MPOG
MULTICENTER PERIOPERATIVE
OUTCOMES GROUP

Module 5
Case Viewer

MPOG
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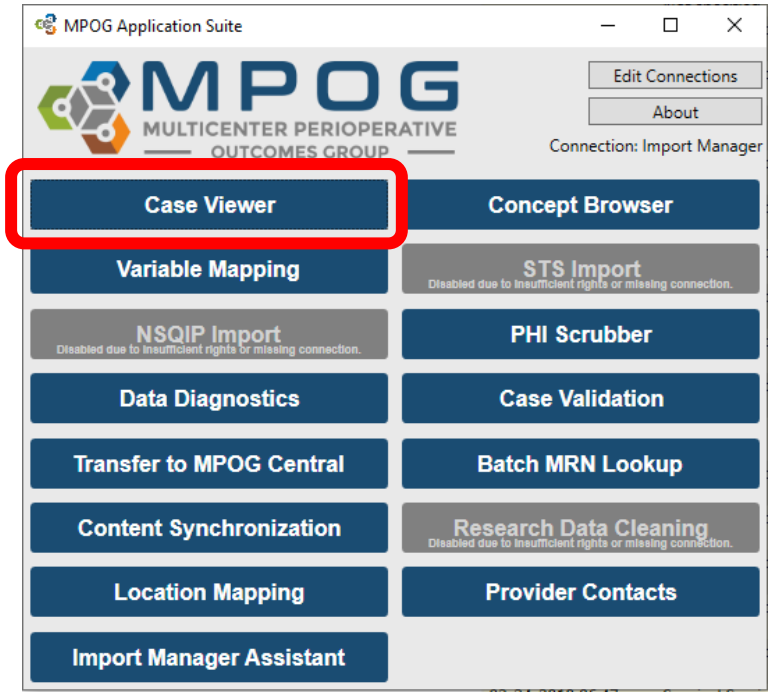
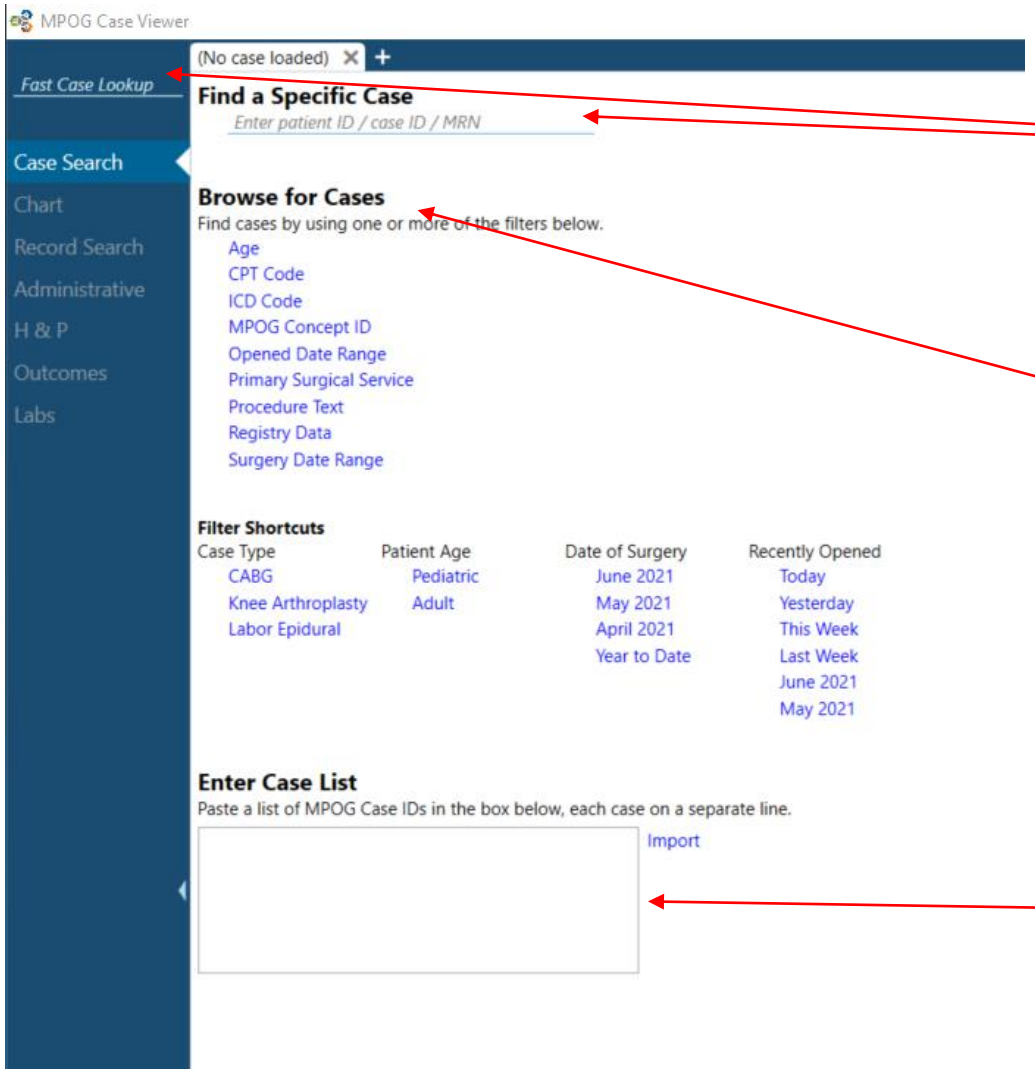
OUTCOMES GROUP

Case Viewer Overview

The MPOG Case Viewer application displays individual case data just as an anesthesia information management system (AIMS) would display.





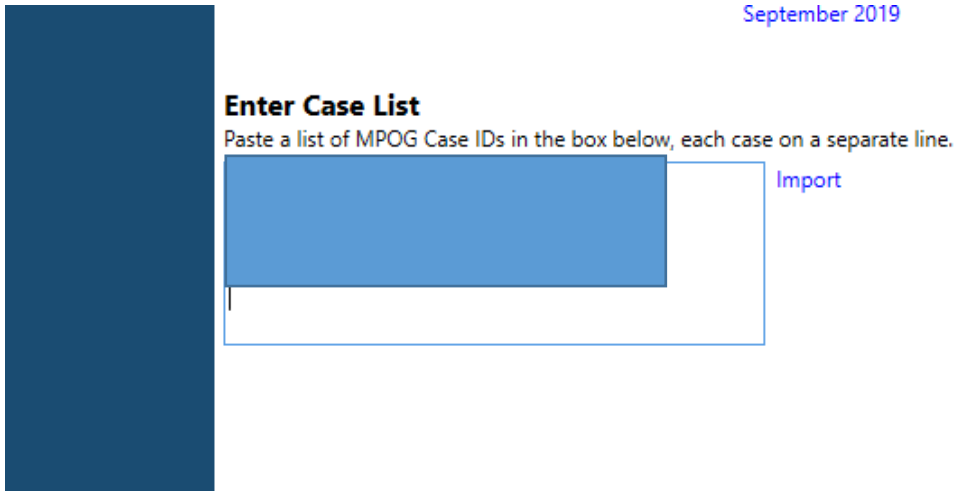
To open a case, search by MPOG Patient ID, MPOG Case ID, or MRN in either location

Option to browse for cases by using one or more filters listed under “browse for cases”

Import or copy/paste a case list here if interested in viewing multiple specific cases from a list

View Multiple Cases from Case List

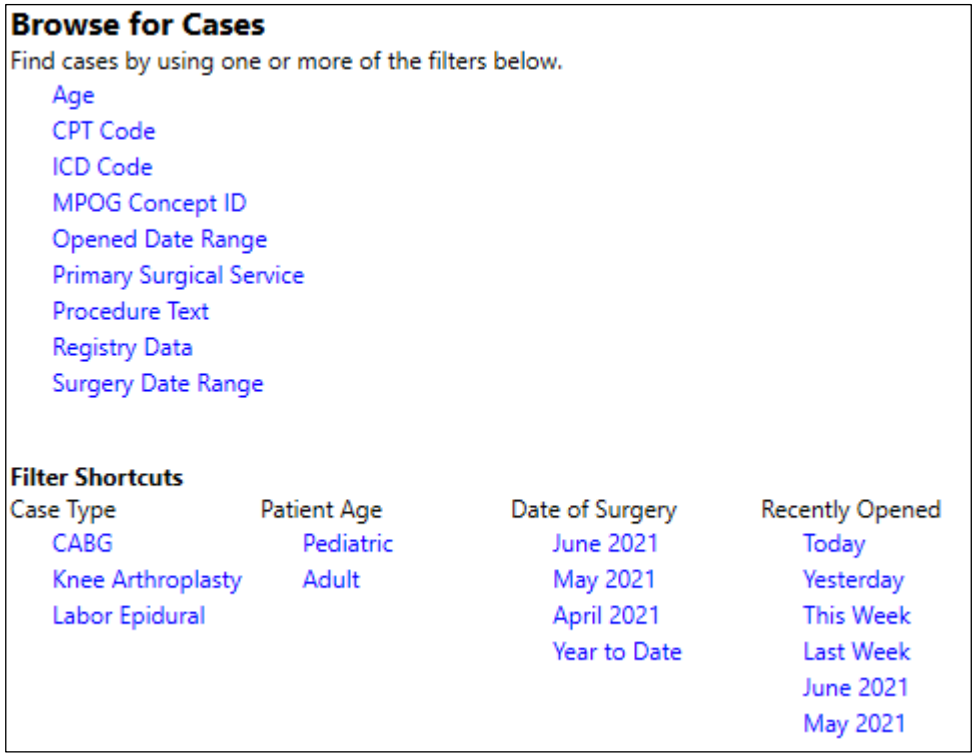
Enter a list of MPOG Case IDs in the box, one per line, and click “Import”. A case will open.



Using the Case List

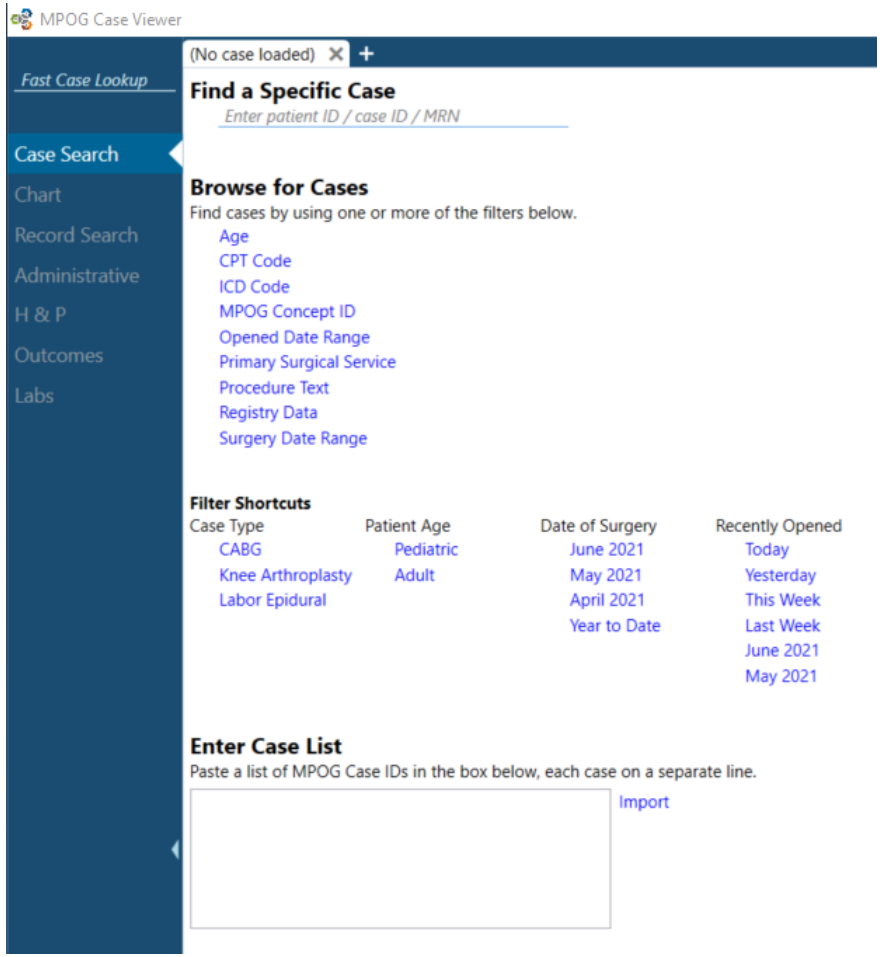
- Arrows appear along the bottom of the left hand column to scroll between cases. If a case number is known (ex: you want to go to case 50 of 100), use the text field to type the desired case number.
- When scrolling through cases using this feature, any ‘Sections’ opened in the case view (see ‘Sections’ slide) will remain open
- User will remain in the same section of the chart when scrolling between cases

Search by Filter

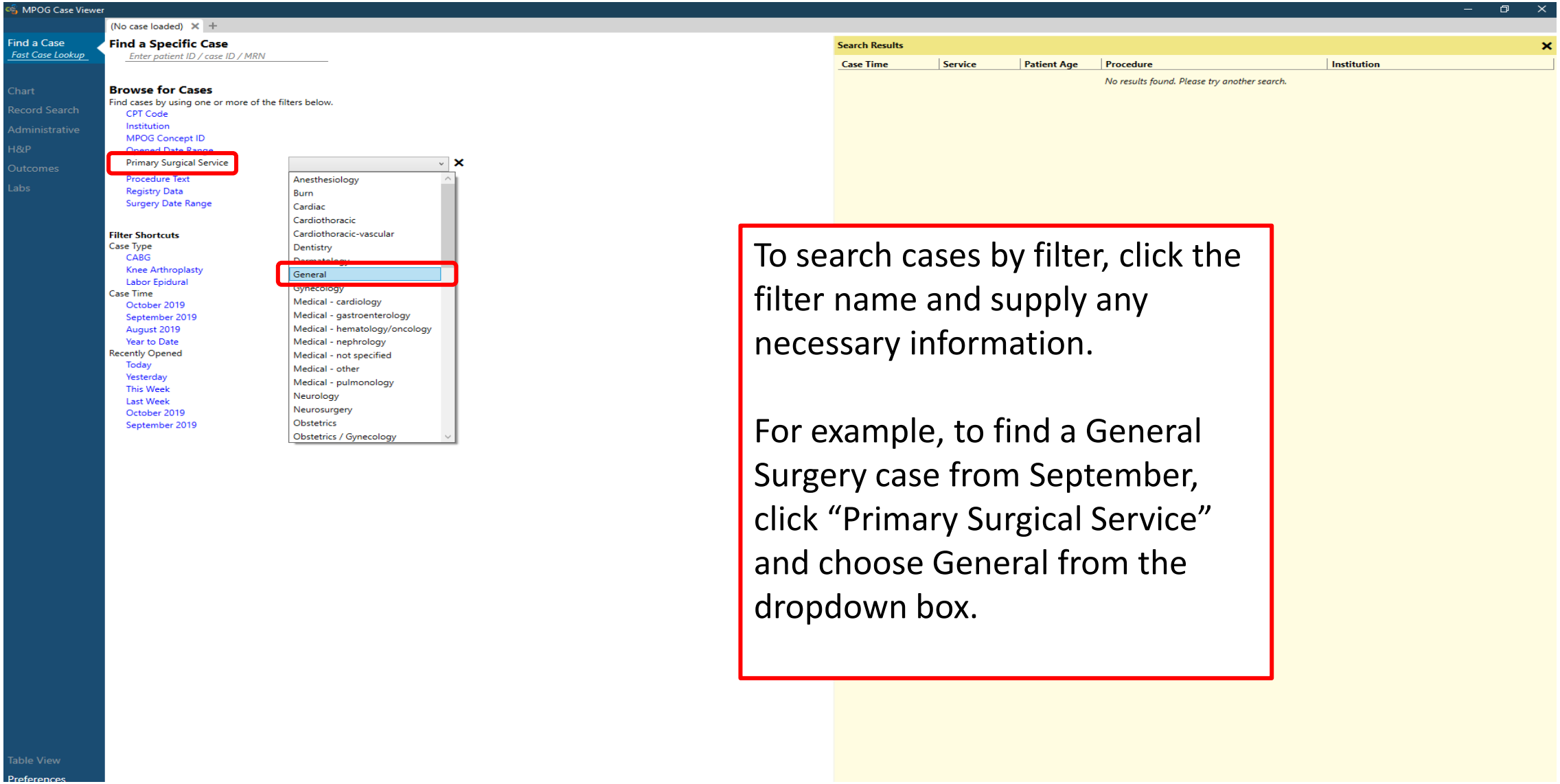


- **Age-** Search for cases by specific age ranges
- **CPT code-** Search for cases that include a specific CPT code.
- **ICD code-** Search for cases that include a specific ICD code
- **MPOG Concept ID** – Lists all cases that have a specific MPOG concept documented.
  - Without other filters, searching by MPOG Concept ID may take awhile. Consider adding a date range filter.
- **Opened Date Range-** This will generate a list of cases that the user previously opened during that time period.
- **Primary Surgical Service** - allows users to search by the primary surgical service associated with each case
- **Procedure Text-** Searches for matches in the Procedure Text field associated with a case (eg. CABG)
- **Registry Data-** Lists all cases that include data from MSQC, NSQIP, STS Adult Cardiac, STS Congenital Heart and STS General Thoracic
- **Surgery Date Range-** Find cases that occurred between specific dates.

