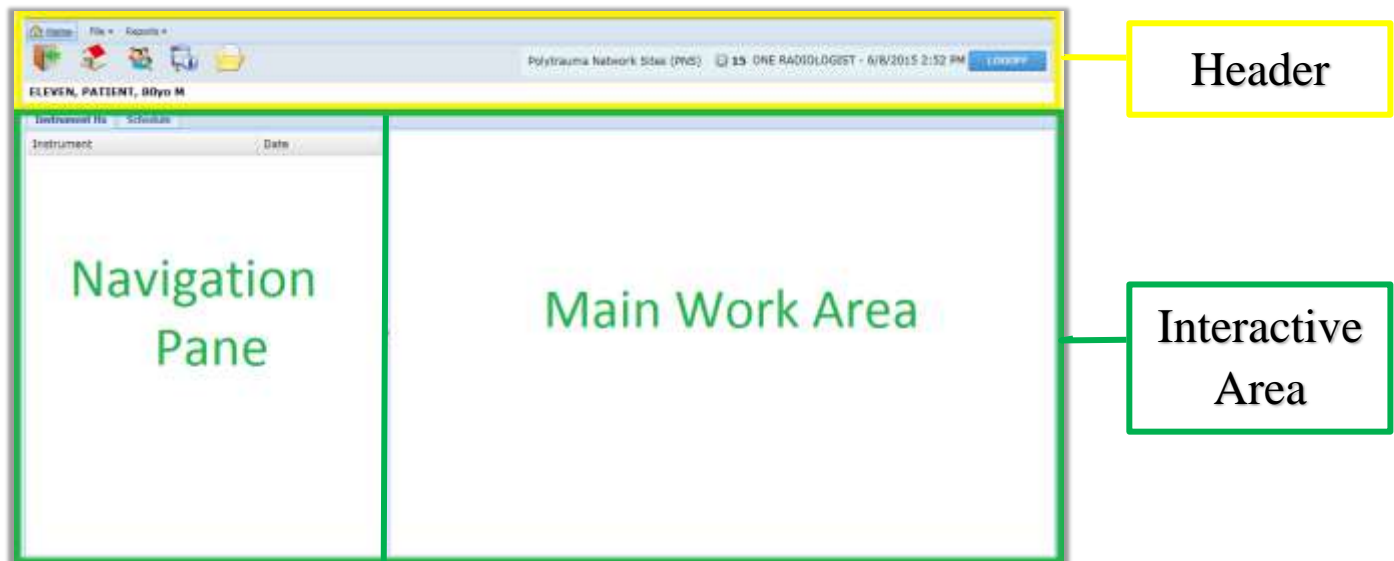


Figure 8: TBI CDS GUI Structure

The TBI CDS Application Graphical User Interface (GUI) is designed to be intuitive to users who are generally familiar with computer applications and programs. At the most basic level, the GUI is divided into a header and an interactive area. On some pages, the interactive area will be further divided into a navigation pane and a work area.

#### 4.1.1. Application Header

The TBI CDS application header runs across the top of the screen and is visible on all pages of the application. It contains a dynamic set of information, application functions and navigation links that change based on the screen being viewed. The main components of the header are the Menu Bar, the Icon Bar, and the Patient Information Bar.

##### 4.1.1.1. Menu Bar

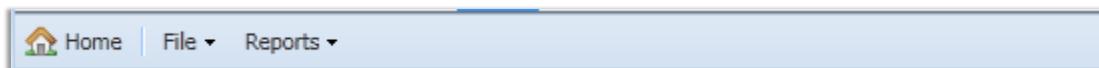


Figure 9: Application Header – Menu Bar








- Home – takes the user to the Home page.
- File Menu – displays a drop-down menu when clicked.

- Patient Lookup – opens the Patient Lookup dialog.
- Reports Menu – displays a drop-down menu when clicked.
  - Patient Reports – takes the user to the Patient Reports screen.
  - Aggregate & Improvement Reports – takes the user to the Aggregate & Improvement Reports screen.
  - Statistical Analysis – takes the user to the Statistical Analysis screen.

#### 4.1.1.2. Icon Bar



**Figure 10: Application Header - Icon Bar**

-  Close Patient\* – closes the Patient Summary and takes the user to the Home page.
-  Demographics\* – takes the user to the current patient's Patient Demographics page.
-  Lookup Patient – opens the Patient Lookup dialog.
-  Summary Page\* – takes the user to the current patient's Patient Summary page.
-  Apply Pathways\* – opens the Apply Pathway dialog.
-  Save\* – saves information entered in the Demographics and Socioeconomics tabs of the Patient Demographics page.
- Session Information – displays information about the current session.
  - Clinical Program Area – displays the Clinical Program Area selected by the user on the Login page at the start of the current session.
  - Session Timer – displays an alarm clock icon () and the number of minutes remaining until the current session times out.
  - User Name – displays the user name of the user that is logged in.
  - Login Time and Date – displays the login time and date of the current session.

- Logoff Button – logs the user off the application.

Note: The items marked with an asterisk (\*) will only appear if the user has looked up a patient and has the patient record open.

#### 4.1.1.3. Patient Information Bar



**Figure 11: Application Header - Patient Information Bar**

If the user is interacting with a patient record (i.e., when viewing the Patient Summary or Patient Demographics pages), the patient's name, age, and gender will be displayed on a bar beneath the Icon Bar. If the user is doing something that does not involve interacting with an individual patient record (e.g., viewing Statistical Analysis or the Home page), the bar will disappear. Thus, unlike the other two bars in the application header, the Patient Information Bar is not always displayed.

#### 4.1.2. Application Interactive Area

Below the Application Header is the interactive area, which is where the user will perform most of the necessary functions of the application. The interactive area is often structured with a navigation or selection pane on the left side and a work area on the right. In this configuration, the user will select items from the navigation or selection pane on the left and then review or edit the information for the items using the work area on the right.

#### 4.1.3. Instruments, Events and Pathways

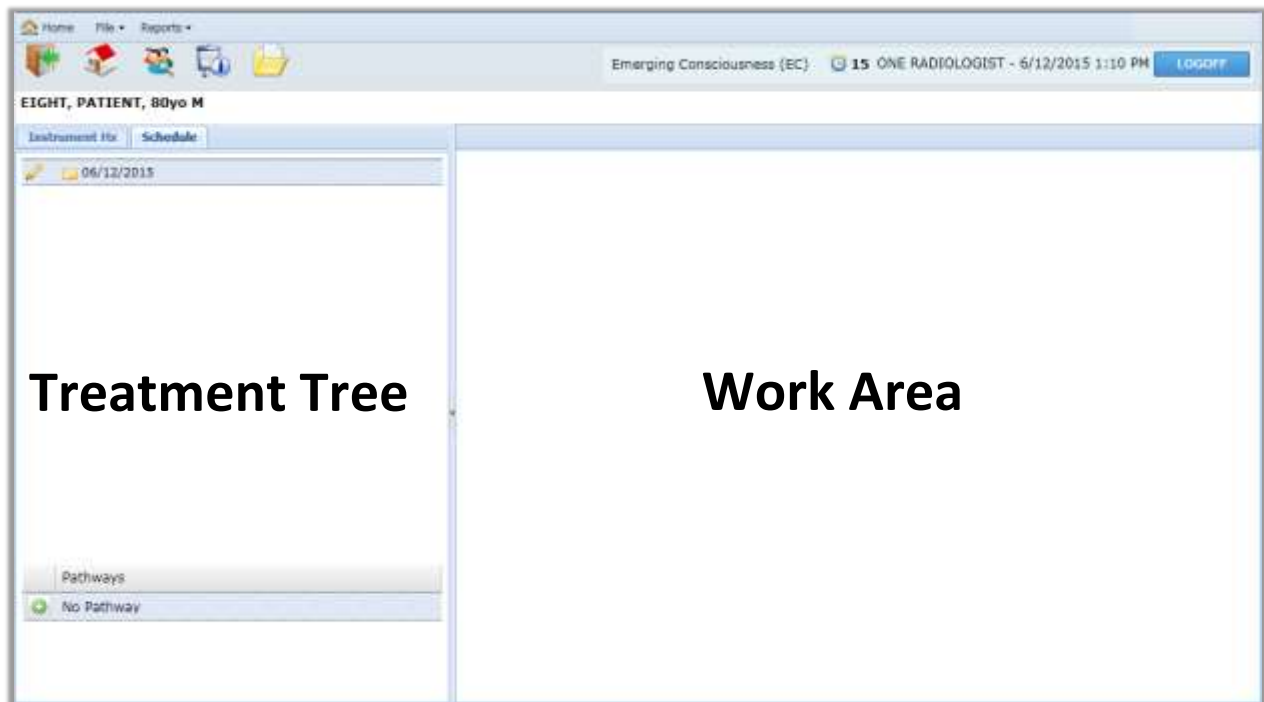
In order to make use of the full functionality of TBI CDS, it is necessary that the user understand the relationship between instruments, events, and pathways.

An instrument is an outcome measure in the form of a questionnaire or assessment that is given to the patient. Instruments can be assigned and completed multiple times, with each iteration saved as a separate instance of the instrument. Users also have the ability to change instrument responses and resubmit an instance, as long as the summary note for the instance has not already been submitted. Every instrument assigned to a patient must be associated with an event.

An event is a unit of the patient's schedule that can represent one encounter between patient and provider, although providers have leeway in adding and modifying events. Each event has a date and a title and can contain a group of instruments to be completed during the event. Only one summary note can be submitted to CPRS for each event, and the event is marked as closed after the note is submitted. Each event must be associated with a pathway.

A pathway is a predefined series of events with associated instruments that the provider can assign to all patients who fit a certain diagnostic profile. Events and instruments in the pathway are chronologically structured to represent a plan of treatment and evaluation from initial visit to discharge visit and follow-ups. All patients will have a No Pathway option that can be used to create events and assign instruments outside of their main pathways.

## 4.2. Patient Summary



**Figure 12: Patient Summary Page**

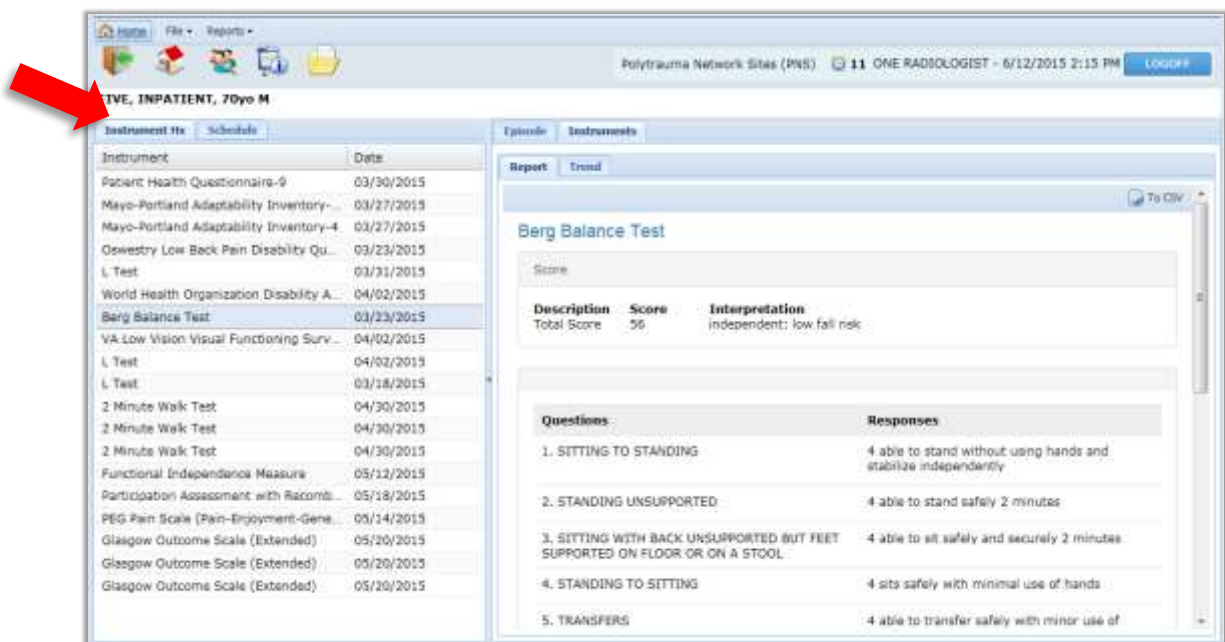
When a user launches TBI CDS from a patient record in CPRS and logs in, the Patient Summary screen will be the first page shown. The patient whose record was open in CPRS will be automatically loaded in TBI CDS, and the user will be able to interact with the Patient Summary page to complete outcomes forms and perform a wide range of other treatment-related activities.

The main components of the Patient Summary page are the Treatment Tree on the left side and the large Work Area on the right. Tabs are displayed across the top of each area as a method of organizing the functionality contained therein.

### 4.2.1. Treatment Tree

The Treatment Tree is used to create the patient's schedule of treatment and access patient events and instruments for completion, viewing and editing in the Work Area. The tree contains the Instrument Hx and Schedule tabs.

#### 4.2.1.1. Instrument Hx (History) Tab



The screenshot displays the 'Instrument Hx' tab for a patient. The left pane shows a list of instrument instances with columns for 'Instrument' and 'Date'. The right pane shows a detailed report for the 'Berg Balance Test'.

Instrument	Date
Patient Health Questionnaire-9	03/30/2015
Mayo-Portland Adaptability Inventory...	03/27/2015
Mayo-Portland Adaptability Inventory-4	03/27/2015
Oswestry Low Back Pain Disability Qu...	03/23/2015
L Test	03/31/2015
World Health Organization Disability A...	04/02/2015
<b>Berg Balance Test</b>	<b>03/23/2015</b>
VA Low Vision Visual Functioning Surv...	04/02/2015
L Test	04/02/2015
L Test	03/18/2015
2 Minute Walk Test	04/30/2015
2 Minute Walk Test	04/30/2015
2 Minute Walk Test	04/30/2015
Functional Independence Measure	05/12/2015
Participation Assessment with Racomb...	05/18/2015
PEG Pain Scale (Pain-Enjoyment-Gene...	05/14/2015
Glasgow Outcome Scale (Extended)	05/20/2015
Glasgow Outcome Scale (Extended)	05/20/2015
Glasgow Outcome Scale (Extended)	05/20/2015

Berg Balance Test		
Score		
Description	Score	Interpretation
Total Score	56	Independent: low fall risk

Questions	Responses
1. SITTING TO STANDING	4 able to stand without using hands and stabilize independently
2. STANDING UNSUPPORTED	4 able to stand safely 2 minutes
3. SITTING WITH BACK UNSUPPORTED BUT FEET SUPPORTED ON FLOOR OR ON A STOOL	4 able to sit safely and securely 2 minutes
4. STANDING TO SITTING	4 sits safely with minimal use of hands
5. TRANSFERS	4 able to transfer safely with minor use of

**Figure 13: Instrument Hx Tab with Instrument Report**

The Instrument Hx tab contains a list of all of the instrument instances that have been completed and submitted for the current patient with the dates on which they were completed. Only instrument instances that were part of an event for which a note has been submitted will appear in the list. If the same instrument instance was completed multiple times (i.e., the responses were edited and resubmitted), the most recent version of the instrument instance will be shown with the date it was last submitted.

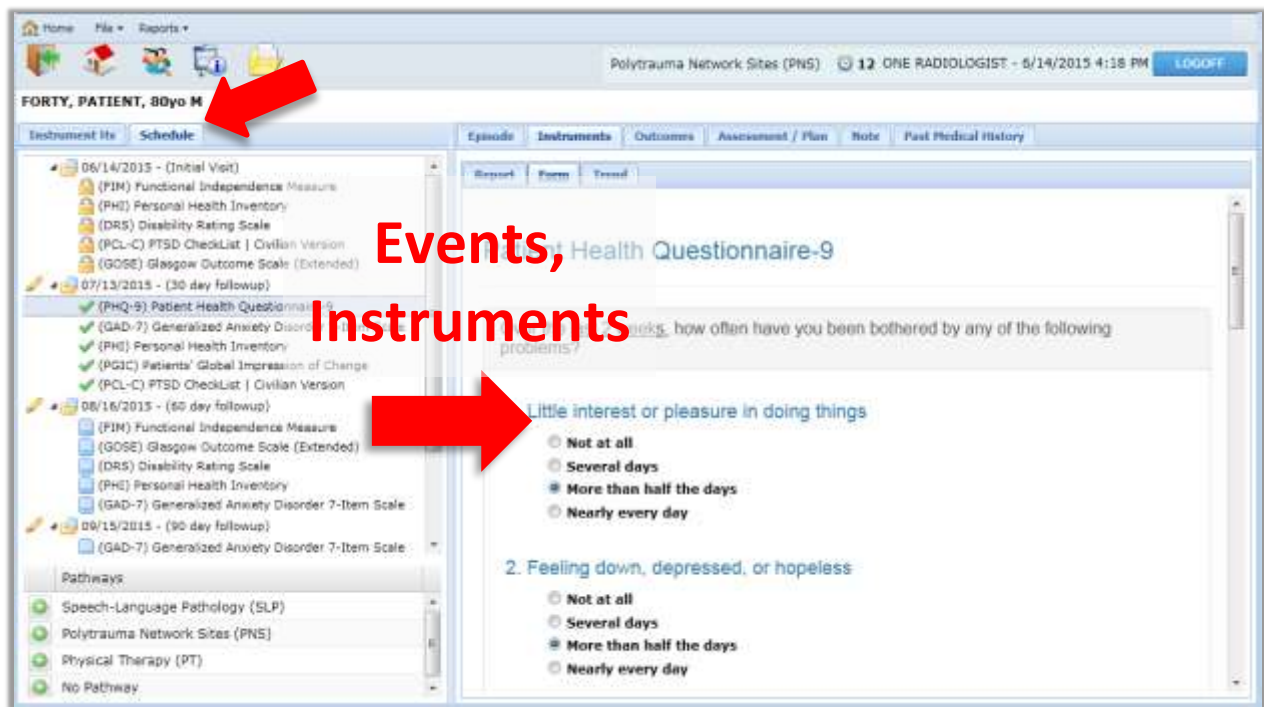
Instrument Hx   Schedule	
Instrument	Date ▼
Glasgow Outcome Scale (Extended)	05/20/2015
Glasgow Outcome Scale (Extended)	05/20/2015
Glasgow Outcome Scale (Extended)	05/20/2015
Participation Assessment with Recomb...	05/18/2015
PEG Pain Scale (Pain-Enjoyment-Gen...	05/14/2015
Functional Independence Measure	05/12/2015
2 Minute Walk Test	04/30/2015
2 Minute Walk Test	04/30/2015
2 Minute Walk Test	04/30/2015
L Test	04/02/2015
VA Low Vision Visual Functioning Surv...	04/02/2015
World Health Organization Disability A...	04/02/2015
L Test	03/31/2015
Patient Health Questionnaire-9	03/30/2015
Mayo-Portland Adaptability Inventory-...	03/27/2015
Mayo-Portland Adaptability Inventory-4	03/27/2015
Berg Balance Test	03/23/2015
Oswestry Low Back Pain Disability Qu...	03/23/2015
L Test	03/18/2015

**Figure 14: Instrument Hx Tab Detail**

Within the list of completed instruments, the user can click the column headers to sort the list by instrument name or by date completed. The user can then toggle the sort order between ascending and descending by clicking on the same column header again. Additional column controls are described in the appendix.

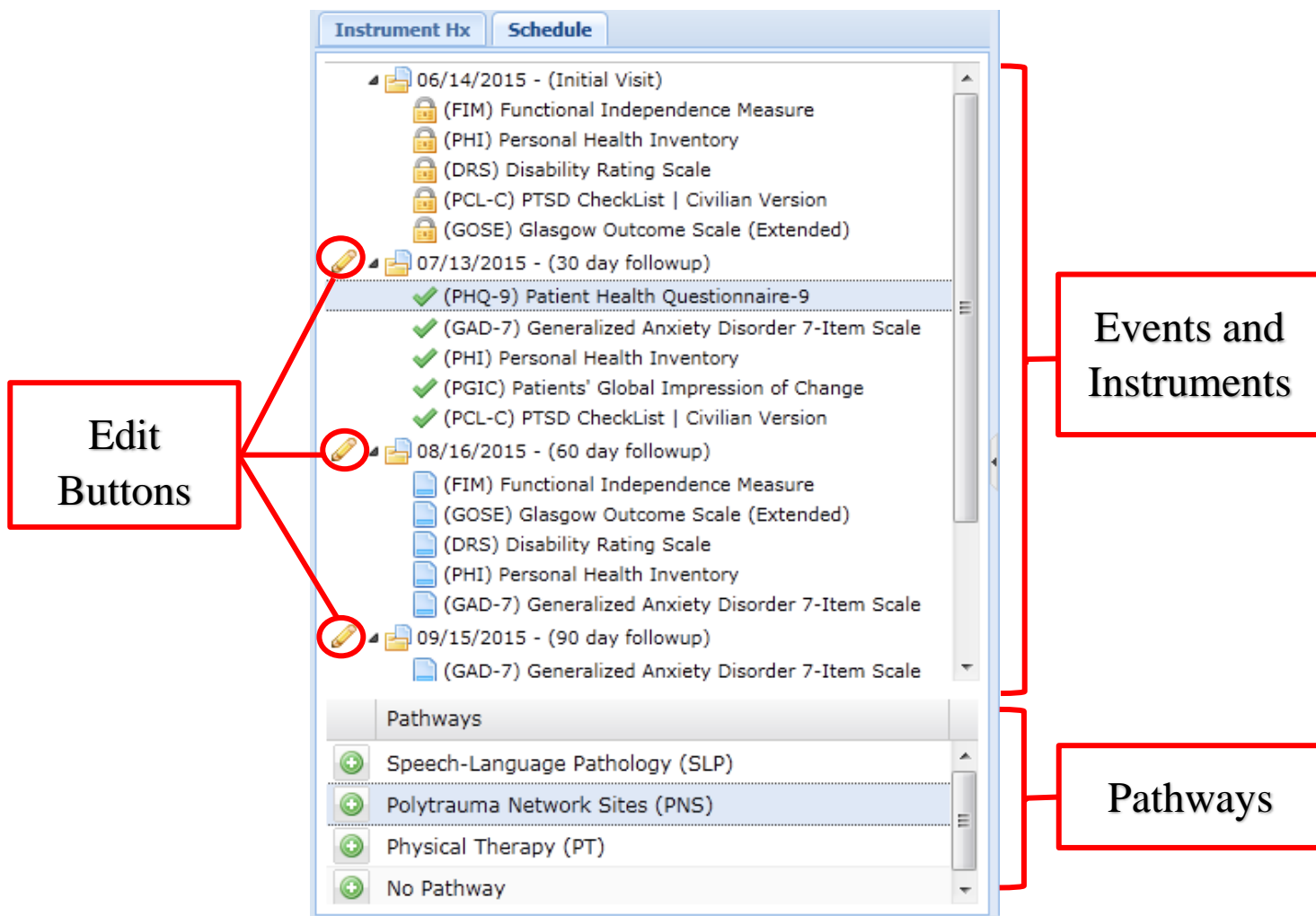
Selecting any of the completed instrument instances listed in the Instrument Hx tab will cause the Report and Trend sub-tabs for that instrument instance to appear in the Work Area under the Instruments tab. The Report sub-tab will be shown by default and will display the responses selected during the chosen instance of the instrument. If the instrument can be scored, the Trend sub-tab will also be shown and will graph the overall trend of the instrument's scores for the current patient.

