Advanced Training 2019

AXIOM SOFTWARE

Table of Contents

Chapter 1: Introduction to Clinical Analytics Advanced

Welcome to Clinical Analytics Advanced training!

The Clinical Analytics Advanced training material is intended to build upon the foundation of Clinical Analytics Basic and Clinical Analytics Intermediate training. In addition, the training is meant to pave the path for a much deeper dive into more complex analytic functions. The chapters in this training manual include learning objectives, key concepts, and scripted step-by-step client use cases. The Clinical Analytics Basic and Intermediate training chapters walked you through a review of Clinical Analytics fundamentals, scorecard navigation, customizing scorecards, profile functionality, accessing patient level data, system administration permissions, and basic data analytics. In Clinical Analytics Advanced, the training manual framework will focus on use case scenarios and leveraging the power of each advanced analytic tool available in the Clinical Analytics Scorecards application.

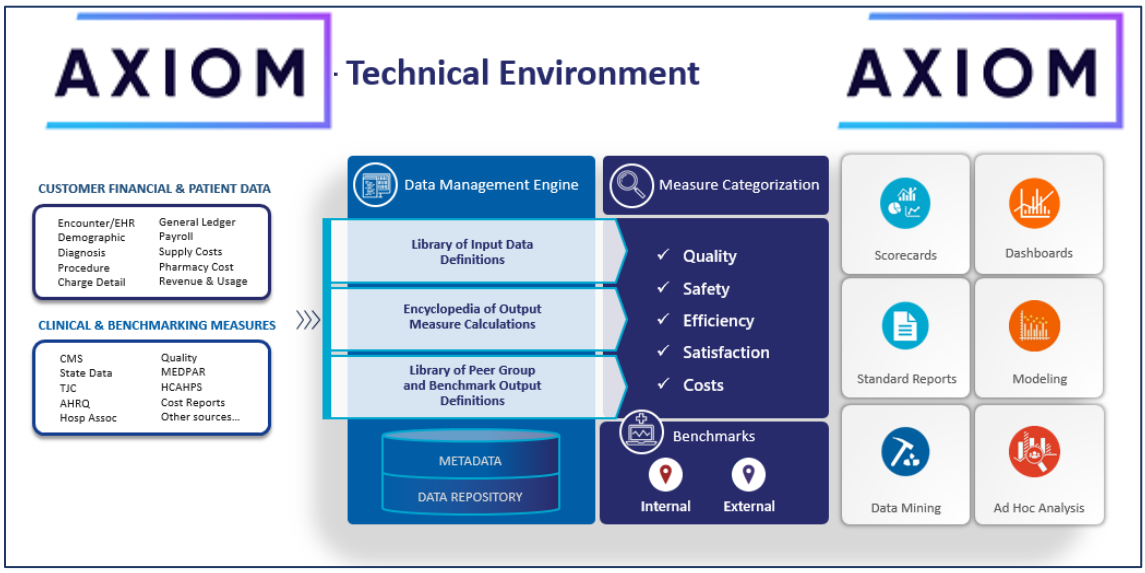
The Clinical Analytics Technical Environment

Clinical Analytics uses a background program to load, store, and compute values that are then displayed in Clinical Analytics. The background program is Clinical Analytics Data Management System (DMS), which receives health system and public data inputs. In addition, the system uses categorizations, definitions, and calculations to arrive at measure reporting that is highly dynamic. Clinical Analytics measure results are both de-identified and secure, while remaining identifiable at the patient level, allowing the data to be actionable (See Figure 1.1). Measure output solutions are packaged in a variety of ways, including interactive scorecards, static reports, ad hoc queries, and flexible data mining formats.

Clinical Analytics software offers several application types beyond the Scorecards application. The Scorecards application will be the primary focus in this training manual. However, it is important to note, depending on user permissions, the Physician Practice Evaluation (PPE) Reporting and Clinical Analytics Reporting applications are two additional applications available within Clinical Analytics software. All three applications are accessible within the same Clinical Analytics environment and within the same login session. The Scorecards application offers ad hoc data analysis, drill capability, and exporting to Excel for additional analysis needs. The Scorecards application can provide details at the health system level and provides the ability to drill down to patient level details. Conversely, the Physician Practice Evaluation (PPE) Reporting application offers dashboards that are static reports at the physician or physician group level. If you would like to drill on any details within the PPE reports, you would utilize the Scorecards application to do so. The third option is the Clinical Analytics Reporting application, which offers static reports that focus on the facility and/or health system. To find additional information about the results on the Clinical Analytics Reporting report, you can leverage the Scorecards application to do so.

The Clinical Analytics Software – Technical Environment image (see Figure 1.1) is included in each training manual. Clinical Analytics DME is the power house behind the scenes, which creates the dynamic and drillable features seen and utilized in the Scorecards application. This image shows the available discrete internal and external data sources along with the available measure categories and types of benchmarks in the Clinical Analytics technology solution.

FIGURE 1.1 CLINICAL ANALYTICS STORY: THE CLINICAL ANALYTICS TECHNICAL ENVIRONMENT



In summary, the power of Clinical Analytics DME highlights the measure outputs across each of the three applications mentioned above. The Scorecards application is where a user would perform ad hoc drillable analysis. The PPE Reporting application provides static physician level report cards or activity reports. The Clinical Analytics Reporting application also offers static report cards, but with a focus on each facility or the entire health system. Keep in mind, the Clinical Analytics team has built many standard scorecards that are available to use and customize based on your preferences. In addition to the standard scorecards, new reports can be easily created and then copied to facilitate efficient report building and sharing. The Clinical Analytics support team is ready to assist with any requests to help build and customize scorecards and reports. The Clinical Analytics support team can be reached at peaksupport@syntellis.com or (847) 441-0022.

Chapter 2: Clinical Analytics Training Opportunities

Learning Objectives:
Following completion of this session you should be able to:

- Describe the available training tracks for Clinical Analytics software.

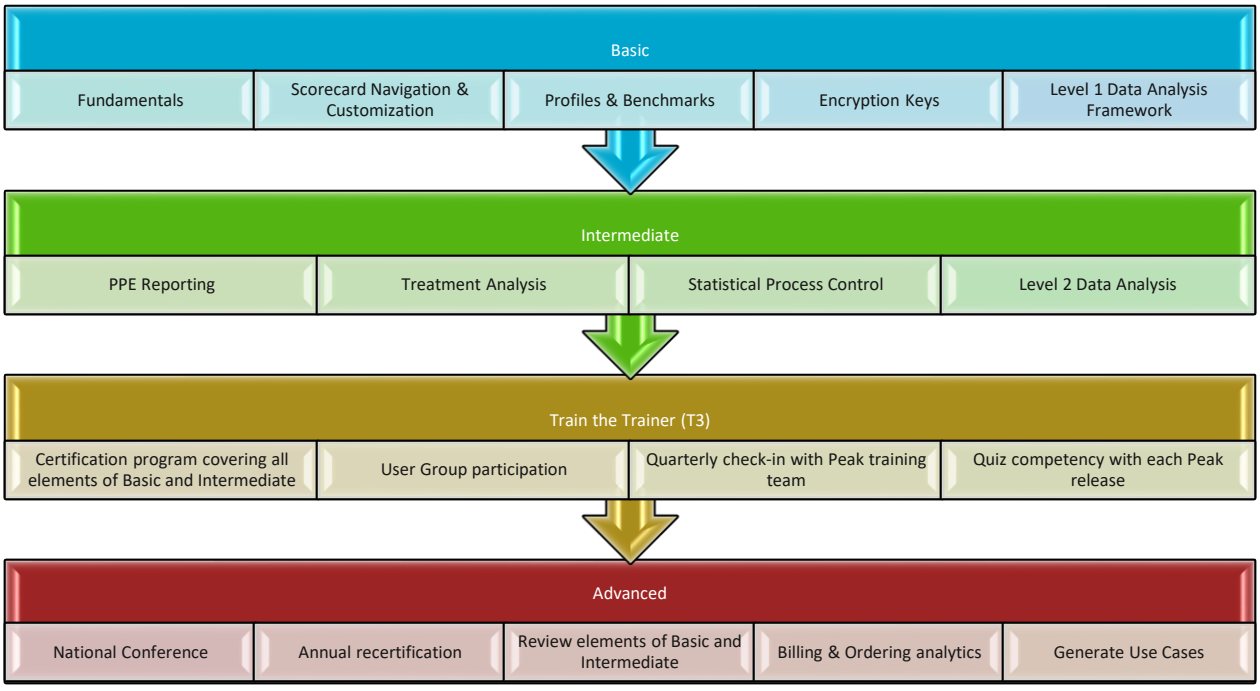
Key Concepts:

- Clinical Analytics Tiered Training is recommended in a sequential approach to build upon the skills learned within each training tier.
- Clinical Analytics Basic is required for every health system user, however additional training tracks are recommended.
- Clinical Analytics Tiered Training options: Clinical Analytics Basic, Intermediate, Train the Trainer, and Advanced.
- Clinical Analytics Basic is offered in a computerized format and is stored in Clinical Analytics Documentation.

Tiered Training Opportunities

Clinical Analytics Training is customized to meet the needs of the learner through strategic options to "meet the users where they are", among the multiple roles and responsibilities within the organizations (See Figure 2.1). All training opportunities include a PowerPoint guided overview, instructor guided demonstration in the system, and navigation of Clinical Analytics. In addition, you can expect a training manual, tips and tricks documents, and a training feedback survey.

FIGURE 2.1 CLINICAL ANALYTICS TIERED TRAINING OPPORTUNITIES



Basic Computerized: This computerized module introduces the end user to the functionality of the Clinical Analytics Software Suite. *It is designed for a new user and a novice analyst*. The content is delivered in a computerized module format, to be viewed in a sequential manner and is self-paced for schedule flexibility. The total computerized video viewing time is approximately four hours. The expected exercise review and completion time is approximately two hours.

Objectives:

The learning objectives include:

- Clinical Analytics fundamentals
- Navigating the Clinical Analytics home page and scorecards
- Creating custom scorecards
- Building analysis profile groups and peer benchmark groups
- Encryption Keys to access patient level secure data
- Modifying detail data elements and completing an analysis
- Stepping through a data analysis framework
- Completion of all recommended training manual exercises

For the computerized modules, the end user is highly encouraged to contact the Clinical Analytics training team to discuss module questions, review the completed analysis, and provide continuous improvement feedback.

Intermediate Training: This module is designed for the analyst who is passionate on progressing from novice to expert, and has mastered basic training. *In addition, it is designed for the advanced beginner with a minimum of six months of Clinical Analytics experience.* The content is delivered in one four-hour session.

Objectives:

The learning objectives include:

- Creating and revising custom scorecards
- Building additional analysis profile groups and peer benchmark groups
- Continue modifying detail data elements and saving details templates
- Level 2 Analytics
- PPE Reporting if applicable
- Clinical Analytics Reporting if applicable
- Successful completion of an analysis presentation as evidenced by presenting the analysis for shared learning and demonstrating understanding

Upon completion of this session, the instructors will provide a written feedback form for continuous improvement of content, faculty, and logistics.

Train the Trainer (Clinical Analytics T3) Certification: *This certification module is designed for the analyst who is passionate about continuing to progress from novice to expert, helping others expand their Clinical Analytics knowledge, and has mastered basic training*. The content is delivered in a one to two day onsite workshop. This certification module is a collaborative session with the training team and will be customized based on your

current knowledge base to help you successfully complete and pass the Clinical Analytics T3 certification exam. Keep in mind, the T3 program was designed to provide an onsite resource for the Clinical Analytics Basic user and provide an onsite extension or resource in addition to the Clinical Analytics support team.

Objectives:

- Scorecards review: navigate and customize
- Building more complex analysis profile groups and peer benchmark groups
- Continue modifying detail data elements and saving details templates
- Encryption Keys: Accessing and resetting encryption keys
- System Administration role review
- The participant identifies a problem of interest, conducts a basic analysis, and presents the analysis for shared learning, utilizing the case study framework to complete the analysis.
- Upon successful completion of the Train the Trainer (Clinical Analytics T3) certification program, the instructors will provide a written feedback form for continuous improvement of content, faculty, and logistics.
- A certificate of completion for the Train the Trainer (Clinical Analytics T3) program.
    - To maintain Clinical Analytics T3 status the user must successfully pass scheduled Clinical Analytics enhancement quizzes made available with each scheduled system release.
        - The Clinical Analytics training team will send the quiz with associated release notes to each Clinical Analytics T3 certified user.
    - The Clinical Analytics T3 user will participate in user group meetings as defined by their facility's schedule.
    - The Clinical Analytics T3 user will participate in quarterly meetings with the Clinical Analytics training team to ensure ongoing collaboration and proactively identify upcoming training needs.

Advanced Training: This module is designed for the autonomous analyst, who has mastered basic and intermediate training. The content is delivered in one four- to eight-hour day, depending on the user's identified needs.

Objectives:

The applications and sections covered include:

- Care Variation Performance
- Physician Service Details
- Treatment Analysis
- Trend Analysis
- Coding Analytics
- Pharmacy Analytics
- Advanced Details section

Upon completion of this session, the instructors will provide a written feedback form for continuous improvement of content, faculty, and logistics.

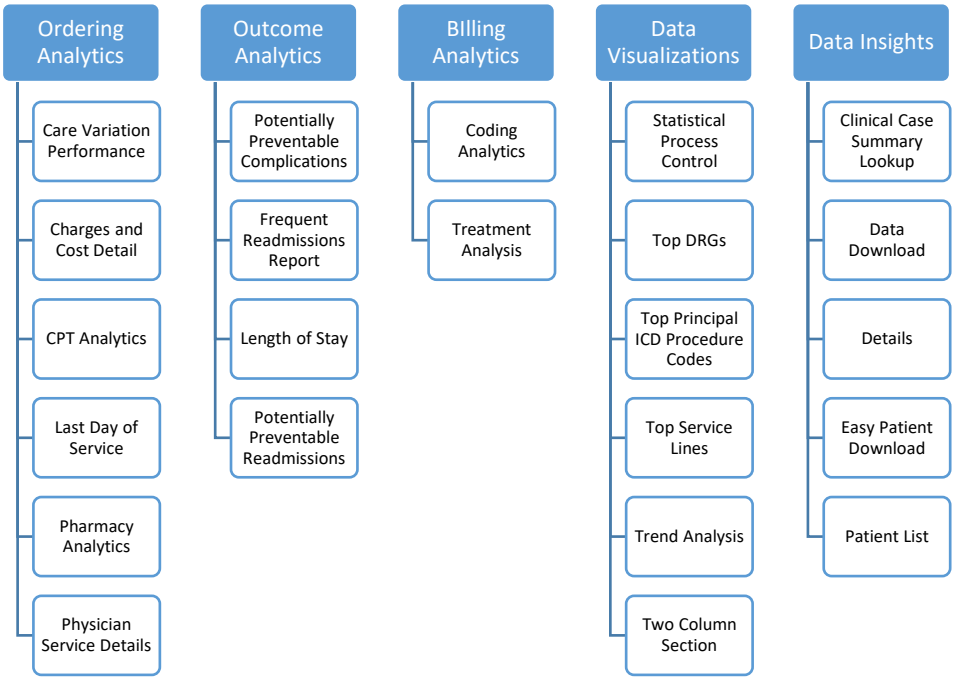
Chapter 3: Clinical Analytics Tools

Introduction

The pinnacle of Clinical Analytics customizing capabilities and subsequent analytical power results from the architecture of its analytical tools—or otherwise referenced as its *Sections.* In Clinical Analytics Basic and Intermediate Training, the scorecard navigation chapter reviewed the mechanics of Sections, including the relationship between Tabs, Sections, and Blocks; and how to use the system's customizing features to assign a Section to a Tab. This chapter digs deeper into the mechanics of using measures in Clinical Analytics, both as a place to focus an initial visual analysis and to provide additional information about your Analysis Profile following application of your selected analytic tools. Also, this chapter will review more advanced analytic sections so you can begin to use those sections in your own analysis framework.

As a reminder from previous Clinical Analytics training sessions, Figure 3.1 illustrates the current analytic tools or Sections in Clinical Analytics and their respective groupings. It is intended to mirror the *+Add Section* dropdown menu options when you are in customizer mode within a scorecard. The Sections in Clinical Analytics are organized under six general categories: Ordering Analytics, Outcome Analytics, Billing Analytics, Data Visualizations, Data Insights, and Performance Workstation.

FIGURE 3.1 CLINICAL ANALYTICS ANALYTIC TOOLS USING SECTION-SPECIFIC TEMPLATES



The Ordering Analytics category includes a grouping of Clinical Analytics analytic tools that all focus on ordering patterns and their associated opportunity analyses for various inpatient and hospital facility care

and services. Outcomes of the patient's encounter can be analyzed using the Outcome Analytic set; documentation, coding and billing data can be examined with the Billing Analytics tools. A unique feature of Clinical Analytics is its capability to provide interactive, dynamic representations of the data analysis; this is supported by the Data Visualizations category. The Data Insights category offers sections that can provide patient level details with efficient pre-built settings and report views. In these sections, additional discoveries related to the analyses can be made with the use of Excel export functionality.

Using Analytic Tools with a Section-Specific Template

Following completion of this portion of the chapter, you should be able to:

- Locate and apply the available advanced analytic sections to a tab on either your scorecard
- Identify the appropriate profile, benchmark and time period for use on the sections that have been applied to the tab on your scorecard
- Recognize that you can apply default detail templates in customizer mode to set time-saving default views

In Clinical Analytics, the functions of the section-specific template is foundational to a majority of the analytic tools available to use for analyzing your data (See Figure 3.1). These section-specific templates are dynamic and highly interactive. We reviewed the function and purpose of the Detail Section template during Clinical Analytics Basic and Intermediate training sessions. In this chapter, you will become familiar with using more analytic tools while adding additional parameters and/or more complex comparisons.

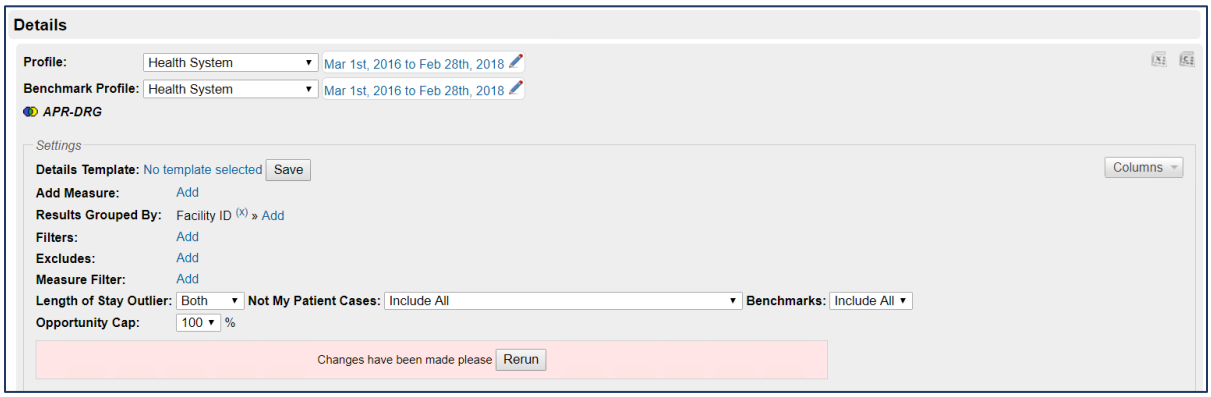
First, we will quickly preview the available advanced sections within Clinical Analytics. The purpose, key concepts, picture example, and basic features will be briefly covered. Once the available analytic sections have been introduced, the upcoming chapters will take each analytic section and apply it to a relevant case study scenario. Each case study will highlight the purpose and power of that particular advanced analytic section.

Details

Purpose: *Primarily for the purposes of flexible and dynamic ad-hoc data analysis, making this the most popular section available in the Clinical Analytics Scorecards application.*

Key Concepts:

- *Details allows for data to be displayed at the patient level, which Clinical Analytics has for any given Encounter ID.*
- *Excel export functionality allows for additional data review and results display.*
- *Efficient data visualization with the use of Detail templates which can be used across any scorecard and user(s) [if saved publicly].*



Basic Features:

- Table views can be exported as an Excel file or CSV file
- Customizable Settings:
    - Add Measure
    - Results Grouped By
    - Filters
    - Excludes
    - Measure Filter
    - Length of Stay outlier
    - Not My Patients
    - Benchmarks
    - Opportunity Cap
- Ability to save the settings for future use and efficiency
- Most flexible ad-hoc data analysis tool available in Scorecards.

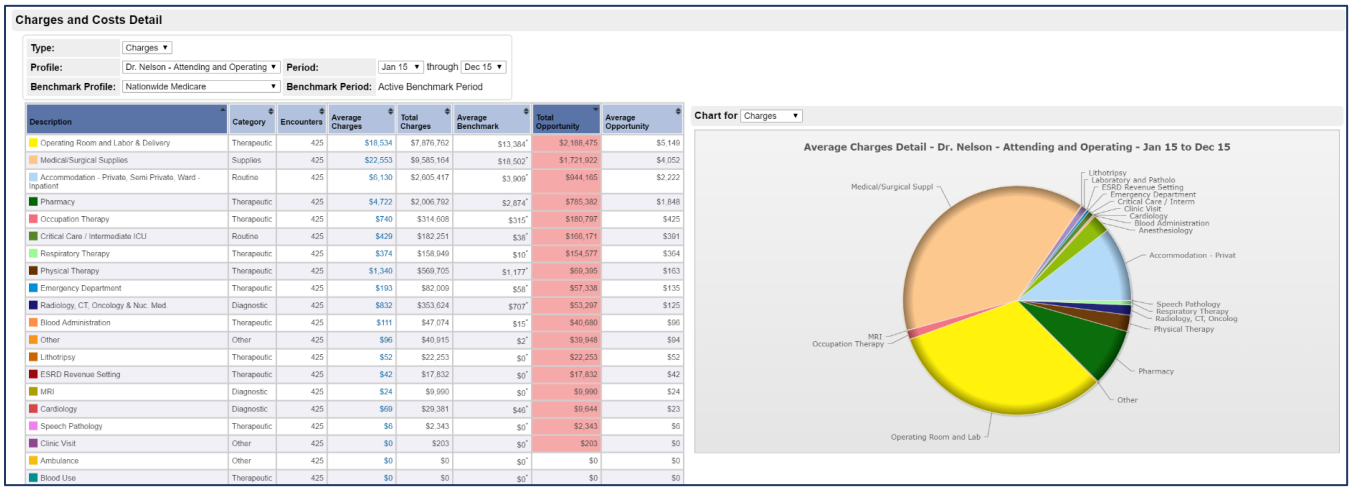
Common use case examples: The most popular section because of the flexible, yet powerful, ad hoc data analysis capabilities. There are too many use case possibilities to list them here, so our team challenges you to try and find an analysis you can't perform using the Details section!

Charges & Costs Detail

Purpose: *Quick way to visually and numerically review revenue code groupings and associated opportunity in terms of charges or cost.*

Key Concepts:

- *Charges and Costs Detail section is typically found on the Utilization tab, in the Hospital Scorecard, but can be added to any preferred tab in additional scorecards.*
- *Data are represented by both an interactive table and pie chart.*
- *Charges and Costs Detail are sorted into revenue code groupings, as defined by CMS, and then benchmarked in order to reflect areas of opportunity.*



Description	Category	Encounters	Average Charges	Total Charges	Average Benchmark	Total Opportunity	Average Opportunity
Operating Room and Labor & Delivery	Therapeutic	425	$18,534	$7,876,762	$13,384	$2,168,475	$5,149
Medical/Surgical Supplies	Supplies	425	$22,553	$9,585,164	$18,502	$1,721,922	$4,052
Accommodation - Private, Semi Private, Ward - Inpatient	Routine	425	$6,130	$2,605,417	$3,909	$944,165	$2,222
Pharmacy	Therapeutic	425	$4,722	$2,006,792	$2,874	$785,382	$1,848
Occupation Therapy	Therapeutic	425	$740	$314,608	$315	$180,797	$425
Critical Care / Intermediate ICU	Routine	425	$429	$182,251	$38	$166,171	$391
Respiratory Therapy	Therapeutic	425	$374	$158,949	$10	$154,577	$364
Physical Therapy	Therapeutic	425	$1,340	$569,705	$1,177	$69,395	$163
Emergency Department	Therapeutic	425	$193	$82,009	$58	$57,338	$135
Radiology, CT, Oncology & Nuc. Med.	Diagnostic	425	$832	$353,624	$707	$53,297	$125
Blood Administration	Therapeutic	425	$111	$47,074	$15	$40,680	$96
Other	Other	425	$96	$40,915	$2	$39,948	$94
Lithotripsy	Therapeutic	425	$52	$22,253	$0	$22,253	$52
ESRD Revenue Setting	Therapeutic	425	$42	$17,832	$0	$17,832	$42
MRI	Diagnostic	425	$24	$9,990	$0	$9,990	$24
Cardiology	Diagnostic	425	$69	$29,381	$46	$9,644	$23
Speech Pathology	Therapeutic	425	$6	$2,343	$0	$2,343	$6
Clinic Visit	Other	425	$0	$203	$0	$203	$0
Ambulance	Other	425	$0	$0	$0	$0	$0
Blood Use	Therapeutic	425	$0	$0	$0	$0	$0

Basic Features:

- Type selection can be Charges or Costs
- Ability to utilize profiles and benchmark profiles in the settings
- Customizable time period
- Drillable feature, when the charges or costs column hyperlink is selected
- Sort the column by clicking on the column header(s)
- Ability to save the settings for future use and efficiency once you've drilled into the Details template for the costs or charges.

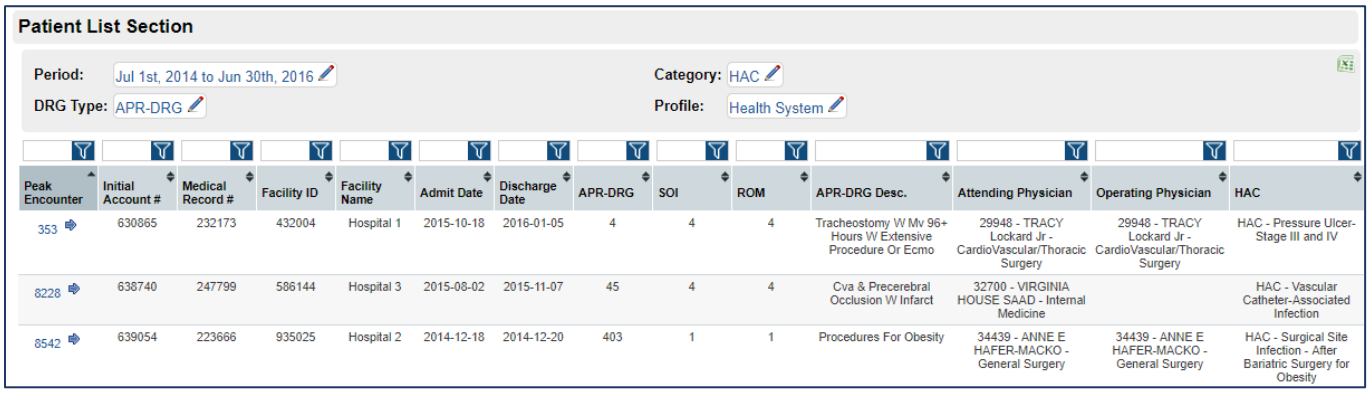
Common use case example: Helping to breakdown and define which revenue bucket your health system has the most cost opportunity in.

Patient List

Purpose: *Allows for patient level analysis specific to Hospital Acquired Conditions (HACs), Patient Safety Indicators (PSIs), Mortality, Core Measures, and Readmissions.*

Key concepts:

- You can choose between APR-DRG and MS-DRG grouping types
- The readmission level allows you to see if readmissions were related and avoids having to build a Details template to display this information.
- The safety indicator categories allow you to see the physicians on the case and infer who the event should be attributed to.



Patient List Section

Period: Jul 1st, 2014 to Jun 30th, 2016 Category: HAC
DRG Type: APR-DRG Profile: Health System

Peak Encounter	Initial Account #	Medical Record #	Facility ID	Facility Name	Admit Date	Discharge Date	APR-DRG	SOI	ROM	APR-DRG Desc.	Attending Physician	Operating Physician	HAC
353	630865	232173	432004	Hospital 1	2015-10-18	2016-01-05	4	4	4	Tracheostomy W Mv 96+ Hours W Extensive Procedure Or Ecmo	29948 - TRACY Lockard Jr - CardioVascular/Thoracic Surgery	29948 - TRACY Lockard Jr - CardioVascular/Thoracic Surgery	HAC - Pressure Ulcer-Stage III and IV
8228	638740	247799	586144	Hospital 3	2015-08-02	2015-11-07	45	4	4	Cva & Precerebral Occlusion W Infarct	32700 - VIRGINIA HOUSE SAAD - Internal Medicine		HAC - Vascular Catheter-Associated Infection
8542	639054	223666	935025	Hospital 2	2014-12-18	2014-12-20	403	1	1	Procedures For Obesity	34439 - ANNE E HAFER-MACKO - General Surgery	34439 - ANNE E HAFER-MACKO - General Surgery	HAC - Surgical Site Infection - After Bariatric Surgery for Obesity

Basic Features:

- Ability to utilize existing profiles
- Customizable time period
- Drillable feature, when clicking on the Clinical Analytics Encounter ID hyperlink (*Must unlock Clinical Analytics for PHI level information)*
- Sort any column by clicking on the column headers
- Filter by the column headers to easily narrow your search results
- Table view can export to Excel for additional functionality

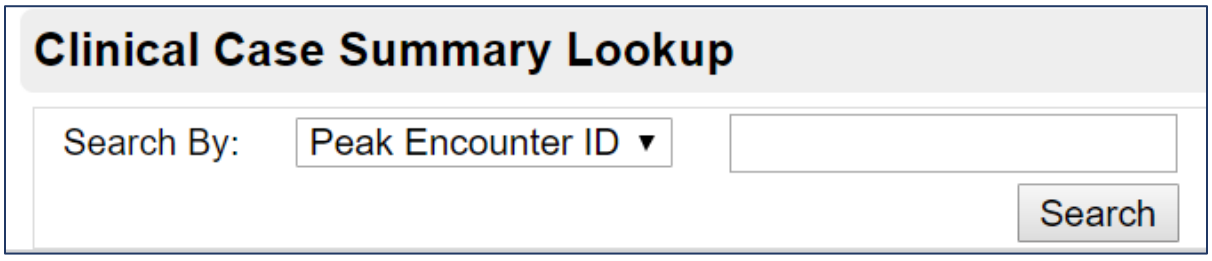
Common uses for the Patient List section: Generating a quick monthly report of any HACs, PSIs, Mortalities, Core Measures, or Readmissions.

Clinical Case Summary (CCS) Lookup

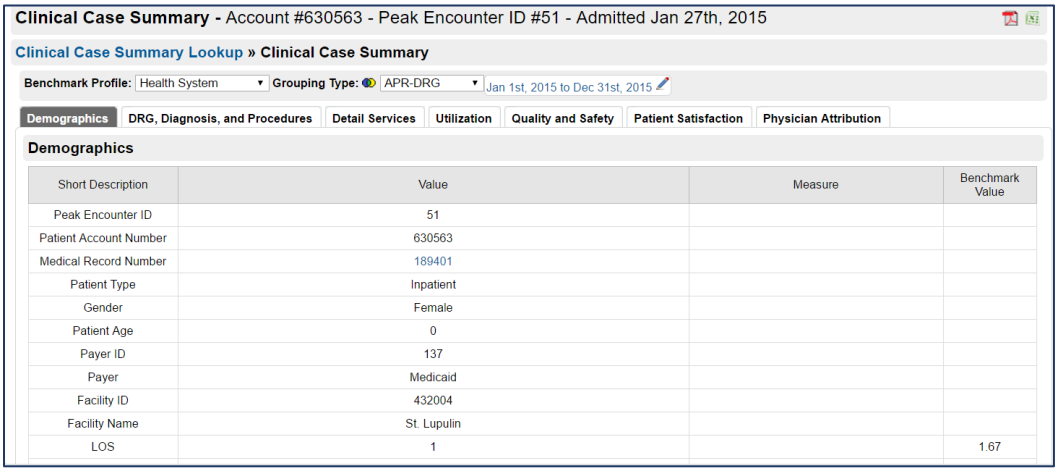
Purpose: *Primarily for the purposes of reviewing all patient level data including demographics, diagnosis, detail services, quality, utilization, patient satisfaction and physician attribution.*

Key Concepts:

- *Clinical Case Summaries display patient level data that Clinical Analytics has for any given Encounter ID.*
- *Accessing Clinical Case Summaries requires that you unlock your Clinical Analytics session.*
- *Using Clinical Case Summary allows you to directly access patient level Clinical Summary data with the Encounter ID number or Account Number.*



- *Once you enter the Clinical Analytics Encounter ID or Account Number, the CCS summary view will display.*



Basic Features:

- Downloadable into a formatted PDF report or to an Excel file
- Summary content sorted into seven tabs:
  - Demographics
  - DRG, Diagnosis, and Procedures
  - Detail Services
  - Utilization
  - Quality and Safety
  - Patient Satisfaction
  - Physician Attribution (where applicable)
- Links to other Encounters for the specific Medical Record Number
- Lists familial records (i.e. mom/baby)

- Identifies coder of record
- Interactive Detail Services tab displays all charges on the encounter and the related date and ordering physician (if we receive ordering physician data from your organization).

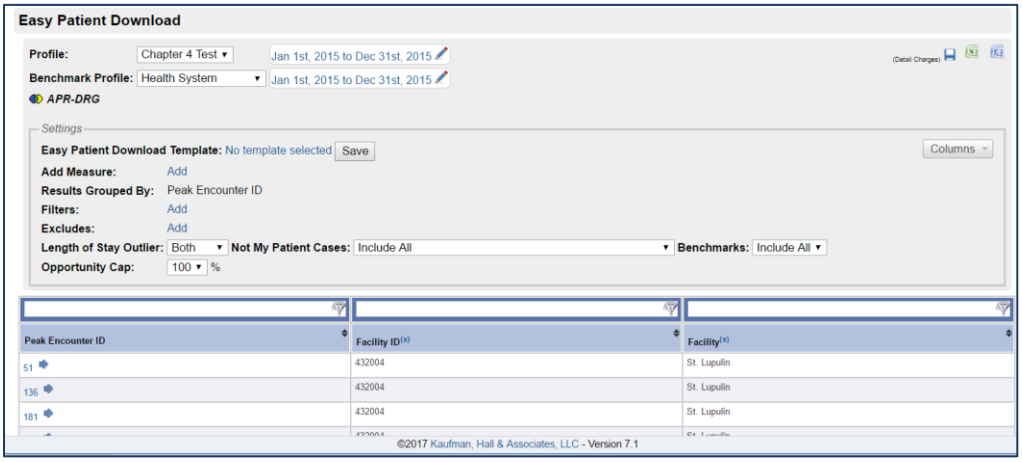
Common uses for the Clinical Case Summary section: This section is commonly used for looking into individual patient encounters and can show encounter trends for the same patient when you click on the MRN link within each clinical case summary.

Easy Patient Download

Purpose: *Primarily for the purposes of exporting encounter level data grouped by Clinical Analytics Patient Encounter into an Excel file for further use and analysis.*

Key Concepts:

- *Easy Patient Download allows for a Profile-based, patient download grouped by Clinical Analytics Encounter ID that can then be exported to Excel. The export to Excel automatically includes the patient diagnoses with POA status, associated procedures and physicians associated with the encounter, in addition to the standard Details View export.*
- *A flexible part of this section is the ability to filter on and see Present on Admission (POA) for every diagnosis code.*
- *Definition of the group of patients allows for selection based on profile and benchmark, additional measures, DRG type, grouping of results, filters and exclusions, and time period.*
- *Easy Patient Download may require that you unlock your Clinical Analytics facility or session if you choose to export.*



Basic Features:

- Ability to utilize existing profiles and benchmark profiles
- Customizable time period
- Drillable feature, when clicking on the Clinical Analytics Encounter ID hyperlink (*Must unlock Clinical Analytics for PHI level information)*
- Sort the column details by clicking on the column headers
- Use the filters and excludes setting options to further narrow your search
- Table view can export to Excel or Detail Charges file for additional functionality

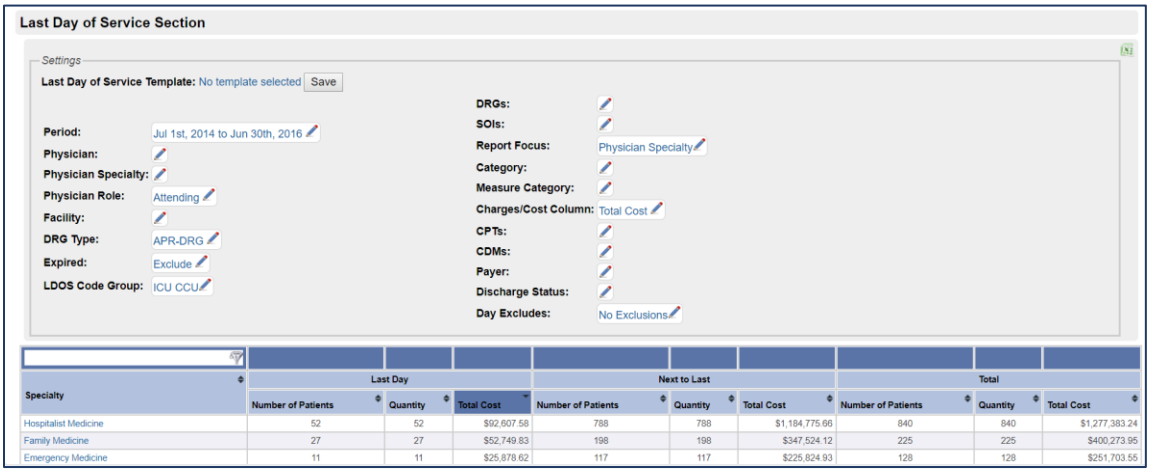
Common use case example: When you need the details view export in addition to encounter level details in one worksheet or view. Also, when you need a list of patients that had a specific diagnosis/set of diagnoses not POA.

Last Day of Service

Purpose: *Analyze services completed on the last and next to last days of the inpatient encounter.*

Key Concepts:

- *Designed to help analysts understand the services delivered on the last and next to last days of a patient's stay.*
- *This can help hospital staff identify services that could potentially be performed on an outpatient basis.*



Basic Features:

- Ability to utilize saved templates
- Customizable Last Day of Services (LDOS) code groups to focus on specific charge codes. LDOS code group customization option found within the Scorecard home.
- Customizable time period
- Sort the column details by clicking on the column headers
- Use the category options to further narrow your search. This section yields results based on AND logic, not AND/OR.
- Table view can export to Excel file for additional functionality

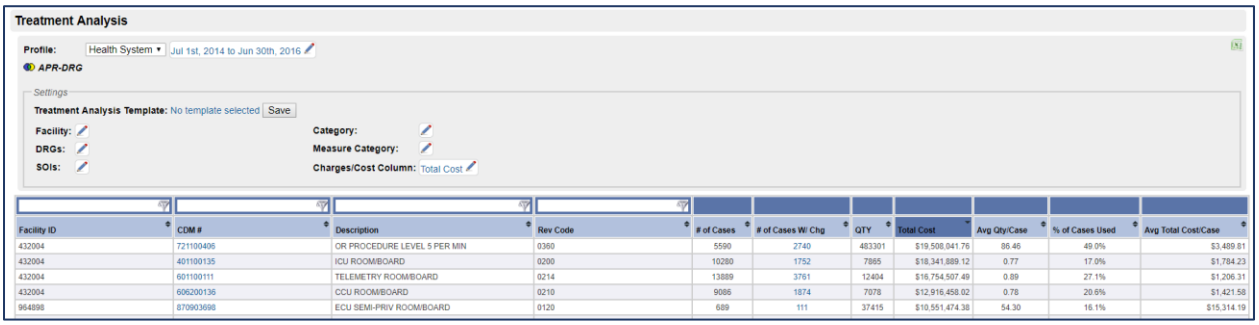
Common use case example: A helpful section to utilize when evaluating Dialysis, Laboratory tests or Radiological exams being performed on the next to last day and/or last day of service for inpatient encounters.

Treatment Analysis

Purpose: *Allows hospitals to see data for all treatments across the hospital.*

Key concepts:

- *The Treatment Analysis section in Clinical Analytics Scorecards allows hospitals to see data for all treatments across the hospital. The data can be sorted by treatment, charge/cost, number of cases, and other attributes.*
- *Treatment Analysis can identify services and interventions that may be overused.*
- *For example, a large number of CT scans may require investigation to better understand utilization. CT scans may be overused in certain DRG groups. Understanding this helps lower costs for the facility by reducing medically unnecessary CT scans.*



Basic Features:

- Ability to utilize saved templates
- Ability to use existing profiles
- Customizable time period
- Sort the column details by clicking on the column headers
- Use the settings filter options to further narrow your search
- Table view can export to Excel file for additional functionality

Common use case example: A useful section when evaluating, at the CDM level, all the patients that could have received a particular service or intervention. Remembering, this section highlights over and under-utilization.

Physician Service Details

Purpose: *Shows cost/charge overage driven by physician preferences. You can create profiles to provide patient population focused trends.*

Key concepts:

- *CDM level details with descriptions and revenue codes*
- *Identifies differences, not necessarily good or bad, just differences*
- *Allows for peer to peer, or peer to group, or physician compared to health system practice trends, etc.*
- *Simple or Detailed report viewing options*

Basic Features:

- Ability to utilize saved templates
- Ability to use existing profiles and benchmark profiles
- Customizable time periods
- Sort the column details by clicking on the column headers
- Use the settings filter options to further narrow your search
- Table view can export to Excel file for additional functionality

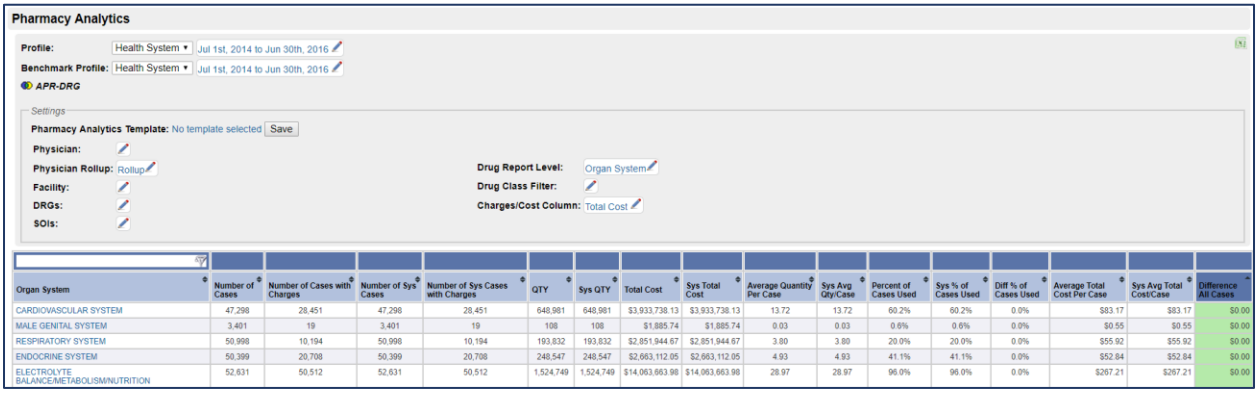
Common use case example: A very useful section when needing to evaluate physician practice trends. The profile and benchmark profile features allow you the flexibility of comparing provider A to self as compared to current year and previous year, peer to peer, peer to group, or physician to facility/health system.

Pharmacy Analytics

Purpose: *Allows hospitals and health systems the ability to analyze the medications used by physicians on various patient populations.*

Key Concepts:

- *Allows users to identify any potential over-utilization of pharmaceuticals*
- *Profile based section*
- *Hierarchy: Organ System, Pharmacological, Therapeutic, Generic, Specific Generic and NDC report levels*
- *Current state allows for internal benchmarking opportunities*



Organ System	Number of Cases	Number of Cases with Charges	Number of Sys Cases	Number of Sys Cases with Charges	QTY	Sys QTY	Total Cost	Sys Total Cost	Average Quantity Per Case	Sys Avg Qty/Case	Percent of Cases Used	Sys % of Cases Used	Diff % of Cases Used	Average Total Cost Per Case	Sys Avg Total Cost/Case	Difference All Cases
CARDIOVASCULAR SYSTEM	47,298	28,451	47,298	28,451	648,981	648,981	$3,933,738.13	$3,933,738.13	13.72	13.72	60.2%	60.2%	0.0%	$83.17	$83.17	$0.00
MALE GENITAL SYSTEM	3,401	19	3,401	19	108	108	$1,885.74	$1,885.74	0.03	0.03	0.6%	0.6%	0.0%	$0.55	$0.55	$0.00
RESPIRATORY SYSTEM	50,998	10,194	50,998	10,194	193,832	193,832	$2,851,944.67	$2,851,944.67	3.80	3.80	20.0%	20.0%	0.0%	$55.92	$55.92	$0.00
ENDOCRINE SYSTEM	50,399	20,708	50,399	20,708	248,547	248,547	$2,663,112.05	$2,663,112.05	4.93	4.93	41.1%	41.1%	0.0%	$52.84	$52.84	$0.00
ELECTROLYTE BALANCE/METABOLISM/NUTRITION	52,631	50,512	52,631	50,512	1,524,749	1,524,749	$14,063,663.98	$14,063,663.98	28.97	28.97	96.0%	96.0%	0.0%	$267.21	$267.21	$0.00

Basic Features:

- Ability to utilize saved templates
- Ability to use existing profiles and benchmark profiles
- Customizable time periods
- Sort the column details by clicking on the column headers
- Use the settings filter options to further narrow your search
- Ability to see the pharmacy data at whatever level of the hierarchy you need for the analysis
- Table view can export to Excel file for additional functionality

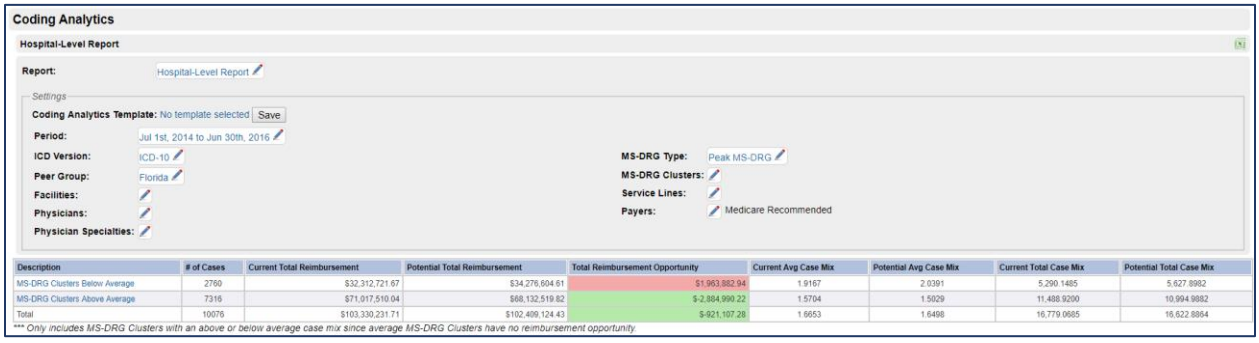
Common use case example: A useful section when evaluating the utilization of pharmaceuticals at the system level, facility level, service line level, and even down to patient encounter level if needed. The profile and benchmark profile features allow you the flexibility of comparing peer to peer, peer to group, or physician to facility/health system.

Coding Analytics

Purpose: *Analyzes overall opportunity based on coding documentation.*

Key concepts:

- *Report types are Hospital-Level, Physician, Specialty and Overall Diagnosis formats.*
- *Ability to identify over and under-coding documentation reflected in total reimbursement opportunity.*



Basic Features:

- Ability to utilize saved templates
- Ability to select DRG type
- Customizable time period
- Use the settings filter options to further narrow your search
- Description column offers additional drill down feature(s) down through secondary diagnosis code
- Table view can export to Excel file for additional functionality

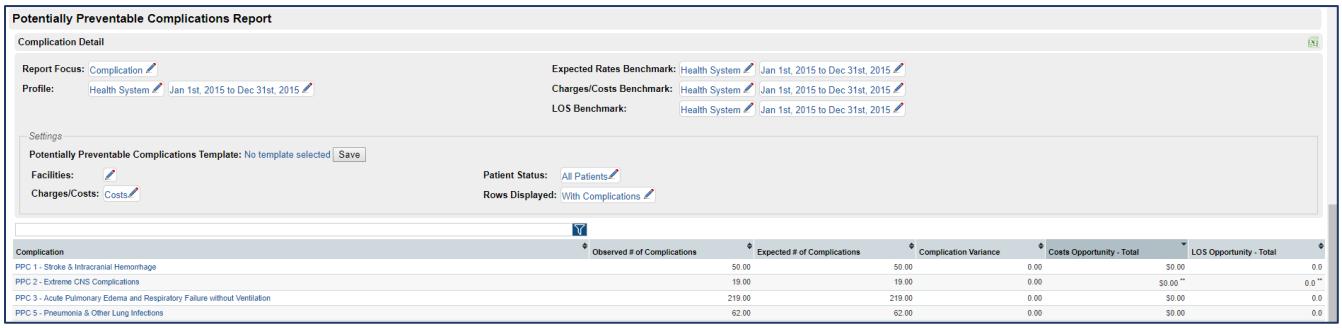
Common use case example: A useful section when needing to evaluate over and under-coding documentation opportunities as reflected in the total reimbursement amount. Medicare payer population recommended for this section.

Potentially Preventable Complications

Purpose: *Specifically designed to analyze Potentially Preventable Complications*

Key Concepts:

- *Only available to clients licensing 3M PPC Software through Syntellis Clinical Analytics Software.*
- *Profile based section that allows you to identify complications and their outcomes.*
- *Additional report viewing options such as Complication, Patient, Physician or by Specialty*



Basic Features:

- Ability to utilize saved templates
- Ability to select different benchmarking options for Expected Rates, Charges/Costs and LOS
- Customizable time periods
- Use the settings filter options to further narrow your search
- Complication column offers additional drill down feature(s) down through patient encounter file level if needed
- Table view can export to Excel file for additional functionality

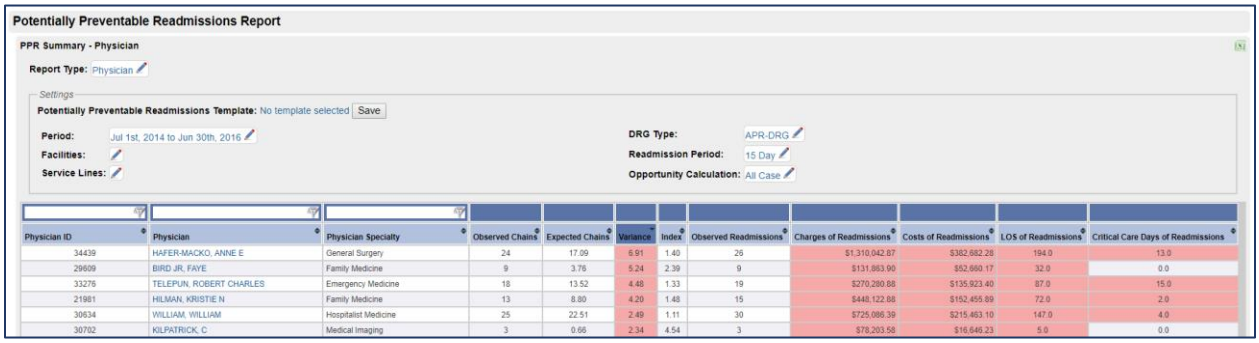
Common use case example: A useful section when trying to identify complications and their financial outcomes. Consider this section useful in a care variation approach or analysis. Leverage the multiple report focus types depending on if you need physician-level or patient-level details.

Potentially Preventable Readmissions

Purpose: Analyzes preventable readmissions by Physician, Specialty, Costs, Charges, and LOS categories.