Search By Filter

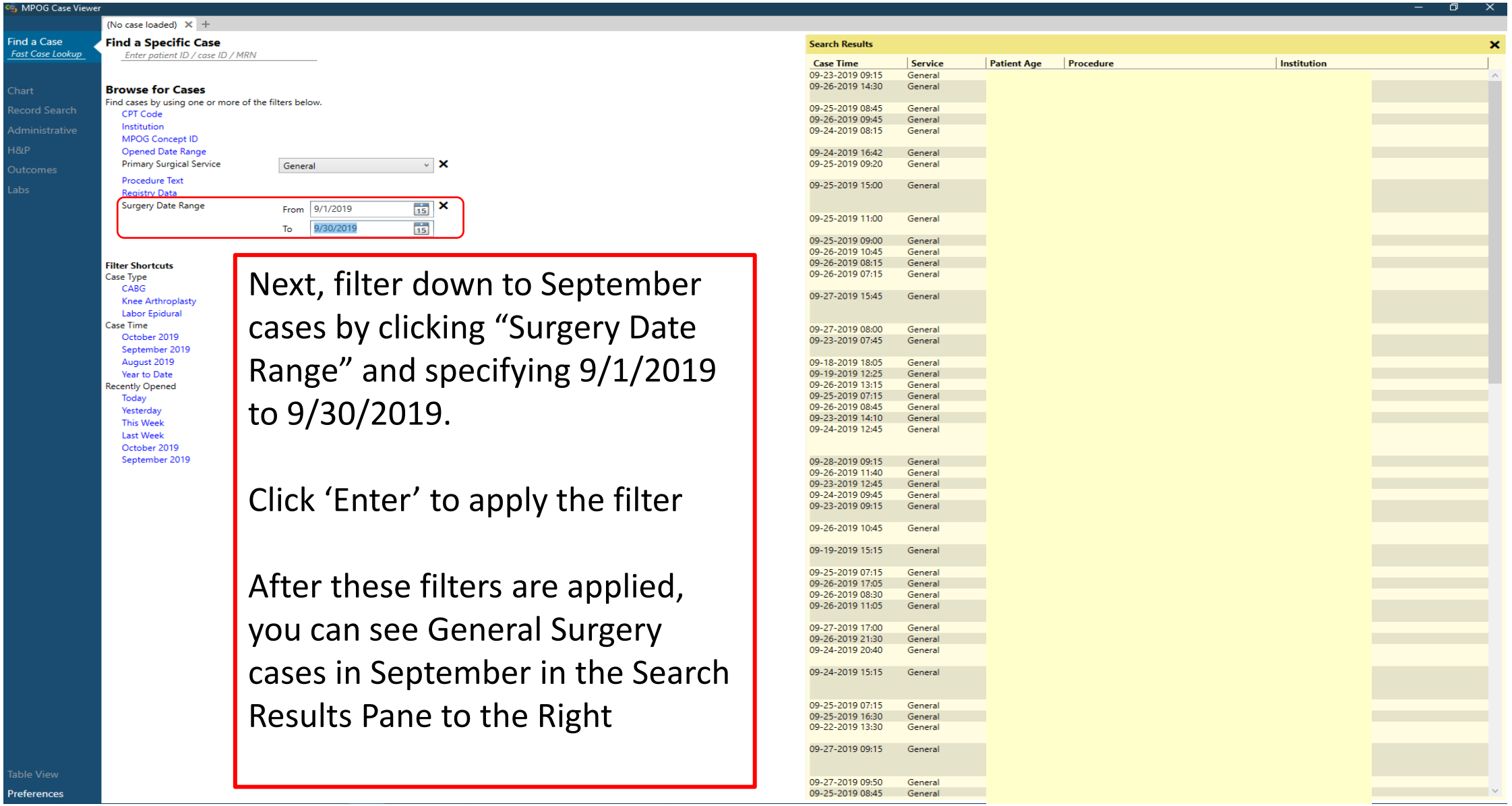


Multiple filters may be applied at a time to narrow down a case list. The “Search Results” pane will automatically update a list of cases as filters are added.



To search cases by filter, click the filter name and supply any necessary information.

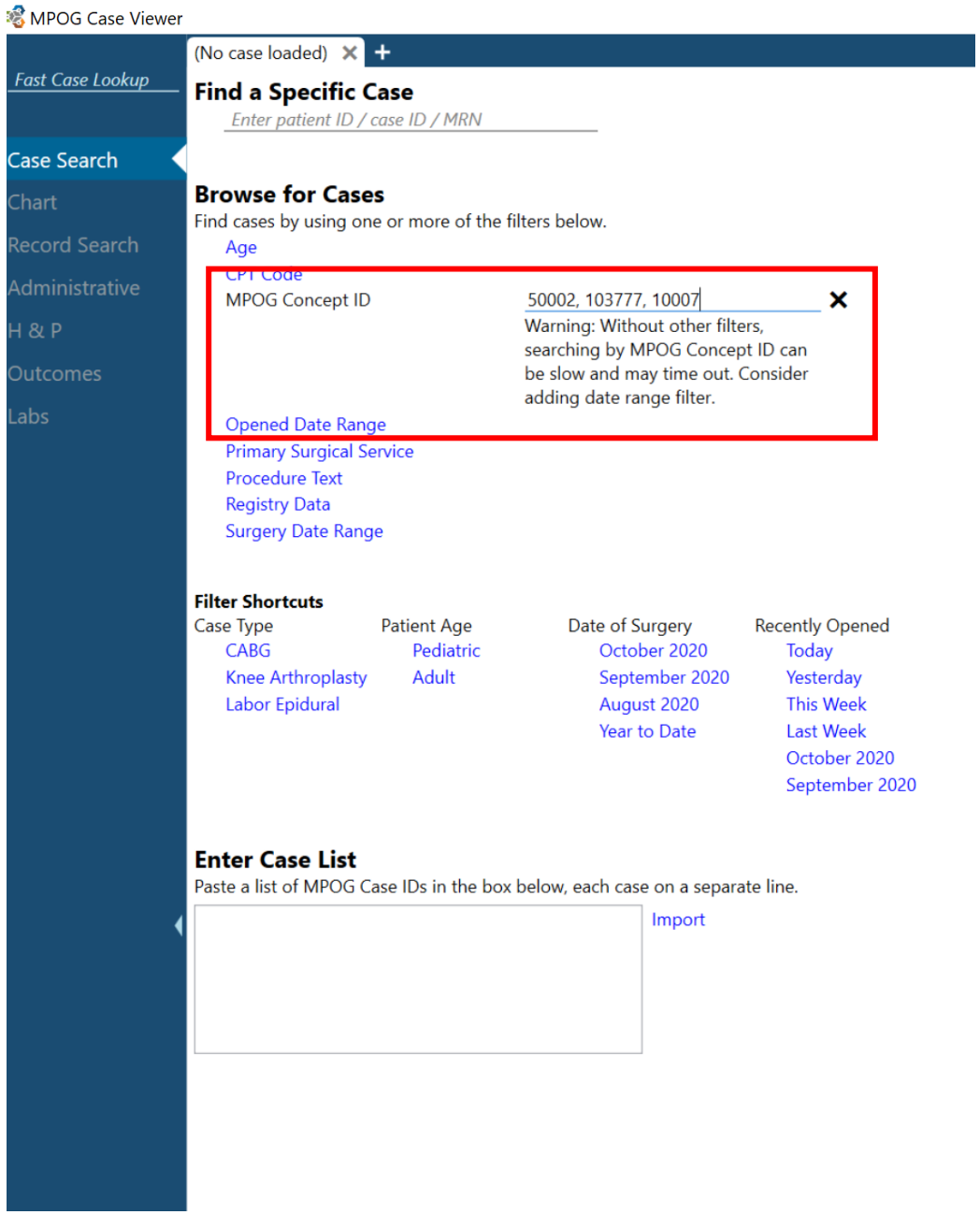
For example, to find a General Surgery case from September, click “Primary Surgical Service” and choose General from the dropdown box.



Next, filter down to September cases by clicking “Surgery Date Range” and specifying 9/1/2019 to 9/30/2019.

Click ‘Enter’ to apply the filter

After these filters are applied, you can see General Surgery cases in September in the Search Results Pane to the Right



"MPOG Concept ID" filter allows for finding cases based on one or multiple concepts being present on the case

To search by multiple concept IDs, use a comma between IDs

Opening a Case

- Double click on a case in the Search Results pane to open. Case viewer will open to the “Chart” Tab. PHI has been removed for the purposes of this guide.

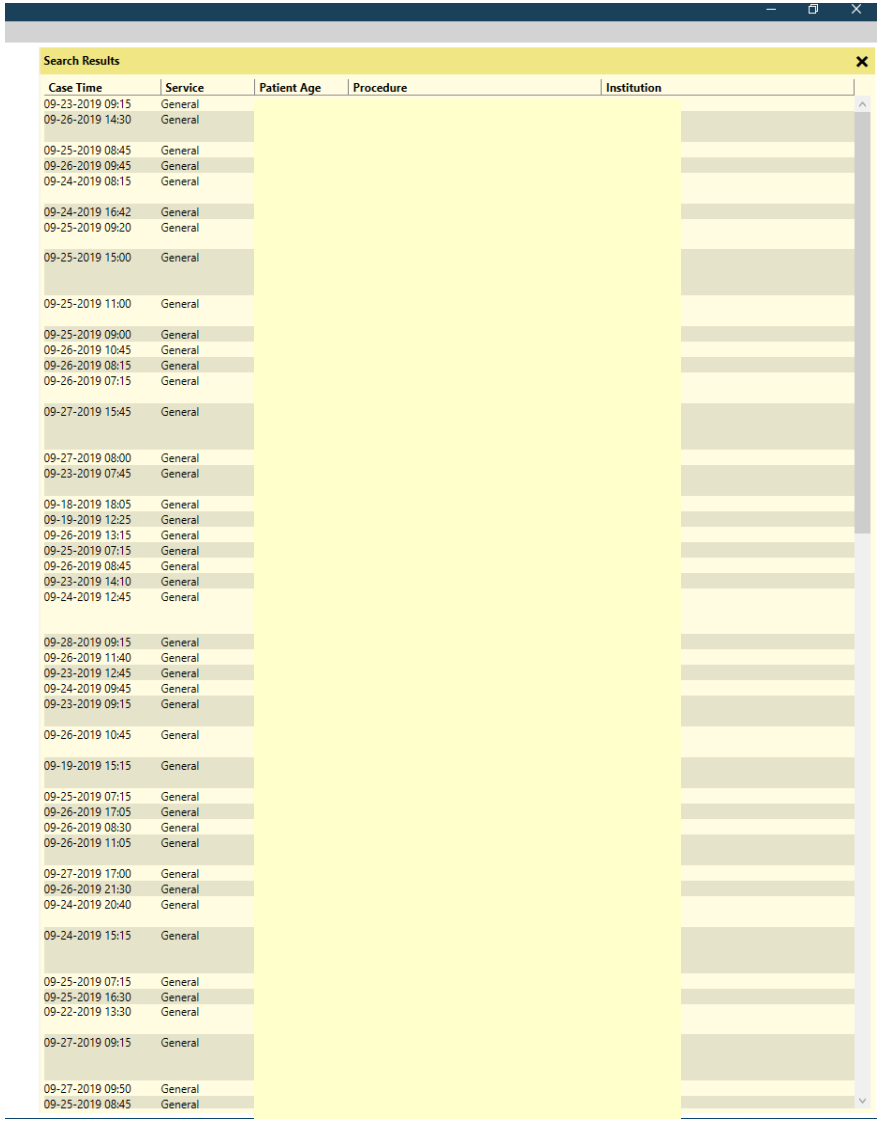
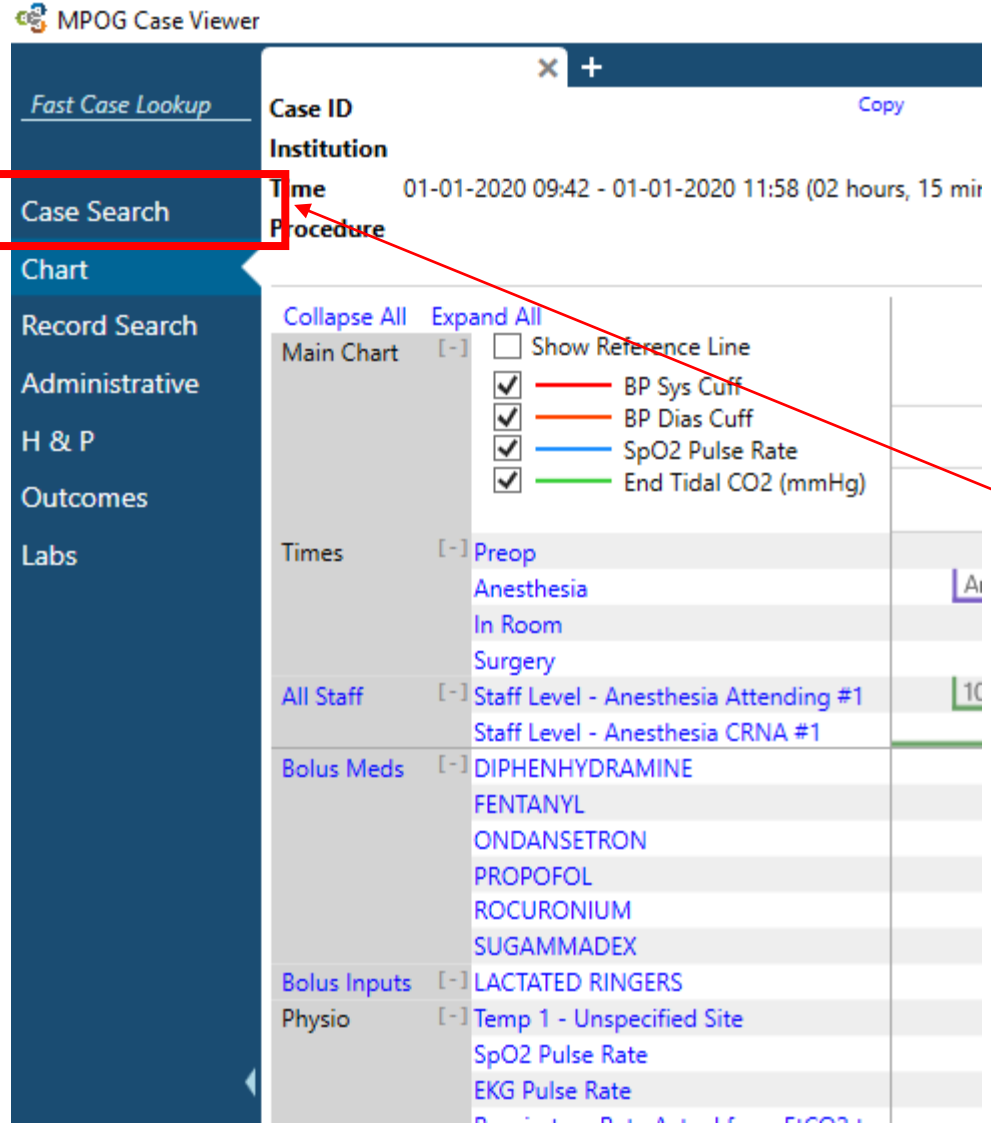
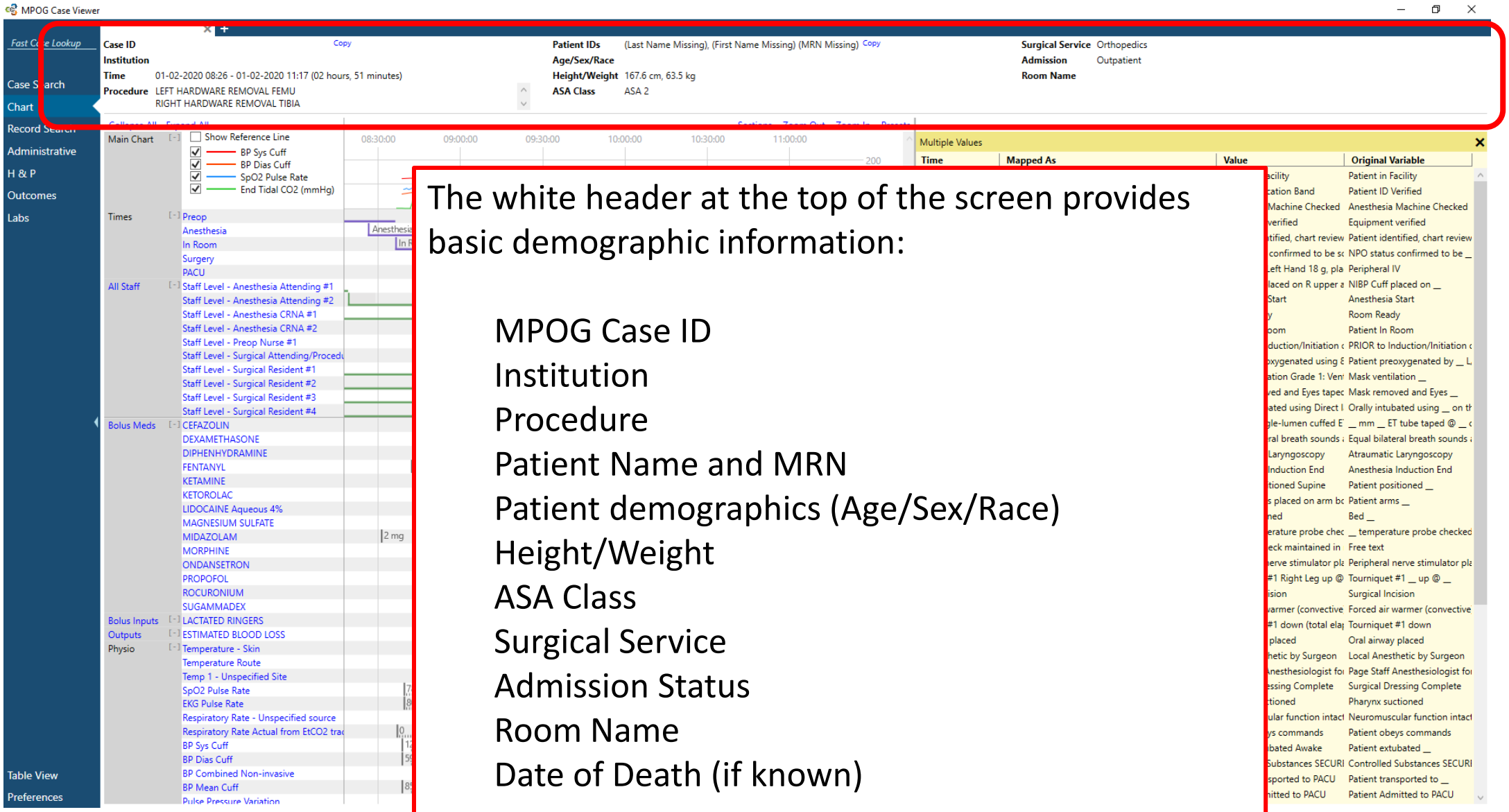


Chart View



To return to the case list generated in the previous step, click “Case Search” in the upper left hand corner at any time while the case is open