#### 4.2.1.2. Schedule Tab



**Figure 15: Patient Summary with Schedule Tab**

The Schedule tab of the Treatment Tree displays the schedule of events and instruments that have been assigned to the patient, divided by pathway. This tab is used to select instruments and events for use in the Work Area. It also contains controls to view, create and edit the Schedule.







**Figure 16: Schedule Tab Detail**

Only one Pathway's events and instruments can be displayed in the Schedule tab at a time. The user can change which Pathway's events are shown by selecting one of them from the Pathways area at the bottom of the tab. The most recently created Pathway will be shown when the user accesses the Schedule tab for the first time in a session. The user can add an event to any Pathway by clicking the green plus icon next to the Pathway name in the Pathways area. A pop-up will appear allowing the user to specify a date and name for the event before adding it to the Pathway and Schedule.

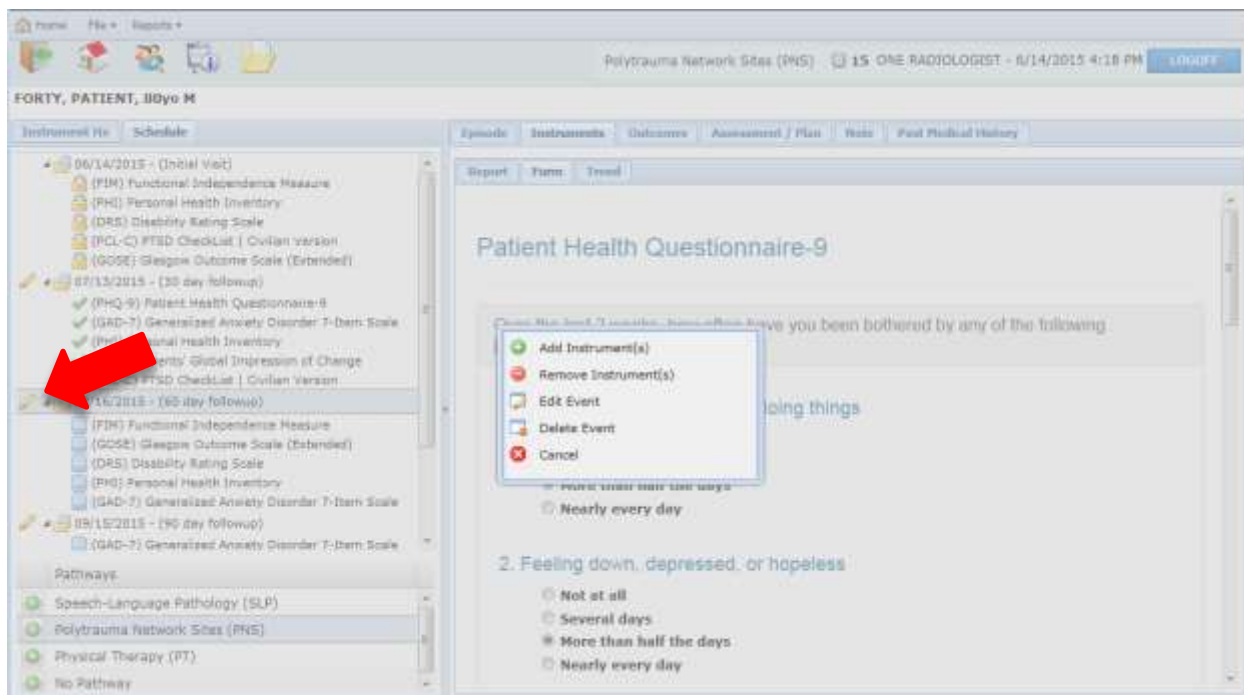
The events in the Schedule are shown in chronological order. Each event in the Schedule is displayed as a folder that may contain a group of instruments for the patient to complete during that event. The instrument(s) for each event will be visible below the event by default, but the user can collapse and expand these by clicking the arrow to the left of the folder icon. Clicking on the event itself will cause that event's information to be loaded in the Outcomes, Assessment/Plan and Note tabs and will also cause the patient's Episode and Past Medical History tabs to be loaded.

Each instrument instance is displayed in the Schedule tab as an item within the “folder” of an event. The icon displayed next to the instrument name indicates the status of the instance, the possible values of which are described in the figure below. Clicking on an instrument instance under an event produces the same result as clicking the event itself, but also causes the Instruments tab to appear with the Form, Report, and/or Trend sub-tabs, depending on the status of the instrument instance.

Icon	Instrument Instance Status	Instrument Tabs Shown
	This instance of the instrument is able to be completed. Responses have not yet been saved.	Form and Trend
	This instance of the instrument has been completed and saved but a note has not been submitted for its associated event. Responses can still be changed on the Form.	Form, Report and Trend
	This instance of the instrument has been completed and saved, and a note was submitted for its associated event. The instrument instance is locked and responses cannot be changed.	Form (Read-Only), Report and Trend
	This instance of the instrument was not completed or saved, but a note was submitted for its associated event. The instrument instance is locked and can no longer be completed.	Form (Read-Only) and Trend

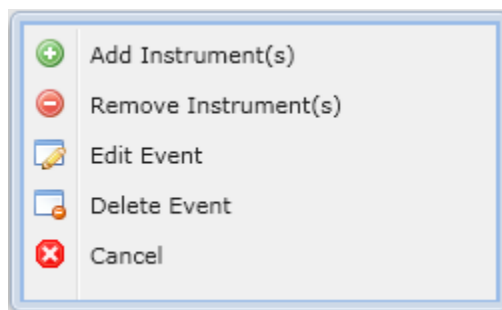
**Table 1: Schedule Tab Instrument Status Icons**

In addition to allowing the user to select events and instruments for use in the Work area, the Schedule tab also contains controls that enable the editing of the patient’s schedule. These controls are accessed by clicking the pencil button next to the event. Note that the pencil button will not appear next to events for which a CPRS note has been submitted, since these are locked and cannot be edited.



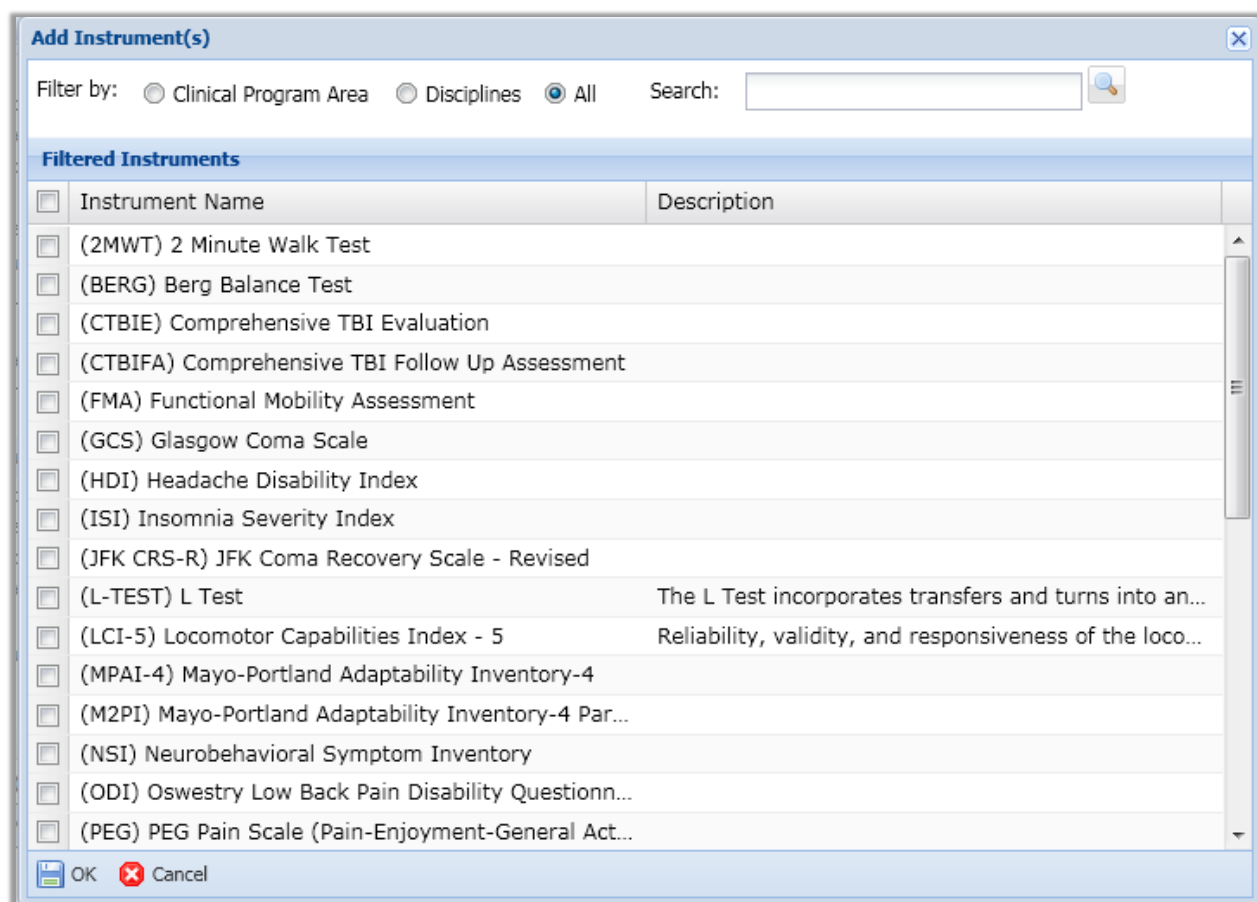
**Figure 17: Launching Schedule Controls Menu from Edit Button**

Clicking the pencil button next to an unlocked event causes the schedule controls menu to appear. The options for this menu are Add Instrument(s), Remove Instrument(s), Edit Event, Delete Event and Cancel. Each of these options opens a dialog except for the Cancel button, which closes the menu.



**Figure 18: Schedule Controls Menu Detail**

## Add Instrument(s) Dialog



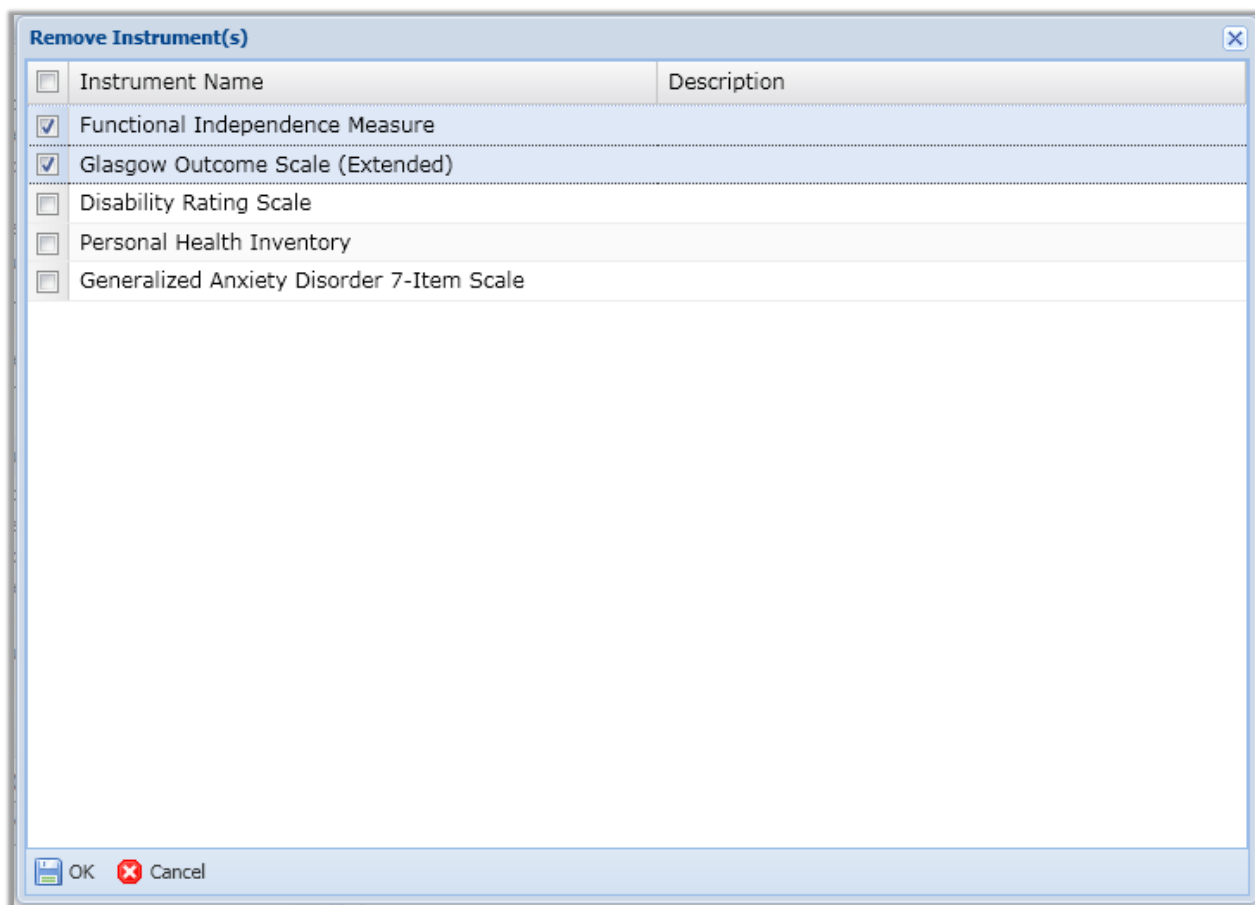
**Figure 19: Add Instrument(s) Dialog**

The Add Instrument(s) dialog is launched from the schedule controls menu, which in turn is launched from the pencil button next to an event in the schedule. The dialog allows the user to add instruments to the event by checking them in the list and clicking 'OK'. Any instrument with an incomplete instance already listed under the event being edited is omitted from the list in the dialog to prevent duplication. The display of the list can be altered using the column controls described in the appendix.


The default filter for the list of instruments is All, which will display all the instruments available in the application that do not already have incomplete instances assigned within the event being edited. The user can also choose to filter by Clinical Program Area or Discipline by using the filter radio buttons and then selecting a specific Clinical Program Area or Discipline from the drop-down menu that appears. If a filter is used, only instruments selected in the filter will be displayed and ultimately added to the event; the user cannot add instruments from multiple filters at once.

Lastly, the user can search for an instrument using the search box and magnifying glass button in the top right corner of the dialog. Any filters selected will not affect the search, which is global except that it excludes instruments that already have incomplete instances in the event.

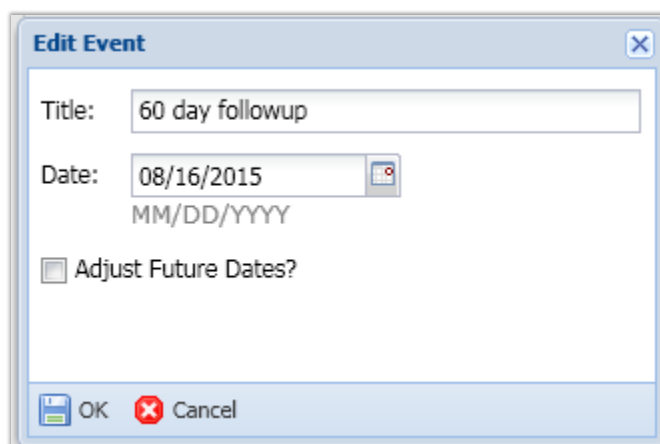
### ***Remove Instrument(s) Dialog***



**Figure 20: Remove Instrument(s) Dialog**

The Remove Instrument(s) dialog is launched by clicking the pencil button next to an event and choosing Remove Instrument(s) in the schedule controls menu. The dialog simply presents the list of incomplete, unlocked instrument instances (  ) in the event and allows the user to check them and click 'OK' to remove them. The presentation of the list can be changed using the column controls described in the appendix.

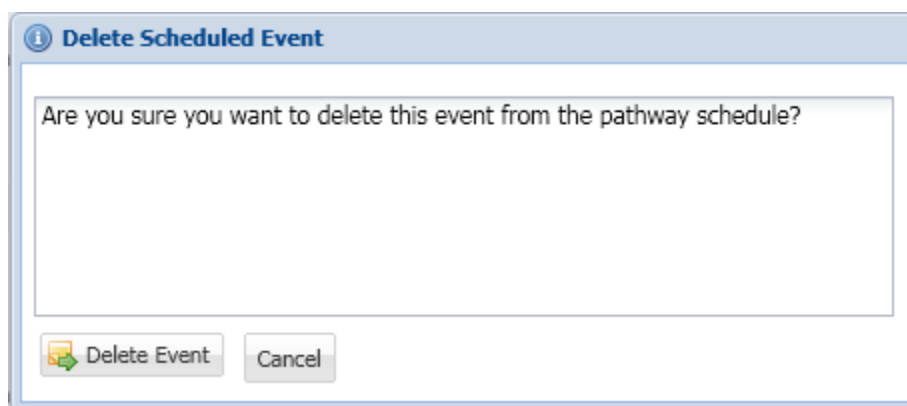
### ***Edit Event Dialog***



**Figure 21: Edit Event Dialog**

The Edit Event dialog is launched by clicking the pencil button next to an event and choosing Edit Event in the schedule controls menu. This simple dialog allows the user to change the current Title and Date of the chosen event. If the user selects the 'Adjust Future Dates?' checkbox when changing the Date of an event, later events in the Schedule will have their Dates adjusted by the same amount as the chosen event. For example, if the user moves the event back by a week and checks the box, all following events will also be moved back by a week.

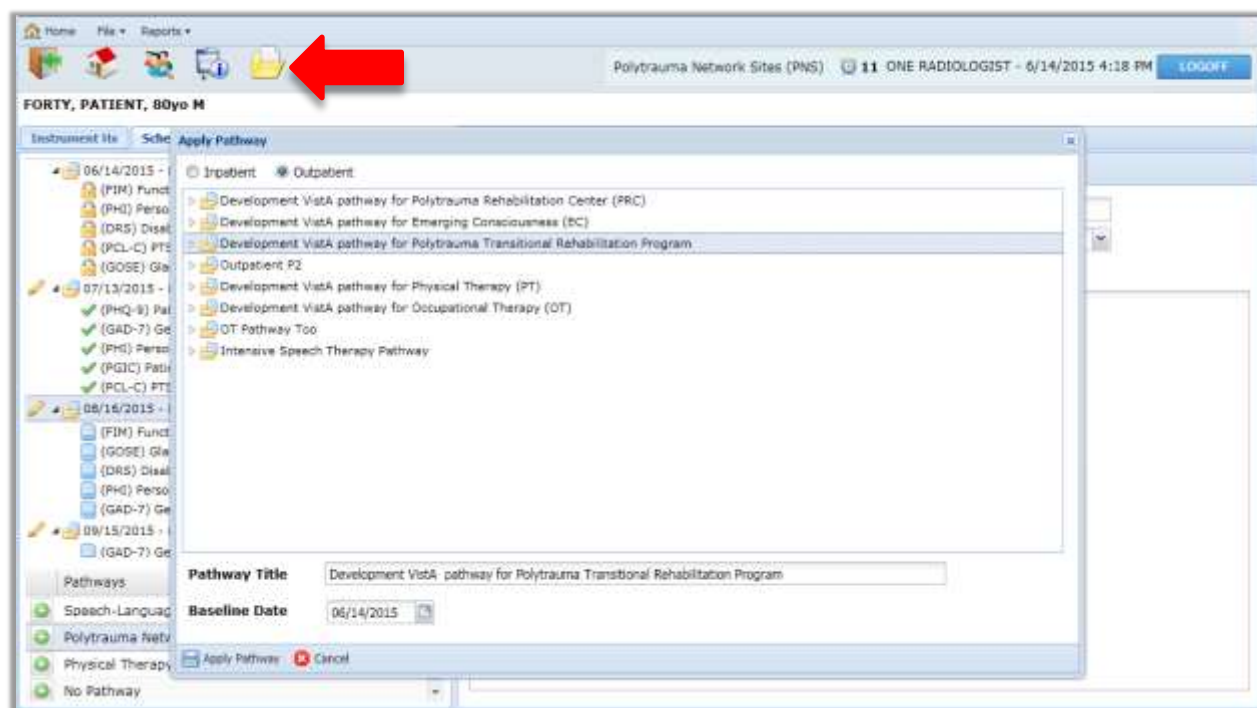
### ***Delete Event Dialog***



**Figure 22: Delete Event Dialog**

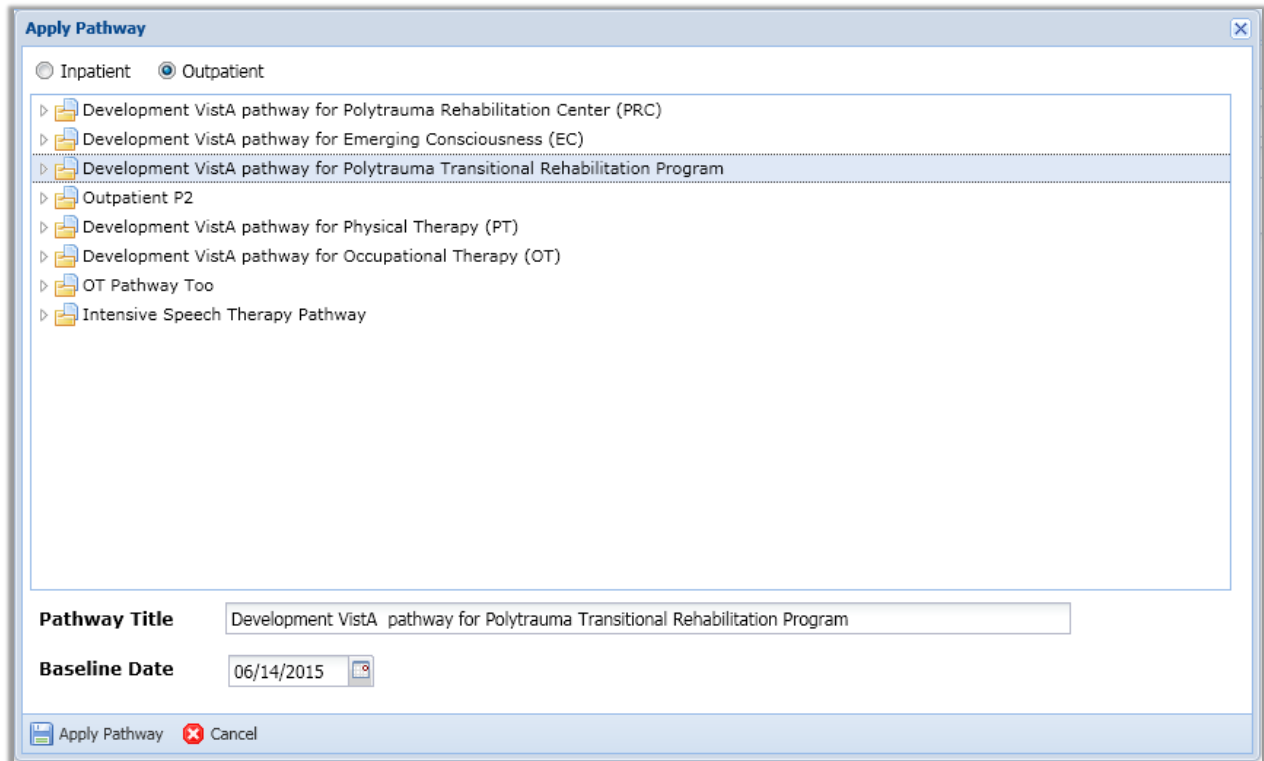
If the user clicks the Delete Event button in the schedule controls menu, a pop-up dialog will appear asking the user to confirm that he or she wishes to delete the event and all of its associated instrument assignments. If the user confirms, the event will be removed from the Schedule along with all of the instrument instances it contains. Only events on which no work has been done can be deleted. In this context, "work" includes the completion of instruments and the saving or submission of notes.