Key concepts:

- *Syntellis Clinical Analytics Software licenses software from 3M for classifying Potentially Preventable Readmissions.*
- *Report types available in Physician, Specialty, Physician Group, Service Line, Clinical Analytics MS-DRG, Client MS-DRG and APR-DRG formats.*



Basic Features:

- Ability to utilize saved templates
- DRG based customization
- Customizable time period
- Use the settings filter options to further narrow your search
- Column headers can be sorted to focus on largest opportunity
- Table view can export to Excel file for additional functionality

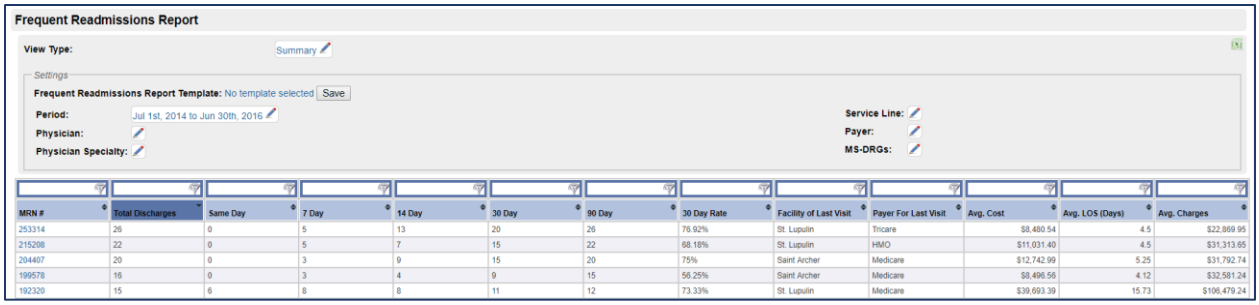
Common use case example: A useful section when trying to identify readmissions and their financial outcomes. Consider this section useful in a care variation approach or analysis. Leverage the multiple report focus types depending on which report type would be most beneficial.

Frequent Readmissions Report

Purpose: *MRN-level readmission data including multiple intervals from 0-30 day ranges. Data can be viewed in Detail or Summary types.*

Key concepts:

- *Must be unlocked to run this report*
- *Allows you to see outcomes associated with each admission*
- *Summary level allows you to see each admission for a particular MRN*



MRN #	Total Discharges	Same Day	7 Day	14 Day	30 Day	90 Day	30 Day Rate	Facility of Last Visit	Payer For Last Visit	Avg. Cost	Avg. LOS (Days)	Avg. Charges
253314	26	0	5	13	20	26	76.92%	St. Lupulin	Tricare	$8,480.54	4.5	$22,869.95
215208	22	0	5	7	15	22	68.18%	St. Lupulin	HMO	$11,031.40	4.5	$31,313.65
204407	20	0	3	9	15	20	75%	Saint Archer	Medicare	$12,742.99	5.25	$31,792.74
199578	16	0	3	4	9	15	56.25%	Saint Archer	Medicare	$8,496.56	4.12	$32,581.24
192320	15	6	8	8	11	12	73.33%	St. Lupulin	Medicare	$39,693.39	15.73	$106,479.24

Basic Features:

- Ability to utilize saved section-specific templates
- Customizable time periods
- Use the settings filter options to further narrow your search
- MRN column offers additional drill down feature(s) down to patient encounter file level
- Table view can export to Excel file for additional functionality
- Detail view provides index admission and readmission DRG details

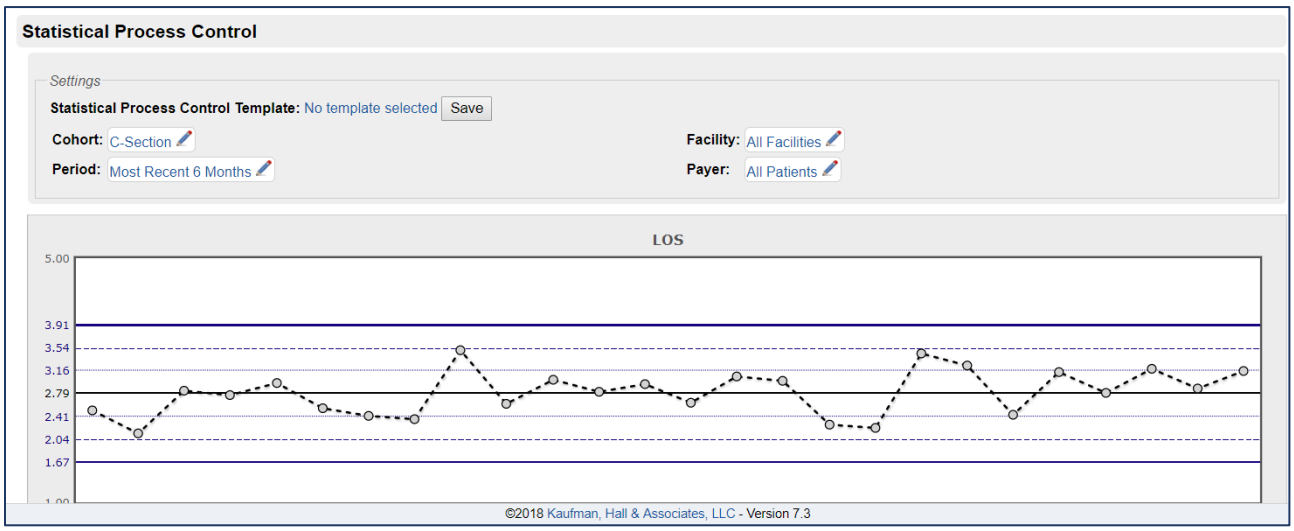
Common use case example: A useful section when trying to identify frequent readmissions and highlight the most common readmission day intervals. Leverage the multiple report focus types depending on which data output best meets your reporting needs.

Statistical Process Control (SPC)

Purpose: *The SPC section was designed to guide your targeted analysis of specific patient cohorts so you can focus your process improvement efforts.*

Key Concepts:

- *Homogenous Cohorts*
- *Severity, Risk, and Volume Adjustment Calculations*
    - *All Procedure codes, All Diagnosis codes, Age, and Gender fields are used for severity and risk adjustment*
- *Control Chart Methodology*
- *Common Cause and Special Cause Variation*
- *Signals*
- *Inherent evaluation of internal process therefore no benchmarks are used in SPC*



Basic Features:

- Ability to utilize saved section-specific templates
- Ability to select homogenous patient cohorts
- Customizable time periods, from 6, 12, 18 or 24 month intervals
- Use the settings filter options to define which cohort, time period, facility and/or payer
- Pre-defined, cohort specific outcome measures, adverse events, and associated patient satisfaction details will display in a floating window for review
- Signals are color coded with mathematical equation definitions available using “hover to discover” feature
- Drillable functionality available with data points and color coded legend signal selections

- Suggested profile creation within the SPC Drill feature
- Table view can export to Excel file for additional functionality
- Clinical Analytics Encounter ID available to export and then utilize in Clinical Case Summary Look-Up section

Common use case example: A useful section when evaluating trends and patterns for statistical significance. Consider this section when evaluating a recent process improvement change to evaluate the effects. This section is meant to identify trends or opportunity and to evaluate whether a process is in control or not.

Chapter 4: Details Case Study

Details Section:

Purpose: *Primarily for the purposes of flexible and dynamic ad-hoc data analysis, making this the most popular section available in Clinical Analytics Scorecards.*

Key Concepts:

- Details allows for depth of display at patient-level data which Clinical Analytics has for any given Encounter ID.
- Excel export functionality allows for additional data review and results display.
- Efficient data visualization with the use of Detail templates which can be used across any scorecard and user (if saved publicly).

Details Section Case Study Scenario:

Question1: *"I want to know what our mortality rate is across our health system for the past six months."*

Question 2: *"Show me how I can also look at total cost and show these measures across service lines."*

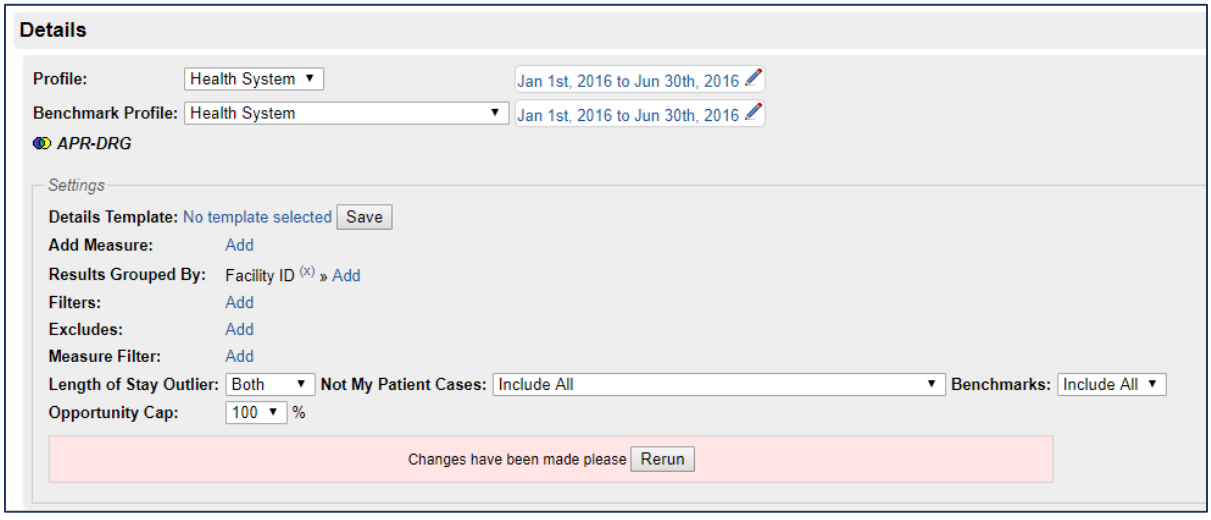
Question 3: *"That's helpful information, but now I want to know which DRGs and physicians have the most cost opportunity."*

Let's take a hospital-based scenario and apply it to this powerful section in Clinical Analytics. The following scenario can be adapted based on the specific criteria you need to answer your analytic question. This scenario has been utilized across our client base and the dynamic flexibility of the Details section is endless! Keep in mind this is one of hundreds of ways you can utilize this powerful analytic section.

Details Section Case Study Scenario:

Question 1: *"What is our Mortality Rate, Total Cost, and which Service Line has the greatest cost opportunity?"*

FIGURE 4.1 DETAILS SECTION VIEW



Step 1: First we need to review the Profile, Benchmark Profile, and date ranges before we proceed to specific settings field customization.

- For this example, we will keep our initial focus on the health system as a whole for a six month time period.
- Once we run the analysis, we can begin to adjust time periods or select different profiles that may help narrow the search further to identify more specific opportunity.

Step 2: In the second step, we need to add the appropriate measures to help answer our case study question above.

- Select the **Add** hyperlink to Add Measure.
- Search for the Quality measure: *Mortality Rate* and check mark the measure selection.
- Add the Utilization measure: *Cost-Total* and check mark the measure selection.
- Once you have selected the Mortality Rate and Cost-Total measures, select OK to confirm your measure selections.

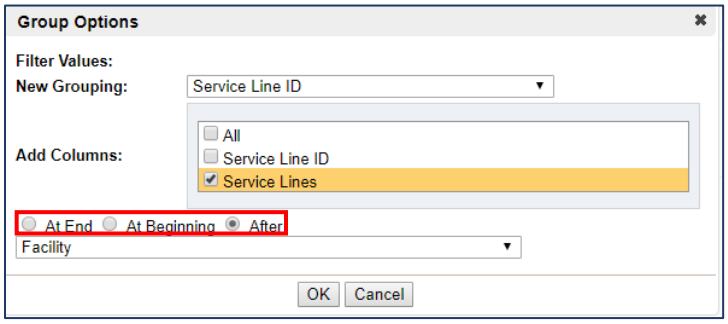
We've answered the first question, focusing on how to add the mortality rate measure. In step 2, we started to answer the second question by adding the cost-total measure. Let's finish answering the second question in step 3 below.

Question 2: *"Show me how I can also look at total cost and show these measures across service lines."*

Step 3: In the third step, we need to add the Results Grouped by selection to further stratify the analysis to show service line filters.

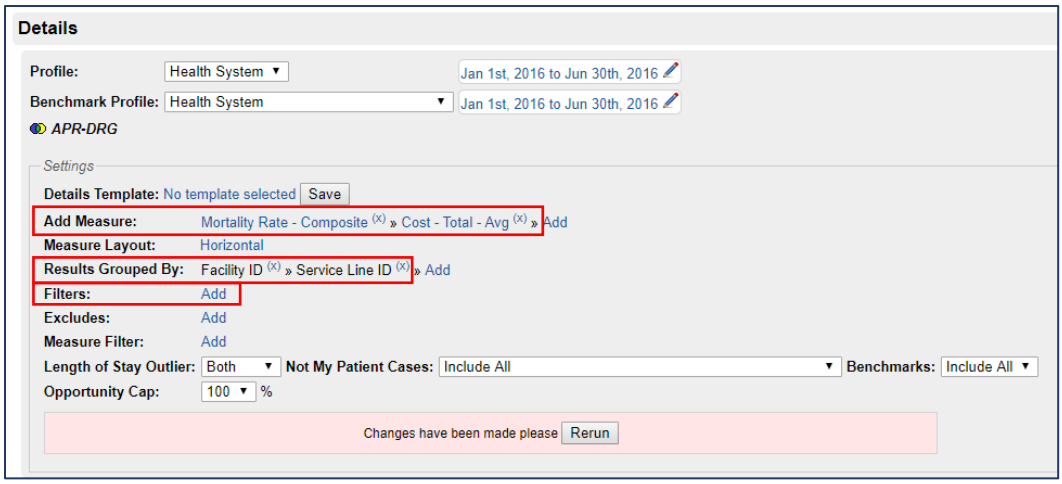
- Select the **Add** hyperlink to select Results Grouped by option(s)
- Search for *Service Line ID*
- Before selecting OK, consider where you would prefer the *Service Line ID* column(s) to display in the table results view.
    - *Keep in mind if you make the selection and click on the OK button, the system default will be "At End" (see Figure 4.2 red At End radio button).*
    - *Each time you select a measure or group by option, the columns will automatically populate at the far right end of the table view,* ***unless*** *you intentionally select the At Beginning or After radio buttons and indicate exactly where you would prefer the column(s) to display.*
- In this example, we will click on the *Service Lines* choice and place the *Service Lines* column after the Facility column (See Figure 4.2)

FIGURE 4.2 CUSTOMIZING GROUPING COLUMNS IN DETAILS TABLE



- Select OK to confirm the *Service Line ID* selection
- The Details Section settings should look similar to Figure 4.3 below:

FIGURE 4.3 DETAILS SECTION WITH MORTALITY RATE, TOTAL COST AND SERVICE LINE SETTING SELECTIONS



Step 4: Now it's time to Run the analysis and review the results.

- Click on the Rerun button in the light pink banner across the bottom of the settings window in the details view (See Figure 4.4)

FIGURE 4.4 RERUN BUTTON

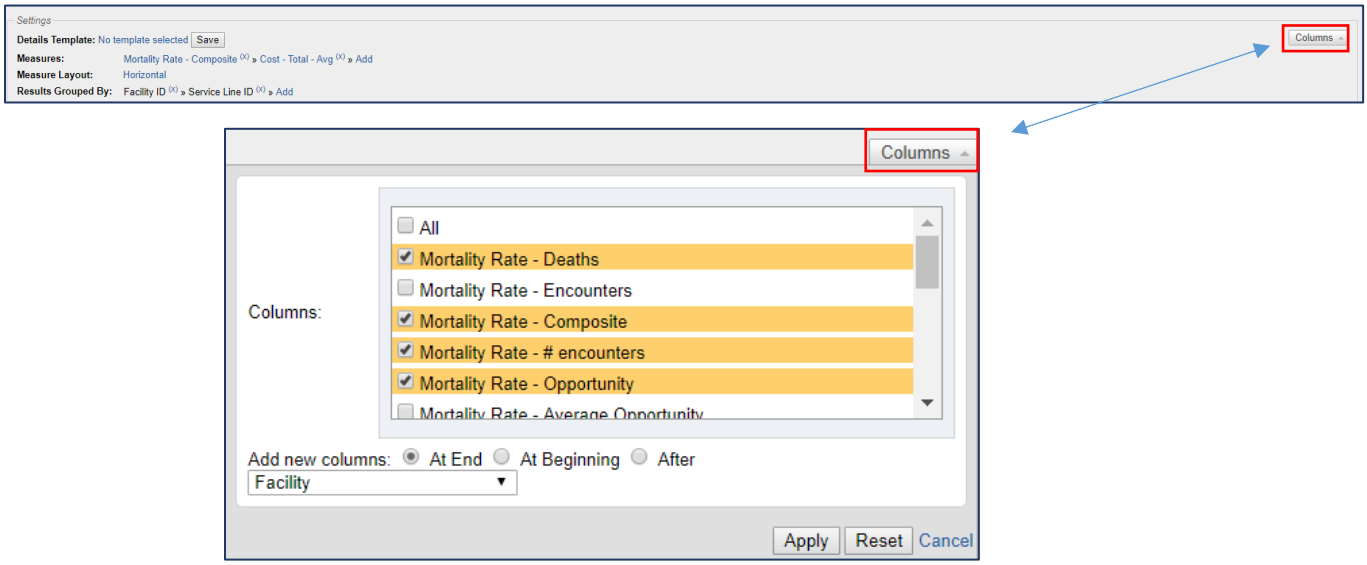
Step 5: Let's take a look at the results and what options you can consider to further analyze the table details (Figure 4.5).

FIGURE 4.5 DETAILS TABLE VIEW

Facility ID(x)	Facility(x)	Service Lines(x)	Mortality Rate - Deaths(x)	Mortality Rate - Encounters(x)	Mortality Rate - Composite(x)	Mortality Rate - # encounters(x)	Mortality Rate - Opportunity(x)	Mortality Rate - Benchmark(x)	Cost - Total - Total(x)	Cost - Total - Avg(x)	Cost - Total - # encounters(x)	Cost - Total - Opportunity(x)	Cost - Total - Benchmark(x)
964898	St. Victorious	Pulmonary	15.00	304.00	4.93 %	304	8.40	2.17 %	$3,157,302	$10,386	304	$832,671	$7,647
964898	St. Victorious	Infectious	15.00	136.00	11.03 %	136	7.96	5.18 %	$1,678,630	$12,343	136	$51,403	$11,965
964898	St. Victorious	Neurology	10.00	98.00	10.20 %	98	7.19	2.86 %	$3,676,855	$37,519	98	$2,453,445	$12,484
935025	Saint Archer	Infectious	63.00	704.00	8.95 %	704	6.11	8.08 %	$9,133,135	$12,973	704	$-1,820,142	$15,559

- In Figure 4.5, the opportunity is sorted by the Mortality Rate measure. However, keep in mind that each column can be sorted by clicking on the column headers with directional arrows.
- You could choose to sort by the Cost-Total Opportunity column and focus your attention on total cost opportunity versus the mortality rate opportunity.
- Each column can be rearranged from left to right by clicking on the column header and dragging either direction. When you drag a column, a light gray box will indicate where the column you are moving will go. They can also be deleted by clicking on the blue “x” next to the column header name.
- Filters can also be applied by using the Filter option within the settings field (See Figure 4.3)
- Additional columns can be added by using the Columns menu in the upper right hand corner of the settings window (See Figure 4.6)
    - *For example, users have requested an O/E column in the Details table view. Using the Columns menu drop-down list is a great place to select and insert the O/E column for either or both the mortality rate or cost- total measure.*
    - *The available list of column options are driven by the measure or group by selections that have already been added to the settings section. If you don’t see a column you want in the list, selecting an additional group by or measure is likely the next suggestion.*

FIGURE 4.6 COLUMNS MENU LIST



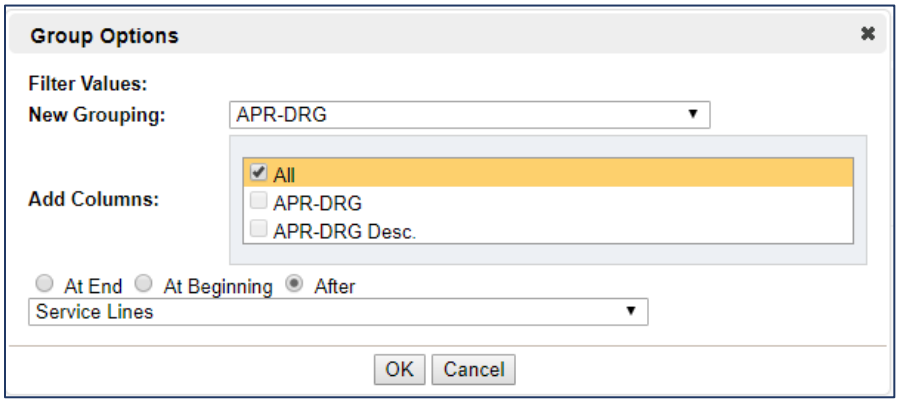
The Details Template functionality in the Details section settings field offers custom public, custom private, and Clinical Analytics standard templates. This feature can provide immense time saving structure to the details table view. Detail templates allow you to save your settings, so you don't have to recreate the analysis each time you log into Clinical Analytics. Using details templates allows the user to obtain the data details in a few clicks versus customizing the details view each and every time they run a details table view. An added bonus of saving templates is that section-specific templates can be used across scorecards! They are not like profiles that are only scorecard centric.

Question 3: *"That's helpful information, but now I want to know which DRGs and physicians have the most cost opportunity."*

Step 1: We can add these settings to our existing table view by adding two additional results grouped by options.

- Select the **Add** hyperlink to select Results Grouped by option(s)
- Search for *APR-DRG* (note you can utilize MS-DRG if needed)
    - *Similar to the Service Line ID example above, you can intentionally place columns in a specific order within the table if you select the At Beginning or After radio buttons. The default radio button selection will always be At End. (See Figure 4.7)*
- To pre-organize the column order, before selecting OK, place the APR-DRG columns after the Service Line column (See Figure 4.7)
    - *The organization and selection of column placement is strictly personal preference. The customization of column header order can be rearranged at any time.*

FIGURE 4.7 APR-DRG RESULTS GROUPED BY OPTION

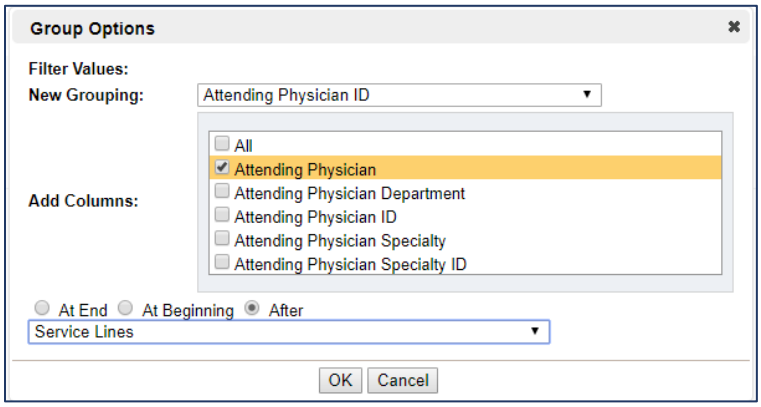


- Click the Rerun button to refresh the table with the new column(s).

Step 2: We've added the APR-DRG grouped by, now we need to finish answering our question by adding the Attending Physician grouped by.

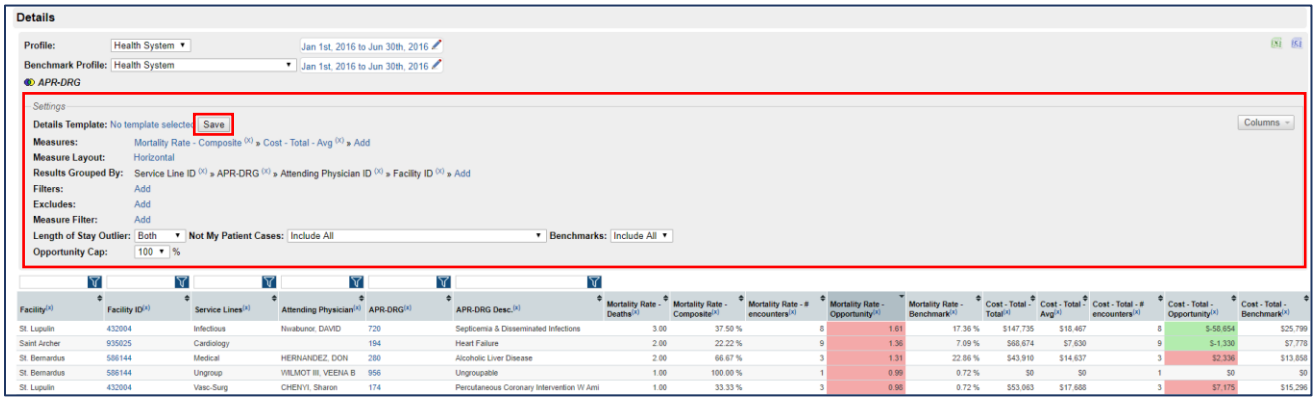
- Select the **Add** hyperlink to select Results Grouped by option(s)
- Search for *Attending Physician ID* (note you can utilize any other physician role option if you prefer)
- Before selecting OK, place the Attending Physician name column after the Service Line column (See Figure 4.8).
    - *The organization and order of the columns is personal preference. The At End default is an acceptable option because you can always rearrange the columns at a later time.*

FIGURE 4.8 ATTENDING PHYSICIAN ID RESULTS GROUPS BY OPTION



- Click on Rerun to refresh the table view with the most recent selections.
- Based on the settings (See Figure 4.9), the details table reveals the information specific to Mortality Rate and Total Cost measures. Further stratifying the data by Service Line, APR-DRG, Attending Physician, and Facility.

FIGURE 4.9 DETAILS VIEW BASED ON CASE STUDY SCENARIO



If this view answers your scenario question and will be needed on an ongoing basis, this would be a great opportunity to save the details template view.

Following the steps below to save the details template view:

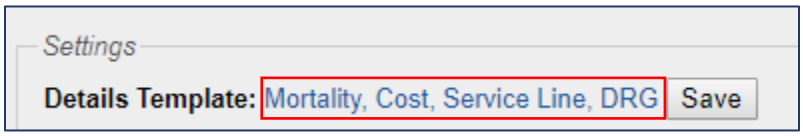
Step 1: Click on the Save button at the top of the settings field (highlighted red in Figure 4.9).

Step 2: Once you click on the Save button, Clinical Analytics will prompt you to name the template.

- *The default view is a private view so that other Clinical Analytics scorecard users can't alter or view your template.*
- *However, if you would like the template to be available across all users, then change the User setting from Private to Public, before clicking on OK to save your changes.*

Step 3: Once you have saved your changes, the Settings field will update and replace "No template selected" with your saved template name (See Figure 4.10 below).

FIGURE 4.10 SAVED DETAILS TEMPLATE



The default template will display in the settings window until you choose to select a different template. You can continue to make necessary edits to existing details templates by clicking on Save to update the current saved template. If you would like to select a different template, click on the current template name blue hyperlink (red highlight in Figure 4.10). The Details Template Types window will display and offer the choices of Custom Private, Custom Public, or Clinical Analytics Standard. Make the desired selection and click the Done button to pull in the updated template.

In conclusion, the Details section affords Clinical Analytics users extensive flexibility in the utilization of Details Template views or adding multiple details section within the same scorecard. Clinical Analytics does

not restrict the amount of times you can add a particular section within a given scorecard. For efficiency, include as many details sections as necessary and apply the default template view for a particular analysis. Ultimately, you can access the scorecard, click on the desired tab(s), and click Rerun in the details section(s). Once you click Rerun, the table displays the information that answers your question. Two final key elements to keep in mind are the ability to export to Excel with each details analysis and the ability to drill down to Patient Encounter-level in any Details section analysis. The Clinical Analytics Encounter ID results grouped by filter must be added in order to drill down to patient encounter-level details.

Chapter 5: Charges & Costs Detail Case Study

Charges and Costs Detail Section:

Purpose: *Quick way to visually and numerically review revenue code groupings and associated opportunity in terms of charges or cost.*

Key Concepts:

- Charges and Costs Detail section is typically found on the Utilization tab in Clinical Analytics, in the standard Hospital Scorecard, but can be added to any preferred tab in additional scorecards.
- Data results are represented by both an interactive table and pie chart.
- Charges and Costs Detail are sorted into revenue code groupings, as defined by CMS, and then benchmarked in order to reflect areas of opportunity.

Charges and Costs Detail Case Study Scenario:

Question 1: *"I want to learn more about the cost opportunity highlighted in red in this Charges and Costs table view, but I don't see a drill option."*

Question 2: *"And how do I know what revenue codes are included in each category?"*

Question 3: *"That's helpful information, but now I want to know which services lines, with the highest encounter volumes, have the most charge opportunity."*

Question 4: *"So now I know which service lines have the most charge opportunity for the pharmacy charges measure, but I don't need the OB service line information in the table. Is there a way to easily remove the OB service line from the table view?"*

Let's take a hospital based scenario and apply it to this dynamic section in Clinical Analytics. The following scenario can be adapted based on the criteria you need to answer your specific charges or costs related analytic question. We encourage you to use the information you learned in Chapter 4: Details Section

and apply it to the drill feature available within the Charges and Costs Detail table. Keep in mind, the Documentation resource in Clinical Analytics is a great source of knowledge to further review the definitions for each revenue category used within this section.

Charges and Costs Detail Section Case Study Scenario:

Question 1: *"I want to learn more about the cost opportunity highlighted in red in the Charges & Costs table view, but I don't see a drill option?"*

FIGURE 5.1 CHARGES AND COSTS DETAIL SECTION BIG PICTURE

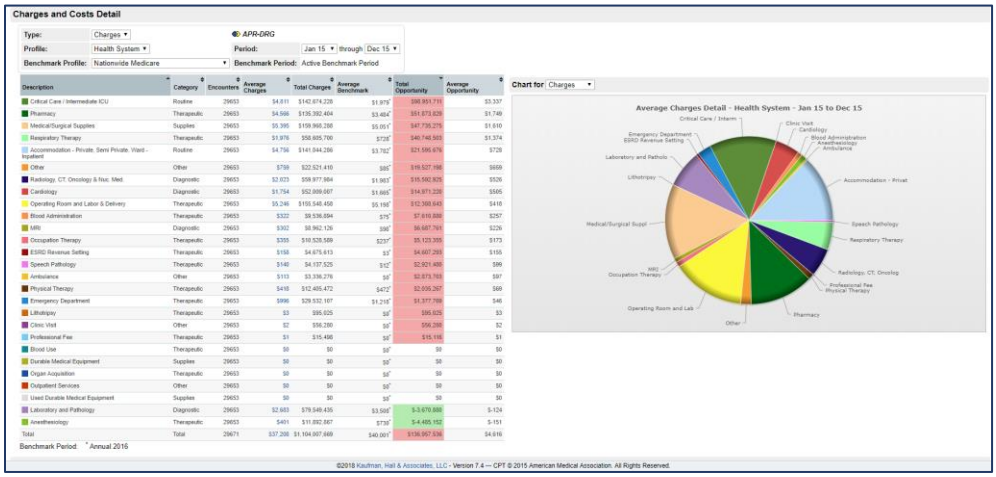
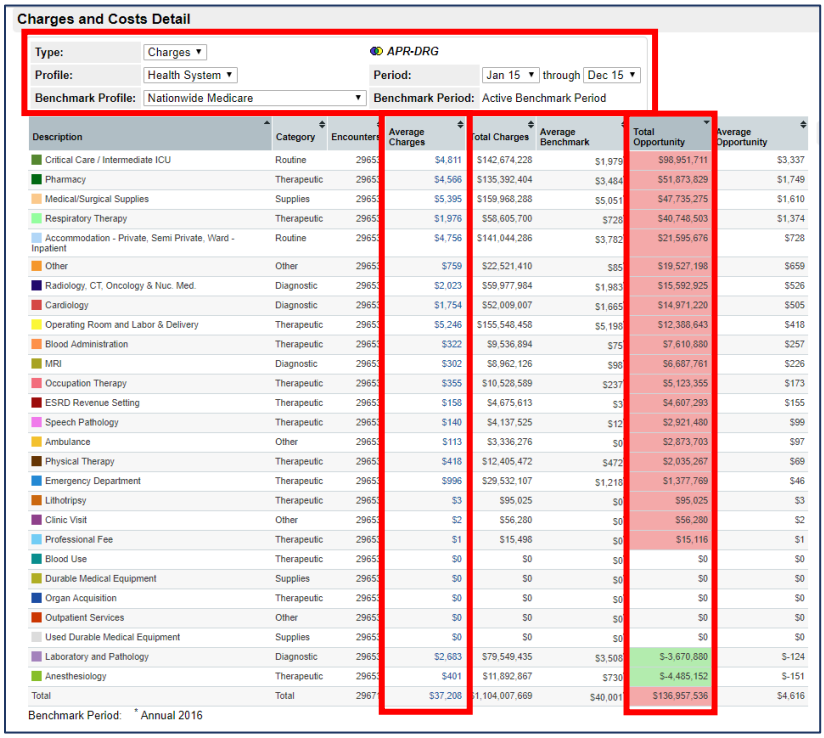


Figure 5.1 provides a big picture overview of the Charges and Costs detail section. Whereas, Figure 5.2 provides a zoomed in view of the table on the left and Figure 5.3 provides the pie graph on the right.

FIGURE 5.2 CHARGES AND COSTS DETAIL TABLE VIEW



Charges and Costs Detail

Type: Charges | APR-DRG
Profile: Health System | Period: Jan 15 through Dec 15
Benchmark Profile: Nationwide Medicare | Benchmark Period: Active Benchmark Period

Description	Category	Encounters	Average Charges	Total Charges	Average Benchmark	Total Opportunity	Average Opportunity
Critical Care / Intermediate ICU	Routine	2965	$4,811	$142,674,228	$1,979	$98,951,711	$3,337
Pharmacy	Therapeutic	2965	$4,566	$135,392,404	$3,484	$51,873,829	$1,749
Medical/Surgical Supplies	Supplies	2965	$5,395	$159,968,288	$5,051	$47,735,275	$1,610
Respiratory Therapy	Therapeutic	2965	$1,976	$58,605,700	$728	$40,748,503	$1,374
Accommodation - Private, Semi Private, Ward - Inpatient	Routine	2965	$4,756	$141,044,286	$3,782	$21,595,676	$728
Other	Other	2965	$759	$22,521,410	$85	$19,527,198	$659
Radiology, CT, Oncology & Nuc. Med.	Diagnostic	2965	$2,023	$59,977,984	$1,983	$15,592,925	$526
Cardiology	Diagnostic	2965	$1,754	$52,009,007	$1,665	$14,971,220	$505
Operating Room and Labor & Delivery	Therapeutic	2965	$5,246	$155,548,458	$5,198	$12,388,643	$418
Blood Administration	Therapeutic	2965	$322	$9,536,894	$75	$7,610,880	$257
MRI	Diagnostic	2965	$302	$8,962,126	$98	$6,687,761	$226
Occupation Therapy	Therapeutic	2965	$355	$10,528,589	$237	$5,123,355	$173
ESRD Revenue Setting	Therapeutic	2965	$158	$4,675,613	$3	$4,607,293	$155
Speech Pathology	Therapeutic	2965	$140	$4,137,525	$12	$2,921,480	$99
Ambulance	Other	2965	$113	$3,336,276	$0	$2,873,703	$97
Physical Therapy	Therapeutic	2965	$418	$12,405,472	$472	$2,035,267	$69
Emergency Department	Therapeutic	2965	$996	$29,532,107	$1,218	$1,377,769	$46
Lithotripsy	Therapeutic	2965	$3	$95,025	$0	$95,025	$3
Clinic Visit	Other	2965	$2	$56,280	$0	$56,280	$2
Professional Fee	Therapeutic	2965	$1	$15,498	$0	$15,116	$1
Blood Use	Therapeutic	2965	$0	$0	$0	$0	$0
Durable Medical Equipment	Supplies	2965	$0	$0	$0	$0	$0
Organ Acquisition	Therapeutic	2965	$0	$0	$0	$0	$0
Outpatient Services	Other	2965	$0	$0	$0	$0	$0
Used Durable Medical Equipment	Supplies	2965	$0	$0	$0	$0	$0
Laboratory and Pathology	Diagnostic	2965	$2,683	$79,549,435	$3,508	$-3,670,880	$-124
Anesthesiology	Therapeutic	2965	$401	$11,892,867	$730	$-4,485,152	$-151
Total	Total	2967	$37,208	1,104,007,669	$40,001	$136,957,536	$4,616

Benchmark Period: * Annual 2016

The table view has several sections that are important to review when analyzing the table data. The ***Type*** field allows for easy toggle between charges or costs. This section allows the use of a profile, a benchmark profile, and the ability to adjust time periods as needed. The ***Revenue Code Descriptions*** are color coded in the first column on the left. The ***Average Charges*** (see Figure 5.2), outlined in red, allows the user to click on the blue hyperlink value and drill to a details table view. The ***Total Opportunity*** column, outlined in red, can be sorted by clicking on the column header to reveal largest charges opportunity (see Figure 5.2).

FIGURE 5.3 CHARGES AND COSTS DETAIL PIE CHART VIEW

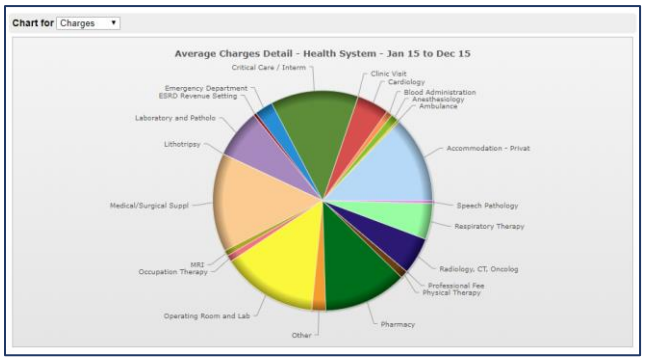


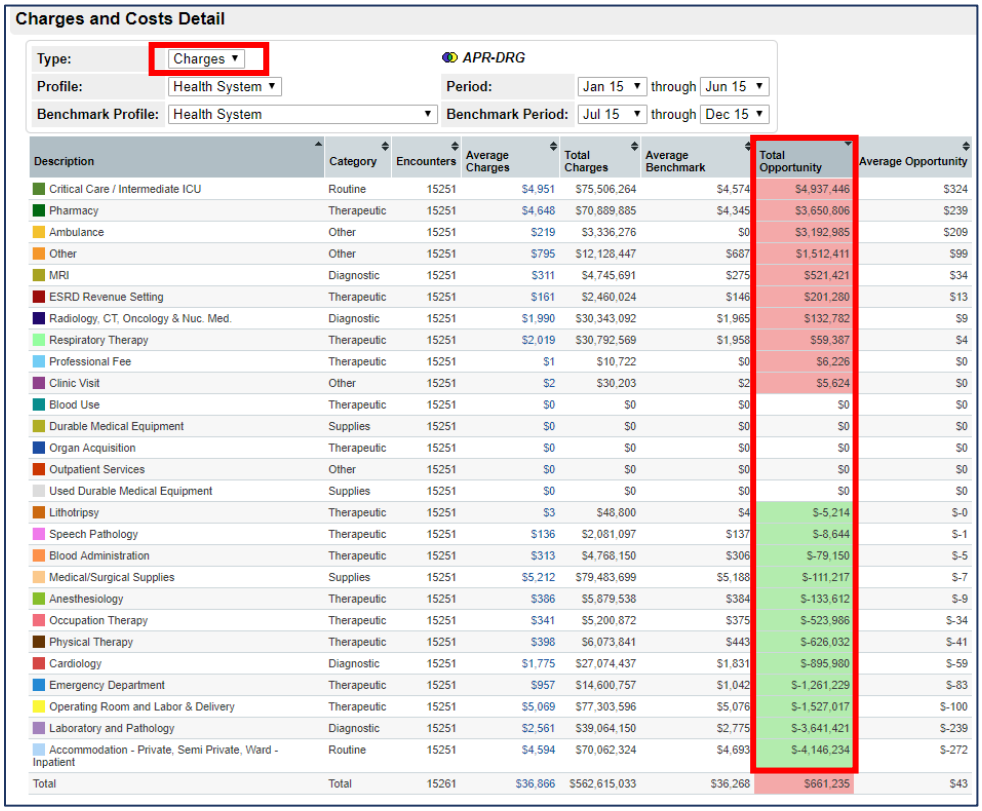
Figure 5.3 provides a color-coded pie graph view of the charges and costs detail outlined in the table view (see Figure 5.2)

As a reminder, before we proceed with the case study scenario, this section helps to breakdown and define which revenue bucket your health system has the most charges or cost opportunity, depending on which type (charges or costs) you selected to view in the table details. You can also choose to look at comparison time frames as well, comparing the previous six months to the current six months, within the health system.

Step 1: First we need to review the Type, Profile, Benchmark Profile and date ranges before we proceed to specific table detail customization.

- For this example, select ***Charges*** for the type we will keep our initial focus on the health system as a whole for a six month time period. Select the health system for the profile and benchmark profile, but apply comparison six month date ranges.
- Once we Run the analysis, we can begin to adjust time periods or select different profiles that may help narrow the search further to identify more specific opportunity.
    - But first, let's see how we are doing across these revenue buckets comparing the last six months to the current six month time period (see Figure 5.4).

FIGURE 5.4 CHARGES TABLE VIEW HEALTH SYSTEM VIEW COMPARING CURRENT SIX MONTHS TO PREVIOUS SIX MONTHS



Charges and Costs Detail

Type: Charges | APR-DRG
Profile: Health System | Period: Jan 15 through Jun 15
Benchmark Profile: Health System | Benchmark Period: Jul 15 through Dec 15

Description	Category	Encounters	Average Charges	Total Charges	Average Benchmark	Total Opportunity	Average Opportunity
Critical Care / Intermediate ICU	Routine	15251	$4,951	$75,506,264	$4,574	$4,937,446	$324
Pharmacy	Therapeutic	15251	$4,648	$70,889,885	$4,345	$3,650,806	$239
Ambulance	Other	15251	$219	$3,336,276	$0	$3,192,985	$209
Other	Other	15251	$795	$12,128,447	$687	$1,512,411	$99
MRI	Diagnostic	15251	$311	$4,745,691	$275	$521,421	$34
ESRD Revenue Setting	Therapeutic	15251	$161	$2,460,024	$146	$201,280	$13
Radiology, CT, Oncology & Nuc. Med.	Diagnostic	15251	$1,990	$30,343,092	$1,965	$132,782	$9
Respiratory Therapy	Therapeutic	15251	$2,019	$30,792,569	$1,958	$59,387	$4
Professional Fee	Therapeutic	15251	$1	$10,722	$0	$6,226	$0
Clinic Visit	Other	15251	$2	$30,203	$2	$5,624	$0
Blood Use	Therapeutic	15251	$0	$0	$0	$0	$0
Durable Medical Equipment	Supplies	15251	$0	$0	$0	$0	$0
Organ Acquisition	Therapeutic	15251	$0	$0	$0	$0	$0
Outpatient Services	Other	15251	$0	$0	$0	$0	$0
Used Durable Medical Equipment	Supplies	15251	$0	$0	$0	$0	$0
Lithotripsy	Therapeutic	15251	$3	$48,800	$4	$-5,214	$-0
Speech Pathology	Therapeutic	15251	$136	$2,081,097	$137	$-8,644	$-1
Blood Administration	Therapeutic	15251	$313	$4,768,150	$306	$-79,150	$-5
Medical/Surgical Supplies	Supplies	15251	$5,212	$79,483,699	$5,188	$-111,217	$-7
Anesthesiology	Therapeutic	15251	$386	$5,879,538	$384	$-133,612	$-9
Occupation Therapy	Therapeutic	15251	$341	$5,200,872	$375	$-523,986	$-34
Physical Therapy	Therapeutic	15251	$398	$6,073,841	$443	$-626,032	$-41
Cardiology	Diagnostic	15251	$1,775	$27,074,437	$1,831	$-895,980	$-59
Emergency Department	Therapeutic	15251	$957	$14,600,757	$1,042	$-1,261,229	$-83
Operating Room and Labor & Delivery	Therapeutic	15251	$5,069	$77,303,596	$5,076	$-1,527,017	$-100
Laboratory and Pathology	Diagnostic	15251	$2,561	$39,064,150	$2,775	$-3,641,421	$-239
Accommodation - Private, Semi Private, Ward - Inpatient	Routine	15251	$4,594	$70,062,324	$4,693	$-4,146,234	$-272
Total	Total	15261	$36,866	$562,615,033	$36,268	$661,235	$43

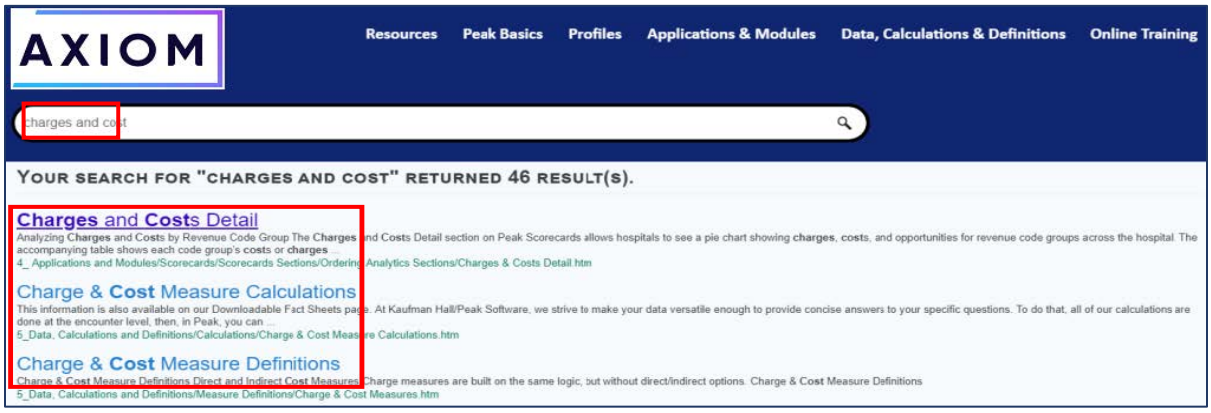
Step 2: In the second step, confirm that the table view is sorted by the Total Opportunity column.

- Confirm that the directional arrow is showing the most charge opportunity at the top, with values highlighted in red (see Figure 5.4 red outline)
  - *In this example, Critical Care/ICU, Pharmacy and Ambulance reflect the top three charge opportunities for the health system, comparing the previous six months to the current six month time period.*
- For the Pharmacy description row, click on the blue hyperlink value in the Average Charges column.
  - *In Figure 5.4 screenshot, clicking on the average charges value $4,648.*
- Once you have selected the average charges value, Clinical Analytics will open the Details section view of the particular charge measure you selected from the Charges and Costs table hyperlink.

Now you are in the Details section view and can utilize all the flexible and ad hoc data analysis features you learned in Chapter 4. You have answered the first part of your question, ***"I want to learn more about the cost opportunity highlighted in red in the Charges and Costs table view, but I don't see a drill option?"*** By clicking on the blue charges or costs value in the Average Charges or Average Costs column, you can easily access the Details section view and related functionality.

Before we move on to a deeper dive of this section, let's make sure we answer the second part of the question, ***"How do I know what revenue codes are included in each category?"*** As mentioned earlier, Documentation in Clinical Analytics is an excellent resource to provide additional definitions, calculations, and more! By entering "charges and cost" in the search bar, the following results displayed (see Figure 5.5):

FIGURE 5.5 DOCUMENTATION VIEW



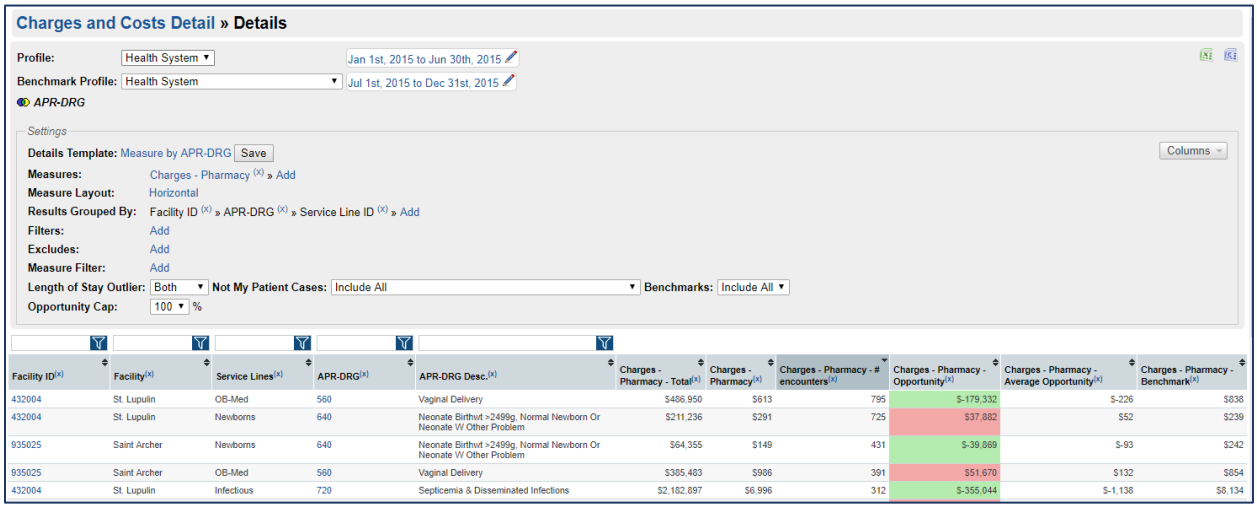
In this example, three useful returns can help provide definitions and calculations (see Figure 5.5). You can click on any of the applicable topics and Clinical Analytics will display additional information and useful tips regarding that particular keyword search. Once you have accessed the reference document, Clinical Analytics offers additional embedded hyperlinks to continue learning more about the specific topic(s) you have selected. Furthermore, you can choose to have two Charges and Costs Detail sections pulled onto a preferred scorecard tab, and default one for Charges type and one for Costs type.

Question 3: *"That's helpful information, but now I want to know which services lines, with the highest encounter volumes, have the most charge opportunity."*

Step 1: We can add settings in the details section view by adding additional results grouped by options

- Add *Service Line*
  - *Remember you can intentionally place a column in a specific order within the table if you select the At Beginning or After radio buttons. The default radio button selection will always be At End.*
- To pre-organize the column order, before selecting OK, place the Service Line columns after the Facility columns.
  - *The organization and selection of column placement is strictly personal preference. The customization of column header order can be rearranged at any time.*
- Click the Rerun button to refresh the table with the new column(s) (See Figure 5.6).
- As the table view in Figure 5.6 displays, the Charges Pharmacy # encounters column is sorted to display the largest number of encounters at the top.

FIGURE 5.6 CHARGES PHARMACY MEASURE DRILL + SERVICE LINE

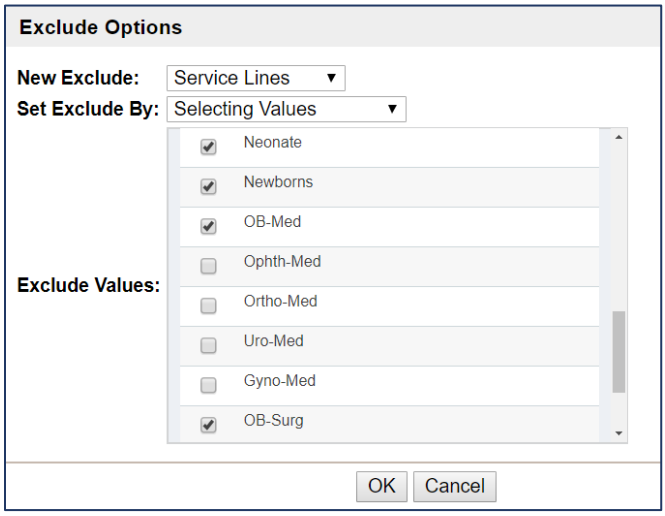


Question 4: *"So now I know which service lines have the most charge opportunity for the pharmacy charges measure, but I don't need the OB service line information in the table. Is there a way to easily remove the OB service line from the table view?"*

Step 2: In Step 1 we added the Service Line grouped by, but we can continue to further stratify the data by excluding the OB service line from the data results.

