Getting Started Toolkit

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Version	Date	Author	Change description
1.0	2/14/2021	Data Entry QI project members	Original Document
1.1	9/1/2022	Data QI project leaders	Sec 7, Sec 1 appendix, updates to Sec 1, Sec 3, Sec 3 appendix, link updates to Dallas SharePoint

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Section 1: Expectations for the Clinical Champion, Data champion, and data team

Definitions

- **Clinical champion**: Point person for PAC^3 at the center. This person must be clinical, but does not have to be a physician
- **Data champion**: person responsible for entering data into the registry

Background

It takes a cohesive team to have timely, accurate, actionable data in the PAC^3 registry.

Process Considerations

Clinical Champion Expectations

- Be the point person for PAC^3 at your center
- Participate in regional/virtual training prior to data entry start and audit when eligible
- Responsibility for the data:
    - Timeliness of data submission (within one month + 7 days after patient discharge)
    - Being a good steward of the data
    - Access to unblinded data from member centers
- Standing (or regularly scheduled) meetings with data champion for timely clarification/ adjudication of data fields
- Advocate for appropriate data champion/team staffing
- Advocate for coordination between clinical and data teams for high quality data
- Suggestions:
    - Attend annual meetings
    - Join a committee

Data champion Expectations

- Participate in regional/virtual training prior to data entry start and audit when eligible
- Pass the data collection quiz
- Data will be entered one month + 7 days post discharge
- There are optional questions about 30-day status. You do not have to wait to submit the case because of these fields. You can submit the case, and then go back after 30 days and check the patient's status, update the fields, and submit again.
- Good working relationships with the data champions from other registries especially STS and IMPACT is key.
- Think about what it would take to submit in a timely fashion without being burned out. Have any pertinent discussions about this with your clinical champion and supervisors.
- Work with clinical champion, data manager, and/or data warehouse to develop a report to help make sure you have an accurate and complete PAC3 census. It is best to address this early before you even begin data collection.

Communication between Data Champion & Clinical Champion

The Data Champion and Clinical Champion are key partners in data collection and submission and should communicate regularly. This is especially important as centers are getting started with data entry, not only because there may be data definition questions, but also to ensure the Data Champion has the support needed to be successful. Below are some examples of real challenges experienced by centers affecting data submission:

1. Insufficient or unreliable FTE allocated for data abstraction at the start
2. Data Champions called into clinical service during high census
3. Data Champions gaining expertise in data querying and increasingly being asked to pull data for local projects at the expense of time to abstract data
4. Data Champions trying to stay timely with data by submitting simple cases to the registry with the intent to get back to more challenging/long length of stay cases
5. Changes in operations (i.e. data entry vendor change, PAC^3 registry version change, or changes to another registry for which a Data Champion is responsible)
6. Clinical Champion or Data Champion leaves of absence

None of these examples is meant to illustrate a failure on the part of an individual:

1. It is hard to estimate or justify FTEs for data abstraction at any center
2. Clinical needs always come first
3. The purpose of the registry is to use data to improve patient care, and often the Data Champion knows the data better than anyone and can help answer questions for clinicians using the data
4. Everyone is learning the best process, and PDSAs to improve efficiency are always welcome
5. These changes are meant to be improvements over the current system, with the intent to ultimately be more effective for improving patient care
6. Redundancies should be created in the system to account for inevitable life events.

The more communication there is between Data Champions and Clinical Champions, the easier it will be to recognize and address these challenges early, before a slight delay in data submission builds into a major backlog.

Please see the appendix for examples of meeting schedules, email communication, and resources to support centers when looking to hire more FTE.

Building Redundancies into the system / Managing a Backlog

It can be very easy to build up a backlog of cases if there is only one Data Champion that knows the PAC^3 registry. The Data Champion taking a new job, going on a leave of absence, or even just a week of PTO can create a backlog that can difficult to overcome.

Suggestions for building redundancies into the system:

- If your center has more than one person responsible for data entry into various cardiac registries, cross train Data Champions
- Have an APP or nurse attend a training

- Identify someone to watch the census and begin input of patients (e.g. add patients to tracking log, enter basic data such as hospital admit date, weight and height at admission, etc.) to ensure patients aren't missed

Suggestions for addressing a backlog:

- Option 1: Start with the oldest cases and work forward trying to incrementally get back to timely data, setting a goal to catch up by x number of calendar days per week.
- Option 2: Begin with current patients and treat the backlog as a project; spend x amount of time on the backlog project a week (e.g. 4 days a week on current patients, 1 day a week focused on backlog patients)
- Enlist the help of a nurse, research coordinator, or other member of the team to help with the backlog in a temporary role. This person could either be fully trained, or could be trained to enter basic data on patients to save the Data Champion time.

Team Considerations

- Develop a strong working relationship between the clinical champion and the data champion
- Consider resources needed to develop accurate/complete census
- Consider how to partner with data champions from other registries (see Section 6)
- Consider how the clinical team can assist in data collection (e.g. documentation)
- Assemble your internal reliability team early
    - See section 5 of GST

Section 2: Building a patient identification report/census

Definitions

- **Census**: A complete list of patients eligible for PAC^3 submission. An accurate census is a result, not something we can simply fetch. It must be created.

Background

A census of cardiology patients sounds like an easy list to make. After all, the clinical staff treat every patient from admission to discharge without missing anyone. We can do the same, right?

This can be a challenging problem to solve, but it is possible. It starts with the clinical setting. Patients arrive and move around the hospital. Clinicians communicate with each other and order transfers to other units or services. These events are captured in the EHR, but with a large staff and high patient volume, we will see issues with consistency. It is one reason why many of our attempts to write census reports miss the mark.

Some cardiology patients go to overflow units. You may have a neuro patient on your cardiac ward. Cardiac patients could be coded to the wrong service. Some patients are complex, with many services consulting. And there are the often cited “late Friday admission / early Saturday discharge” encounters recorded in paper logs. Even if there was a query to capture all of this, could you rely on it?