## Create Pathway Dialog



**Figure 23: Launching Apply Pathway Dialog from Apply Pathways Icon**

The Create Pathway dialog is accessed using the Apply Pathways button and enables the user to apply a pathway to the patient. A pathway is a predetermined set of instruments and events that have predetermined intervals and frequencies, enabling a provider to quickly create the patient schedule from a template as opposed to creating it event-by-event.



**Figure 24: Apply Pathway Dialog Detail**

In order to select a pathway to apply, the user must first choose between inpatient and outpatient pathways using the radio buttons at the top of the dialog. After making this selection, the user will see a list of pathways for that Clinical Setting in the main area of the dialog. At this point, the user can select a pathway to add or click the arrow to the left of the pathway name to see the events and instruments it contains. Clicking this arrow again will hide the pathway events and instruments.

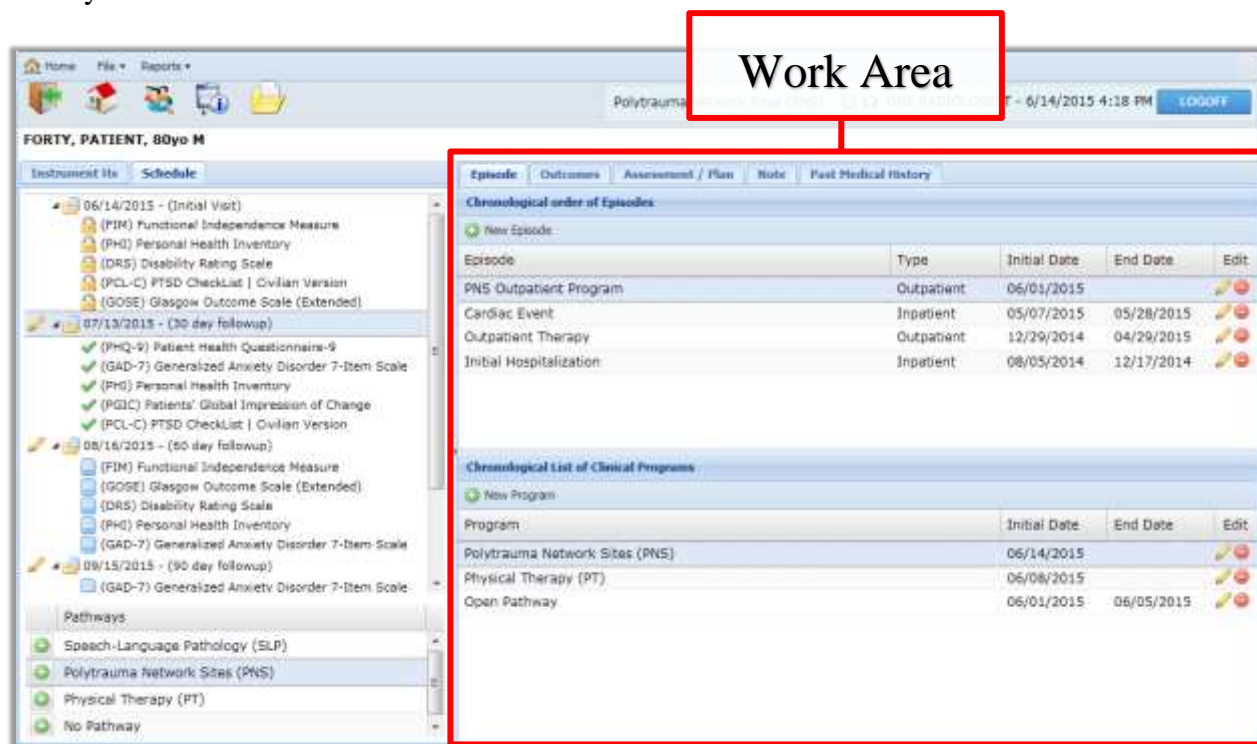
Once the user selects a pathway, the Pathway Title field at the bottom of the dialog will be populated with the pathway name. The user can leave this field unaltered or can type a different Pathway Title if necessary, with the restriction that all of a patient's pathways must have unique names. Below the Pathway Title, the Baseline Date field will be populated with the current date by default. The user can leave this as is or choose a different Baseline Date for the pathway by typing the date into the field or using the advanced date picker launched from the calendar button. The Baseline Date will be used as the date of the first event in the pathway, and the dates of subsequent events will be determined based on the predefined spacing of the events in the pathway.

Once the user has made all desired selections, he or she can commit the pathway to the Schedule using the 'Apply Pathway' button in the bottom left corner of the dialog. Doing this will cause the pathway to appear in the Pathways section at the bottom of the Schedule tab. The events and instruments for the pathway will then appear in the main part of the Schedule tab.

The user can discard the selections in the dialog using the ‘Cancel’ button next to the ‘Apply Pathway’ button or using the ‘X’ in the top right corner of the dialog.

## 4.2.2. Work Area















The Work area of the Patient Summary page provides the functionality to allow the user to administer instruments, review and annotate instrument results, plan future events, enter patient medical history, document patient episodes and Clinical Programs, and write notes to CPRS. It consists of the Episode, Instruments, Outcomes, Assessment/Plan, Note, and Past Medical History tabs.



**Figure 25: Patient Summary with Episode Tab in Work Area**

Note: In order to interact with any of these tabs, the user must first select an event (or an instrument under an event) in the Schedule tab.

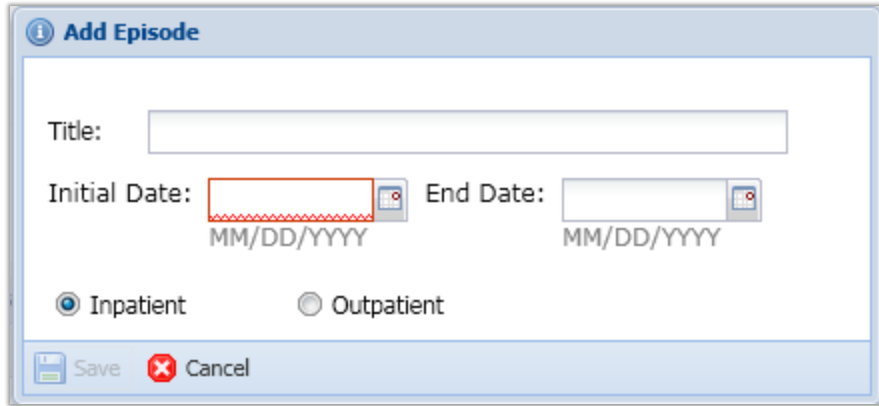
#### 4.2.2.1. Episode Tab

Episode					Outcomes	Assessment / Plan	Note	Past Medical History
Chronological order of Episodes								
+ New Episode								
Episode	Type	Initial Date	End Date	Edit				
PNS Outpatient Program	Outpatient	06/01/2015		 				
Cardiac Event	Inpatient	05/07/2015	05/28/2015	 				
Outpatient Therapy	Outpatient	12/29/2014	04/29/2015	 				
Initial Hospitalization	Inpatient	08/05/2014	12/17/2014	 				
Chronological List of Clinical Programs								
+ New Program								
Program	Initial Date		End Date	Edit				
Polytrauma Network Sites (PNS)	06/14/2015			 				
Physical Therapy (PT)	06/08/2015			 				
Open Pathway	06/01/2015		06/05/2015	 				

**Figure 26: Episode Tab Detail**

The Episode tab allows providers to track the patient's inpatient and outpatient Episodes and the Clinical Programs involved in each Episode. This data is extremely important to the accuracy and utility of the Reporting functionality, so all users are highly encouraged to record and update this information diligently. The Episode tab is presented persistently regardless of the event or instrument selected in the Schedule; however, an event or instrument must be selected in order to view it.

In the top half of the tab, the user can see the Chronological order of Episodes for the patient, with the most recent Episode listed first. The presentation of the list can be altered using the column controls described in the appendix.



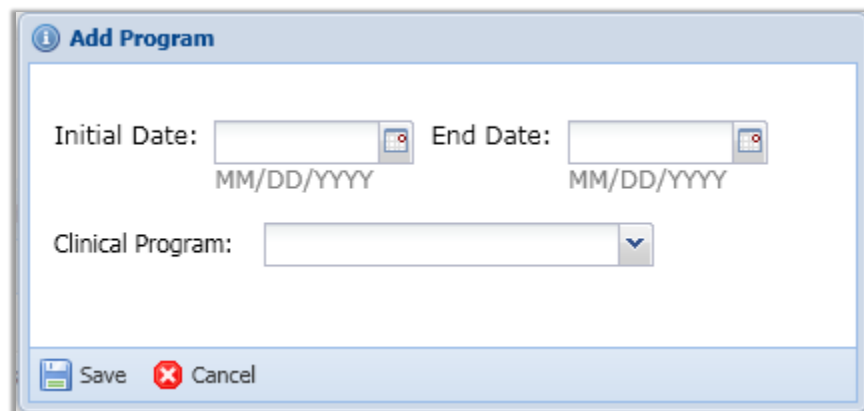
The 'Add Episode' dialog box features a title bar with an information icon and the text 'Add Episode'. It contains a 'Title' text field, 'Initial Date' and 'End Date' date pickers (both with 'MM/DD/YYYY' labels), and radio buttons for 'Inpatient' (selected) and 'Outpatient'. At the bottom are 'Save' and 'Cancel' buttons.

**Figure 27: Add Episode Dialog**

To add a new Episode, the user must click the New Episode button in the top left corner of the tab and complete the dialog that appears. The dialog contains fields for an Episode Title, Initial Date, End Date, and Clinical Setting (Inpatient or Outpatient). The End Date field is optional so that the provider can document an Episode while it is in progress. After making all required selections, the user can create the Episode by clicking Save or discard it by clicking Cancel.

The new Episode will appear in the Chronological order of Episodes according to the date(s) chosen. The user can edit the Episode by clicking the pencil button, which will open a dialog with the same fields seen when adding the Episode, allowing the user to make changes and Save. The user can also delete an Episode by clicking the red minus button and confirming in the dialog that appears.

Once the patient has an inpatient or outpatient Episode, the user can add Clinical Programs to the Episode in the bottom half of the tab. First, the user must select an Episode from the Chronological order of Episodes, as each Episode will have its own list of Programs. Once the desired Episode is selected, the user will see the Programs for the Episode in the Chronological List of Clinical Programs.



The 'Add Program' dialog box has a title bar with an information icon and the text 'Add Program'. It includes 'Initial Date' and 'End Date' date pickers (both with 'MM/DD/YYYY' labels) and a 'Clinical Program' dropdown menu. At the bottom are 'Save' and 'Cancel' buttons.

**Figure 28: Add Program Dialog**

At this point, the user can click the New Program button above the list of Programs and interact with the dialog that appears to add a new Program. The dialog contains fields for an Initial Date, End Date, and Clinical Program. The list of Clinical Programs is filtered based on those available at the site to which the user logged in. Once again, the End Date is optional so that the provider can document a Program while it is in progress. After making all required selections, the user can add the Program to the chosen Episode by clicking Save or discard it by clicking Cancel.

The new Program will appear in the Chronological List of Programs for the selected Episode according to the date(s) chosen. The user can edit the Program by clicking the pencil button, which will open a dialog with the same fields seen when adding the Program, allowing the user to make changes and Save. The user can also delete a Program by clicking the red minus button and confirming in the dialog that appears.

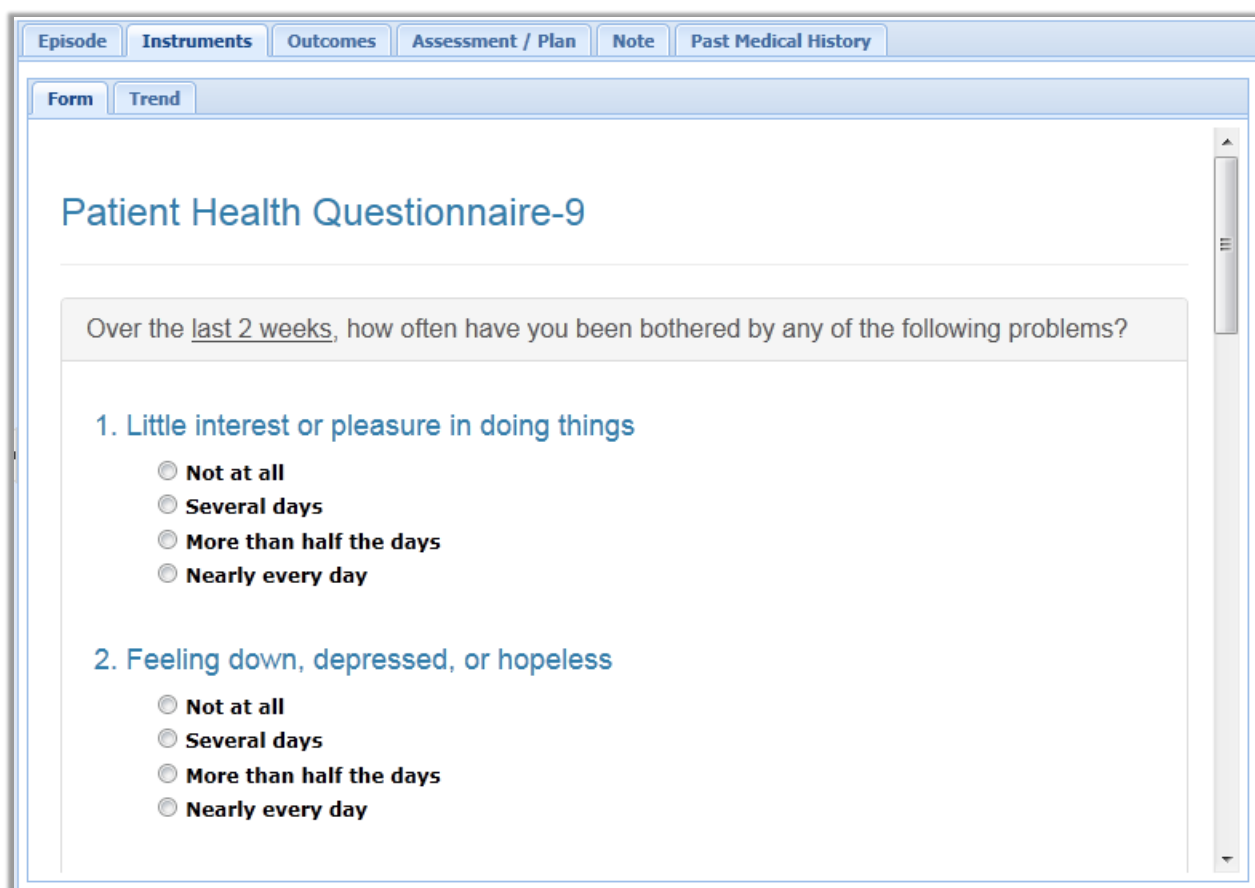
#### 4.2.2.2. Instruments Tab

The screenshot displays the 'Instruments' tab for a patient named FORTY, PATIENT, 80yo M. The interface includes a top navigation bar with 'Home', 'File', and 'Reports' menus. A red arrow points to the 'Instruments' tab, which is highlighted. The left sidebar shows a list of instruments and pathways, including 'PHQ-9 Patient Health Questionnaire-9', 'GAD-7 Generalized Anxiety Disorder 7-Item Scale', and 'Polytrauma Network Sites (PNS)'. The main content area displays the 'Patient Health Questionnaire-9' form, which asks 'Over the last 2 weeks, how often have you been bothered by any of the following problems?'. The form includes two questions: '1. Little interest or pleasure in doing things' and '2. Feeling down, depressed, or hopeless'. Each question has four radio button options: 'Not at all', 'Several days', 'More than half the days', and 'Nearly every day'. The 'More than half the days' option is selected for both questions.

Figure 29: Instrument Tab with Completed PHQ-9 Form

The Instruments tab is used within the application to complete instruments, to review instrument reports, and to view the graphical trend of instrument scores. To achieve this functionality, it is divided into three sub-tabs that are shown and hidden dynamically depending on context: the Form, Report, and Trend sub-tabs.

## Form Sub-Tab




The screenshot shows a web application interface with a top navigation bar containing tabs: Episode, Instruments, Outcomes, Assessment / Plan, Note, and Past Medical History. Below this, a sub-tab bar shows 'Form' and 'Trend'. The main content area is titled 'Patient Health Questionnaire-9'. It contains a question: 'Over the last 2 weeks, how often have you been bothered by any of the following problems?'. Below the question are two numbered items, each with four radio button options:

- 1. Little interest or pleasure in doing things
  - ☐ Not at all
  - ☐ Several days
  - ☐ More than half the days
  - ☐ Nearly every day
- 2. Feeling down, depressed, or hopeless
  - ☐ Not at all
  - ☐ Several days
  - ☐ More than half the days
  - ☐ Nearly every day

A vertical scrollbar is visible on the right side of the form area.

**Figure 30: Instrument Form Sub-Tab Detail**

When an incomplete instance of an instrument is selected from the Schedule tab in the Treatment Tree, the instrument form will be shown in the Form sub-tab under Instruments. From there, the user will be able to make selections, enter text, and, generally, complete the instrument form as designed. If the instrument form is longer than the space available onscreen, it will be displayed with a scroll bar. After the user has finished filling out the instrument form, he or she can click the 'I'm Finished!' button at the bottom of the form to submit the answers and complete the instrument.

The Form tab will remain accessible until the summary note for the event is submitted, enabling the provider to adjust submitted instrument responses if necessary before finalizing them. To change instrument responses, select a completed, unlocked instrument (  ) from the Schedule and click over to the Form tab.

## Report Sub-Tab

**PTSD Checklist | Civilian Version**



Score

Description	Score	Interpretation
Total Severity Score	50	Symptomatic of PTSD

Instruction to patient: Below is a list of problems and complaints that veterans sometimes have in response to stressful life experiences. Please read each one carefully and select the response that indicates how much you have been bothered by that problem *in the last month*.

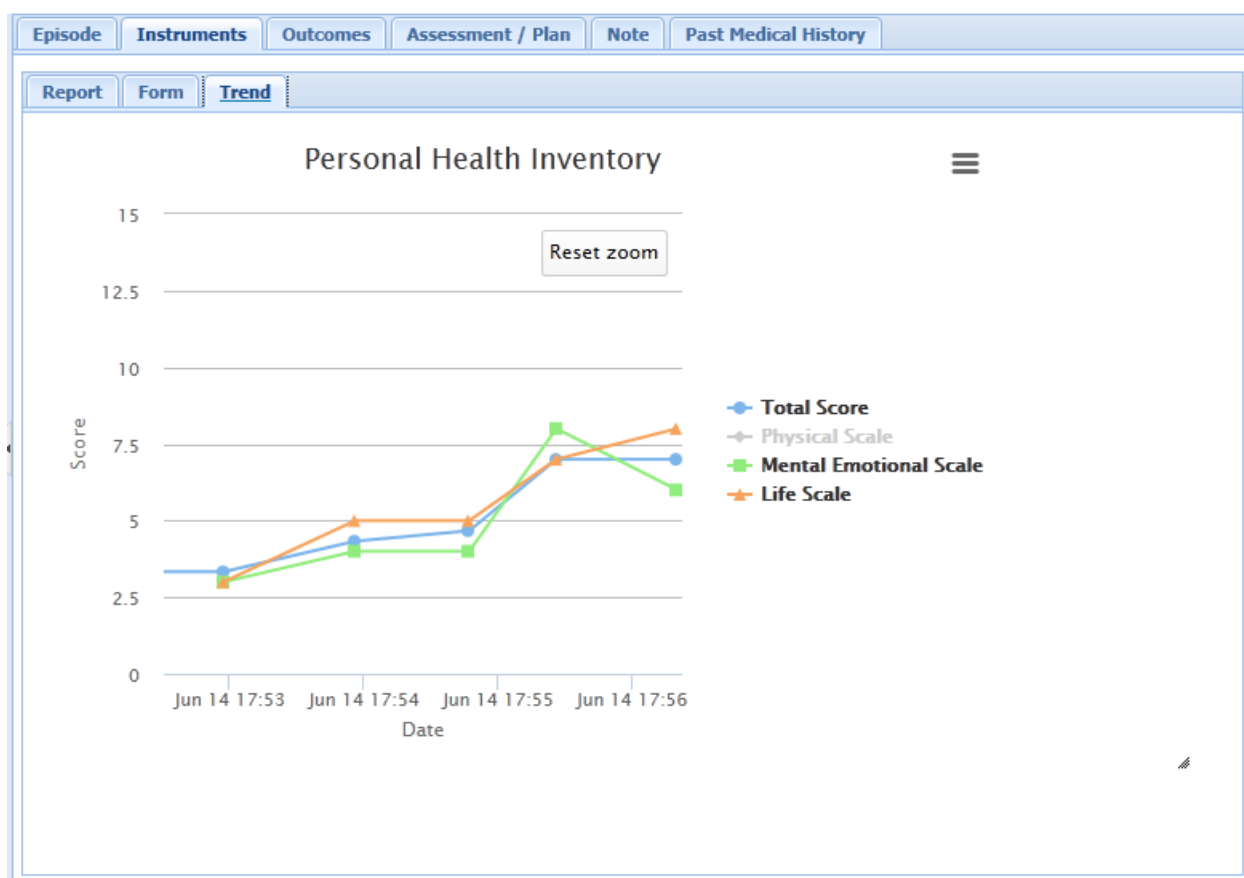
Questions	Responses
1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?	(4) Quite a bit
2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?	(5) Extremely
3. Suddenly <i>acting or feeling</i> as if a stressful experience <i>were happening</i> again (as if you were reliving it)?	(3) Moderately
4. Feeling very upset when something reminded you...	(2) A little bit

**Figure 31: Instrument Report Sub-Tab Detail**

When a completed instance of an instrument (  or  ) is selected from the Schedule or Instrument Hx tabs of the Treatment Tree, the Instrument Report for that instance will be displayed in the Report sub-tab. The Instrument Report displays the score(s) received, if applicable, and also presents the instructions and questions from the instrument form with the answers selected by the patient during that instance of the instrument. It can be exported as a comma-separated values (CSV) file using the To CSV button in the top right corner of the tab.

If the instrument has a score, the CSV file of the Instrument Report will have two levels of headers. The upper section of the file will show the score(s) for the instrument, and the lower section will show the instrument questions, the patient's chosen responses, and the score value of each chosen response, if applicable.