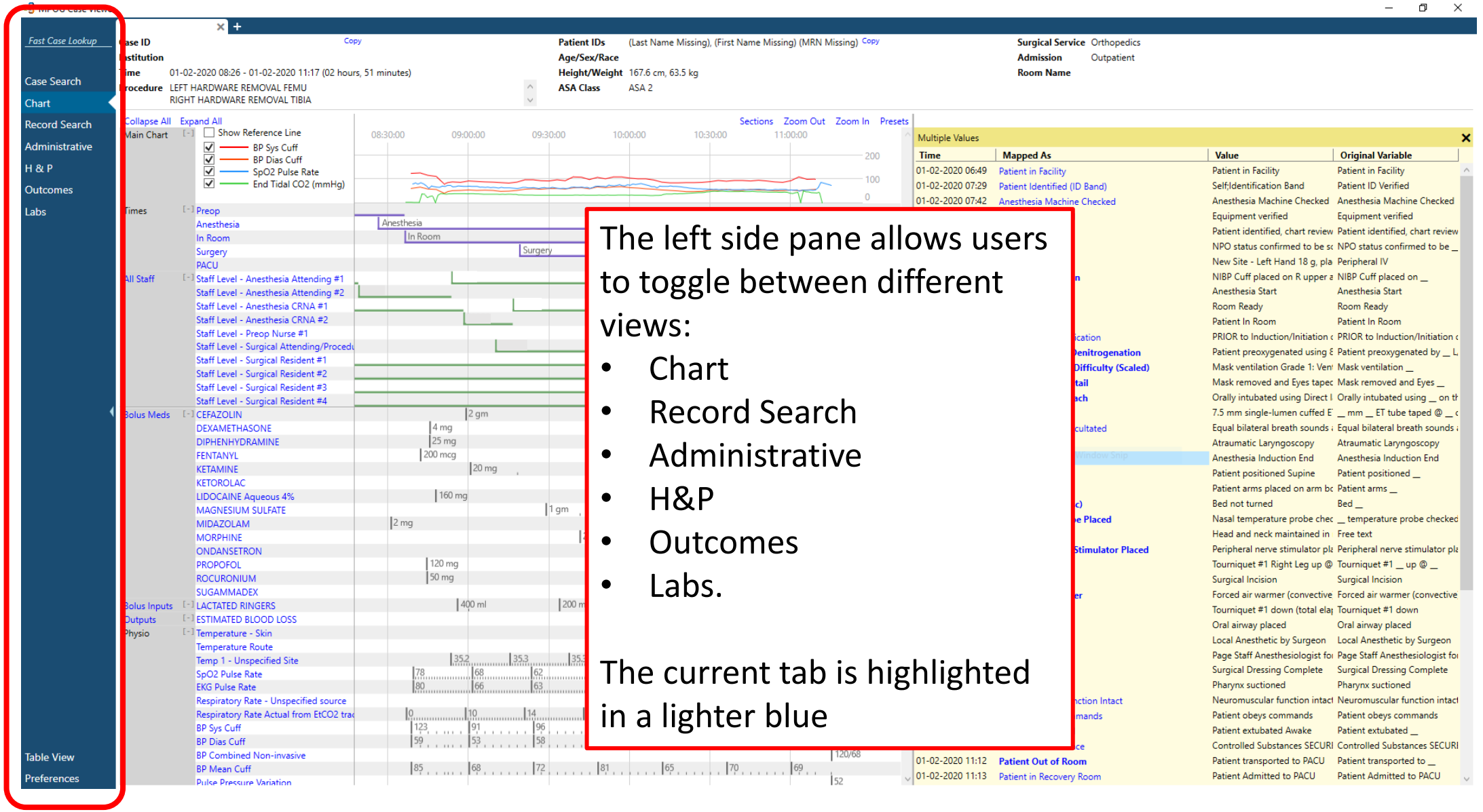


The white header at the top of the screen provides basic demographic information:

- MPOG Case ID
- Institution
- Procedure
- Patient Name and MRN
- Patient demographics (Age/Sex/Race)
- Height/Weight
- ASA Class
- Surgical Service
- Admission Status
- Room Name
- Date of Death (if known)

Chart View

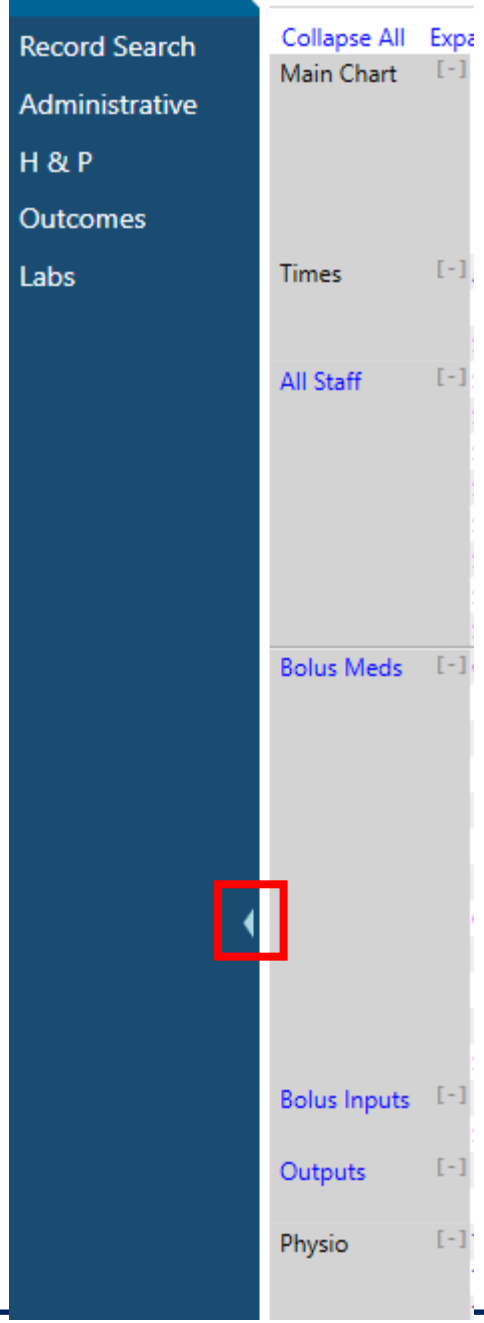
The MRN and MPOG Case ID can be copied using the ‘Copy’ button



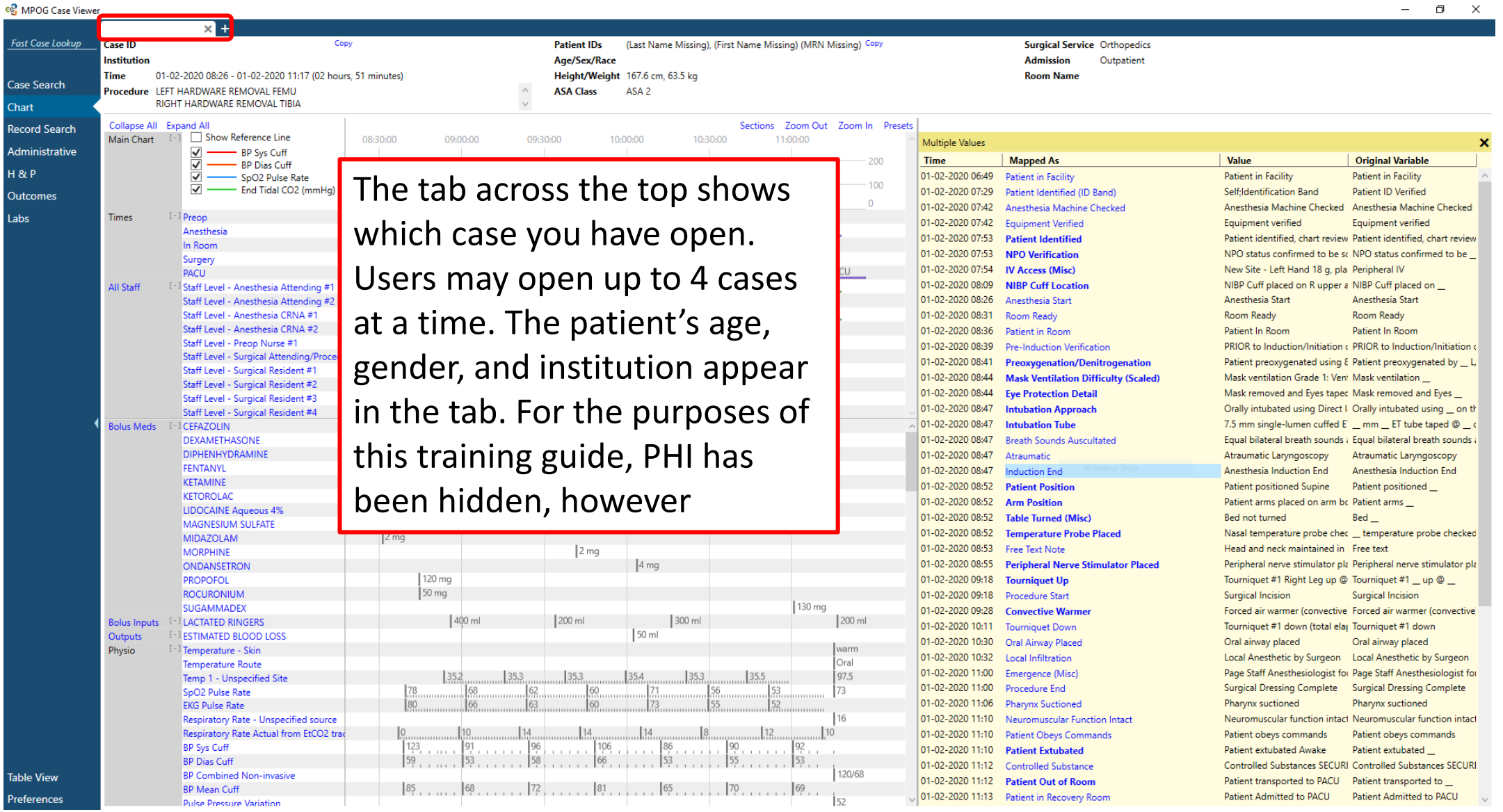
The left side pane allows users to toggle between different views:

- Chart
- Record Search
- Administrative
- H&P
- Outcomes
- Labs.

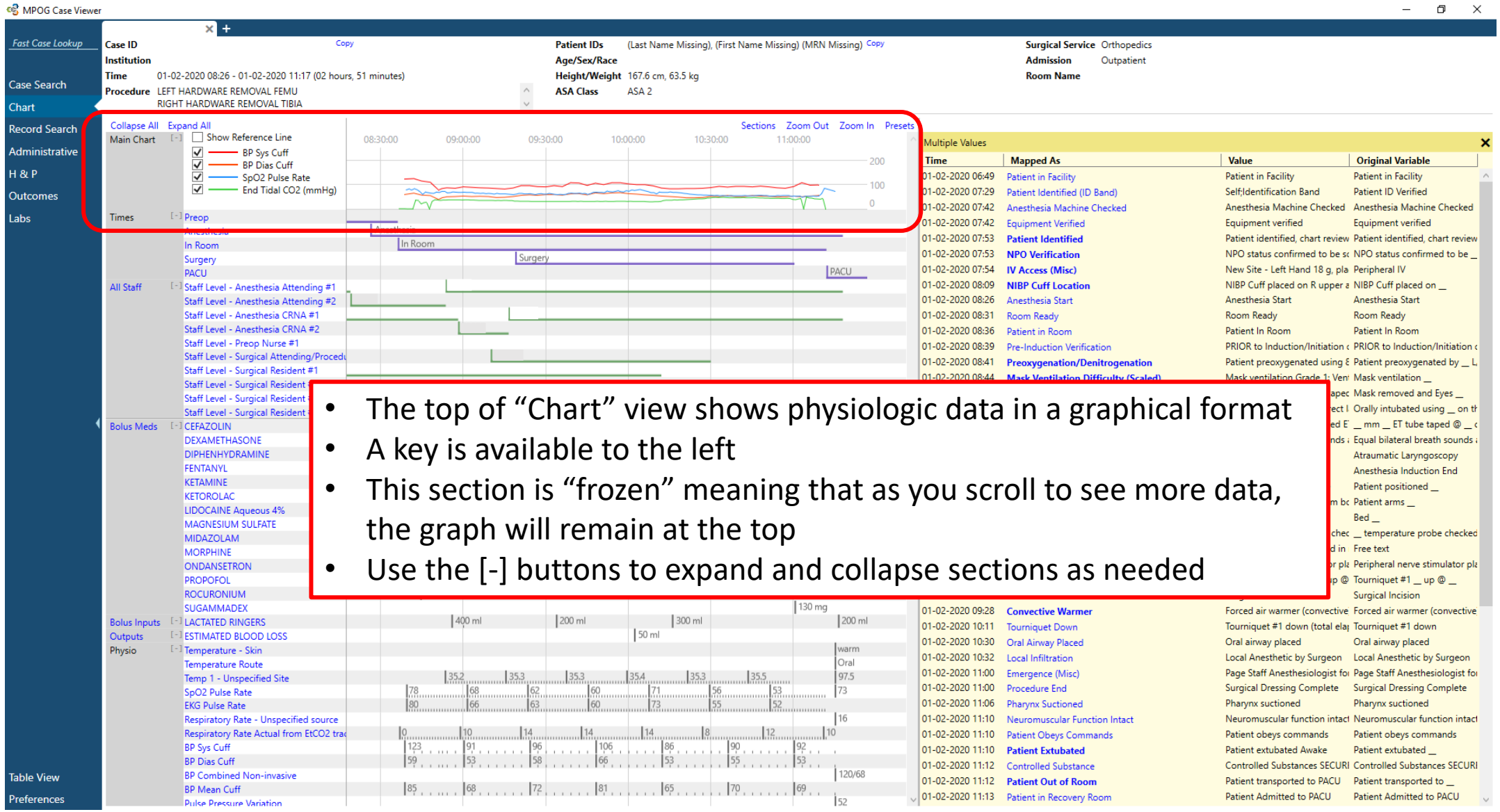
The current tab is highlighted in a lighter blue



- For viewing on smaller laptop screens, the blue panel can be collapsed to save space by using the small arrow

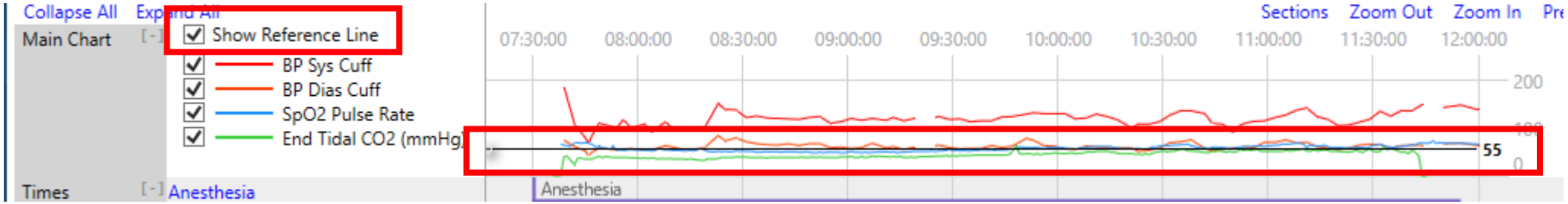


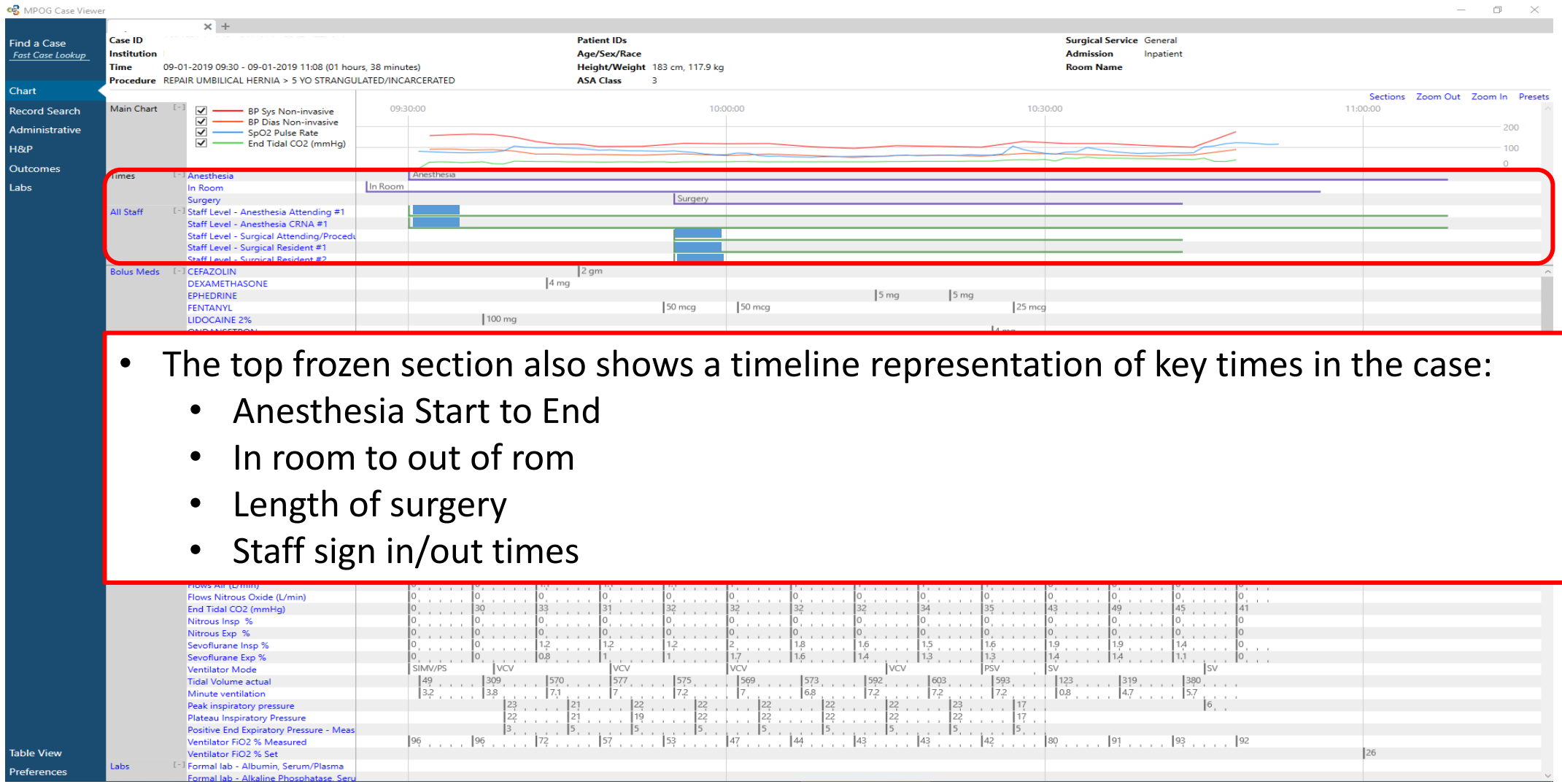
The tab across the top shows which case you have open. Users may open up to 4 cases at a time. The patient's age, gender, and institution appear in the tab. For the purposes of this training guide, PHI has been hidden, however