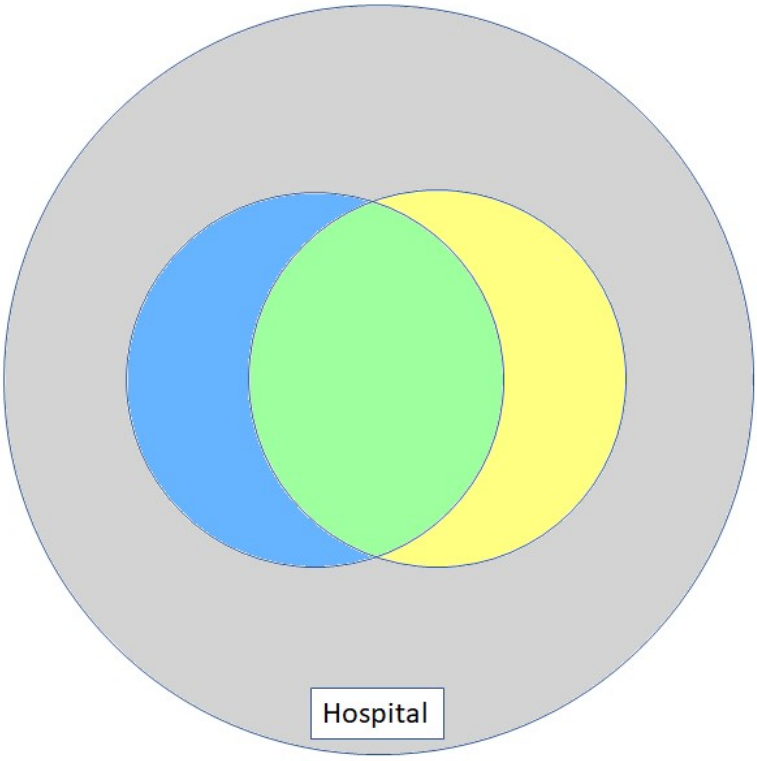
The queries we are trying to write with IT are not the census. Think of them as sources. And we can do things to make those sources as accurate as possible.

Process Considerations

- How can your source answer the question, “was this patient ***ever*** on Cardiology service?”
- How can you capture very short encounters – short does mean duration,
- Hospitals must manage overflow so there is always the possibility of non-cardiology patients being included in queries. How do we exclude them?
- Managing the balance: maximizing the positives while minimizing the false positives. Start with a query that ensures you have all your cardiology encounters and then manage the false positives. Watching the false positives over time may reveal just how frequently (or infrequently) some coding scenarios occur.

Approaching the Query

It helps to visualize the populations we want to see for our review.



	Cardiology units	other units
Cardiology services	**Most**	*some*
other services	*some*	rare to never!

1. Most of the patients to be included in our census will be on our Cardiology services and located on our units (green).
2. Some may be on service but elsewhere in the hospital (blue)
3. Some patients on our units may not be on our services (yellow).

Unless your Heart Center runs an exclusive ward, these three situations will always exist. But! This exercise reveals an important detail – the 4th group (gray): It should be a rare circumstance where a patient that should be included in our census was: a) never on a Cardiology service, AND b) never on our unit, c) at any time during the hospitalization. (This was written prior to the COVID-19 pandemic, and your center may have rules for handling positive cases that you'll need to consider.)

Establishing your center's criteria for patient eligibility, report criteria, and timelines should be discussed with your clinical champion. Working with your EHR IT team, the data champion can have a report that is accurate, reliable, and timely.

Section 3: Chart Abstraction

Definitions

- **Retrospective data collection:** begins upon transfer or discharge from the Acute Care Unit.
- **Prospective data collection:** begins upon admission to the Acute Care Unit and updated daily while inpatient through transfer or discharge.
- **Source of truth document:** A comprehensive document outlining each PAC^3 data element with the associated source of your EMR. The purpose for creating a source of truth is to demonstrate consistent data collection from your EMR for every data field. For example, you can find a birth weight documented in a couple different ways (progress notes from multiple providers, admit notes, flowsheets, History tab, etc.). The data collection team at each site should determine ONE source that they will use every time they enter a birth weight in PAC^3. This aids in consistent data collection across single and multiple data champion teams as well as on-boarding and cross-training new data champions.

  Tip: The PAC3v1 FAQ sheet has been created to include every data field. By downloading a copy of this document from SharePoint and adding a column, you could update your center's "source" for each data field. It's also helpful to have Source 1, 2, 3. In the event the data point is not found in Source 1, you would use Source 2 or 3.

  Tip - add 2 more columns. One should be an integer to preserve the native sort. The second can be the order in which you prefer to collect the encounter. Sort by this and it's easy to see your workflow and train new people so they can leverage the optimization you created

Background

Establishing a chart abstraction process leads to consistent and quality data collection across data champion teams. Data collection for PAC^3 patients can be approached in either a retrospective or prospective fashion.

Once your team determines an approach, it is essential to sync your chart abstraction process with all your other tools (census, case tracking, and partnerships with clinical team)

Process Considerations

Prospective vs. Retrospective Data Collection

Your data collection process should be what works best in your system. Some centers prefer prospective data collection, and some prefer retrospective. There are examples of timely and accurate data collection using both methods. Data champions who use each method describe their reasoning below.

An argument for prospective data collection:
The advantages of performing prospective data collection include timely discussions between ACCU clinicians (patient events, clarification of data elements, etc.) and registry team members such as STS, PC4 and Impact while memories are more accurate. It allows for the data champion to be closer to the events when they happen. Trying to piece a patient's journey retrospectively by

reading through each progress note after discharge can be as time consuming as daily data abstraction, especially in cases with long lengths of stay.

An argument for retrospective data collection:
It's costly to partially collect a patient, leave, and re-engage later. If I start a patient and don't finish it, or start something else, the time is wasted. For me, it requires a large amount of short-term memory, and interruptions are highly volatile. Multitasking patients is overhead.
Retrospective collection also allows for all necessary information to be present within the chart- all medications & dosages have been administered, any respiratory support is established, and final feeding routes & concentrations are documented.