## Trend Sub-Tab



**Figure 32: Instrument Trend Sub-Tab Detail**

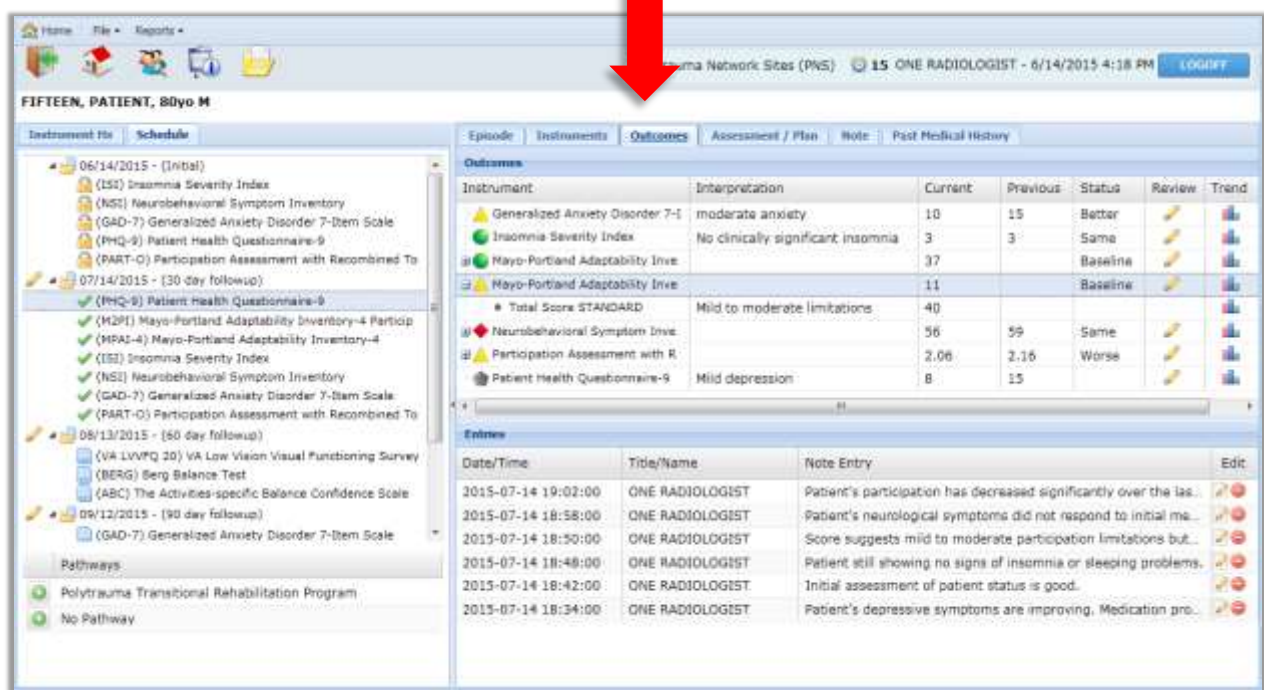
When an instrument that can be scored is selected from the Schedule or Instrument Hx tabs, the Trend sub-tab will be activated. If the current patient has already completed one or more instances of the instrument, the user can click on the tab to see a graph of the patient's previous score(s) on the instrument over time.

When viewing the Trend graph, the user can zoom into a section of the graph's y-axis by clicking on the graph and dragging to highlight that section. Zooming in allows providers to view a section of time in the patient's record of scores in more detail. The user can return to the full view of the Trend graph by clicking the 'Reset zoom' button that appears on the graph after zooming in.

If the instrument displayed in the Trend sub-tab uses scoring subscales, the trend of subscale scores will be visible on the graph alongside the trend of overall scores. The user can hide the trend of a subscale score or the overall score on the graph by clicking on that trend in the legend to the right of the graph. Multiple trends can be shown or hidden at once.

Finally, the user can access the chart context menu by clicking the button with three horizontal lines above and to the right of the graph. From this menu the user can choose to print the graph or to export it as a JPEG image, a PNG image, a PDF document, or an SVG vector image.

#### 4.2.2.3. Outcomes Tab



The screenshot displays the 'Outcomes' tab for a patient named 'FIFTEEN, PATIENT, 80yo M'. The interface includes a sidebar with a 'Schedule' view showing various assessment dates and instruments. The main area is divided into two sections: 'Outcomes' and 'Entries'.

**Outcomes Section:**

Instrument	Interpretation	Current	Previous	Status	Review	Trend
Generalized Anxiety Disorder 7-1	moderate anxiety	10	15	Better		
Insomnia Severity Index	No clinically significant insomnia	3	3	Same		
Mayo-Portland Adaptability Inve		37		Baseline		
Mayo-Portland Adaptability Inve		11		Baseline		
Total Score STANDARD	Mild to moderate limitations	40				
Neurobehavioral Symptom Inve		56	59	Same		
Participation Assessment with R		2.06	2.16	Worse		
Patient Health Questionnaire-9	Mild depression	8	15			

**Entries Section:**





Date/Time	Title/Name	Note Entry	Edit
2015-07-14 19:02:00	ONE RADIOLOGIST	Patient's participation has decreased significantly over the las...	
2015-07-14 18:58:00	ONE RADIOLOGIST	Patient's neurological symptoms did not respond to initial me...	
2015-07-14 18:50:00	ONE RADIOLOGIST	Score suggests mild to moderate participation limitations but...	
2015-07-14 18:48:00	ONE RADIOLOGIST	Patient still showing no signs of insomnia or sleeping problems.	
2015-07-14 18:42:00	ONE RADIOLOGIST	Initial assessment of patient status is good.	
2015-07-14 18:34:00	ONE RADIOLOGIST	Patient's depressive symptoms are improving. Medication pro...	

Figure 33: Patient Summary with Outcomes Tab

The Outcomes tab displays the completed instrument instances associated with a chosen event from the Schedule and enables the user to write, review and edit comments on these. The tab consists of a list of instrument outcomes in the upper half and an Entries section in the lower half.



The severity indicator appears to the left of the instrument name and gives a visual representation of the severity level selected by the provider for that instrument instance. If more than one severity level has been assigned to the instrument instance, the most recent rating (determined by the date and time selected in the Outcomes entry) will be shown. The possible states of the severity indicator are as follows:

	Mild
	Moderate
	Severe
	Unknown

**Table 2: Outcomes Tab Instrument Severity Indicator States**

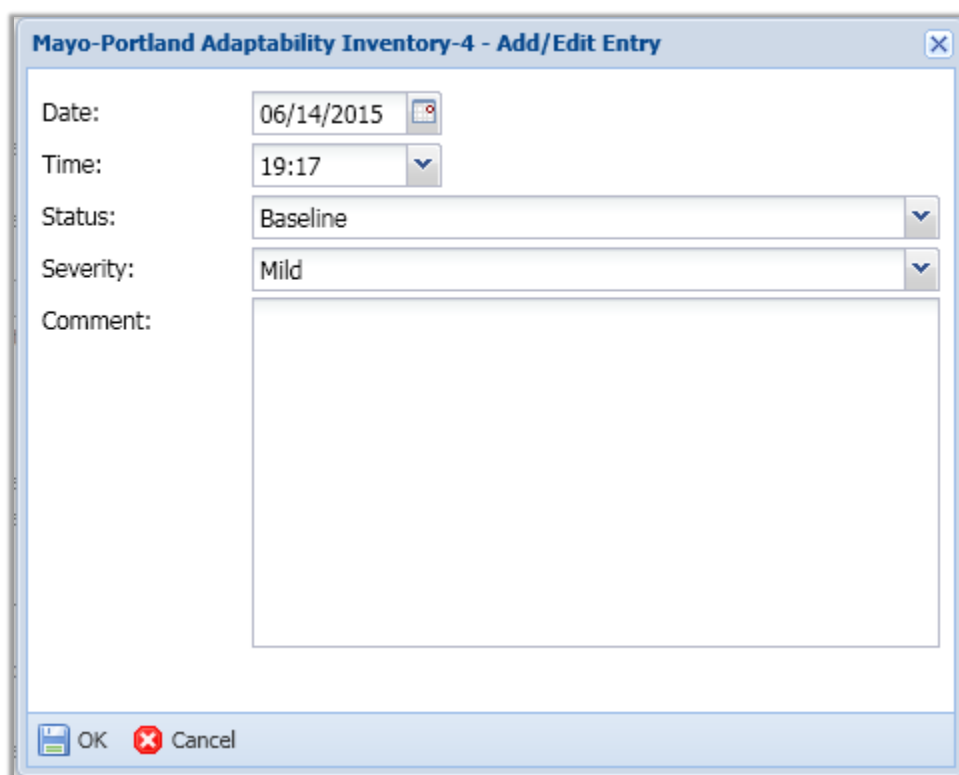
The scoring interpretation appears in the column to the right of the instrument name and gives an interpretation of the patient's current instrument score that is taken from the questionnaire hardcopy or related documents. To the right of the interpretation column, the current score column displays the score received on that instance of the instrument. To the right of that, the previous score column shows the most recent score of the instrument prior to the selected instance.

Next, the Status column gives the patient's progress with regards to the chosen instrument, as rated by the provider. The possible values for this rating are Baseline (no previous score data), Better, the Same, Worse, or Unknown. This column appears after the Current and Previous Score columns to allow the provider to assess the patient's progress quickly by comparing all three. If multiple Status ratings have been given for the same instrument instance, the most recent rating (determined by the time and date selected in the Outcomes entry) will be shown.

The Trend column on the far right contains a button for each instrument outcome that will launch a pop-up window displaying the instrument Trend graph. For more information on the Trend graph, see the section on the Instrument Trend sub-tab above.

Finally, just to the left of the Trend column, the tabular list also contains a Review button for each completed instrument instance, which opens the Add/Edit Entry dialog for that instance. This column is positioned next to the Trend column so that the user can easily see the trend of past results before creating a Review entry.

### **Add/Edit Entry Dialog**

The image shows a software dialog box titled "Mayo-Portland Adaptability Inventory-4 - Add/Edit Entry". It contains several input fields: "Date:" with a text box showing "06/14/2015" and a calendar icon; "Time:" with a text box showing "19:17" and a dropdown arrow; "Status:" with a dropdown menu showing "Baseline"; "Severity:" with a dropdown menu showing "Mild"; and "Comment:" with a large empty text area. At the bottom, there are "OK" and "Cancel" buttons with standard icons.

**Figure 35: Add/Edit Entry Dialog**

The Add/Edit Entry dialog is accessed by clicking a Review button in the list of instrument outcomes. This dialog gives providers the ability to review and assess the outcome of a completed instrument instance from the event chosen in the Schedule. At the top of the dialog, the user can select a date and time for the entry, which are defaulted to the current date and time. Multiple entries can be added for the same instrument instance, but only the most recent one, as determined by the date and time selected here, will have its ratings used in the list of instrument outcomes on the Outcomes tab. However, all entries will appear in the Entries section.

Below the date and time, the user can select a Status for the instrument instance, which is designed to reflect the patient's progress regarding that outcome measure. The possible choices for Status are Baseline, Better, Same, Worse, and Unknown.

Next, the user can select a Severity for the instrument instance, which is designed to indicate the overall severity of the patient's problems regarding that outcome measure. The options for Severity are Mild, Moderate, Severe, and Unknown.

If the user has already created an Outcomes entry for the selected instrument instance, the earlier entry's Status and Severity ratings will be automatically populated in the dialog. The user can choose new ratings or use the ones selected for the earlier entry.

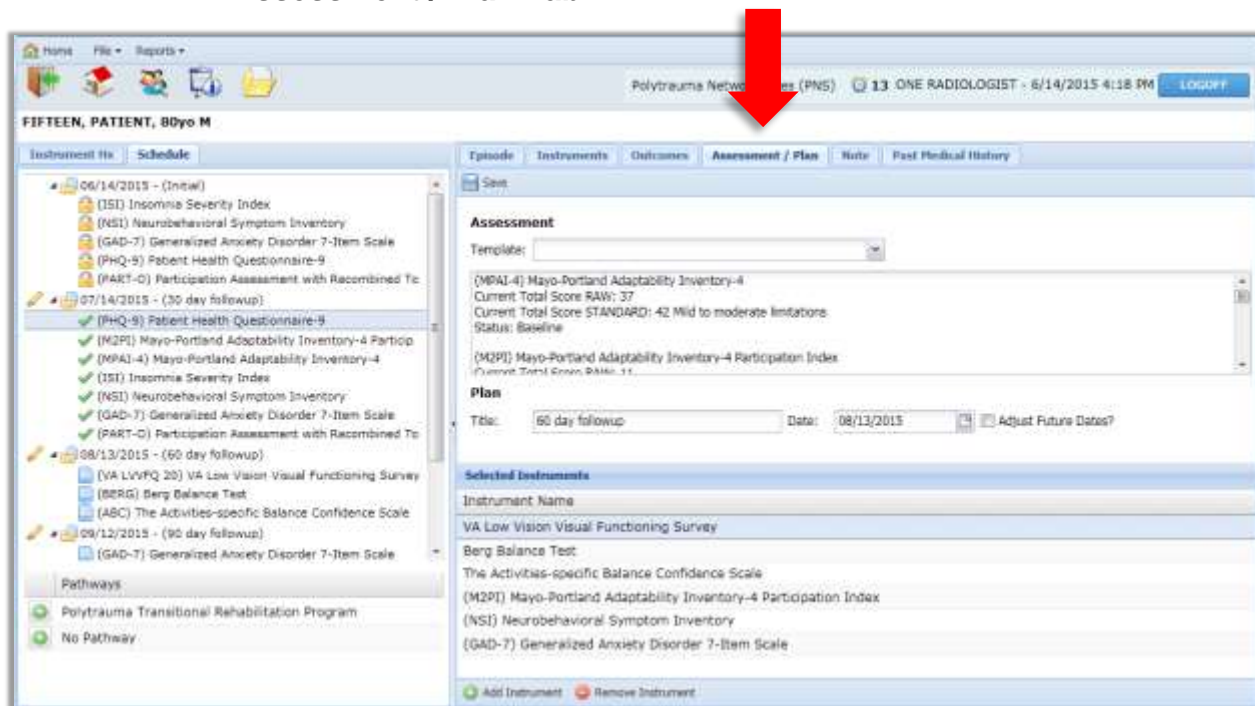
Finally, the user has the ability to enter free text as a Comment on the instrument instance. After the user has completed these steps, he or she can save the entry using the 'OK' button at the

bottom of the dialog or discard it using the adjacent ‘Cancel’ button or the ‘X’ in the top right corner. If the user saves the entry, it will appear in the Entries section in the lower half of the Outcomes tab.

## Entries Section

The Entries section in the bottom half of the Outcomes tab displays a table of all of the Review entries completed for the currently selected event in the Schedule. The columns of the table give the entries’ dates, times, authors, and a portion of the comments entered. The final column on the right side presents controls to edit or delete each entry. If the user chooses to edit the entry, he or she is presented with the saved Add/Edit Entry dialog for that entry. The user can then interact with the dialog as normal and save the changes over the previous selections and text. If the user chooses to delete the entry, he or she is first asked to confirm the action. If the user confirms, the entry is removed from the Entries section, and its Status and Severity ratings are removed from the Outcomes section, if applicable.

### 4.2.2.4. Assessment / Plan Tab



**Figure 36: Patient Summary with Assessment / Plan Tab**

The Assessment/Plan tab is the next tab in the Work Area. It is used to write an assessment of the current event that is selected in the Schedule and to plan the next event in the same pathway. The tab is divided into the Assessment section in the upper half of the Work Area and the Plan section in the lower half.

**Assessment**

Template: ▼

(MPAI-4) Mayo-Portland Adaptability Inventory-4  
 Current Total Score RAW: 37  
 Current Total Score STANDARD: 42 Mild to moderate limitations  
 Status: Baseline

(M2PI) Mayo-Portland Adaptability Inventory-4 Participation Index  
 Current Total Score RAW: 11

**Plan**

Title: 60 day followup Date: 08/13/2015 ☐ Adjust Future Dates?

**Selected Instruments**

Instrument Name
VA Low Vision Visual Functioning Survey
Berg Balance Test
The Activities-specific Balance Confidence Scale
(M2PI) Mayo-Portland Adaptability Inventory-4 Participation Index
(NSI) Neurobehavioral Symptom Inventory
(GAD-7) Generalized Anxiety Disorder 7-Item Scale

+ Add Instrument - Remove Instrument

**Figure 37: Assessment / Plan Tab Detail**

### **Assessment Section**

The Assessment section contains a drop-down menu for selecting a template and a text box for writing and editing the event assessment. If the user does not wish to use the template system, he or she may simply type the assessment text into the text box. Otherwise, the user may click the Template drop-down menu to select a template from the available options. When a template is selected from the menu, it will be populated in the Assessment text box. If the template contains tags, these will be replaced with the information they are designed to pull from the patient record. At least one template will contain tags to pull all reviewed instrument outcomes from the Outcomes Tab, saving the provider time in collecting these for the note.

After the template text has appeared in the text box, the user once again has the ability to edit the text. When the user is finished writing and editing the Assessment text, he or she may click the Save button in the top left corner of the Work area to save or may move down to the Plan section to plan the patient's next pathway event. If the user attempts to leave the tab without saving the Assessment text, he or she will be shown a warning that the unsaved data will be lost. The user can choose to continue navigating away or can cancel and then save the information using the Save button. The Save button will also save any changes made to the Plan section.

## **Plan Section**

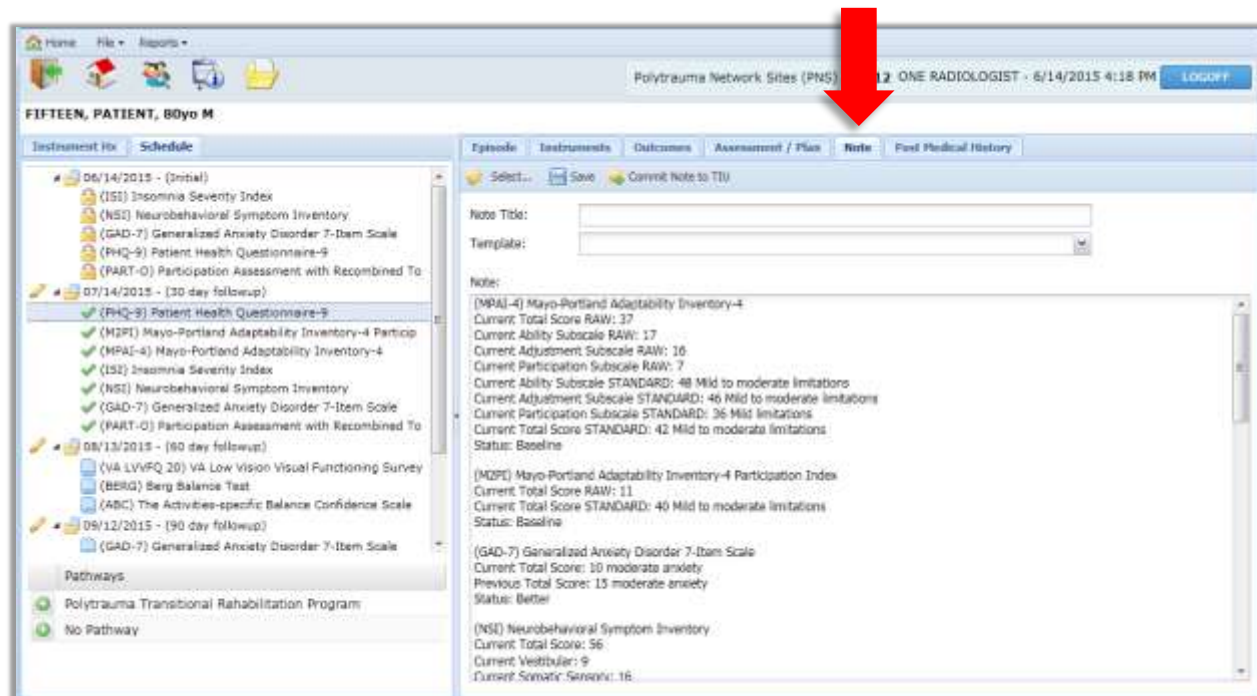
The Plan section of the Assessment/Plan tab gives providers the ability to edit the next event in the same pathway as the event currently selected in the Schedule. Note that this can also be achieved using the pencil button next to the upcoming event in the Schedule. If the patient does not have a future event scheduled in the same pathway as the current event, the Plan section can be used to create a future event.

At the top of the Plan section, the user has the option to edit the title and date of the upcoming event in the pathway. If there is no upcoming event in the pathway, these fields will be blank. Checking the 'Adjust Future Dates?' checkbox when changing the date will cause the dates of all subsequent events in the pathway to be adjusted by the same number of days as the upcoming event.

Below the title and date fields, the Selected Instruments list shows all of the instruments assigned for the upcoming event in the pathway, if any. Instruments can be added to the list of Selected Instruments and assigned for the next pathway event using the Add Instrument button at the bottom of the Plan section. Clicking this button opens the Add Instrument(s) dialog described in the Schedule tab section above. The user can remove an instrument from the Selected Instruments list by clicking the instrument name followed by the Remove Instrument button at the bottom of the Plan section.

Once the user has made the desired changes to the next pathway event in the Plan section, he or she can save and commit them to the Schedule by clicking the Save button in the top left corner of the Work area, which will also save any changes to the Assessment section. If the pathway of the currently selected event does not have any future events in the Schedule, clicking 'Save' will create an event in the Schedule with the chosen parameters.

#### 4.2.2.5. Note Tab



**Figure 38: Patient Summary with Note Tab**

The Note tab of the TBI CDS application is used to create a summary note for the event selected in the Schedule and commit the note to CPRS unsigned.