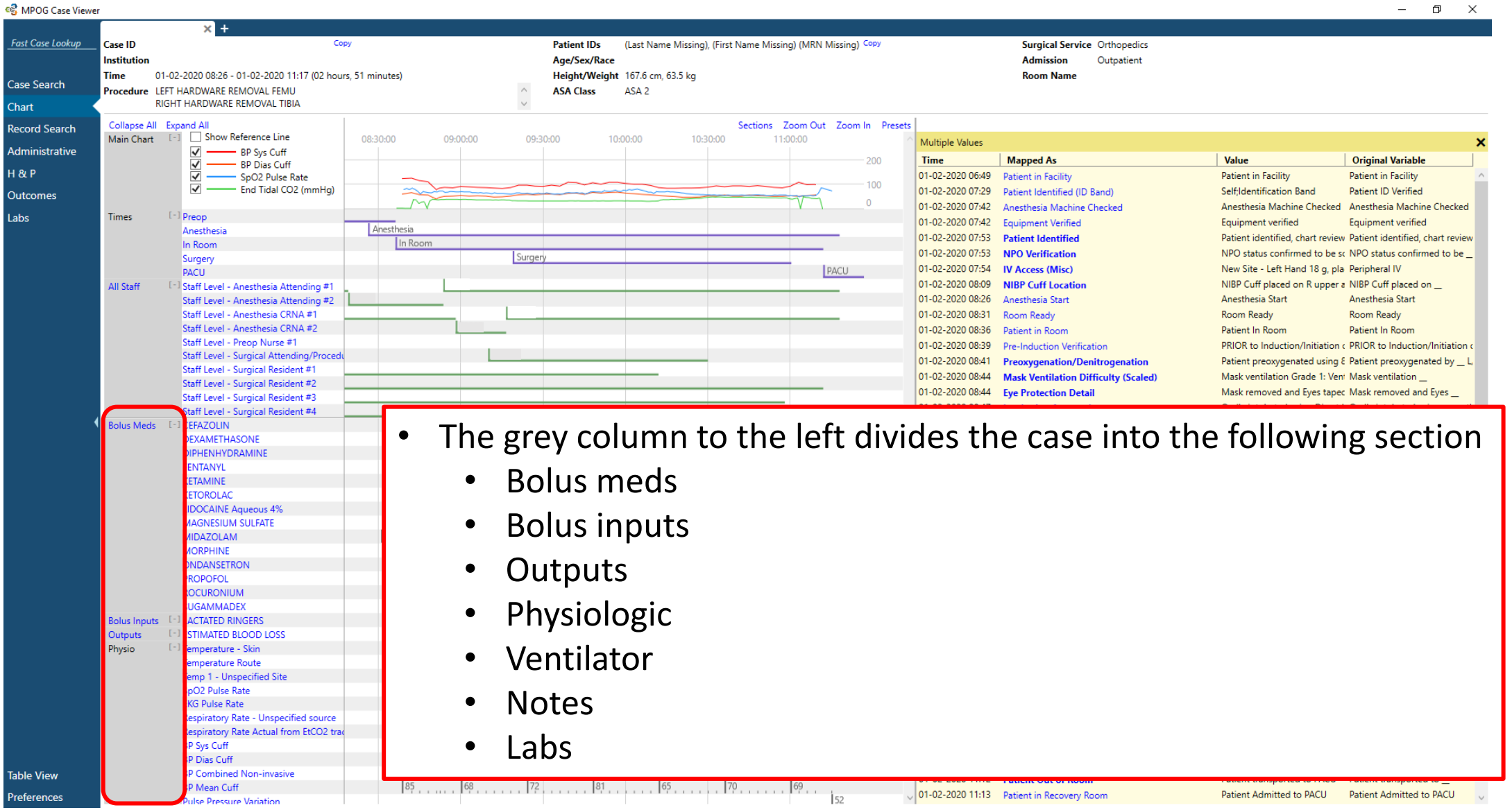
- The top of “Chart” view shows physiologic data in a graphical format
- A key is available to the left
- This section is “frozen” meaning that as you scroll to see more data, the graph will remain at the top
- Use the [-] buttons to expand and collapse sections as needed

- Choosing “Show Reference Line” adds an adjustable horizontal line across the grid
- This can be adjusted by clicking moving up or down

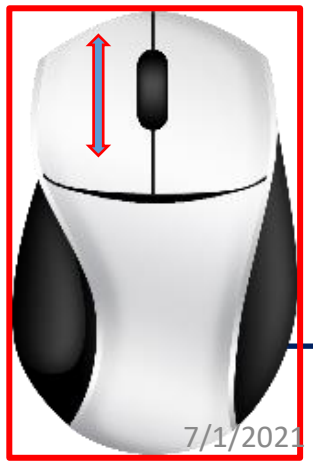




- The top frozen section also shows a timeline representation of key times in the case:
  - Anesthesia Start to End
  - In room to out of rom
  - Length of surgery
  - Staff sign in/out times



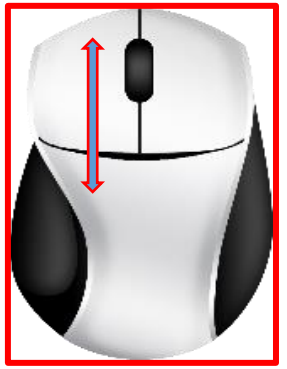
- The grey column to the left divides the case into the following section
  - Bolus meds
  - Bolus inputs
  - Outputs
  - Physiologic
  - Ventilator
  - Notes
  - Labs



- Scroll through the sections by either hovering over the grey bar and using the scroll wheel on your mouse OR using the scroll bar to the right.
- Use the “[-]” buttons to expand and collapse sections as needed.
- Use “Collapse All” to collapse all sections.

Hover Mouse Pointer

Use scroll wheel to zoom in and out



Hover Mouse Pointer

Information available in the body of the chart is arranged to match the chronological timeline listed across the top of the view. To view more information, hover the mouse pointer over the flow sheet and use the scroll bar to scroll in or out. “Zoom Out” and “Zoom In” buttons are also available in the upper right corner

Click Mouse

Click and drag mouse left or right

Tick marks on the flowsheet let users know that more information is available if you scroll in.

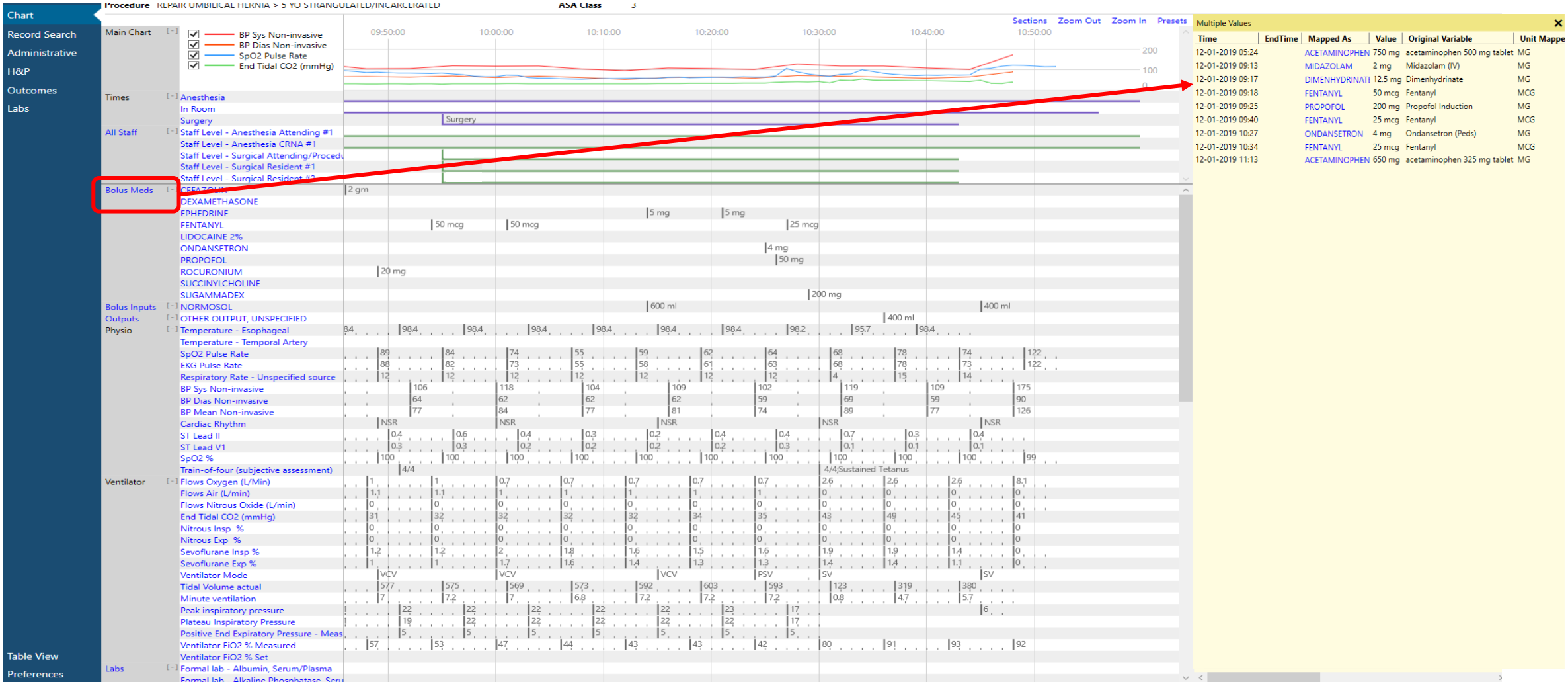
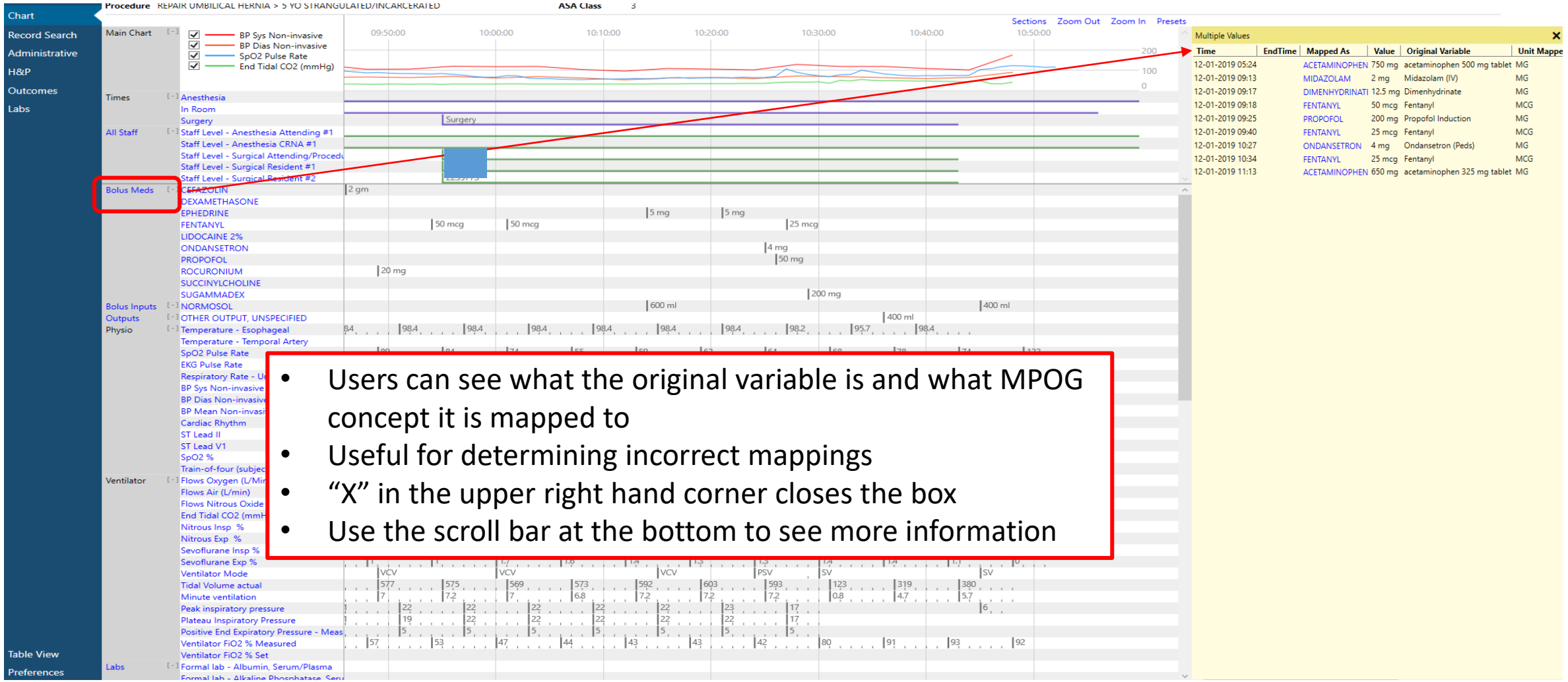
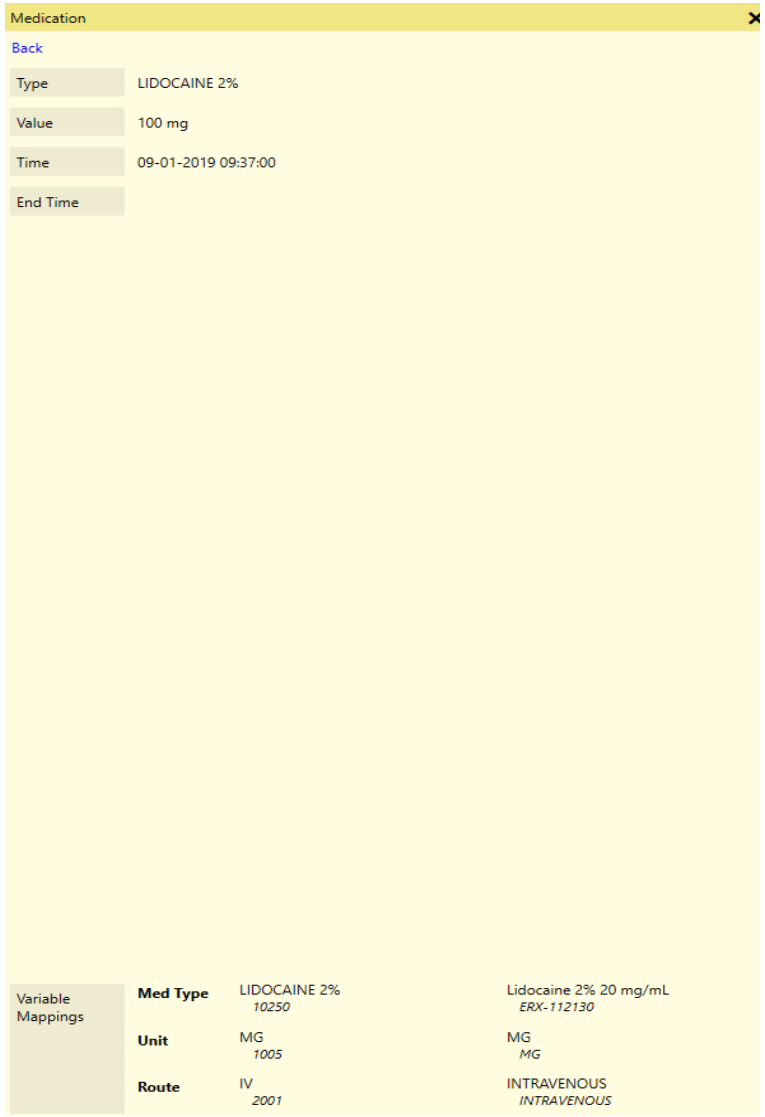


Chart
Record Search
Administrative
H&P
Outcomes
Labs
Table View
Preferences
Procedure REPAIR UMBILICAL HERNIA > 5 YO STRANGULATED/INCARCERATED
ASA Class 3
Sections Zoom Out Zoom In Presets
Main Chart
BP Sys Non-invasive
BP Dias Non-invasive
SpO2 Pulse Rate
End Tidal CO2 (mmHg)
Times
Anesthesia
In Room
Surgery
All Staff
Staff Level - Anesthesia Attending #1
Staff Level - Anesthesia CRNA #1
Staff Level - Surgical Attending/Proced
Staff Level - Surgical Resident #1
Staff Level - Surgical Resident #2
Bolus Meds
CEFAZOLIN
DEXAMETHASONE
EPHEDRINE
FENTANYL
LIDOCAINE 2%
ONDANSETRON
PROPOFOL
ROCURONIUM
SUCCINYLCHOLINE
SUGAMMADEX
Bolus Inputs
NORMOSOL
Outputs
OTHER OUTPUT, UNSPECIFIED
Physio
Temperature - Esophageal
Temperature - Temporal Artery
SpO2 Pulse Rate
EKG Pulse Rate
Respiratory Rate - Unspecified source
BP Sys Non-invasive
BP Dias Non-invasive
BP Mean Non-invasive
Cardiac Rhythm
ST Lead II
ST Lead V1
SpO2 %
Train-of-four (subjective assessment)
Ventilator
Flows Oxygen (L/Min)
Flows Air (L/min)
Flows Nitrous Oxide (L/min)
End Tidal CO2 (mmHg)
Nitrous Insp %
Nitrous Exp %
Sevoflurane Insp %
Sevoflurane Exp %
Ventilator Mode
Tidal Volume actual
Minute ventilation
Peak inspiratory pressure
Plateau Inspiratory Pressure
Positive End Expiratory Pressure - Meas
Ventilator FiO2 % Measured
Ventilator FiO2 % Set
Labs
Formal lab - Albumin, Serum/Plasma
Multiple Values
Time | EndTime | Mapped As | Value | Original Variable | Unit Mappe
12-01-2019 05:24 ACETAMINOPHEN 750 mg acetaminophen 500 mg tablet MG
12-01-2019 09:13 MIDAZOLAM 2 mg Midazolam (IV) MG
12-01-2019 09:17 DIMENHYDRINATI 12.5 mg Dimenhydrinate MG
12-01-2019 09:18 FENTANYL 50 mcg Fentanyl MCG
12-01-2019 09:25 PROPOFOL 200 mg Propofol Induction MG
12-01-2019 09:40 FENTANYL 25 mcg Fentanyl MCG
12-01-2019 10:27 ONDANSETRON 4 mg Ondansetron (Peds) MG
12-01-2019 10:34 FENTANYL 25 mcg Fentanyl MCG
12-01-2019 11:13 ACETAMINOPHEN 650 mg acetaminophen 325 mg tablet MG