- **Discharge Summary or Progress Note adjustments (Epic)**
  - Adjustments made to discharge summary/progress notes to include common smartphrase templates. Edit these notes to include highpoints to aide in data collection (ex: pre-hospitalization feeding or indication for therapies). Decreases the amount of time data champions invest in digging in chart.
  - Daily rounding tools/worksheets have also been added to Epic at some sites which has deemed to be helpful in obtaining data

- **Accordion Views (Epic)**
  - Standard views of key data elements in a consolidated view. Limits the need to scroll in flowsheets or click multiple tabs to record data elements.
  - For example: In accordion view, you can see oxygen therapy, vascular access, some medications, etc.
  - Some standard views in Epic ***or*** customize and build with Epic team locally.

- **Automated Reports (Epic)**
  - Extensive report that includes key data points across many areas of the registry including: demographics, procedures, growth measurements, vascular access, oxygen therapy, medications and nutrition information. (see appendix for example from Lurie)
  - **Steps**:
    - Start with a ticket and determine who best to work with locally (Epic Report Writer) to build this query using Epic discrete data fields.
    - Support your need for automation through case workload, time spent on data entry, etc.
    - Validate, validate, validate. Be patient and flexible. There are limitations in report building

- **Automated Reports (Cerner)**
  - Data warehouse/Business Objects reports
    - Reports generated through Cerner to include various data elements
      - Chest tube data
      - Medication data
      - Readmissions/Deaths
- **Results Review Flow sheet (Cerner & Epic)**
  - Customized with data elements in the order you collect the fields

- See appendix for Cerner example

- **Registry Version 1.5: Diuretics**
  - Many centers found the diuretics fields added in version 1.5 of the registry difficult to abstract.
  - See appendix for simple ways to pull diuretics data from Epic

- **Other methods:**
  - Attending rounds or clinical care conferences
  - Clinical team assists with data collection
    - Input data directly into database
    - Data collection sheets used by clinical team on rounds daily-track key data elements

Navigating EMR tips:

- **Feeding Data Fields**
  - Create calculator in Excel to help with cc/day and kcal calculations. An example calculator can be found in the Appendix.
  - **Epic**
    - ICU flowsheet-provides a break-down to easily see feeding route, calories and volumes
    - Use Intake/Output
    - Dietician notes
    - Orders (last resort)
  - **Cerner**
    - I-View- I/O section
    - Accept/Progress Notes
    - Template and documented via Discharge Summary
    - Nutrition Notes
      - Can build templates and work collaboratively to document key data elements

- **Therapy/Support Data Fields:**
  - **Epic**
    - Use LDA to sort by line description or date (helpful when patient has multiple encounters)
    - Flowsheets for oxygen and venous lines
    - Accordion view for looking at oxygen therapy over many days—can set time frame to 4, 8 or 12 hours in order to maximize time interval you are viewing.
    - Notes
  - **Cerner**
    - Results Review flow sheet to track oxygen
    - I-View
    - Progress Notes/DC Summary- templates
    - Data warehouse reports on medications

Looking forward/Lessons learned:

- Building relationships with IT staff, EMR constructors, and team communications will inherently lead to quality data collection, abstraction and usage.
- Use your database to its fullest! Ask questions! Can we add this custom field? What can we electronically generate to save data champion time?
- What works for one may not work for all. Find what works best for your organization. Cross train personnel, have your own internal toolkit, etc.

Section 4: Tracking patients

Definitions

- Prospective data collection: Entering data while the patient is still admitted
- Retrospective data collection: Starting data entry after the patient has been discharged

Background

Developing a complete tracking system for patients from admission to discharge and beyond (in the case of readmission and genetic testing, for example) and through submission is essential to ensure every case is complete and submitted. A clear and intuitive system also facilitates cross training and teamwork to make a resilient data collection system. If there are multiple data champions at your center, be sure to save this document in a location where all team members can access it.

Process Considerations

Elements to consider for inclusion in a tracking sheet:

- Date columns to capture when case is started, finished, submitted, and resubmitted (if needed).
- Status column including one of four values:
    1. NULL – means nothing has happened yet
    2. Done – means it is completed
    3. No PAC^3 – means I had the admission flagged for collection but later discovered it was an ICU-only encounter
    4. The 4th value is free form (note-to-self) that reminds me why I didn't finish. It doesn't matter what this value is because it will be replaced by a "Done" value upon submission.
- LUMEDX/CardioAccess ID numbers for the patient, admission, and encounter.

Tracking design elements:

- Some sites don't submit prior to discharge+30 days. This makes readmission part of the initial collection, instead choosing to use this spreadsheet to quickly review which patients are ready to submit. Others submit when the case is finished (discharge + 7 days) and track the date that patients need to be checked for 30-day readmission.
    - Note: 30-day readmission is an optional field. Centers should decide whether to collect this or not and follow that decision consistently. This field will only be used locally, so it is important to decide as a team whether to collect this ahead of time.
- Submitting cases is completed daily and at a minimum, weekly.
- Non-STS patients can be tracked in the event the patient returns for cardiovascular surgery. At that time, the fundamental dx may be updated.

Tips for using Excel features to get the most out of your tracking document:

- Sort the file by discharge date in order to focus on what is due the soonest
- Including the discharge date in the spreadsheet allows for calculation of all other dates like the 37-day submission target
- Including a calculation for the length-of-stay allows for scanning the list and see what may require more effort.
- Including a calculation for age at admission can show if the patient triggers additional collecting for feeds.

Genetic testing:

- Centers should determine how they will follow up on outstanding lab results such as genetic testing. This can be accomplished by designating one person to follow up on outstanding testing or other data champions (STS, PC4, or PAC^3) communicating when results are discovered. The results are then verified by the appropriate data champion before entering the results into the correct database. This is especially important as most information flows from STS as the "center of truth" to the other databases such as PC4 and PAC^3.
- Genetic results may change from unknown significance to disease causing as knowledge or research becomes available. It may not be possible to catch each of these shifts, but it is a good idea to review genetic testing with results of "unknown significance" within each hospitalization.
- Tracking pending results:
    - LUMEDX: It is possible to have a custom field built into LUMEDX for pending genetic results. STS can have one as well; this may be considered double tracking between registries but it also allows for follow up in the event the patient is not an STS patient (EP and cardiomyopathy/heart failure patients).
    - CardioAccess: The genetics dropdown has a choice OTHER and a free-text field. Choose OTHER and free type the pending test. In future admissions, it's a reminder to go back and check for results. In the meantime, it doesn't negatively affect what you submitted. You could query the system for that value and produce a list of "pending" patients to review for completeness.