Episode Instruments Outcomes Assessment / Plan **Note** Past Medical History

Select... Save Commit Note to TIU

Note Title:

Template:

Note:

(MPAI-4) Mayo-Portland Adaptability Inventory-4  
 Current Total Score RAW: 37  
 Current Ability Subscale RAW: 17  
 Current Adjustment Subscale RAW: 16  
 Current Participation Subscale RAW: 7  
 Current Ability Subscale STANDARD: 48 Mild to moderate limitations  
 Current Adjustment Subscale STANDARD: 46 Mild to moderate limitations  
 Current Participation Subscale STANDARD: 36 Mild limitations  
 Current Total Score STANDARD: 42 Mild to moderate limitations  
 Status: Baseline

(M2PI) Mayo-Portland Adaptability Inventory-4 Participation Index  
 Current Total Score RAW: 11  
 Current Total Score STANDARD: 40 Mild to moderate limitations  
 Status: Baseline

(GAD-7) Generalized Anxiety Disorder 7-Item Scale  
 Current Total Score: 10 moderate anxiety  
 Previous Total Score: 15 moderate anxiety  
 Status: Better

(NSI) Neurobehavioral Symptom Inventory  
 Current Total Score: 56  
 Current Vestibular: 9  
 Current Somatic Sensory: 16

**Figure 39: Note Tab Detail**

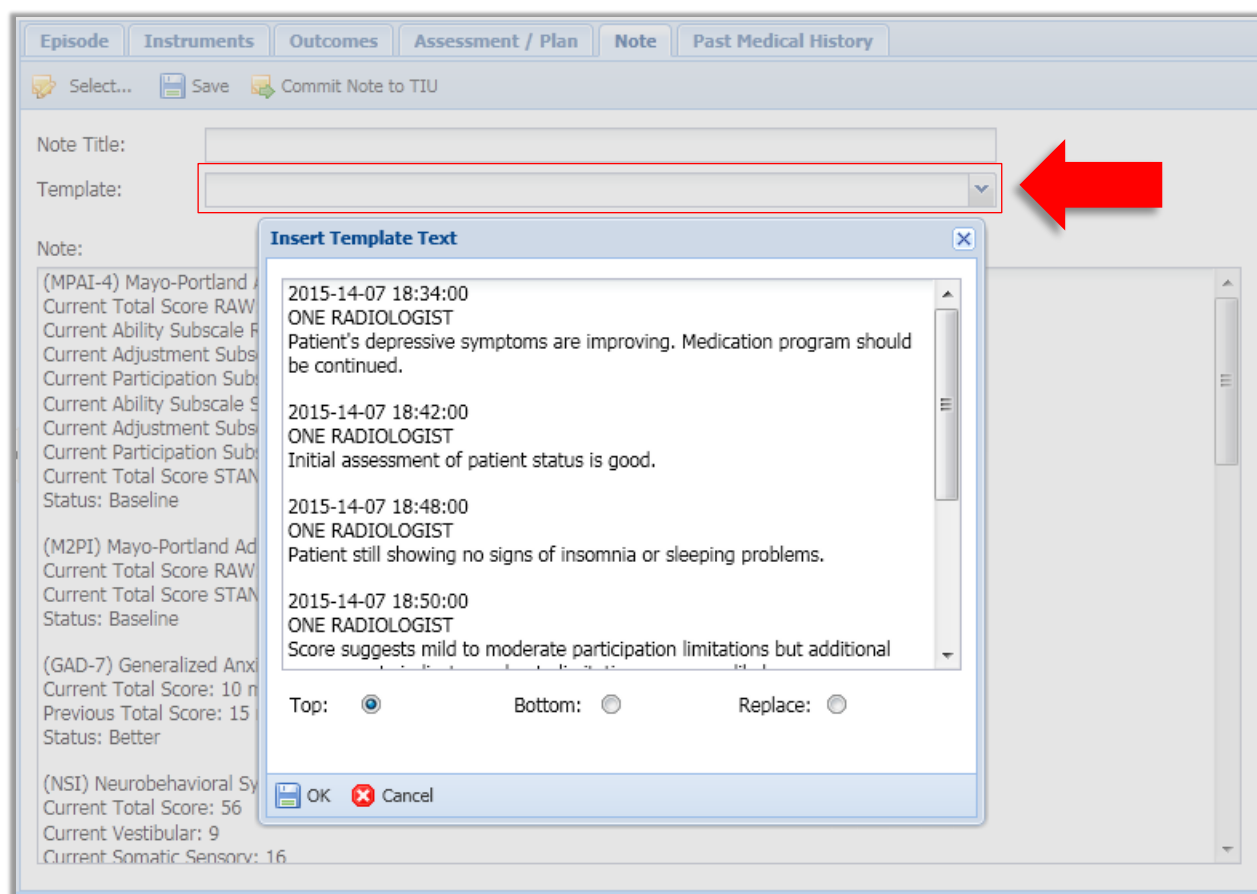
At the top left corner of the tab are the Select, Save and Commit Note to TIU buttons. The Select button opens the Note Selection dialog, the Save button saves the user's progress on the Note, and the Commit Note to TIU button sends the note to CPRS unsigned. Additional information on making note selections and committing to TIU is presented in the sections below.

Underneath these buttons is the Note Title field, which displays the Note Title selected for the note, but which cannot be edited directly by the user. In order to choose a Note Title, the user must open the Note Selection dialog by clicking Select.

The majority of the space in the Note tab is taken up by the text box for the note. If the text for the note takes up more space than is available in the text box, the box will extend downwards and a scroll bar will appear on the right side.

If desired, the user can select a template to insert into the note using the Template drop-down menu above the text box. At least one template will be included to pull Outcomes Entries for the currently selected event from the Outcomes Tab, and at least one template will be included to pull the Assessment text for the currently selected event from the Assessment tab. When the user selects a template, he or she is shown the Insert Template Text dialog.

## Insert Template Text Dialog



**Figure 40: Note Tab with Insert Template Text Dialog**

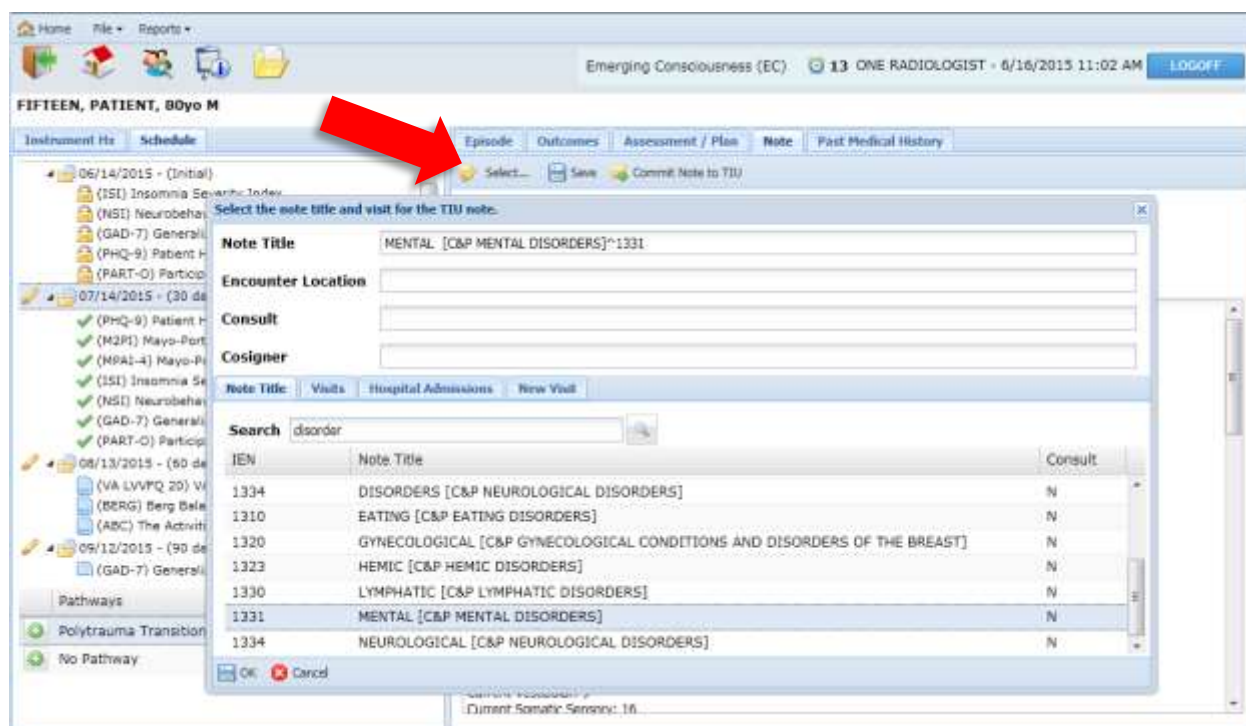
The Insert Template Text dialog pops up when the user selects a template from the Template drop-down menu on the Note tab. The dialog displays the text of the chosen template text in a preview text box, followed by radio buttons labeled 'Top,' 'Bottom' and 'Replace.'

In the preview text box, any tags present in the template text will be replaced with the information they are designed to pull from the patient record. The user has the ability to edit the template text via free text entry in the preview text box.

The radio buttons below the text box allow the user to choose where in the note text box the template will ultimately be inserted. Choosing Top will place the text at the top of the note text box, choosing Bottom will place it at the bottom, and choosing Replace will cause the template text to replace everything currently in the note text box.

After editing the text as desired and choosing a placement, the user can click the 'OK' button at the bottom of the dialog to commit the text to the note text box in the manner chosen. If the user wishes to discard the text in the preview, he or she can click the 'Cancel' button at the bottom of the dialog or the 'X' in the top right corner to do so.

## Note Selection Dialog



**Figure 41: Launching Note Selection Dialog from Select Button on Note Tab**

The Note Selection pop-up dialog is displayed when the user clicks the Select button in the top left corner of the Note tab. This dialog enables the user to give a title to the note and tie it to a patient encounter in CPRS, in addition to choosing an applicable Consult and Cosigner if necessary. The Note Title, Encounter Location, Consult, and Cosigner fields at the top of the Note Selection dialog show the current settings for the note but cannot be edited directly. In order to make selections for these fields, the user must interact with the tabs below them.

## Note Title

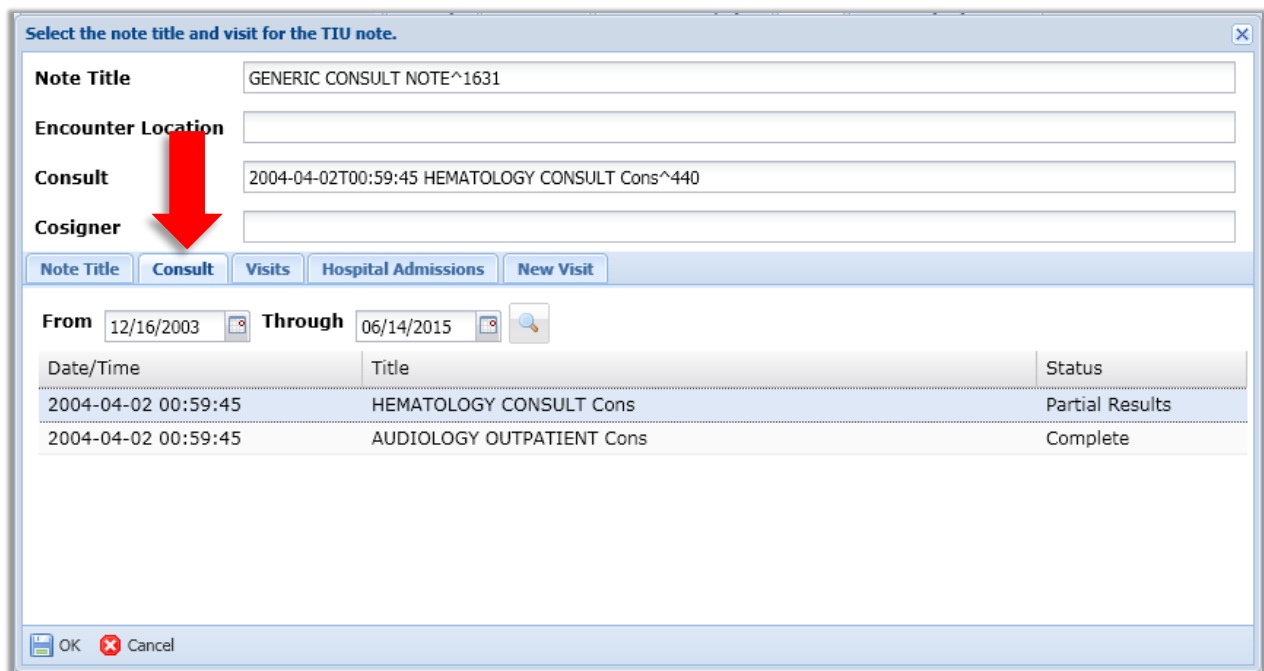
The screenshot shows a dialog box titled "Select the note title and visit for the TIU note." with a close button (X) in the top right corner. The dialog has four tabs: "Note Title", "Visits", "Hospital Admissions", and "New Visit". The "Note Title" tab is selected. Above the tabs are four input fields: "Note Title" (containing "MENTAL [C&P MENTAL DISORDERS]^1331"), "Encounter Location", "Consult", and "Cosigner". A large red arrow points down from the "Encounter Location" field towards the "Note Title" tab. Below the tabs is a search section with a "Search" label and a text box containing "disorder", followed by a magnifying glass icon. Below the search box is a table with three columns: "IEN", "Note Title", and "Consult". The table contains seven rows of data. The row with IEN 1331 and Note Title "MENTAL [C&P MENTAL DISORDERS]" is highlighted. At the bottom of the dialog are "OK" and "Cancel" buttons.

IEN	Note Title	Consult
1334	DISORDERS [C&P NEUROLOGICAL DISORDERS]	N
1310	EATING [C&P EATING DISORDERS]	N
1320	GYNECOLOGICAL [C&P GYNECOLOGICAL CONDITIONS AND DISORDERS OF THE BREAST]	N
1323	HEMIC [C&P HEMIC DISORDERS]	N
1330	LYMPHATIC [C&P LYMPHATIC DISORDERS]	N
1331	MENTAL [C&P MENTAL DISORDERS]	N
1334	NEUROLOGICAL [C&P NEUROLOGICAL DISORDERS]	N

**Figure 42: Note Selection Dialog with Note Title Tab**

In the Note Title tab of the Note Selection dialog, the user can type three or more letters into the Search box to search for a Note Title in CPRS. If the search is successful, the user will see the available Note Titles listed next to their Internal Entry Numbers (IENs) and Consult values. The Consult value will be 'Y' if the Note Title requires a Consult and 'N' if it does not.

## Consult



Select the note title and visit for the TIU note.

**Note Title** GENERIC CONSULT NOTE^1631

**Encounter Location**

**Consult** 2004-04-02T00:59:45 HEMATOLOGY CONSULT Cons^440

**Cosigner**

**Note Title** **Consult** **Visits** **Hospital Admissions** **New Visit**

**From** 12/16/2003 **Through** 06/14/2015

Date/Time	Title	Status
2004-04-02 00:59:45	HEMATOLOGY CONSULT Cons	Partial Results
2004-04-02 00:59:45	AUDIOLOGY OUTPATIENT Cons	Complete

OK Cancel

**Figure 43: Note Selection Dialog with Consult Tab**

If the user selects a Note Title that requires a Consult, the Consult tab will appear to the right of the Note Title tab. In the Consult tab, the user can search for a Consult in the patient's CPRS record. This is achieved by using the two date fields at the top of the Consult tab to designate a period of time in which to search for Consults. If the search is successful, all consults after the left date but before the right date will be shown in a list with their respective dates, times, titles, and statuses. The user can select a consult from the list of results, and it will be shown in the Consult field in the upper area of the Note Selection dialog.

## Encounter Location

Select the note title and visit for the TIU note.

Note Title: GENERIC CONSULT NOTE^1631

Encounter Location: 2010-08-11T08:00:00 GENERAL MEDICINE A^23;20100811.080000;A

Consult: 2010-04-02T00:58:00 HEMATOLOGY CONSULT Cons^440

Cosigner:

From: 12/16/2007 Through: 06/14/2015

Date/Time	Title	Status	Type
2010-08-12 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A
2010-08-11 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A
2010-08-10 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A
2010-08-09 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A
2008-07-17 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A
2008-07-16 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A
2008-07-15 08:00:00	GENERAL MEDICINE	ACTION REQUIRED	A

OK Cancel

**Figure 44: Note Selection Dialog with Visits or Hospital Admissions Tab**

The Visits tab works identically to the Consult tab. The user can search for Visits in the patient's CPRS record using the date fields to designate a period in which to search. If the search is successful, the user will see a list of Visits along with their respective dates, times, titles, statuses, and types. The user can select a Visit from the list as the Encounter Location, which will cause it to be displayed in the Encounter Location field at the top of the Note Selection dialog.

The Hospital Admissions tab also works identically to the Visits and Consult tabs. The user can search for a Hospital Admission in the patient's CPRS record using the date fields to designate a period in which to search. If the search is successful, the user will see a list of Hospital Admissions with their respective dates, times, locations, and types. The user can select a Hospital Admission from the list as the Encounter Location, which will cause it to be displayed in the Encounter Location field at the top of the Note Selection dialog.

Select the note title and visit for the TIU note.

**Note Title** GENERIC CONSULT NOTE^1631

**Encounter Location** GENERAL MEDICINE 6/14/2015 15:00:00^23;20150614.1500;A

**Consult** 2004-04-02T00:59:45 HEMATOLOGY CONSULT Cons^440

**Cosigner**

**Note Title** **Consult** **Visits** **Hospital Admissions** **New Visit**

**Date/Time of Visit** 06/14/2015 15:00 ☐ **Historical** **Search** general

Clinic

GENERAL MEDICINE

GENERAL SURGERY

OK Cancel

**Figure 45: Note Selection Dialog with New Visit Tab**

The New Visit tab enables the user to enter an Encounter Location if the patient does not have an applicable Visit or Hospital Admission in his or her CPRS record. Next to 'Date/Time of Visit' the user must select a date from the date picker and a time from the drop-down list. The user can also enter a date and time into these fields manually. Note that the time should be entered in 24-hour format, and dates later than the current date are not accepted. To the right of the date and time fields, the user can check the 'Historical' checkbox to indicate that the note is for a past patient encounter.

Finally, the user must search for a Clinic for the visit in CPRS by entering at least three characters into the search box and clicking the magnifying glass button. If the search is successful, the user will see the clinic(s) in a list and can select one for the visit. Once the clinic is chosen, the Encounter Location field at the top of the Note Selection dialog will be populated with the information from the New Visit tab.

### Cosigner

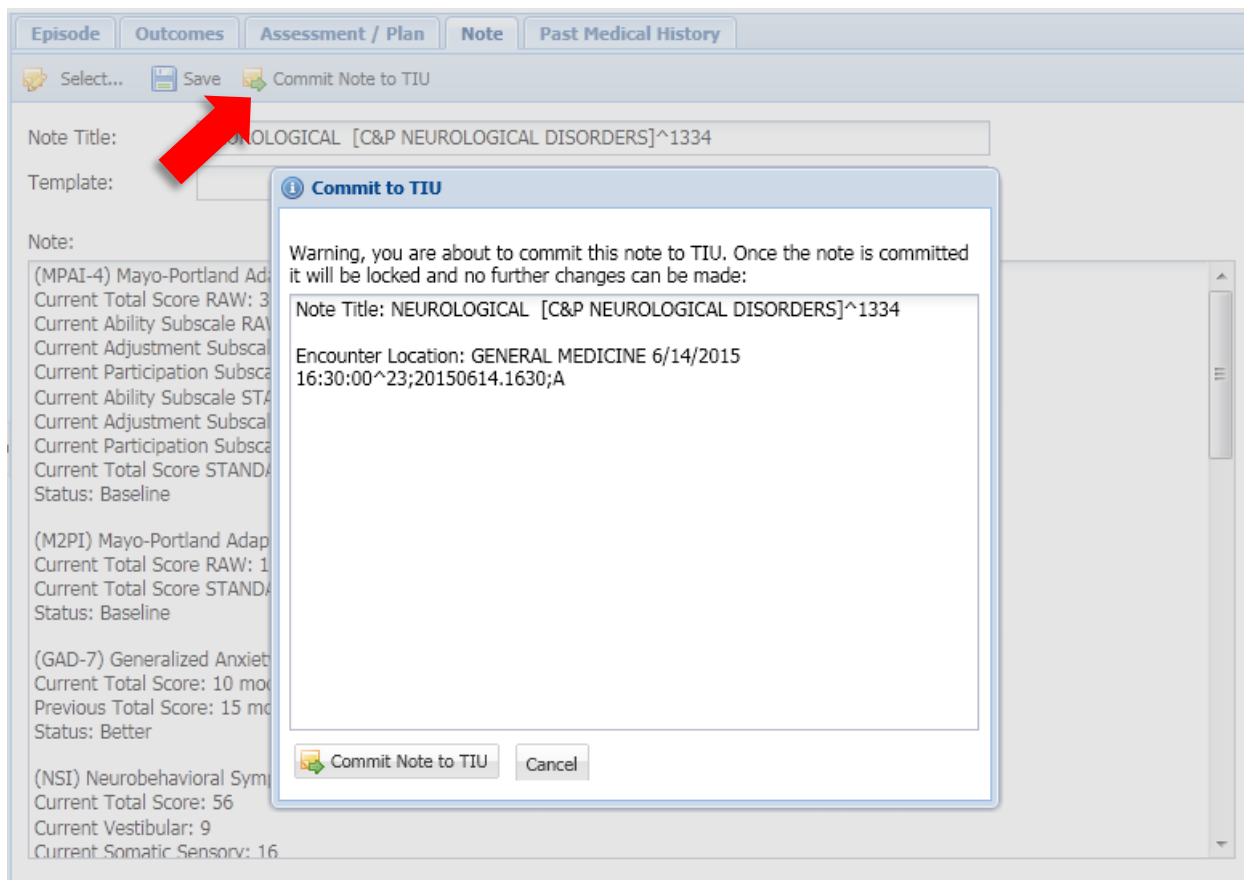
If the user's CPRS account requires a Cosigner, the Cosigner tab will be shown. In the Cosigner tab, the user can select a cosigner and see the selection populated in the Cosigner field at the top of the Note Selection dialog.

Once the user has made the desired Note Title, Encounter Location, Consult, and/or Cosigner selections, he or she can commit them to the Note tab by clicking the 'OK' button at the bottom of the Note Selection dialog. If the user wishes to discard his or her selections, he or she may do so by clicking the 'Cancel' button at the bottom of the dialog or the 'X' in the top right corner.

When the user clicks 'OK', the dialog is closed and the Note Title selected will appear in the Note Title field of the Note tab. As long as the user does not navigate to another event in the

Schedule or leave the patient record, the selections made in the Note Selection dialog will be preserved. If the user wishes to navigate away from the current event without submitting the note, he or she may save the selections and text permanently by clicking the 'Save' button in the top left corner of the Note tab. Since the note is not submitted in this case, the user will be able to return to the Note tab and continue working on the note at a later time.

### **Commit Note to TIU**





**Figure 46: Launching Commit Note to TIU Dialog from Note Tab**

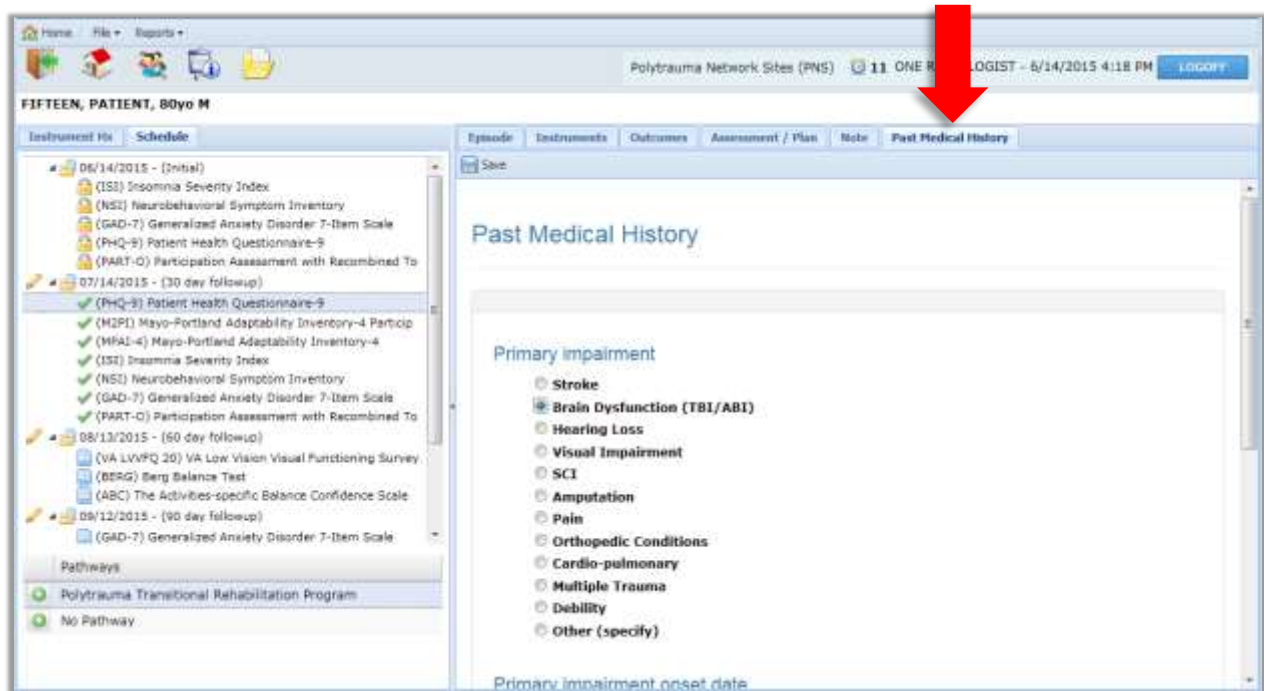
Once the user has written a summary for the current event in the Note text box and made the desired selections in the Note Selection dialog, he or she can choose to send the note to CPRS by clicking the 'Commit Note to TIU' button at the top of the Note tab.