- Users can see what the original variable is and what MPOG concept it is mapped to
- Useful for determining incorrect mappings
- “X” in the upper right hand corner closes the box
- Use the scroll bar at the bottom to see more information

- Clicking a value brings up more information
- Allows for further drill down of the information



- Data in this view can also be sorted by clicking on the column header

Click header

Multiple Values

Time	Mapped As	Value	Original Variable
12-01-2019 06:10	BP Sys Non-invasive	114	2100310150
12-01-2019 08:08	BP Sys Non-invasive	109	7
12-01-2019 08:12	BP Sys Non-invasive	109	7
12-01-2019 08:15	BP Sys Non-invasive	118	7
12-01-2019 08:18	BP Sys Non-invasive	84	7
12-01-2019 08:21	BP Sys Non-invasive	88	7
12-01-2019 08:24	BP Sys Non-invasive	93	7
12-01-2019 08:27	BP Sys Non-invasive	93	7
12-01-2019 08:30	BP Sys Non-invasive	105	7
12-01-2019 08:33	BP Sys Non-invasive	107	7
12-01-2019 08:36	BP Sys Non-invasive	97	7
12-01-2019 08:39	BP Sys Non-invasive	106	7

Multiple Values

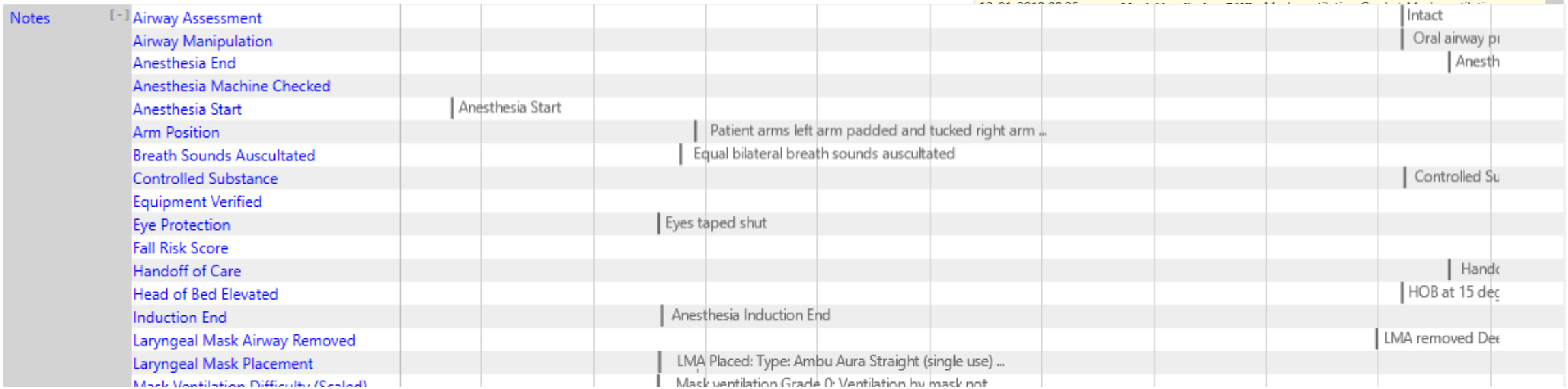
Time	Mapped As	Value	Original Variable
12-01-2019 08:18	BP Sys Non-invasive	84	7
12-01-2019 08:21	BP Sys Non-invasive	88	7
12-01-2019 08:24	BP Sys Non-invasive	93	7
12-01-2019 08:27	BP Sys Non-invasive	93	7
12-01-2019 08:36	BP Sys Non-invasive	97	7
12-01-2019 08:30	BP Sys Non-invasive	105	7
12-01-2019 08:39	BP Sys Non-invasive	106	7
12-01-2019 08:33	BP Sys Non-invasive	107	7
12-01-2019 08:08	BP Sys Non-invasive	109	7
12-01-2019 08:12	BP Sys Non-invasive	109	7
12-01-2019 06:10	BP Sys Non-invasive	114	2100310150
12-01-2019 08:48	BP Sys Non-invasive	115	7
12-01-2019 09:00	BP Sys Non-invasive	115	7

Values sorted in order

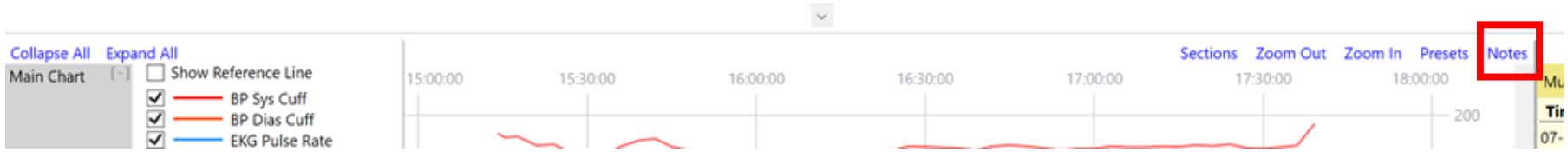
- Side box view can be especially helpful when reviewing notes if users wish to see them in chronological order similar to some EHRs
- The note information is also available in the body of the flowsheet

Multiple Values

Time	Mapped As	Value	Original Variable
11-29-2019 20:43	Patient in Facility	Patient in Facility	Patient in Facility
12-01-2019 07:28	Fall Risk Score	No Risk Factors Present	Fall Risk Assessment
12-01-2019 08:22	Patient Identified (ID Bar	Self;Identification Band	Patient ID Verified
12-01-2019 08:59	Anesthesia Machine Che	Anesthesia Machine Che	Anesthesia Machine Che
12-01-2019 08:59	Equipment Verified	Equipment verified	Equipment verified
12-01-2019 08:59	**Patient Identified**	Patient identified, chart	Patient identified, chart
12-01-2019 08:59	NPO Verification	NPO status confirmed tc	NPO status confirmed tc
12-01-2019 09:00	Patient Identified (ID Bar	Identification Band;Self	Patient ID Verified
12-01-2019 09:05	Room Ready	Room Ready	Room Ready
12-01-2019 09:07	Anesthesia Start	Anesthesia Start	Anesthesia Start
12-01-2019 09:13	Patient in Room	Patient In Room	Patient In Room
12-01-2019 09:15	Patient in Room	Patient In Room	Patient In Room
12-01-2019 09:16	Monitors Specified	Standard monitors place	Standard monitors place
12-01-2019 09:17	Pre-Induction Verificatio	PRIOR to Induction/Initi	PRIOR to Induction/Initi
12-01-2019 09:24	Pre-Induction Verificatio	PRIOR to Induction/Initi	PRIOR to Induction/Initi
12-01-2019 09:24	**Preoxygenation/Denitr**	Patient preoxygenated b	Patient preoxygenated b

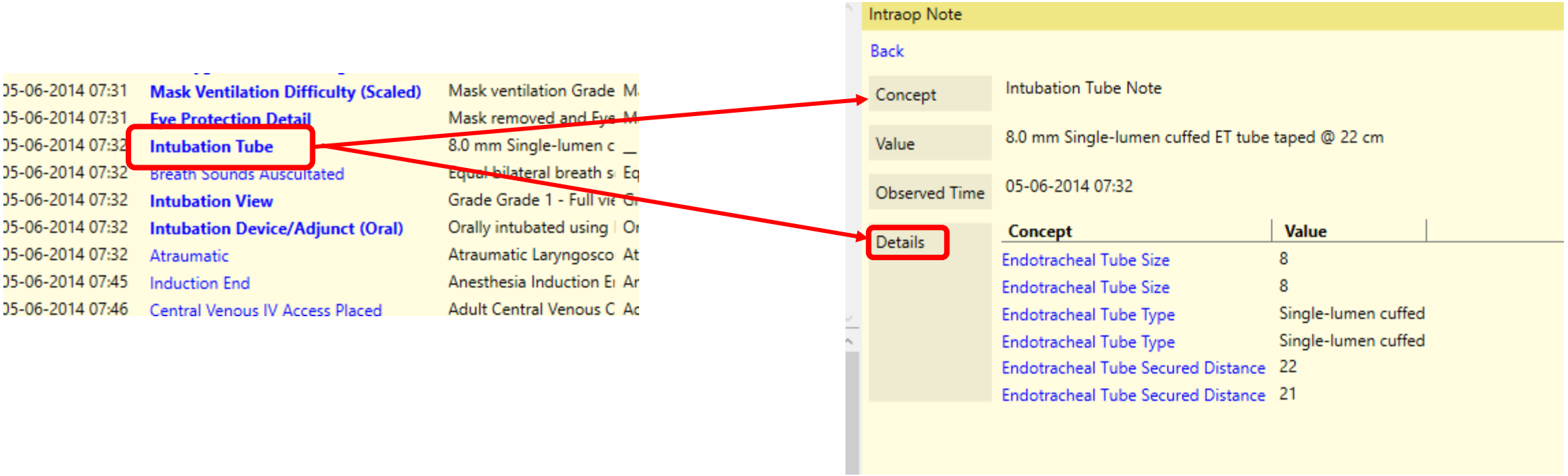


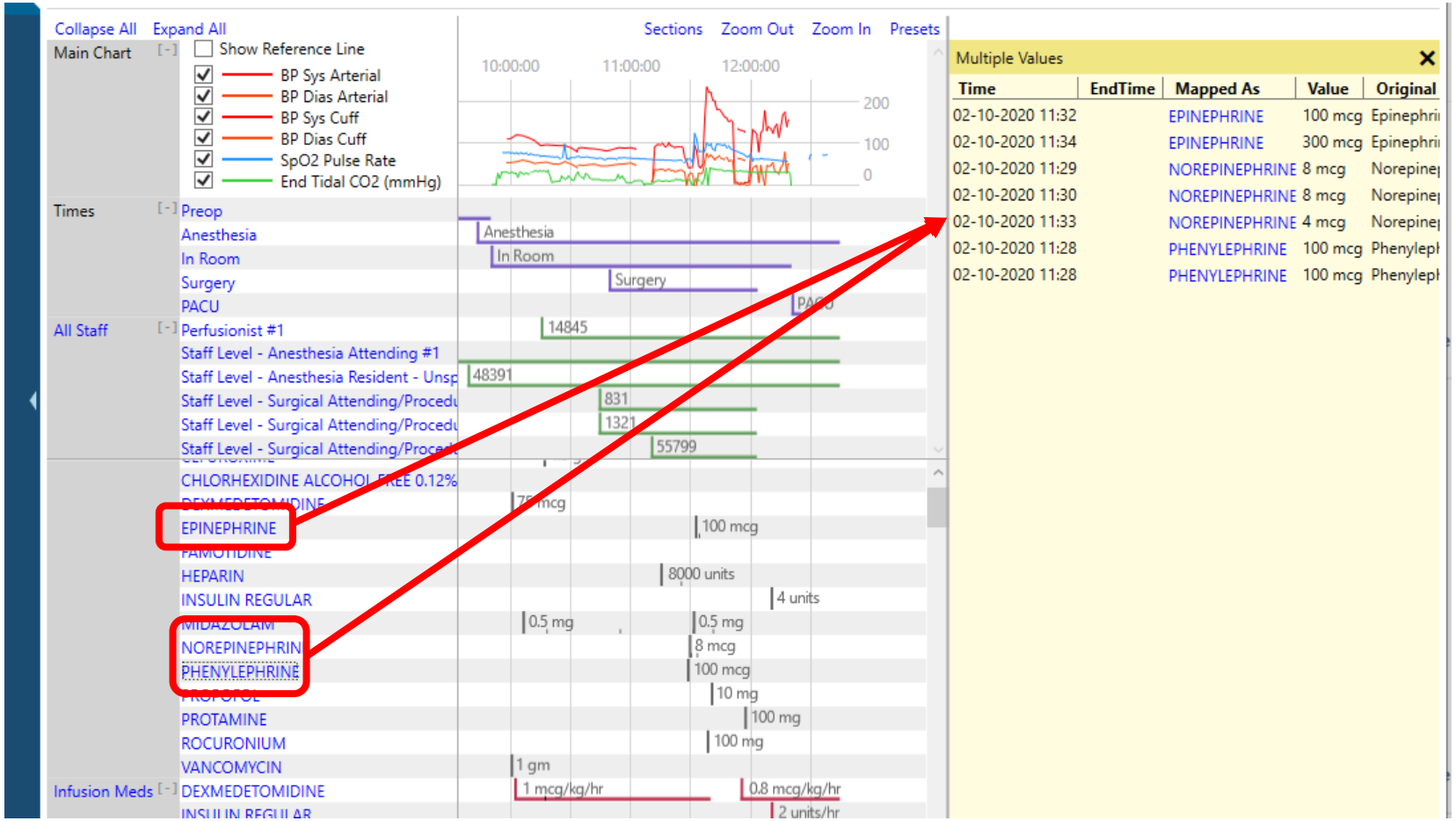
- The notes pane can be quickly re-opened via the “notes” shortcut in the upper right hand corner



- When applicable, the note entered time is available at the bottom of the yellow pane to compare differences between Observed Time and Entered Time
- Observed Time- The time the event/note happened
- Entered Time- The time the user entered in the information into the EHR

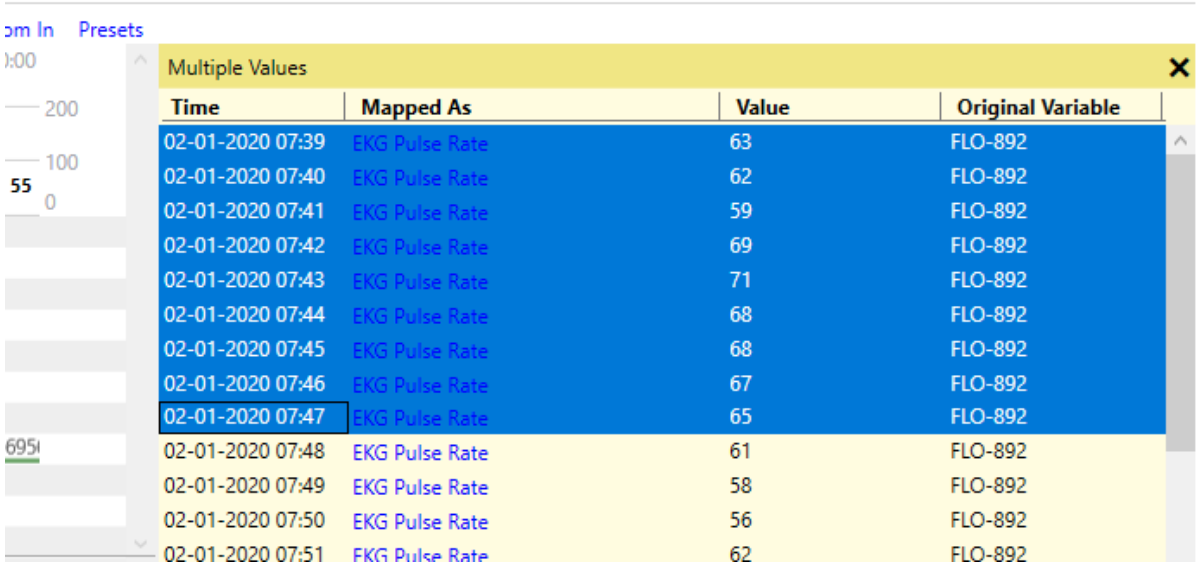
- Bolded “parent” notes have associated “child” detail notes. Clicking on a bolded note will give the additional details as well

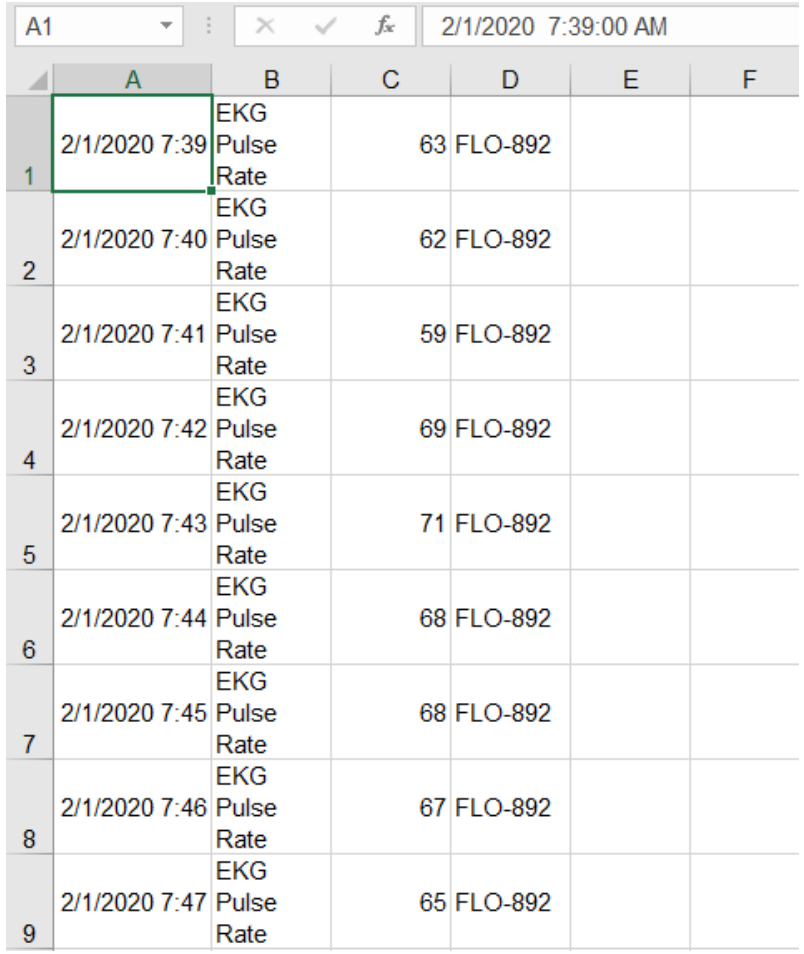




- Holding down ‘Shift’ and selecting multiple headers will open those headers together in the notes pane