Shared data fields across STS, Impact and PC4:

- We rely heavily on the STS database for fundamental, non-cardiac anomalies, chromosomal abnormalities, and syndromes.
- Our STS, Impact, and PC4 champions discuss patient changes via email, calls, or team meetings.
- Other registries may have a backlog and/or communication regarding fundamental diagnosis, genetic results, etc. may take place after the PAC^3 encounter has been submitted.
    - For example, the STS champion exports twice yearly for the spring and fall harvests. They will receive a report concerning their data that may require changes to the local STS record. This happens similarly in Impact. Therefore, communication regarding changes are paramount to make sure all data is clean and accurate.
- Shared data fields have advantages for decreased abstraction of the same data elements across multiple registries (demographics, surgical, cath, etc.).

- The disadvantages of shared data fields include lost “time” when there is poor team communication and multiple resubmissions of data.
- The registry also includes patients who have not had an STS surgery (EP, heart failure/ cardiomyopathy patients, etc.).

Section 5: Process for internal review of cases

Definitions

- Internal Reliability Process (IRP): A standardized process used to assess the degree to which data champions interpret and record information from the EMR. This process enables sites to identify variation in interpretation or collection methods between multiple data champions, or between episodes of data collection for a single data champion.

Background

Sites are asked to perform a quarterly internal review as part of the auditing process and report their internal reliability process to the PAC^3 data manager via Qualtrics survey. Some steps and ideas are suggested below to help develop an internal auditing process if one is not already in place.

Process Considerations

Establish a team

Identify team members for the internal reliability process. There is no limit to team members, but the team could include the clinical champion, the data champion(s) for PAC^3, as well as data collectors from other registries that cross-populate with PAC^3, including PC^4 and STS. If the clinical champion is not available, other options include working with other another clinician (MD, APRN, etc.) who is familiar with PAC^3 data or doing crosschecks between two data collectors if there is more than one at your site.

Determine how many cases you will review

The team should select a number of cases per quarter that can realistically be audited (e.g. 3-10 per quarter). Another idea is to review 1-2 cases during regularly scheduled standing meetings with your team.

Determine what kind of cases you will review

Decide what types of cases work best for the audit with your team. Options include:

- Random selection
- Cases that were complicated for the collector to abstract
- Infant to capture the additional fields.
- Mix of cases:
    - Medical hospitalization
    - Hospitalization including a CT surgery
    - Hospitalization including a Cardiac Cath
    - Encounters with a length of stay of at least 7 days
    - Encounters with at least 1 complication or medical event

- Patient less than 1 year of age

Case review

Using the data collection tool as your guide, the data champion(s) will complete a case review using the EMR as the data source. It is recommended that when a site first starts data submission that the data champion(s) complete a full case review. Over time, as the team learns which sections are consistently completed with a high degree of reliability, they may start excluding those sections from review. Please note that at a minimum patient's diagnoses (fundamental, encounter medical/cardiothoracic), feeding section and complications should always be included in the review. Reviews are conducted on a quarterly basis (minimum).

Reconcile identified discrepancy and resubmit if required.

Cross check that all cardiac cath and surgical procedures have successfully been imported or included under the hospital admission, including those performed *outside* of the PAC^3 encounter (e.g. after the PAC^3 encounter has ended, but patient not yet discharged).

If your team has the bandwidth to review other portions of the case report form or the entire form, feel free to do so. We strongly recommend reviewing the points listed above based on prior experience (both in PAC^3 and in PC^4) because they are the most nuanced.

Document the outcomes of the review

Were there any errors or disagreements? How were they reconciled? If they were not reconciled, do you have any questions for the collaborative? Feel free to share any unreconciled data points on feedback calls or on the quarterly audit survey.

Section 6: Maximizing partnerships with clinical teams

Definitions

- Data team:
  - Data Team Manager: big picture view, coordinates flow and communication between all registries and data entry software
  - Data champion
  - Clinical champion
- Clinical team:
  - Clinical champion
  - Attending physicians, nurse practitioners, bedside providers, and others involved in patient care

Background

The consistent, timely, and accurate submission of data into the PAC^3 registry depends on a team approach and should *not* be considered the sole responsibility of the data champion.

Process Considerations

Collaboration Between…

- All registry teams:
  - Defined workflow to efficiently resolve discrepancies with overlapping data fields
  - Data team oriented to all registries, helps to understand overlapping data fields and differences with data definitions
- Clinical champion and other data team members:
  - Defined workflows for census adjudication, daily data collection and discharge review meetings
  - Clinical champion and PAC^3 data champion audit encounters prior to submission at regularly scheduled discharge review meetings
- Clinical staff and data staff:
  - Review charting, .phrases, etc. to facilitate data abstraction
  - Work with rounding teams to assist in data collection (see appendix for example)

Communication

- Open communication between registries – PAC^3, PC4, STS and IMPACT to efficiently resolve shared field discrepancies and answer questions about coding
- Open and reciprocal face time and email communication with data team and clinical champion
  - Include all involved team members
- Data Team attends weekly surgical conference case review
- Infection control emails team for all CLABSI, CAUTI, VAP and SSI complications

Shared data fields across STS, Impact and PC4:

- We rely heavily on the STS database for fundamental, non-cardiac anomalies, chromosomal abnormalities, and syndromes.
- Our STS, Impact, and PC4 champions discuss patient changes via email, calls, or team meetings.
- Other registries may have a backlog and/or communication regarding fundamental diagnosis, genetic results, etc. may take place after the PAC^3 encounter has been submitted.
    - For example, the STS champion exports twice yearly for the spring and fall harvests. They will receive a report concerning their data that may require changes to the local STS record. This happens similarly in Impact. Therefore, communication regarding changes are paramount to make sure all data is clean and accurate.
- Shared data fields have advantages for decreased abstraction of the same data elements across multiple registries (demographics, surgical, cath, etc.).
- The disadvantages of shared data fields include lost "time" when there is poor team communication and multiple resubmissions of data.