When this button is clicked, a pop-up appears with the current note settings asking the user to confirm that he or she wants to commit the note to TIU and close the event. If the user responds 'Yes', the note will be sent to CPRS, and the event will be closed.

Closed events can still be accessed from the schedule but will be in a read-only format. The user will not be able to take or re-take instruments, modify the instrument list, or make any changes to the Outcomes, Assessment/Plan, or Note tabs for that event. Instruments under the event that were not completed before the note was submitted will be identified in the Schedule as

permanently incomplete (  ), while instruments that were completed will be locked (  ). The event itself will show the date of note submission, if this is different from the date originally chosen for the event. The Note tab will show the note in the format in which it was committed to TIU.

#### 4.2.2.6. Past Medical History Tab



**Figure 47: Patient Summary with Past Medical History Tab**

The Past Medical History tab is the last tab in the Work Area and is used to enter information on the patient's medical history. Capturing this information is important for the purpose of aggregate reporting on outcomes based on medical history. Like the Episode tab, but unlike the other tabs in the Work area, the Past Medical History tab is the same when accessed from any event in the Schedule.

The screenshot shows a software interface with a tabbed menu at the top. The 'Past Medical History' tab is active. Below the tab, there is a 'Save' button. The main content area is titled 'Past Medical History'. Under this title, there is a section for 'Primary impairment' which contains a list of radio button options: Stroke, Brain Dysfunction (TBI/ABI) (selected), Hearing Loss, Visual Impairment, SCI, Amputation, Pain, Orthopedic Conditions, Cardio-pulmonary, Multiple Trauma, Debility, and Other (specify). Below this list is a section for 'Primary impairment onset date' with a date picker showing 01/17/2015.

**Figure 48: Past Medical History Tab Detail**

When interacting with the Past Medical History tab, the user will find that it utilizes many of the same controls as the instrument forms. The user can select a single Primary Impairment for the patient using radio buttons. If the user selects the ‘Other (specify)’ option for Primary Impairment, a text box labeled ‘Specify’ will appear so that the user can type in a Primary Impairment.

Below that, the user can select a primary impairment onset date using a date picker. Mechanism of injury can be selected using radio buttons, once again with a text box appearing if the user selects the ‘Other (specify)’ option. Finally, the user can enter information on any comorbidities the patient may have in the Comorbidities text box at the bottom of the tab.

In order to save the information entered, the user must click the ‘Save’ button in the top left corner of the Past Medical History tab. If the user attempts to navigate away from the tab without saving the new data, he or she will be shown a warning and given the opportunity to go back and save the data. Only the most recent saved form will be shown, and it can be accessed and updated from any event in the Schedule.

## 4.3. Patient Demographics

The screenshot shows a web application interface for patient demographics. At the top, there is a navigation bar with 'Home', 'File', and 'Reports' menus. Below this, a status bar indicates 'Emerging Consciousness (EC)' and '13 ONE RADIOLOGIST - 6/15/2015 10:25 AM'. A 'LOGOFF' button is in the top right. The main content area is titled 'FIFTEEN, PATIENT, 80yo M'. Below this, there are two tabs: 'Demographics' (selected) and 'Socioeconomics'. The 'Demographics' tab contains a form with the following fields:

- First Name: PATIENT
- Middle Initial: A
- Last Name: FIFTEEN
- SSN: 666-00-0015
- SSN Confirm: 666-00-0015
- Address1: 123 Main Street
- Address2: (empty)
- City: San Antonio
- State: TEXAS (dropdown)
- Postal Code: 55555
- Work Phone: (555) 123-4567 (checkbox 'Ok to call?')
- Cell/Home Phone: (555) 987-6543 (checkbox 'Ok to text?')
- Email: patientafifteen@email.co (checkbox 'Ok to email?')
- Date of Birth: 04/07/1935 (MM/DD/YYYY)
- Gender: Male (dropdown)
- Duty Status: Veteran (dropdown)
- Preferred Language: English (dropdown)
- Ethnicity: Hispanic or Latino (dropdown)
- Race: (checkboxes for American Indian or Alaska Native, Asian, Black or African-American, Native Hawaiian or Other Pacific Islander, White (checked), Unknown, Not reported)
- Hand Preference Type: Right Hand (dropdown)

**Figure 49: Patient Demographics Page with Demographics Tab**

The Patient Demographics page displays the patient's personal information and enables the provider to enter and make changes to this information if necessary. It can be accessed from the Patient Summary page by clicking the Demographics icon (🏠) in the Icon Bar.

Information saved in the tabs of the Patient Demographics page is important to the ability of the application's aggregate reporting to group patients based on demographic and socioeconomic characteristics.

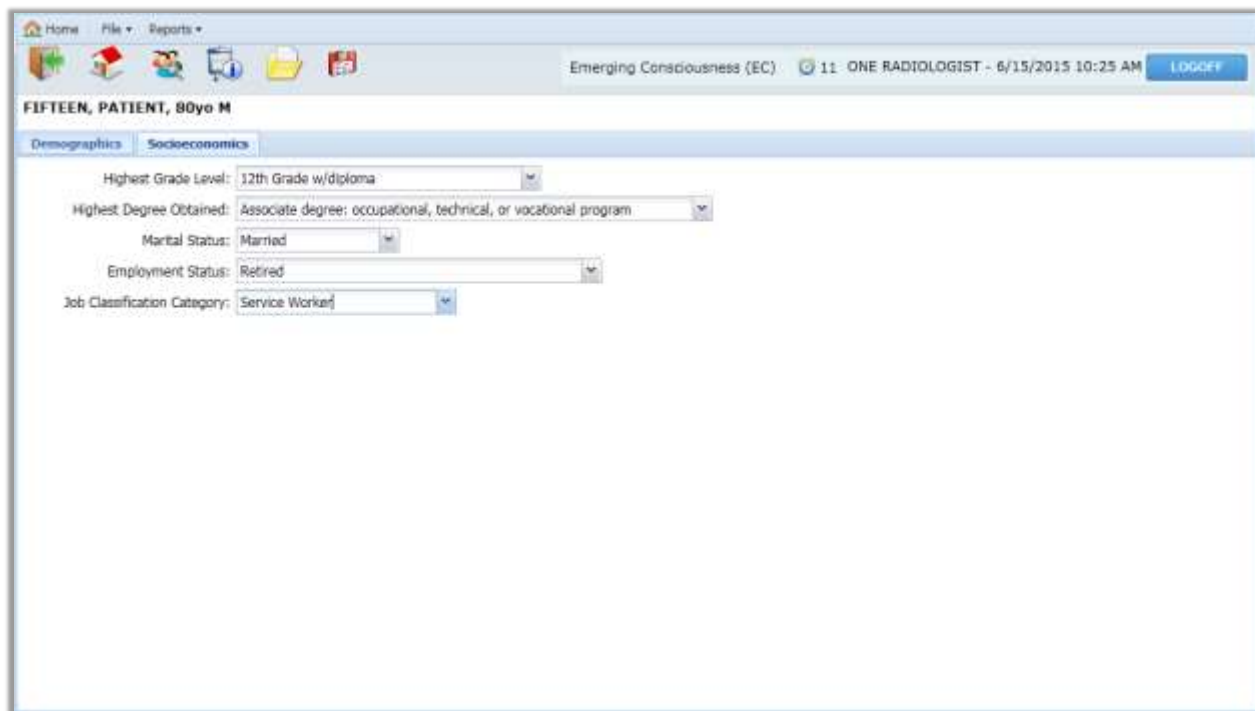
### 4.3.1. Demographics Tab

As the default tab on the Patient Demographics page, the Demographics tab contains general information about the patient, including name, Social Security Number (SSN), address, date of birth, gender, duty status, race, ethnicity, and hand preference. The provider can enter a work phone, cell/home phone, and an email address and mark a checkbox next to any of these fields to indicate that the patient has consented to be contacted via that method. The provider can also select a preferred language for the patient from a list. If the patient's preferred language is not on the list, the provider can select the 'Other, specify' option and type the language name in the 'Specify Language' text box that appears.

If the patient's record in CPRS contains information for any of the fields on the Demographics Tab, the application will attempt to pull that information automatically and show it in the tab.

The provider can save any changes made to the patient's Demographics tab by clicking the Save icon in the Icon Bar. A message will appear stating that the patient's data was successfully updated.

### 4.3.2. Socioeconomics Tab

The screenshot shows a web application interface for patient demographics. At the top, there is a navigation bar with 'Home', 'File', and 'Reports' menus. Below this is a status bar showing 'Emerging Consciousness (EC)', a user icon, '11- ONE RADIOLOGIST - 6/15/2015 10:25 AM', and a 'LOGOFF' button. The main content area is titled 'FIFTEEN, PATIENT, 80yo M'. Below the title are two tabs: 'Demographics' and 'Socioeconomics'. The 'Socioeconomics' tab is active, displaying five drop-down menus: 'Highest Grade Level' (set to '12th Grade w/diploma'), 'Highest Degree Obtained' (set to 'Associate degree: occupational, technical, or vocational program'), 'Marital Status' (set to 'Married'), 'Employment Status' (set to 'Retired'), and 'Job Classification Category' (set to 'Service Worker').

**Figure 50: Patient Demographics with Socioeconomics Tab**

As its name implies, the Socioeconomics tab contains information related to the patient's socioeconomic status. The fields for this tab are Highest Grade Level, Highest Degree Obtained, Marital Status, Employment Status, and Job Classification Category. Each of these fields is controlled using a drop-down menu. Any changes made to the fields can be saved by clicking the Save icon in the Icon Bar. A message will appear to inform the user that the patient's data was successfully updated.

### 4.3.3. Patient Portal Account Tab (Inactive)

If the TBI CDS Patient Portal is activated, the Patient Demographics page will display a Patient Portal Account tab to the right of the Socioeconomics tab. The provider can use the Patient Portal Account tab to create and manage the patient's Patient Portal credentials.

If a Patient Portal account has not yet been created for the current patient, the user will see blank fields next to the Username, Password, and Verify Password fields. The Status options below these fields will be grayed out. In order to create the patient's Patient Portal account, the user

must enter a user name and password, retype the password in the Verify Password field, and then click the Create Account button. A pop-up will appear to notify the user that the Patient Portal account was successfully created.

If the patient already has a Patient Portal account, the user will see a Reset Password button followed by the Username field, which will show the user name of the patient's account and cannot be edited. If the user clicks the Reset Password button, the Password and Verify Password fields will appear beneath the Username field to allow the provider to enter and verify a new temporary password for the patient. The user can then click the Update Account button to save the new temporary password or click the Cancel Reset Password button to discard the new password and hide the password fields again. If the user chooses to update the account with the new password, a pop-up will appear stating that the account password was updated successfully.

The Status options will be selectable for a patient who already has a Patient Portal account. The user can check the Locked checkbox and the Inactive checkbox to lock the patient's account and mark it as inactive, respectively. If the patient's account has been locked, marked as inactive or both, the user will see the appropriate checkbox(es) marked when he or she accesses the Patient Portal Account tab. The user can then uncheck the boxes and click the Update Account button to restore the patient's access to the account. A pop-up will appear to notify the user that the account was updated successfully.

## 4.4. Reports

### 4.4.1. Patient Reports

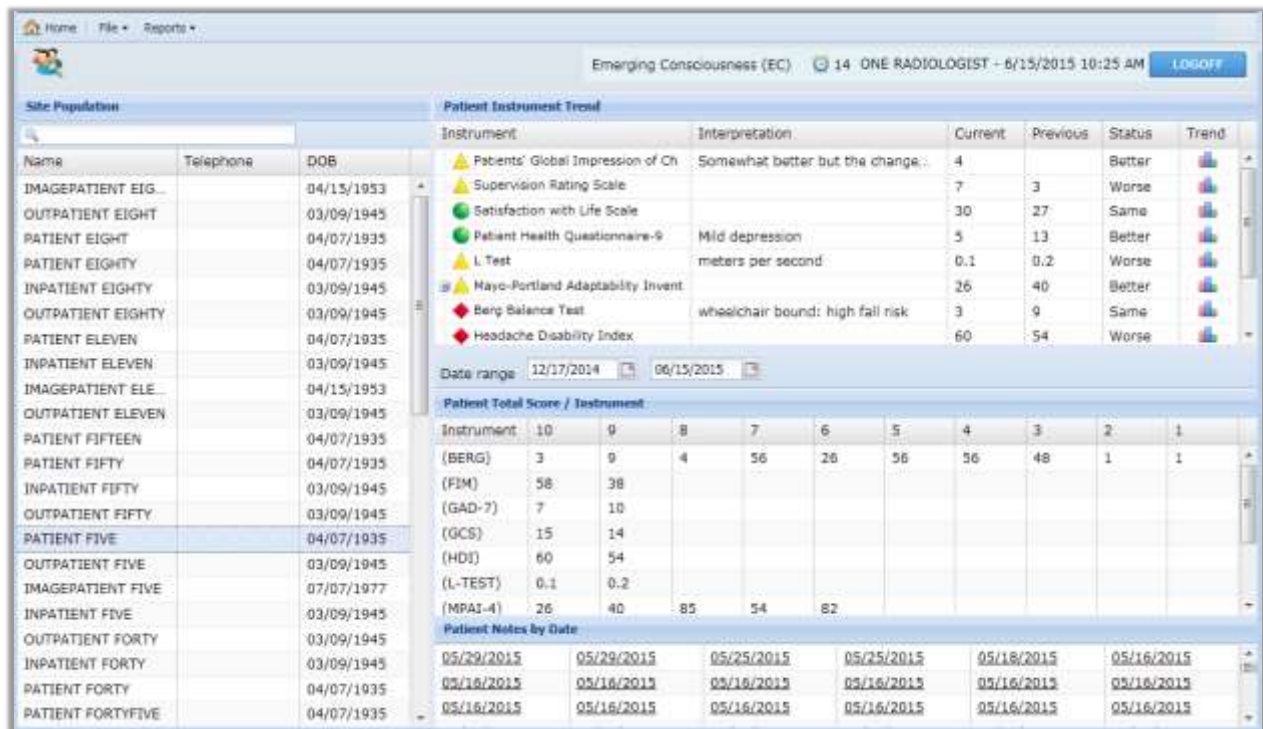


Figure 51: Patient Reports Page


















The Patient Reports page is accessed from the Menu Bar by clicking on the Reports menu and selecting the Patient Reports menu item. It can also be accessed by clicking the Patient Reports quick-access button on the Home screen.

On the Patient Reports page, the provider can review the outcomes of individual patients one-by-one. The page provides access to past instrument results and summary notes for each patient to enable a provider to assess patients' overall statuses.

First, the user must select a patient from the Site Population area on the left, which contains the full list of patients at the user's site who have been looked up in TBI CDS, along with their respective telephone numbers and dates of birth, if available. The user can search through the list of patients by typing all or part of a patient's first or last name into the search field at the top of the list and pressing the Enter key on the keyboard. In order to see the full list of patients again, the user can clear the field and press Enter again.

After selecting a patient in the Site Population list, the user will see the outcomes data for that patient load in the areas on the right side of the screen. Note that instrument data will not be included in reports unless the instrument is scored and locked and the summary note for the associated event has been submitted to CPRS.

#### 4.4.1.1. Patient Instrument Trend

Patient Instrument Trend						
Instrument	Interpretation	Current	Previous	Status	Trend	
 Patients' Global Impression of Ch	Somewhat better but the change...	4		Better		
 Supervision Rating Scale		7	3	Worse		
 Satisfaction with Life Scale		30	27	Same		
 Patient Health Questionnaire-9	Mild depression	5	13	Better		
 L Test	meters per second	0.1	0.2	Worse		
  Mayo-Portland Adaptability Invent		26	40	Better		
 Berg Balance Test	wheelchair bound: high fall risk	3	9	Same		
 Headache Disability Index		60	54	Worse		





**Figure 52: Patient Instrument Trend Detail**

At the top of the right side, the Patient Instrument Trend section mimics the Outcomes tab of the Patient Summary screen but shows outcomes for the patient's entire course of treatment on TBI CDS. All scored instruments that were completed in TBI CDS and for which summary notes have been submitted to CPRS will be shown for the patient. Note that this section is not affected by the dates displayed beneath it, which will only affect the Patient Total Score / Instrument and Patient Notes by Date sections described below.

The tabular display presents the instrument name along with a Severity indicator, score interpretation, current score, previous score, and instrument Status, if any of these are available. Clicking any of the column headers once will sort the table in ascending order based on the column values. Clicking the same header a second time will sort the table in descending order based on the column values, and further clicks will toggle the sort order between ascending and descending.

If the completed instrument has more than one score (e.g., multiple subscale or domain scores), the user will see a small, square plus (+) button to the left of the severity indicator. Clicking the plus button causes the subscale names and scores to appear beneath the chosen instrument instance. Clicking the same button again—it will appear as a minus (-) button after being clicked the first time—will cause the subscale information to collapse again.

The Severity indicator appears to the left of the instrument name and gives a visual representation of the most recent Severity level selected by the provider in the Outcomes tab for the instrument. The possible states of the severity indicator are as follows:

	Mild
	Moderate
	Severe
	Unknown

**Table 3: Patient Instrument Trend Severity Indicator States**

The scoring interpretation appears in the column to the right of the instrument name and gives an interpretation of the patient's current instrument score that is derived from the instrument hardcopy or related documents. To the right of the interpretation column, the current score column displays the score received on the most recent instance of the instrument. To the right of that, the previous score column shows the score received on the second most recent instance of the instrument.

Next, the Status column gives the most recent assessment of the patient's progress with regards to the chosen instrument, as rated by the provider in the Outcomes tab. The possible values for this rating are Baseline, Better, the Same, Worse, or Unknown. This column appears after the Current and Previous Score columns to allow the provider to assess the patient's progress quickly by comparing all three. If multiple Status ratings have been given for the same instrument instance, the most recent rating (determined by the time and date selected in the Outcomes entry) will be shown.

The Trend column on the far right contains a button for each instrument outcome that will launch a pop-up window displaying the instrument Trend graph. For more information on the Trend graph, see the section on the Instrument Trend sub-tab above.

#### 4.4.1.2. Patient Total Score / Instrument

Date range 12/17/2014 06/15/2015										
Patient Total Score / Instrument										
Instrument	10	9	8	7	6	5	4	3	2	1
(BERG)	3	9	4	56	26	56	56	48	1	1
(FIM)	58	38								
(GAD-7)	7	10								
(GCS)	15	14								
(HDI)	60	54								
(L-TEST)	0.1	0.2								
(MPAI-4)	26	40	85	54	82					

**Figure 53: Patient Total Score / Instrument Detail**

The middle area of the right side of the Patient Reports screen contains the Patient Total Score / Instrument section. This section and the section below, Patient Notes by Date, are controlled with the Date range located above both sections. Only instrument results and notes completed within the chosen Date range (inclusive) will be shown in the sections below it.

To choose a Date range, the user can type into each date field in MM/DD/YYYY format or click the calendar button at the end of each field and use the advanced date pickers that appear. To enforce the selections, the user must then click the patient name in the Site Population list. For the Patient Total Score / Instrument section, all scored instruments that were completed in TBI

CDS within the Date range and for which summary notes have been submitted to CPRS will be shown.

The Patient Total Score / Instrument section uses a tabular display to show the results of all scored instruments that were completed in TBI CDS during the Date range and for which summary notes have been submitted to CPRS. The instrument acronym is shown, followed by a chronological list of the ten most recent results for the instrument with the most recent shown first. The display of the columns can be controlled using the methods described in the appendix.

Hovering the cursor over the instrument acronym will cause the full name of the instrument to be displayed on a tooltip next to the cursor. Hovering the cursor over any of the past instrument scores will cause the application to show a tooltip with the interpretation for the score, the date and time of instrument submission, and the name of the user who submitted the instrument.

#### 4.4.1.3. Patient Notes by Date

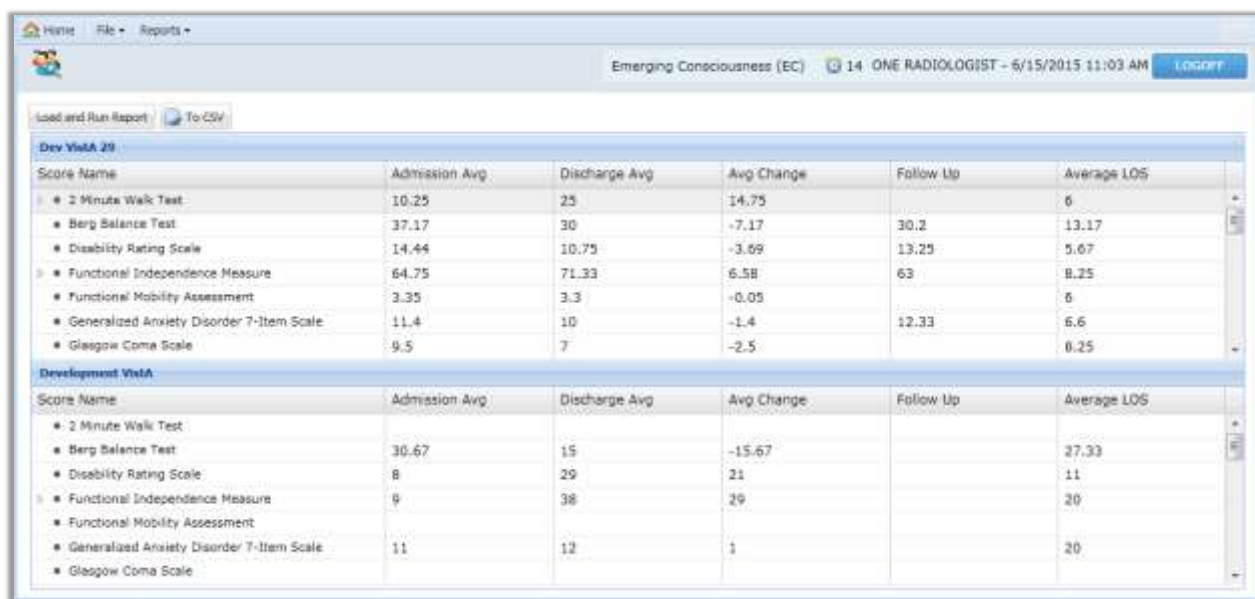
Date range 12/17/2014 06/15/2015										
Patient Total Score / Instrument										
Instrument	10	9	8	7	6	5	4	3	2	1
(BERG)	3	9	4	56	26	56	56	48	1	1
(FIM)	58	38								
(GAD-7)	7	10								
(GCS)	15	14								
(HDI)	60	54								
(L-TEST)	0.1	0.2								
(MPAI-4)	26	40	85	54	82					
Patient Notes by Date										
05/29/2015	05/29/2015	05/25/2015	05/25/2015	05/18/2015	05/16/2015					
05/16/2015	05/16/2015	05/16/2015	05/16/2015	05/16/2015	05/16/2015					
05/16/2015	05/16/2015	05/16/2015	05/16/2015	05/16/2015	05/16/2015					

**Figure 54: Patient Total Score / Instrument and Patient Notes by Date**

The Patient Notes by Date section at the bottom of the right side of the Patient Reports screen shows the submission dates of all summary notes sent from TBI CDS to CPRS during the Date range selected (inclusive). When changing the Date range, it should be noted that the user must click on the patient name in the Site Population list again in order to enforce the new selection(s). The note submission dates are displayed in order of recentness from left to right, top to bottom. The user will be able to scroll down to see older note dates if necessary.