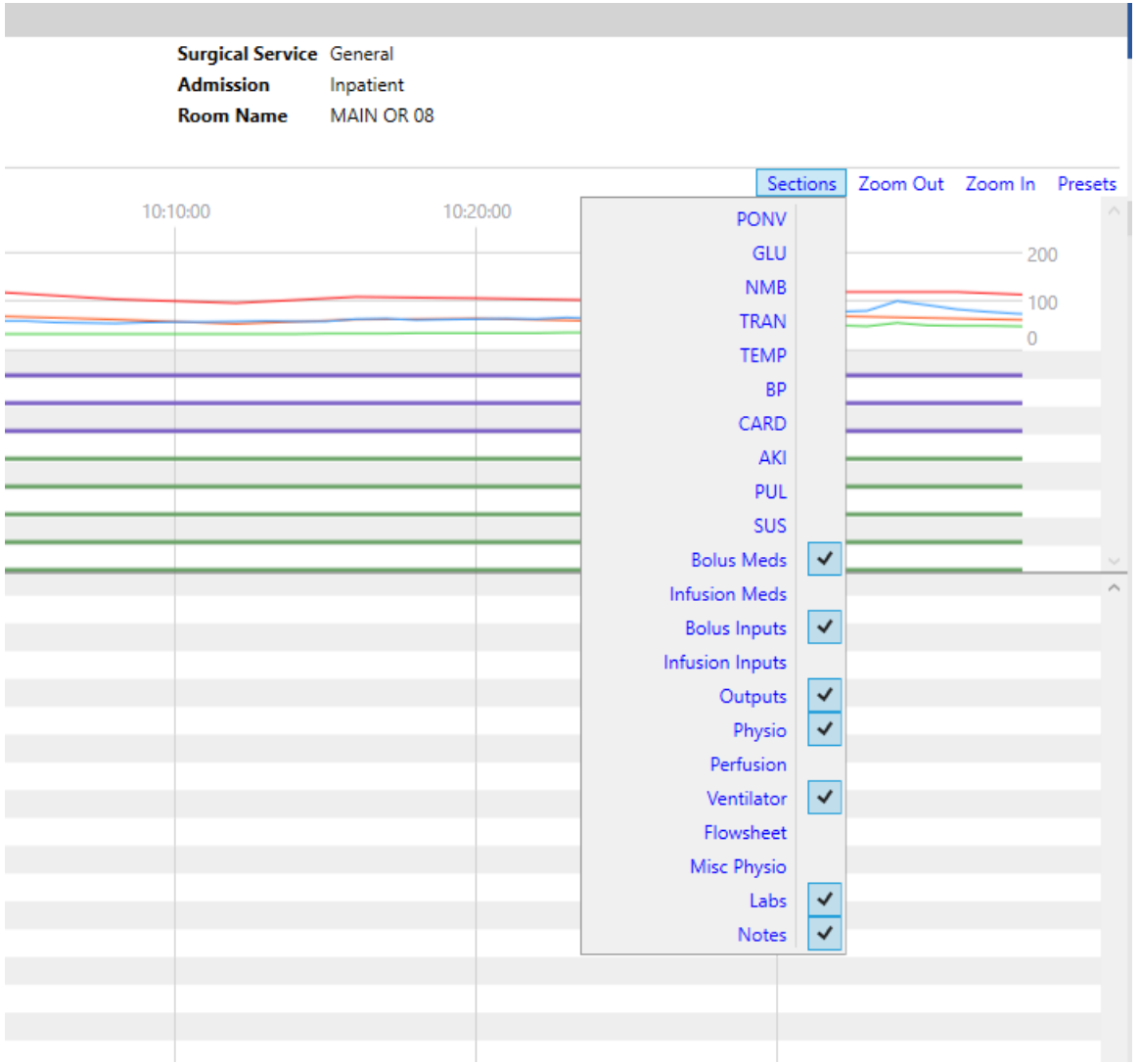
- Data can be copied out of the yellow pane and pasted into Excel for purposes of chart review
- Highlight desired rows
- Use Ctrl + C to copy
- Use Ctrl + V to paste in Excel



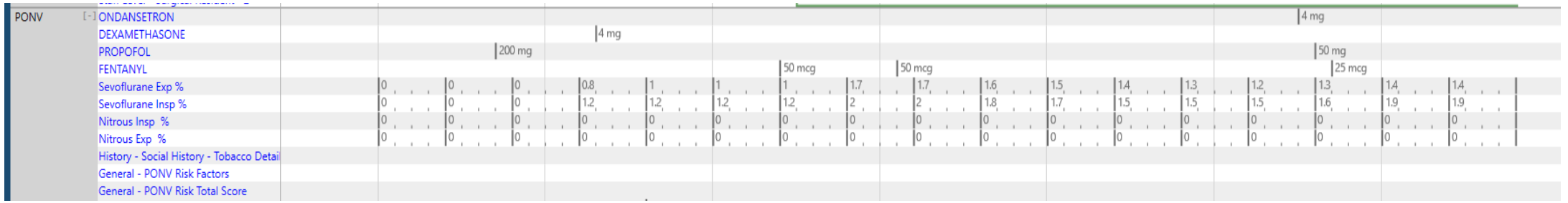


Sections Menu

- Upper right hand corner
- Use to add and remove sections from the body of the chart as needed
- MPOG Measure related sections pull in a summary section of all relevant variables to complete chart review on those measures.



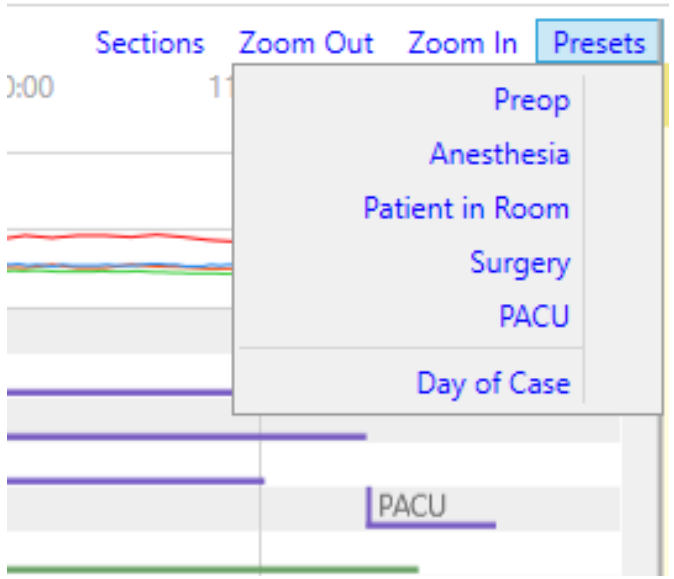
For example, the PONV section summarizes PONV relevant information such as anti-emetics given, anesthetic gases used, and PONV and smoking history and risk factors. While this information is available elsewhere in the chart, this view quickly summarizes and puts the information into one place.

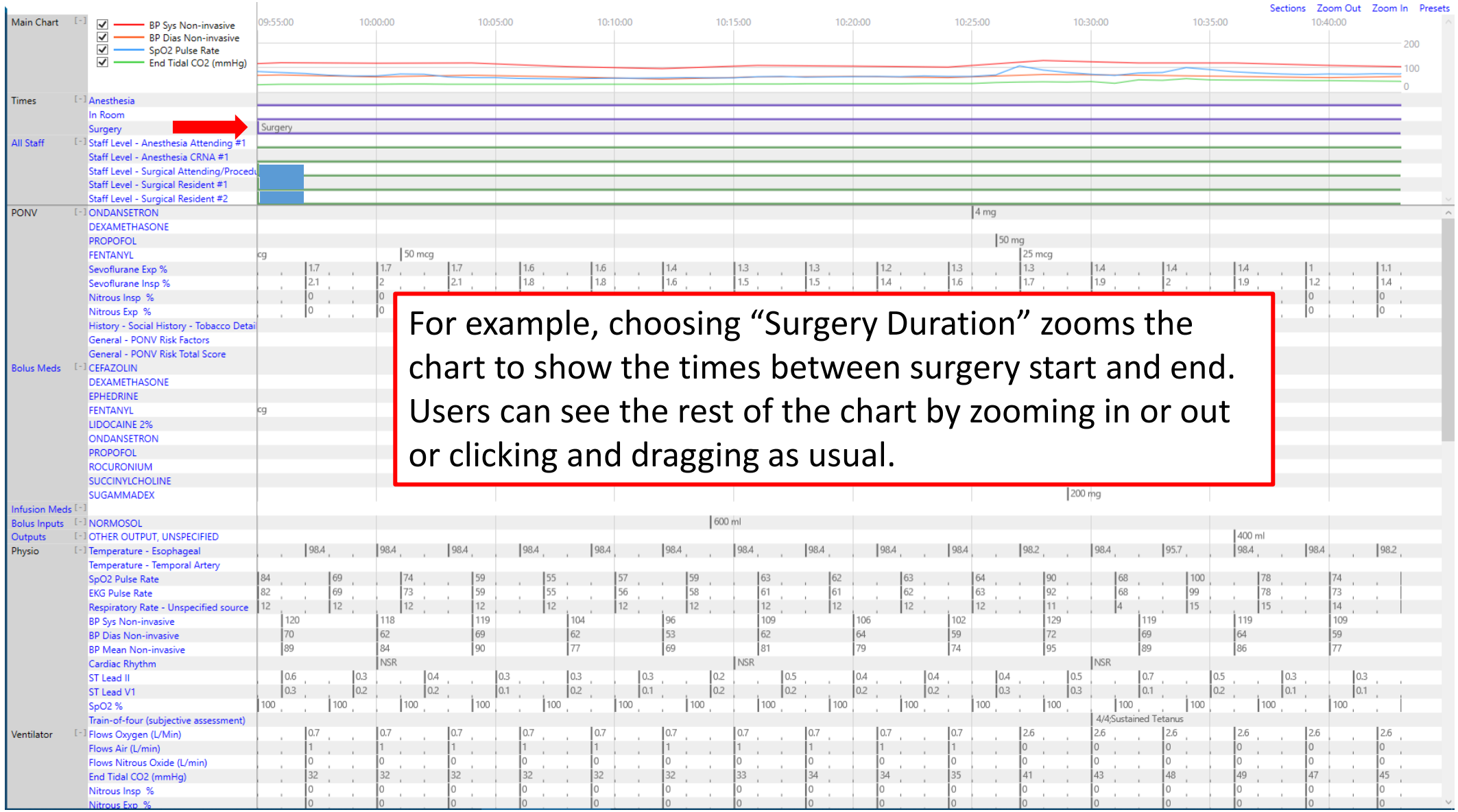


When using an imported case list and the box on the left to move through cases, any ‘Section’ you have open will remain open case to case

Preset Menu

- The “Preset” menu in the upper right corner shows users preset views of the chart based on their choice.

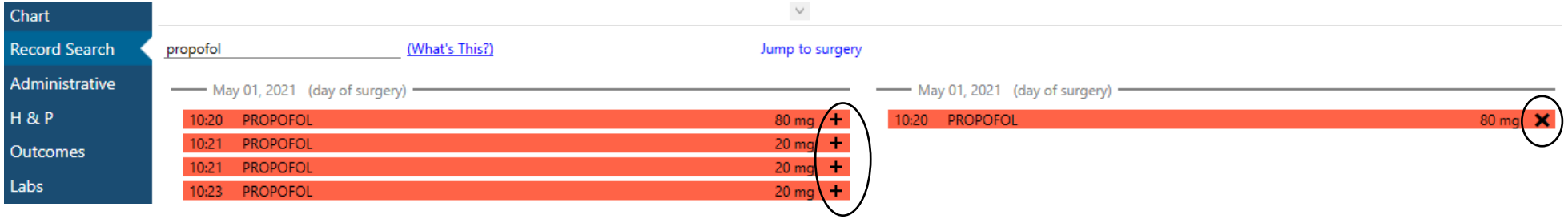




For example, choosing “Surgery Duration” zooms the chart to show the times between surgery start and end. Users can see the rest of the chart by zooming in or out or clicking and dragging as usual.

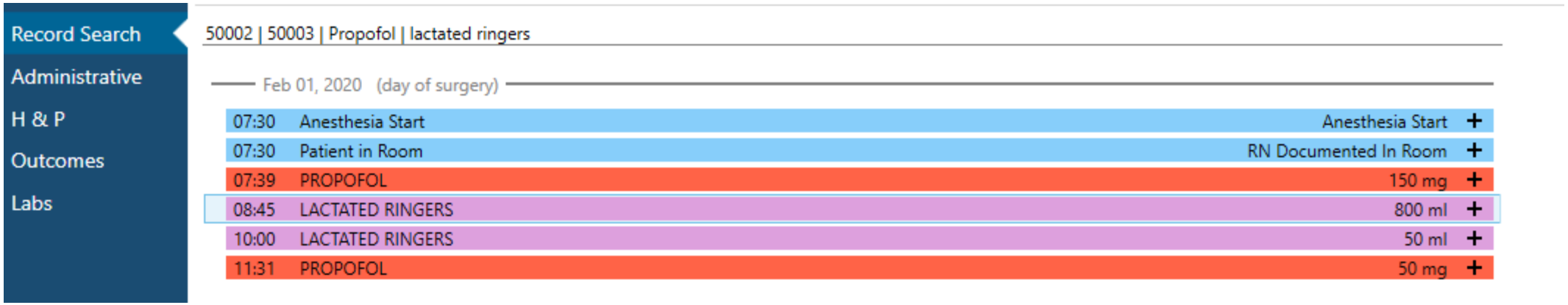
Record Search

- Next view available in the left pane
- Search relevant information, including by MPOG Concept ID (exact match required for Concept ID) and original variable ID/name
  - Use “mpog:” in front of a keyword in order to only consider the MPOG concept ID or name
  - Use “aims:” in front of a keyword in order to only consider the original variable ID or name
  - Use “value:” in front of a keyword in order to only consider the value of the record
- Temporarily save that information together in the “Shopping cart” to the right using the “+”
- Remove information from the shopping cart using the “X”



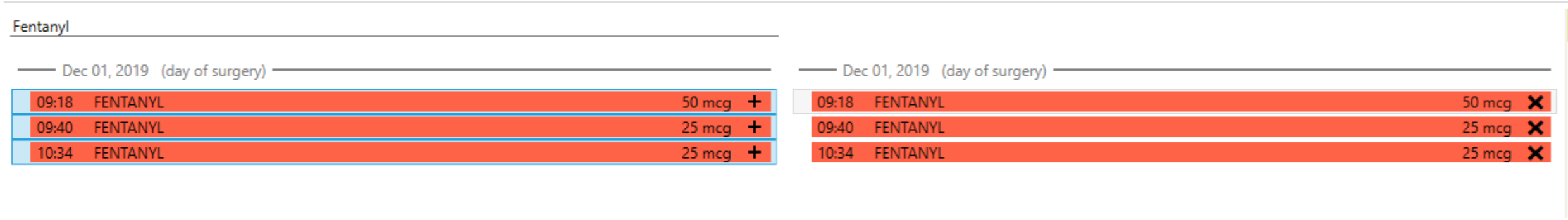
Record Search

- Search for multiple terms/variables at the same time using the '|' symbol between variables
  - Hint: | is found on the same key as \, use 'Shift' to type |
- Ex: 50002 | 50003 | Propofol | lactated ringers
  - This will pull in everything mapped to those two concept IDs and everything including the words 'propofol' and 'lactated ringers'
- CTRL + Z will undo searches in record search

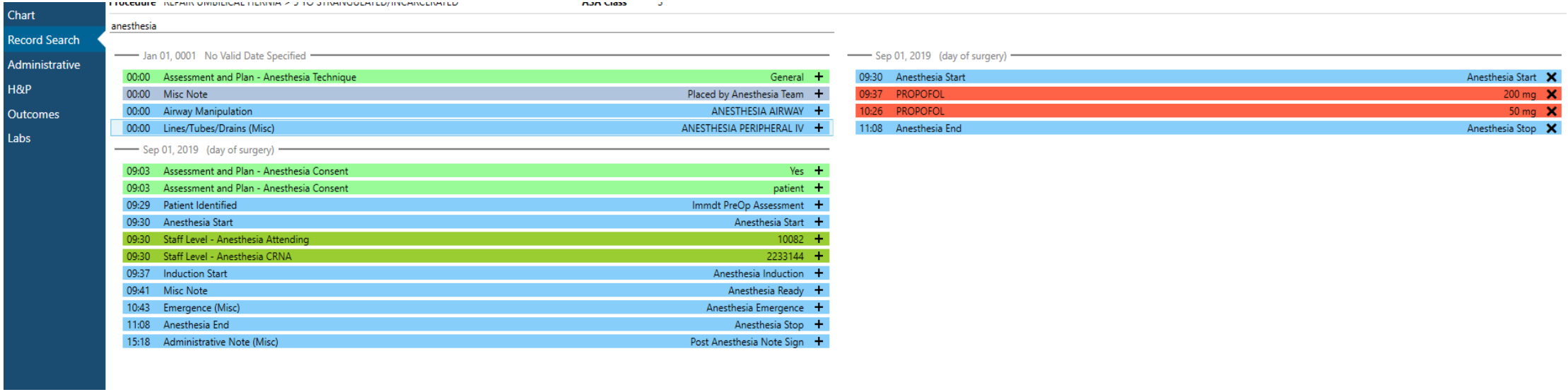


Record Search

- Ctrl + Click or Shift + Click allows for multi-select and the ability to add more than one row of information into the “Shopping Cart”