The registry also includes patients who have not had an STS surgery (EP, heart failure/ cardiomyopathy patients, etc.).

Considerations for modifying registry workflow to support the data team

- Size of team and work location of team members – balancing ability to attend in-person events, benefits of working from home, and other considerations
- Team experience
- Additional registries supported by the PAC^3 data analysts
- Workflow between registries
- Incorporating internal audit mechanisms into the workflow
- Data entry methods and platform
- Working with IT teams to build automated reports that assist with data collection
- Clinical champion bandwidth

Section 7: Mentor Hospital Support

Definitions

- Mentor hospital: Any hospital that is currently up to date on data entry and has passed an audit is eligible to be invited to be a mentor hospital. When possible, mentor and mentee hospitals are matched by EMR and/or data submission vendor (e.g. CardioAccess and LUMEDX.)
- Mentee hospital: Hospitals planning to initiate data collection or established hospitals who request a mentor. Mentee hospitals may one day be invited to be a mentor.

Background

The goal of mentor hospital support is to prevent each center from having to "reinvent the wheel." Mentor centers can share best practices and ensure that mentee hospitals are set up for success.

Process Considerations

How it works

- All centers planning to begin data entry are introduced to mentors at the registry training.
- Any center may request a mentor at any time. Established centers typically request mentors when there is complete Data Champion turnover, they are very far behind in data collection, or did not pass an audit the first time.
- Approximately 1-3 months after data entry start, the Data Champions from the mentor and mentee hospital will plan a phone call.
    - These conversations should focus on what the mentee finds most challenging about data entry and on answering their questions. Mentors should listen and help problem solve where possible or suggest other people, groups, or resources that may be able to help answer remaining questions.
    - These conversations are not meant to set up the data collection and submissions system for a new site. They should be carried out with an "all teach, all learn" mindset, where both centers have the opportunity to learn from one another.
- Informal conversations can happen at any time.

Mentor Hospital Expectations

- When invited, the mentor hospital Data Champions should consider if they have time to dedicate to working with a new hospital (roughly 1 hour a month)
- The mentor should reach out to the mentee roughly one month after start of data collection to set up a call (see appendix for suggested questions.)
- The mentor may reach out to check on their mentee before their first audit, when there is a transition between data champions, or any other changes to the environment (e.g. clinical champion change, pandemic)

Mentee Hospital Expectations

- Set up data collection in a way that works for your center
- Ask questions to the mentor about registry set up or process or logistical questions

- Mentees may choose to reach out to Center B if they experience new challenges related to timeliness or accuracy
- The mentee Data Champions should *not* ask the mentor for data definition clarification. Data definitions questions should be first asked to the site Clinical Champion and then directed to the Database Committee Chairs and Data Manager, either through weekly feedback calls or email.

Appendix

Section 1: Expectations for the Clinical Champion, Data champion, and data team

Meeting Cadence Examples

- Bi-weekly meetings with PAC^3, PC^4, STS and IMPACT Data Champions and Clinical Champions (or equivalent) to review cases with long length of stay or mortality
- Weekly meetings between Clinical Champion and Data Champion at the start, moving to bi-weekly meetings

Data Champion Update Email Examples

- Email to Clinical Champion when all the cases for a month have been submitted
- Detailed weekly update including:
    - Chart: Sorted by discharge month/year with total discharges, how many still need to be abstracted for the current week, how many were abstracted and how many left at the end of the week.
    - Chart: Sorted by Admit month/year indicating how many were ACCU admissions and how many were transfers in, how many were discharged and how many are still in house.

Resources for justifying adding FTE for data abstraction

Email pac3@childrens.com to be put in contact with centers who have successfully increased FTE allocation for data abstraction

View and share our Flyer highlighting PAC^3 accomplishments.

Download and use the Slide Deck to present to administrators.

Section 2: Building a patient identification report/census site examples

Generic Example

SQL
Structured Query Language (SQL) is a database, data structure, and set of tools for managing data. This document won't go into technical detail, but it is helpful to think of our information and what we want to extract using SQL concepts.

The simplest statement in SQL in the SELECT query.

SELECT *columns* **FROM** *tables* **WHERE** *conditions*

Here is a generalized example that selects basic demographic columns (separated by commas) from the encounters table for patients on the "Cardiology" service.

SELECT
FIN, MRN, DOB, Name, Admit Date, Discharge Date, Service, Unit
FROM
tbl_encounters
WHERE
Service="Cardiology"

Keeping the previous Venn Diagram in mind, we will focus on the **WHERE** clause.

Let's say we want to query the last month worth of data. Part of the WHERE clause would include the discharge column and those date values.

Next, we want to query for our hospital's Cardiology services, like "Cardiology", "CT Surgery", and "Critical Care Medicine".

Lastly, we want to include patients on our Unit who may not be on our services, like "7A CICU", "7B", and "CICU".

Our WHERE clause might look like this:

WHERE
Service="Cardiology", "CT Surgery", "Critical Care Medicine"
OR
Unit="7A CICU", "7B", "CICU"
AND
Discharge=[your date range]

This means a "hit" must satisfy the date range, and either be on service or on unit.

The Manual Review

Now that our query has produced a list of patients either on our services or on our units, we must review them. The review step is simple:

Look up the patient in your EHR by their FIN, and inspect their Orders, Attending Physician, or H&P. Any of these clues should quickly tell you if the patient is of interest or not.

Remember, you may have a patient with significant cardiology history who's admitted to the ENT service for a tonsillectomy (who should be excluded), while other encounters could be coded incorrectly, so it is important to review your list carefully.

Make a column in your tracking sheet for this step and set the value Yes or No for each patient.

By doing a manual review on each patient from your query, you assure a high-quality census result.

It is possible to optimize your tracking sheet and steps to minimize administrative overhead.

Your tracking sheet for census can also be the first step of a complete workflow.

Epic Example

Your Epic team can build reports that are specific to your needs by utilizing admission, discharge and transfer timelines (ADT). Epic can further delineate by service through orders and patient location (unit). Communication with your Epic team is essential to build reports that are accurate, reliable, and timely. Reports can be generated daily and monthly depending on your center's needs.