Clicking on any of the note dates will cause the text for the associated summary note to be shown in a pop-up window. The user can close this window by clicking the 'X' in the top right corner.

## 4.4.2. Aggregate & Improvement Reports



The screenshot shows a software interface for 'Emerging Consciousness (EC)' with a user '14 ONE RADIOLOGIST' logged in at 6/15/2015 11:03 AM. Below the header, there are buttons for 'Load and Run Report' and 'To CSV'. The main content area displays two tables of instrument scores.

Score Name	Admission Avg	Discharge Avg	Avg Change	Follow Up	Average LOS
• 2 Minute Walk Test	10.25	25	14.75		6
• Berg Balance Test	37.17	30	-7.17	30.2	13.17
• Disability Rating Scale	14.44	10.75	-3.69	13.25	5.67
• Functional Independence Measure	64.75	71.33	6.58	63	8.25
• Functional Mobility Assessment	3.35	3.3	-0.05		6
• Generalized Anxiety Disorder 7-Item Scale	11.4	10	-1.4	12.33	6.6
• Glasgow Coma Scale	9.5	7	-2.5		0.25

Score Name	Admission Avg	Discharge Avg	Avg Change	Follow Up	Average LOS
• 2 Minute Walk Test					
• Berg Balance Test	30.67	15	-15.67		27.33
• Disability Rating Scale	8	29	21		11
• Functional Independence Measure	9	38	29		20
• Functional Mobility Assessment					
• Generalized Anxiety Disorder 7-Item Scale	11	12	1		20
• Glasgow Coma Scale					

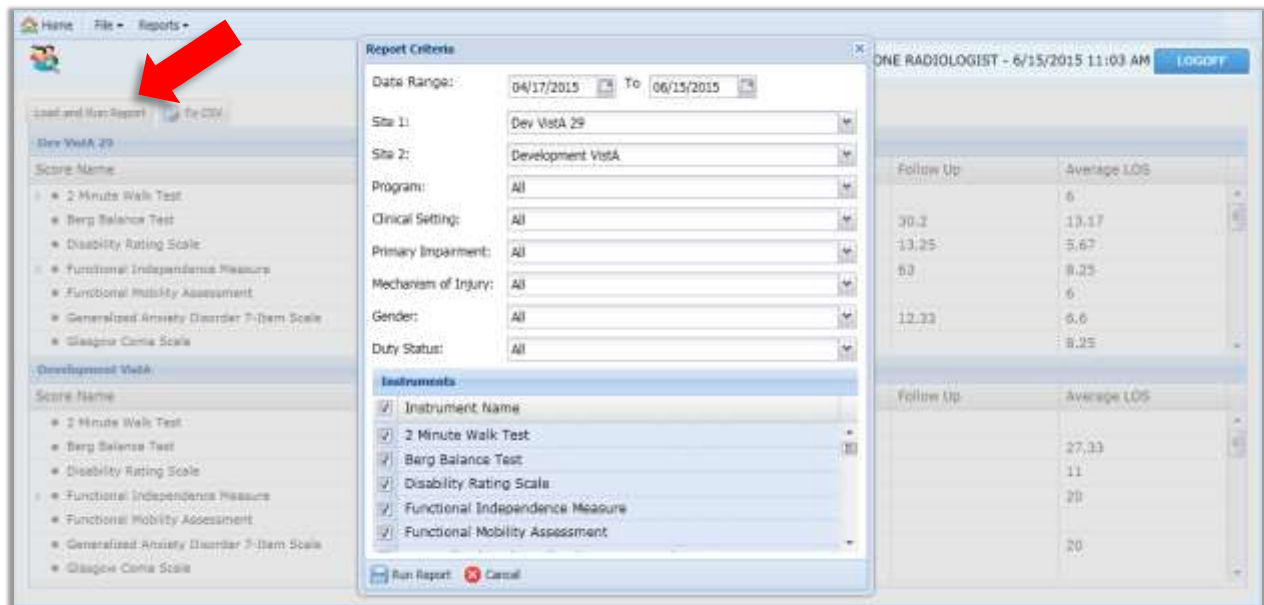
**Figure 55: Aggregate & Improvement Reports Page**

The Aggregate & Improvement Reports page is accessed from the Menu Bar by clicking the Reports menu and choosing the Aggregate & Improvement Reports menu item. The user can also go to the Home screen and click the Aggregate & Improvement Reports quick access button to be taken to this page.

The Aggregate & Improvement Reports page allows the user to view aggregate outcomes for up to two CPRS sites in the form of various instrument score measures. The user can also compare the results of one site to the aggregate results of all sites, or simply view the results for one site only. Additional filters can be applied to the site or sites using the Report Criteria dialog described below.

The results are listed by instrument in a table, the display of which can be adjusted using the column controls described in the appendix. Note that only the results of instruments that are scored and have been reviewed in the Outcomes tab will be used in the calculation of the aggregate results. Furthermore, the patient must have Program and Episode data in the Episode tab covering the date(s) of instrument completion in order for those instrument results to be included. The Program data must include a discharge date, as this is the basis of the overarching Date Range filter.

#### 4.4.2.1. Report Criteria Dialog



**Figure 56: Launching Report Criteria Dialog from Aggregate & Improvement Reports Page**

The user's first port of call on the Aggregate & Improvement Reports page is the Load and Run Report button in the top left corner. Clicking this button will launch the Report Criteria dialog, which allows the user to choose filters for the aggregate report. The available filters are as follows:

Filter	Format	Possible Values	Description
<b>Date Range</b>	Typed or chosen with date picker	MM/DD/YYYY	Searches for all patients discharged from a Program between the two dates chosen (inclusive), as determined by the Program dates on the Patient Summary Episode tab.
<b>Site 1</b>	Drop-down	Any site available in CPRS	Defaulted to the user's current site. Chooses the site whose results will be displayed in the Site 1 section.
<b>Site 2</b>	Drop-down	All, None, or any site available in CPRS	Chooses the site or sites whose results will be displayed in the Site 2 section, if any.
<b>Program</b>	Drop-down	All, or any Clinical Program available in CPRS	Searches for patients with a discharge date for the chosen Program in the chosen Date Range in the Patient Summary Episode tab. Choosing All searches for all patients with discharges in the chosen Date Range, regardless of Program.
<b>Clinical Setting</b>	Drop-down	All, Inpatient, or Outpatient	Searches for patients who were discharged from a Program in the chosen Clinical

Filter	Format	Possible Values	Description
			Setting during the chosen Date Range, as determined by the Episode setting and Program dates on the Patient Summary Episode tab.
<b>Primary Impairment</b>	Drop-down	All, or any Primary Impairment on the Patient Summary Past Medical History tab	Searches for patients with the chosen Primary Impairment selected on their Past Medical History tabs. Choosing All will include all patients, even if they have no Primary Impairment information.
<b>Mechanism of injury</b>	Drop-down	All, or any Mechanism of injury on the Patient Summary Past Medical History tab	Searches for patients with the chosen Mechanism of injury selected on their Past Medical History tabs. Choosing All will include all patients, even if they have no Mechanism of injury information.
<b>Gender</b>	Drop-down	All, Male, or Female	Searches for patients with the chosen Gender, as determined by the information on the Patient Demographics page. Choosing All will include patients who are not identified as Male or Female.
<b>Duty Status</b>	Drop-down	All, Veteran, or Active	Searches for patients with the chosen Duty Status, as determined by the information on the Patient Demographics page. Choosing All will include all patients, even if they have no Duty Status information.
<b>Instruments</b>	Checkboxes	Any or all scored instruments available on TBI CDS	Chooses the instruments whose aggregate results will be shown under Site 1 and Site 2 (if applicable). The user can choose as many instruments as desired and can choose all instruments by checking the checkbox next to the Instrument Name column header. The report will only include data for instruments that are scored, were reviewed in the Outcomes column, and were completed during the dates of a closed Program in the patient's Episode tab.

**Table 4: Report Criteria Dialog Filters**

After making all desired filter selections, the user can click Run Report at the bottom of the dialog to execute the report according to the choices made in the dialog. A 'Please Wait' message will be displayed while the report is running.

#### 4.4.2.2. Aggregate Results Display

Load and Run Report

Score Name	Admission Avg	Discharge Avg	Avg Change	Follow Up	Average LOS
2 Minute Walk Test	10.25	25	14.75		6
Distance 1	10	20	10		6
Distance 2	13	30	17		6
Distance 3	10				6
Berg Balance Test	37.17	30	-7.17	30.2	13.17
Disability Rating Scale	14.44	10.75	-3.69	13.25	5.67
Functional Independence Measure	64.75	71.33	6.58	63	8.25

Score Name	Admission Avg	Discharge Avg	Avg Change	Follow Up	Average LOS
2 Minute Walk Test					
Berg Balance Test	30.67	15	-15.67		27.33
Disability Rating Scale	8	29	21		11
Functional Independence Measure	9	38	29		20
Functional Mobility Assessment					
Generalized Anxiety Disorder 7-Item Scale	11	12	1		20
Glasgow Coma Scale					

**Figure 57: Aggregate & Improvement Reports Site Results Detail**

Once the report has finished running, the user will be able to review the aggregate outcomes of the chosen instruments for Site 1 and, if activated, Site 2. The results are presented in two tables, the displays of which can be adjusted using the column controls described in the appendix.

The first column, Score Name, shows the name of each instrument selected for the aggregate report. If the instrument has additional score data (e.g., subscale or domain scores), these can be expanded and collapsed by clicking the arrow to the left of the instrument name. If the instrument has only one score or no data at all, this arrow will not be shown.

To the right of the Score Name column are the outcomes columns, which display the calculated values for the measures delineated below. Note that only the results of instruments that are scored and reviewed in the Outcomes tab will be used in the calculation of the aggregate results. Furthermore, the patient must have Program and Episode data in the Episode tab covering the date(s) of instrument completion in order for those instrument results to be included. The Program data must include a discharge date, as this is the basis of the overarching Date Range filter described above.

- **Admission Avg** – For all patients discharged from the chosen Program within the chosen Date Range, this is the average score of the instrument instance with the earliest completion date that falls within the date range of that Program on the patient's Episode tab (inclusive). The patient must also match all other selected filters for the data to be included.
- **Discharge Avg** – For all patients discharged from the chosen Program within the chosen Date Range, this is the average score of the instrument instance with the latest completion date that falls within the date range of that Program on the patient's Episode tab (inclusive). The patient must also match all other selected filters for the data to be included.

- **Avg Change** – the Discharge Avg minus the Admission Avg.
- **Follow Up** – For all patients discharged from the chosen Program within the chosen Date Range, this is the average score of the instrument instance with the earliest completion date that comes after the end of the date range of that Program on the patient's Episode tab. The patient must also match all other selected filters for the data to be included.
- **Average LOS** – For all patients discharged from the chosen Program within the chosen Date Range, this is the average length of time the patient was in the Program, as determined by the dates in the patient's Episode tab. The patient must also match all other selected filters for the data to be included.

Users have the option of exporting the data to a downloadable comma-separated values (CSV) file by clicking the To CSV button adjacent to the Load and Run Report button in the top left corner of the page. The CSV file will contain the criteria selected for the report as well as the data shown in the Site 1 and Site 2 tables, including any subscale or domain scores.

#### 4.4.3. Statistical Analysis Page

Title	Status	Start	End	Action
Last CS Test 2	Canceled	06/10/2015	06/10/2015	[Icons]
Last CS Test	Ready for Download	06/03/2015	06/03/2015	[Icons]
Different Patients...	Ready for Download	06/03/2015	06/03/2015	[Icons]
Some Instruments...	Ready for Download	06/03/2015	06/03/2015	[Icons]
No Instruments	Ready for Download	06/03/2015	06/03/2015	[Icons]
Excluding Outcomes	Ready for Download	06/03/2015	06/03/2015	[Icons]
Outcomes7	Ready for Download	06/02/2015	06/02/2015	[Icons]
Outcomes6	Ready for Download	06/02/2015	06/02/2015	[Icons]
Outcomes5	Ready for Download	06/02/2015	06/02/2015	[Icons]
Outcomes4	Ready for Download	06/02/2015	06/02/2015	[Icons]
Outcomes3	Ready for Download	06/02/2015	06/02/2015	[Icons]
Outcomes1	Ready for Download	06/02/2015	06/02/2015	[Icons]
CS Double Check	Ready for Download	06/02/2015	06/02/2015	[Icons]
Program Double C...	Ready for Download	06/02/2015	06/02/2015	[Icons]
CS Test2	Ready for Download	06/02/2015	06/02/2015	[Icons]
CS Test	Ready for Download	06/02/2015	06/02/2015	[Icons]
Program Test3	Ready for Download	06/02/2015	06/02/2015	[Icons]
Program Test2	Ready for Download	06/02/2015	06/02/2015	[Icons]
Testing	Canceled	06/02/2015	06/02/2015	[Icons]
Program2	Canceled	06/02/2015	06/02/2015	[Icons]
Error Test2	Canceled	06/02/2015	06/02/2015	[Icons]
Error Test	Canceled	06/02/2015	06/02/2015	[Icons]
Program Test	Canceled	06/02/2015	06/02/2015	[Icons]

Figure 58: Statistical Analysis Page

The Statistical Analysis Page is accessed from the Menu Bar by clicking the Reports menu and selecting the Statistical Analysis menu item. It can also be accessed from the Home page by clicking the Statistical Analysis quick access button.

This page allows the user to make filter and data selections and generate a longitudinal file that provides highly granular instrument response data for multiple patients. The page consists of the

Data Extract settings area on the left side and the list of My Requests on the right side. Data Extracts created on this page must be downloaded as longitudinal CSV files and are not viewed within the application itself.

#### 4.4.3.1. Data Extract

The screenshot shows the 'Data Extract' window. At the top, there is a 'Title' field with the value 'Polytrauma Program'. Below this is a 'FILTERS' section with the following fields: 'Date range' (02/03/2015), 'To' (06/12/2015), 'Location - Region' (Development VISN), 'Site' (Development Vista), 'Program' (Polytrauma Network Sites (PI)), and 'Clinical Setting' (Inpatient and Outpatient checkboxes, with Outpatient selected). Below the filters is a section titled 'Data to be included in the file extract:' which contains a list of data categories with checkboxes: Demographics, Socioeconomics, Past Medical History, and Instruments. Under 'Instruments', there are several sub-items: (2MWT) 2 Minute Walk Test, (BERG) Berg Balance Test, (CTBIE) Comprehensive TBI Evaluation, (CTBIFA) Comprehensive TBI Follow Up Assessment (which is selected), (DRS) Disability Rating Scale, and (FIM) Functional Independence Measure. At the bottom right of the window is a 'Submit Data Extract' button.

Figure 59: Data Extract Area Detail

The Data Extract area on the left side of the screen enables the user to make filter and data selections for the aggregate report. After giving the Data Extract request a unique Title, the user is able to make selections for the filters delineated below. Note that only results of instruments for which a summary note was submitted will be included in the extract. Furthermore, the patient who completed the instrument must have at least one Episode and Program listed in his or her Episode tab on the Patient Summary page in order for the data to be included in the extract.

- **Date Range** - selects data for all patients who have locked instruments (instruments that are part of closed notes) that were completed (the last time 'I'm Finished' was clicked) during that period of time, inclusive. It is not dependent on the date the note was submitted for the instrument.

- **Region and Site** - selects data for patients who have locked instruments within the date range that were also associated with an event in the chosen Region & Site, determined by the Region & Site the user logged into to complete the instrument. The available Regions and Sites are taken from CPRS. The Site drop-down will be populated from CPRS after the user selects a Region.
- **Program** - selects data for patients who have locked instruments in the chosen date range and Region/Site, and who also have at least one instance of the chosen Program in their Episode tab, regardless of Program dates. Options for this filter are determined by the Programs available at the Site selected from CPRS.
- **Clinical Setting** - allows the user to select Inpatient or Outpatient. This selection merges with the Program selection, e.g., if the user chooses Inpatient, only data for patients who have the chosen Program as part of an Inpatient Episode on the Episode tab will be included. Like the Program selections, Episode selections do not depend on the dates listed in the patient's Episode tab; the patient only needs to have one instance of the chosen Program in the chosen Clinical Setting, regardless of date. Patients without an Episode or Program in the Episode tab will not appear in Statistical Analysis data extracts.

Located below the filters are the data selections, which allow the user to choose data to include in the aggregate report. They are presented as an expandable list of checkboxes to enable the user to choose as many as desired, with a minimum of one selection. The list can be expanded and collapsed by clicking the arrows to the left of the data selection categories. Checking the box of one of the categories will have the same effect as checking all of the boxes for the options within that category.













The available data selection categories are as follows:

- **Demographics** - This data option allows the user to choose patient demographic information to include in the data extract. It does not act as a filter, and the user can select as many options to include as desired. The information will be taken from the patients' respective Demographics tabs.
- **Socioeconomics** - This data option allows the user to choose patient socioeconomic information to include in the data extract. It does not act as a filter, and the user can select as many options to include as desired. The information will be taken from the patients' respective Socioeconomics tabs on the Patient Demographics page.
- **Past Medical History** - This data option allows the user to choose patient medical history to include in the data extract. It does not act as a filter, and the user can select as many options to include as desired. The information will be taken from the patients' respective Past Medical History tabs on the Patient Summary page.

- **Instruments** - Selecting any instrument will cause the extract to include only patients who completed that instrument within the parameters chosen for the other filters. Selecting multiple instruments will cause the extract to include only patients who completed at least one of the chosen instruments within the parameters chosen for the other filters. Patients who completed more than one of the chosen instruments or who completed one or more of the instruments multiple times will have their results displayed on a separate line for each instrument completion. If the user selects no instruments and only uses the other data options, the application will create an extract that has one line for each patient who completed any instrument within the parameters chosen for the other filters. The line for each patient will show the selected demographic / socioeconomic / medical history information but will contain no instrument data. See below for more information on the display of exported Data Extracts.

After making all desired filter and data selections, the user can click Submit Data Extract to execute the report. If the submission is successful, a message will be shown informing the user that he or she should check the page again in 24 hours. This message is included so that the application will not use an undue amount of resources on processing the extract immediately, which could affect other users on the application. However, depending on the size of the Data Extract, it may be completed within a matter of minutes or even seconds.

#### 4.4.3.2. My Requests

My Requests				
Title	Status	Start	End	Action
PNS Site Statistical...	In Progress	06/15/2015		 
Speech Language P...	Ready for Download	06/15/2015	06/15/2015	 
Polytrauma Progra...	Canceled	06/15/2015	06/15/2015	 
Outcomes Reporting	Ready for Download	06/04/2015	06/04/2015	 
Program Analysis	Ready for Download	06/04/2015	06/04/2015	 
Patient Report for M...	Ready for Download	06/04/2015	06/04/2015	 

**Figure 60: My Requests Detail**

Once the Data Extract request has been submitted, the user will see it in the list of My Requests, which shows all past requests in chronological order with the most recent one first. This table gives the request's Title, Status, Start date (date that the request was submitted), and End date (date that the request was fulfilled or canceled). On the far right is the Action column, which contains a Cancel button and a Download CSV File button for each request.

The Status column will show 'In Progress' for a request that is processing. While the request processes, the Cancel button (red minus symbol) will be active in the Action column. Clicking this button will cause a confirmation dialog to appear, and clicking Yes in the dialog will cancel

the request. The Data Extract will not become available for download, and the Status column will show ‘Canceled’ for the request.

When a request finishes processing, the Status column will show ‘Ready for Download’, and the Download CSV File button (arrow with floppy disk) will become active in the Action column. Clicking this button will cause a confirmation dialog to appear, and clicking Yes in the dialog will make the Data Extract available for download.

If a request has finished processing or is almost finished processing when the user clicks the Cancel button, he or she may receive a message stating that the request could not be canceled. In this case, the Data Extract will still ultimately become available for download.

The user can click on any request in the list of My Request and see the settings for that request populated in the Data Extract area. If desired, the user can adjust the settings and resubmit them as a new request after giving them a unique Title.

#### **4.4.3.3. Data Extract CSV File**

The longitudinal files are prepared as comma-separated values files. In order to enable the user to understand the file, each file will include a header containing the data field name for each variable. The longitudinal position of these elements will always be the same, with demographic, socioeconomic, and medical history data presented before instrument response data. A Patient ID column is included to allow the user to group the results by patient without seeing the patient name.

The longitudinal data for instrument responses is organized using the Instrument or Module ID (MID), Topic ID (T), Question ID (Q) and selected Response ID (R). These columns indicate whether the patient selected a certain response, and in the case of text box and combo box responses, they give the text selected or entered. An example column header for an instrument response would be “MID4000T2Q2R250”, indicating Module ID 4000, Topic ID 2, Question ID 2, and Response ID 250. If the patient selected the response, the value in the column will be 1, unless the response involves a combo box or text box, in which case it will show the selected response or text entered. If the patient completed the instrument but did not select the response, the value in the column will be 0. If the patient did not complete the instrument, the value in the column will be empty.