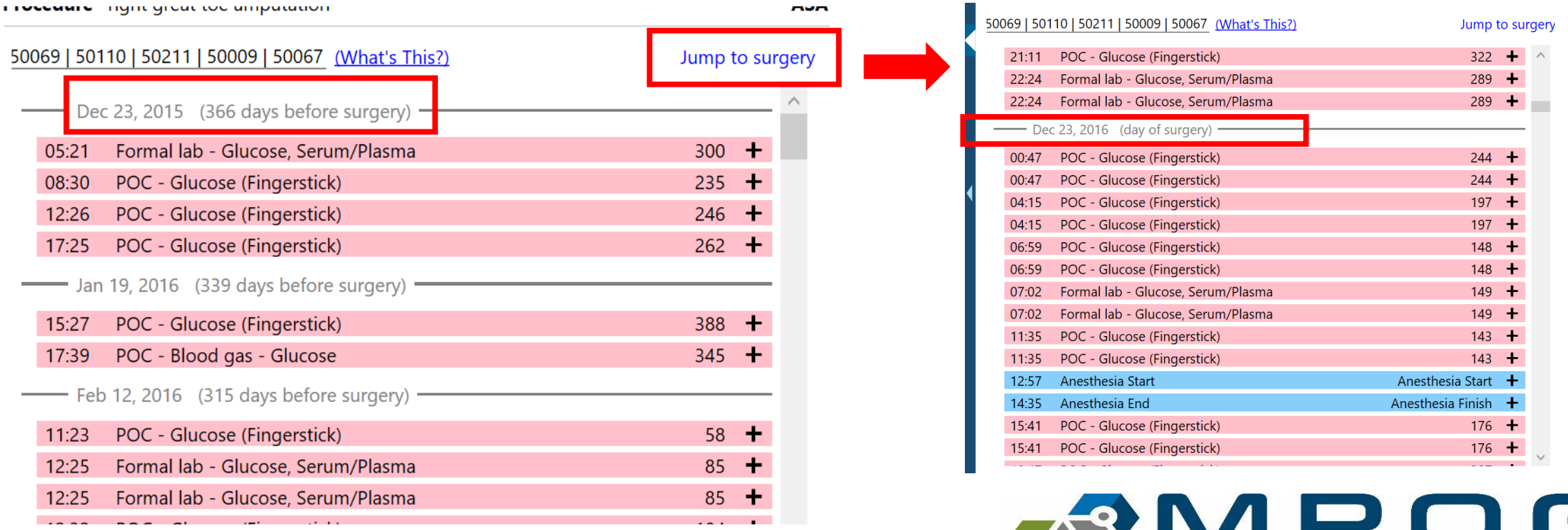


- Utilize Record Search to look at information relevant to a chart evaluation in one location



Record Search

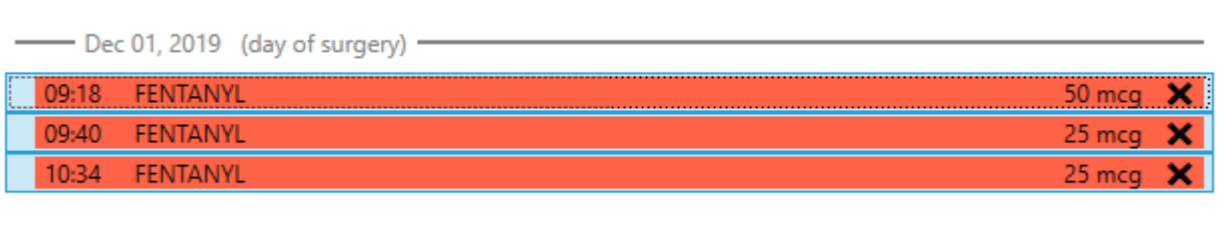
- If a case is showing multiple search results from before the surgery date, choose "Jump to Surgery" to quickly scroll down to the day of the case

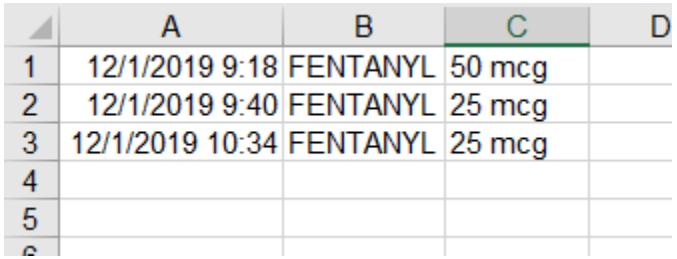


MPOG
MULTICENTER PERIOPERATIVE OUTCOMES GROUP

Record Search

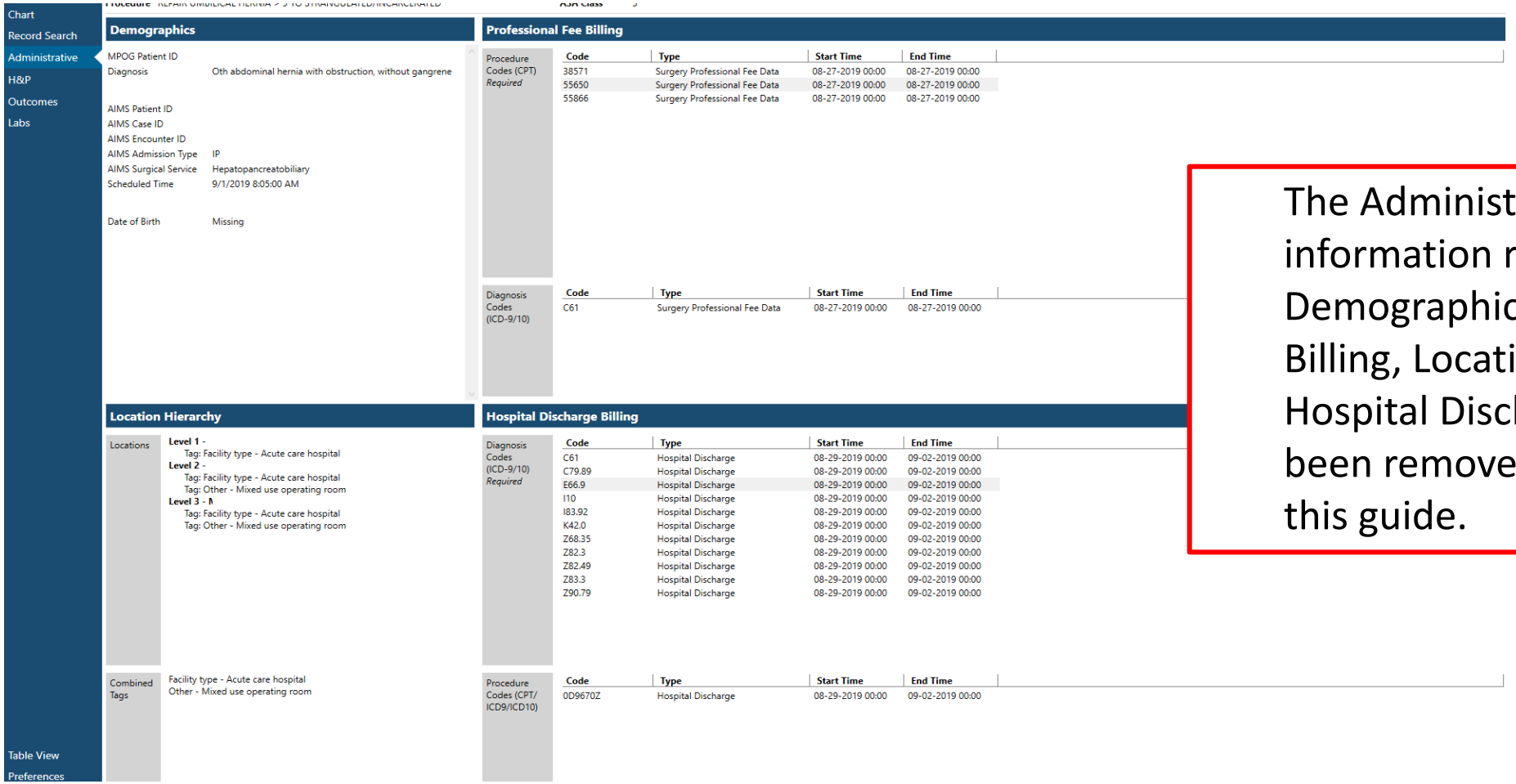
- Users can copy and paste select information from the “Shopping Cart” into an Excel file if needed
- Select the desired rows and use Ctrl + C to copy information
- In an Excel spreadsheet, Paste the information



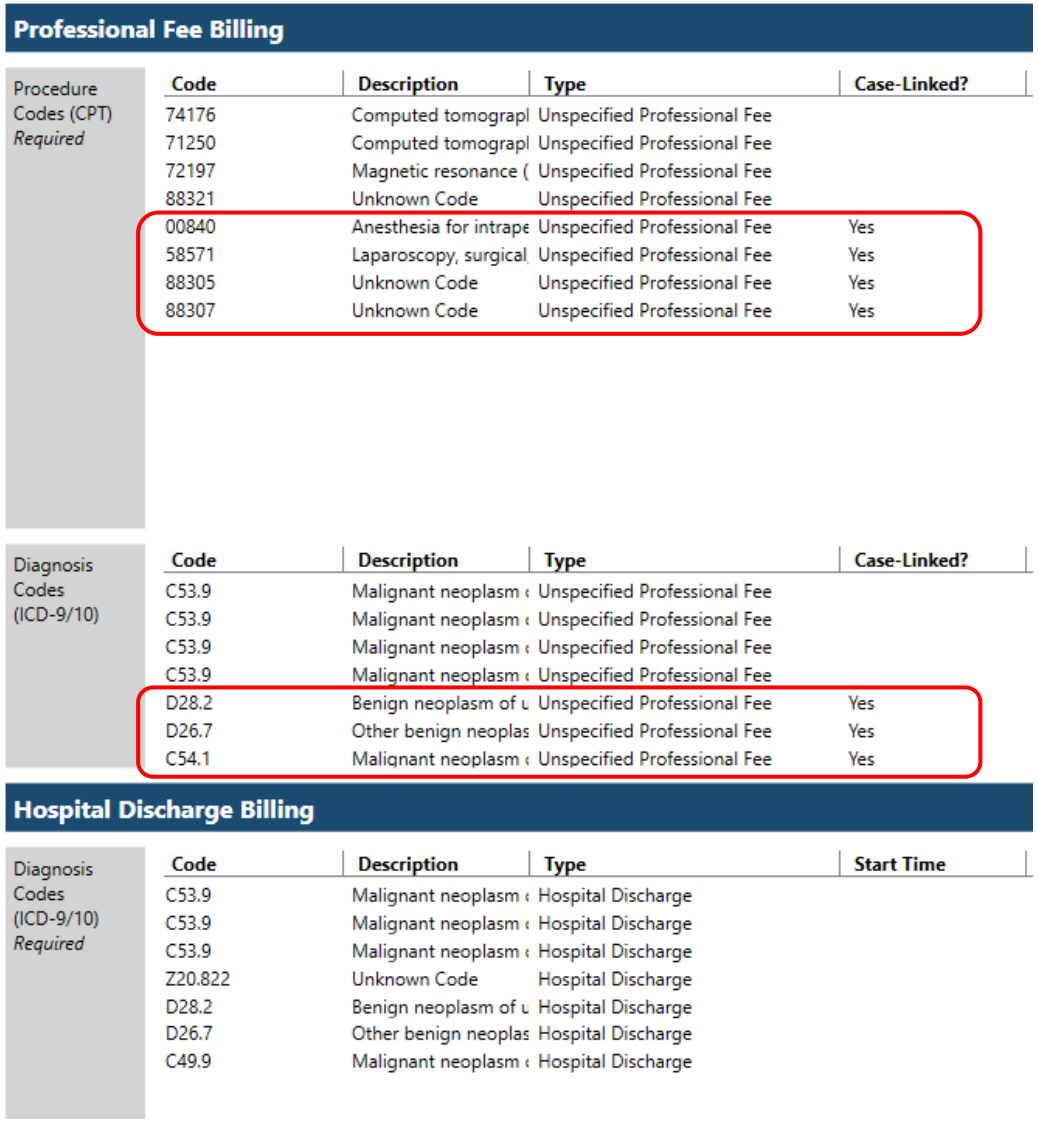


	A	B	C	D
1	12/1/2019 9:18	FENTANYL	50 mcg	
2	12/1/2019 9:40	FENTANYL	25 mcg	
3	12/1/2019 10:34	FENTANYL	25 mcg	
4				
5				

Administrative



The Administrative view has information regarding Demographics, Professional Fee Billing, Location Hierarchy, and Hospital Discharge Billing. PHI has been removed for the purposes of this guide.



Professional Fee Billing

Procedure Codes (CPT) *Required*

Code	Description	Type	Case-Linked?
74176	Computed tomograpl	Unspecified Professional Fee	
71250	Computed tomograpl	Unspecified Professional Fee	
72197	Magnetic resonance (	Unspecified Professional Fee	
88321	Unknown Code	Unspecified Professional Fee	
00840	Anesthesia for intrape	Unspecified Professional Fee	Yes
58571	Laparoscopy, surgical	Unspecified Professional Fee	Yes
88305	Unknown Code	Unspecified Professional Fee	Yes
88307	Unknown Code	Unspecified Professional Fee	Yes

Diagnosis Codes (ICD-9/10)

Code	Description	Type	Case-Linked?
C53.9	Malignant neoplasm (	Unspecified Professional Fee	
C53.9	Malignant neoplasm (	Unspecified Professional Fee	
C53.9	Malignant neoplasm (	Unspecified Professional Fee	
C53.9	Malignant neoplasm (	Unspecified Professional Fee	
D28.2	Benign neoplasm of u	Unspecified Professional Fee	Yes
D26.7	Other benign neoplas	Unspecified Professional Fee	Yes
C54.1	Malignant neoplasm (	Unspecified Professional Fee	Yes

Hospital Discharge Billing

Diagnosis Codes (ICD-9/10) *Required*

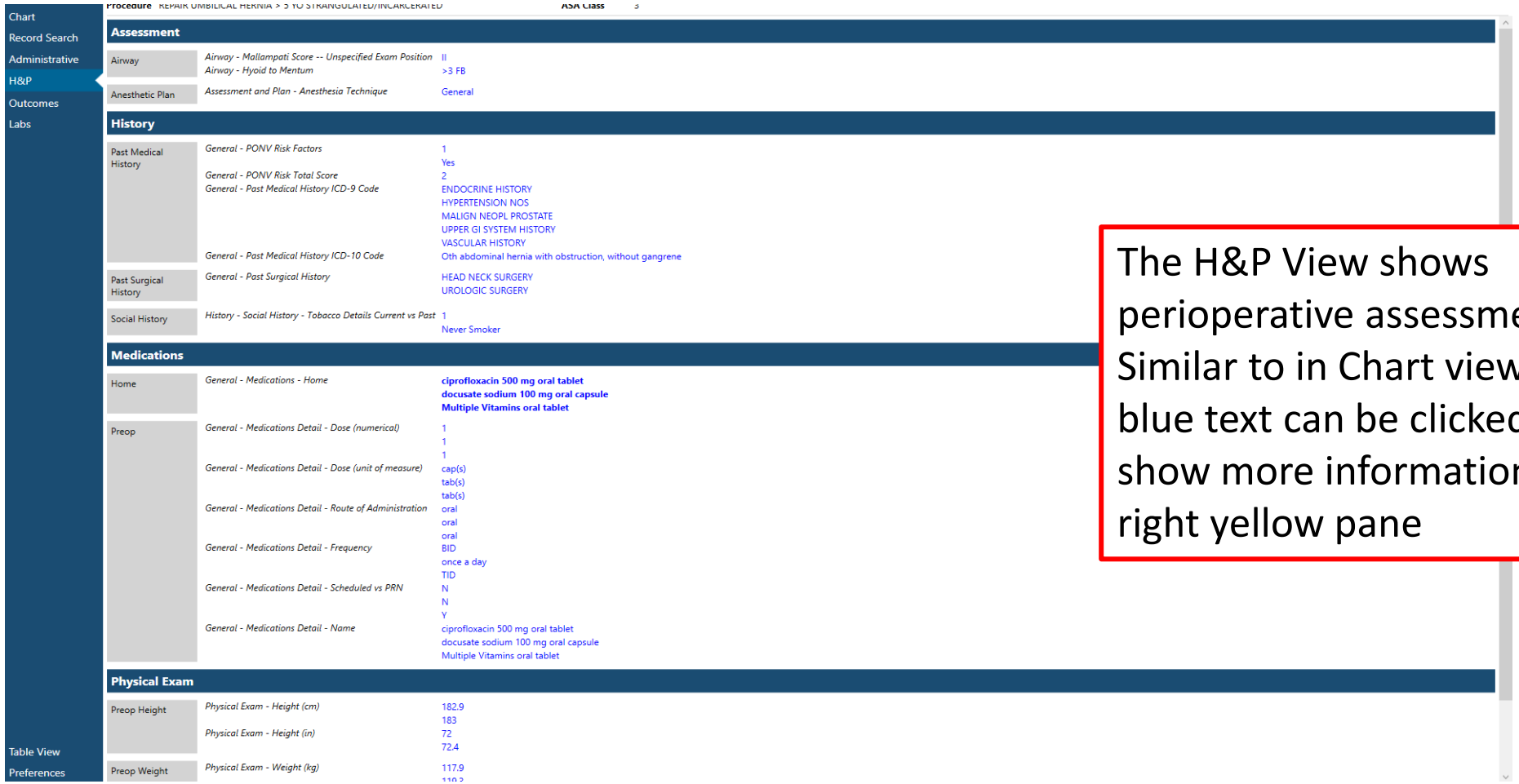
Code	Description	Type	Start Time
C53.9	Malignant neoplasm (	Hospital Discharge	
C53.9	Malignant neoplasm (	Hospital Discharge	
C53.9	Malignant neoplasm (	Hospital Discharge	
Z20.822	Unknown Code	Hospital Discharge	
D28.2	Benign neoplasm of u	Hospital Discharge	
D26.7	Other benign neoplas	Hospital Discharge	
C49.9	Malignant neoplasm (	Hospital Discharge	

The billing section shows all billing codes that have been associated with the patient, including all encounters other than the procedure.

The Professional Fee Billing and the Hospital Discharge Billing sections include a description of what the codes are.

The Case-Linked column flags the billing codes that are linked to the case that you are viewing.