For example, an Epic team can build a report using the following data points: Patient name, MRN, CSN, Primary service provider, Unit location, and Provider name.

Below is an example of CHOP's SQL code for building a census report. In this example we are looking for all patients for the month of May. The department_group_name = CCU is managed by the CHOP data governance group. This would be unique to each hospital.

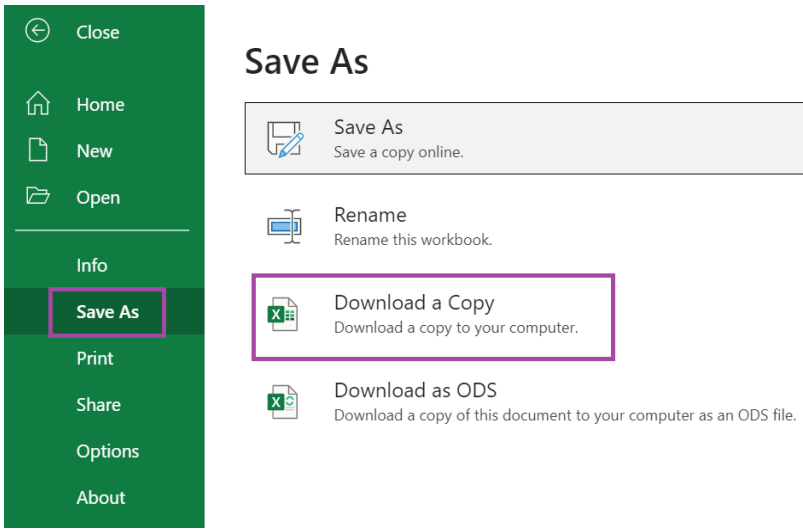
```
select
        mrn
       ,dob
       ,patient_name
       ,hospital_admit_date
       ,hospital_discharge_date
       ,enter_date as ccu_admit_date
       ,exit_date as ccu_discharge_date
       ,initial_service

from chop_analytics..adt_department_group

where department_group_name = 'CCU'
and exit_date >= '2020-05-01'
and exit_date <= '2020-05-31 23:59:59'
```

Section 3: Chart Abstraction example

Please note, when using any template from SharePoint, please download it by clicking “File” → “Save as” → “Download a copy.” **Do not** edit directly in SharePoint.



A template Nutrition Calculator and medication index can be found on SharePoint: [PAC3 Nutrition calculator and Index.xlsx (sharepoint.com)]

Epic examples

An example **source of truth document** template can be found on SharePoint: [Source of Truth Doc_Epic.xlsx (sharepoint.com)]

Below is an **Epic report** built at Lurie Children’s with information with HIPAA information changed. The rows with one * and in green are currently being added to the report and the rows with ** in orange we have plans to add in the new year as many of those we have to first add discrete data fields in the discharge instructions in order to be able to pull that data from.

PAT_MRN_ID	33333333	1111111	2222222
PAT_NAME	Doe, Ava	Doe, John	Doe, Jane
Event	Patient Update	Transfer In	Patient Update
From Service	CV SURGERY	CARDIAC INTENSIVE CARE UNIT	CARDIAC INTENSIVE CARE UNIT
To Service	CV SURGERY	HEART FAILURE	CV SURGERY
To Dept	LC22	LCMIRC	LC22
EVENT DATE	12/10/2020	12/10/2020	11/15/2020
EFFECTIVE_TIME	12/10/2020 12:00:00 AM	12/10/2020 7:58:00 AM	11/15/2020 6:00:00 AM
ADMISSION	12/6/2020 6:11:00 AM	8/20/2020 6:03:00 AM	11/13/2020 1:22:00 AM
DISCHARGE	12/11/2020 12:48:00 PM	12/11/2020 11:56:00 AM	11/16/2020 11:30:00 AM
ON CICU DURING ENCOUNTER	Y	Y	Y
LengthofStayInDays	4	108	3
READMITTED	N	N	N
SSN	000-00-0000	000-00-0000	000-00-0000

BIRTH_DATE	4/20/1988	11/10/2011	12/10/2006
GESTATIONAL AGE	38	39 5/7	
SEX	MALE	FEMALE	MALE
DEATH_DATE			
ZIP	60440	61027	60525
BIRTH WEIGHT (kg)		3.68	
BIRTH LENGTH (cm)			
BIRTH HEAD CIRCUMFERENCE (cm)			
MOTHER_NAME	Doe, Sandra	Doe, Jane	Doe, Heidi
BIRTH HOSPITAL			
BIRTH_CITY	CHICAGO	FREEPORT	NAPERVILLE
BIRTH_STATE	IL-ILLINOIS	IL-ILLINOIS	IL-ILLINOIS
PATIENT RACE(S)	1-WHITE	1-WHITE	1-WHITE
ETHNIC GROUP	11-NOT HISPANIC OR LATINO	11-NOT HISPANIC OR LATINO	11-NOT HISPANIC OR LATINO
COUNTRY	United States	United States	United States
PATIENT STATUS AT DISCHARGE	HOME OR SELF CARE	HOME OR SELF CARE	HOME OR SELF CARE
PRIMARY PROCEDURE SERVICE	CV Surgery	Cardiology	Cardiology
PRIMARY PROCEDURE LOCATION	LC OPERATING ROOM	LC CATH/EP	LC CATH/EP
PRIMARY PROCEDURE NAME	VALVE REPLACEMENT	CATH DIAGNOSTIC,ANNUAL BIOPSY	EP RF ABLATION
PRIMARY PROCEDURE DATE	12/8/2020	8/26/2020	11/15/2020
PRIMARY PROCEDURE IN	12/8/2020 7:33:00 AM		
PRIMARY PROCEDURE OUT	12/8/2020 2:51:00 PM	8/26/2020 12:48:00 PM	11/15/2020 2:27:00 PM
ALL PROCEDURES + COMMENT	[ECHOCARDIOGRAM,TRANSESOPHAGEAL(WITH CV)] ; [EXTRACORPOREAL CIRCULATION/MEDIAN STERNOTOMY] ; [VALVE REPLACEMENT] Redo median sternotomy, extracorporeal circulation, pulmonary valve replacement using a 29mm Inspiris valve with 32mm dacron gelweave graft, transesophageal echocardiogram	[CATH DIAGNOSTIC,ANNUAL BIOPSY] CATH DIAGNOSTIC ANNUAL BIOPSY General anesthesia	[EP RF ABLATION] EPS Ablation General anesthesia
ADMISSION WEIGHT (kg)	69.1	30.2	89.1
DISCHARGE WEIGHT (kg)	67.40	33.00	87.60
ADMISSION HEIGHT (cm)	167.01	127.00	182.88
DISCHARGE HEIGHT (cm)	167.01	129.54	182.88
VASCULAR ACCESS	Y: LC LDA NON-TUNNELED DOUBLE LUMEN-Removal Removal Date (Do not remove a line when it is exchanged)/Time: 12/10/20 0900 Placement Original Placement Date (Do not remove line OR change original insertion date if line exchanged)/Time: 12/08/20 (c) 0833 Placed at other facility?: No L...	Y: LC LDA TUNNELED CVC DOUBLE LUMEN-Removal Removal Date (Do not remove a line when it is exchanged)/Time: 12/08/20 1058 Placement Original Placement Date (Do not remove line OR change original insertion date if line exchanged)/Time: 09/01/20 0926 Placed at other facility?: No Locat...	N
FIRST GASTRIC PLACEMENT		9/10/2020	
LAST GASTRIC REMOVAL		12/10/2020	
CHEST TUBE REMOVAL DATE	12/10/2020	12/1/2020	
EARLIEST DATES OF NUTRITION ROUTES	PO - Dec 10 2020 8:00PM	NGT - Sep 20 2020 3:00PM / NGT;PO - Sep 22 2020 8:00PM / NPO - Sep 12 2020 12:00AM / PO - Aug 26 2020 12:57PM /	NPO - Nov 15 2020 12:00AM / PO - Nov 13 2020 1:30AM