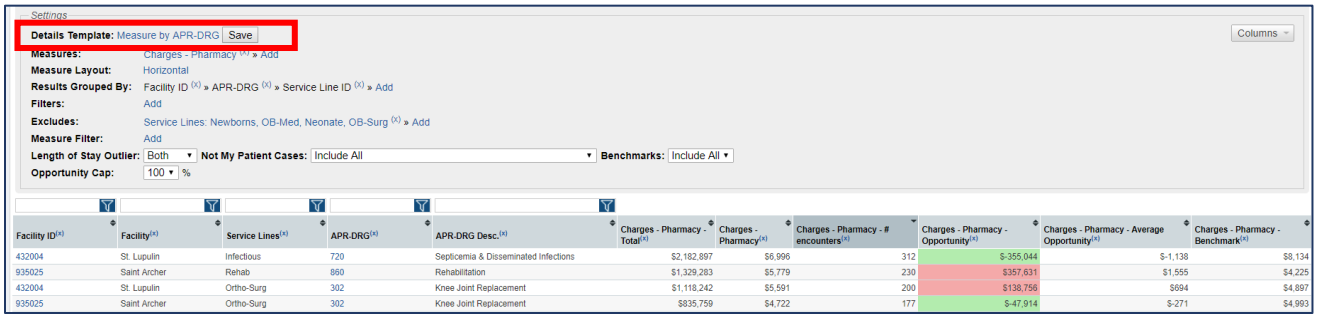
- The ***Excludes*** setting allows you to quickly exclude information returned in any of the added results grouped by.
- Click on the **Add** option next to the ***Excludes*** setting.
    - The Exclude Options window will display to indicate which results grouped by value you would like to select exclusions and then specifically which ones (See Figure 5.7).
    - Once you have selected the New Exclude option and Exclude values, click on OK to save your new exclusion settings.

FIGURE 5.7 EXCLUDE SETTINGS OPTIONS



- Click Rerun button to refresh the table which will now exclude OB service line.
- The updated details table reveals the same information, however now the OB service line is not represented in the table view. One benefit of using the exclude settings option, allows you to deselect the exclusion in one click and then the table is back to the original view.

FIGURE 5.8 DETAILS VIEW BASED ON CASE STUDY SCENARIO



As mentioned in Chapter 4, if this view answers your scenario question and will be needed on an ongoing basis, this would be a great opportunity to save the details template view. Click on the Save button at the top of the settings field (highlighted red in Figure 5.8). Once you click on the Save button, Clinical Analytics will prompt you to name the template. The default view is a private view so that other Clinical Analytics scorecard users can't alter or view your template. However, if you would like the template to be available across all users, then change the User setting from Private to Public, before clicking on OK to save your changes.

The default template will display in the settings window until you choose to select a different template. You can continue to make necessary edits to existing details templates by clicking on Save to update the current saved template. If you would like to select a different template, click on the current template name blue hyperlink, titled Measure by APR-DRG in Figure 5.8. The Details Template Types window will display and offer

the choices of Custom Private, Custom Public, or Clinical Analytics Standard. Make the desired selection and click the Done button to pull in the updated template.

In conclusion, the Charges and Costs detail section provides a clean table and pie chart view. You can leverage the power of the details section drill when you select any charges or costs value link from the table view. If you wish to have a Charges default type and a Costs default type view, then add the Charges and Costs detail section twice to a preferred tab within a scorecard. Two final key elements to keep in mind; you still have the ability to export to Excel and drill to patient-level information once you are in the Details section view and you will have to be unlocked in order to access the patient level information. In the next chapter, Patient List analysis, you will learn how to quickly run a pre-built monthly report that focuses on HACs, PSIs, Mortalities, Core Measures, or Readmissions.

Chapter 6: Patient List Case Study

Patient List

Purpose: *Allows for profile filter and category search specific to HACs, PSIs, Mortality, Core Measures, and Readmissions.*

Key concepts:

- You can choose between APR-DRG and MS-DRG
- The readmission level allows you to see if readmissions were related and avoids having to build a Details template to display this information
- Readmissions doesn't limit you to Clinical Analytics integers, so you can see any readmission
- You must be unlocked in Clinical Analytics to access the Readmissions report view

Patient List Case Study Scenario:

Question 1: *"I want a quick report that I don't have to build from scratch that shows me a list of all Vascular Catheter-Associated Infections over the last six months."*

Question 2: *"Also, what if I only want to look at all HACs for a specific patient population, facility, or different time period?"*

Let's take a hospital-based scenario and apply it to this versatile section in Clinical Analytics. The following scenario can be adapted to answer your specific HAC, PSI, Core Measures, Mortality, or Readmissions related analytic question(s). The Patient List section offers a profile-based and one stop shopping report. The pre-built view for HACs, PSIs, Core Measures, Mortality, and Readmissions automatically drills down to the Clinical Analytics Encounter ID and patient-level encounter. In this case study we will focus on a HAC-specific question, however, keep in mind that the same logic can be used across the other four report types mentioned above.

Patient List Section Case Study Scenario:

Question 1: *"I want a quick report that I don't have to build from scratch that shows me a list of all Vascular Catheter-Associated Infections over the last 6 months."*

FIGURE 6.1 PATIENT LIST SECTION

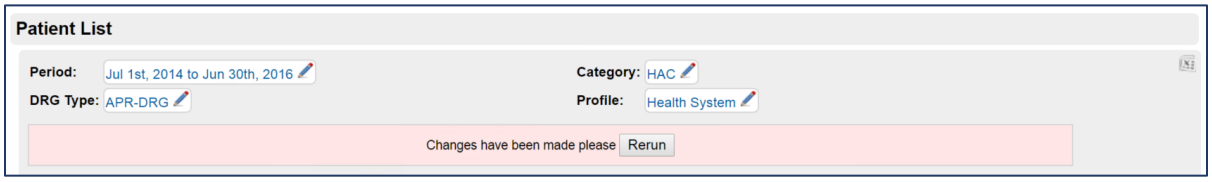


Figure 6.1 provides a clean view of the Patient List section, offering several predefined settings. The time period can be adjusted to accommodate the necessary timeframe. You can select between APR-DRG or

MS-DRG depending on the most used DRG for the analysis you are running. The Category settings allow you to select from the five different report categories available in this section. Every category table view will automatically display at the patient-level, hence the name of this section, Patient List. The fourth and final setting option within this section is the Profile option, making this a powerful section allowing for profile-level filtering. Let's go through the necessary steps to answer the analysis question in this Patient List case study.

Step 1: Starting with the first setting option, update the period to reflect the last six months.

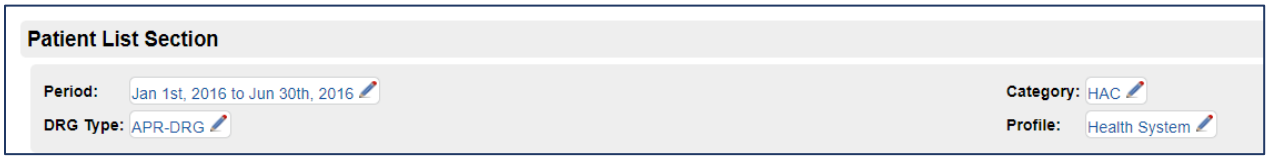
Step 2: Select the desired DRG Type, noting that APR-DRG is the default, but you can select the pencil icon and switch it to MS-DRG.

Step 3: Based on the case study question, the focus of this analysis will be the HAC category.

- *You can run this report on PSIs, Core Measures (if data is loaded), Mortality and Readmissions too.*

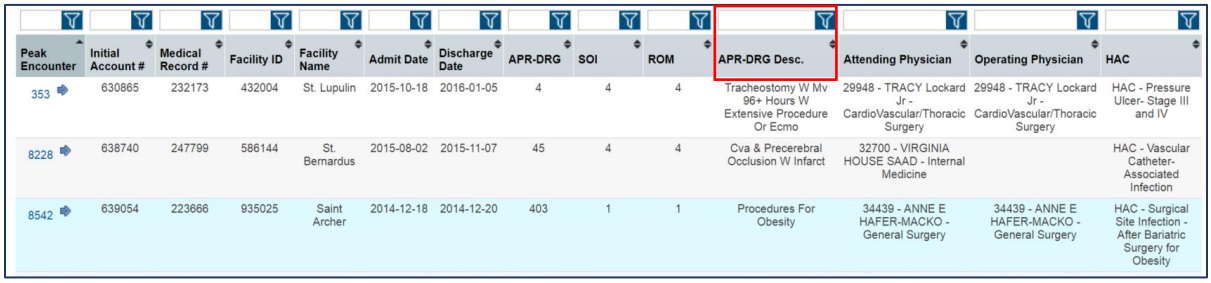
Step 4: For this case study, the profile will remain Health System. You can always select any other profile that has been created, within this scorecard, based on the patient population you need to focus on.

FIGURE 6.2 PATIENT LIST SECTION WITH UPDATED CASE STUDY SETTINGS



Once you have confirmed that the settings are set to the four steps listed above, select the Rerun button to view the results. The table will default sort by the Clinical Analytics Encounter ID column, however, you have the option to sort by <u>any</u> column header in this section (see Figure 6.3).

FIGURE 6.3 PATIENT LIST ALL HACS VIEW

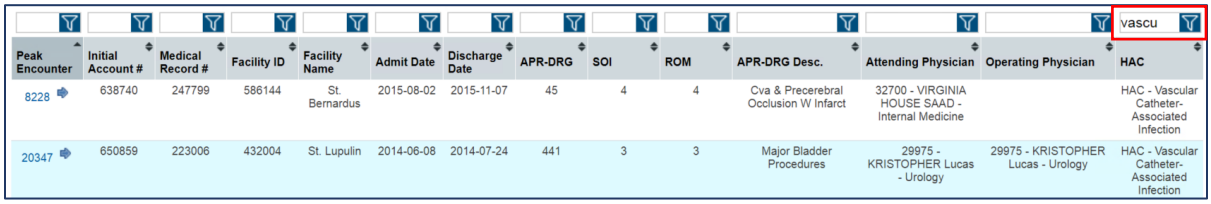


Peak Encounter	Initial Account #	Medical Record #	Facility ID	Facility Name	Admit Date	Discharge Date	APR-DRG	SOI	ROM	APR-DRG Desc.	Attending Physician	Operating Physician	HAC
353	630865	232173	432004	St. Lupulin	2015-10-18	2016-01-05	4	4	4	Tracheostomy W Mv 96+ Hours W Extensive Procedure Or Ecmo	29948 - TRACY Lockard Jr - CardioVascular/Thoracic Surgery	29948 - TRACY Lockard Jr - CardioVascular/Thoracic Surgery	HAC - Pressure Ulcer- Stage III and IV
8228	638740	247799	586144	St. Bernardus	2015-08-02	2015-11-07	45	4	4	Cva & Precerebral Occlusion W Infarct	32700 - VIRGINIA HOUSE SAAD - Internal Medicine		HAC - Vascular Catheter-Associated Infection
8542	639054	223666	935025	Saint Archer	2014-12-18	2014-12-20	403	1	1	Procedures For Obesity	34439 - ANNE E HAFER-MACKO - General Surgery	34439 - ANNE E HAFER-MACKO - General Surgery	HAC - Surgical Site Infection - After Bariatric Surgery for Obesity

The focus of this case study is a HAC analysis, with specific attention to the HAC – Vascular Catheter-Associated Infection. Therefore, we will filter on the HAC column to display only the vascular catheter-associated HACs (See Figure 6.4). The filter field only requires the partial word to narrow the search, so there is no need to type the entire name in the filter field. You will need to click the Rerun button after entering the filter text to see the updated table results. Now you can continue to drill to encounter level details (if your

Clinical Analytics session is unlocked) with the Clinical Analytics Encounter ID hyperlink or export to Excel for added filtering functionality.

FIGURE 6.4 PATIENT LIST HAC FILTERED VIEW

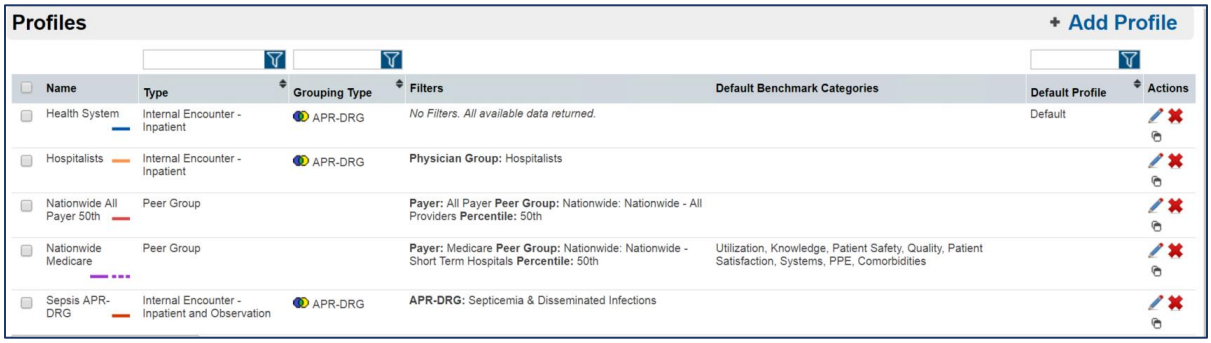


Peak Encounter	Initial Account #	Medical Record #	Facility ID	Facility Name	Admit Date	Discharge Date	APR-DRG	SOI	ROM	APR-DRG Desc.	Attending Physician	Operating Physician	HAC (vascu)
8228	638740	247799	586144	St. Bernardus	2015-08-02	2015-11-07	45	4	4	Cva & Precerebral Occlusion W Infarct	32700 - VIRGINIA HOUSE SAAD - Internal Medicine		HAC - Vascular Catheter-Associated Infection
20347	650859	223006	432004	St. Lupulin	2014-06-08	2014-07-24	441	3	3	Major Bladder Procedures	29975 - KRISTOPHER Lucas - Urology	29975 - KRISTOPHER Lucas - Urology	HAC - Vascular Catheter-Associated Infection

Question 2: *"That's helpful information, but what if I only want to look at all HACs for a specific patient population, facility, or different time period?"*

In the first part of this case study, you focused on a six-month time period, using APR-DRG, specified the HAC category, and used the broad Health System profile. There are a few ways to narrow the target patient population in the Patient List section analysis. The first way, is to use the red highlighted APR-DRG column header filter (see Figure 6.3), and filter on the DRG of interest. The benefit of using the column filters is that you maintain the integrity of the initial analysis and can spot-check different DRGs, but then delete the filter and return to the original results view. In this use case example, we are going to walk through the second way to narrow the target population and show you how to leverage the power of profiles in Clinical Analytics.

FIGURE 6.5 PROFILE MANAGER



Profiles — + Add Profile

Name	Type	Grouping Type	Filters	Default Benchmark Categories	Default Profile	Actions
Health System	Internal Encounter - Inpatient	APR-DRG	*No Filters. All available data returned.*		Default	
Hospitalists	Internal Encounter - Inpatient	APR-DRG	**Physician Group:** Hospitalists			
Nationwide All Payer 50th	Peer Group		**Payer:** All Payer **Peer Group:** Nationwide: Nationwide - All Providers **Percentile:** 50th			
Nationwide Medicare	Peer Group		**Payer:** Medicare **Peer Group:** Nationwide: Nationwide - Short Term Hospitals **Percentile:** 50th	Utilization, Knowledge, Patient Safety, Quality, Patient Satisfaction, Systems, PPE, Comorbidities		
Sepsis APR-DRG	Internal Encounter - Inpatient and Observation	APR-DRG	**APR-DRG:** Septicemia & Disseminated Infections			

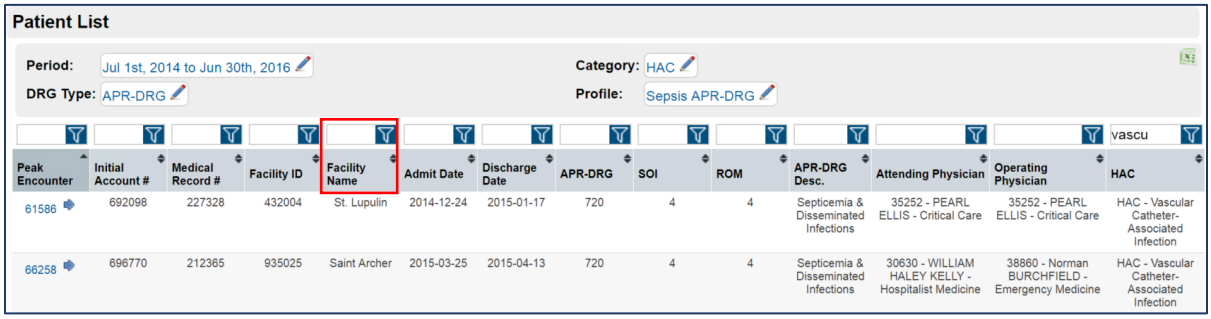
Step 1: Figure 6.5 displays the profile manger view with three internal population profiles and an additional two peer group profiles. Your view may list several more profiles, but for the purpose of this use case scenario, make sure you have created an APR-DRG specific profile.

- *In this example, we created a Sepsis profile with APR-DRG 720. Additional profile filters can be added, such as gender, facility, nursing unit, etc.*

Step 2: Return to the Patient List section, and switch the profile from Health System to the new Sepsis profile, and click Rerun.

- *Keep in mind, the time period may reset back to the original two year time period (see Figure 6.6). If you want to keep your focus on the last six months, update the time period and rerun the results.*

FIGURE 6.6 PATIENT LIST WITH SEPSIS PROFILE



Peak Encounter	Initial Account #	Medical Record #	Facility ID	Facility Name	Admit Date	Discharge Date	APR-DRG	SOI	ROM	APR-DRG Desc.	Attending Physician	Operating Physician	HAC
61586	692098	227328	432004	St. Lupulin	2014-12-24	2015-01-17	720	4	4	Septicemia & Disseminated Infections	35252 - PEARL ELLIS - Critical Care	35252 - PEARL ELLIS - Critical Care	HAC - Vascular Catheter-Associated Infection
66258	696770	212365	935025	Saint Archer	2015-03-25	2015-04-13	720	4	4	Septicemia & Disseminated Infections	30630 - WILLIAM HALEY KELLY - Hospitalist Medicine	38860 - Norman BURCHFIELD - Emergency Medicine	HAC - Vascular Catheter-Associated Infection

Step 3: The table results, as displayed in Figure 6.6, are only showing the HACs for all patients with the Sepsis APR-DRG, across a two-year time period.

- *The HACs happen to be the same in this example, however, this profile approach will show any HAC for patients with the Sepsis APR-DRG 720.*

The last two elements of our question asked to further narrow the search by facility or a time period different than six months. Use the settings field to update the time period and click Rerun when you have entered the updated time period. You can restrict the facility by using the facility column header filter option (see the red highlight box in Figure 6.6). Any changes you make will require the selection to be Rerun in order to see the updated results in the table view.

In conclusion, the Patient List section provides a ready-to-go report that is specific to HACs, PSIs, Mortalities, Core Measures, or Readmissions. If you are in need of monthly reports for these specific report types, save yourself a few extra clicks and instead use the Patient List section! Similar to other sections we've mentioned so far, you can add the Patient List section multiple times to any scorecard. You have the ability to export these reports to Excel and the Patient List section automatically provides a patient level drillable view. Also, this is a profile based section, so we encourage you to leverage the power of profiles, as shown in this use case, to narrow your focus and provide the exact view you need. Remember, you must unlock your Clinical Analytics session in order to see PHI level details! In the next chapter, the Clinical Case Summary Lookup section will focus our attention to the individual Clinical Analytics encounter-level details.

Chapter 7: Clinical Case Summary Look-Up Case Study

Clinical Case Summary Lookup

Purpose: *Primarily for the purposes of reviewing all patient level data including demographics, diagnosis, detail services, quality, utilization, patient satisfaction, and physician attribution.*

Key Concepts:

- Clinical Case Summaries display all patient level data which Clinical Analytics has for any given Encounter ID.
- Accessing Clinical Case Summaries requires that you unlock your Clinical Analytics session.
- Using Clinical Case Summary allows you to directly access patient level Clinical Summary data with the Encounter ID number or Account Number.

Clinical Case Summary Section Case Study Scenario:

Question 1: *"So, if I can only see one encounter file at a time, what's the benefit of using the clinical case summary section?"*

Question 2: *"Why can't I just click on the Clinical Analytics Encounter ID that I see in other sections?"*

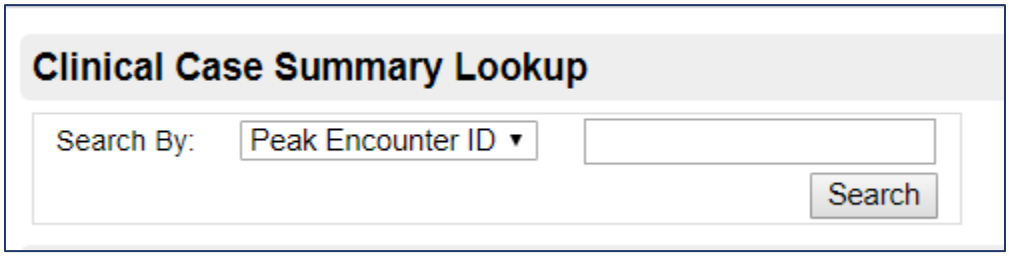
The Clinical Case Summary Lookup (CCS) section is not an advanced section per se. However, it's included in this manual to remind you of the depth of detail available in Clinical Analytics. Each clinical case summary lookup view can be exported to Excel or a PDF report. Keep in mind that the PDF report will provide a lengthy static report view of all the details included in the clinical case summary lookup results. Whereas, the Excel export offers a user friendly tabular view aligning with the view you see in Clinical Analytics in the CCS section. To answer the questions above, you can click on any Clinical Analytics Encounter ID within other sections and access the CCS section. However, in Chapter 17, we will cover the use of the CCS section in conjunction with the Statistical Process Control (SPC) section, which can be beneficial and more efficient.

Clinical Case Summary Section Case Study Scenario:

Question 1: *"So, if I can only see one encounter file at a time, what's the benefit of using the clinical case summary section?"*

The CSS a great way to access encounter specific details in one place without affecting the table views and results in other sections. The CCS Lookup section is for the sole purpose of looking at individual encounters. The added benefit is the ability to search by Clinical Analytics Encounter ID or Account Number.

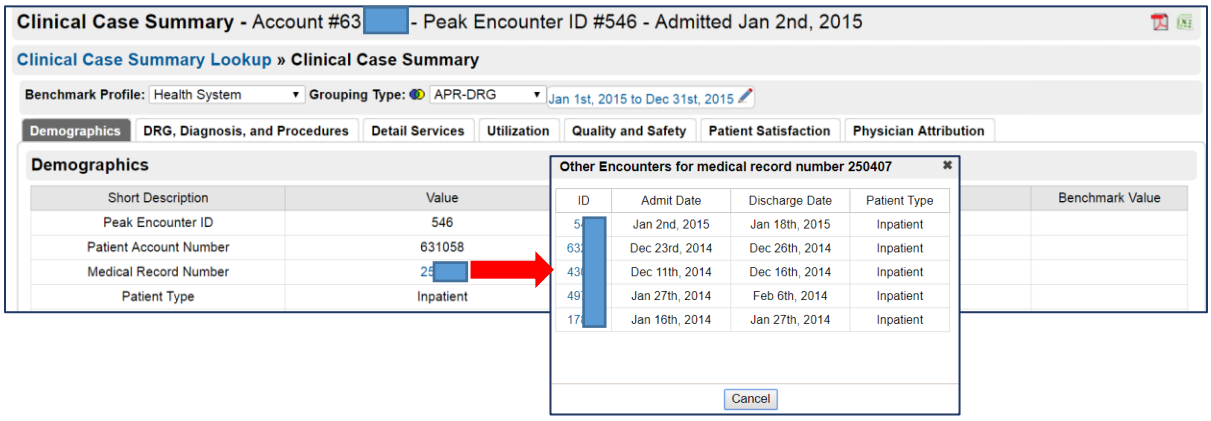
FIGURE 7.1 CLINICAL CASE SUMMARY LOOKUP CLEAN VIEW



For this scenario, we have selected a Sepsis Mortality encounter, Clinical Analytics encounter ID #546. Any Clinical Analytics encounter ID or Account number can be entered in the search by field. The clinical case summary will open in a tabular view, starting with the Demographics tab and ending with the Physician Attribution tab. The tabs in the CCS section are static and will always be in the same regardless of the CCS encounter you have chosen to view.

For the purpose of this chapter, we will not go into detail for every single CCS section tab. Instead, we will highlight some helpful uses for this section, and then proceed to Chapter 8 with additional case studies. As shown in Figure 7.2, the first benefit of this section are the encounter links available in the Medical Record number blue hyperlink. The "Other Encounter for" window will display when you click on the blue medical record number hyperlink on the Demographics tab. Keep in mind, the current encounter will be included in the list. This link is used to review the snapshot of how often the patient has been in the hospital. The Admit and Discharge date columns allow you to quickly assess time frames between encounters. Outpatient data, such as the ambulatory surgery center and emergency room, will display in the Patient Type column if your organization is utilizing outpatient data in Clinical Analytics. You can access any additional CCS for available blue hyperlinked encounter ID's in the list.

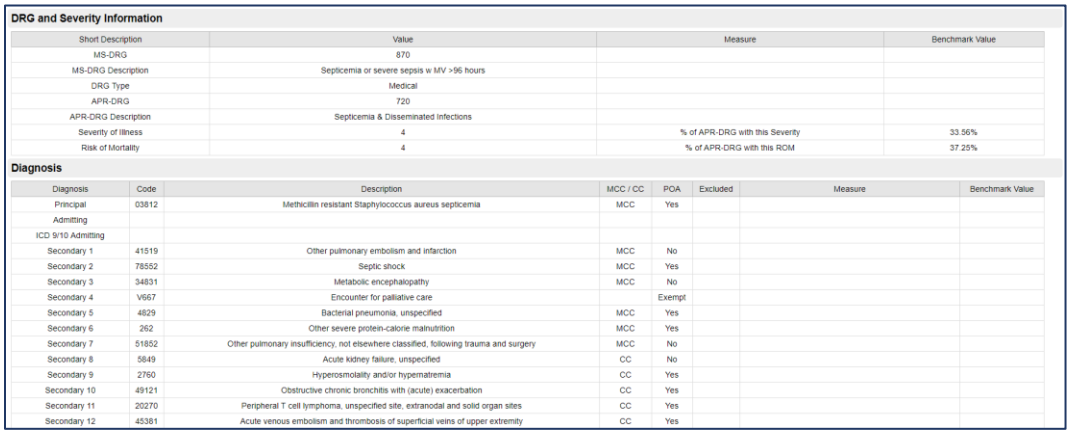
FIGURE 7.2 MEDICAL RECORD NUMBER ENCOUNTERS LINK



Additional encounter details such as the names of the physicians and coders can also be found on the demographics tab.

The DRG, Diagnosis, and Procedures tab contains helpful details and can uncover potential coding opportunities. Principal and secondary diagnosis and procedure codes are listed and can offer additional insight into why certain procedures may have been performed on the patient. This tab can be utilized to evaluate if certain diagnosis codes are flagged as Present on Admission (POA). Also, to identify coding opportunities where a procedure code, such as blood administration, should be listed on a patient that received blood, yet was not coded in the procedure list.

FIGURE 7.3 DRG, DIAGNOSIS, AND PROCEDURES TAB VIEW



DRG and Severity Information

Short Description	Value	Measure	Benchmark Value
MS-DRG	870		
MS-DRG Description	Septicemia or severe sepsis w MV >96 hours		
DRG Type	Medical		
APR-DRG	720		
APR-DRG Description	Septicemia & Disseminated Infections		
Severity of Illness	4	% of APR-DRG with this Severity	33.56%
Risk of Mortality	4	% of APR-DRG with this ROM	37.25%

Diagnosis

Diagnosis	Code	Description	MCC / CC	POA	Excluded	Measure	Benchmark Value
Principal	03812	Methicillin resistant Staphylococcus aureus septicemia	MCC	Yes			
Admitting							
ICD 9/10 Admitting							
Secondary 1	41519	Other pulmonary embolism and infarction	MCC	No			
Secondary 2	78552	Septic shock	MCC	Yes			
Secondary 3	34831	Metabolic encephalopathy	MCC	No			
Secondary 4	V667	Encounter for palliative care		Exempt			
Secondary 5	4829	Bacterial pneumonia, unspecified	MCC	Yes			
Secondary 6	262	Other severe protein-calorie malnutrition	MCC	Yes			
Secondary 7	51852	Other pulmonary insufficiency, not elsewhere classified, following trauma and surgery	MCC	No			
Secondary 8	5849	Acute kidney failure, unspecified	CC	No			
Secondary 9	2760	Hyperosmolality and/or hypernatremia	CC	Yes			
Secondary 10	49121	Obstructive chronic bronchitis with (acute) exacerbation	CC	Yes			
Secondary 11	20270	Peripheral T cell lymphoma, unspecified site, extranodal and solid organ sites	CC	Yes			
Secondary 12	45381	Acute venous embolism and thrombosis of superficial veins of upper extremity	CC	Yes			

The Detail Services tab contains every charge for a particular encounter. This is a great place to review revenue code, charge code, and even CPT code information. You can choose to display the services by category or individually. In addition, you can view procedures or interventions that were performed on the last or next to last day of service. In Chapter 9 we will discuss, in detail, the section called Last Day of Service (LDOS) section. The LDOS section helps identify over utilization of unnecessary procedures that could likely be done on an outpatient basis, but were performed on the last two days of an inpatient encounter.

The Utilization tab offers similar measure information to what you would find on the Utilization tab in the Hospital Scorecard. However, in the CCS section, we are looking at an individual patient encounter versus all hospital encounters. Additional graphics are available with color coded symbols and whisker-plot distribution graphs.

FIGURE 7.4 UTILIZATION TAB VIEW

LOS Analysis

Short Description	Value	Benchmark Value	Difference	Graphic	Graph
Days - Critical Care / Intermediate ICU (All Patients)	15 day(s)	5.80	9.20		Days - Critical Care / Intermediate ICU (All Patients)
Days - Critical Care Without Intermediate ICU/CCU (All Patients)	14 day(s)	3.01	10.99		Days - Critical Care Without Intermediate ICU/CCU (All Patients)
Days - Intermediate ICU/ CCU	1 day(s)	5.30	-4.30		Days - Intermediate ICU/ CCU
Days - Private, Semi-Private and Ward	1 day(s)	2.94	-1.94		Days - Private, Semi-Private and Ward

The Quality and Safety tab provides a patient level report card of measures the patient could have obtained based on severity and risk adjustment, and color coded **Yes** or **No** values for each. These measure values are available across all encounters at your organization, however, the CCS view provides a patient level report card.

FIGURE 7.5 QUALITY AND SAFETY TAB VIEW

Quality

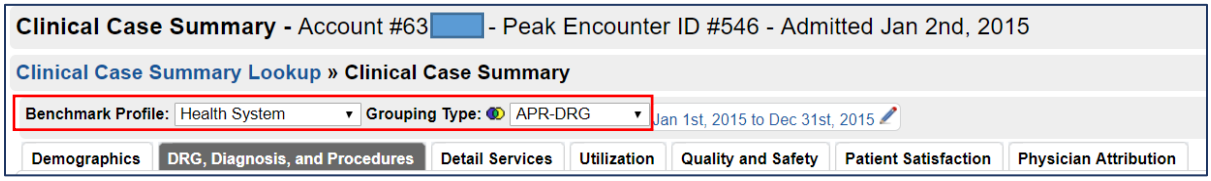
Name	Description	Value	Benchmark Value
Mortality Rate	Number of deaths In-house divided by number of patients	Yes	19.38%
Same Day Readmission Rate Backward	Patients Readmitted on the same day of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	No	0%
7 Day Readmission Rate Backward	Patients Readmitted within 7 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	Yes	5.26%
10 Day Readmission Rate Backward	Patients Readmitted within 10 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	Yes	6.64%
14 Day Readmission Rate Backward	Patients Readmitted within 14 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	Yes	9.38%
30 Day Readmission Rate Backward	Patients Readmitted within 30 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	Yes	14.87%
Same Day Readmission Rate Forward	Patients who were readmitted the same day as the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	No	3.66%
7 Day Readmission Rate Forward	Patients who were readmitted within 7 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	No	8.01%
10 Day Readmission Rate Forward	Patients who were readmitted within 10 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	No	8.47%
14 Day Readmission Rate Forward	Patients who were readmitted within 14 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	No	10.3%
30 Day Readmission Rate Forward	Patients who were readmitted within 30 days of the their original discharge date, excluding discharges/transfers to a short-term hospital for inpatient care divided by volume of all cases.	No	13.96%
VTE Core Measure Bundle	Venous Thromboembolism (VTE) patients which received all appropriate quality of care measures, including: VTE-1 VTE-2 VTE-3 VTE-4 VTE-5 VTE-6	Yes	97.03%

Patient Safety

Name	Description	Value
Post Operative Infection - Rate	Number of Cases with Infection and Inflammatory Reaction due to Internal Prosthetic device, Implant, and graft OR Post Operative Infection OR Other Infection (after infusion, injection, transfusion, or injection) divided by the number of Surgical Cases as per AHRQ	No
PSI-3 - Pressure Ulcer O/E	Pressure Ulcer Observed over Expected Rate (PSI 3). Decubitus ulcer discharges with a length of stay greater than 4 days.	No
PSI-6 - Iatrogenic Pneumothorax O/E	Iatrogenic Pneumothorax Observed over Expected Rate (PSI 6). Cases of iatrogenic pneumothorax.	No
PSI-15 - Accidental Puncture/Laceration O/E	Accidental Puncture or Laceration Observed over Expected Rate (PSI 15). Cases of technical difficulty (e.g., accidental cut or laceration during procedure).	No
HAC - Air Embolism	Count of Hospital-Acquired Condition - Medical Events: Air Embolism and not present on admission.	No
HAC - Blood Incompatibility	Count of Hospital-Acquired Condition - Medical Events: Blood Incompatibility and not present on admission.	No
HAC - Catheter-associated UTI	Count of Hospital-Acquired Condition - Medical Events: Catheter-associated UTI and not present on admission and excludes the following from acting as a CC/MCC: Candidiasis, Infections of kidney, Cystitis, Urethritis not sexually transmitted and urethral syndrome, and other disorders or urethra and urinary tract.	No

In conclusion, the Clinical Case Summary section provides individual patient encounter level details. Keep in mind, you also have the ability to utilize benchmark profiles and grouping types within the CCS section (see Figure 7.6). An added benefit of using the CCS section is the ability to search by Clinical Analytics Encounter ID **or** Account Number.

FIGURE 7.6 BENCHMARK PROFILE AND GROUPING TYPE OPTIONS



Several of the CCS tabs were highlighted in this chapter with examples on how the tabs are useful to help uncover over utilization of procedures on the last day of service or coding opportunities, to name a few. Remember, you must unlock your Clinical Analytics session in order to see PHI level details! We will conclude this chapter with answering the second and final question regarding Clinical Analytics Encounter IDs in other analytic sections.

Question 2: *"Why can't I just click on the Clinical Analytics Encounter ID that I see in other sections?"*

You can access the CCS view by clicking on any Clinical Analytics Encounter ID found within several sections in Clinical Analytics or by using the CCS section by itself and entering the Clinical Analytics Encounter ID number. In chapter 17 which covers Statistical Process Control (SPC), we will discuss the importance of having the CCS section added so you can easily access encounter level data. In the next chapter, the Easy Patient Download section will keep the focus on encounters grouped by the Clinical Analytics Encounter ID with additional Present on Admission bonus details in the table results.

Chapter 8: Easy Patient Download Case Study

Easy Patient Download

Purpose: *Primarily for the purposes of exporting patient level data grouped by Clinical Analytics Patient Encounter into an Excel file for further use and analysis.*

Key Concepts:

- Easy Patient Download allows for a Profile-based, patient download grouped by Clinical Analytics Encounter ID which can then be exported to Excel. The export to Excel automatically includes the patient diagnosis, associated procedures and physicians associated with the encounter, in addition to the standard Details View export.
- A flexible part of this section is the ability to filter on and see Present on Admission (POA) for every diagnosis code.
- Definition of the patient group allows for selection based on profile and benchmark, additional measures, DRG type, grouping of results, filters and exclusions, and time period.
- Easy Patient Download will require that you unlock your Clinical Analytics session if you choose to export.

Easy Patient Download Section Case Study Scenario:

Question 1: *"What's unique about this section?"*

Question 2: *"I see that it's a profile based section, but can you tell more about the benefit of using this section over others?"*

Once you become more comfortable with the Easy Patient Download section, you will likely begin to use it more often. This profile based section can be exported to Excel, CSV or a Detail Charges view. It provides a pre-built POA view that you won't find readily available in any other section in Clinical Analytics. As with any other section in Clinical Analytics that allows for PHI level information, you will want to make sure you have unlocked your Clinical Analytics session to ensure you are seeing PHI level details in the analysis. Let's discuss the unique features this section offers towards your data analysis needs.

Easy Patient Download Section Case Study Scenario:

Question 1: *"What's unique about this section?*

The Easy Patient Download section automatically drills down to the patient encounter level, as shown in Figure 8.1 in the results grouped by settings. You gain the benefit of using profile flexibility and adding measures of choice. Don't forget about the columns button in the upper right hand corner of the settings field. The columns menu offers a la carte selection of which information you would like to display or be removed from the table view as relevant to the available encounter level elements.

FIGURE 8.1 EASY PATIENT DOWNLOAD SECTION

In answering the first question, you should try taking the Excel export option for a test drive. In this particular analytic section you can readily see if a particular diagnosis was POA and on what day of stay certain charges were completed. The Excel export offers plenty of organized tabs which include the Details, Profiles, Diagnosis, Procedure, and Physicians tab(s).

Question 2: *"I see that's it's a profile based section, but can you tell more about the benefit of using this section over others?"*

Not only is this section profile based, it also offers a benchmark profile comparison. When you select the Excel export option, pay attention to the diagnosis tab, as shown in Figure 8.2 below. You may recognize the diagnosis tab from the Clinical Case Summary section we reviewed in Chapter 7. In this section, the Excel export workbook provides multiple tabs of detailed information. In particular, the Diagnosis tab displays multiple columns including the POA column which can be beneficial, especially for identifying coding and documentation opportunities. We highlighted the POA column within the CCS chapter, however, the Easy Patient Download section offers this information across all the encounters selected, instead of just one at a time. An added detail benefit can be found within the procedure tab which includes the name of the principal procedure and the day the procedure happened for each encounter.

FIGURE 8.2 DIAGNOSIS TAB DETAILS IN EXCEL EXPORT

Peak Encounter ID	Principal	Code	ICD Ver	POA	Description
373	Y	F10239	10	Y	Alcohol dependence with withdrawal, unspecified
374	Y	A419	10	Y	Sepsis, unspecified organism
378	Y	O328XX0	10	Y	Maternal care for other malpresentation of fetus, not applicable or unspecified
388	Y	I480	10	Y	Paroxysmal atrial fibrillation
390	Y	O700	10	N	First degree perineal laceration during delivery
392	Y	R5381	10	Y	Other malaise

Details | Profile | Diagnoses | Procedures | Physicians

In chapter 4 we reviewed a use case scenario focusing on the Details section. In this chapter, we are focusing on the benefits of using the Easy Patient Download section. The Excel export icon is available in the upper right hand corner of the advanced analytic sections. In Details, the Excel export will be exactly what the table results display when you run the analysis (see Figure 8.3 and 8.4).

FIGURE 8.3 DETAILS SECTION RESULTS GROUPED BY CLINICAL ANALYTICS ENCOUNTER ID

Facility ID(x)	Facility(x)	Peak Encounter ID(x)
432004	Hospital 1	361
432004	Hospital 1	369
432004	Hospital 1	373
432004	Hospital 1	382
432004	Hospital 1	385
432004	Hospital 1	388
432004	Hospital 1	394

FIGURE 8.4 DETAILS SECTION EXCEL EXPORT VIEW

Facility ID	Facility	Peak Encounter ID
432004	Hospital 1	358
432004	Hospital 1	361
432004	Hospital 1	369
432004	Hospital 1	373
432004	Hospital 1	382
432004	Hospital 1	385
432004	Hospital 1	388
432004	Hospital 1	394

However, in the Easy Patient Download section, as seen in Figure 8.2 above, you gain an in-depth, tab-based view in just a few clicks. The POA column is readily available in the Easy Patient Download section Excel export. If you need additional level of detail, you can utilize the Detail Charges and CSV export options as well. Remember to unlock your Clinical Analytics session in order to activate the export options and begin to further analyze the results. As a final thought, consider using the Clinical Case Summary section in conjunction with this section on the same tab, so that you can easily plug-in specific Clinical Analytics Encounter IDs for additional flexibility and transition between both sections.

Chapter 9: Last Day of Service Case Study

Last Day of Service

Purpose: *Analyze services completed on the last and next to last days of the inpatient encounter.*

Key Concepts:

- Designed to help analysts understand the services delivered on the last and next to last days of a patient's stay.
- This can help hospital staff identify services that could potentially be performed on an outpatient basis.

Last Day of Service Section Case Study Scenario:

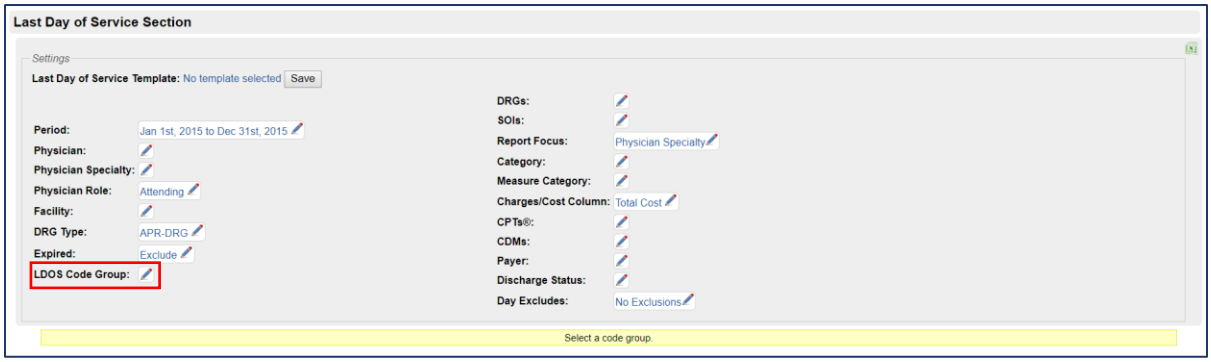
Question 1: *"How can the last day of service section help me identify opportunity in my organization?"*

Question 2: *"Can I narrow my focus to individual physicians associated with specific diagnostic or procedure codes?"*

Question 3: *"O.K., so what if a patient was only in the hospital for two days, are they reflected in these values?"*

The Last Day of Service (LDOS) section is a powerful section in Clinical Analytics. In Figure 9.1 below, you can see the large variety of setting to provide very specific results. The only required selection in the settings field, is the LDOS Code Group. You have the ability to create customized code groups based on your specific analysis needs. In clinical practice, a common code group used to identify opportunity would be renal failure patients having hemodialysis performed on the last day of an inpatient stay versus keeping their scheduled outpatient dialysis appointment. Another common analysis would be identifying endoscopy procedures and differentiating between upper and lower endoscopies. For this chapter, let's start with the first question above and work through the hemodialysis analysis to uncover opportunity.

FIGURE 9.1 LAST DAY OF SERVICE SECTION



Last Day of Service Section Case Study Scenario:

Question 1: *"How can the last day of service section help me identify opportunity in my organization?"*

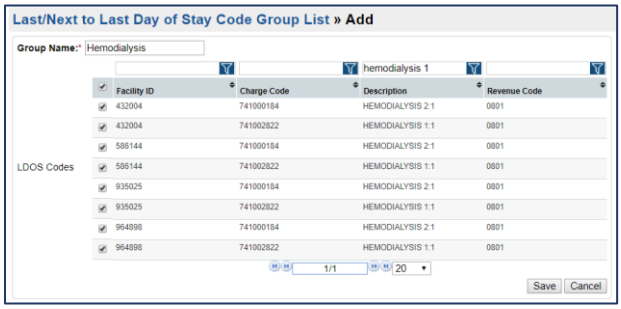
Before we dive into this section, we will briefly review the steps to create the customized code groups at your organization.

Step 1: From the Scorecards home page, select the LDOS tab to create a customized code group (see Figure 9.2). The LDOS Code Groups view will list existing code groups and allows you to create new code groups.

- *In this case study scenario, we will focus on patients that have received hemodialysis.*

FIGURE 9.2 LDOS CODE GROUPS TAB

Step 2: Select the **+Add** hyperlink and then decide if you want the charge or CPT group type.

- *For this case study, select the group type* ***"Charge"****.*
- *Search for hemodialysis charge description and select the appropriate charge items.*
- *The selections are made by placing a checkmark next to each charge code.*
  - 

- *Save your changes!*

Clinical Analytics does not restrict the amount of code groups that you can utilize within the LDOS section. If you want specific code groups in the LDOS code group menu list, you will need to follow the steps above to create additional code groups.

We've answered our first question, ***"How can the last day of service section help me identify opportunity in my organization?"*** Now you can see the value added in utilizing charge and revenue code items to specifically narrow a patient population with designated procedures.

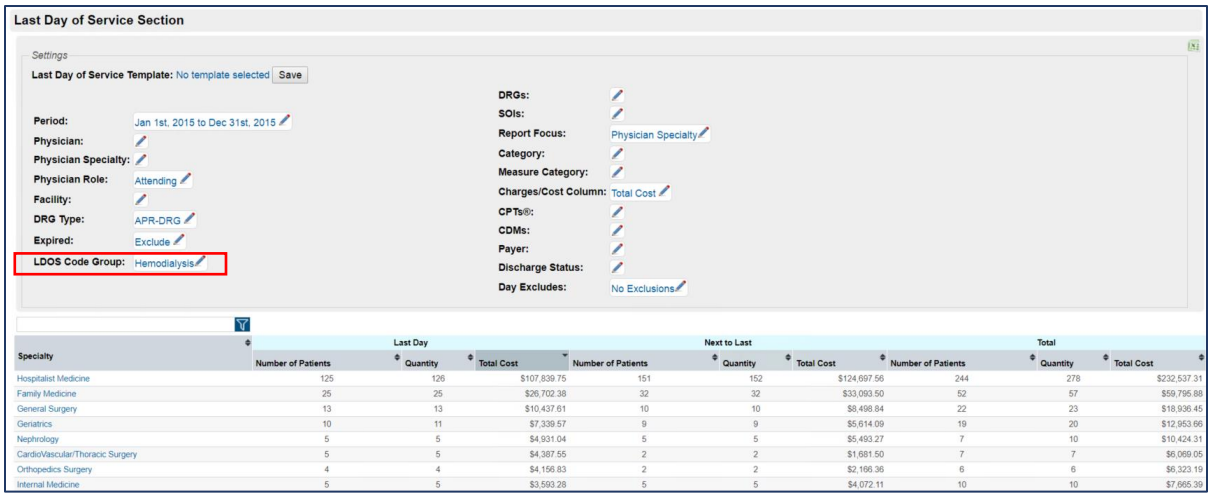
Let's start our case study by using our new Hemodialysis code group first, and then we can begin to answer our second question.

Question 2: *"Can I narrow my focus to individual physicians associated with specific diagnostic or procedure codes?"*

Step 1: Figure 9.3 displays the analysis results using the Hemodialysis code group.

- *No additional filters were added before selecting the hemodialysis code group and then clicking on the Rerun button.*
- *There are numerous settings options available in this powerful section. As we begin to answer the second question, we can pull in additional settings.*

FIGURE 9.3 LDOS HEMODIALYSIS PHYSICIAN SPECIALTY ANALYSIS



Specialty	Last Day			Next to Last			Total		
	Number of Patients	Quantity	Total Cost	Number of Patients	Quantity	Total Cost	Number of Patients	Quantity	Total Cost
Hospitalist Medicine	125	126	$107,839.75	151	152	$124,697.56	244	278	$232,537.31
Family Medicine	25	25	$26,702.38	32	32	$33,093.50	52	57	$59,795.88
General Surgery	13	13	$10,437.61	10	10	$8,498.84	22	23	$18,936.45
Geriatrics	10	11	$7,339.57	9	9	$5,614.09	19	20	$12,953.66
Nephrology	5	5	$4,931.04	5	5	$5,493.27	7	10	$10,424.31
CardioVascular/Thoracic Surgery	5	5	$4,387.55	2	2	$1,681.50	7	7	$6,069.05
Orthopedics Surgery	4	4	$4,156.83	2	2	$2,166.36	6	6	$6,323.19
Internal Medicine	5	5	$3,593.28	5	5	$4,072.11	10	10	$7,665.39

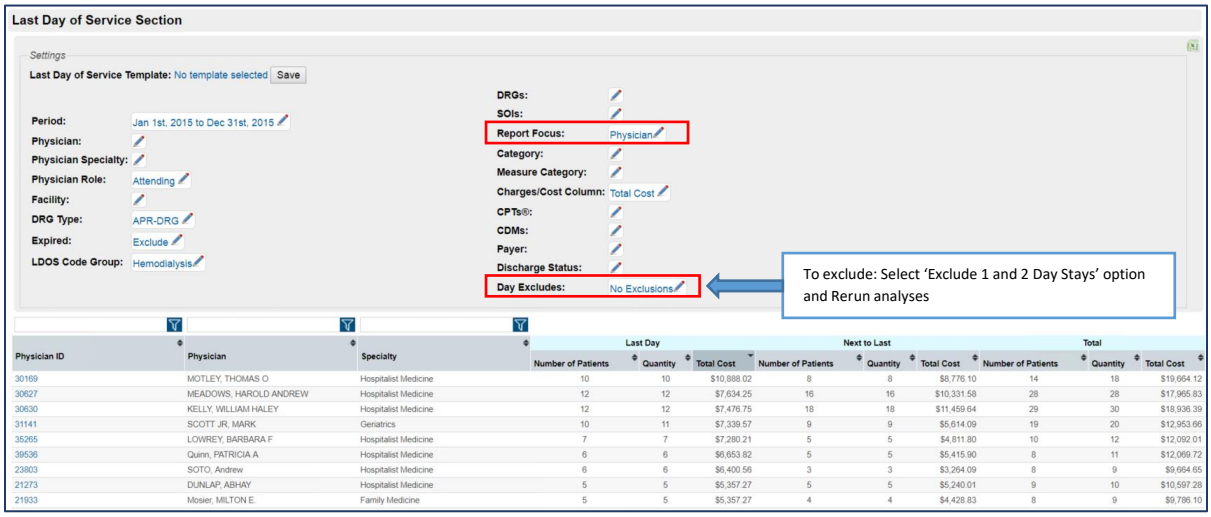
The first table of results displays Specialty level information, with differentiation of the Last Day and Next to Last Day details (see Figure 9.3). We only utilized the hemodialysis code group to get this initial, yet helpful information.

We answered part of the second question because we already defined the code group to include only Hemodialysis charges, therefore, the table results display patients that had Hemodialysis charges on their last day and/or next to last day of an inpatient encounter. Now let's change the report focus to answer the rest of the question.

Step 2: Change the Report Focus type to ***Physician*** and select Rerun (see Figure 9.4).

- *The Report Focus setting option provides a one click switch from a specialty focus table display to each row representing an individual physician.*

FIGURE 9.4 LDOS HEMODIALYSIS INDIVIDUAL PHYSICIAN ANALYSIS



Physician ID	Physician	Specialty	Last Day			Next to Last			Total		
			Number of Patients	Quantity	Total Cost	Number of Patients	Quantity	Total Cost	Number of Patients	Quantity	Total Cost
30169	MOTLEY, THOMAS O	Hospitalist Medicine	10	10	$10,888.02	8	8	$8,776.10	14	18	$19,664.12
30627	MEADOWS, HAROLD ANDREW	Hospitalist Medicine	12	12	$7,634.25	16	16	$10,331.58	28	28	$17,965.83
30630	KELLY, WILLIAM HALEY	Hospitalist Medicine	12	12	$7,476.75	18	18	$11,459.64	29	30	$18,936.39
31141	SCOTT JR, MARK	Geriatrics	10	11	$7,339.57	9	9	$5,614.09	19	20	$12,953.66
35265	LOWREY, BARBARA F	Hospitalist Medicine	7	7	$7,280.21	5	5	$4,811.80	10	12	$12,092.01
39536	Quinn, PATRICIA A	Hospitalist Medicine	6	6	$6,653.82	5	5	$5,415.90	8	11	$12,069.72
23803	SOTO, Andrew	Hospitalist Medicine	6	6	$6,400.56	3	3	$3,264.09	8	9	$9,664.65
21273	DUNLAP, ABHAY	Hospitalist Medicine	5	5	$5,357.27	5	5	$5,240.01	9	10	$10,597.28
21933	Mosier, MILTON E.	Family Medicine	5	5	$5,357.27	4	4	$4,428.83	8	9	$9,786.10

Question 3: *"O.K., so what if a patient was only in the hospital for two days, are they reflected in these values?"*

The settings filters offer many flexible options to ensure the results are reliable based on the criteria you have chosen to select. The ***Day Excludes*** filter option, outlined in red in Figure 9.4, provides the one to two day length of stay exclusion, to ensure the results only display inpatient encounters greater than two days.