History and Physical

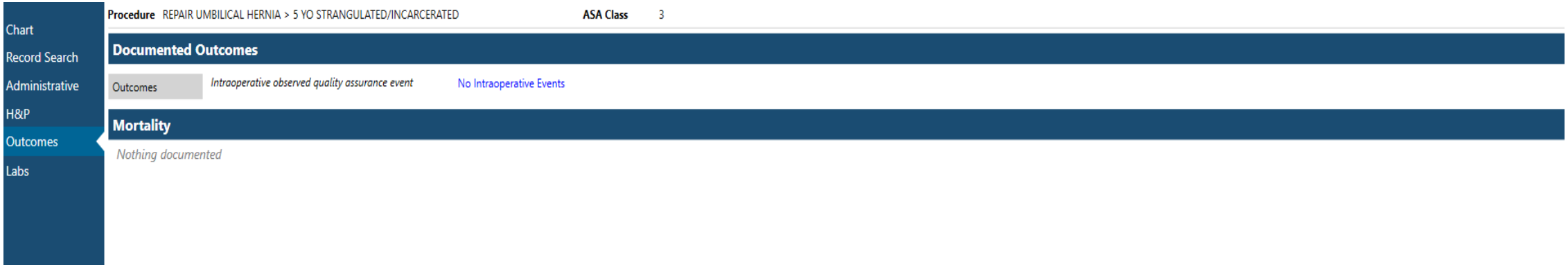


The H&P View shows perioperative assessment data. Similar to in Chart view, any blue text can be clicked to show more information in the right yellow pane

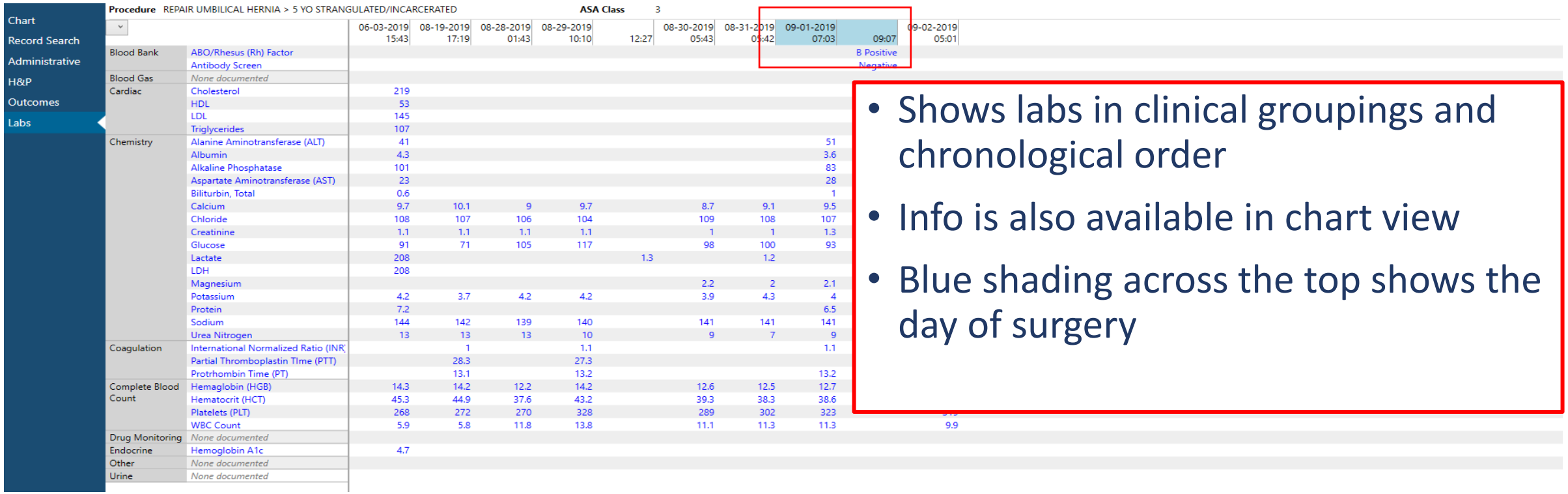
MPOG MULTICENTER PERIOPERATIVE OUTCOMES GROUP

Outcomes

The Outcomes view shows documented outcomes and mortality if available. The blue text in this view also remains clickable to reveal more information in the yellow right pane.

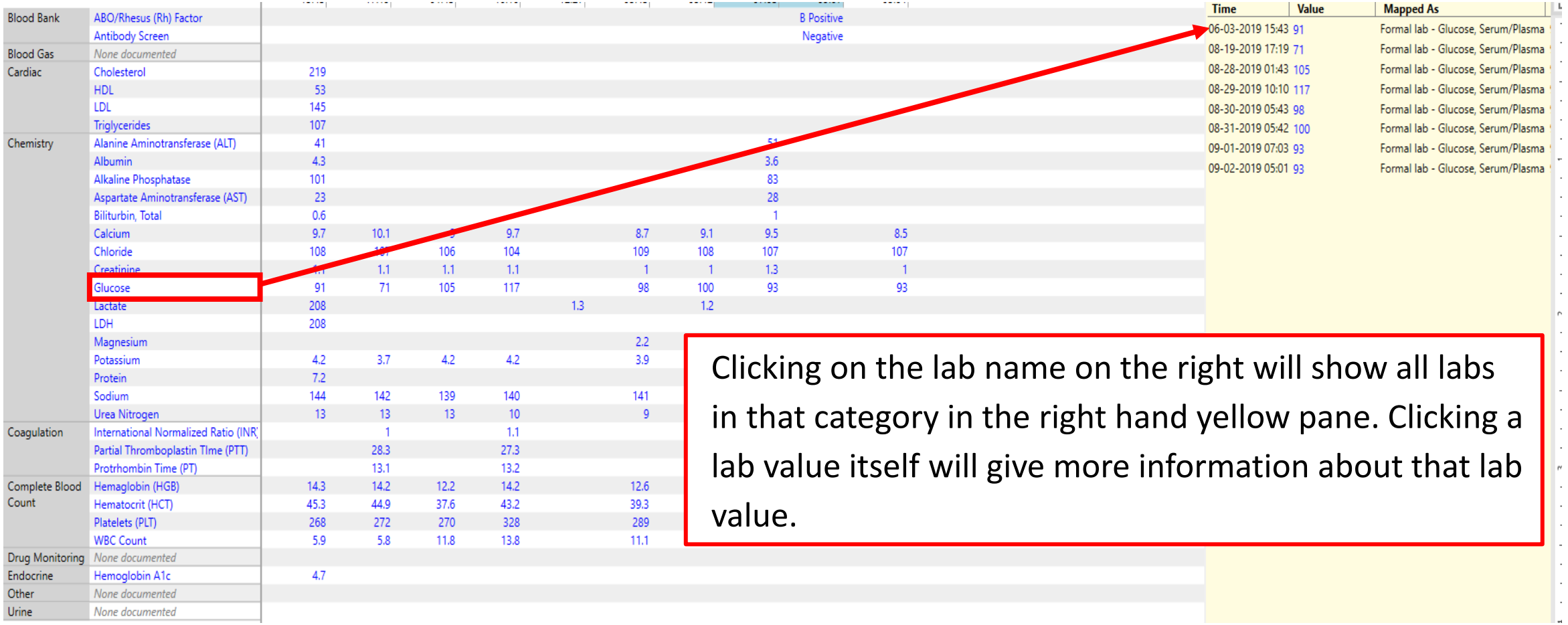


Labs



- Shows labs in clinical groupings and chronological order
- Info is also available in chart view
- Blue shading across the top shows the day of surgery

MPOG MULTICENTER PERIOPERATIVE OUTCOMES GROUP

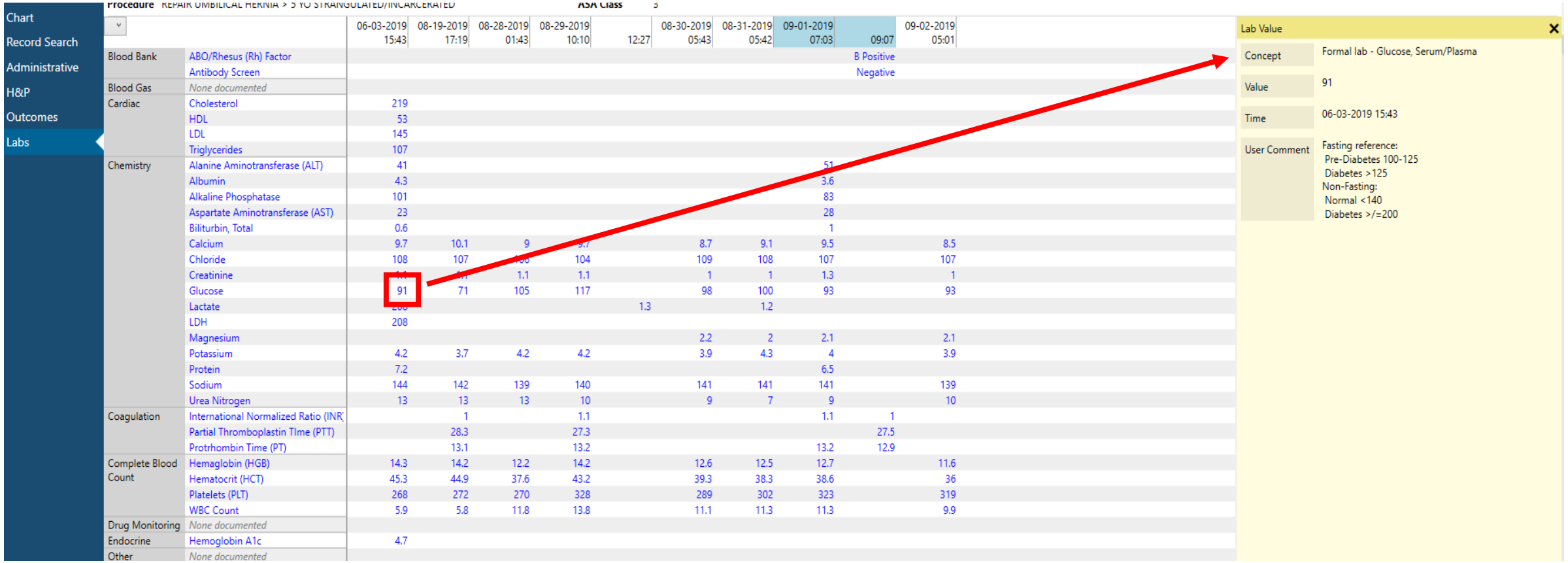


Blood Bank	ABO/Rhesus (Rh) Factor							B Positive	
	Antibody Screen							Negative	
Blood Gas	*None documented*								
Cardiac	Cholesterol	219							
	HDL	53							
	LDL	145							
	Triglycerides	107							
Chemistry	Alanine Aminotransferase (ALT)	41						51	
	Albumin	4.3						3.6	
	Alkaline Phosphatase	101						83	
	Aspartate Aminotransferase (AST)	23						28	
	Biliturbin, Total	0.6						1	
	Calcium	9.7	10.1		9.7	8.7	9.1	9.5	8.5
	Chloride	108	107	106	104	109	108	107	107
	Creatinine	1.1	1.1	1.1	1.1	1	1	1.3	1
	Glucose	91	71	105	117	98	100	93	93
	Lactate	208				1.3	1.2		
	LDH	208							
	Magnesium					2.2			
	Potassium	4.2	3.7	4.2	4.2	3.9			
	Protein	7.2							
	Sodium	144	142	139	140	141			
	Urea Nitrogen	13	13	13	10	9			
Coagulation	International Normalized Ratio (INR)		1		1.1				
	Partial Thromboplastin TIme (PTT)		28.3		27.3				
	Protrhombin Time (PT)		13.1		13.2				
Complete Blood Count	Hemaglobin (HGB)	14.3	14.2	12.2	14.2	12.6			
	Hematocrit (HCT)	45.3	44.9	37.6	43.2	39.3			
	Platelets (PLT)	268	272	270	328	289			
	WBC Count	5.9	5.8	11.8	13.8	11.1			
Drug Monitoring	*None documented*								
Endocrine	Hemoglobin A1c	4.7							
Other	*None documented*								
Urine	*None documented*								

Time	Value	Mapped As
06-03-2019 15:43	91	Formal lab - Glucose, Serum/Plasma
08-19-2019 17:19	71	Formal lab - Glucose, Serum/Plasma
08-28-2019 01:43	105	Formal lab - Glucose, Serum/Plasma
08-29-2019 10:10	117	Formal lab - Glucose, Serum/Plasma
08-30-2019 05:43	98	Formal lab - Glucose, Serum/Plasma
08-31-2019 05:42	100	Formal lab - Glucose, Serum/Plasma
09-01-2019 07:03	93	Formal lab - Glucose, Serum/Plasma
09-02-2019 05:01	93	Formal lab - Glucose, Serum/Plasma

Clicking on the lab name on the right will show all labs in that category in the right hand yellow pane. Clicking a lab value itself will give more information about that lab value.

- Clicking a value brings up more information



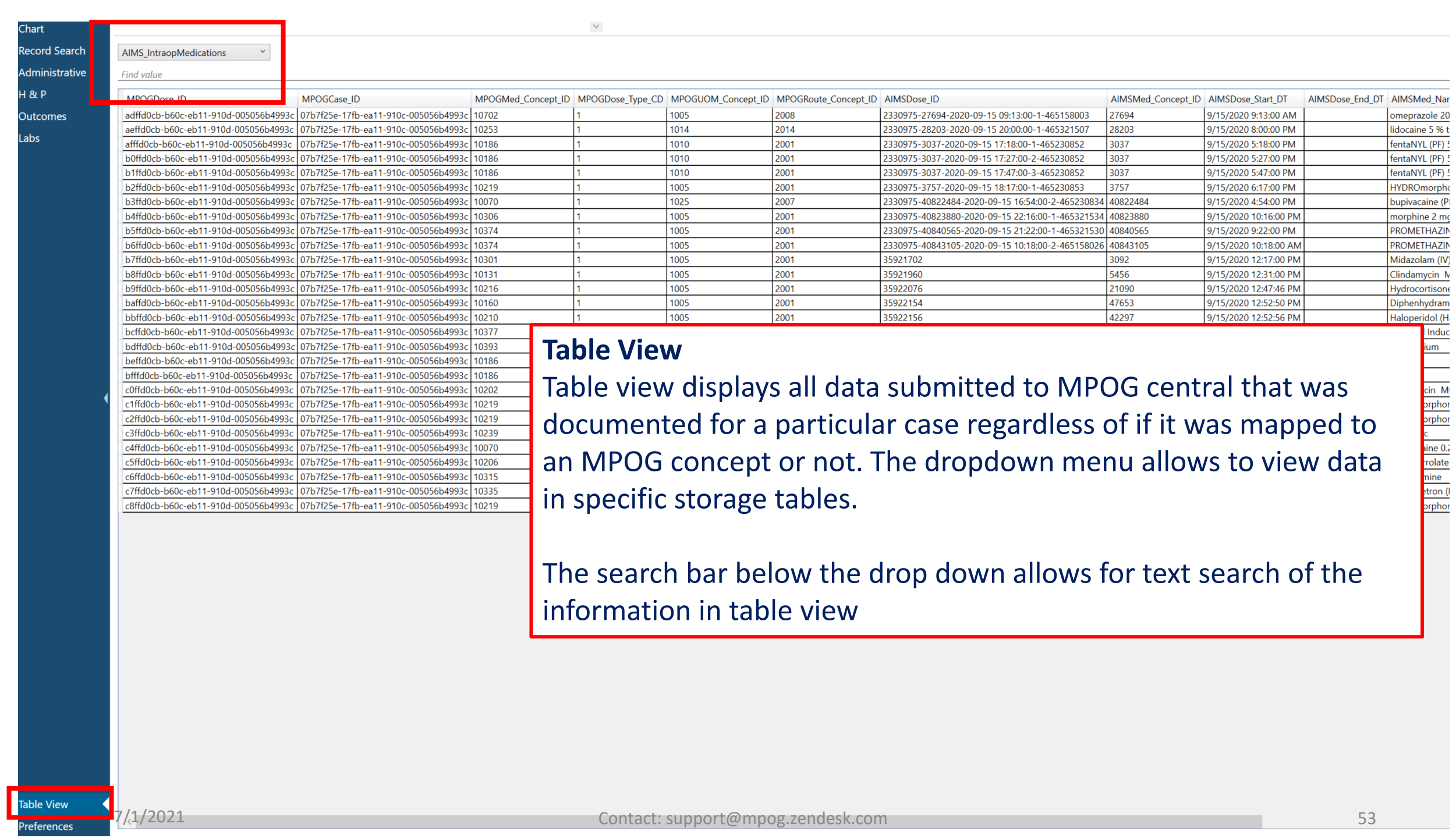


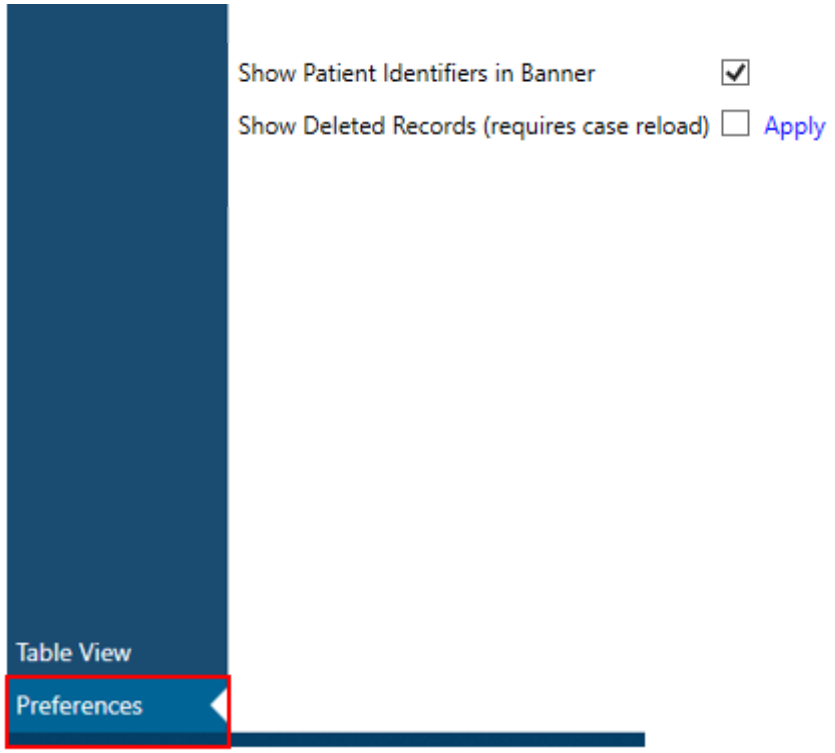
Table View

Table view displays all data submitted to MPOG central that was documented for a particular case regardless of if it was mapped to an MPOG concept or not. The dropdown menu allows to view data in specific storage tables.

The search bar below the drop down allows for text search of the information in table view

Preferences

- The preferences option on the bottom of the left pane lets users turn on/off PHI viewing and deleted record information
- Values marked as ‘Artifact’ are not shown when the option to not show Deleted data is selected



ACQR “Cheat Sheet”

- Example search strings for failed case review. Copy and paste into “Record Search”

- Glucose Measures:

glucose | insulin | anesthesia start | anesthesia End | dextrose | diabetes | 50012 | 50304 | 6008 | 50301 | 50443 | 50016 | 50002 | 50011 | 50069 | 50110 | 50211 | 50009

- Transfusion Measures:

anesthesia start | anesthesia end | HCT | hematocrit | hemoglobin | HGB | Red blood cells | Estimated blood loss | Saline 0.9% | lactated ringers | albumin | platelets | phenylephrine | ephedrine | epinephrine