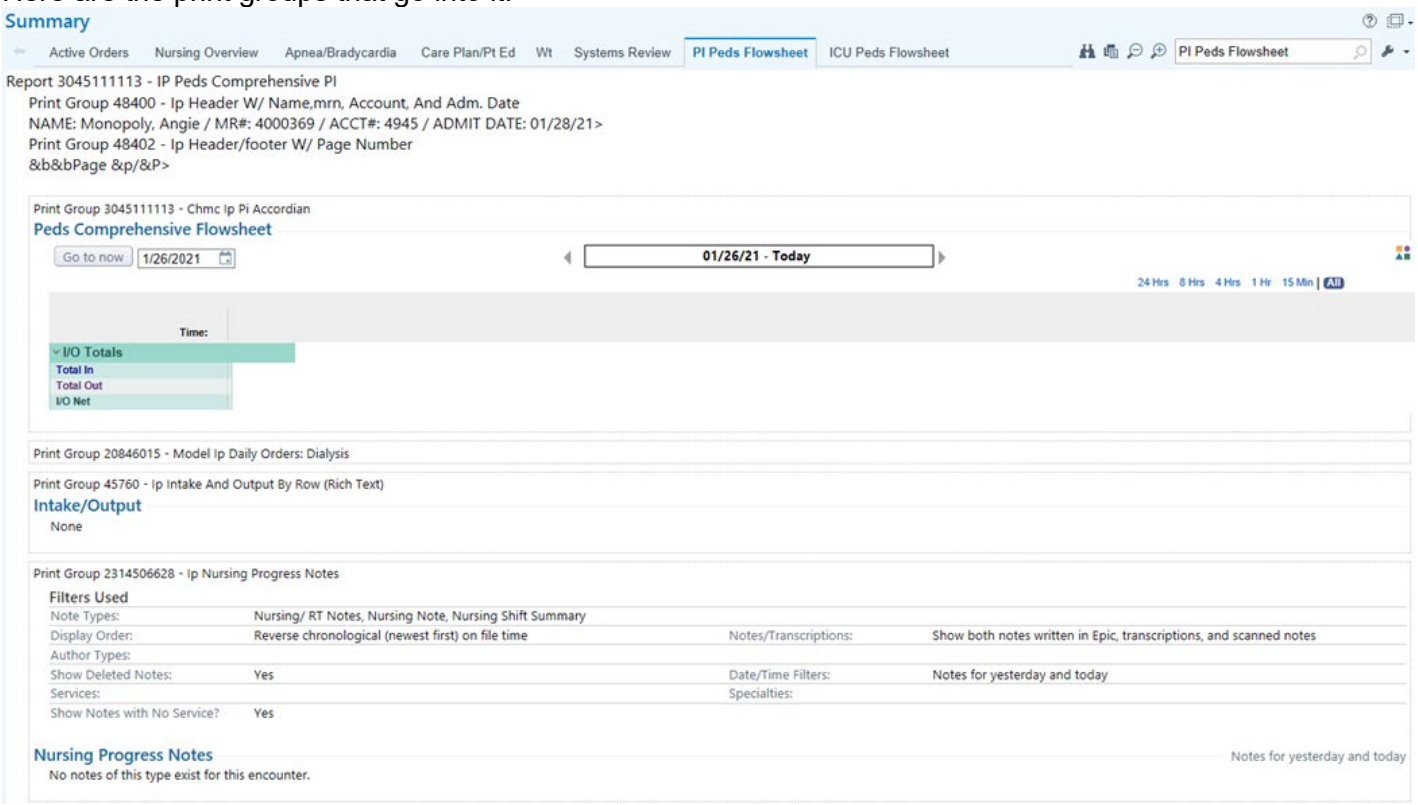
		PO;NGT - Oct 16 2020 8:00AM	
NUTRITION RECEIVED			
ENCOUNTER DIAGNOSES	ADD (attention deficit disorder) without hyperactivity, Anxiety, ASD (atrial septal defect), Extrinsic asthma, unspecified asthma severity, unspecified whether complicated, unspecified whether persistent, Nonrheumatic pulmonary valve stenosis, Pulmonary valve insufficiency, unspecified etiology	Abnormal ECG, Acute cellular rejection of transplanted heart, grade 2R by ISHLT 2004 guideline, Acute rejection of heart transplant, Aftercare following organ transplant, Cardiac arrest, CKD (chronic kidney disease) stage 1, GFR 90 ml/min or greater, Coronary artery disease involving native artery of transplanted heart without angina pectoris, Cytomegalovirus (CMV) viremia, Femoral neuropathy, unspecified laterality, Heart transplant failure, Heart transplant recipient, Heart transplanted, Hypomagnesemia, Intractable migraine without aura and without status migrainosus, Past history of ventricular septal defect, post surgical repair, Pericardial effusion, Personal history of ECMO, S/P orthotopic heart transplant, S/P ventricular assist device	AICD (automatic cardioverter/defibrillator) present, Cardiac arrest with ventricular fibrillation, Syncope and collapse, Ventricular tachycardia
ENCOUNTER MEDICATIONS [EARLIEST START DATE]	heparin injection 21,000 Units [2020-12-08]; milrinone (PRIMACOR) 20 mg in dextrose 5% 100 mL drip [2020-12-08]; sodium chloride 0.45% 50 mL with heparin 1 Units/mL solution [2020-12-08]	heparin 10,000 Units in dextrose 5% 50 mL drip [2020-09-10]; heparin 25000 unit in dextrose 5% 250 mL drip [2020-08-30]; heparin injection 1,500 Units [2020-09-20]	heparin injection 3,000 Units [2020-11-15]; heparin injection 5,000 Units [2020-11-15]; sodium chloride 0.45% 50 mL with heparin 1 Units/mL solution [2020-11-15]; sodium chloride 0.9% 500 mL with heparin 4,000 Units/L solution [2020-11-15]
ACE INHIBITOR MEDICATIONS [EARLIEST START DATE]		enalapril (VASOTEC) tablet 1.25 mg [2020-08-30], enalapril (VASOTEC) tablet 2.5 mg [2020-12-1], enalapril (VASOTEC) tablet 5 mg [2020-12-3]	
ANTIARRHYTHMIC MEDICATIONS [EARLIEST START DATE]		esmolol (BREVIBLOC) 2,000 mg in 100 mL drip [2020-09-20], lidocaine-prilocaine (EMLA) 2.5-2.5% cream [2020-09-1], propranolol tablet 10 mg [2020-09-02], propranolol tablet 20 mg [2020-09-2]	buffered lidocaine 1 % syringe [2020-11-15], esmolol (BREVIBLOC) 2,000 mg in 100 mL drip [2020-11-13], esmolol (BREVIBLOC) 6,000 mg in sodium chloride 0.9% 300 mL drip [2020-11-13], LIDOCAINE-HCO3 **BUFFERED LIDOCAINE J-TIP** INJECTION [2020-11-13], propranolol (INDERAL LA) ER capsule 240 mg [2020-11-13], propranolol tablet 80 mg [2020-11-15]
ANTICONVULSANT MEDICATIONS [EARLIEST START DATE]			
VENTILATOR MODE		2020-09-6 11:45:00: Ventilation Mode-- SIMV;Pressure control;Pressure support /	