In conclusion, it is important to keep in mind that the LDOS section operates on *And* logic. Our recommendation is to start with a code group and then build upon the analysis through the use of filters one at a time. This helps to make sure you are not inadvertently excluding results in the analysis. You have many filter options within this powerful section. We encourage you to focus on a handful of code groups that are commonly over-utilized, such as blood work, radiology exams, and procedures on the last or next to last day of an inpatient encounter. Remember to create the code groups first, and then the code groups will display in the LDOS code group menu in the LDOS analysis section.

Before we move to the next chapter, we have included a few steps below to refresh your memory on how you can easily create a LDOS code group.

Step 1: From the Scorecard Home page, click on the LDOS tab.

Step 2: Click +Add Code Group and choose CPT or CDM.

Step 3: Search for the codes and check mark to build your list.

Step 4: Save your selections. The new code group has been added to the LDOS menu list of options.

Chapter 10: Treatment Analysis Case Study

Treatment Analysis

Purpose: *Allows hospitals to see data for all treatments across the hospital.*

Key concepts:

- The Treatment Analysis section in Clinical Analytics Scorecards allows hospitals to see data for all treatments across the hospital. The data can be sorted by treatment, charge/cost, number of cases, and other attributes.
- Treatment Analysis can identify services and interventions that may be overused.
    - For example, a large number of CT scans may require investigation to better understand utilization. CT scans may be overused in certain DRG groups. Understanding this helps lower costs for the facility by reducing medically unnecessary CT scans.

Treatment Analysis Section Case Study Scenario:

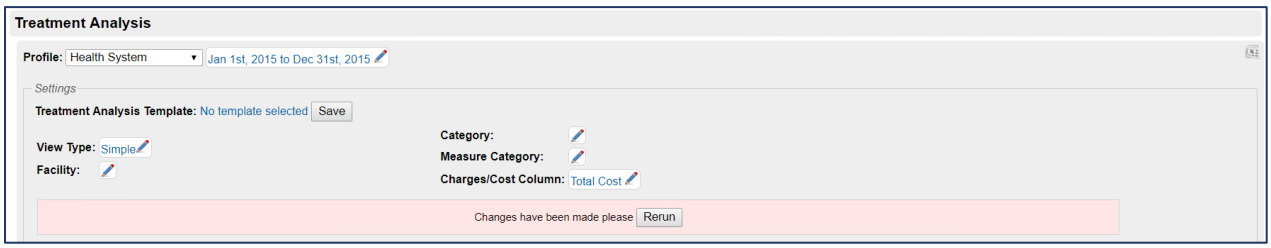
Question 1: *"How can I identify which radiology tests are potentially over utilized at my organization, specifically MRIs?"*

Question 2: *"Am I able to evaluate which day of stay the MRI took place on and the physician associated with these orders?"*

The treatment analysis section provides a snapshot of internal utilization of all procedures and interventions. This is a profile based section, but does not allow for benchmark comparison. You do have the option of utilizing the details view report, which offers an internal comparison of all the patients that received a particular service or intervention, as compared to those that did not receive the service or intervention. Think of this section as identifying and focusing on cleaning up internal health system trends. In following the format of previous chapters, we will start with a clean view of the section, as seen in Figure 10.1, and then begin to answer the case study questions in sequence.

Treatment Analysis Section Case Study Scenario:

FIGURE 10.1 TREATMENT ANALYSIS SECTION



Step 1: Become familiar with the settings filter options. We will keep the health system profile to start with, and then begin to narrow the focus based on the table results. As seen in Figure 10.1, we will keep the one year date range and select Rerun to see the initial results.

Question 1: *"How can I identify which radiology tests are potentially over utilized at my organization, specifically MRIs?"*

Let's answer the first question in the Treatment Analysis section scenario by first running the analysis with no filters to start, and then begin to narrow the results. In Figure 10.2 below, the initial results are at the Charge Description Master (CDM) level with Revenue Code, Profile Volume with Charge, Profile Quantity, Profile Total Cost, Average Quantity per Case with Charge, and Average Total Cost per Case with Charge columns.

FIGURE 10.2 TREATMENT ANALYSIS INITIAL RESULTS (NO FILTERS APPLIED YET)

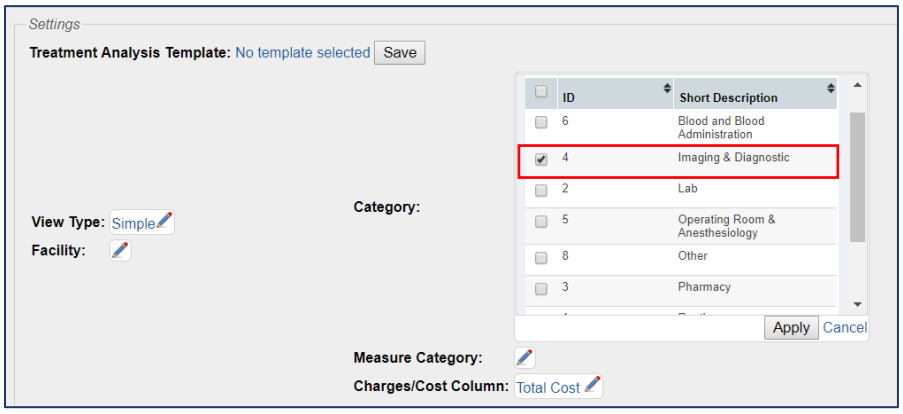
Facility ID	CDM #	Description	Rev Code	Profile Volume w/ Chg	Profile Qty	Profile Total Cost	Avg Qty/Case w/ Chg	Avg Total Cost/Case w/ Chg
432004	RX24156199375	ANTI-INHIBITOR COAGULANT COMPL	0636	4	75866	$105,387.17	18,966.50	$26,346.7
586144	RX2146108850110	ANTIHEMOPHILIC FACTOR (VIII)(R	0636	1	14000	$11,235.20	14,000.00	$11,235.2
964898	RX109409114411	SUCRALFATE (CONC: 1 G/10 ML) 1	0250	1	13790	$10,762.79	13,790.00	$10,762.7
432004	RX2146108850110	ANTIHEMOPHILIC FACTOR (VIII)(R	0636	2	17100	$15,813.65	8,550.00	$7,906.8

The table results display all CDMs for the encounters that fell within the time period indicated. In order to filter out specific radiology CDMs, the settings field provides the Category and Measure Category filter to further narrow the search.

Step 1: Figure 10.3 displays the options available in the Category filter. Select the Imaging & Diagnostic filter option.

- *Click Apply to save the filter selection.*

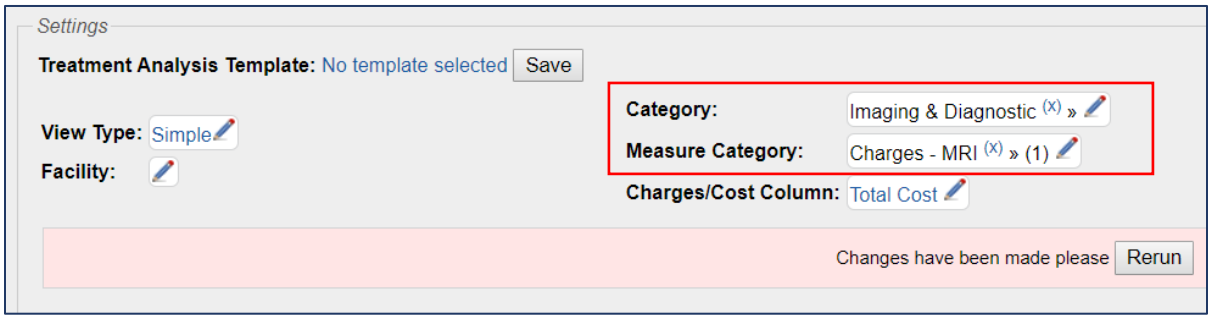
FIGURE 10.3 TREATMENT ANALYSIS CATEGORY FILTER 'IMAGING & DIAGNOSTIC'



Step 2: Once you have applied the Imaging & Diagnostic category filter selection, click on the Measure Category filter pencil to identify additional filter options.

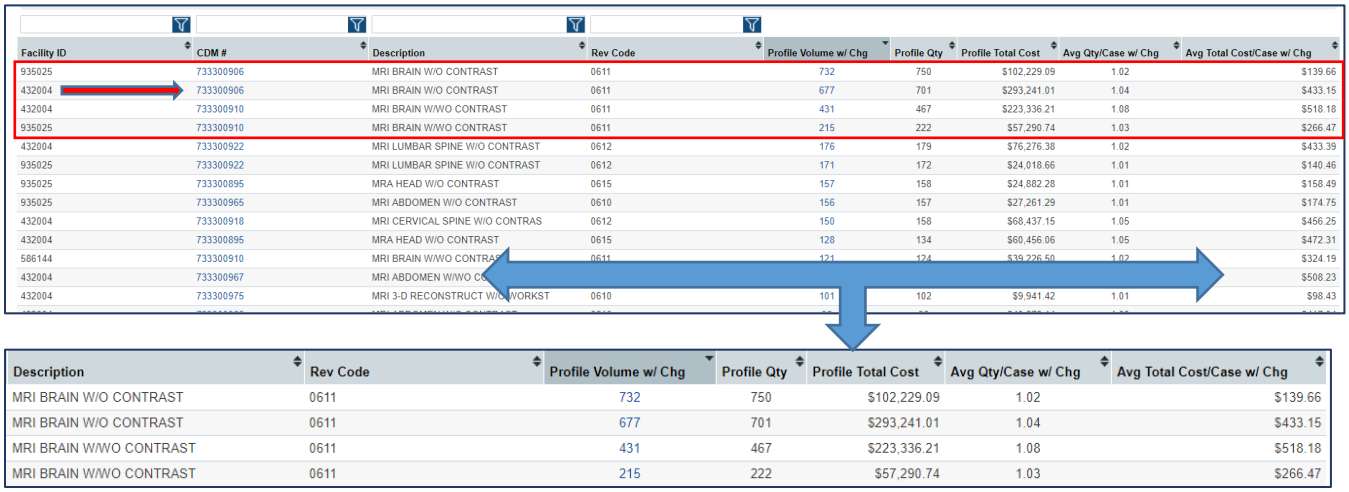
- *Select the MRI measure category filter to further narrow the search from general imaging to just return results for MRI only. The settings field should look like Figure 10.4 before selecting Rerun to view the results.*

FIGURE 10.4 TREATMENT ANALYSIS CASE SCENARIO SETTINGS CONFIRMATION



As shown in Figure 10.2, the initial table results, without filters, returned all CDMs. Now we've applied a Category and Measure Category filter to help answer the radiology question in this scenario. If you wanted to keep the search more generalized across all imaging and diagnostic charges, then remove the MRI filter and rerun the analysis. In Figure 10.5 below, the results contain encounters that received a MRI charge.

FIGURE 10.5 TREATMENT ANALYSIS MRI FILTER RESULTS



Facility ID	CDM #	Description	Rev Code	Profile Volume w/ Chg	Profile Qty	Profile Total Cost	Avg Qty/Case w/ Chg	Avg Total Cost/Case w/ Chg
935025	733300906	MRI BRAIN W/O CONTRAST	0611	732	750	$102,229.09	1.02	$139.66
432004	733300906	MRI BRAIN W/O CONTRAST	0611	677	701	$293,241.01	1.04	$433.15
432004	733300910	MRI BRAIN W/WO CONTRAST	0611	431	467	$223,336.21	1.08	$518.18
935025	733300910	MRI BRAIN W/WO CONTRAST	0611	215	222	$57,290.74	1.03	$266.47
432004	733300922	MRI LUMBAR SPINE W/O CONTRAST	0612	176	179	$76,276.38	1.02	$433.39
935025	733300922	MRI LUMBAR SPINE W/O CONTRAST	0612	171	172	$24,018.66	1.01	$140.46
935025	733300895	MRA HEAD W/O CONTRAST	0615	157	158	$24,882.28	1.01	$158.49
935025	733300965	MRI ABDOMEN W/O CONTRAST	0610	156	157	$27,261.29	1.01	$174.75
432004	733300918	MRI CERVICAL SPINE W/O CONTRAS	0612	150	158	$68,437.15	1.05	$456.25
432004	733300895	MRA HEAD W/O CONTRAST	0615	128	134	$60,456.06	1.05	$472.31
586144	733300910	MRI BRAIN W/WO CONTRA	0611	121	124	$39,226.50	1.02	$324.19
432004	733300967	MRI ABDOMEN W/WO C						$508.23
432004	733300975	MRI 3-D RECONSTRUCT W/O WORKST	0610	101	102	$9,941.42	1.01	$98.43

Description	Rev Code	Profile Volume w/ Chg	Profile Qty	Profile Total Cost	Avg Qty/Case w/ Chg	Avg Total Cost/Case w/ Chg
MRI BRAIN W/O CONTRAST	0611	732	750	$102,229.09	1.02	$139.66
MRI BRAIN W/O CONTRAST	0611	677	701	$293,241.01	1.04	$433.15
MRI BRAIN W/WO CONTRAST	0611	431	467	$223,336.21	1.08	$518.18
MRI BRAIN W/WO CONTRAST	0611	215	222	$57,290.74	1.03	$266.47

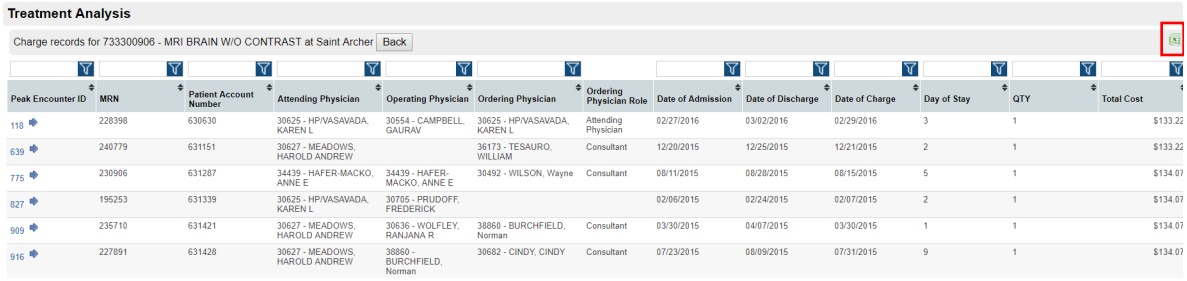
Use the column headers to filter and sort the table information. We chose to sort the Profile Volume with Charge column so that we could readily identify the highest volume MRIs first. We expanded the screenshot on the first four rows so we can focus on the column details. The Profile Volume with Charge shows how many encounters had a MRI (732) alongside the Profile Quantity column showing how many MRIs (750) total were performed across those 732 encounters. This shows that several patients had more than one

MRI per encounter. We have answered the first part of the question and shown how you can narrow the all CDM view down to specific radiology exams. Let's move on to the second question in this use case scenario.

Question 2: *"Am I able to evaluate which day of stay the MRI took place on and the physician associated with these orders?"*

We will continue to focus on the MRI Brain exams we have been reviewing in this scenario. If you click on the CDM number hyperlink (see Figure 10.5 arrow), Clinical Analytics will drill into the patient encounter level details and a few more helpful columns. In Figure 10.6, the additional level of detail is shown through the new columns available in the CDM drill view.

FIGURE 10.6 TREATMENT ANALYSIS CDM LEVEL DRILL VIEW



Treatment Analysis

Charge records for 733300906 - MRI BRAIN W/O CONTRAST at Saint Archer Back

Peak Encounter ID	MRN	Patient Account Number	Attending Physician	Operating Physician	Ordering Physician	Ordering Physician Role	Date of Admission	Date of Discharge	Date of Charge	Day of Stay	QTY	Total Cost
118	228398	630630	30625 - HP/VASAVADA, KAREN L	30554 - CAMPBELL, GAURAV	30625 - HP/VASAVADA, KAREN L	Attending Physician	02/27/2016	03/02/2016	02/29/2016	3	1	$133.22
639	240779	631151	30627 - MEADOWS, HAROLD ANDREW		36173 - TESAURO, WILLIAM	Consultant	12/20/2015	12/25/2015	12/21/2015	2	1	$133.22
775	230906	631287	34439 - HAFER-MACKO, ANNE E	34439 - HAFER-MACKO, ANNE E	30492 - WILSON, Wayne	Consultant	08/11/2015	08/28/2015	08/15/2015	5	1	$134.07
827	195253	631339	30625 - HP/VASAVADA, KAREN L	30705 - PRUDOFF, FREDERICK			02/06/2015	02/24/2015	02/07/2015	2	1	$134.07
909	235710	631421	30627 - MEADOWS, HAROLD ANDREW	30636 - WOLFLEY, RANJANA R	38860 - BURCHFIELD, Norman	Consultant	03/30/2015	04/07/2015	03/30/2015	1	1	$134.07
916	227891	631428	30627 - MEADOWS, HAROLD ANDREW	38860 - BURCHFIELD, Norman	30682 - CINDY, CINDY	Consultant	07/23/2015	08/09/2015	07/31/2015	9	1	$134.07

By clicking on the CDM number hyperlink, the patient encounter level detail offers additional columns as seen in Figure 10.6. Also, the Excel export option is available in the upper right hand corner of the table. In the CDM drill view, admit and discharge date, day of stay, and quantity of MRIs display on the right side of the table. The various provider roles and names are also listed for each encounter. Remember, the column header filters can easily narrow your search, especially if you have a few providers in mind already.

Before we move on to the next chapter, let's review what you have learned about the Treatment Analysis section in Clinical Analytics. This section allows hospitals to see data for all treatments across the hospital stay. In addition, this section can help identify services or interventions that are over-utilized. You can leverage the power of profiles to help further narrow the scope of your internal health system analysis. We will expand upon the benefits of this section in the next chapter where we dig even deeper into the Physician Service Details case study.

Chapter 11: Physician Service Details Case Study

Physician Service Details

Purpose: *Shows cost/charge overage driven by physician preferences. Patient population focus trends.*

Key concepts:

- CDM level details with descriptions and revenue codes
- Identifies differences, not necessarily good or bad, just differences
- Allows for peer to peer, or peer to group, or physician compared to health system practice trends
- Simple or Detailed report viewing options

Physician Service Details Section Case Study Scenario:

Question 1: *"Can I evaluate practice trends across a physician group or do I have to pick a single physician to compare?"*

Question 2: *"What if I want to compare the same doctor from the current year to the previous year?"*

Question 3: *"Can I compare practice trends of a specific doctor within their physician group?"*

Question 4: *"This section is great for exploring physician preferences, but can you tell me more about how to leverage the information in these columns?"*

In chapter 10 you learned how to use the Treatment Analysis section which shows utilization of services or interventions across the hospital system or each facility. The Physician Service Details section also provides CDM level details, however, you have the advantage of more than one profile and more settings options. This section shows cost and charge overage driven by physician preferences. The dual profile option allows for flexible comparisons such as comparing one surgeon to his/her peers or one surgeon's practice trends comparing last year to this year. This chapter will be slightly more complex, but worth the time and effort given the power of this particular analytic section in Clinical Analytics.

FIGURE 11.1 PHYSICIAN SERVICE DETAILS SECTION

Physician Service Details Section Case Study Scenario:

Question 1: *"Can I evaluate practice trends across a physician group or do I have to pick a single physician to compare?"*

Let's start with the first question in this scenario, asking if we can look at practice trends across a physician group or if we can select a single physician to compare. The answer is absolutely YES! We will highlight a few options you can select to accomplish both points in this question. The first example will show you how to evaluate across physician groups and the second example will explore how you focus on individual physicians.

Step 1: The Physician and Physician Rollup settings default as shown in Figure 11.1.

- *Before changing any settings, click Rerun and view the table results.*
- *The results return all CDMs across the encounters included with the Health System profile and time period listed. This view should be familiar if you have gone through Chapter 10 which reviewed the Treatment Analysis section.*

Step 2: Now let's focus on how we can show the results for physician groups. The best option to narrow the table results to a particular physician group is the use of profiles in Clinical Analytics.

- *In the profile manager, create a physician group profile with the use of the physician group filter option. I created the Hospitalist group profile for this scenario.*
- *Select the newly created physician group profile, update the time period if needed, and click ReRun. (See Figure 11.2)*

FIGURE 11.2 PHYSICIAN SERVICE DETAILS WITH PHYSICIAN GROUP PROFILE SAME TIME PERIOD

Physician Service Details

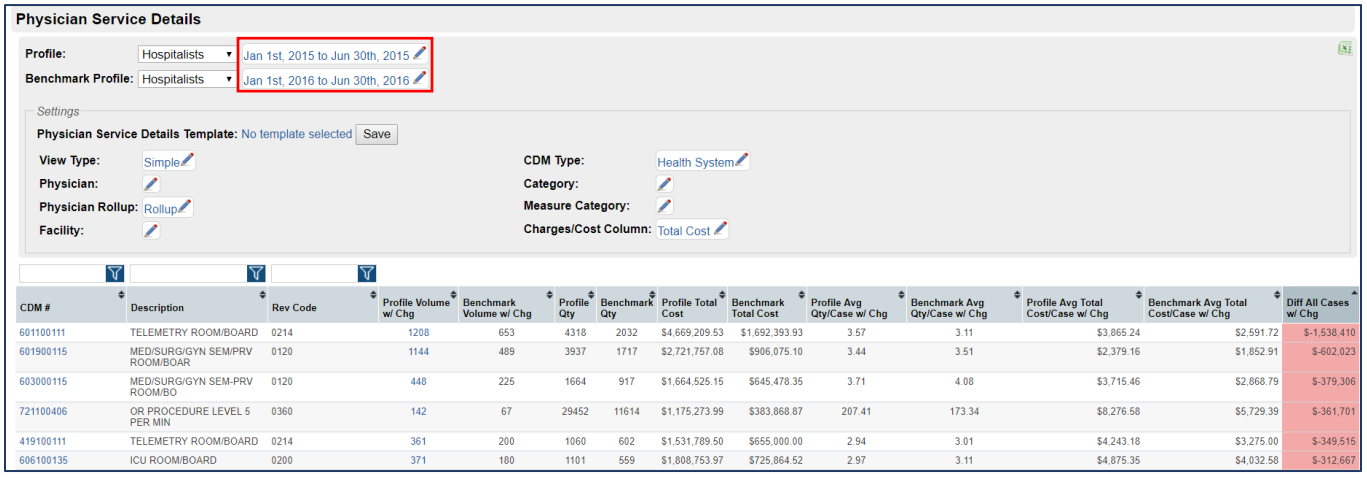
Profile: Hospitalists — Jan 1st, 2016 to Jun 30th, 2016
Benchmark Profile: Hospitalists — Jan 1st, 2016 to Jun 30th, 2016

Settings
Physician Service Details Template: No template selected — Save
View Type: Simple — CDM Type: Health System
Physician: — Category:
Physician Rollup: Rollup — Measure Category:
Facility: — Charges/Cost Column: Total Cost

CDM #	Description	Rev Code	Profile Volume w/ Chg	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Profile Avg Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Diff All Cases w/ Chg
419100111	TELEMETRY ROOM/BOARD	0214	200	200	602	602	$655,000.00	$655,000.00	3.01	3.01	$3,275.00	$3,275.00	$-0
733101190	DI CHEST ONE VIEW	0320	1447	1447	2792	2792	$165,075.55	$165,075.55	1.93	1.93	$114.08	$114.08	$-0
603000115	MED/SURG/GYN SEM-PRV ROOM/BO	0120	225	225	917	917	$645,478.35	$645,478.35	4.08	4.08	$2,868.79	$2,868.79	$-0
737000386	PULSE OXIMETRY SINGLE	0460	949	949	8548	8548	$112,563.94	$112,563.94	9.01	9.01	$118.61	$118.61	$-0
RX2142981694469998	HEPARIN (CONC: 5000 UNITS/ 0.5	0636	636	636	26622	26622	$327,260.41	$327,260.41	41.86	41.86	$514.56	$514.56	$-0

Now the table is displaying CDM level results for the Hospitalist physician group. The view in Figure 11.2 shows the same physician group for the same time period. Next, we will change the time period to compare the previous time period to the comparable current time period, and rerun the results. Changing the time period allows you to show practice trend differences from one time period compared to a different, yet similar, time period.

Figure 11.3 PHYSICIAN SERVICE DETAILS WITH PHYSICIAN GROUP PROFILE TIME PERIOD COMPARISON



Physician Service Details

Profile: Hospitalists — Jan 1st, 2015 to Jun 30th, 2015
Benchmark Profile: Hospitalists — Jan 1st, 2016 to Jun 30th, 2016

Settings
Physician Service Details Template: No template selected — Save
View Type: Simple — CDM Type: Health System
Physician: — Category:
Physician Rollup: Rollup — Measure Category:
Facility: — Charges/Cost Column: Total Cost

CDM #	Description	Rev Code	Profile Volume w/ Chg	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Profile Avg Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Diff All Cases w/ Chg
601100111	TELEMETRY ROOM/BOARD	0214	1208	653	4318	2032	$4,669,209.53	$1,692,393.93	3.57	3.11	$3,865.24	$2,591.72	$-1,538,410
601900115	MED/SURG/GYN SEM/PRV ROOM/BOAR	0120	1144	489	3937	1717	$2,721,757.08	$906,075.10	3.44	3.51	$2,379.16	$1,852.91	$-602,023
603000115	MED/SURG/GYN SEM-PRV ROOM/BO	0120	448	225	1664	917	$1,664,525.15	$645,478.35	3.71	4.08	$3,715.46	$2,868.79	$-379,306
721100406	OR PROCEDURE LEVEL 5 PER MIN	0360	142	67	29452	11614	$1,175,273.99	$383,868.87	207.41	173.34	$8,276.58	$5,729.39	$-361,701
419100111	TELEMETRY ROOM/BOARD	0214	361	200	1060	602	$1,531,789.50	$655,000.00	2.94	3.01	$4,243.18	$3,275.00	$-349,515
606100135	ICU ROOM/BOARD	0200	371	180	1101	559	$1,808,753.97	$725,864.52	2.97	3.11	$4,875.35	$4,032.58	$-312,667

Note the differences between running the same physician group by just altering the time period comparison. The far right column in Figure 11.2 doesn't show any difference because we are comparing the same group and the same time period. However, Figure 11.3 does show a difference because we are comparing the same group, but looking at January 2015 through June 2016. We have answered the first of three questions for this scenario. It's time to move to question number two.

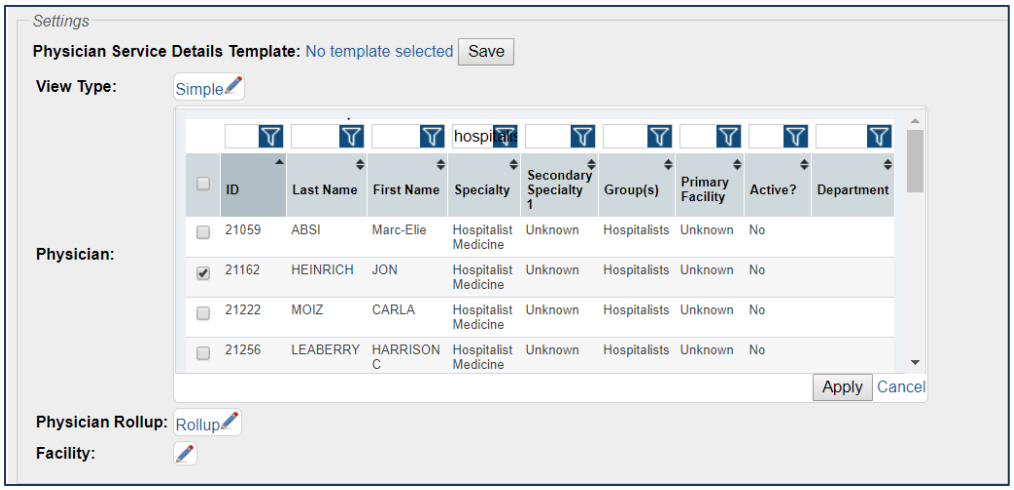
Question 2: *"What if I want to compare the same doctor from the current year to the previous year?"*

You have two options when looking at an individual provider. The settings field offers a physician filter where you can run the results on a particular physician of choice. The second option is the use of profiles which you just learned by answering the first question in this scenario. You can create a profile for the individual physician instead of creating one for the physician group.

First Option: Select an individual physician using the settings field by clicking the pencil icon next to the Physician filter.

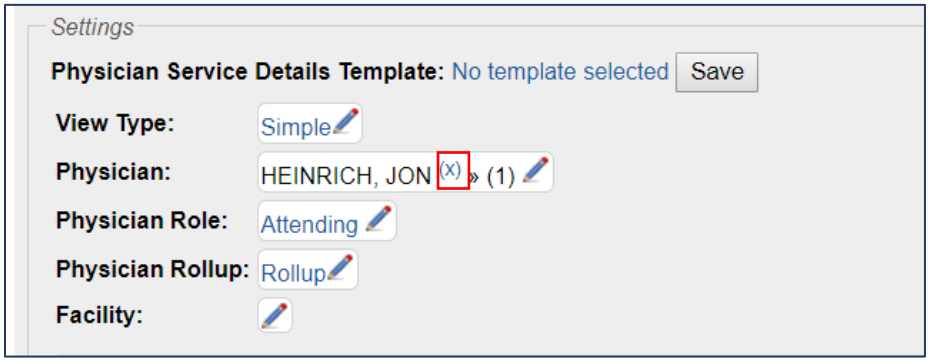
- *You can use the column header to filter out by physician ID, last name, first name, specialty, groups, facility, and/or department.*
- *Hint: <u>This is another way to answer the first question regarding physician groups if you do not prefer the profile option.</u>*

FIGURE 11.4 PHYSICIAN SETTINGS FILTER



After selecting the physician Jon Heinrich, we selected rerun to update the table results. Now the data is reflective of only Dr. Heinrich's information. However, the limitation with using the settings field is that you cannot perform the time period comparison as that is dependent on using profiles. In order to truly show a time period comparison for Dr. Heinrich, you would need to create a Dr. Heinrich profile. The benefit of using the settings field is that you can easily spot check individual providers on the fly and then return to the inclusive list of all providers or the ones determined by the profile(s) you have selected. You can accomplish this by clicking on the blue 'x' next to the physician name(s) you would like to remove and return back to the original analysis (See Figure 11.5).

FIGURE 11.5 REMOVING INDIVIDUAL PHYSICIANS FROM SETTINGS FIELD



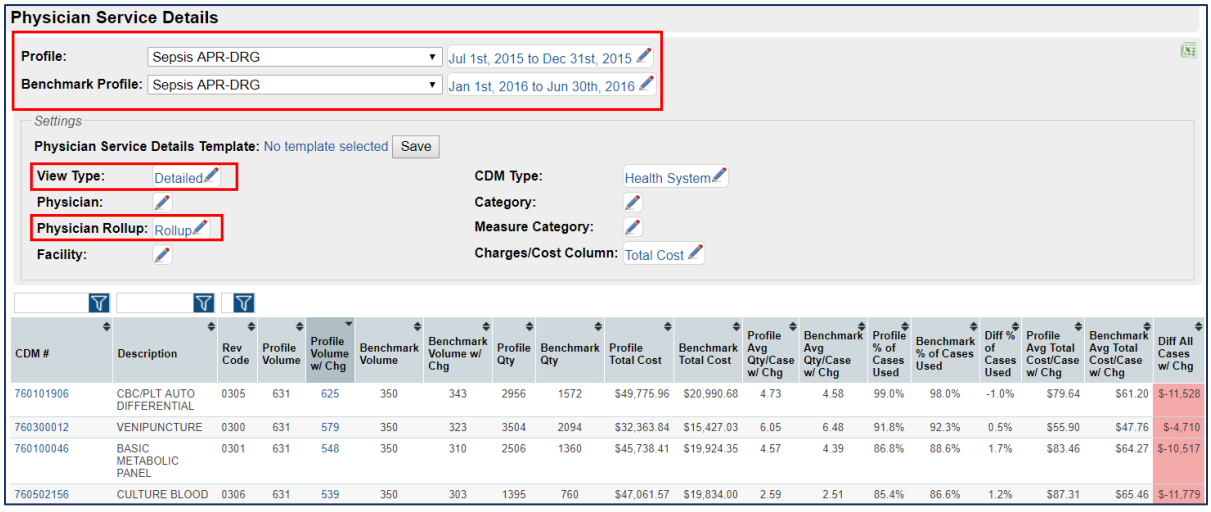
We have answered two of the three questions in this scenario, it's time to wrap up with question number three.

Question 3: *"Can I compare practice trends of a specific doctor within their physician group?"*

After answering the first two questions in this scenario, you are probably able to answer question three. The answer is an affirmative yes! A common request is to see how a particular surgeon is doing as compared to his/her peers within the same surgical group. The best option is to create a profile for the individual surgeon and then create a profile for the surgical group. The risk and severity adjustment methodology applied in Clinical Analytics allows for a Macintosh apple to Macintosh apple comparison when evaluating physicians within the same group.

Question 4: *"This section is great for exploring physician preferences, but can you tell me more about how to leverage the information in these columns?"*

FIGURE 11.6 PHYSICIAN SERVICE DETAILS COLUMN HEADER REVIEW



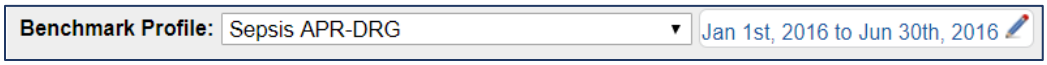
CDM #	Description	Rev Code	Profile Volume	Profile Volume w/ Chg	Benchmark Volume	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Profile % of Cases Used	Benchmark % of Cases Used	Diff % of Cases Used	Profile Avg Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Diff All Cases w/ Chg
760101906	CBC/PLT AUTO DIFFERENTIAL	0305	631	625	350	343	2956	1572	$49,775.96	$20,990.68	4.73	4.58	99.0%	98.0%	-1.0%	$79.64	$61.20	$-11,528
760300012	VENIPUNCTURE	0300	631	579	350	323	3504	2094	$32,363.84	$15,427.03	6.05	6.48	91.8%	92.3%	0.5%	$55.90	$47.76	$-4,710
760100046	BASIC METABOLIC PANEL	0301	631	548	350	310	2506	1360	$45,738.41	$19,924.35	4.57	4.39	86.8%	88.6%	1.7%	$83.46	$64.27	$-10,517
760502156	CULTURE BLOOD	0306	631	539	350	303	1395	760	$47,061.57	$19,834.00	2.59	2.51	85.4%	86.6%	1.2%	$87.31	$65.46	$-11,779

First, we want to review the results shown in Figure 11.6. We selected a Sepsis APR-DRG profile and chose to compare the previous six months (July 2015 to December 2015) to the most current six months (January 2016 to June 2016). The default view will show results across the selected profile encounter(s) with the physician level details rolled up. Remember, this is a charge description master (CDM) level analysis which can drill down to patient level, by clicking on the CDM hyperlink, if needed.

Let's review the columns in the Detailed View type report in Figure 11.6: (Sepsis APR-DRG focus, six month comparison)

- **Charge Description Master (CDM)**: The CDM code, which is a hyperlinked value that will drill down to patient level details.
- **Description**: The CDM description details.
- **Rev Code**: The Revenue Code bucket for the CDM listed per row.
- **Profile Volume**: Based on the selected profile and time period, the volume of encounters that could have received the CDM listed per row.

- **Profile Volume w/Chg**: Based on the selected profile and time period, the volume of encounters that actually received the CDM charge listed per row.
- **Benchmark Volume**: Based on the selected profile and time period, the volume of encounters, in the benchmark profile, that could have received the CDM listed per row.



- **Benchmark Volume x/Chg**: Based on the selected profile and time period, the volume of encounters, in the benchmark profile, that actually received the CDM charge listed per row.
- **Profile Quantity**: The quantity of CDMs for the profile encounters that received a charge.
- **Benchmark Quantity**: The quantity of CDMs for the benchmark profile encounters that received a charge.
- **Profile Total Cost**: The sum of cost for all encounters that received a charge in the profile group.
- **Benchmark Total Cost**: The sum of cost for all encounters that received a charge in the benchmark profile group.
- **Profile Avg Qty/Case/w Chg:** Based on the selected profile with charge, the average quantity of CDMs used for the listed CDM row.
- **Benchmark Avg Qty/Case w/Chg**: Based on the selected benchmark profile with charge, the average quantity of CDMs used for the listed CDM row.
- **Profile % of Cases Used:** Based on the selected profile, the percentage of encounters that utilized the listed CDM per row.

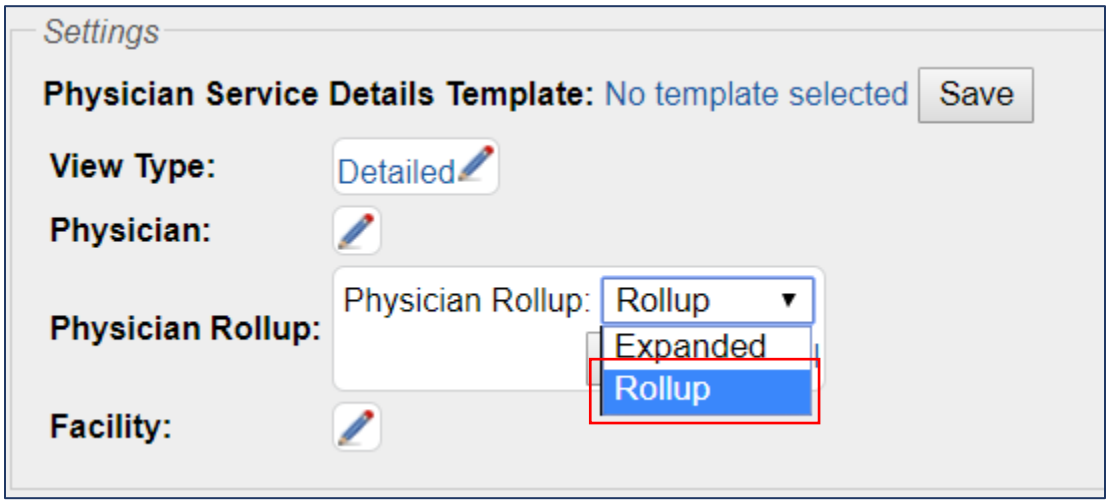
- **Benchmark % of Cases Used:** Based on the selected benchmark profile, the percentage of encounters that utilized the listed CDM per row.
- **Diff % of Cases Used:** The difference in percentage used between the profile group and the benchmark profile group.
- **Profile Avg Total Cost/Case w/Chg:** The Profile Total Cost column divided by the Profile Volume with Charge column.
- **Benchmark Avg Total Cost/Case w/Chg**: The Benchmark Total Cost column divided by the Benchmark with Charge column.
- **Diff All Cases w/Chg:** The difference between the Profile Avg Total Cost/Case w/Chg and the Benchmark Avg Total Cost/Case w/Chg multiplied by the Profile Volume w/Chg.

We just covered the definition and applicable formulas for each column. Hopefully this review will help you decide which columns are most relevant to your particular analysis. Remember, you can sort by the column headers to focus on the largest volume of CDMs across the profile comparison groups. Next, we will unroll the physicians to evaluate individual physician preferences across the Sepsis APR-DRG example above.

Step 1: Switch from Rollup to Expanded

- Select the Expanded Physician Rollup setting option and click Apply (see Figure 11.7).

FIGURE 11.7 PHYSICIAN SERVICE DETAILS PHYSICIAN EXPANDED OPTION



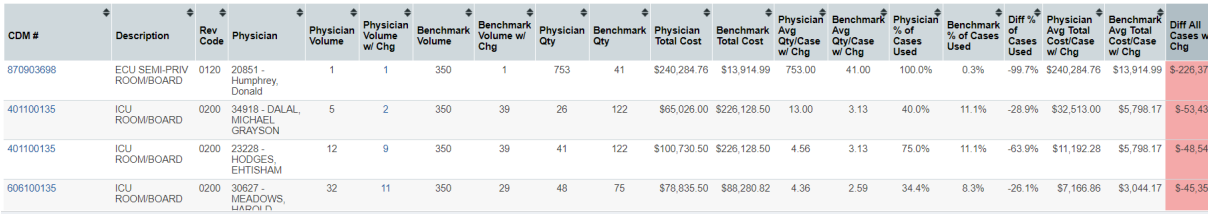
Step 2: Determine which Physician Role best fits your analysis.

- I will keep the default Attending role. ***Depending on the analysis, it will be important to make sure the most applicable role type is selected.***

Step 2: Rerun Analysis

Step 3: Evaluate results (see Figure 11.8)

FIGURE 11.8 PHYSICIAN SERVICE DETAILS PHYSICIAN LEVEL RESULTS



CDM #	Description	Rev Code	Physician	Physician Volume	Physician Volume w/ Chg	Benchmark Volume	Benchmark Volume w/ Chg	Physician Qty	Benchmark Qty	Physician Total Cost	Benchmark Total Cost	Physician Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Physician % of Cases Used	Benchmark % of Cases Used	Diff % of Cases Used	Physician Avg Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Diff All Cases w Chg
870903698	ECU SEMI-PRIV ROOM/BOARD	0120	20851 - Humphrey, Donald	1	1	350	1	753	41	$240,284.76	$13,914.99	753.00	41.00	100.0%	0.3%	-99.7%	$240,284.76	$13,914.99	$-226,37
401100135	ICU ROOM/BOARD	0200	34918 - DALAL, MICHAEL GRAYSON	5	2	350	39	26	122	$65,026.00	$226,128.50	13.00	3.13	40.0%	11.1%	-28.9%	$32,513.00	$5,798.17	$-53,43
401100135	ICU ROOM/BOARD	0200	23228 - HODGES, EHTISHAM	12	9	350	39	41	122	$100,730.50	$226,128.50	4.56	3.13	75.0%	11.1%	-63.9%	$11,192.28	$5,798.17	$-48,54
606100135	ICU ROOM/BOARD	0200	30627 - MEADOWS, HAROLD	32	11	350	29	48	75	$78,835.50	$88,280.82	4.36	2.59	34.4%	8.3%	-26.1%	$7,166.86	$3,044.17	$-45,35

The expansion of the physician rollup setting, as seen in Figure 11.7, stratified the analysis results by individual physicians. The profile columns now reflect the individual physician level encounter volumes and related CDM utilization results. As mentioned earlier in this chapter, this is a great section to look at utilization and preferences for individual physicians compared to themselves over two time periods or an individual physician as compared to his/her group or service line.

In conclusion, we hope you have learned more about how to use the Physician Service Details section to provide CDM level details, dual profiles, and cost/charge overage driven by physician preferences. Keep in mind the dual profile option allows for flexible internal and external comparisons. An example of an internal comparison would be comparing one surgeon to his/her peers or one surgeon's practice trends comparing last year to this year. In the next chapter, we will explore the Pharmacy analytics section which provides NDC level information and resembles the same settings you became familiar with in this chapter, in the Physician Service Details section.

Chapter 12: Pharmacy Analytics Case Study

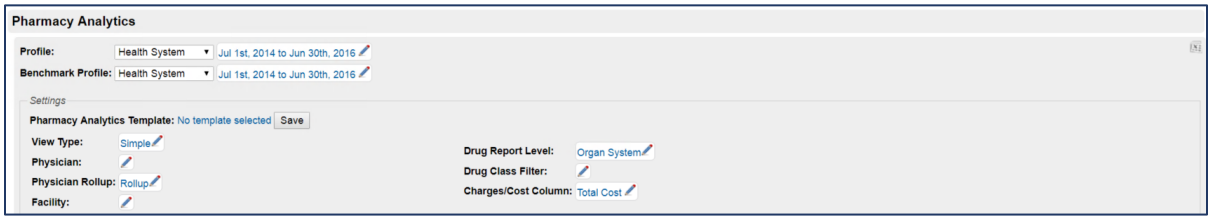
Pharmacy Analytics

Purpose: *Allows hospitals and health systems the ability to analyze the medications used by physicians based on various patient populations.*

Key Concepts:

- It also allows users to identify any potential over-utilization of pharmaceuticals
- Profile based section
- Hierarchy: Organ System, Pharmacological, Therapeutic, Generic, Specific Generic and NDC report levels
- Current state, allows for internal benchmarking opportunities

FIGURE 12.1 PHARMACY ANALYTICS SECTION



Pharmacy Analytics Section Case Study Scenario:

Question 1: *"I want to evaluate utilization of antibiotics for a specific DRG."*

Question 2: *"Can I drill to patient encounter level for these results?"*

Question 3: *"Can you show me how to leverage this section for opioid utilization analysis?"*

The Pharmacy Analytics section can be used to evaluate the utilization of pharmaceuticals across the health system with the ability to ultimately drill down to NDC and patient encounter level details. The profile and benchmark profile options allow for flexible comparisons between peers, peer to his/her group, or physician to facility or health system. The Excel export option is also available in this powerful section to continue analyzing the pharmacy data results. There are six drug reporting levels which include: Organ System, Pharmacological Class, Therapeutic Class, Generic Drug Name, Specific Generic Drug, and NDC level. We will highlight the various ways you can leverage this section to answer your pharmacology utilization related questions.

Pharmacy Analytics Section Case Study Scenario:

Question 1: *"I want to evaluate utilization of antibiotics for a specific DRG."*

Step 1: Add the Pharmacy Analytics section to your scorecard.

- *The Pharmacy Analytics section can be found in the Ordering Analytics category when you add a section in customizer mode. Click on the green checkmark to save your changes and exit customizer mode.*

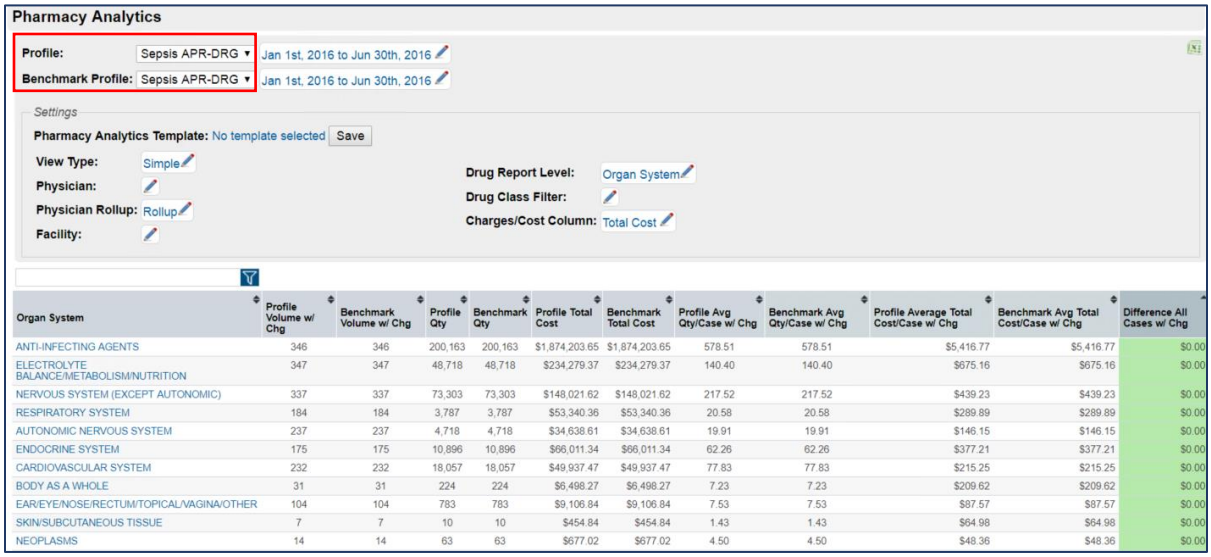
Step 2: For this scenario, we selected a Sepsis APR-DRG for the patient profile.

- *In the Profile Manager, create an internal encounter profile with an APR-DRG filter, selecting Sepsis as the profile filter. Click on the Save button and then click on the green checkmark to exit the profile manager.*

Step 3: In the Pharmacy Analytics section, select the Sepsis profile and appropriate time period.

- *Select Rerun to review the initial analysis results before we apply any additional filters.*

FIGURE 12.2 PHARMACY ANALYTICS SECTION WITH SEPSIS PROFILE



Organ System	Profile Volume w/ Chg	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Profile Average Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Difference All Cases w/ Chg
ANTI-INFECTING AGENTS	346	346	200,163	200,163	$1,874,203.65	$1,874,203.65	578.51	578.51	$5,416.77	$5,416.77	$0.00
ELECTROLYTE BALANCE/METABOLISM/NUTRITION	347	347	48,718	48,718	$234,279.37	$234,279.37	140.40	140.40	$675.16	$675.16	$0.00
NERVOUS SYSTEM (EXCEPT AUTONOMIC)	337	337	73,303	73,303	$148,021.62	$148,021.62	217.52	217.52	$439.23	$439.23	$0.00
RESPIRATORY SYSTEM	184	184	3,787	3,787	$53,340.36	$53,340.36	20.58	20.58	$289.89	$289.89	$0.00
AUTONOMIC NERVOUS SYSTEM	237	237	4,718	4,718	$34,638.61	$34,638.61	19.91	19.91	$146.15	$146.15	$0.00
ENDOCRINE SYSTEM	175	175	10,896	10,896	$66,011.34	$66,011.34	62.26	62.26	$377.21	$377.21	$0.00
CARDIOVASCULAR SYSTEM	232	232	18,057	18,057	$49,937.47	$49,937.47	77.83	77.83	$215.25	$215.25	$0.00
BODY AS A WHOLE	31	31	224	224	$6,498.27	$6,498.27	7.23	7.23	$209.62	$209.62	$0.00
EAR/EYE/NOSE/RECTUM/TOPICAL/VAGINA/OTHER	104	104	783	783	$9,106.84	$9,106.84	7.53	7.53	$87.57	$87.57	$0.00
SKIN/SUBCUTANEOUS TISSUE	7	7	10	10	$454.84	$454.84	1.43	1.43	$64.98	$64.98	$0.00
NEOPLASMS	14	14	63	63	$677.02	$677.02	4.50	4.50	$48.36	$48.36	$0.00

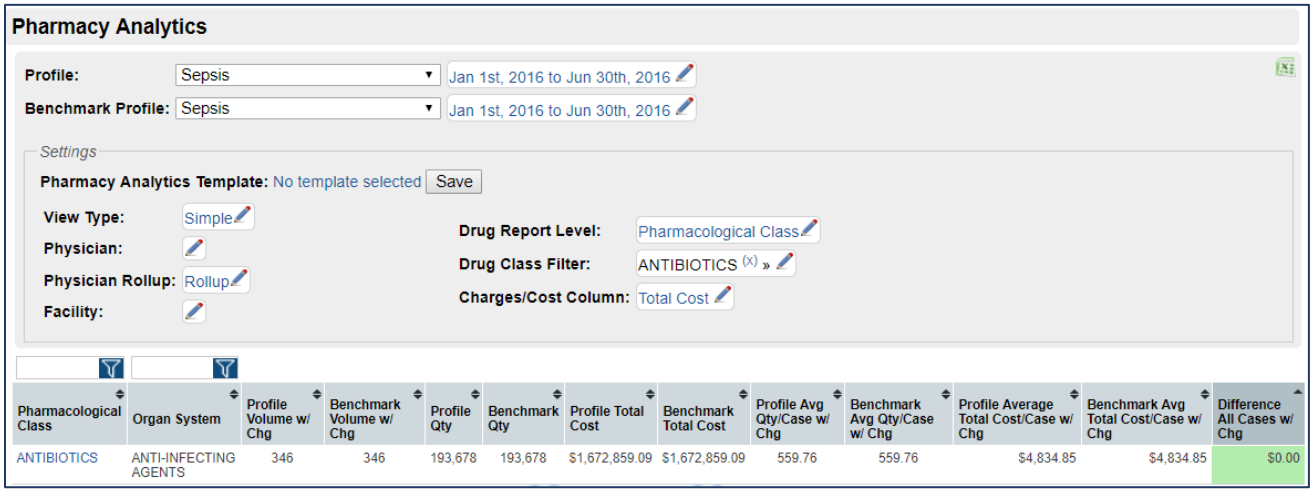
Step 4: Now it's time to apply the Drug Report Level and Drug Class Filter to narrow the search to Antibiotics only.

- *Click the pencil icon next to the Drug Report Level and select Pharmacological Class.*
- *Click the pencil icon next to the Drug Class Filter and select Antibiotics.*

Step 5: Confirm your settings view matches Figure 12.3 below.