Example:

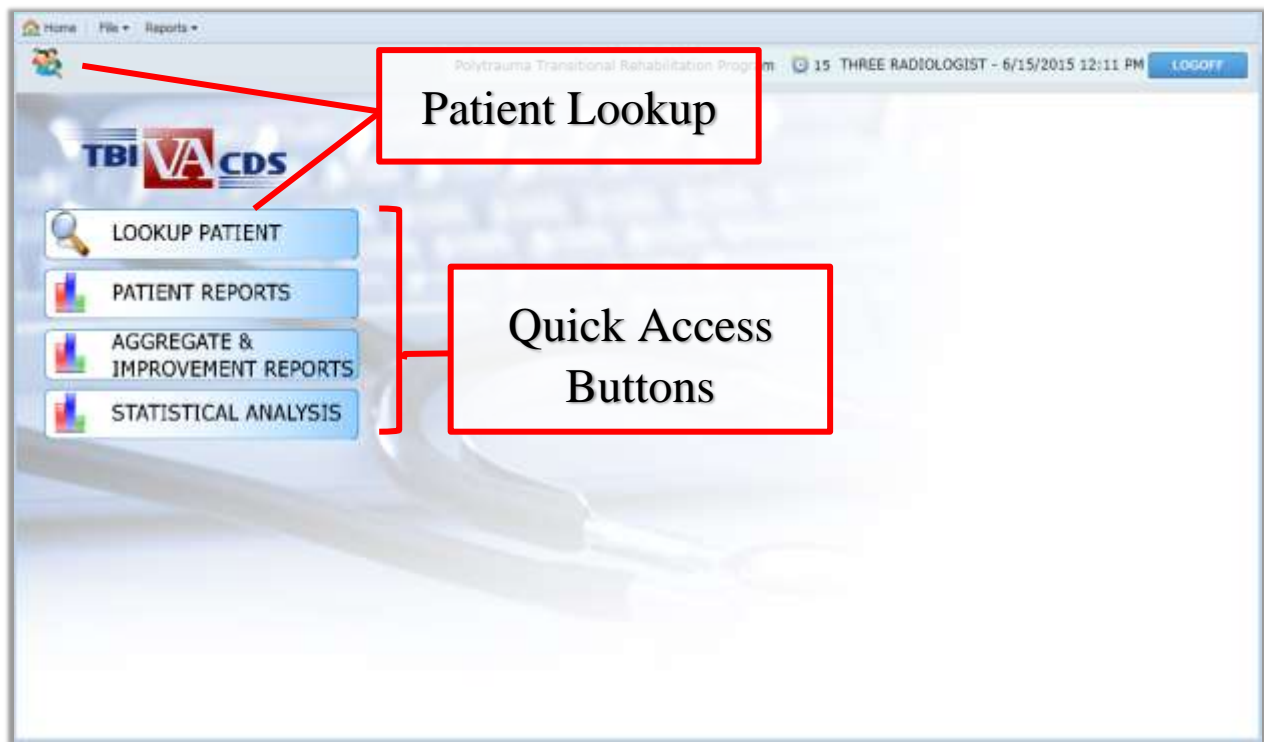
MID4099\_INSTRUMENT\_NAME|MID4099T1Q1R5|MID4099T1Q1R10|MID4099T1Q1R15 | ...

Example Instrument|1|0|Patient has mild severity.| ...

Consecutive delimiters signify an empty data field or no data in the specified position. Each patient who passes the filters will have at least one row in the file, with additional rows if he or

she has more than one instrument record in the file. Each instrument record will be situated in a separate row, with all other instrument response columns in that row left empty. As stated above, if no instruments are selected, the file will contain one row for each patient who completed any instrument within the chosen filter parameters. The row for each patient will display the chosen demographic, socioeconomic, and/or medical history information but will contain no instrument response data.

## 4.5. Home



**Figure 61: Home Page**

The Home page is accessed by clicking the Home button on the Menu Bar or by clicking the Close Patient button on the Icon Bar while a patient record is open in TBI CDS. This page provides navigation links so that the user can access the different parts of the TBI CDS application.

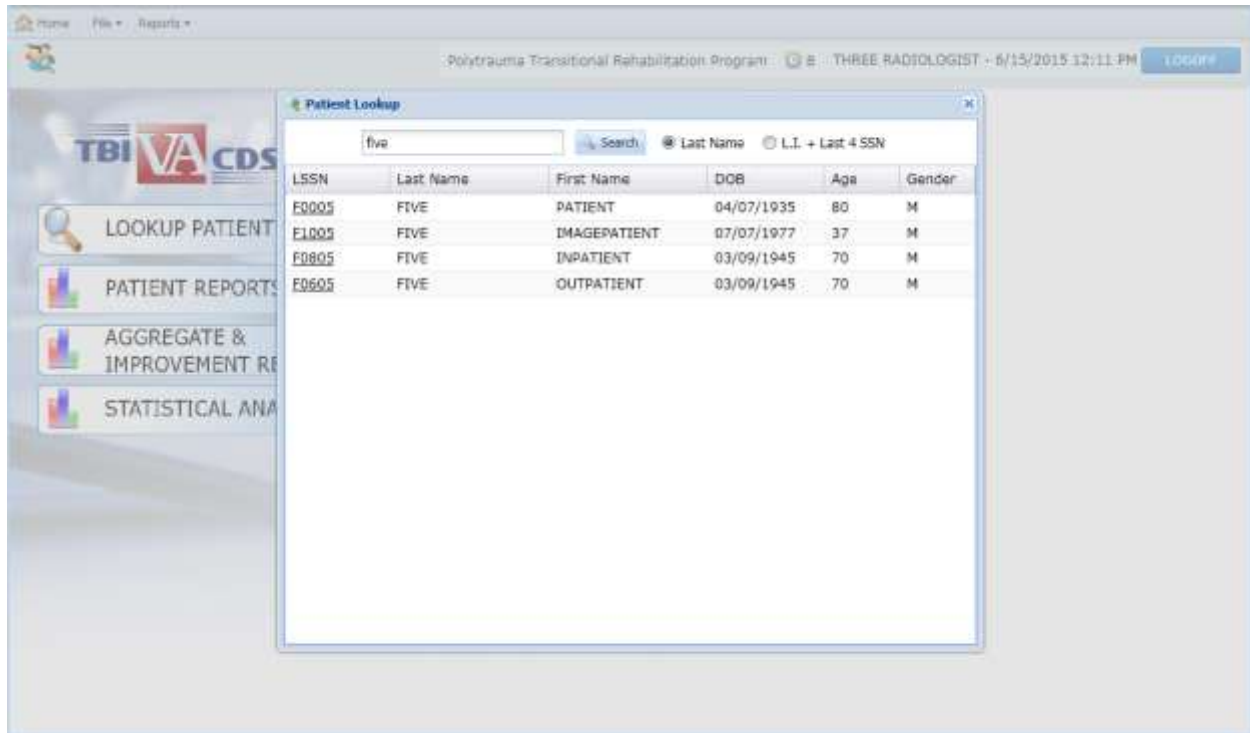
### 4.5.1. Quick Access Buttons

Quick Access Buttons are included on the Home page to give the user a fast way to access commonly used pages and functions.

- Lookup Patient – launches the Patient Lookup dialog.
- Patient Reports – takes the user to the Patient Reports screen.

- Aggregate & Improvement Reports – takes the user to the Aggregate & Improvement Reports screen.
- Statistical Analysis – takes the user to the Statistical Analysis screen.


## 4.5.2. Patient Lookup



**Figure 62: Home Page with Patient Lookup Dialog**

Patient Lookup is the process of loading the patient record for use within the application. Patient Lookup is typically achieved by accessing the patient's record in CPRS before clicking the TBI CDS shortcut in the Tools menu.

Additionally, the user may be able to look up a patient using the Patient Lookup dialog, which the user can launch by performing any one of the following actions:

- Clicking the  (Lookup Patient) button in the Icon Bar,
- Clicking the Lookup Patient quick access button on the Home page, or
- Going to **File > Patient Lookup** in the Menu Bar.

The Patient Lookup dialog box has a title bar with a close button (X). Below the title bar is a search input field containing the text 'five'. To the right of the input field is a 'Search' button with a magnifying glass icon. Further right are two radio buttons: 'Last Name' (which is selected) and 'L.I. + Last 4 SSN'. Below these controls is a table with the following data:

LSSN	Last Name	First Name	DOB	Age	Gender
<u>F0005</u>	FIVE	PATIENT	04/07/1935	80	M
<u>F1005</u>	FIVE	IMAGEPATIENT	07/07/1977	37	M
<u>F0805</u>	FIVE	INPATIENT	03/09/1945	70	M
<u>F0605</u>	FIVE	OUTPATIENT	03/09/1945	70	M

**Figure 63: Patient Lookup Dialog Detail**

The Patient Lookup dialog enables the user to search for a patient record at the user's site in CPRS. The 'X' in the top right corner closes the dialog when clicked.

Within the Patient Lookup dialog, the user can search for a patient by last name or by last name initial plus the last four digits of the patient's Social Security Number (SSN), e.g., 'T1020'. This search setting is toggled using the radio buttons to the right of the 'Search' button.

After the user types a term and clicks the Search button, the search results will be presented in a list within the dialog. Each row contains a different patient's LSSN (last name initial plus last four digits of SSN), last and first name, date of birth, age, and gender. The user can sort the list of search results according to any of these fields by clicking the appropriate column header. The user can then toggle the sort order between ascending and descending order by clicking on the chosen column header again. Additional column controls are described in the appendix.

Once the patient is located in the search results, the user can click the patient's LSSN to open the patient record and be taken to the Patient Summary screen.

## 5. Project-Specific Scenario

### 5.1.1. Treatment

One of the primary uses of the TBI CDS application is as a tool for the treatment and evaluation of patients in a clinical setting. The primary page with which the user will interact in this context is the Patient Summary page.

After accessing the Patient Summary page by looking up a patient, the user's first port of call is the Treatment Tree on the left side of the page. Here, the user can view the patient's history of completed instruments in the Instrument Hx tab or select an instrument or event to work on in the Schedule tab. To add instruments or events to the Schedule, the user can interact with the controls on the Treatment Tree or use the Apply Pathway button on the Icon Bar.

When an instrument or event is selected in the Schedule tab of the Treatment Tree, the Work Area becomes active and displays its own tabs. Here the user can perform the following actions:

- Document patient Episodes and Programs in the Episode tab,
- Complete or review instruments in the Instrument tab,
- Evaluate instrument results in the Outcomes tab,
- Write assessments and plan future events in the Assessment / Plan tab,
- Write and submit a CPRS note in the Note tab, and
- Update the patient's medical history in the Past Medical History tab.

In the course of treatment the user may also wish to update the information on the Patient Demographics page, accessible from the icon in the Icon Bar.

### 5.1.2. Reporting

The second use of the TBI CDS application is for reporting on the information generated through treatment and evaluation of patients. TBI CDS is capable of producing reports on outcomes for individual patients, groups of patients, clinical programs, and sites, among other options. The user can access the pages that present these reports from the Reports Menu on the Menu Bar.

The Patient Reports page allows the user to visualize outcomes for individual patient in a variety of ways. Once a patient is selected from the searchable list on the left side of the screen, the user can see the full list of the patient's completed instruments in the Patient Instrument Trend area. The user can then designate a date range in which to view the patient's ten most recent total scores for each instrument and the notes submitted for the patient in that range.

The Aggregate & Improvement Reports screen groups instrument outcomes in a manner that enables the user to assess the performance of a group of patients in a site or across all sites. The

user sets population parameters from the Load Population button and can then view aggregate outcomes from the population for instruments grouped by clinical program. Results for two sites can be compared in one view.

The Statistical Analysis page produces a longitudinal file of highly granular instrument response information that can be used with statistical analysis software. After the user makes filter and data selections for the file, he or she will be able to download it in a comma-separated values (CSV) format.

## 6. Troubleshooting

When the TBI CDS application encounters an unexpected error, it will produce an error report. The error report will provide a name and code for the error and may include additional information, such as the lines of code within the application that produced the error.

Refreshing the application page will resolve most errors. If an error persists, the user may take down the information in the error report and provide it to Intellica or to the organization responsible for application support for resolution.

### 6.1. Cross-Site Scripting (XSS) Protection

The TBI CDS application uses cross-site scripting (XSS) protection to prevent the injection of malicious code into the system. The XSS protection scans characters entered in the system for dangerous combinations that may signify an attack.

Unfortunately, some of the character combinations that are flagged by the XSS protection may be used accidentally by normal users, causing an error. If the application produces an error report that states a dangerous value was detected from the client, the user should review any text entered on the current screen and try to adjust any abnormal character combinations until the error no longer occurs. If the error persists or occurs without user text input, the user should inform Intellica of the error.

In order to avoid having error reports presented to the average user, Intellica created validation to check for some of the more commonly used character combinations that can activate XSS protection. When this validation detects an unsafe character combination, the user will receive a friendlier message stating that he or she should review the text fields on the current page, rather than seeing the ‘unfriendly’ error report.

## 7. Appendix

### 7.1. TBI CDS Instruments

The TBI CDS application contains 39 instruments, which represent questionnaires, assessments or rating forms that may be completed by or for a patient in the course of treatment. The list below identifies these instruments along with their abbreviations or acronyms, which are used in certain areas of the application to conserve visual space.

- Mayo-Portland Adaptability Inventory-4 (MPAI-4)
- Mayo-Portland Adaptability Inventory-4 Participation Index (M2PI)
- L Test (L-TEST)
- The Activities-specific Balance Confidence Scale (ABC)
- Berg Balance Test (BERG)
- VA Low Vision Visual Functioning Survey (VA LVVFQ 20)
- Satisfaction with Life Scale (SWLS)
- Locomotor Capabilities Index-5 (LCI-5)
- Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST)
- Generalized Anxiety Disorder 7-Item Scale (GAD-7)
- Headache Disability Index (HDI)
- The Dizziness Handicap Inventory (DHI)
- Neurobehavioral Symptom Inventory (NSI)
- Functional Mobility Assessment (FMA)
- 2 Minute Walk Test (2MWT)
- Patient Health Questionnaire-9 (PHQ-9)
- World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0)
- Personal Health Inventory (PHI)
- Pain-Enjoyment-General Activity Scale (PEG)
- PTSD CheckList | Civilian Version (PCL-C)
- Glasgow Coma Scale (GCS)
- Glasgow Outcome Scale (Extended) (GOSE)
- Functional Independence Measure (FIM)
- Polytrauma-TBI Individualized Rehabilitation and Community Reintegration Plan of Care (IRCR)
- The Orientation Log (O-LOG)

- Supervision Rating Scale (SRS)
- Comprehensive TBI Evaluation (CTBIE)
- Comprehensive TBI Follow Up Assessment (CTBIFA)
- Disability Rating Scale (DRS)
- Participation Assessment with Recombined Tools- Objective (PART-O)
- Timed Up and Go Test (TUG)
- Oswestry Low Back Pain Disability Questionnaire (ODI)
- Pain Outcomes Questionnaire – VA: Intake (POQ-VAI)
- Insomnia Severity Index (ISI)
- JFK Coma Recovery Scale – Revised (JFK CRS-R)
- Pain Outcomes Questionnaire – VA: Discharge (POQ-VAD)
- Pain Outcomes Questionnaire – VA: Follow Up (POQ-VAF)
- The Rancho Levels of Cognitive Functioning (LCFS)

## 7.2. User Controls

### 7.2.1. Date Pickers

A date picker is a user control that appears in various parts of the application, such as instrument forms, event and pathway editing dialogs, etc. Every field that requires a date in the TBI CDS application functions as a combo box, meaning that the user can either type directly into the field or select a value for it from a menu.

#### 7.2.1.1. Simple Date Picker

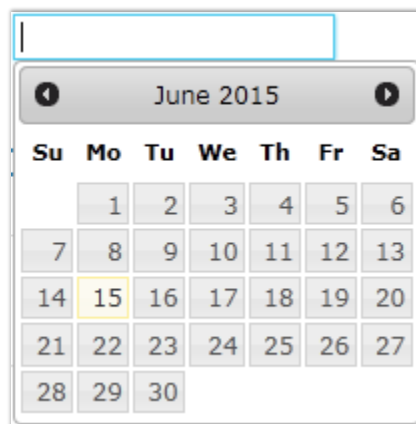
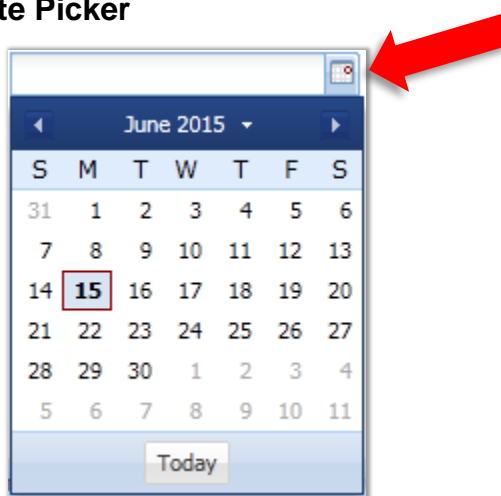


Figure 64: Simple Date Picker Detail

After selecting a date field that uses the simple date picker, the user will see the control appear automatically below the field. The date picker will show a calendar view of the current month with the current day highlighted. The user can press the Enter key immediately to select the current date or can choose a different date using the mouse and/or keyboard.

When using the mouse to navigate the simple date picker, the user can click a day in the calendar view to select that day or click the arrows on either side of the month name to navigate to another month and select a day from there. When using the keyboard to navigate, the user can press Ctrl+← or Ctrl+→ to navigate between days and Ctrl+↑ or Ctrl+↓ to navigate between weeks. Pressing Enter will then select the date to which the user navigated with the keyboard.

#### 7.2.1.2. Advanced Date Picker



**Figure 65: Advanced Date Picker Detail**

In order to access the advanced date picker, the user must click the calendar button that appears at the end of a date field that uses this control. If a date has already been selected and/or saved for the field, a calendar display of that date's month will be shown with the selected day highlighted. If no date has been previously entered, the current month will be shown with the current day highlighted.

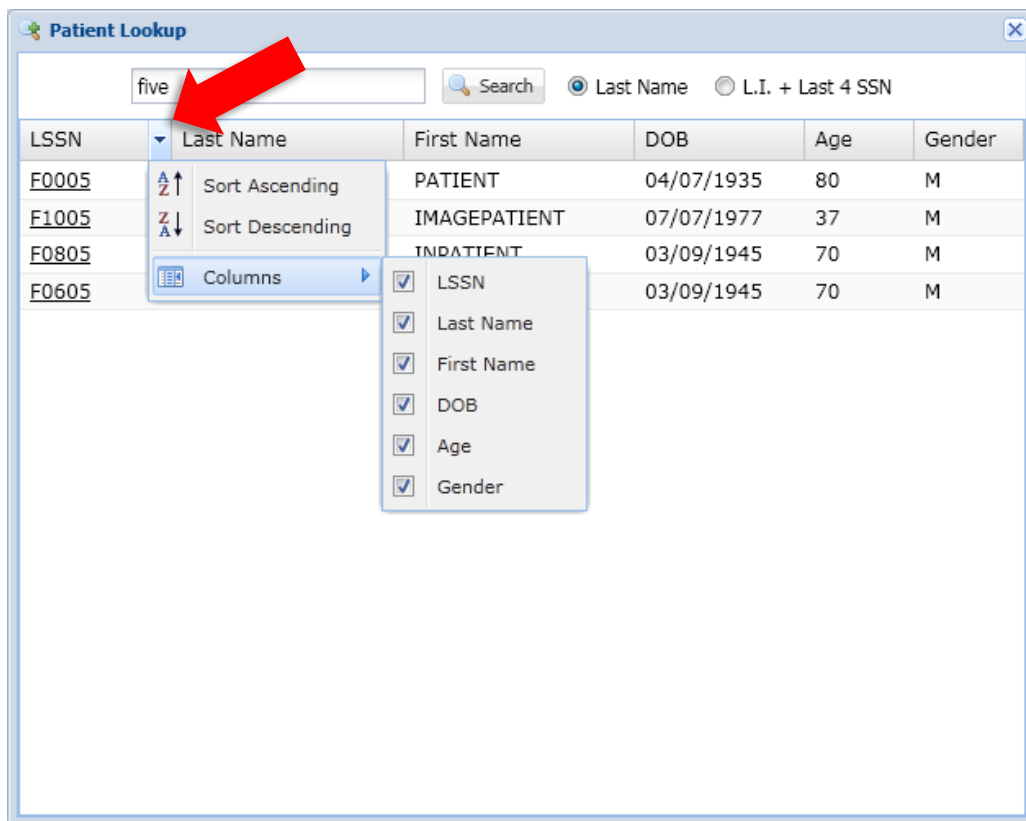
In order to select the highlighted day, the user can click it with the mouse or press the Enter key. In order to select the current date, the user may press Spacebar or click the Today button at the bottom of the calendar view.

The arrow keys can be used to navigate between days (← and →) and weeks (↑ and ↓). The user can navigate between months by clicking the arrow on either side of the month/year at the top of the date picker. The month can also be changed using the keyboard shortcuts Ctrl+← and Ctrl+→, and the year can be changed with Ctrl+↑ and Ctrl+↓.

If the user would like more control when selecting a month and year, he or she can click the month/year at the top of the advanced date picker. Doing this will cause the calendar view to be overlaid with a list of months and a list of years. The list of years can be navigated using the

arrow buttons at the top. Once the user has chosen a month and year from the lists, he or she can click 'OK' to see the calendar view of that month or 'Cancel' to return to the previous calendar view.

## 7.2.2. Column Controls



**Figure 66: Patient Lookup Dialog with Column Controls Menu**

When items are presented in a tabular list in the TBI CDS application, the user can alter the view of the list by interacting with controls built into the column headers.

Hovering the mouse over the right edge of a column header will cause the mouse icon to change to two vertical lines with arrows pointing to the left and right. Once the mouse changes its appearance, the user can click and drag the right edge of the column header to resize the column.

To change the ordering of items in the list, the user can click any one of the column headers to sort the list in ascending order according to the values in that column. Ascending order will present numbers from low to high, letters from A to Z, etc. The user can reverse this sort order to descending order by clicking the same column header a second time. Continued clicking of the same column header will toggle the sort order between ascending and descending.

The user can access additional view controls by hovering the mouse over a column header until a downward arrow button appears at the right edge of the header. Clicking this button causes a

drop-down menu of view options to appear. The first two options of the menu allow the user to choose a sort order directly. Choosing one of these options will sort the list in either ascending or descending order according to the values in the column from which the menu was accessed.

The final option in the drop-down menu, labeled 'Columns', displays a drop-down list of the columns in the tabular list when hovered over with the mouse. The name of each column header is shown next to a checkbox that indicates whether that column is currently being displayed. To hide columns, the user can simply uncheck the checkbox next to the column header name of the column he or she wishes to hide. Multiple columns can be hidden or shown at once.

### **7.2.3. Pop-Up Dialog Controls**

The TBI CDS application uses pop-up dialogs in a number of locations. These dialogs look like pop-up windows but are displayed within the application and do not cause additional browser windows or tabs to open.

With the exception of the schedule controls menu, all pop-ups used in the TBI CDS application can be moved by the user. In order to move a dialog, the user can simply click and drag the dialog header to the desired location.

Certain dialogs in the application can also be resized. In order to resize the dialog, the user must move the mouse to the edge of the dialog window until the cursor changes to two arrows pointing in opposite directions. The user can then click and drag the edge until the dialog has been resized as desired.

Depending on the pop-up, there are a number of additional controls that may be presented to the user. Most dialogs have an 'X' button in the top right corner that closes the dialog when clicked. Many dialogs display buttons in the bottom left corner, such as 'OK' or 'Cancel', that allow the user to save, apply, discard, or otherwise interact with data in the pop-up.