- *Once you have confirmed the correct filters were added for Drug Report Level and Drug Class Filter, Click Rerun*

FIGURE 12.3 PHARMACY ANALYTICS WITH SEPSIS PROFILE AND ANTIBIOTICS FILTER



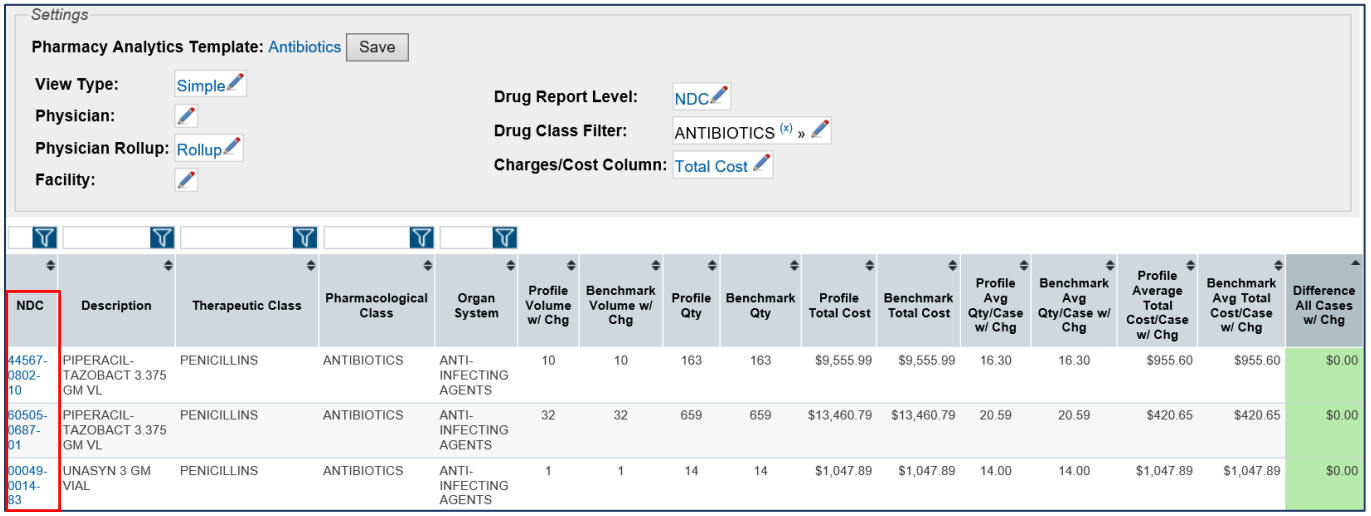
Pharmacological Class	Organ System	Profile Volume w/ Chg	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Profile Average Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Difference All Cases w/ Chg
ANTIBIOTICS	ANTI-INFECTING AGENTS	346	346	193,678	193,678	$1,672,859.09	$1,672,859.09	559.76	559.76	$4,834.85	$4,834.85	$0.00

We answered the first question in this pharmacy scenario, showing how a profile can filter on a particular DRG and then continue to narrow the search to focus on a specific pharmacological class.

Question 2: *"Can I drill to patient encounter level for these results?*

The second question wants to know if we can drill to patient encounter level information. Similar to other sections in Clinical Analytics, you must have encryption key access and unlock the Clinical Analytics session in order to view PHI level information. Once you have unlocked your Clinical Analytics session, you can easily drill down to patient level information in the Pharmacy Analytic section. If you select the NDC drug report level, you can access patient level details through the NDC blue hyperlink (see Figure 12.4). You can also continue to click on each category to drill from organ system all the way down to NDC, and then the NDC will take you to patient level details.

FIGURE 12.4 PHARMACY ANALYTICS SECTION WITH NDC FILTER



NDC	Description	Therapeutic Class	Pharmacological Class	Organ System	Profile Volume w/ Chg	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Profile Average Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Difference All Cases w/ Chg
44567-0802-10	PIPERACIL-TAZOBACT 3.375 GM VL	PENICILLINS	ANTIBIOTICS	ANTI-INFECTING AGENTS	10	10	163	163	$9,555.99	$9,555.99	16.30	16.30	$955.60	$955.60	$0.00
60505-0687-01	PIPERACIL-TAZOBACT 3.375 GM VL	PENICILLINS	ANTIBIOTICS	ANTI-INFECTING AGENTS	32	32	659	659	$13,460.79	$13,460.79	20.59	20.59	$420.65	$420.65	$0.00
00049-0014-83	UNASYN 3 GM VIAL	PENICILLINS	ANTIBIOTICS	ANTI-INFECTING AGENTS	1	1	14	14	$1,047.89	$1,047.89	14.00	14.00	$1,047.89	$1,047.89	$0.00

We've answered the second question, "*Can I drill to patient encounter level for these results?*" Now it's time to answer the third question in this scenario.

Question 3: *"Can you show me how to leverage this section for opioid utilization analysis?"*

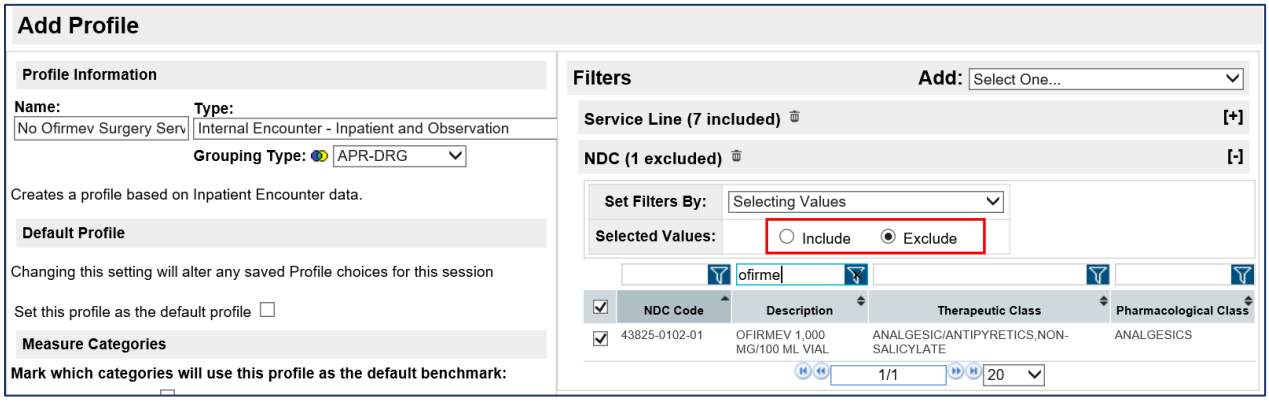
Step 1: Determine which profiles you want to utilize for the narcotics analysis.

- *A recent question was asked by one of our clients, "Our anesthesia team is stating that IV Tylenol must be kept on the formulary, despite higher cost, because those patients receive less narcotics, have a decreased length of stay, and less complications. Can Clinical Analytics confirm or refute this statement?"*

Step 2: For this scenario, we created two profiles to use in the Pharmacy Analytics section.

- *In the Profile Manager, create the first internal encounter profile with a NDC filter, Facility filter (if applicable), and Service Line filters.*
  - ***NDC Filter****: Select Ofirmev (IV Tylenol)*
  - ***Facility Filter****: Optional filter if you need to narrow your search down to one specific facility.*
  - ***Service Line Filter****: Select all surgery related service lines. Remembering you can further narrow your search by adding specific Procedure Code filters as well.*
- *Create the second internal encounter profile by copying the first one which included IV Tylenol and then selecting the 'exclude' radio button (see Figure 12.5).*
  - *Note the default is 'Include', therefore depending on your filter needs, it may be much faster to select exclude versus the default include setting option.*

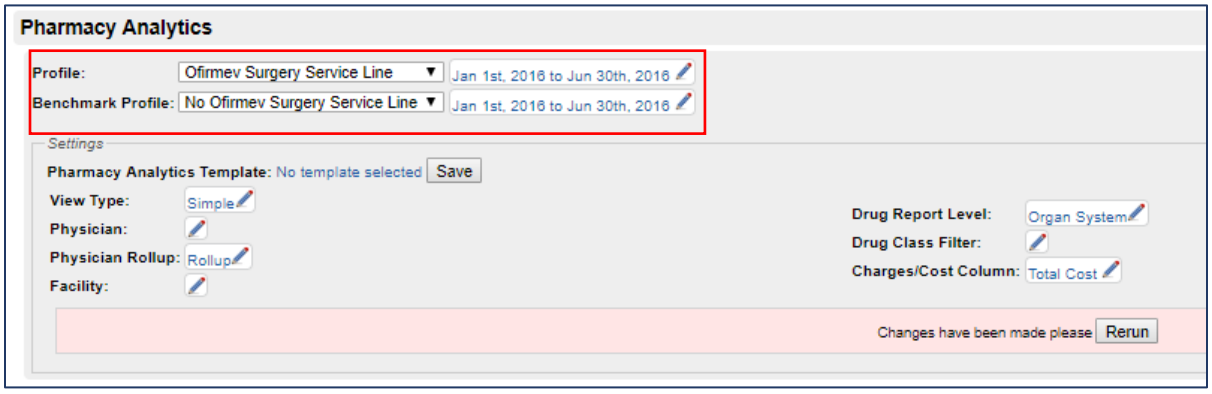
FIGURE 12.5 PROFILE MANAGER FILTER SETTINGS



Step 3: Select the Profile and Benchmark Profile with appropriate time periods (See Figure 12.6).

- *For the Profile, select the Ofirmev profile with a six month time period*
- *For the Benchmark Profile, select the No Ofirmev profile with the same six month time period*

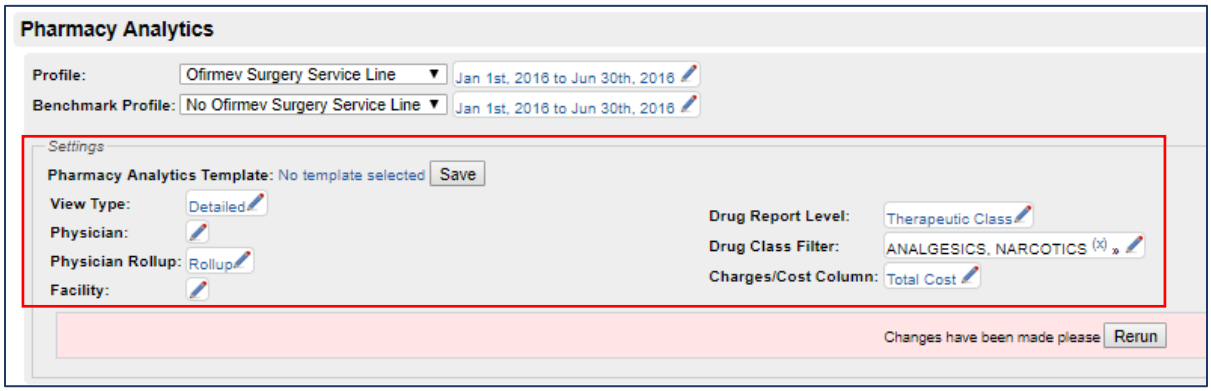
FIGURE 12.6 PHARMACY ANALYTICS SECTION WITH PROFILE SETTINGS



Step 4: Adjust the Pharmacy Analytics section setting filters (See Figure 12.7)

- *Click on the pencil icon for the View Type. Change the setting from Simple to Detailed view. Click Apply to save the updated report view filter.*
- *Click on the pencil icon for the Drug Report Level to narrow the drug class filter to Therapeutic Class. Click Apply to save the updated report level filter.*
- *Click on the pencil icon for the Drug Class Filter to narrow the category to Narcotics by selecting the Therapeutic Class filter and then searching for Narcotics. Click Apply to save the updated Narcotics filter.*

FIGURE 12.7 PHARMACY ANALYTICS SECTION WITH SETTINGS FILTERS



Step 5: Confirm your settings match Figure 12.7, then click Rerun to view the results.

- *The Detailed View Type provides a few additional columns which can be helpful to show percentage values and total number of encounters versus the encounters with a charge.*
- *In this scenario, 99.4% of IV Tylenol surgical patients also received narcotics, whereas 97.6% of surgical patients that did NOT receive IV Tylenol, received narcotics.*

FIGURE 12.8 PHARMACY ANALYTICS SECTION RESULTS WITH IV TYLENOL AND NARCOTICS COMPARISON

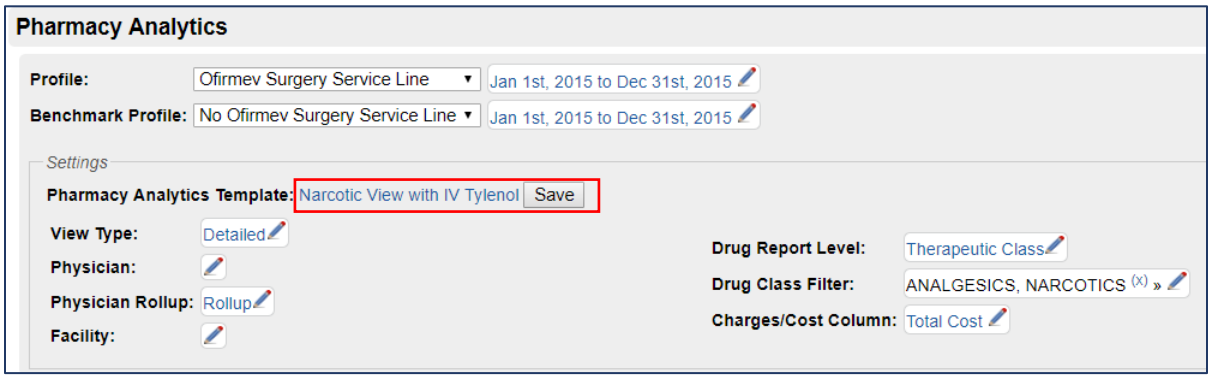
Therapeutic Class	Pharmacological Class	Organ System	Profile Volume	Profile Volume w/ Chg	Benchmark Profile Volume	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Percent of Cases Used	Benchmark % of Cases Used	Diff % of Cases Used	Profile Average Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Difference All Cases w/ Chg
ANALGESICS, NARCOTICS	ANALGESICS	NERVOUS SYSTEM (EXCEPT AUTONOMIC)	852	847	990	966	31,973	24,899	$190,367.19	$148,630.87	37.75	25.78	99.4%	97.6%	-1.8%	$224.75	$153.86	$-60,045.92

- *In addition to the percentage of narcotics in these two patient populations, you can see that the average total cost per case is more with the IV Tylenol group (Profile) as compared to the Non-IV Tylenol group (Benchmark Profile) - highlighted in green on Figure 12.8.*
- *In this example, it appears that patients who receive Ofirmev are not in fact receiving less narcotics. Keep in mind, as you begin to narrow your population of interest, you will see different results across your organization's data. For example, narrowing the surgical population down to just Colon resection surgical patients, will likely yield different results.*

As we conclude Chapter 12, we want to provide one more helpful tip to consider. If you do not want to replicate Step 4 every time you want to rerun the narcotics analysis scenario, you can use the 'save' option within the settings field (see Figure 12.8). Once the settings are precisely how you want them, rerun the

analysis to make sure the results answer your question(s). Click on the save button in the settings field, name the template, and click ok to save the new template. Now the saved template will honor the discrete settings and all you need to do next time is pull in the appropriate profiles, review the time period, and click rerun.

FIGURE 12.8 PHARMACY ANALYTICS SECTION SAVING A TEMPLATE VIEW



In summary, the Pharmacy Analytics section scenario provided a review on how you can create profiles to narrow your patient population, how you can access patient level information using the NDC hyperlink, and highlighted a practical use case to evaluate IV Tylenol and associated opioid utilization. In Chapter 13, you will learn the benefits of using the Coding Analytics section within the Clinical Analytics Scorecards application.

Chapter 13: Coding Analytics Case Study

Coding Analytics

Purpose: *Analyzes overall opportunity based on coding documentation.*

Key concepts:

- Report types are Hospital-Level, Physician, Specialty and Overall Diagnosis formats.
- Ability to identify over and under-coding documentation reflected in total reimbursement opportunity.

Coding Analytics Section Case Study Scenario:

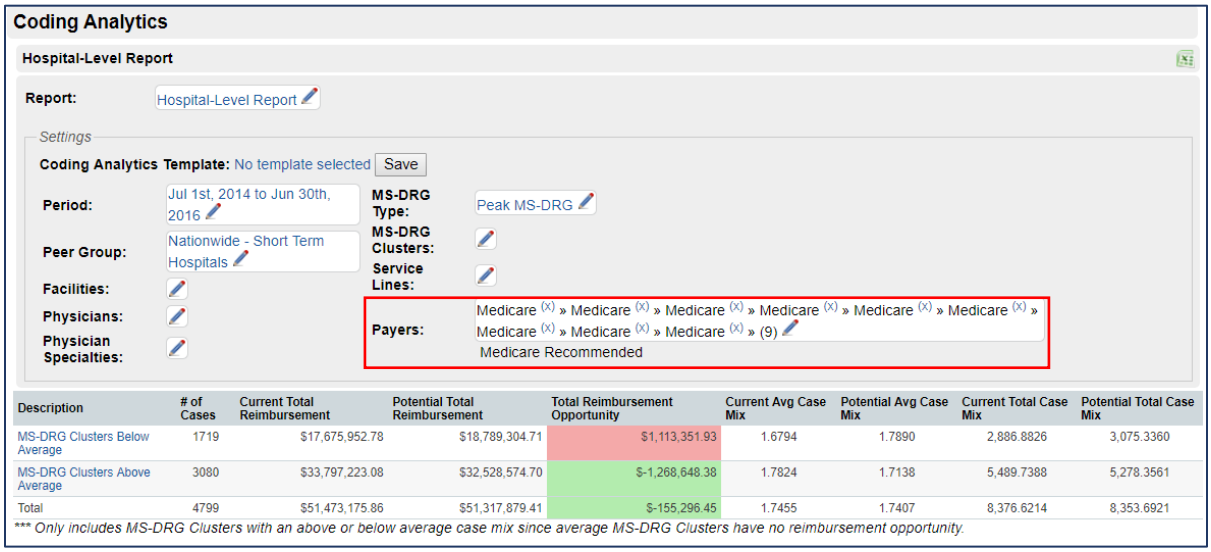
Question 1: *"What type of coding documentation opportunities could our organization benefit from discovering using the Coding Analytics section?"*

Question 2: *"What is the distribution of DRGs included in the MS-DRG cluster with the largest reimbursement opportunity?"*

Question 3: *"What diagnosis code that would qualify the encounter as a Major Complications or Comorbidities MCC are we missing the most?"*

Question 4: *"I have sorted by the cases opportunity column to reflect the largest opportunity, can I see patient level detail now?"*

FIGURE 13.1 CODING ANALYTIC SECTION



Description	# of Cases	Current Total Reimbursement	Potential Total Reimbursement	Total Reimbursement Opportunity	Current Avg Case Mix	Potential Avg Case Mix	Current Total Case Mix	Potential Total Case Mix
MS-DRG Clusters Below Average	1719	$17,675,952.78	$18,789,304.71	$1,113,351.93	1.6794	1.7890	2,886.8826	3,075.3360
MS-DRG Clusters Above Average	3080	$33,797,223.08	$32,528,574.70	$-1,268,648.38	1.7824	1.7138	5,489.7388	5,278.3561
Total	4799	$51,473,175.86	$51,317,879.41	$-155,296.45	1.7455	1.7407	8,376.6214	8,353.6921

**** Only includes MS-DRG Clusters with an above or below average case mix since average MS-DRG Clusters have no reimbursement opportunity.*

Coding Analytics Section Case Study Scenario:

Question 1: *"What type of coding documentation opportunities could our organization benefit from discovering using the Coding Analytics section?"*

The Coding Analytics section is useful when needing to evaluate over and under documentation opportunities as reflected in the total reimbursement amount. The Medicare payer population is recommended for this section analysis (see Figure 13.1). This section offers several report types and additional settings options which you haven't seen in other sections yet. The over and under documentation opportunities that are discovered through using this section are meant to highlight potential coding documentation opportunities. This is a report based section and only includes MS-DRG Clusters with an above or below average case mix since average MS-DRG Clusters have no reimbursement opportunity. The report type provides flexible options regarding Hospital-Level report, Physician report, Specialty report and Overall diagnosis report. Moving into the settings field, there are peer group, physician specialties, service lines and payer filters which are unique to this section. The peer groups for coding analytics are a fixed list of peer groups specific to the coding analytics analysis. Therefore, you will not see the same peer group options that you developed to use throughout the rest of the scorecard. You would use the coding analytics section to identify coding opportunities which could equate to better reimbursement from Medicare.

The Hospital-Level report lists totals for the MS-DRG clusters that received more than the benchmark reimbursement and the clusters that received less. In order to find under-coded opportunities, click on the *MS-DRG Clusters Below Average* hyperlink in the Description column in the table view (See Figure 13.1).

FIGURE 13.1 CODING ANALYTICS SECTION MS-DRG CLUSTERS BELOW AVERAGE

Description	# of Cases	Current Total Reimbursement	Potential Total Reimbursement	Total Reimbursement Opportunity	Current Avg Case Mix	Potential Avg Case Mix	Current Total Case Mix	Potential Total Case Mix
MS-DRG Clusters Below Average	1719	$17,675,952.78	$18,789,304.71	$1,113,351.93	1.6794	1.7890	2,886.8826	3,075.3360
MS-DRG Clusters Above Average	3080	$33,797,223.08	$32,528,574.70	$-1,268,648.38	1.7824	1.7138	5,489.7388	5,278.3561
Total	4799	$51,473,175.86	$51,317,879.41	$-155,296.45	1.7455	1.7407	8,376.6214	8,353.6921

When you click on the 'below average' hyperlink, the table rows will display specific MS-DRG Clusters. The table columns will then reflect the number of cases, reimbursement opportunity, and case mix values specific to the MS-DRG clusters in each row. See Figure 13.2 for an example of this stratification and drill feature. You can easily sort the values by clicking on the column header(s), with the directional arrows, to bring the largest opportunity to the top row.

FIGURE 13.2 CODING ANALYTICS SECTION MS-DRG CLUSTERS DRILL VIEW

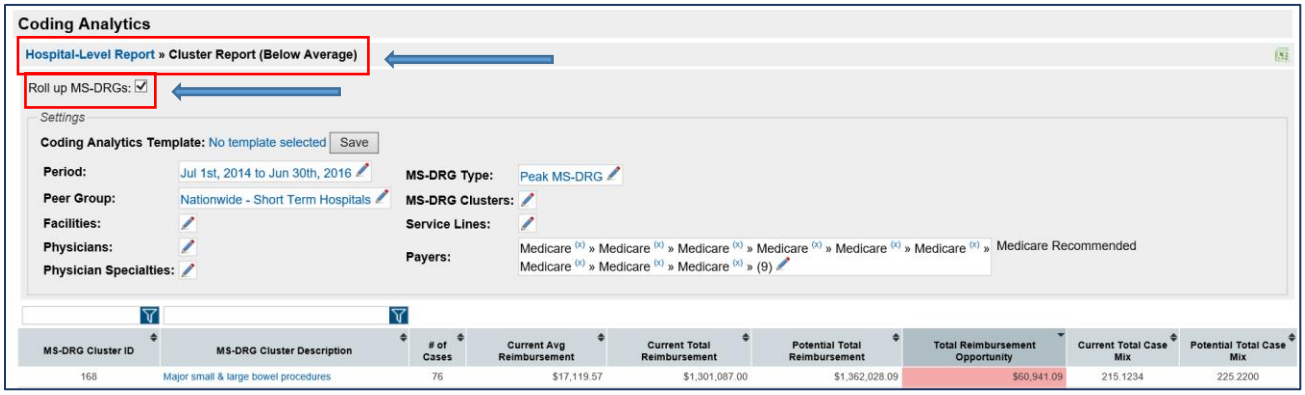
MS-DRG Cluster ID	MS-DRG Cluster Description	# of Cases	Current Avg Reimbursement	Current Total Reimbursement	Potential Total Reimbursement	Total Reimbursement Opportunity	Current Total Case Mix	Potential Total Case Mix
168	Major small & large bowel procedures	76	$17,119.57	$1,301,087.00	$1,362,028.09	$60,941.09	215.1234	225.2200
234	Other O.R. procedures for multiple significant trauma	7	$22,400.71	$156,805.00	$211,829.10	$55,024.10	27.3831	37.1088
251	Permanent cardiac pacemaker implant	34	$15,159.21	$515,413.00	$570,274.25	$54,861.25	85.2541	94.1619
335	Wnd debrid & skn grft exc hand, for musculo-conn tiss dis	23	$18,208.87	$418,804.00	$466,173.91	$47,369.91	71.4156	79.7529
296	Spinal fus exc cerv w spinal curv/malig/infec or ext fus	14	$39,612.92	$554,580.84	$599,065.02	$44,484.18	94.1788	101.6852
245	Perc cardiovasc proc w drug-eluting stent	83	$14,239.69	$1,181,894.00	$1,225,646.50	$43,752.50	195.3841	202.9990
61	Circulatory disorders except AMI, w card cath	48	$8,119.21	$389,722.00	$431,277.45	$41,555.45	63.3602	70.6068
98	Extensive O.R. procedure unrelated to principal diagnosis	20	$21,081.90	$421,638.00	$463,145.80	$41,507.80	71.3943	78.9176

You can continue to drill into the largest opportunity, by clicking on the MS-DRG "Major small & large bowel procedures" (see Figure 13.2). We will focus on the MS-DRG cluster ID #168 (Major small & large bowel procedures) for this scenario. In Figure 13.2 we can see that ID #168 has 76 cases with the following columns offering various reimbursement opportunity values. We sorted by the Total Reimbursement Opportunity column to focus on the largest reimbursement opportunity first.

Question 2: *"What is the distribution of DRGs included in the MS-DRG cluster with the largest reimbursement opportunity?"*

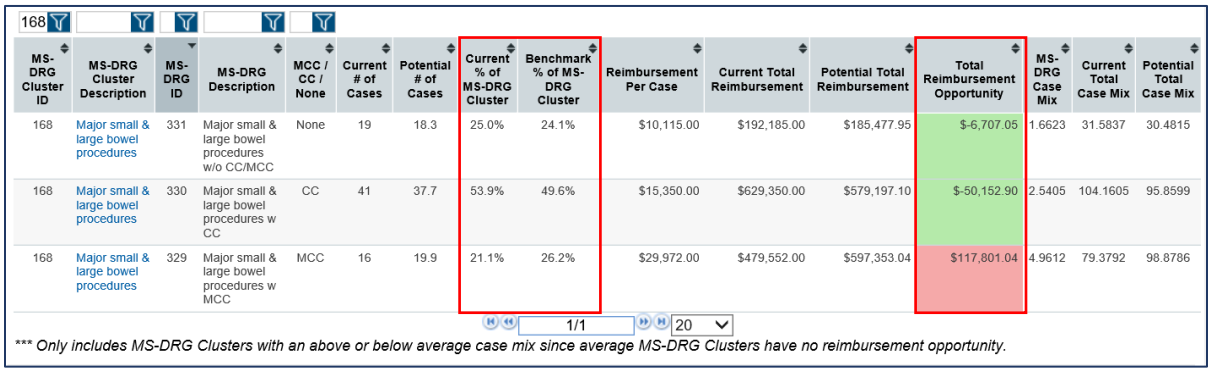
In this use case we are focusing on the MS-DRG Cluster ID #168. The table results yield information at the Hospital-Level Report and provides a list of MS-DRG Cluster IDs. There are two highlighted items in Figure 13.3 which we would like to draw your attention to for a moment. The first highlighted item identifies the report type and view, whereas the second highlighted item allows you to de-select the checkmark and unroll the MS-DRGs. Once we remove the checkmark to unroll the MS-DRGs we can be more selective about our focus on just ID #168. Before proceeding with the steps outlined below, take a few moments to review the unrolled results for the ID #168 MS-DRG Cluster. When you de-select Roll up MS-DRGs, the table rows will be display the MS-DRGs across the None, Complications or Comorbidities (CC), or MCC categories. For this scenario, we are going to keep our focus on ID #168, Major small & large bowel procedures. Follow the steps below to narrow your search.

FIGURE 13.3 HOSPITAL LEVEL REPORT MS-DRG ROLL UP



- **Step 1**: Remove the checkmark next to "Roll up MS-DRGs" and select Rerun.
- **Step 2**: Take a moment to review the unrolled MS-DRG table results, focusing on the Total Reimbursement Opportunity column.
- **Step 3**: Filter on the MS-DRG Cluster ID column, entering "168" to continue our focus on the Major small & large bowel procedures MS-DRG cluster (see Figure 13.4).

FIGURE 13.4 HOSPITAL LEVEL REPORT MS-DRG UNROLL & FILTER ON MS-DRG CLUSTER ID 168



168

MS-DRG Cluster ID	MS-DRG Cluster Description	MS-DRG ID	MS-DRG Description	MCC / CC / None	Current # of Cases	Potential # of Cases	Current % of MS-DRG Cluster	Benchmark % of MS-DRG Cluster	Reimbursement Per Case	Current Total Reimbursement	Potential Total Reimbursement	Total Reimbursement Opportunity	MS-DRG Case Mix	Current Total Case Mix	Potential Total Case Mix
168	Major small & large bowel procedures	331	Major small & large bowel procedures w/o CC/MCC	None	19	18.3	25.0%	24.1%	$10,115.00	$192,185.00	$185,477.95	$-6,707.05	1.6623	31.5837	30.4815
168	Major small & large bowel procedures	330	Major small & large bowel procedures w CC	CC	41	37.7	53.9%	49.6%	$15,350.00	$629,350.00	$579,197.10	$-50,152.90	2.5405	104.1605	95.8599
168	Major small & large bowel procedures	329	Major small & large bowel procedures w MCC	MCC	16	19.9	21.1%	26.2%	$29,972.00	$479,552.00	$597,353.04	$117,801.04	4.9612	79.3792	98.8786

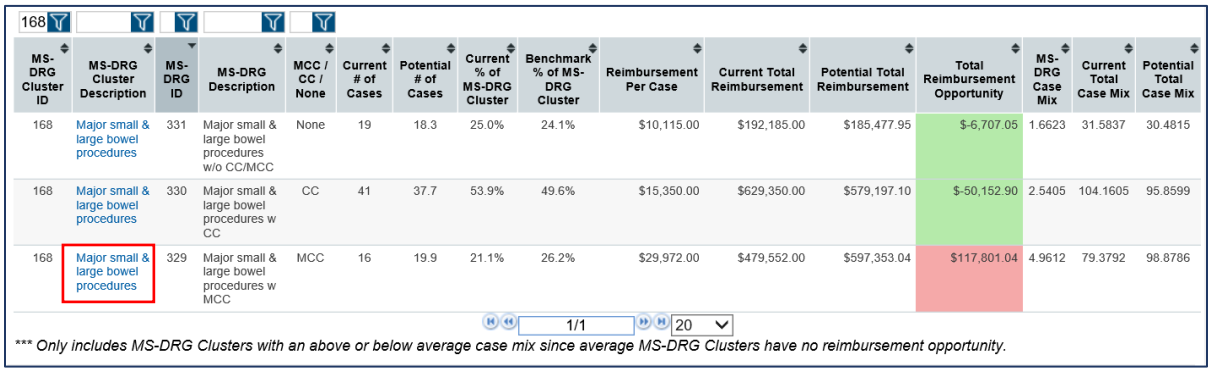
1/1 20

*** Only includes MS-DRG Clusters with an above or below average case mix since average MS-DRG Clusters have no reimbursement opportunity.

Let's take a few moments to review the important table results in Figure 13.4. The Current % of MS-DRG Cluster column and the Benchmark % DRG cluster column highlight the percentage of cases involving this particular MS-DRG Cluster, #168. The MS-DRG cluster #168 is made up of MS-DRGs 329, 330, and 331. Furthermore, MS-DRG Cluster #168 is broken down by None, CC, and MCC with current cases as compared to cases represented in the benchmark profile. The table results in Figure 13.4 reveal total reimbursement opportunity across the MCC category for the MS-DRG Cluster 168. In addition, focusing on the bottom row shown in Figure 13.4, approximately 3.9 more cases should have reflected additional coding documentation, which in turn would have impacted reimbursement opportunity. ***The benchmark shows that of 76 cases in MS-DRG cluster #168, about 20 of those end up being MCC or MS-DRG 329, which gives the highest value of reimbursement.***

Question 3: *"What diagnosis code that would qualify the encounter as a MCC are we missing the most?"*

FIGURE 13.5 HOSPITAL LEVEL REPORT MS-DRG UNROLL & FILTER ON MS-DRG CLUSTER ID 168



168

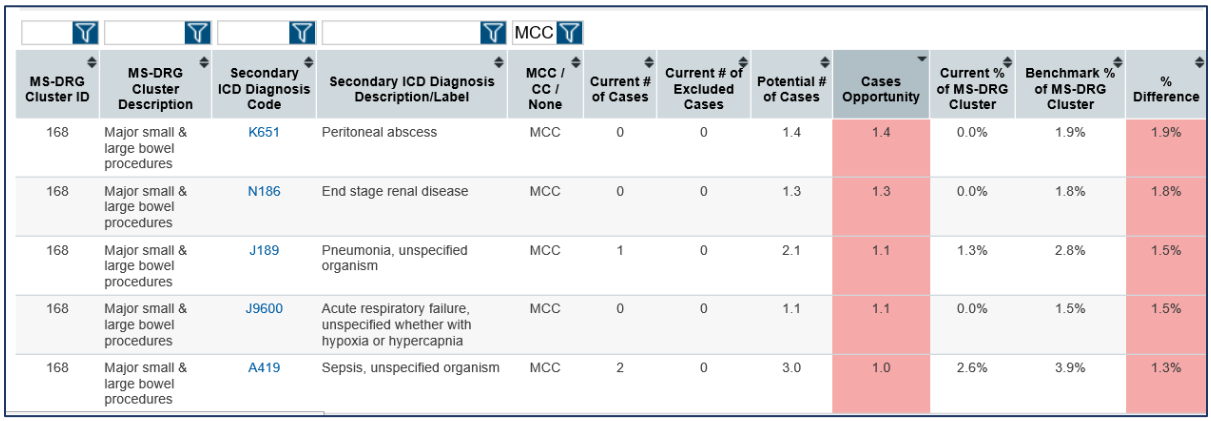
MS-DRG Cluster ID	MS-DRG Cluster Description	MS-DRG ID	MS-DRG Description	MCC / CC / None	Current # of Cases	Potential # of Cases	Current % of MS-DRG Cluster	Benchmark % of MS-DRG Cluster	Reimbursement Per Case	Current Total Reimbursement	Potential Total Reimbursement	Total Reimbursement Opportunity	MS-DRG Case Mix	Current Total Case Mix	Potential Total Case Mix
168	Major small & large bowel procedures	331	Major small & large bowel procedures w/o CC/MCC	None	19	18.3	25.0%	24.1%	$10,115.00	$192,185.00	$185,477.95	$-6,707.05	1.6623	31.5837	30.4815
168	Major small & large bowel procedures	330	Major small & large bowel procedures w CC	CC	41	37.7	53.9%	49.6%	$15,350.00	$629,350.00	$579,197.10	$-50,152.90	2.5405	104.1605	95.8599
168	Major small & large bowel procedures	329	Major small & large bowel procedures w MCC	MCC	16	19.9	21.1%	26.2%	$29,972.00	$479,552.00	$597,353.04	$117,801.04	4.9612	79.3792	98.8786

1/1 20

*** Only includes MS-DRG Clusters with an above or below average case mix since average MS-DRG Clusters have no reimbursement opportunity.

Click on the MS-DRG cluster description blue hyperlink, MS-DRG ID 329, as highlighted in Figure 13.5. The table results will reflect the MCC specific details only, with associated secondary diagnosis codes, for further review (see Figure 13.6).

FIGURE 13.6 MS-DRG CLUSTER ID 168 UNROLLED WITH MCC CASE OPPORTUNITIES



MS-DRG Cluster ID	MS-DRG Cluster Description	Secondary ICD Diagnosis Code	Secondary ICD Diagnosis Description/Label	MCC / CC / None	Current # of Cases	Current # of Excluded Cases	Potential # of Cases	Cases Opportunity	Current % of MS-DRG Cluster	Benchmark % of MS-DRG Cluster	% Difference
168	Major small & large bowel procedures	K651	Peritoneal abscess	MCC	0	0	1.4	1.4	0.0%	1.9%	1.9%
168	Major small & large bowel procedures	N186	End stage renal disease	MCC	0	0	1.3	1.3	0.0%	1.8%	1.8%
168	Major small & large bowel procedures	J189	Pneumonia, unspecified organism	MCC	1	0	2.1	1.1	1.3%	2.8%	1.5%
168	Major small & large bowel procedures	J9600	Acute respiratory failure, unspecified whether with hypoxia or hypercapnia	MCC	0	0	1.1	1.1	0.0%	1.5%	1.5%
168	Major small & large bowel procedures	A419	Sepsis, unspecified organism	MCC	2	0	3.0	1.0	2.6%	3.9%	1.3%

In Figure 13.6, we sorted by the Cases Opportunity column and confirmed that our search is narrowed to just looking at MCC diagnosis codes. At a glance, we can identify that peritoneal abscess, end stage renal disease, and pneumonia are the top three MCC case opportunities to focus your documentation improvement efforts.

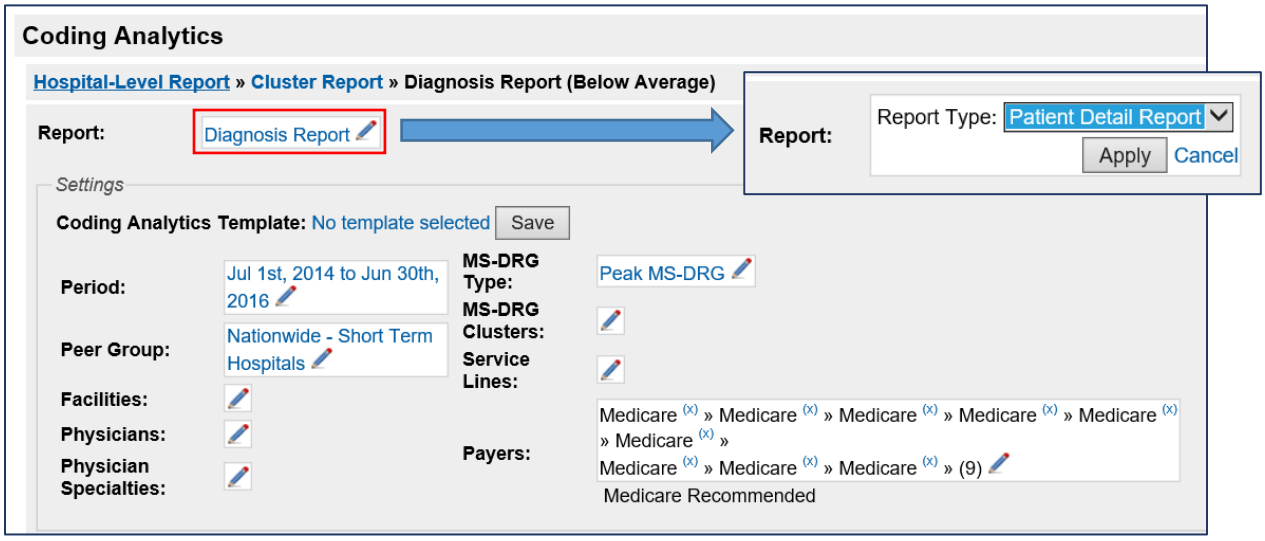
We've answered question number three, now it's time to move on to question number four which asks about patient level details.

Question 4: *"I have sorted by the cases opportunity column to reflect the largest opportunity, can I see patient level detail now?"*

Patient level detail can be revealed by switching the Report type in the settings field above the table view. Follow the steps listed below to display patient level information.

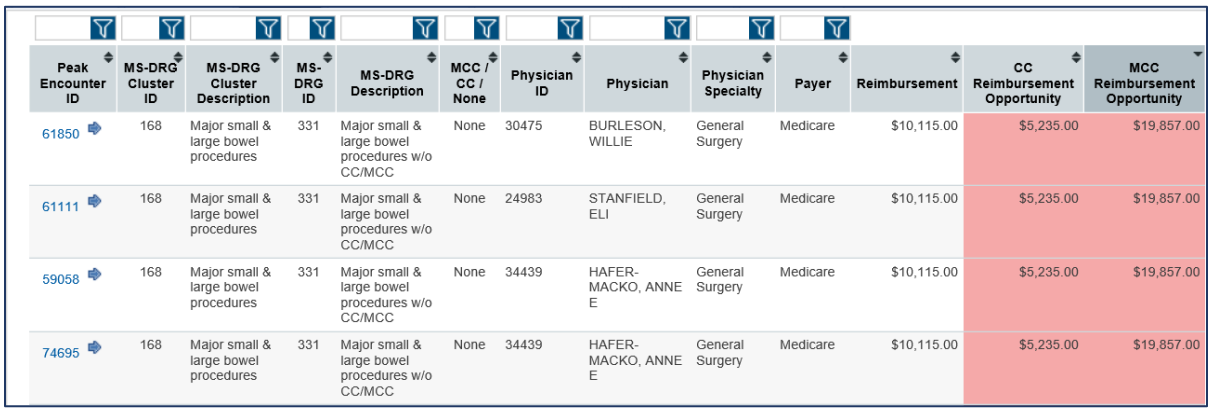
- **Step 1**: Click on the pencil icon next to the Report type called 'Diagnosis Report'.
- **Step 2**: Select the Patient Detail Report Type from the menu.
- **Step 3**: Click Apply to save the updated report selection and Rerun to view the results (see Figure 13.7).

FIGURE 13.7 CODING ANALYTICS REPORT OPTIONS



The Patient Detail Report view reflects reimbursement opportunity based on MS-DRG details. By switching to this particular report view, each row represents one encounter, and additional details including physician name, physician specialty, and the reimbursement related columns on the far right side of the table (see Figure 13.8). You can now easily find all encounters with opportunity that may need a second review.

FIGURE 13.8 PATIENT DETAIL REPORT – REIMBURSEMENT OPPORTUNITY RESULTS



Peak Encounter ID	MS-DRG Cluster ID	MS-DRG Cluster Description	MS-DRG ID	MS-DRG Description	MCC / CC / None	Physician ID	Physician	Physician Specialty	Payer	Reimbursement	CC Reimbursement Opportunity	MCC Reimbursement Opportunity
61850	168	Major small & large bowel procedures	331	Major small & large bowel procedures w/o CC/MCC	None	30475	BURLESON, WILLIE	General Surgery	Medicare	$10,115.00	$5,235.00	$19,857.00
61111	168	Major small & large bowel procedures	331	Major small & large bowel procedures w/o CC/MCC	None	24983	STANFIELD, ELI	General Surgery	Medicare	$10,115.00	$5,235.00	$19,857.00
59058	168	Major small & large bowel procedures	331	Major small & large bowel procedures w/o CC/MCC	None	34439	HAFER-MACKO, ANNE E	General Surgery	Medicare	$10,115.00	$5,235.00	$19,857.00
74695	168	Major small & large bowel procedures	331	Major small & large bowel procedures w/o CC/MCC	None	34439	HAFER-MACKO, ANNE E	General Surgery	Medicare	$10,115.00	$5,235.00	$19,857.00

In conclusion, we have reviewed how to use the coding analytics section to discover documentation opportunities, specifically across the Medicare patient population. We explored the unroll feature and which report types show additional details to further narrow and identify documentation and reimbursement opportunities. In addition to MS-DRG clusters, the secondary diagnosis codes are available for review and can be organized to show highest reimbursement opportunity. We learned that the coding analytics section can drill down to encounter level detail with the Clinical Analytics Encounter ID hyperlink, using the Patient Details report type. Hopefully, this scenario highlighted the benefits of this powerful section and you will consider adding this section to your Clinical Analytics scorecards.

Chapter 14: Potentially Preventable Complications Case Study

Potentially Preventable Complications Analysis

Purpose: *Specifically designed to analyze Potentially Preventable Complications*

Key Concepts:

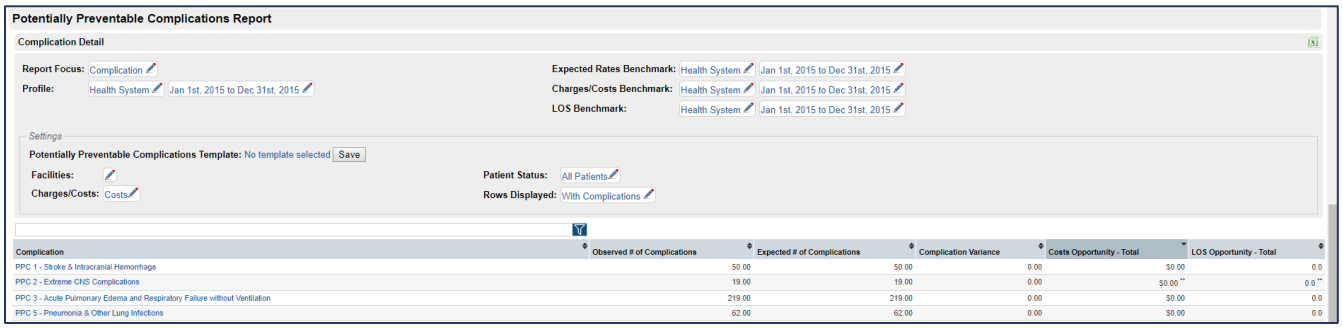
- *Only available to health systems licensing 3M PPC Software through Syntellis/Clinical Analytics Software.*
- *Profile based section that allows you to identify complications and their outcomes.*
- *Additional report viewing options such as Complication, Patient, Physician or by Specialty*

Potentially Preventable Complications Report Case Study Scenario:

Question 1: *"What is the best report type to easily see the complications and the associated financial outcomes?"*

Question 2: *"How can I leverage the benchmarks to provide the most meaningful analysis?"*

FIGURE 14.1 POTENTIALLY PREVENTABLE COMPLICATIONS REPORT SECTION



The Potentially Preventable Complications section can help to identify complications and the related financial outcomes. Consider taking a care variation approach or leverage the multiple report focus types to explore the highest volume of complications. In this chapter we will discuss how to run an efficient analysis and how to interpret the results revealed in the PPC report. The PPC section is unique from other sections in Clinical Analytics because it offers several additional benchmarking capabilities with an Expected Rates Benchmark, Charges/Costs Benchmark, and LOS Benchmark options. This is a profile based section, so you can use the power of profiles to narrow the population of interest from the start.

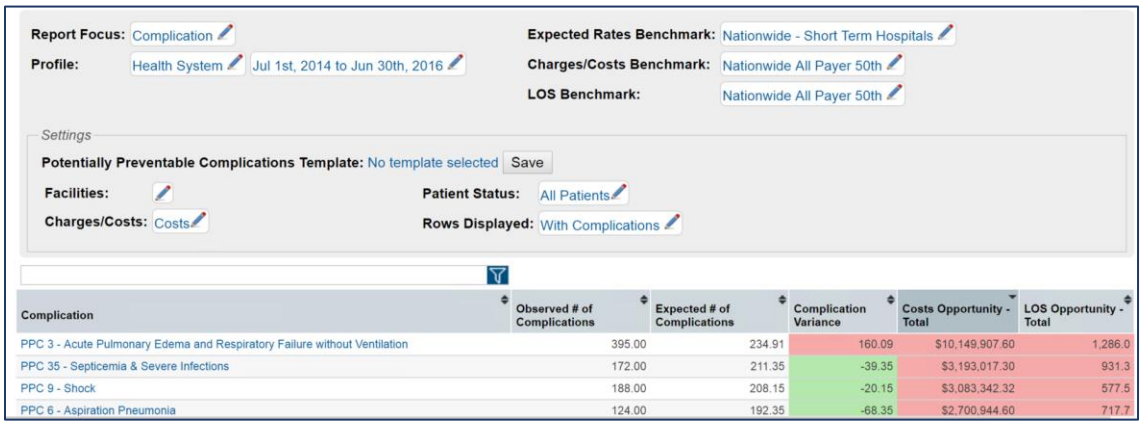
Potentially Preventable Complications Report Section Case Study Scenario:

Question 1: *"What is the best report type to easily see the complications and the associated financial outcomes?"*

In order to pick the best report type, let's take a few minutes to review the available reports and what details you can uncover with each report. The results in the report examples listed below are using the Health System profile which is looking across all encounters in the health system with no filters applied. The four available report types in the PPC analytic section are the complication, patient, physician, and specialty report options:

- The Complication report is the default report and displays rolled up complications listing observed versus expected numbers, complication variance, total cost opportunity and total length of stay opportunity (see Figure 14.2).

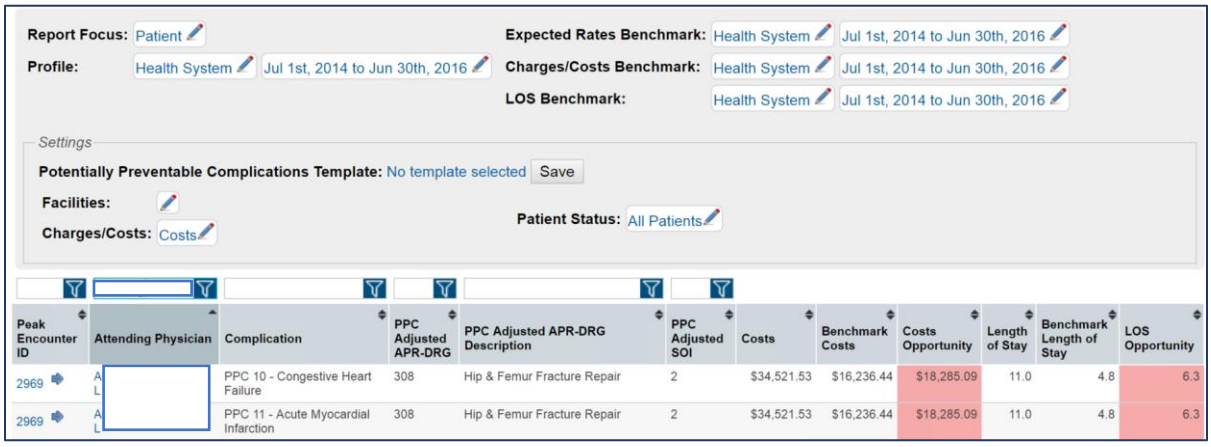
FIGURE 14.2 PPC COMPLICATION REPORT VIEW



Complication	Observed # of Complications	Expected # of Complications	Complication Variance	Costs Opportunity - Total	LOS Opportunity - Total
PPC 3 - Acute Pulmonary Edema and Respiratory Failure without Ventilation	395.00	234.91	160.09	$10,149,907.60	1,286.0
PPC 35 - Septicemia & Severe Infections	172.00	211.35	-39.35	$3,193,017.30	931.3
PPC 9 - Shock	188.00	208.15	-20.15	$3,083,342.32	577.5
PPC 6 - Aspiration Pneumonia	124.00	192.35	-68.35	$2,700,944.60	717.7

- The Patient report offers patient level detail with PPC Adjusted APR-DRG and SOI. You can sort or filter by the column headers to identify the highest cost and LOS opportunities (see Figure 14.3).

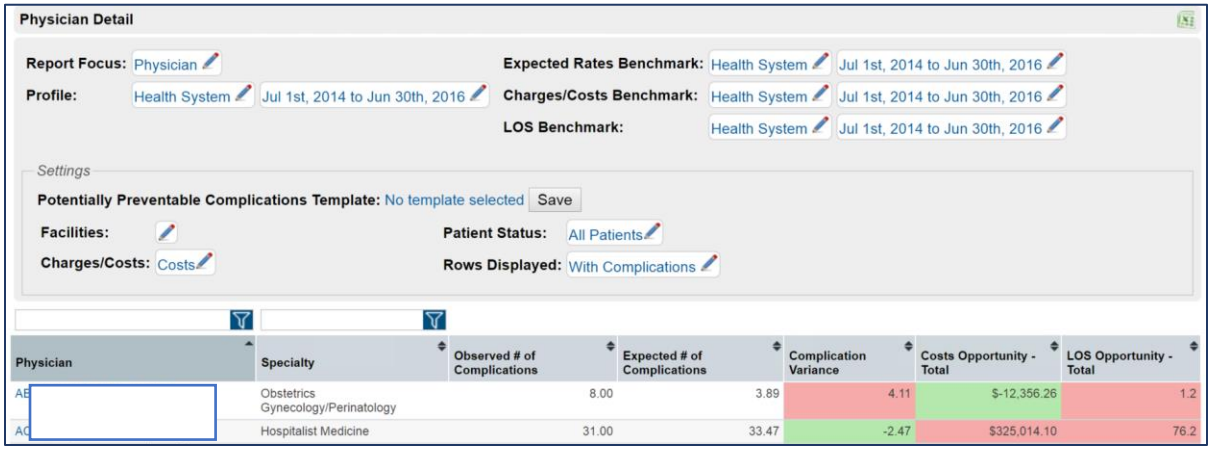
FIGURE 14.3 PPC PATIENT REPORT VIEW



Peak Encounter ID	Attending Physician	Complication	PPC Adjusted APR-DRG	PPC Adjusted APR-DRG Description	PPC Adjusted SOI	Costs	Benchmark Costs	Costs Opportunity	Length of Stay	Benchmark Length of Stay	LOS Opportunity
2969	A L	PPC 10 - Congestive Heart Failure	308	Hip & Femur Fracture Repair	2	$34,521.53	$16,236.44	$18,285.09	11.0	4.8	6.3
2969	A L	PPC 11 - Acute Myocardial Infarction	308	Hip & Femur Fracture Repair	2	$34,521.53	$16,236.44	$18,285.09	11.0	4.8	6.3

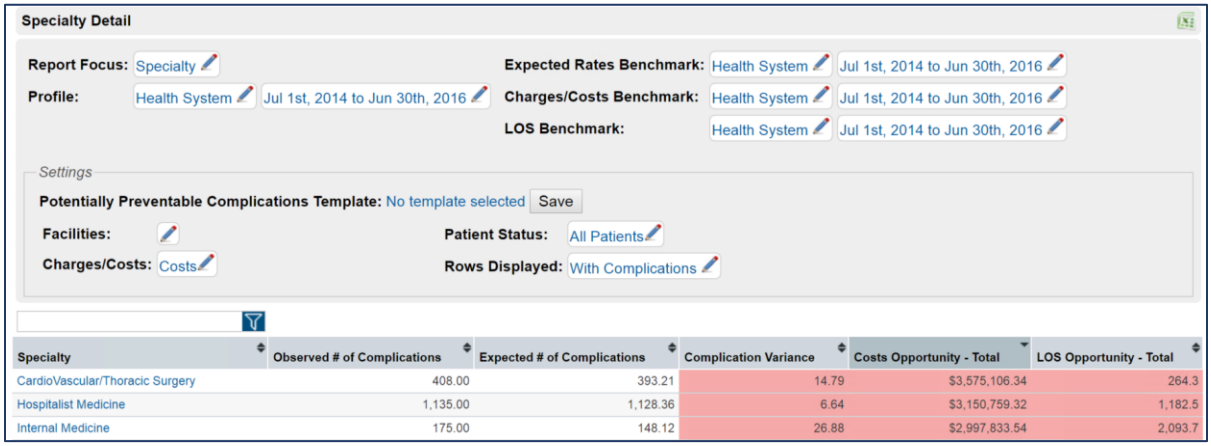
- The Physician report looks like the Complication report, but provides a rolled up view of total number of complications across each individual physician (see Figure 14.4).

FIGURE 14.4 PPC PHYSICIAN REPORT VIEW



- The Specialty report is a rolled up view similar to the Physician report. It shows the total number of complications, but instead of each row representing a physician, each row represents the specialty (see Figure 14.5).

FIGURE 14.5 PPC SPECIALTY REPORT VIEW



Now that we've reviewed the four report types, you can see that each one will offer a cost opportunity, it's just a matter of how you want to focus the report results (e.g., complications, physician specialties, individual physicians, or patient level).

For this case study we will focus on the complication report, and set up the benchmarks to compare the health system profile, over a one year time period, to nationwide all payer and short term hospitals. We talked through the available report options to answer the first question, so now we will use the complication report and answer the second question in the steps outlined below.

Question 2: *"How can I leverage the benchmarks to provide the most meaningful analysis?"*

As mentioned earlier in the chapter, the PPC section offers unique benchmark options that you will not find in any other Clinical Analytics scorecards analytic section. You can utilize internal or external benchmarks for expected rates, charges/costs and length of stay. The flexible benchmark options allow you to focus internally across your health system or externally at other 'like' hospitals across the nation. Let's focus on the complication report and use the benchmarks mentioned above.

- **Step 1**: Click on the pencil icons for each benchmark profile and select the following:
  - Expected Rates Benchmark: *Nationwide – Short Term Hospitals, click Apply*
  - Charges/Costs Benchmark: *Nationwide All Payer 50th, click Apply*
  - LOS Benchmark: *Nationwide All Payer 50th, click Apply*
- **Step 2**: Set the time period, for the Profile 'Health System', to a thirteen month frame.
  - The report settings should look like this when you are done:

- **Step 3**: Click Rerun to view the results
- *If you did not have the benchmark options listed above, go to the Profile Manager to create new ones. If you don't find the peer group in Profile Manager, contact Clinical Analytics Support for further assistance (see Appendix B).*

FIGURE 14.6 PPC COMPLICATION REPORT CASE STUDY RESULTS

Complication	Observed # of Complications	Expected # of Complications	Complication Variance	Costs Opportunity - Total	LOS Opportunity - Total
PPC 3 - Acute Pulmonary Edema and Respiratory Failure without Ventilation	178.00	108.61	69.39	$7,724,033.79	705.0
PPC 65 - Urinary Tract Infection	103.00	284.88	-181.88	$2,676,692.81	1,572.3
PPC 48 - Other Complications of Medical Care	38.00	24.87	13.13	$2,018,845.27	467.2
PPC 9 - Shock	91.00	101.90	-10.90	$1,951,583.82	384.1

The complication report results show the greatest ***cost opportunity*** for PPC 3: Acute Pulmonary Edema and Respiratory Failure without Ventilation (see Figure 14.6).

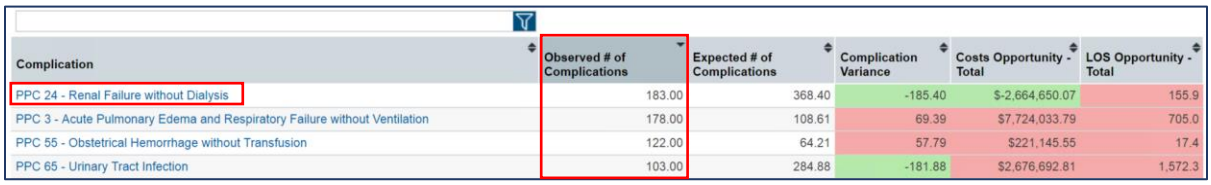
If we sort by the LOS Opportunity column, we can see that the complication with the highest ***LOS opportunity*** is now PPC 65 Urinary Tract Infection (see Figure 14.7).

FIGURE 14.7 PPC COMPLICATION REPORT LOS OPPORTUNITY RESULTS

Complication	Observed # of Complications	Expected # of Complications	Complication Variance	Costs Opportunity - Total	LOS Opportunity - Total
PPC 65 - Urinary Tract Infection	103.00	284.88	-181.88	$2,676,692.81	1,572.3
PPC 1 - Stroke & Intracranial Hemorrhage	35.00	48.13	-13.13	$1,033,179.50	1,211.8
PPC 3 - Acute Pulmonary Edema and Respiratory Failure without Ventilation	178.00	108.61	69.39	$7,724,033.79	705.0

If we sort by the Observed # of Complications column, the highest volume complication is PPC 24: Renal Failure without Dialysis.

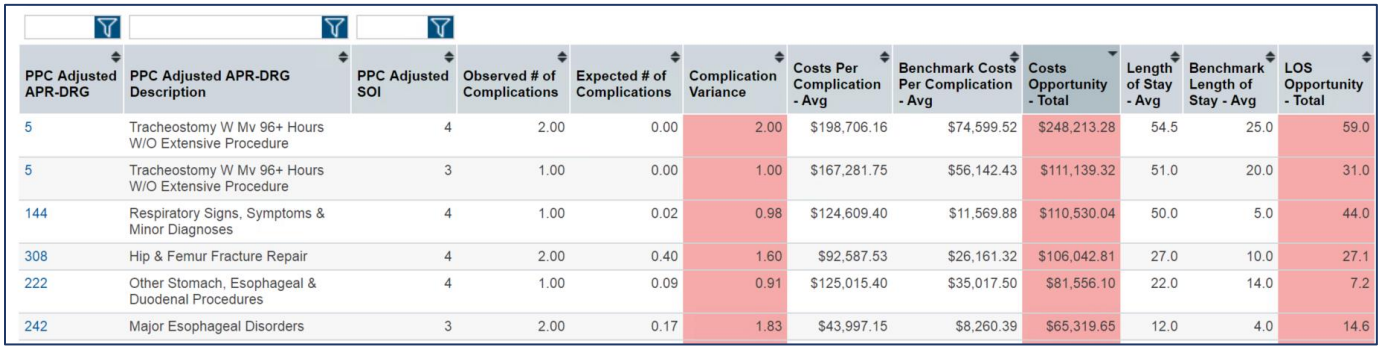
FIGURE 14.8 PPC COMPLICATION REPORT OBSERVED # OF COMPLICATIONS RESULTS



Complication	Observed # of Complications	Expected # of Complications	Complication Variance	Costs Opportunity - Total	LOS Opportunity - Total
PPC 24 - Renal Failure without Dialysis	183.00	368.40	-185.40	$-2,664,650.07	155.9
PPC 3 - Acute Pulmonary Edema and Respiratory Failure without Ventilation	178.00	108.61	69.39	$7,724,033.79	705.0
PPC 55 - Obstetrical Hemorrhage without Transfusion	122.00	64.21	57.79	$221,145.55	17.4
PPC 65 - Urinary Tract Infection	103.00	284.88	-181.88	$2,676,692.81	1,572.3

Let's take a deeper dive into PPC 24: Renal Failure without Dialysis by clicking on the blue hyperlink in the Complication column. The drill view, once you've clicked on the PPC 24 complication link, will look very similar to the Patient report view discussed at the beginning of this chapter. However, it does not list the individual patients and physicians quite yet, but it can by drilling into the PPC Adjusted APR-DRG column. Review Figure 14.9 to identify the unique columns available in this particular drill exercise.

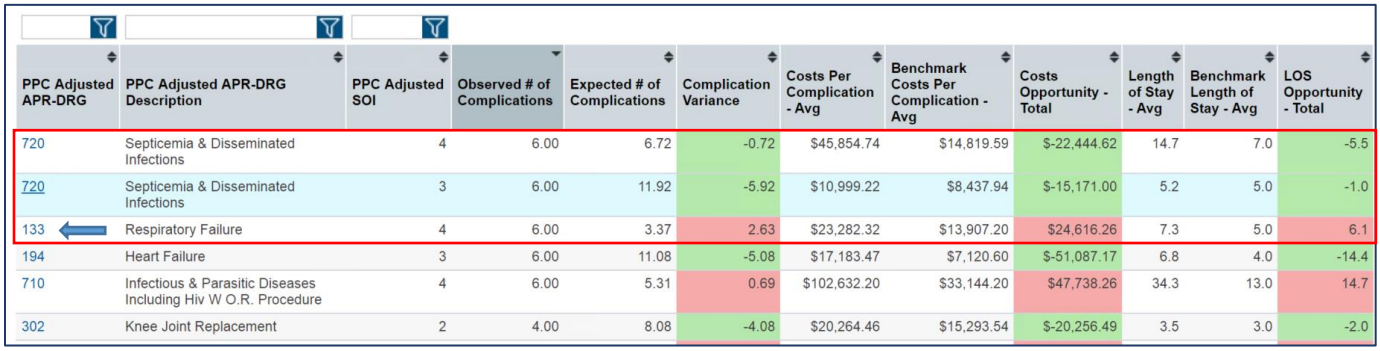
FIGURE 14.9 PPC COMPLICATION REPORT DRILL INTO PPC 24



PPC Adjusted APR-DRG	PPC Adjusted APR-DRG Description	PPC Adjusted SOI	Observed # of Complications	Expected # of Complications	Complication Variance	Costs Per Complication - Avg	Benchmark Costs Per Complication - Avg	Costs Opportunity - Total	Length of Stay - Avg	Benchmark Length of Stay - Avg	LOS Opportunity - Total
5	Tracheostomy W Mv 96+ Hours W/O Extensive Procedure	4	2.00	0.00	2.00	$198,706.16	$74,599.52	$248,213.28	54.5	25.0	59.0
5	Tracheostomy W Mv 96+ Hours W/O Extensive Procedure	3	1.00	0.00	1.00	$167,281.75	$56,142.43	$111,139.32	51.0	20.0	31.0
144	Respiratory Signs, Symptoms & Minor Diagnoses	4	1.00	0.02	0.98	$124,609.40	$11,569.88	$110,530.04	50.0	5.0	44.0
308	Hip & Femur Fracture Repair	4	2.00	0.40	1.60	$92,587.53	$26,161.32	$106,042.81	27.0	10.0	27.1
222	Other Stomach, Esophageal & Duodenal Procedures	4	1.00	0.09	0.91	$125,015.40	$35,017.50	$81,556.10	22.0	14.0	7.2
242	Major Esophageal Disorders	3	2.00	0.17	1.83	$43,997.15	$8,260.39	$65,319.65	12.0	4.0	14.6

The initial results returned highest opportunity filtered on the Costs Opportunity column. We want to see the highest volume by the Observed # of Complications and focus on those encounters. By filtering on the Observed # of Complications column we can see that Sepsis APR-DRG 720 and Respiratory Failure APR-DRG 133 have the same number of complications. As compared to the Sepsis APR-DRG 720 complications, there are more than expected complications and increased cost opportunity for Respiratory APR-DRG 133 (see Figure 14.10). Next we will identify the six patient encounters that fall into the Respiratory Failure APR-DRG 133 observed complications, by clicking on the blue hyperlink for 133 in the PPC Adjust APR-DRG column (see blue arrow in Figure 14.10).

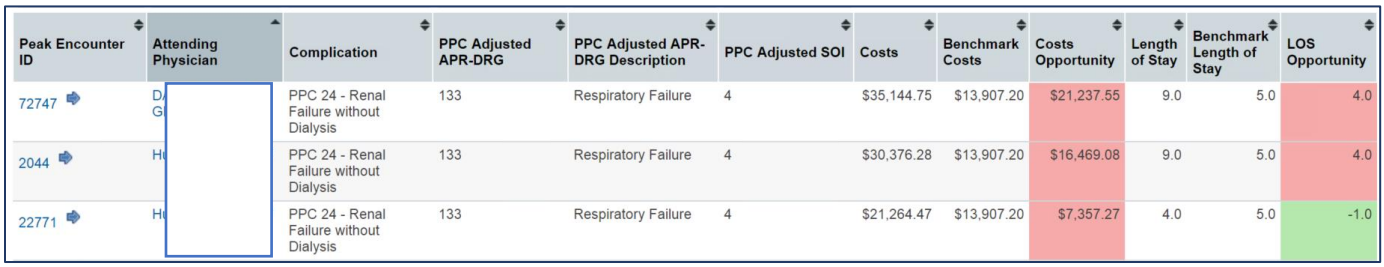
FIGURE 14.10 PPC COMPLICATION REPORT OBSERVED # OF COMPLICATION FILTER RESULTS



PPC Adjusted APR-DRG	PPC Adjusted APR-DRG Description	PPC Adjusted SOI	Observed # of Complications	Expected # of Complications	Complication Variance	Costs Per Complication - Avg	Benchmark Costs Per Complication - Avg	Costs Opportunity - Total	Length of Stay - Avg	Benchmark Length of Stay - Avg	LOS Opportunity - Total
720	Septicemia & Disseminated Infections	4	6.00	6.72	-0.72	$45,854.74	$14,819.59	$-22,444.62	14.7	7.0	-5.5
720	Septicemia & Disseminated Infections	3	6.00	11.92	-5.92	$10,999.22	$8,437.94	$-15,171.00	5.2	5.0	-1.0
133	Respiratory Failure	4	6.00	3.37	2.63	$23,282.32	$13,907.20	$24,616.26	7.3	5.0	6.1
194	Heart Failure	3	6.00	11.08	-5.08	$17,183.47	$7,120.60	$-51,087.17	6.8	4.0	-14.4
710	Infectious & Parasitic Diseases Including Hiv W O.R. Procedure	4	6.00	5.31	0.69	$102,632.20	$33,144.20	$47,738.26	34.3	13.0	14.7
302	Knee Joint Replacement	2	4.00	8.08	-4.08	$20,264.46	$15,293.54	$-20,256.49	3.5	3.0	-2.0

Once you click on the PPC Adjusted APR-DRG 133 hyperlink, the drill view will look just like the Patient Report view we discussed earlier in this chapter. You can continue to sort and filter on other opportunity columns by clicking on the column headers.

FIGURE 14.11 PPC COMPLICATION REPORT PPC 133 DRILL VIEW



Peak Encounter ID	Attending Physician	Complication	PPC Adjusted APR-DRG	PPC Adjusted APR-DRG Description	PPC Adjusted SOI	Costs	Benchmark Costs	Costs Opportunity	Length of Stay	Benchmark Length of Stay	LOS Opportunity
72747	D[redacted] G[redacted]	PPC 24 - Renal Failure without Dialysis	133	Respiratory Failure	4	$35,144.75	$13,907.20	$21,237.55	9.0	5.0	4.0
2044	H[redacted]	PPC 24 - Renal Failure without Dialysis	133	Respiratory Failure	4	$30,376.28	$13,907.20	$16,469.08	9.0	5.0	4.0
22771	H[redacted]	PPC 24 - Renal Failure without Dialysis	133	Respiratory Failure	4	$21,264.47	$13,907.20	$7,357.27	4.0	5.0	-1.0

If any of these views were of particular interest and you don't want to perform multiple clicks every time you access this section, you can save the template view for future use. If you don't recall how to save a template, access the Documentation (Knowledge Center) resource in Clinical Analytics to learn more about this time saving tool!

FIGURE 14.12 SETTINGS TEMPLATE SAVE FEATURE

In conclusion, complication rates across hospitals requires the use of severity and risk adjustment methodology, reason for admission, and evaluation of comorbid conditions to provide fair and reasonable comparisons. The PPC analytic section utilizes the 3M methodology and provides fair and reasonable analyses for your health system. Keep in mind, you have the power of profile filtering to further narrow the population of interest in the PPC section. You could consider running the report on a surgical or medical patient population, or even more specifically a particular surgery or medical condition. Now that you have a better understanding of the PPC section, we hope to hear from you soon about the meaningful reports and results you have discovered.

Chapter 15: Potentially Preventable Readmissions Case Study

Potentially Preventable Readmissions

Purpose: Analyzes preventable readmissions by Physician, Specialty, Costs, Charges, and LOS categories.

Key concepts:

- Syntellis Clinical Analytics Software licenses software from 3M for classifying Potentially Preventable Readmissions.
- Report types available in Physician, Specialty, Physician Group, Service Line, Clinical Analytics MS-DRG, Client MS-DRG and APR-DRG formats.
- This section is **not** Profiles-based
- There is no benchmark selection available

FIGURE 15.1 POTENTIALLY PREVENTABLE READMISSIONS (PPR) REPORT SECTION

Potentially Preventable Readmissions Report Case Study Scenario:

Question 1: *"What is the best report type to easily see the readmissions and the associated charges and costs outcomes?"*

Question 2: *"Can I drill down to patient level information?"*

Question 3: *"How can I see the DRG details associated with each readmission?"*

In Chapter 14 we reviewed the Potentially Preventable Complications (PPC) section which identified complications and the related cost, charges, and length of stay opportunities. Whereas, the Potentially Preventable Readmission (PPR) section identifies readmissions and their financial outcomes. You will see similarities between the PPC and PPR sections, however, let's use this chapter to point out the differences and how you can leverage the multiple report focus types to provide an actionable readmission report.

PPRs are chain-based and, therefore, less sensitive to readmission outliers than other readmission rate calculations. By design, PPRs only include readmissions based on conditions that could have been prevented. This analytic can reveal issues with discharge planning, post-discharge follow-up, or coordination between inpatient and outpatient teams. We can use this tool to track measures that drive outcomes-based payment and patient safety initiatives, as well as tracking the costs associated with readmission chains.

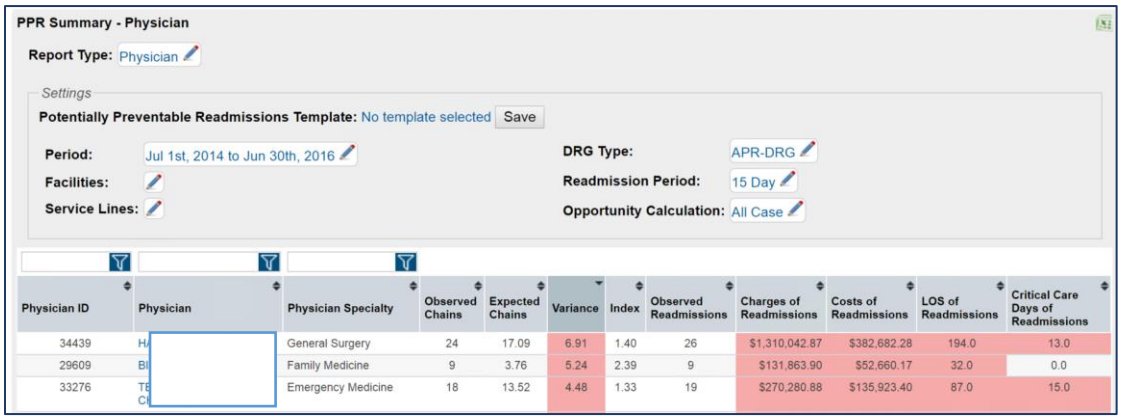
Potentially Preventable Readmissions Report Section Case Study Scenario:

Question 1: *"What is the best report type to easily see the readmissions and the associated charges and costs outcomes?"*

In order to answer this question, let's take a few moments to talk about what each report type offers and then decide which one would be best. There are several additional report options in the PPR section as compared to the PPC section. The report type options are: Physician (default report), Specialty, Physician Group, Service Line, APR-DRG, Client MS-DRG, and Clinical Analytics MS-DRG.

- The ***Physician report*** type is the default report in the PPR section. See Figure 15.2 to review what columns of information you can see without applying any filters and just running the PPR Physician report type. As compared to other analytic sections, this may be one of the first times you identify the Observed and Expected Chains columns. This section is built on the concept of the Readmission chain, a sequence of one or more visits related to the same initial admission. This view groups readmission chains by the Attending Physician of the initial encounter. Each row in the table is an aggregation of all encounters for a particular physician.

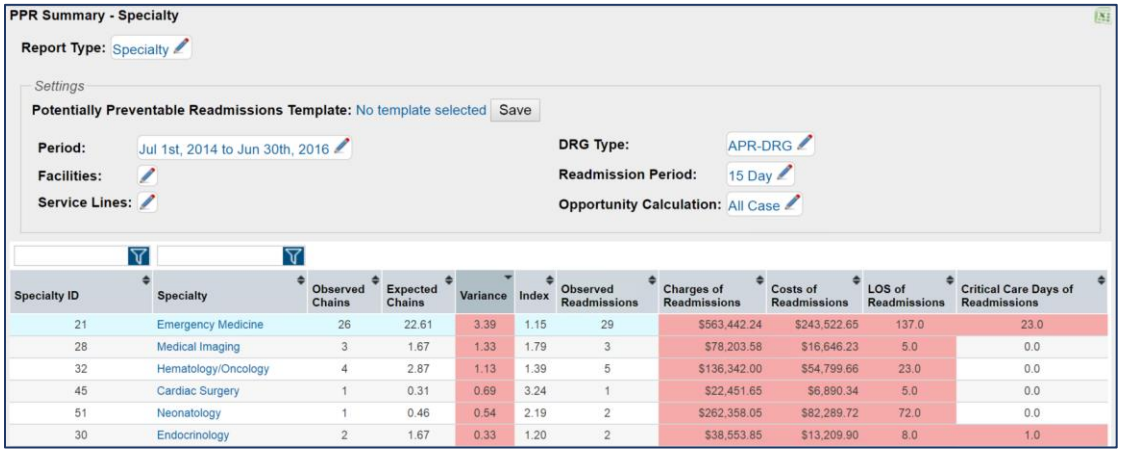
FIGURE 15.2 PPR PHYSICIAN REPORT VIEW



Physician ID	Physician	Physician Specialty	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
34439	H	General Surgery	24	17.09	6.91	1.40	26	$1,310,042.87	$382,682.28	194.0	13.0
29609	B	Family Medicine	9	3.76	5.24	2.39	9	$131,863.90	$52,660.17	32.0	0.0
33276	T C	Emergency Medicine	18	13.52	4.48	1.33	19	$270,280.88	$135,923.40	87.0	15.0

- The ***Specialty report*** view groups readmission chains by the specialty of the Attending Physician on the initial encounter. Each row is an aggregation of all encounters for a particular physician specialty (see Figure 15.3).

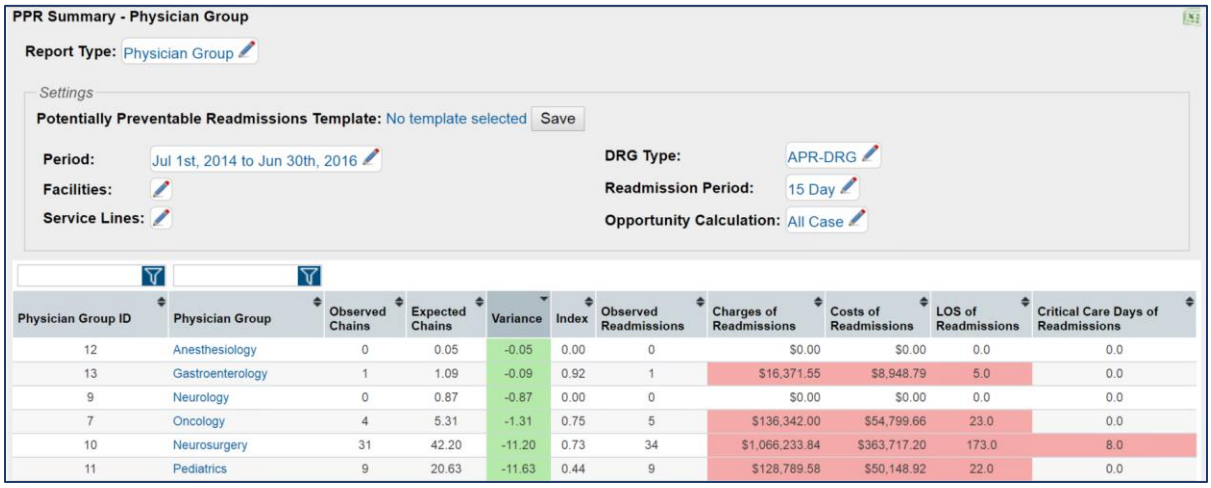
FIGURE 15.3 PPR SPECIALTY REPORT VIEW



Specialty ID	Specialty	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
21	Emergency Medicine	26	22.61	3.39	1.15	29	$563,442.24	$243,522.65	137.0	23.0
28	Medical Imaging	3	1.67	1.33	1.79	3	$78,203.58	$16,646.23	5.0	0.0
32	Hematology/Oncology	4	2.87	1.13	1.39	5	$136,342.00	$54,799.66	23.0	0.0
45	Cardiac Surgery	1	0.31	0.69	3.24	1	$22,451.65	$6,890.34	5.0	0.0
51	Neonatology	1	0.46	0.54	2.19	2	$262,358.05	$82,289.72	72.0	0.0
30	Endocrinology	2	1.67	0.33	1.20	2	$38,553.85	$13,209.90	8.0	1.0

- The ***Physician Group*** report view groups readmission chains by the Physician Group of the Attending Physician on the initial encounter. Each row is an aggregation of all encounters for a particular physician group (see Figure 15.4).

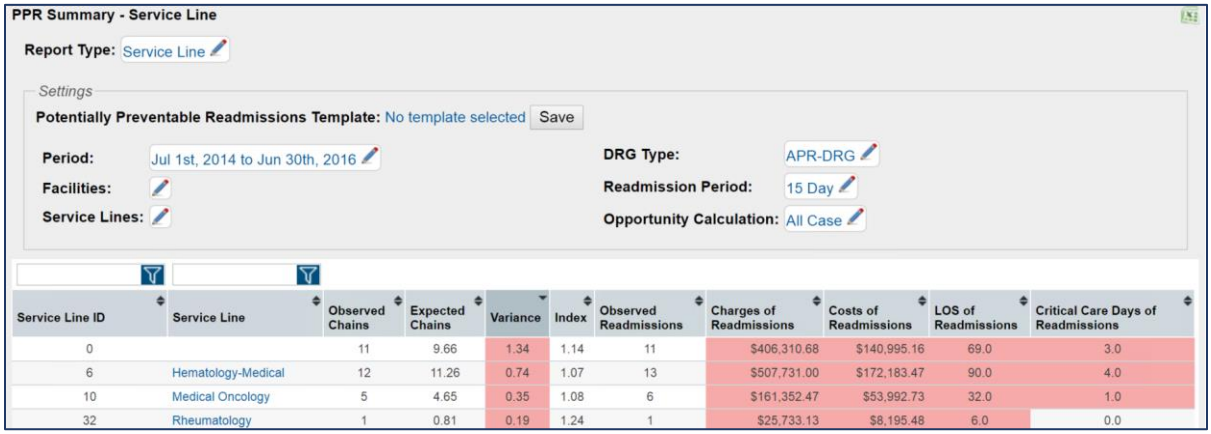
FIGURE 15.4 PPR PHYSICIAN GROUP REPORT VIEW



Physician Group ID	Physician Group	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
12	Anesthesiology	0	0.05	-0.05	0.00	0	$0.00	$0.00	0.0	0.0
13	Gastroenterology	1	1.09	-0.09	0.92	1	$16,371.55	$8,948.79	5.0	0.0
9	Neurology	0	0.87	-0.87	0.00	0	$0.00	$0.00	0.0	0.0
7	Oncology	4	5.31	-1.31	0.75	5	$136,342.00	$54,799.66	23.0	0.0
10	Neurosurgery	31	42.20	-11.20	0.73	34	$1,066,233.84	$363,717.20	173.0	8.0
11	Pediatrics	9	20.63	-11.63	0.44	9	$128,789.58	$50,148.92	22.0	0.0

- The ***Service Line Group*** report view groups readmission chains by the service line of the initial encounter. Each row is an aggregation of all encounters for a particular service line (see Figure 15.5).

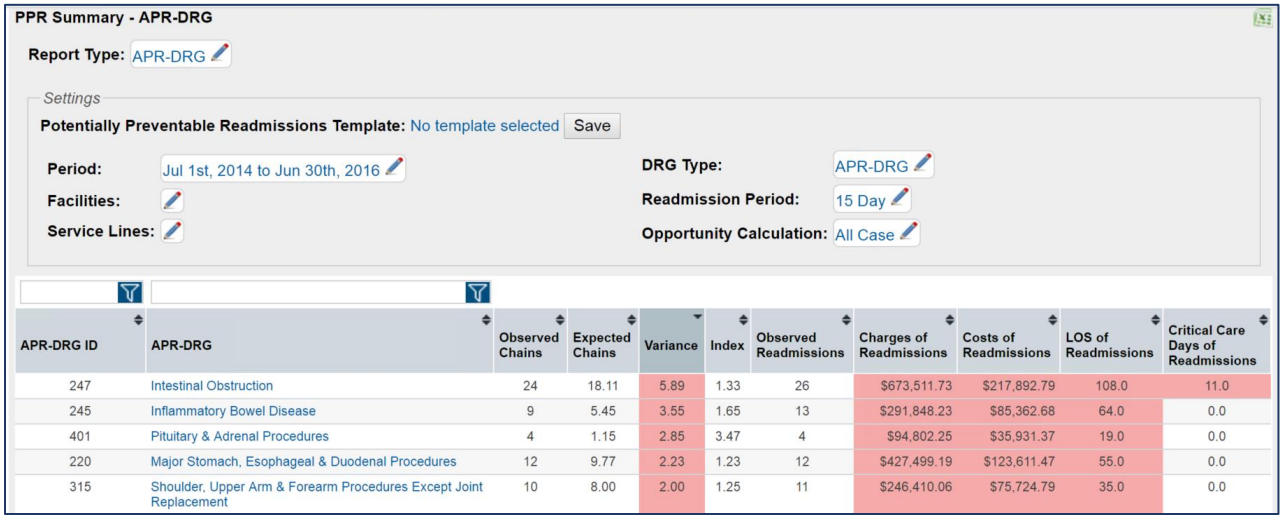
FIGURE 15.5 PPR SERVICE LINE GROUP REPORT VIEW



Service Line ID	Service Line	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
0		11	9.66	1.34	1.14	11	$406,310.68	$140,995.16	69.0	3.0
6	Hematology-Medical	12	11.26	0.74	1.07	13	$507,731.00	$172,183.47	90.0	4.0
10	Medical Oncology	5	4.65	0.35	1.08	6	$161,352.47	$53,992.73	32.0	1.0
32	Rheumatology	1	0.81	0.19	1.24	1	$25,733.13	$8,195.48	6.0	0.0

- The ***APR-DRG report*** view groups readmission chains by the APR-DRG of the initial encounter. Each row is an aggregation of all encounters for a particular APR-DRG (see Figure 15.6). Keep in mind, you can drill deeper by clicking on the APR-DRG blue hyperlink in the APR-DRG column.

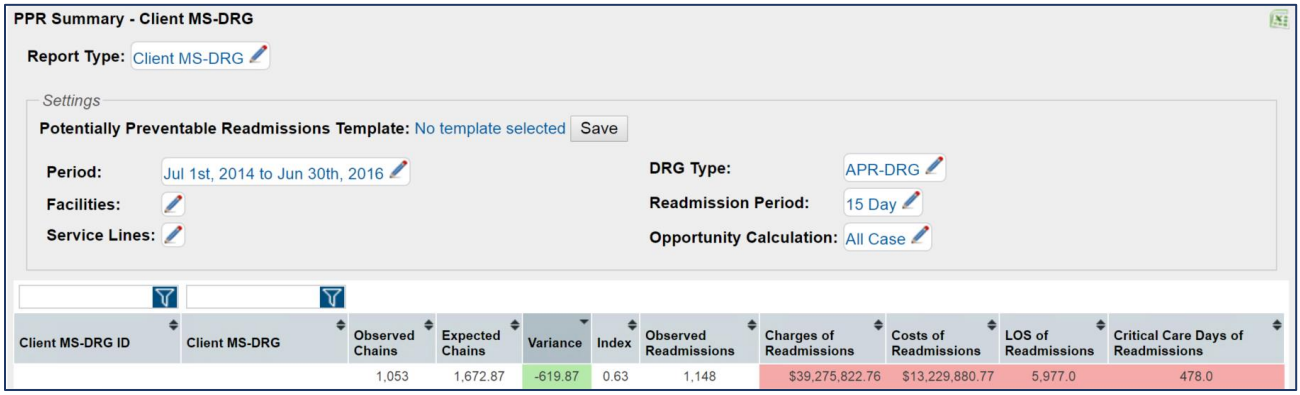
FIGURE 15.6 PPR APR-DRG REPORT VIEW



APR-DRG ID	APR-DRG	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
247	Intestinal Obstruction	24	18.11	5.89	1.33	26	$673,511.73	$217,892.79	108.0	11.0
245	Inflammatory Bowel Disease	9	5.45	3.55	1.65	13	$291,848.23	$85,362.68	64.0	0.0
401	Pituitary & Adrenal Procedures	4	1.15	2.85	3.47	4	$94,802.25	$35,931.37	19.0	0.0
220	Major Stomach, Esophageal & Duodenal Procedures	12	9.77	2.23	1.23	12	$427,499.19	$123,611.47	55.0	0.0
315	Shoulder, Upper Arm & Forearm Procedures Except Joint Replacement	10	8.00	2.00	1.25	11	$246,410.06	$75,724.79	35.0	0.0

- The ***Client MS-DRG report*** view groups readmission chains by the Client MS-DRG of the initial encounter. Each row is an aggregation of all encounters for a particular MS-DRG (see Figure 15.7).

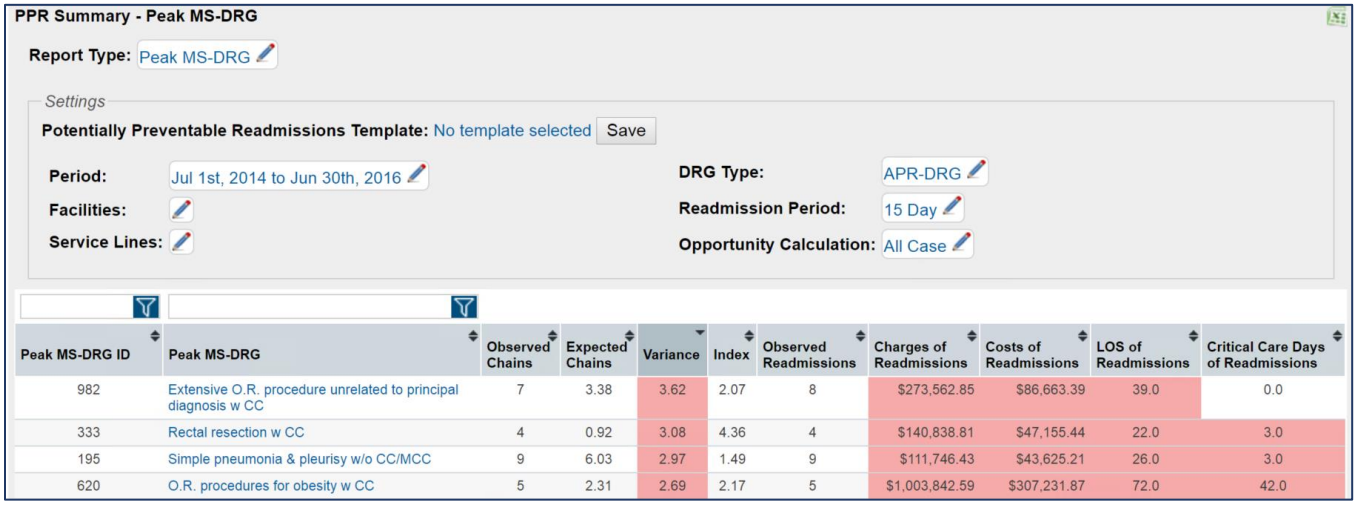
FIGURE 15.7 PPR CLIENT MS-DRG REPORT VIEW



Client MS-DRG ID	Client MS-DRG	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
		1,053	1,672.87	-619.87	0.63	1,148	$39,275,822.76	$13,229,880.77	5,977.0	478.0

- The ***Clinical Analytics MS-DRG report*** view groups readmission chains by the Clinical Analytics MS-DRG of the initial encounter. Each row is an aggregation of all encounters for a particular MS-DRG (see Figure 15.8).

FIGURE 15.8 PPR CLINICAL ANALYTICS MS-DRG REPORT VIEW



Peak MS-DRG ID	Peak MS-DRG	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
982	Extensive O.R. procedure unrelated to principal diagnosis w CC	7	3.38	3.62	2.07	8	$273,562.85	$86,663.39	39.0	0.0
333	Rectal resection w CC	4	0.92	3.08	4.36	4	$140,838.81	$47,155.44	22.0	3.0
195	Simple pneumonia & pleurisy w/o CC/MCC	9	6.03	2.97	1.49	9	$111,746.43	$43,625.21	26.0	3.0
620	O.R. procedures for obesity w CC	5	2.31	2.69	2.17	5	$1,003,842.59	$307,231.87	72.0	42.0

We took some time reviewing the available report types in the PPR analytic section. The first question in this use case asked, *"What is the best report type to easily see the readmissions and the associated charges and costs outcomes?"* Based on the reports we have reviewed I selected the APR-DRG report type because I want to see a rolled up view by APR-DRG and then sort by the Observed Readmission column to identify the largest volume of readmissions (See Figure 15.10). Sepsis and Heart Failure comprise the top two opportunities. By clicking on the blue APR-DRG hyperlink, we can access additional details and continue the analysis.

Before we move onto the Sepsis drill view, let's briefly discuss what valuable information the far right columns offer. The Charges of Readmissions column reflects the charge opportunity available if the

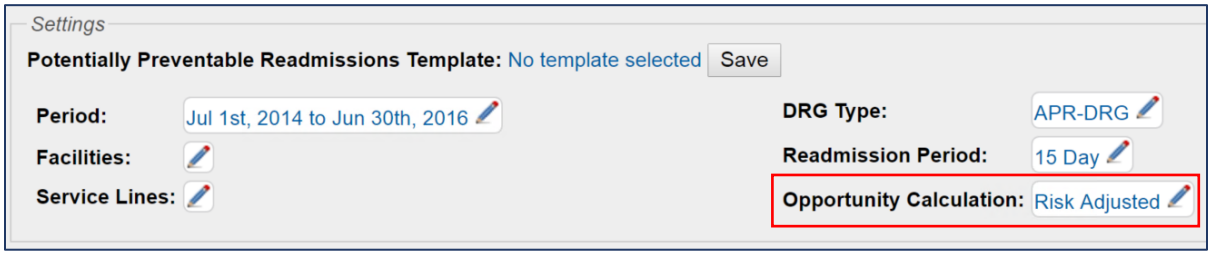
readmissions were prevented. The Costs of Readmissions column reflects the cost opportunity available if the readmissions were prevented. The LOS of Readmissions column shows the length of stay opportunity available if the readmissions were prevented. And finally, the Critical Care Days of Readmissions shows the critical care days opportunity available, yes you've got it, if the readmissions were prevented.

FIGURE 15.10 PPR APR-DRG REPORT RESULTS FILTERED ON OBSERVED READMISSIONS COLUMN

APR-DRG ID	APR-DRG	Observed Chains	Expected Chains	Variance	Index	Observed Readmissions	Charges of Readmissions	Costs of Readmissions	LOS of Readmissions	Critical Care Days of Readmissions
720	Septicemia & Disseminated Infections	66	123.49	-57.49	0.53	76	$2,990,211.11	$947,735.02	438.0	46.0
194	Heart Failure	44	81.79	-37.79	0.54	47	$1,184,553.99	$369,211.01	203.0	12.0
133	Respiratory Failure	37	55.58	-18.58	0.67	41	$1,641,897.54	$482,152.65	218.0	25.0
139	Other Pneumonia	35	51.63	-16.63	0.68	38	$901,483.87	$281,692.07	168.0	6.0
221	Major Small & Large Bowel Procedures	36	38.75	-2.75	0.93	38	$1,479,182.13	$476,956.86	226.0	18.0
460	Renal Failure	29	45.90	-16.90	0.63	31	$803,083.01	$238,387.64	136.0	11.0

Once you select the APR-DRG Septicemia & Disseminated Infections, the drill view is down to the patient encounter level detail. Let's take a moment and touch on the Opportunity Calculation setting option in the settings field. The All Case calculations provide the opportunity values as if the readmission never happened, whereas the Risk Adjusted calculations provide adjusted opportunity values based on the case mix index. In following with this use case, and wanting to ensure we highlight an actionable readmission report, we updated the Opportunity Calculation to reflect values based on case mix (see Figure 15.11).

FIGURE 15.11 PPR OPPORTUNITY CALCULATION SETTING



Another important setting option to point out is the Readmission Period filter (see Figure 15.11). You can choose a fifteen day period or change it to a thirty day period, depending on your analysis needs. Before we go too much further, this is a great time to ask the remaining two questions for this use case.

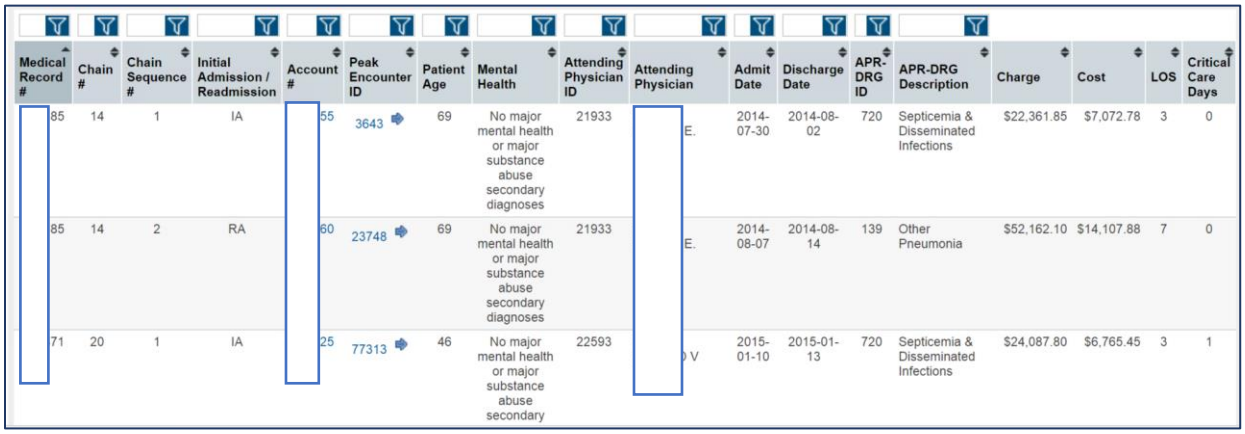
Question 2: *"Can I drill down to patient level information?"*

Question 3: *"How can I see the DRG details associated with each readmission?"*

These two questions bring us back to the Sepsis APR-DRG example, with the 76 Observed Readmissions (see Figure 15.10). When you click on any APR-DRG blue hyperlink, the drill view takes you patient encounter level details. You must be unlocked in Clinical Analytics to see these details and access this view. As with any table view in Clinical Analytics, you have column header filters and the ability to directionally sort by clicking on any column header. The first two rows in Figure 15.12 show the same patient, first row

index admission (IA) and second row shows the readmission (RA). There is valuable information available in this view, such as the MRN, Account #, Attending Physician, Admit/Discharge Dates and the reason for the admission. You can distinctly correlate the IA with RA and spot check the date ranges in between the first discharge and subsequent readmission date with APR-DRG reason. In this view, we tend to focus on one MRN and evaluate the readmission pattern with associated APR-DRG(s). Due to the nature of displaying patient sensitive details, we have chosen to hide the MRN, Account #, and the Attending physician name(s) in Figure 15.12.

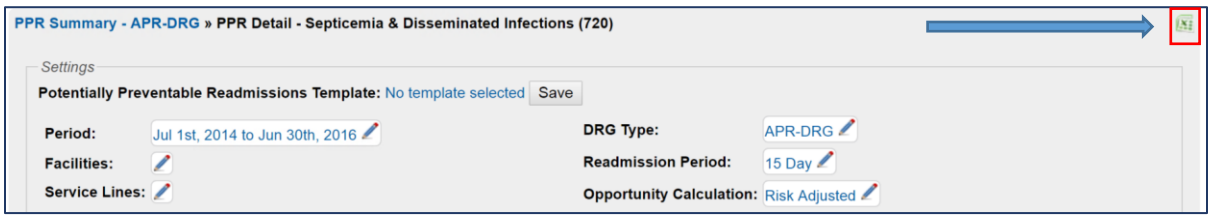
FIGURE 15.12 PPR SEPSIS APR-DRG DRILL VIEW



Medical Record #	Chain #	Chain Sequence #	Initial Admission / Readmission	Account #	Peak Encounter ID	Patient Age	Mental Health	Attending Physician ID	Attending Physician	Admit Date	Discharge Date	APR-DRG ID	APR-DRG Description	Charge	Cost	LOS	Critical Care Days
[redacted] 85	14	1	IA	[redacted] 55	3643	69	No major mental health or major substance abuse secondary diagnoses	21933	[redacted] E.	2014-07-30	2014-08-02	720	Septicemia & Disseminated Infections	$22,361.85	$7,072.78	3	0
[redacted] 85	14	2	RA	[redacted] 60	23748	69	No major mental health or major substance abuse secondary diagnoses	21933	[redacted] E.	2014-08-07	2014-08-14	139	Other Pneumonia	$52,162.10	$14,107.88	7	0
[redacted] 71	20	1	IA	[redacted] 25	77313	46	No major mental health or major substance abuse secondary	22593	[redacted] V	2015-01-10	2015-01-13	720	Septicemia & Disseminated Infections	$24,087.80	$6,765.45	3	1

Keep in mind, the Excel export option is also available to perform additional data analysis, pivot tables, etc. As a reminder, the Excel export icon can always be located in the upper right hand corner of each analytic section once you have run the analysis (see Figure 15.13).

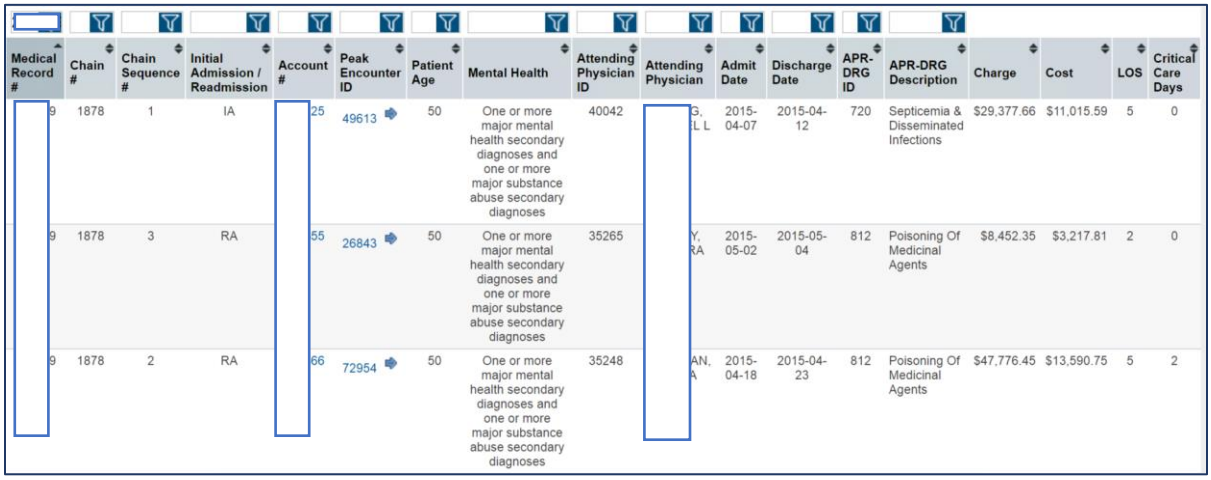
FIGURE 15.13 PPR EXCEL EXPORT ICON VIEW



We could have easily selected the first MRN that is reflected in the first two rows, but we wanted to dig a little deeper in the Excel export and see if we could find a patient with more than one readmission in the fifteen day period. We were able to find several MRNs that showed up three times in the readmission report Excel export. We will use one of those MRNs to continue this case study.

We went back into the PPR section and searched by the updated MRN so that the table results were only the three readmission that we discovered from reviewing the Excel export.

FIGURE 15.14 PPR SEPSIS APR-DRG DRILL ON INDIVIDUAL MRN



Medical Record #	Chain #	Chain Sequence #	Initial Admission / Readmission	Account #	Peak Encounter ID	Patient Age	Mental Health	Attending Physician ID	Attending Physician	Admit Date	Discharge Date	APR-DRG ID	APR-DRG Description	Charge	Cost	LOS	Critical Care Days
9	1878	1	IA	25	49613	50	One or more major mental health secondary diagnoses and one or more major substance abuse secondary diagnoses	40042	G, L L	2015-04-07	2015-04-12	720	Septicemia & Disseminated Infections	$29,377.66	$11,015.59	5	0
9	1878	3	RA	55	26843	50	One or more major mental health secondary diagnoses and one or more major substance abuse secondary diagnoses	35265	Y, RA	2015-05-02	2015-05-04	812	Poisoning Of Medicinal Agents	$8,452.35	$3,217.81	2	0
9	1878	2	RA	66	72954	50	One or more major mental health secondary diagnoses and one or more major substance abuse secondary diagnoses	35248	AN, A	2015-04-18	2015-04-23	812	Poisoning Of Medicinal Agents	$47,776.45	$13,590.75	5	2

We can see from this information that the patient was initially admitted on April 7th, with Sepsis and discharged on April 12th. The patient was then readmitted on April 18th, with Poisoning of Medicinal Agents, and discharged on April 23rd. The patient was readmitted again on May 2nd, with Poisoning of Medicinal Agents, and discharged May 4th. With further investigation by clicking on the Clinical Analytics Encounter IDs, this patient had a significant secondary diagnosis list with multiple psychiatric related conditions.

In summary, we have answered the final two questions; yes you can absolutely drill down to patient level details and then investigate further by clicking on the Clinical Analytics Encounter IDs or utilize the MRN and Account numbers to research further in your organizations EMR system. We used the Excel export to quickly identify the patients with the most readmissions for the indicated time period. You could also consider creating profiles from the Excel export details to perform additional analysis in the other powerful analytic sections that are profile-based in Clinical Analytics.

PPCs and PPRs are add-on modules in Clinical Analytics, but hopefully you have learned about the depth of information you can obtain from both of these sections covered in Chapter 14 and this chapter as well. If you frequently perform readmission related analysis, the next chapter covers the topic of readmissions as well, and it's already included in the Clinical Analytics Suite!

Chapter 16: Frequent Readmissions Report Case Study

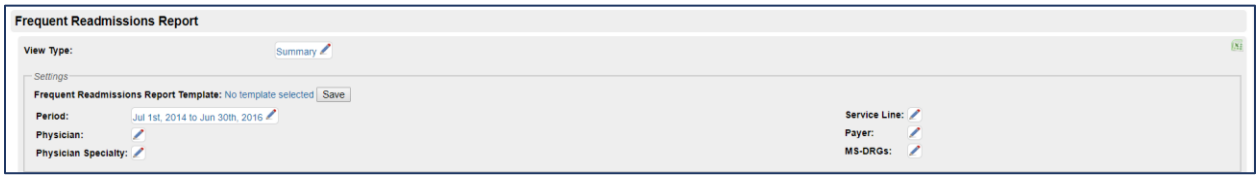
Frequent Readmissions Report

Purpose: *MRN level data including multiple intervals from 0-30 day ranges. Data can be viewed in Detail or Summary types.*

Key concepts:

- Must be unlocked to run this report.
- Allows you to see outcomes associated with each admission.
- Summary level allows you to see each admission for a particular MRN.

FIGURE 16.1 FREQUENT READMISSIONS REPORT SECTION



Frequent Readmissions Report Case Study Scenario:

Question 1: *"How can I identify the patient with the largest number of discharges?"*

Question 2: *"Am I able to define a time period and see why the patient was readmitted?"*

Question 3: *"Can I filter on a specific chronic condition, such as Diabetes, to identify information that can help us improve across our organization?"*

Question 4: *"What does this information, about the Diabetic MS-DRG population, tell me about what areas of my organization could be helped with this data?"*

The Frequent Readmission Report section is useful when trying to identify frequent readmissions and highlight the most common readmission day intervals. You can leverage the multiple report focus types depending on which data output best meets your reporting needs. You can also look across a specific chronic illness or condition to target quality improvement across selected condition(s).

Frequent Readmissions Report Section Case Study Scenario:

Question 1: *"How can I identify the patient with the largest number of discharges?"*

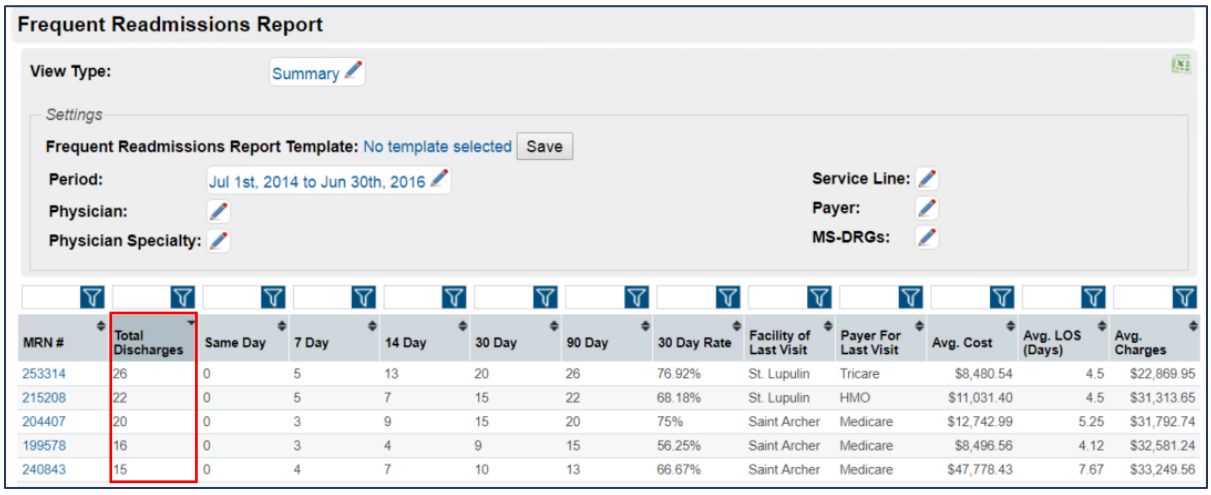
We have started each chapter by running the section, before adding any filters or adjusting the setting options. As seen in Figure 16.1, the Frequent Readmissions Report section is not profile based, however there are several setting options to help narrow your population of interest, select physician(s), payer(s), or MS-DRGs. The first question asks how we can identify the largest number of discharges. Let's run the report, before making any adjustments and see if we can answer the first question.

Step 1: Make sure you Unlock your Clinical Analytics session so you can access PHI.

Step 2: Click Rerun and review the column and table results.

- *The table results should look like Figure 16.2 below.*

FIGURE 16.2 FREQUENT READMISSION REPORT TABLE RESULTS



MRN #	Total Discharges	Same Day	7 Day	14 Day	30 Day	90 Day	30 Day Rate	Facility of Last Visit	Payer For Last Visit	Avg. Cost	Avg. LOS (Days)	Avg. Charges
253314	26	0	5	13	20	26	76.92%	St. Lupulin	Tricare	$8,480.54	4.5	$22,869.95
215208	22	0	5	7	15	22	68.18%	St. Lupulin	HMO	$11,031.40	4.5	$31,313.65
204407	20	0	3	9	15	20	75%	Saint Archer	Medicare	$12,742.99	5.25	$31,792.74
199578	16	0	3	4	9	15	56.25%	Saint Archer	Medicare	$8,496.56	4.12	$32,581.24
240843	15	0	4	7	10	13	66.67%	Saint Archer	Medicare	$47,778.43	7.67	$33,249.56

The table results offer several helpful columns and you don't have to go too far to be able to answer question number one. The total discharges column is sorted by largest volume at the top. Because we unlocked our Clinical Analytics session, we are able to view and drill into the MRNs to access patient level detail. Once we click on the MRNs of interest we can investigate why any given patient had 'x' amount of discharges in the time period indicated in the settings field. Before clicking on the MRN with the largest discharge volume, update the time period to reflect only the last six months, as explained in the next question.

Question 2: *"Am I able to define a time period and see why the patient was readmitted?"*

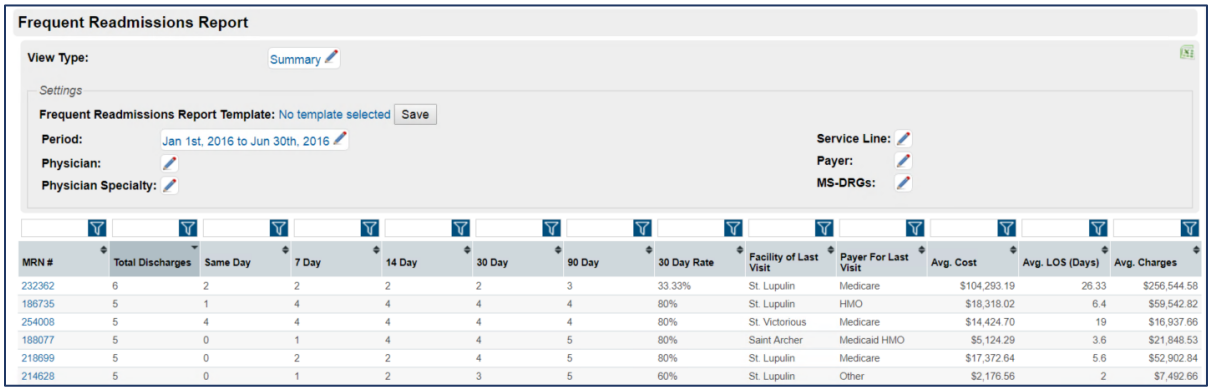
In the first question we ran the report without applying any filters or making any adjustments to the View type or time period. Now you can go back up to the settings field and apply a shorter or longer time period. For this scenario, let's focus on the last six months, instead of the two year time period.

Step 1: Click on the Period setting and adjust the time to reflect the last six months.

- The settings window should reflect a six month time period as seen in Figure 16.3

Step 2: Click Rerun to update the table results.

FIGURE 16.3 FREQUENT READMISSION REPORT (WITH 6 MONTH TIME FRAME APPLIED)



Frequent Readmissions Report

View Type: Summary

Settings

Frequent Readmissions Report Template: No template selected Save

Period: Jan 1st, 2016 to Jun 30th, 2016

Physician:

Physician Specialty:

Service Line:

Payer:

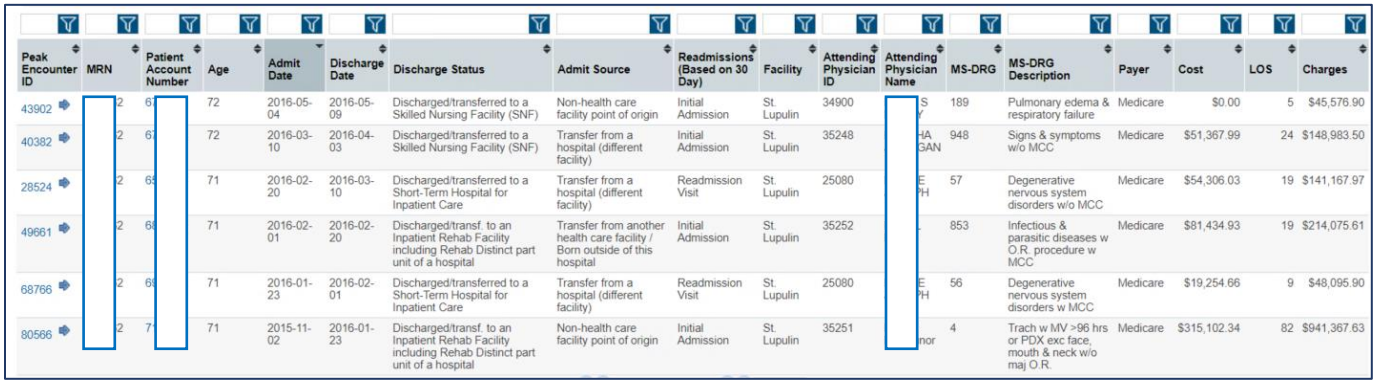
MS-DRGs:

MRN #	Total Discharges	Same Day	7 Day	14 Day	30 Day	90 Day	30 Day Rate	Facility of Last Visit	Payer For Last Visit	Avg. Cost	Avg. LOS (Days)	Avg. Charges
232362	6	2	2	2	2	3	33.33%	St. Lupulin	Medicare	$104,293.19	26.33	$256,544.58
186735	5	1	4	4	4	4	80%	St. Lupulin	HMO	$18,318.02	6.4	$59,542.82
254008	5	4	4	4	4	4	80%	St. Victorious	Medicare	$14,424.70	19	$16,937.66
188077	5	0	1	4	4	5	80%	Saint Archer	Medicaid HMO	$5,124.29	3.6	$21,848.53
218699	5	0	2	2	4	5	80%	St. Lupulin	Medicare	$17,372.64	5.6	$52,902.84
214628	5	0	1	2	3	5	60%	St. Lupulin	Other	$2,176.56	2	$7,492.66

Another consideration, before drilling into a particular MRN, may be to review the Payer and Average LOS (Days) to identify opportunity beyond the number of discharges in a set time period. The first example in Figure 16.3 shows the most opportunity across the total discharges, average cost, and average LOS columns. Let's click on the first MRN to review why the patient was admitted each time with associated dates, providers, costs, length of stay, and charges.

Once you click on the MRN, it breaks apart each admission and discharge per row with initial admission (IA) and readmission (RA). If you want to dig deeper and review the specifics of an individual encounter, you can click on the Clinical Analytics Encounter ID in the first column, (see Figure 16.4). Admit source and discharge status are two additional measure columns that can provide meaningful information in this report.

FIGURE 16.4 FREQUENT READMISSIONS REPORT MRN DRILL WITH CLINICAL ANALYTICS ENCOUNTER ID OPTION



Peak Encounter ID	MRN	Patient Account Number	Age	Admit Date	Discharge Date	Discharge Status	Admit Source	Readmissions (Based on 30 Day)	Facility	Attending Physician ID	Attending Physician Name	MS-DRG	MS-DRG Description	Payer	Cost	LOS	Charges
43902	2	6	72	2016-05-04	2016-05-09	Discharged/transferred to a Skilled Nursing Facility (SNF)	Non-health care facility point of origin	Initial Admission	St. Lupulin	34900	S Y	189	Pulmonary edema & respiratory failure	Medicare	$0.00	5	$45,576.90
40382	2	6	72	2016-03-10	2016-04-03	Discharged/transferred to a Skilled Nursing Facility (SNF)	Transfer from a hospital (different facility)	Initial Admission	St. Lupulin	35248	HA GAN	948	Signs & symptoms w/o MCC	Medicare	$51,367.99	24	$148,983.50
28524	2	6	71	2016-02-20	2016-03-10	Discharged/transferred to a Short-Term Hospital for Inpatient Care	Transfer from a hospital (different facility)	Readmission Visit	St. Lupulin	25080	E PH	57	Degenerative nervous system disorders w/o MCC	Medicare	$54,306.03	19	$141,167.97
49661	2	6	71	2016-02-01	2016-02-20	Discharged/transf. to an Inpatient Rehab Facility including Rehab Distinct part unit of a hospital	Transfer from another health care facility / Born outside of this hospital	Initial Admission	St. Lupulin	35252		853	Infectious & parasitic diseases w O.R. procedure w MCC	Medicare	$81,434.93	19	$214,075.61
68766	2	6	71	2016-01-23	2016-02-01	Discharged/transferred to a Short-Term Hospital for Inpatient Care	Transfer from a hospital (different facility)	Readmission Visit	St. Lupulin	25080	E PH	56	Degenerative nervous system disorders w MCC	Medicare	$19,254.66	9	$48,095.90
80566	2	7	71	2015-11-02	2016-01-23	Discharged/transf. to an Inpatient Rehab Facility including Rehab Distinct part unit of a hospital	Non-health care facility point of origin	Initial Admission	St. Lupulin	35251	nor	4	Trach w MV >96 hrs or PDX exc face, mouth & neck w/o maj O.R.	Medicare	$315,102.34	82	$941,367.63

Question 3: *"Can I filter on a specific chronic condition, such as Diabetes, to identify information that can help us improve across our organization?"*

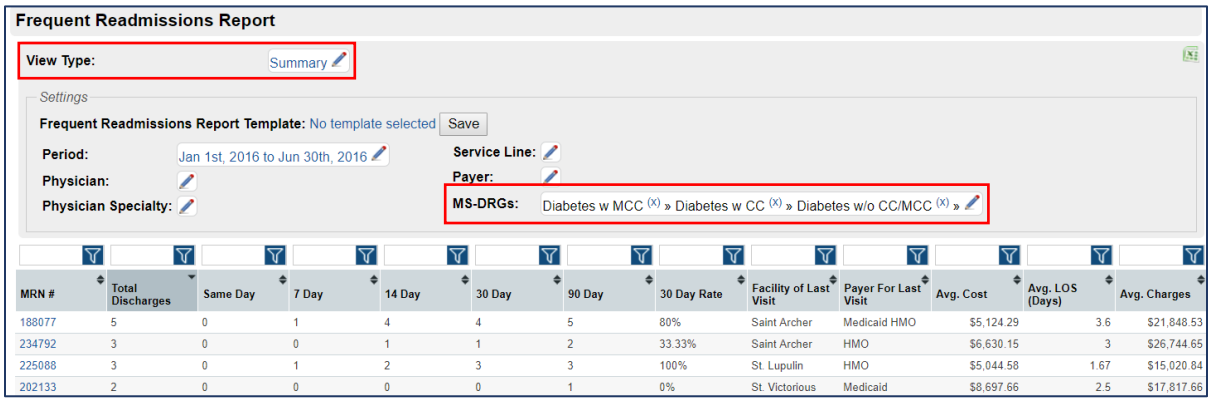
Absolutely, you can use the MS-DRG settings option to filter by the DRG of choice. For this scenario we will focus on Diabetes, however, you can apply the same scenario to any other preferred MS-DRG. This is a good time to review the two report view types available in this section. The default report view type is the Summary view and the second option is the Detail view. The Summary view will result in each MRN rolled up to represent one row, and then clicking on the MRN would unroll each encounter for that particular patient. Whereas, the Details view report breaks apart every single encounter per row. This view would allow you to then filter by the MS-DRG or MS-DRG Description column(s) to focus on a chronic condition.

For efficiency, we will immediately narrowing our focus by using the MS-DRG setting filter option.

Step 1: Search and select Diabetes with MCC, Diabetes with CC and Diabetes without CC/MCC, then click Apply.

- Before clicking Rerun, confirm the settings window looks like Figure 16.5, with the desired time period.

FIGURE 16.5 FREQUENT READMISSIONS REPORT SUMMARY VIEW WITH DIABETES MS-DRG FOCUS



MRN #	Total Discharges	Same Day	7 Day	14 Day	30 Day	90 Day	30 Day Rate	Facility of Last Visit	Payer For Last Visit	Avg. Cost	Avg. LOS (Days)	Avg. Charges
188077	5	0	1	4	4	5	80%	Saint Archer	Medicaid HMO	$5,124.29	3.6	$21,848.53
234792	3	0	0	1	1	2	33.33%	Saint Archer	HMO	$6,630.15	3	$26,744.65
225088	3	0	1	2	3	3	100%	St. Lupulin	HMO	$5,044.58	1.67	$15,020.84
202133	2	0	0	0	0	1	0%	St. Victorious	Medicaid	$8,697.66	2.5	$17,817.66

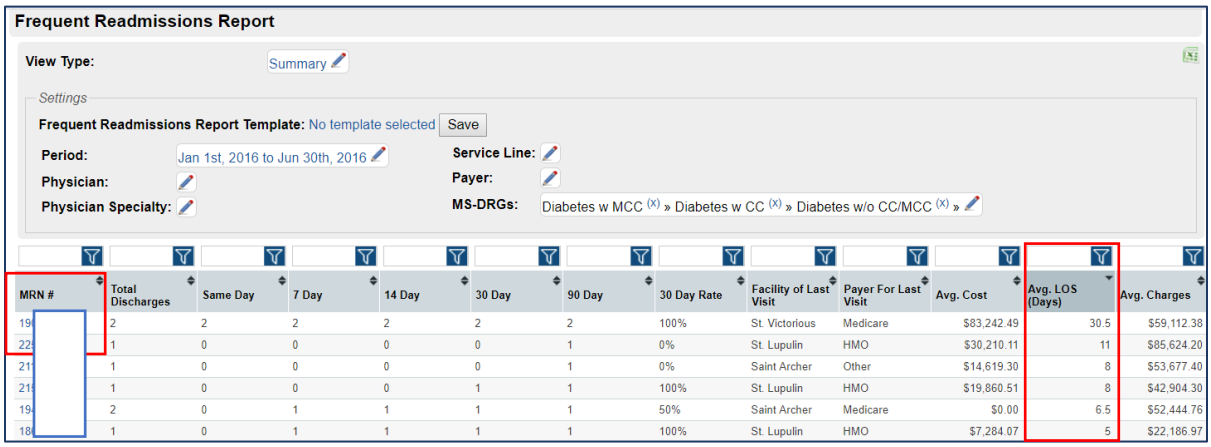
Step 2: Click Rerun to view the narrowed results focused on Diabetes encounters.

As seen in Figure 16.3, the table results in Figure 16.5, offer the same columns, however, these results have filtered out all other encounters and only shows the MS-DRGs for Diabetes (see Figure 16.5). You can use the column header filters to sort by discharge quantity, payer, cost, length of stay, or charges to narrow your focus and preferred opportunity target.

Question 4: *"What does this information, about the Diabetic MS-DRG population, tell me about what areas of my organization could be helped with this data?"*

In Figure 16.5, the highlighted opportunity is sorted by the total discharges column. However, if you have a desire to review the highest opportunity by the last four columns, then sort by those to focus on the one that best aligns with your organization's goals. The total discharges column has been the focus so far in this scenario. Let's turn our attention to the length of stay column, by sorting for the highest length of stay on the length of stay column header (see Figure 16.6).

FIGURE 16.6 FREQUENT READMISSIONS REPORT AVERAGE LOS DAYS FOCUS



MRN #	Total Discharges	Same Day	7 Day	14 Day	30 Day	90 Day	30 Day Rate	Facility of Last Visit	Payer For Last Visit	Avg. Cost	Avg. LOS (Days)	Avg. Charges
19[redacted]	2	2	2	2	2	2	100%	St. Victorious	Medicare	$83,242.49	30.5	$59,112.38
22[redacted]	1	0	0	0	0	1	0%	St. Lupulin	HMO	$30,210.11	11	$85,624.20
21[redacted]	1	0	0	0	0	1	0%	Saint Archer	Other	$14,619.30	8	$53,677.40
21[redacted]	1	0	0	0	1	1	100%	St. Lupulin	HMO	$19,860.51	8	$42,904.30
19[redacted]	2	0	1	1	1	1	50%	Saint Archer	Medicare	$0.00	6.5	$52,444.76
18[redacted]	1	0	1	1	1	1	100%	St. Lupulin	HMO	$7,284.07	5	$22,186.97

After review, the first row stands out for length of stay opportunity, but also for average cost and charges. The second row only had one readmission, but the average charges were much higher than the first row MRN. Let's start by taking a look at the first encounter to see if we can identify a trend beyond the six month view revealed in this particular analysis. Let's click on the first MRN, 19****, which will split apart the two discharge encounters and provide the Clinical Analytics Encounter ID, (see Figure 16.7), to then access the clinical case summary.

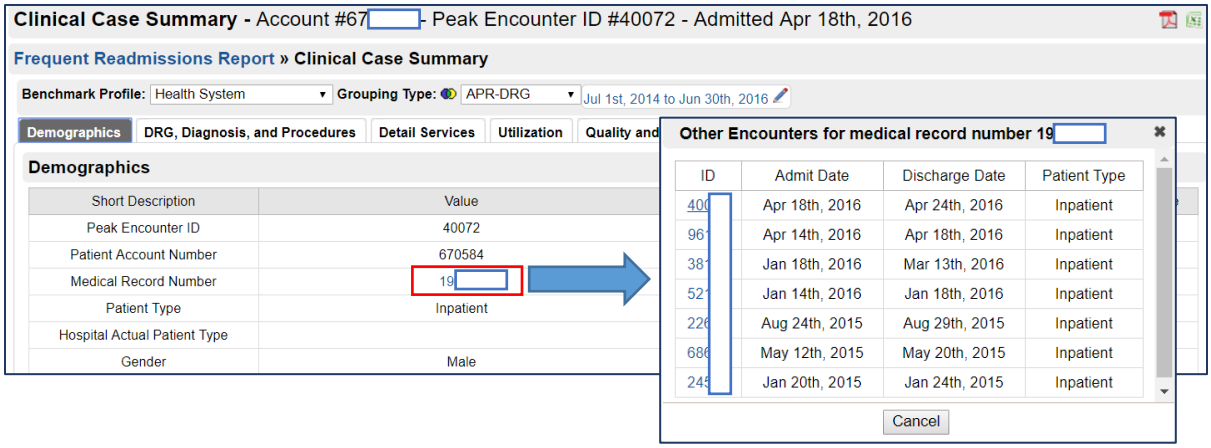
FIGURE 16.7 FREQUENT READMISSIONS REPORT MRN ACCESS TO CLINICAL ANALYTICS ENCOUNTER ID

Peak Encounter ID	MRN	Patient Account Number	Age	Admit Date	Discharge Date	Discharge Status	Admit Source	Readmissions (Based on 30 Day)	Facility	Attending Physician ID	Attending Physician Name	MS-DRG	MS-DRG Description	Payer	Cost	LOS	Charges
40072	19[redacted]	6[redacted]	66	2016-04-18	2016-04-24	Discharged to Home or Self Care (Routine Discharge)	Clinic	Readmission Visit	St. Victorious	32576	[redacted]	638	Diabetes w CC	Medicare	$0.00	6	$10,261.79
38174	19[redacted]	6[redacted]	66	2016-01-18	2016-03-13	Discharged/transferred to a Short-Term Hospital for Inpatient Care	Transfer from a hospital (different facility)	Readmission Visit	St. Victorious	37007	[redacted]	637	Diabetes w MCC	Medicare	$83,242.49	55	$107,962.96

When you click on the Clinical Analytics Encounter ID in the first column, you gain access to the clinical case summary which provides extensive detail on that particular encounter. If you click on the blue MRN on the demographics tab, a new window opens that shows you all encounters for this particular patient, with dates, encounter type, and an additional hyperlinked account number that displays the details of those

encounters as well (see Figure 16.8). The other encounters window shows all encounters for this particular MRN, beyond the six month time period. We can see in one quick glance that this patient has frequent encounters extending past the two revealed in the analysis. At the clinical case summary level, all encounters for each MRN are listed in this window within Clinical Analytics. We use the MRN hyperlink, in clinical case summary, to quickly identify if this particular patient is a frequent flyer.

FIGURE 16.8 FREQUENT READMISSIONS REPORT CLINICAL CASE SUMMARY DRILL



This clinical case summary review was helpful, but we have been focused on one patient so far. Let's take a step back and see how you find additional details with the use of the Excel export option, and find a group of patients that can reveal opportunity across the organization.

In Figure 16.6, we ran a summary analysis on the Diabetes MS-DRGs, with CC, MCC and without CC/MCC. At the summary report level, you can export the results to Excel and the export will match the table results in the summary view. However, if you use the Details view type and export to Excel, you gain patient level details with additional columns, specifically the Admission Source column! In Excel, you can apply multiple filters or create a pivot table to shift your focus to patients that were admitted from a non-health care facility point of origin, and determine which physicians admit the most patients directly from the clinic (see Figure 16.9).

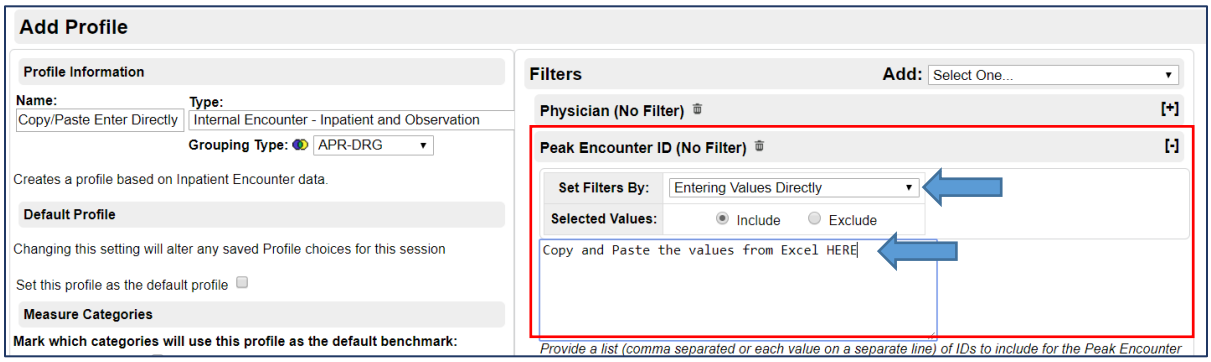
FIGURE 16.9 FREQUENT READMISSIONS REPORT DETAILS VIEW WITH EXCEL EXPORT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Peak	MRN	Patie	Ag	Admit Date	Discharge	Discharge Status	Admission Source	Readmission	Attend	Payer	Cost	LOS	Charges
2	81027	200	71	66	2016-01-19	2016-01-21	Discharged to Home	Non-health care facil	Initial Admission	DROR BRA	BCBS	2552.58	2	8898.41
3	92366	196	72	28	2016-01-23	2016-01-25	Discharged to Home	Non-health care facil	Initial Admission	DROR BRA	Medicaid	2174.6	2	6489.4
4	90643	249	72	30	2016-02-11	2016-02-13	Discharged to Home	Non-health care facil	Initial Admission	DROR BRA	BCBS	5666.16	2	20542.3
5	51649	188	68	37	2016-02-15	2016-02-19	Discharged to Home	Non-health care facil	Readmission Visi	DROR BRA	Medicaid H	4438.91	4	19071.64
6	59187	227	68	22	2016-03-17	2016-03-20	Discharged to Home	Non-health care facil	Initial Admission	DROR BRA	Medicaid	7030.34	3	25257.35
7	96204	225	72	38	2016-03-29	2016-03-31	Discharged to Home	Non-health care facil	Initial Admission	DROR BRA	Self Pay	3631.44	2	18234.44
8	38307	234	66	43	2016-04-07	2016-04-09	Discharged to Home	Non-health care facil	Initial Admission	DROR BRA	HMO	2493.22	2	20505.56

You can now create a profile in your scorecard using the copy and paste feature within 'enter values directly' for the physician profile filter and the Clinical Analytics Encounter ID profile filter (see Figure 16.10).

You can easily apply this narrowed population to many of the advanced analytic sections you have learned about thus far. Consider using the Details section you learned about in chapter 4, or use this new profile across the measures available in the two column section line charts or speedometers.

FIGURE 16.10 PROFILE MANAGER ENTER VALUES DIRECTLY VIEW



The Frequent readmissions report is a valuable analytic section offering initial admission and readmission details across all encounters or specific DRGs selected in the settings field. You can continue to utilize this section for the evaluation of readmissions as it relates to identifying the common interval of days (i.e. Same Day, 7 day, 14 day, 30 day, or 90 day), specific DRG population, and the flexibility in additional analysis through the use of the Excel export option. The 'enter values directly' feature, in the profile manager (see Figure 16.10), is an efficient way to copy and paste values for any available profile filter option. This can save a significant amount of time when creating profiles where a long list of values are needed. The next chapter will cover all things Statistical Process Control (SPC) related! The SPC section is one of our newest and most powerful sections in Clinical Analytics.

Chapter 17: Statistical Process Control (SPC) Case Study

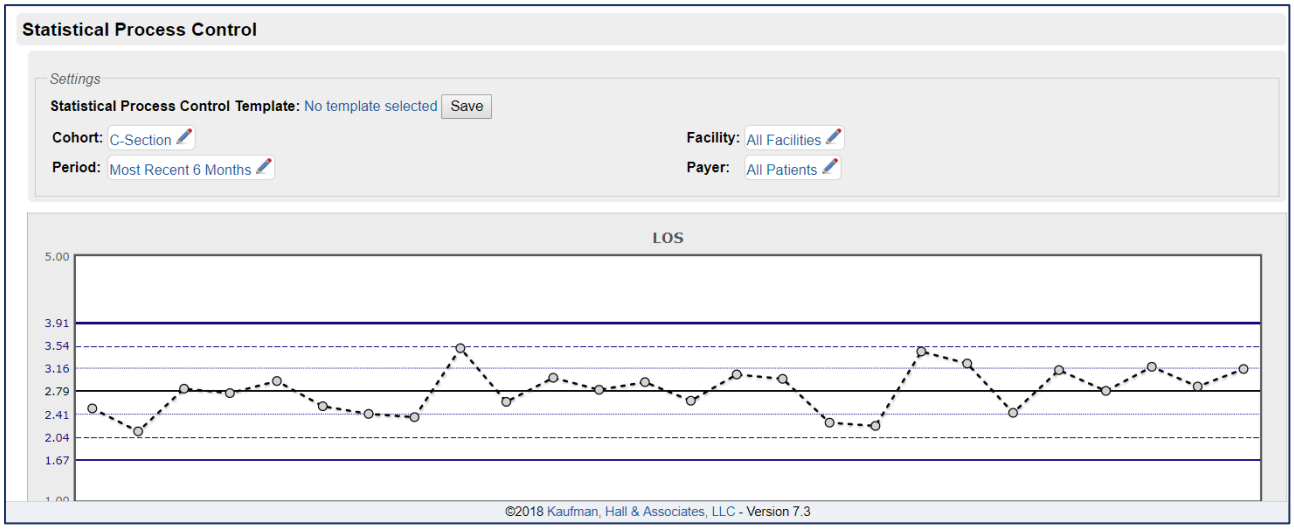
Statistical Process Control (SPC)

Purpose: The SPC section was designed to guide your targeted analysis of specific patient cohorts so you can focus your process improvement efforts.

Key Concepts:

- Homogenous Cohorts
- Severity, Risk and Volume Adjustment Calculations
    - All Procedure codes, All Diagnosis codes, Age, and Gender fields are used for severity and risk adjustment
- Control Chart Methodology
- Common Cause and Special Cause Variation
- Signals
- Inherent evaluation of internal process, therefore, no benchmarks are used in SPC

FIGURE 17.1 STATISTICAL PROCESS CONTROL (SPC) SECTION VIEW



Statistical Process Control Section Case Study Scenario:

Question 1: *"How does SPC display data differently from a line chart that can be used in a two-column section within the Scorecards application?"*

Question 2: *"How are cohorts defined in Clinical Analytics?"*

Question 3: *"How can I find out the inclusions, exclusions, and definitions for the SPC cohorts?"*

Question 4: *"Can you help explain how measures and adverse events were selected for the SPC cohorts"*

Question 5: *"You mentioned in a previous chapter that the CCS section would be helpful when using SPC, show me how."*

Question 6: *"We recently implemented a new quality initiative in the ICU's, and I want to evaluate the trends since it's been implemented, how can I do that in the SPC section and confirm my findings in another section?"*

The Statistical Process Control (SPC) section is a useful when evaluating trends and patterns for statistical significance. Consider the SPC section when evaluating the effects of a recent process improvement change. Keep in mind the SPC section is meant to identify trends or opportunity and to evaluate whether a process is in control or not. An in-control process is not necessarily satisfactory and vice-versa. Being able to distinguish between special cause variation and common cause variation can be helpful in targeting interventions, if desired. The definitions and available resources for SPC control charts, signals, and the variation types will be explained in this chapter. This is a content heavy final chapter, but well worth the review!

Statistical Process Control (SPC) Section Case Study Scenario:

Before we jump into the case study scenario and related questions, let's take a moment to understand the intent of the SPC section.

- *It's about the process* – A patient's journey through your facility can be thought of as a process. Individual measures are indicators of that process. For each cohort, we have selected three to four key measures for you to track. This helps focus on the most telling indicators of your process for those particular patients. Once you have identified abnormal measure values, you can drill into your data and use other Clinical Analytics analytic tools to investigate what occurred in your process during that time. We have also selected relevant adverse events for each cohort, so you have a drillable at-a-glance view of any incidents.
- *Benchmarks are not the focus* – You will notice that the SPC section does not allow you to select a benchmark. The intent of SPC is to analyze the current processes within your facility, so we intentionally disregard all benchmarks (internal and external) in this section. This allows us to track the consistency of our process without comparing to benchmarks, targets, or other goals. Once we have established consistency, we can focus on overall improvement, such as lowering Length of Stay or increasing HCAHPS scores.
- *Types of variation matter* – Variation is a general term used to describe changes we see in a process or in the process outcomes. In any process, there are three types of variation we may see. It is important to understand the sources of variation unique to your facility so you can address their impact on the process.
    - *Common Cause Variation* – Common cause variation is inherent to the process. These are differences in measures values that can be attributable to the standard practice at the facility, such as holiday scheduling, Operating Room policies or discharge routines. Holding individual employees accountable for common cause

variation is generally not appropriate, as this variation can only be addressed by administration making interventions to improve the process.

- *Special Cause Variation* – Special cause variation is variation that is assignable to a specific and preventable cause and is not inherent to the process. By drilling into the SPC charts, you may find variations in measure values to be attributable to a particular unit, a certain physician, or a unique event. Special cause variation can generally be addressed by helping individuals improve their processes.
- *External Cause Variation* – External cause variation, as its name implies, is change that is not part of the process nor assignable to any correctable special cause. External variation is a concept not traditionally addressed in SPC. It is inescapable in medicine, however, since a hospital must treat the patients as they present. Without any changes in process or mistakes by hospital personnel, a change in case mix severity or volume can cause changes in outcome measures.
    - *Clinical Analytics accounts for most of the external variation for you in the SPC section with risk and volume adjustments to the measure values you see in the control charts. By statistically accounting for the diagnosis severity, age, facility, payer, and HCUP's Clinical Classification Software (CCS) categories for each encounter within the cohort, you can be reasonably certain that the variation you see in your control charts is assignable to common or special causes and is not due to external causes.*

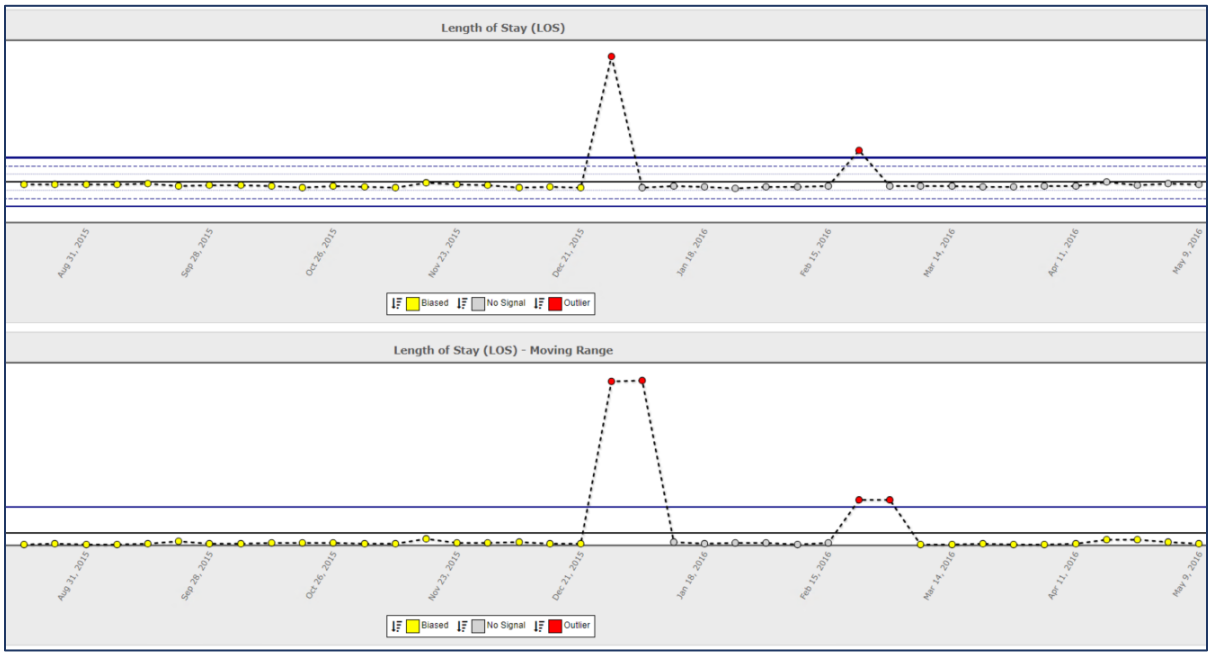
Now that we've covered the basics of SPC, let's go through the case study to learn more about this powerful analytic section. Due to the complexity of the SPC section, the first few questions are intended to provide additional review of the functionality and purpose of the SPC section. By the fourth question, we will begin diving into a scenario based review.

Question 1: *"How does SPC display data differently from a line chart that can be used in a two-column section within the Scorecards application?"*

When looking at the SPC section in Clinical Analytics Scorecards, it is important to understand the intent and structure of typical control charts, as compared to the line charts you will see in the Two Column Section in Clinical Analytics. A control chart uses signals to differentiate common cause variation from special cause variation and to monitor an in-control process for changes. In a control chart, measurements are plotted in chronological order on a line graph with a line indicating the central tendency of the measure value (typically the mean) as well as control bars to indicate degrees of variation (bars are typically placed at the 1, 2, and 3 standard deviations above and below the mean). In the SPC section, all plotted measure values are risk and volume-adjusted, and take on continuous values, even for discrete and binary measures.

Clinical Analytics SPC uses XmR (X and Moving Range) charts for every adjusted key measure. An XmR chart consists of two graphs, one for the observed measure values (X) and one for the moving range (mR). The plotted values for the moving range chart is the absolute value of the difference between two successive points. In Clinical Analytics, the X values are the weekly measures, such as the average (such as Length of Stay) or the rate (such as Mortality Rate). The mR chart plots the absolute value of the difference between the measure values for the current week and the previous week (see Figure 17.2).

FIGURE 17.2 SPC CONTROL CHART XMR LENGTH OF STAY MEASURE



In answering the first question, the information provided above highlights the distinct difference between the line chart display using the two column section and the line graph display seen in the SPC section. In addition, the two column section line chart displays values for a month at a time, whereas the line graph in the SPC section represents values on a week by week view. As you continue to differentiate control charts from line charts, it is important to remember that the control bars and signals are computed under the assumption that every data point comes from a similar process, which is further ensured by the use of cohorts. External variation is, by definition, outside of the process being analyzed and should be minimized as much as possible in control charts. If the external variation is not accounted for, special cause variation and common cause variation can be confounded by external sources of variation. The algorithm for these calculations is one of the key differentiators between the Two Column section line charts in Clinical Analytics and the control charts in the SPC section.

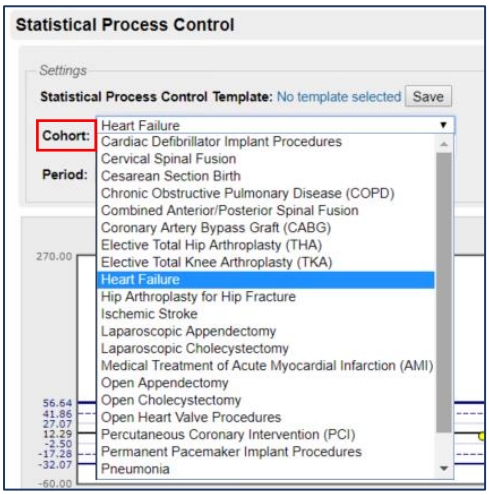
The Documentation (i.e. Knowledge Center) provides in-depth details on the SPC section, including definitions for signals you will see within each SPC line graph display. Now that we have covered the layout

and purpose of SPC control charts and line graphs, it's time to review another important concept in SPC, cohorts.

Question 2: *"How are cohorts defined in Clinical Analytics?"*

The cohorts for SPC are explicitly defined in terms of diagnosis codes, procedure codes, DRGs, and discharge dispositions. This is to ensure that all encounters represented on a control chart have similar medical conditions, indicated treatments, and expected outcomes. Cohorts in Clinical Analytics use a profile with a pre-defined set of profile filters. This saves time defining common high cost, high volume, or high risk profiles of interest. The SPC defined cohorts are utilized in the SPC section (see Figure 17.3) and can be used as profiles across other analytic sections in Clinical Analytics Scorecards.

FIGURE 17.3 SPC SECTION COHORT MENU



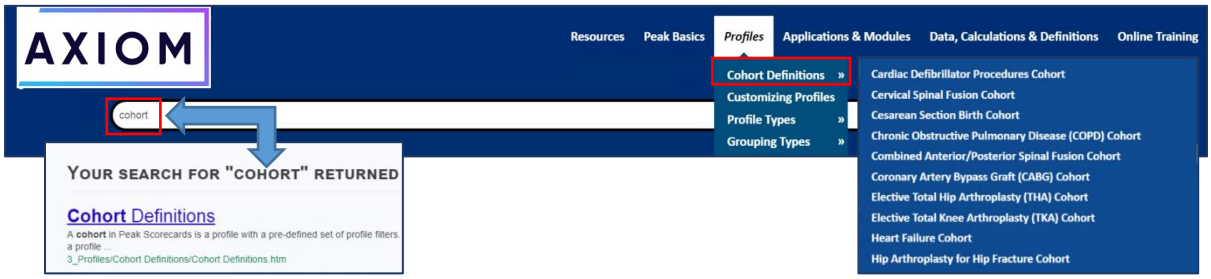
Each SPC cohort has a detailed definition that can be reviewed in the Documentation (Knowledge Center) resource in Clinical Analytics. Currently, more than 25 SPC cohorts have been created with additional cohorts to be made available with future Clinical Analytics software release.

Question 3: *"How can I find out the inclusions, exclusions, and definitions for the SPC cohorts?"*

The Documentation resource (Knowledge Center), available in Clinical Analytics, is an excellent place to explore the definitions of analytic sections, measures, and SPC cohort details. Once you open the Documentation link, (located in the upper right hand corner of your active Clinical Analytics session)

you can keyword search 'cohort' or use the cascading headers to find the particular cohort(s) of interest. (See Figure 17.4). Each cohort is explained in detail within Documentation, expanding on inclusions, exclusions, key measures, and adverse events associated with each cohort.

FIGURE 17.4 USING DOCUMENTATION TO DEFINE SPC COHORTS

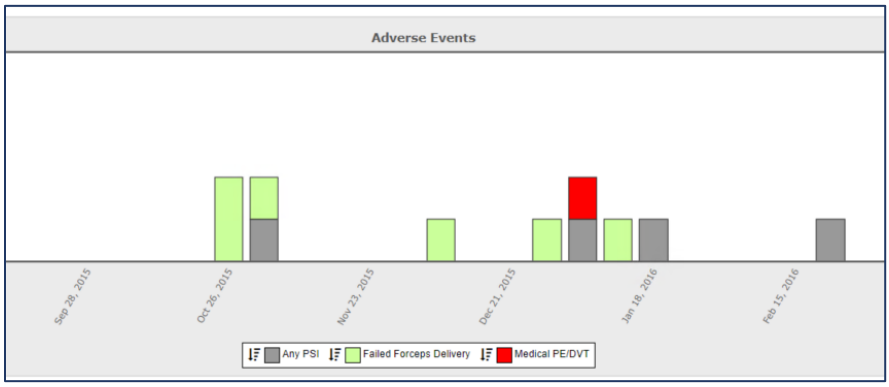


Question 4: *"Can you help explain how measures and adverse events were selected for the SPC cohorts?"*

Within the SPC section, measures are displayed as the average or rate for the encounters discharged each week. These measure values are risk- and volume-adjusted within the control charts of the SPC section. A few examples of measures used in the SPC section are Length of Stay (LOS), One to Thirty day Readmission Forward Rate, Total Charge Amount, Charge Amount, and Mortality Rate. The Charge Amount measures will vary slightly with each cohort to help ensure the results are as specific as possible to the cohort you are viewing. For example, if you are looking at the SPC cohort, "Percutaneous Coronary Intervention (PCI)", then the key measures would be Average LOS, One to Thirty Day Readmission Forward Rate, Charge Amount: Cardiology (sum of Cardiology charges), and Mortality Rate. Whereas a Vaginal Birth cohort would not have the "cardiology" charges measure applied, instead the Charge Amount measure would be Charges – Total.

We carefully selected measures and adverse events, for each SPC cohort, which are the most applicable to the homogenous population you are analyzing. Similar to the measure selection, common adverse events that are important to consider across all cohorts would be Any PSI and Any HAC. However, depending on the cohort you selected, you may see many different adverse events display on the bar chart. For example, the Vaginal Birth cohort displays the following adverse events: Any PSI, Any HAC, Pulmonary Embolism or Deep Vein Thrombosis (PE/DVT), Eclampsia, Postpartum, Major Puerperal Infection, Postpartum, Failed Forceps Delivery, or Reaction to Anesthesia or Drug-Induced Delirium. Despite the adverse events listed for the Vaginal Birth cohort, see Figure 17.5 below, only the adverse events that actually occurred in the designated weekly time period will display in the bar graph analysis.

FIGURE 17.5 SPC VAGINAL BIRTH COHORT ADVERSE EVENTS



We have established the foundation for the SPC section. We can now work through a scenario that helps reinforce what you have learned and how you can apply a cohort of interest to help interpret the control chart results.

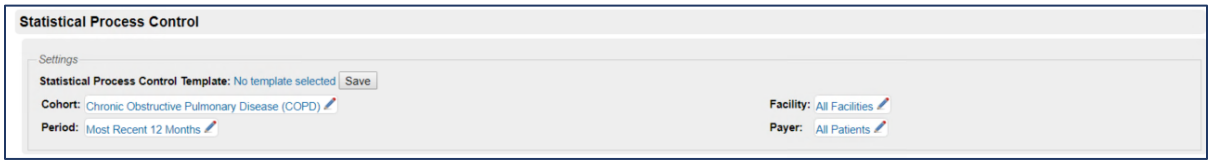
Question 5: *"Can you show me an example of selecting a cohort and interpreting those results?"*

We are going to start at the beginning and select a cohort, time period, facility, and payer settings. Then we will review the measure and adverse event results, followed by drilling into a signal of interest. We will end the scenario with how to apply the results to other analytic sections in Clinical Analytics.

Step 1: Select a cohort, time period, facility, payer settings, and click Rerun.

SPC settings field should look like Figure 17.6 before clicking Rerun.

FIGURE 17.6 SPC COPD COHORT SETTINGS SELECTION



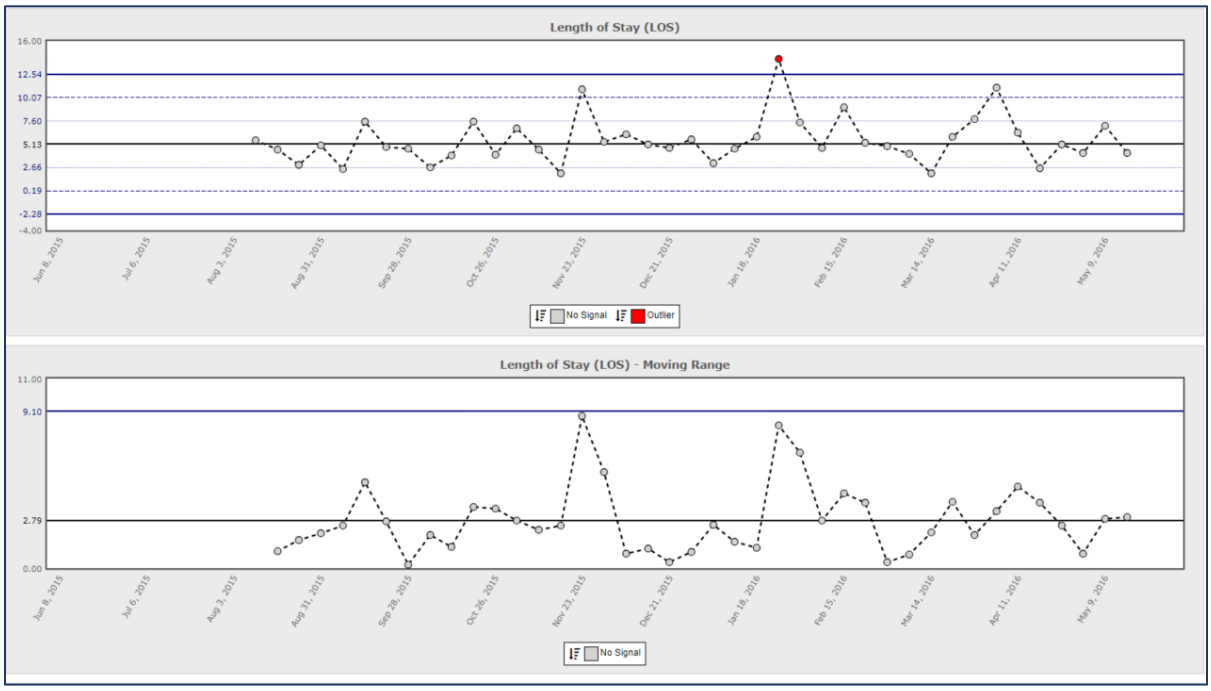
- **Cohort**: *Chronic Obstructive Pulmonary Disease (COPD)*
- **Time Period:** *Last 12 months* (you can select most recent 6, 12, 18, or 24 months)
- **Facility**: *Keep default All Facilities* (you can select one facility if you prefer)
- **Payer:** *Keep default All Patient* (you can select Only Medicaid or Only Medicare Patients if you prefer)

Keep in mind, this scenario and associated screenshots were done in the Clinical Analytics training environment, so the results may differ if you are performing the same analysis on your Clinical Analytics server.

Step 2: Review the results, paying attention to the Measures and Adverse Events for the COPD cohort

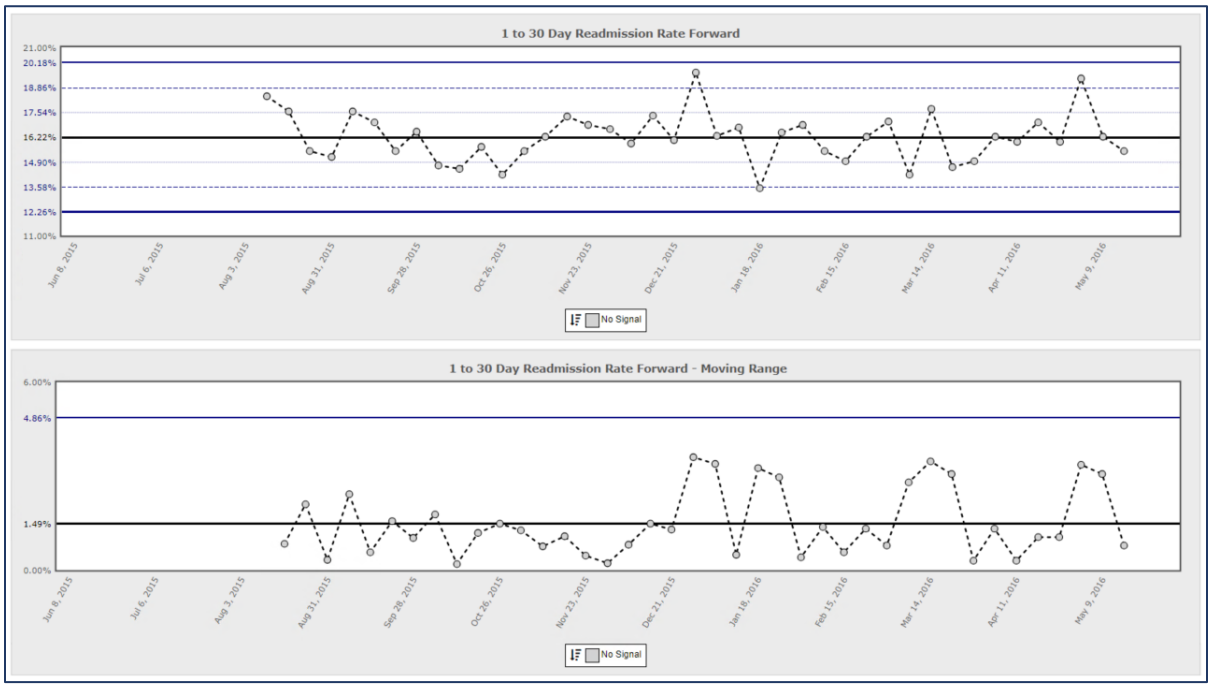
- The following measures were selected for the COPD cohort:
  - **Length of Stay (LOS)** (see Figure 17.7)

FIGURE 17.7 SPC COPD COHORT LOS MEASURE RESULTS



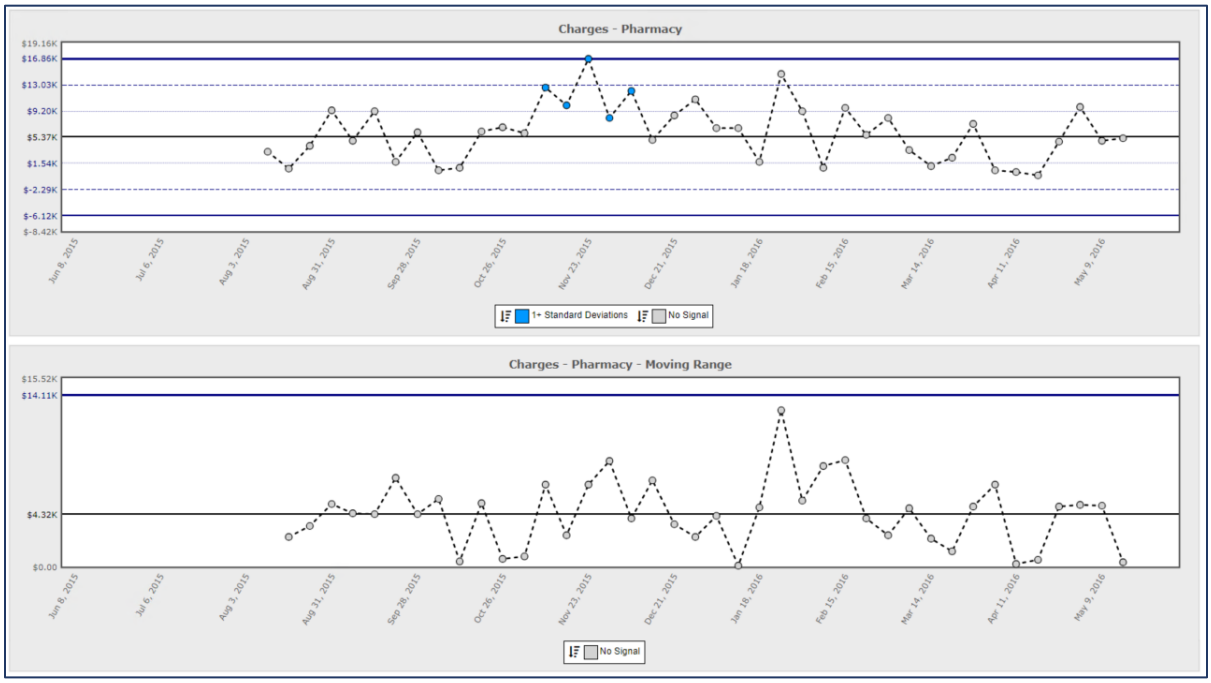
  - **1 to 30 day Readmission Rate Forward** (see Figure 17.8)

FIGURE 17.8 SPC COPD COHORT READMISSION RATE MEASURE RESULTS



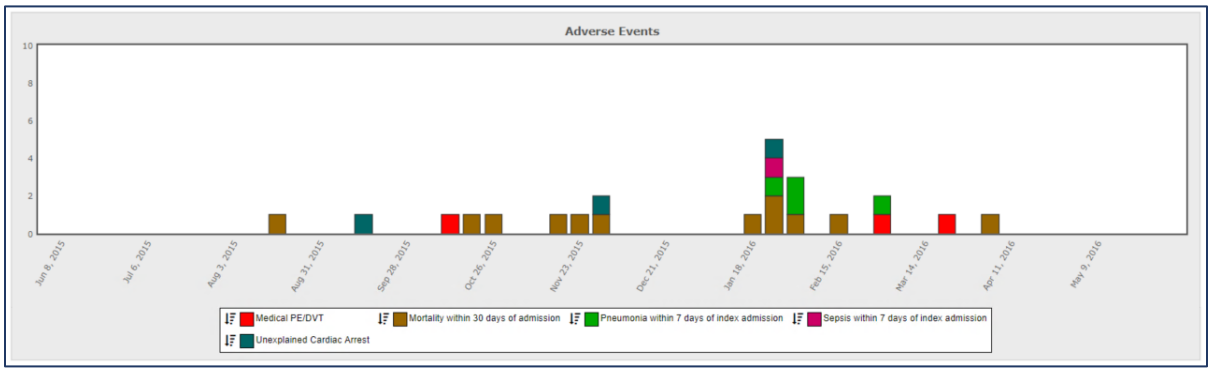
- **Charges – Pharmacy** (see Figure 17.9)

FIGURE 17.9 SPC COPD COHORT CHARGES – PHARMACY MEASURE RESULTS



- **Adverse Events bar graph results** (see Figure 17.10)
  - Several adverse events are reflected in the bar graph.

FIGURE 17.10 SPC COPD COHORT ADVERSE EVENTS BAR GRAPH RESULTS



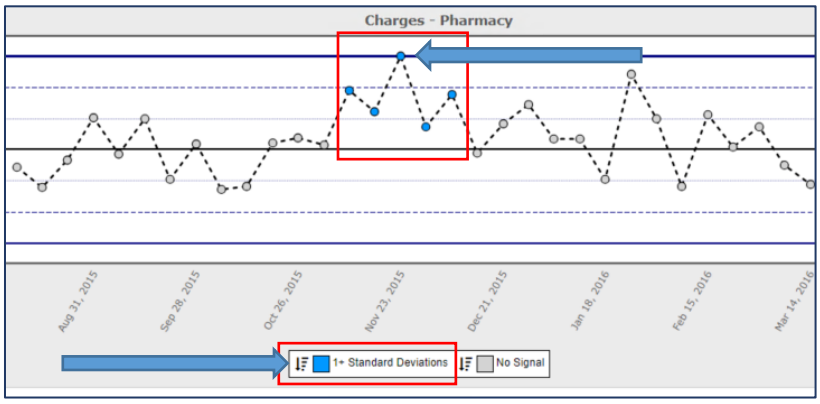
Documentation provides the all-inclusive list of adverse events that could have displayed for the COPD cohort.

Upon initial review, the Readmission and Pharmacy charge measures do not have any signals that stand out or need immediate investigation. However, there may be certain medications driving up pharmacy costs during the month of November (see Figure 17.9). In addition, there was an increase in adverse events during the second week in January as compared to surrounding weeks (see Figure 17.10). Let's first focus on the November pharmacy charges blue signal trend shown in Figure 17.9.

Step 1: For the Charges – Pharmacy measure, click on the top blue signal.

- Note the hover-to-discover feature, when you hover your cursor over the color coded signal in the legend or on the weekly signal data point in the line graph, an information window is displayed.

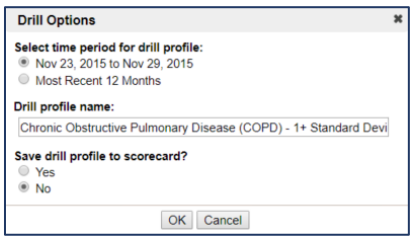
FIGURE 17.2 SPC COPD COHORT PHARMACY CHARGES SINGLE BLUE SIGNAL SELECTION



- Hovering your mouse over the signal data point in the line graph provides additional details specific to the particular data point signal. Hovering your mouse over the signal title in the legend provides an information window with definition of that particular signal trend.
- The blue signal in the legend means four out of five consecutive data points are outside the dotted blue lines on the same side (outlined in red in Figure 17.2).

Step 2: When clicking on the blue signal data point on the line graph (highlighted in Figure 17.11), a new drill window pops up before proceeding to a details style table view (see Figure 17.12).

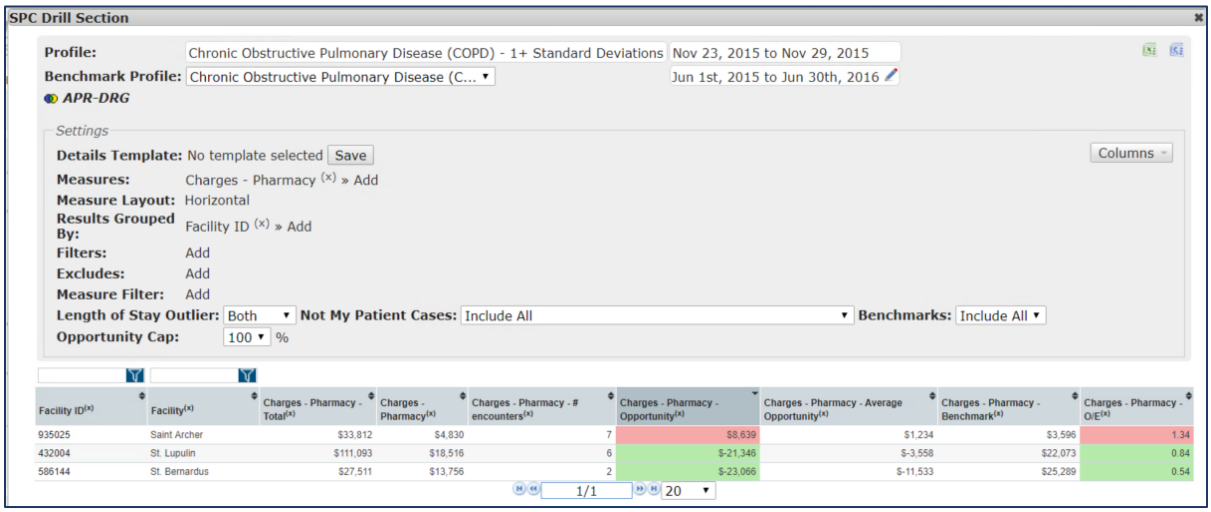
FIGURE 17.12 SPC COPD COHORT SIGNAL DRILL OPTIONS WINDOW



- Because we clicked on one data point, the default suggested view is for the time period specific to the selected single week on the line graph.
- You also have the option to save the drill profile and use this profile elsewhere in the scorecards application. The default option is No, but you can switch to Yes if you would like to save this particular drill profile for future analysis.
    - *Keep in mind, if you choose to save the drill profile, it will be a static reference of the encounters within the selected cohort and time period only.*
- Let's stay with the default selections as shown in Figure 17.12 above, click OK once you have made your selections.

Step 3: A free floating SPC window pops up with the familiar Details section table view. Take a few minutes to review the unique features in the details view (see Figure 17.13).

FIGURE 17.13 SPC COPD DRILL SECTION RESULTS



- Let's first talk about the similarities of the SPC Drill Section view and the Details Section view.
  - There are profile and benchmark profile options with associated time periods.
  - There are the same details setting options with the ability to save template views.
  - You can customize the organization of the columns within the table results.
  - You can add or delete columns based on availability using the columns button in the upper right hand corner.
  - You can export to Excel or CSV for further analysis.
- Let's review the unique features of the SPC Drill Section view.
  - This is a free floating window. You cannot access other sections of the scorecard without having to close out of the free floating SPC Drill window.
  - The profile is static, reflecting the precise weekly signal you clicked on from the line graph (in this example). The time period can be adjusted.
  - The benchmark profile is the COPD Cohort, maintaining the integrity of this particular homogenous patient population for initial comparison purposes. However, there is the ability to change out the benchmark profile if it's appropriate in the analysis.
  - You can view the Clinical Analytics Encounter IDs that make up any cohort level drill, but you cannot click on it to access the Clinical Case Summary (CCS) level detail. An easy solution to retain the Clinical Analytics Encounter IDs would be exporting to

Excel. Question #6 will help answer the inquiry of how you can access CCS level detail in conjunction with SPC results.

- There should be fifteen encounters included in the single blue data signal that we selected from the line graph. In Figure 17.13, you can see that the fifteen encounters are spread across three facilities in the health system.

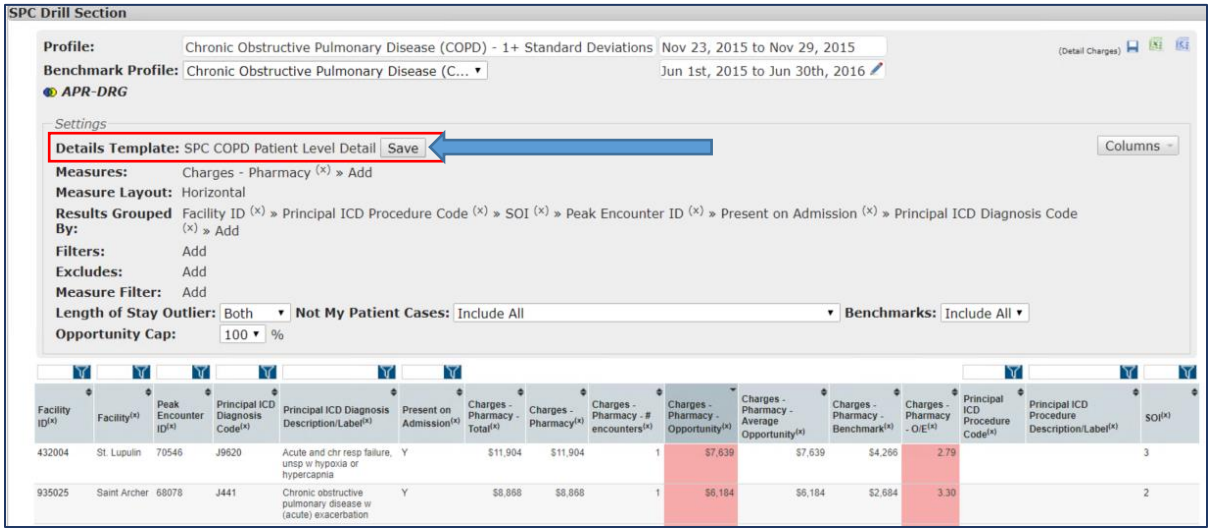
Step 4: It's time to add a few results grouped by filters to narrow the opportunity of interest.

- Let's include the following filters:
  - **Present of Admission (POA)** – POA is for the principle diagnosis code.
  - **Principal ICD Diagnosis Codes** –to review the diagnosis codes present on admission
  - **Principle ICD Procedure Codes** – to review the principal procedures performed on these encounters
  - **Severity of Illness (SOI)** – to review the severity of illness across the patients with the most opportunity
  - **Clinical Analytics Encounter ID** – in SPC, we need to export to Excel to then access the clinical case summary. We must include the Clinical Analytics Encounter ID to view that information, and copy/paste if needed into new profiles or the Clinical Case Summary (CCS) section.

Step 5: For efficiency, we chose to save the table view, with the above settings in Step 4, so that we would not have to recreate that view again (See Figure 17.14).

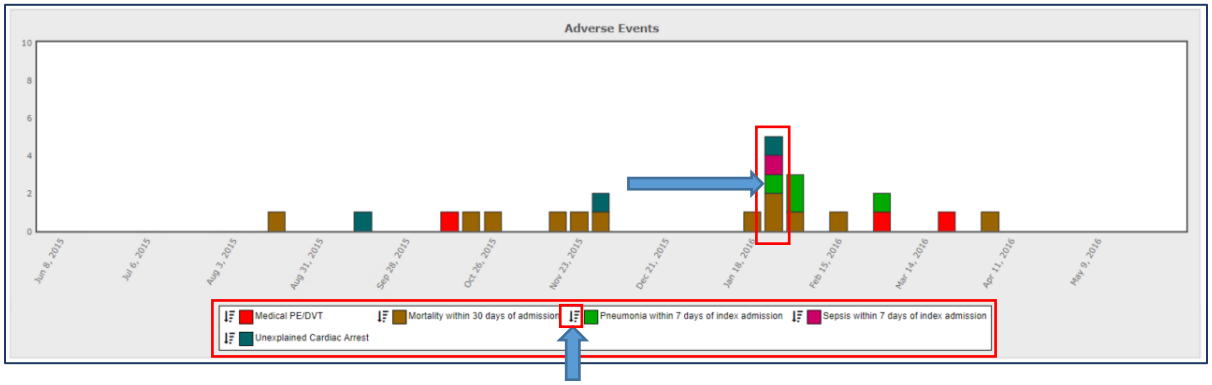
- You can save views by clicking the Save button, highlighted by the blue arrow in figure 17.14 below.
- Another benefit of creating details template saved views, is that you can use them across any details section.

FIGURE 17.14 SPC COPD DRILL SECTION RESULTS WITH ADDITIONAL SETTINGS (PER STEP 4)



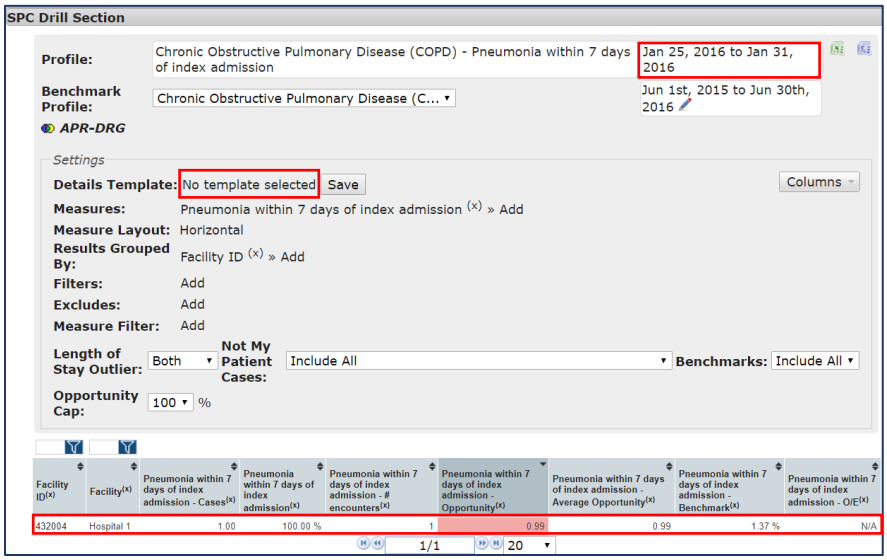
We have reviewed how to click on an individual signal from a line graph. Let's review how to access the same SPC Drill section window from the adverse events bar chart. Earlier, we mentioned the spike in adverse events noted during the second week of January. You can open the SPC drill section window the same way from the bar chart, by clicking on the individual adverse event color coded bar or through the signals in the legend (see Figure 17.15).

FIGURE 17.15 SPC COPD COHORT ADVERSE EVENTS BAR CHART



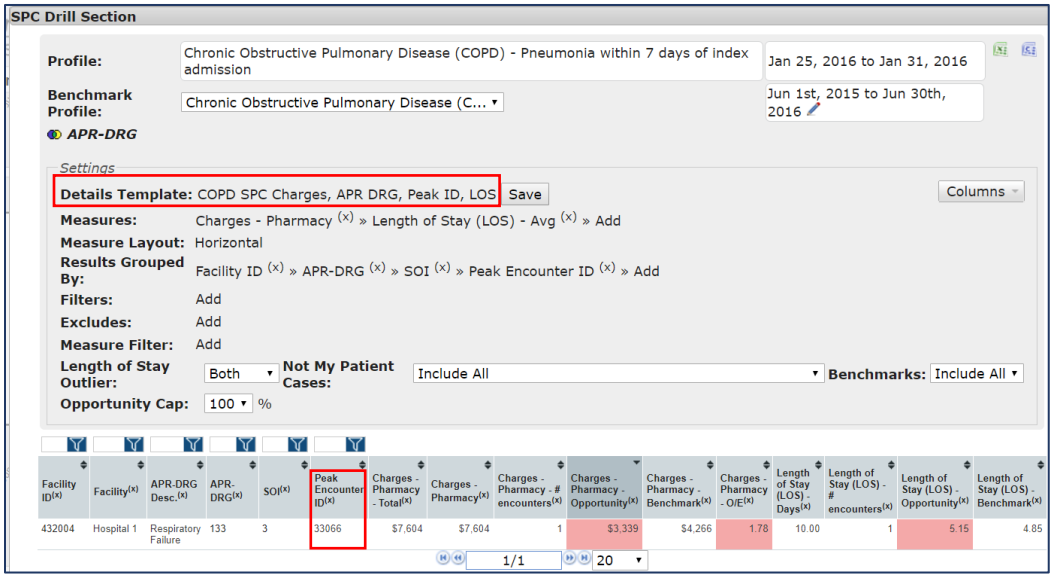
Let's drill into the Pneumonia adverse events and interpret the findings. You can click on the pneumonia signal in the legend or the green bar in the adverse events display. If you click on the green bar in the graph you will be given the option to look at just that week or you can choose to review the entire twelve months as it relates to pneumonia adverse event flags. By selecting the pneumonia signal in the legend, Clinical Analytics will display the most recent twelve months of data. We clicked on the green bar in the graph to take a look at the one encounter during the second week of January (see Figure 17.16).

FIGURE 17.16 SPC COPD COHORT JANUARY PNEUMONIA ENCOUNTER



As a reminder, let's take a moment to make the most of this view and pull in a saved template to explore additional opportunity as it relates to this particular encounter. By clicking on the 'no template selected' hyperlink to the right of the Details Template row (highlighted in Figure 17.16), you can easily pull in any saved view you have created. We selected a view that shows charges, length of stay, APR-DRG, SOI and Clinical Analytics Encounter ID (see Figure 17.17).

FIGURE 17.17 SPC COPD COHORT PNEUMONIA ENCOUNTER VIEW WITH SAVED DETAILS TEMPLATE

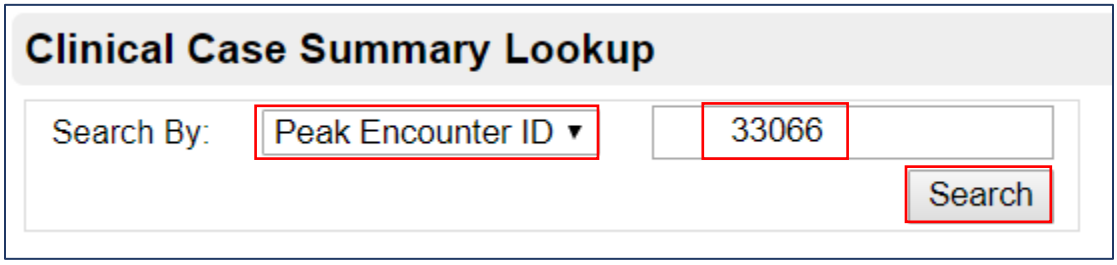


Now, we can assess the opportunity for this COPD patient, flagged for pneumonia within seven days of admission, in comparison to the COPD cohort as a whole. This particular encounter showed charges and length of stay opportunity compared to the same exact patient population. The Clinical Analytics Encounter ID is included in the table results and can be applied to the CCS section to explore more encounter level details, as discussed in the next question.

Question 6: *"You mentioned in a previous chapter that the CCS section would be helpful when using SPC, show me how."*

The Clinical Case Summary (CCS) section in Clinical Analytics allows you to search for specific Clinical Analytics Encounter IDs or Account Numbers one by one. You only need to have the Clinical Analytics Encounter ID or the Account number to drill into an encounter level clinical case summary. We will use the example in Figure 17.17 to highlight this functionality. First, you will want to make sure you have the CCS section added to your scorecard. If not, you can click the pencil icon and add the CCS Lookup section before proceeding. Once you have confirmed you have the CCS section, enter in the Clinical Analytics Encounter ID or Account Number and click on search (see Figure 17.18).

FIGURE 17.18 CLINICAL CASE SUMMARY LOOKUP SECTION



After you enter the Clinical Analytics Encounter ID and click on search, the individual encounter summary will display for your review (see Figure 17.19). As mentioned in a previous chapter, you can click on the MRN in the third row to view every encounter type for this particular patient. This is a great way to review how many the types of encounters and related date ranges between each in one view (see Figure 17.20). In a snapshot, you are able to see that this patient was readmitted within 48 hours of the index admission.

FIGURE 17.19 CLINICAL CARE SUMMARY ENCOUNTER LEVEL DETAILS

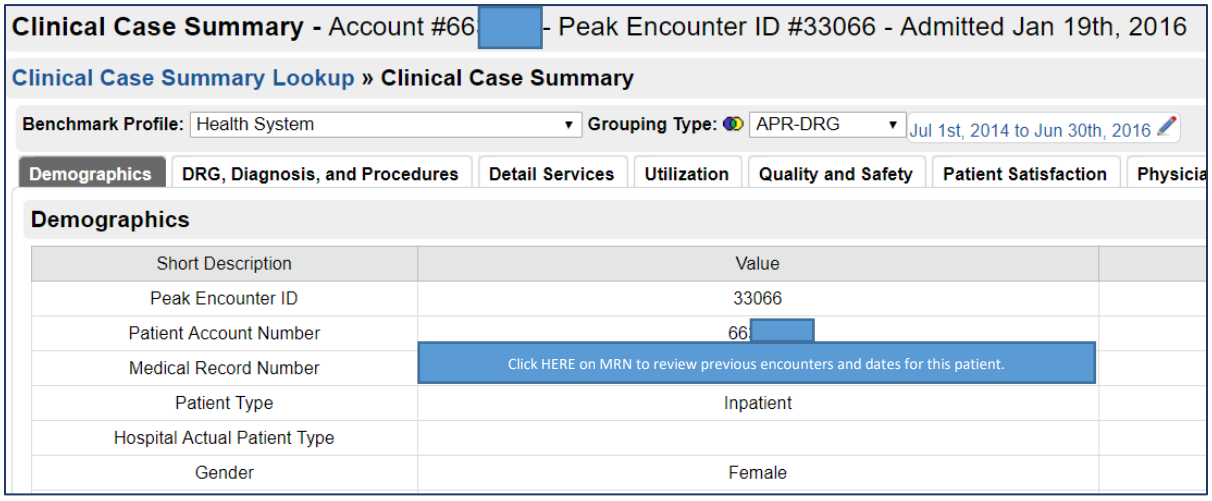
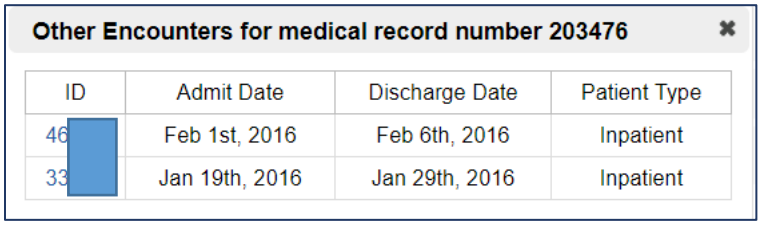


FIGURE 17.20 MRN LINK TO OTHER ENCOUNTERS VIEW

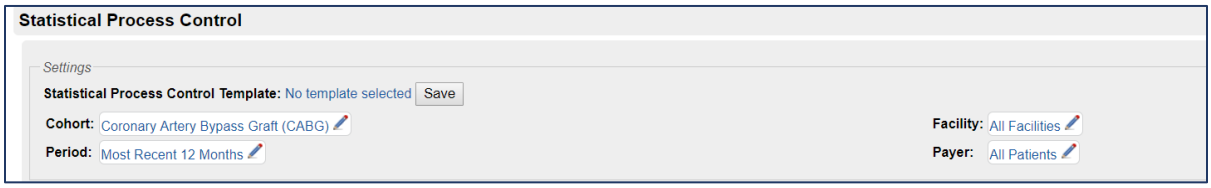


The focus has been on one specific patient encounter during this scenario, but you can apply the same functionality and tips to any cohort within your SPC analysis. In our final question, we will show you how to start an analysis in SPC, save the SPC drill profile, and then use the profile across other analytic sections in Clinical Analytics.

Question 7: *"We recently implemented a new quality initiative in the ICU's, and I want to evaluate the trends since it's been implemented, how can I do that in the SPC section and confirm my findings in another section?"*

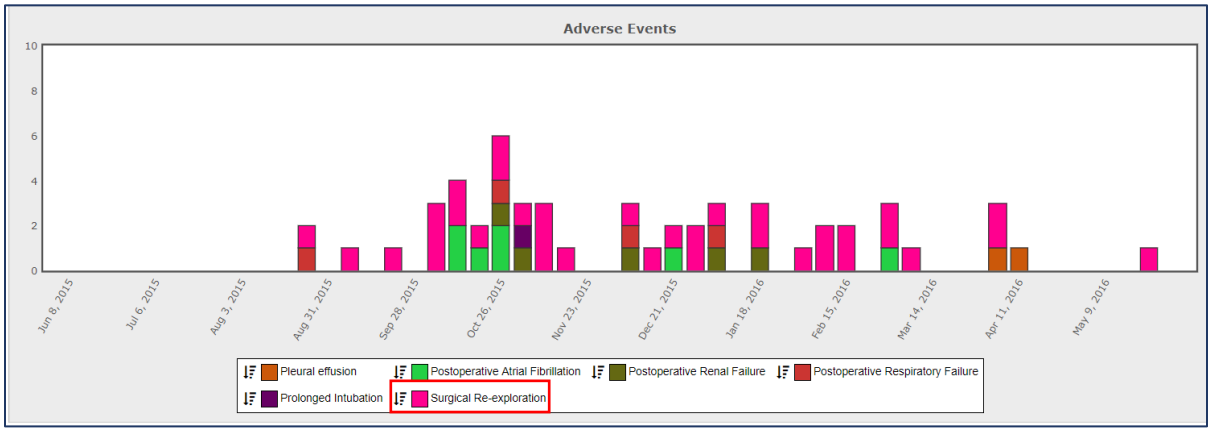
For this scenario we will use the Coronary Artery Bypass Graft (CABG) cohort group, knowing they spend at least the first post-operative day or two in the Cardiac ICU. We will focus on the most recent twelve months and will look across all facilities and all patients (see Figure 17.21 for settings detail).

FIGURE 17.21 SPC CABG COHORT SETTINGS



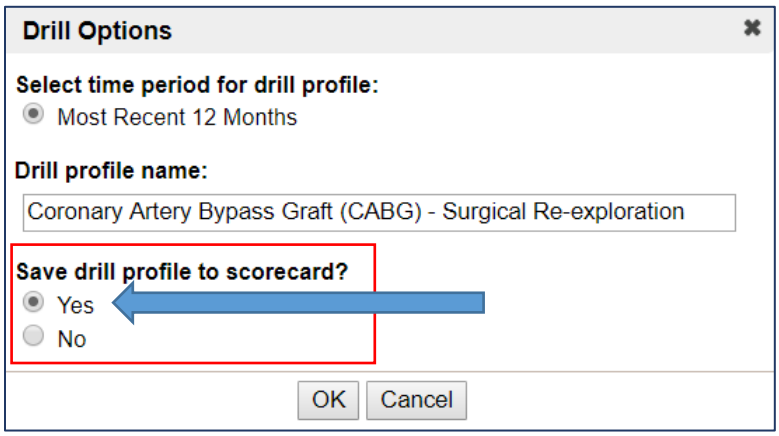
After running the analysis, the Adverse Events bar graph immediately stands out as something we need to explore further (see Figure 17.22). Remember, you can look in Documentation to see all possible adverse events assigned to the CABG cohort, but only the adverse events that actually happened will be represented in the bar graph display.

FIGURE 17.22 SPC CABG COHORT ADVERSE EVENTS BAR GRAPH RESULTS



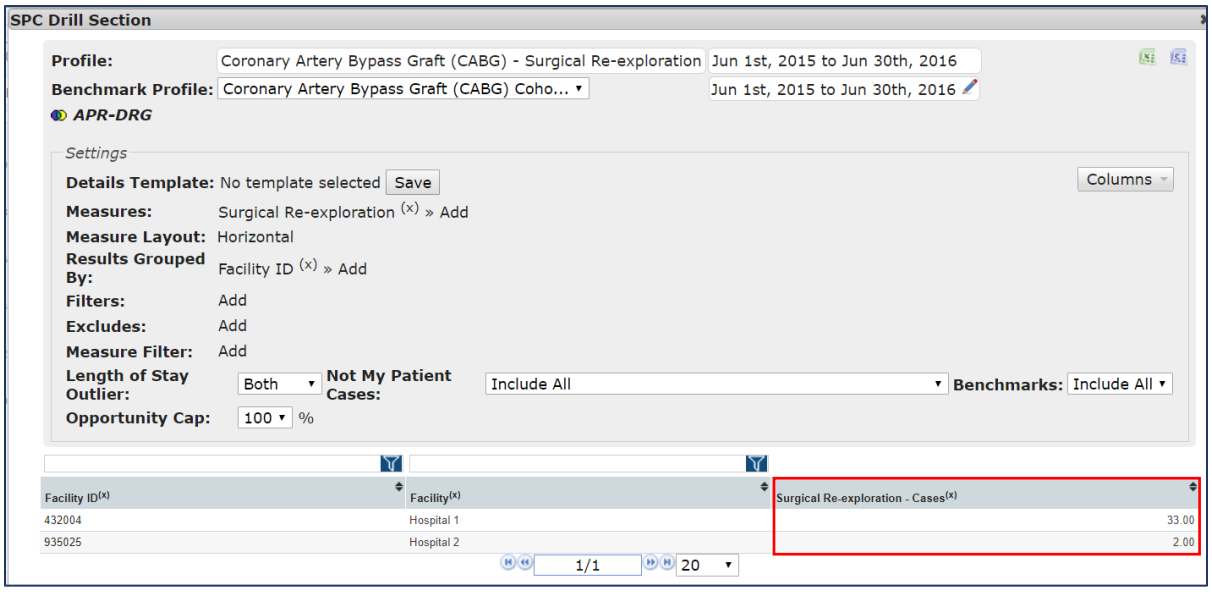
Surgical Re-exploration is a frequent occurrence in these results. In the previous example, we focused on one specific encounter. Now, let's take a look across the entire time period to review all of these patient encounters with the surgical re-exploration adverse event, instead of focusing on just one. The SPC Drill Options window will display once you click on the signal icon to the left of the pink surgical re-exploration legend event (see Figure 17.23).

FIGURE 17.23 SPC CABG COHORT SURGICAL RE-EXPLORATION ADVERSE EVENT DRILL



Next, you will want to switch the save drill profile option from No, to Yes, before clicking OK. Selecting Yes, will prompt Clinical Analytics to create a profile with the encounters that represent the Surgical Re-exploration adverse event only. Once you click OK, this saved profile will be available to use across any profile based analytic section in the Clinical Analytics scorecards application. The table results indicate that Hospital 1 had 33 total surgical re-exploration events across a twelve month time period.

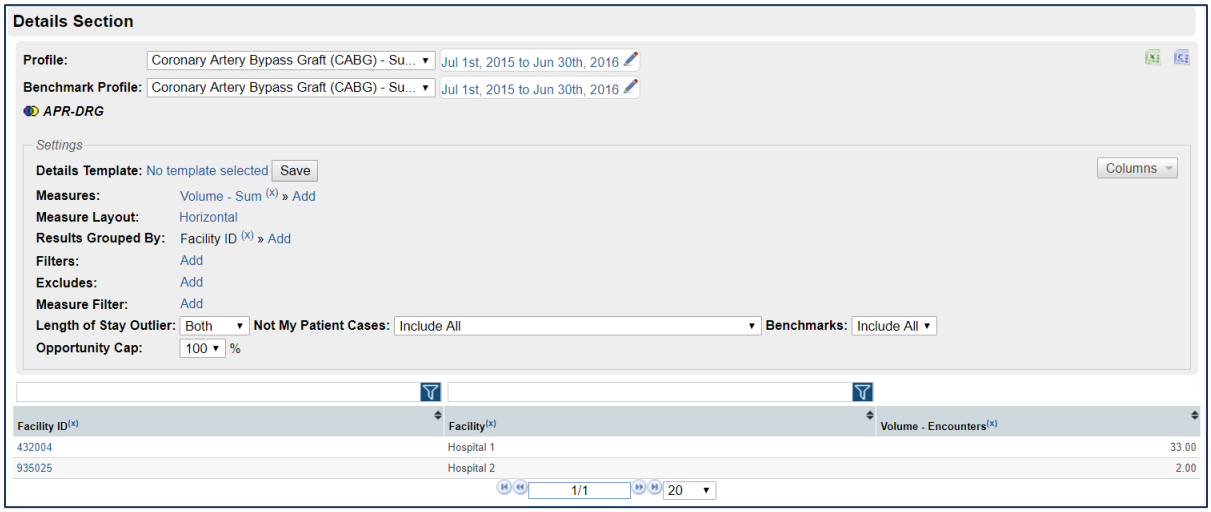
FIGURE 17.24 SPC CABG COHORT ADVERSE EVENTS DRILL RESULTS



Similar to the previous scenario in this chapter, you can begin to further stratify the data to determine which operating physicians make up the 33 encounters represented in the table above. The same results grouped by options are available to narrow your focus and identify additional opportunity. We have covered how to add, change, and save details setting options, so let's focus on finishing the answer for question seven as we wrap up this final chapter.

We have used the SPC section to focus on the CABG cohort and identified a significant amount of surgical re-exploration adverse events. First, we will show how to confirm these results in another section in Clinical Analytics, and then work through how you can use this information to evaluate if an initiative is working since the implementation of a practice change.

FIGURE 17.25 DETAILS SECTION SPC CABG PROFILE CONFIRMATION



In Figure 17.25, we used the CABG Surgical Re-exploration profile we created earlier and applied the SPC drill profile to the Details section in Clinical Analytics. Additional information on how to leverage the power of the Details section can be reviewed in Chapter 4. We pulled in the SPC drill profile, confirmed the twelve month time period, and added the Volume measure to reflect a total encounter count for the profile selection, before clicking Rerun to confirm the SPC section results in the Details section. We started off in the SPC section, and then focused on the adverse events for the CABG cohort. However, you can access all developed cohorts in the Profile Manager within Clinical Analytics Scorecards. You don't necessarily have to start in the SPC section if you are comfortable in the Details section, and have a focused analysis you want to apply to a cohort population. We hope you now understand the distinct difference and power in using the SPC section to evaluate trends over time.

There are several sections in Clinical Analytics that allow you to evaluate the results comparing a pre-quality initiative time period to the post-quality initiative time period. The physician service details (Chapter 11), pharmacy analytics (Chapter 12), and details section (Chapter 4) are a few examples of analytic tools you can use to compare the same population of interest and the associated comparison time periods. We will utilize the pharmacy analytics section to highlight how easily you can compare two time periods and evaluate if the practice change has been effective.

Using the power of cohorts in other scorecard sections:

Let's say your organization recently implemented a multi-modal approach in pain management across the Open Heart surgery population and you want to know if these patients are receiving less narcotics as compared to before the multi-modal initiative was implemented. We will outline the step-by-step approach to answer this question.

Your Health System must be sending NDC details to Clinical Analytics and you must have the pharmacy analytics section in order to perform this scenario.

Step 1: Confirm you have the Pharmacy analytics section added to your scorecard.

Step 2: Create a profile that represents the population of interest to perform the analysis.

- *In this example, we have created a profile titled, CABG and Open Heart Valve Cohorts and selected these two choices from the cohort filter option within profiles.*

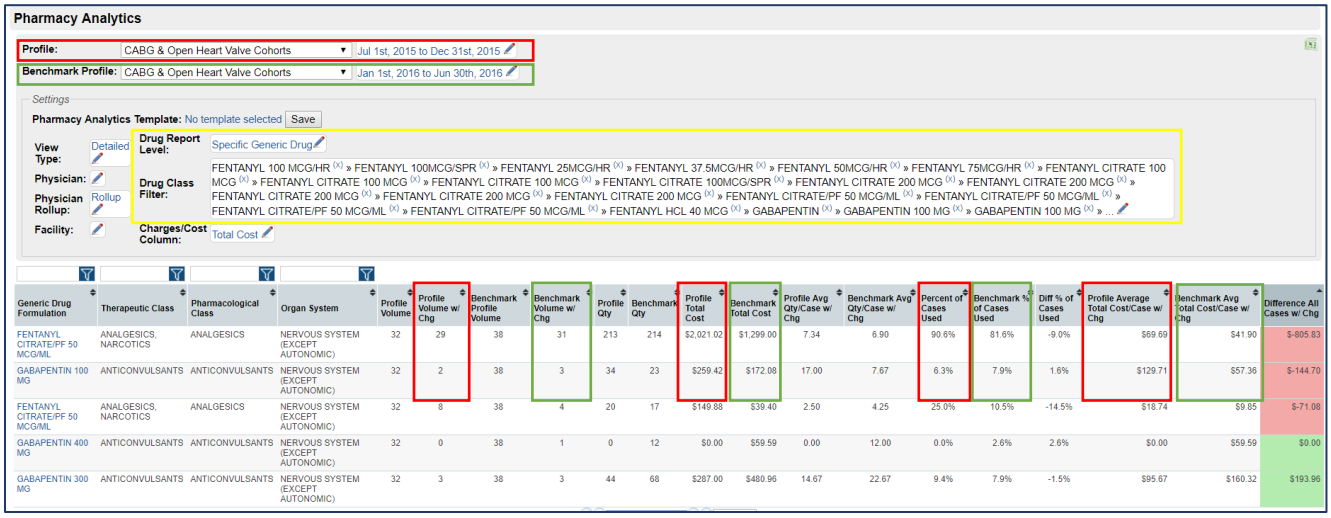
Step 3: Use the CABG and Valve cohort profile as **both** the profile and benchmark profile selection in the pharmacy analytics section.

Step 4: Update the time period for the **profile to reflect the prior-to-initiative implementation** time frame (see Figure 17.26 highlighted in red).

Step 5: Update the time period for the **benchmark profile to reflect the post-initiative implementation** time frame (see Figure 17.26 highlighted in green).

Step 6: Select the specific generic drug report level and then select the medications of interest to further filter your focus. *For this scenario, we selected a few Fentanyl IV and Gabapentin Oral NDC options (see Figure 17.26 highlighted in yellow).*

FIGURE 17.26 PHARMACY ANALYTICS SECTION QUALITY INITIATIVE COMPARISON ANALYSIS



This scenario and results are in the training environment, which doesn't reflect your specific quality initiative project. However, this scenario does help to show you how you would approach your analysis question in Clinical Analytics and then leverage various sections based on your personal preference.

In Figure 17.26, the table results represent encounter level medication details on the profile group (outlined in red) during the first six month time period as compared to the benchmark profile group (outlined in green) during the post implementation six month time period. We picked Fentanyl and Gabapentin, but you could select any other medication analysis based on the quality projects you may be working on. In addition, you could select any other population of interest as well, by creating a new profile.

For this scenario, the quality initiative project focused on the utilization of Fentanyl and Gabapentin in the CABG and Open Heart Valve patient population only. We created a profile that narrowed the patient population to pull only CABG and Open Heart Valve patient encounters. We used the same profile and set the time periods to show six months before the implementation and the six months post implementation to evaluate if the utilization of these two drugs increased or decreased. Let's focus on the first two rows as seen in Figure 17.27 below.

FIGURE 17.27 PHARMACY ANALYTICS SECTION QUALITY INITIATIVE COMPARISON ANALYSIS FOCUS FIRST TWO ROWS

Generic Drug Formulation	Therapeutic Class	Pharmacological Class	Organ System	Profile Volume	Profile Volume w/ Chg	Benchmark Profile Volume	Benchmark Volume w/ Chg	Profile Qty	Benchmark Qty	Profile Total Cost	Benchmark Total Cost	Profile Avg Qty/Case w/ Chg	Benchmark Avg Qty/Case w/ Chg	Percent of Cases Used	Benchmark % of Cases Used	Diff % of Cases Used	Profile Average Total Cost/Case w/ Chg	Benchmark Avg Total Cost/Case w/ Chg	Difference All Cases w/ Chg
FENTANYL CITRATE/PF 50 MCG/ML	ANALGESICS, NARCOTICS	ANALGESICS	NERVOUS SYSTEM (EXCEPT AUTONOMIC)	32	29	38	31	213	214	$2,021.02	$1,299.00	7.34	6.90	90.6%	81.6%	-9.0%	$69.69	$41.90	$-805.83
GABAPENTIN 100 MG	ANTICONVULSANTS	ANTICONVULSANTS	NERVOUS SYSTEM (EXCEPT AUTONOMIC)	32	2	38	3	34	23	$259.42	$172.08	17.00	7.67	6.3%	7.9%	1.6%	$129.71	$57.36	$-144.70

The Profile Volume with Charge column reflects that Profile encounters that received Fentanyl 50mcg and Gabapentin 100mg in the first six month time period. Whereas the second highlighted column, the Benchmark Volume with Charge column, reflects the same information, except it represents the comparison time period. Moving towards the right, the Percent of Cases Used columns represent the percentage of encounters that utilized each drug comparing the previous six month time period to the next six month time period. The far right highlighted columns comprise the average total cost per case with charge for each time period (the profile time frame compared to benchmark profile time frame).

We can see that in this patient population, Fentanyl was utilized 9% less in the current six month period and Gabapentin was used slightly more as compared to the previous six month time period. You may be asking yourself, "Well, what if I don't need to do a medication time sensitive comparison analysis, but instead one on surgical supplies?" The Physician Service Details section will provide the same functionality and comparison power outlined in this scenario, but broadens the scope to include all charge description master items. You can absolutely leverage profiles to filter and narrow the encounter population, and physician service details allows for the profile and benchmark profile comparison as well.

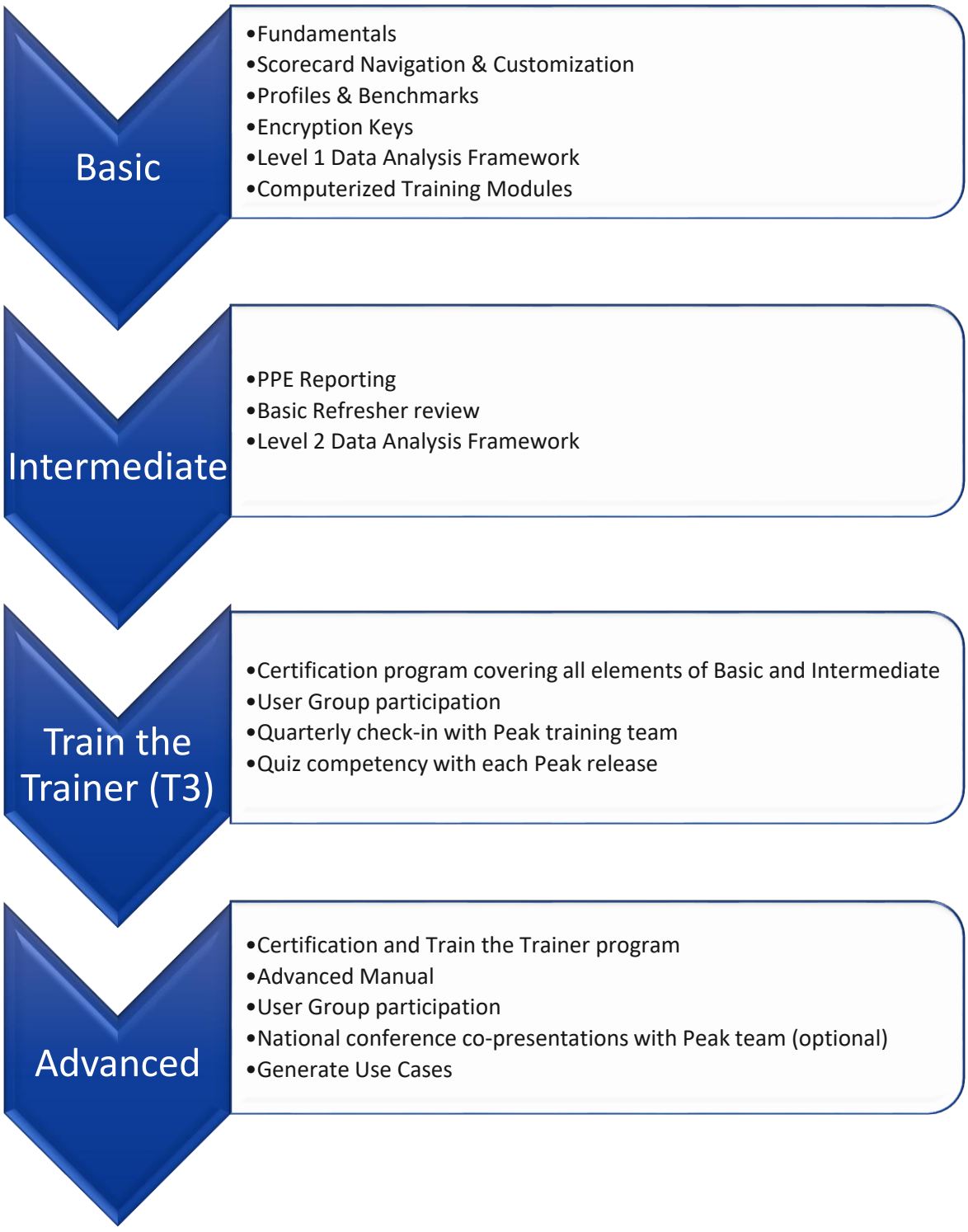
You did it! The SPC chapter is the final chapter in the Clinical Analytics Advanced Manual. We have highlighted the available analytic sections in Clinical Analytics and built upon each one in order of complexity. Hopefully the case studies were beneficial to helping explore the various ways each section can be utilized. We were only able to cover the most common use cases for each analytic section. Therefore, our team has already begun to develop a supplemental exercise manual that will offer even more advanced clinical case studies, for each analytic section, commonly used across our user base.

Conclusion

In conclusion, there have been many exciting developments over the past year on the Clinical Analytics training and support team, which are highlighted in Appendix A. Our users now have access to Clinical Analytics Basic Scorecards in a computerized training format. Training manuals and resources for Clinical Analytics Basic/Intermediate Scorecards and Physician Practice Evaluation (PPE) Reporting are available in print or electronically on the Documentation resource within Clinical Analytics software. The Clinical Analytics Advanced manual, for the scorecards application, will be a new addition to our library of resources. In addition, we continue to provide onsite training sessions for large and small groups. We are also offering more remote webinar training sessions to help provide cost effective training options.

We sincerely appreciate your dedication, time, and attention to become a more proficient Clinical Analytics user! We look forward to hearing about the success stories and various ways your health system is leveraging Clinical Analytics software to reveal opportunity and impact change across your organizations! "We all teach, we all learn!" If you have any questions, comments, or suggestions, please reach out to the Clinical Analytics team (see Appendix B), at your convenience, so we can follow up as soon as possible.

Appendix A: Clinical Analytics Training Sequence



Appendix B: Contact Clinical Analytics Support

We love to hear from our clients! Located in beautiful Colorado, support staff is in the office Monday-Friday 8am-5pm Mountain Time.

- Reach out to us if you have questions about:
    - Add-on modules
    - Accessing your account
    - Your specific analysis
    - New ideas for Clinical Analytics
    - Anything else!
- Email: peaksupport@syntellis.com
- Call: (847) 441-0022