		2020-09-1 14:30:00: Ventilation Mode--SIMV;Pressure control;Pressure support / 2020-09-6 16:33:00:	
OXYGEN DEVICE	2020-12-08 17:01:00: O2 Device/Method--Nasal cannula / 2020-12-08 20:00:00: O2 Device/Method--Nasal cannula / 2020-12-08 22:00:00: O2 Device/Method--Nasal cannula / 2020-12-09 00:00:00	O2 Device/Method--High Flow Nasal Cannula / 2020-09-22 02:00:00: O2 Device/Method--Nasal cannula / 2020-09-22 04:00:00: O2 Device/Method--Nasal cannula / 2020-09-23 06:00:00: O2 Device/Method--Nasal cannula / 2020-09-23 08:00:00	
O2 DELIVERY	Oxygen / Room air	Oxygen / Room air	Room air
BETA BLOCKER MEDICATIONS [EARLIEST START DATE]		esmolol (BREVIBLOC) 2,000 mg in 100 mL drip [2020-09-22], propranolol tablet 10 mg [2020-09-01], propranolol tablet 20 mg [2020-09-23]	esmolol (BREVIBLOC) 2,000 mg in 100 mL drip [2020-11-13], esmolol (BREVIBLOC) 6,000 mg in sodium chloride 0.9% 300 mL drip [2020-11-13], propranolol (INDERAL LA) ER capsule 240 mg [2020-11-13], propranolol tablet 80 mg [2020-11-15]
REFLUX MEDS [EARLIEST START DATE]	famotidine (PEPCID) tablet 20 mg [2020-12-10], famotidine syringe pump 17 mg [2020-12-08]	famotidine (PEPCID) suspension 32 mg [2020-09-22], famotidine (PEPCID) tablet 30 mg [2020-10-11], famotidine syringe pump 15 mg [2020-09-2], famotidine syringe pump 20 mg [2020-09-250], magnesium hydroxide (MILK of MAGNESIA) suspension 600 mg [2020-11-12], magnesium hydroxide (MILK of MAGNESIA) suspension 720 mg [2020-08-3], magnesium hydroxide (MILK of MAGNESIA) suspension 800 mg [2020-09-03], omeprazole (PRILOSEC) DR capsule 20 mg [2020-12-5], omeprazole (PRILOSEC) DR capsule 30 mg [2020-10-2], omeprazole (PRILOSEC) suspension 30 mg [2020-09-2], pantoprazole (PROTONIX) injection 30 mg [2020-09-3], pantoprazole (PROTONIX) injection 34 mg [2020-12-01]	
PHTN MEDS [EARLIEST START DATE]		sildenafil (REVATIO) injection 10 mg [2020-09-3], sildenafil (REVATIO) suspension 20 mg [2020-09-8], sildenafil (REVATIO) tablet 20 mg [2020-10-1]	
*Vasoactive Drug Infusion			
*Inotropic Support			
*Most Common Antibiotics			
**Transfer Service Order			
**Thrombus requiring treatment			
**Seizure			
**Stroke			
Endocarditis			

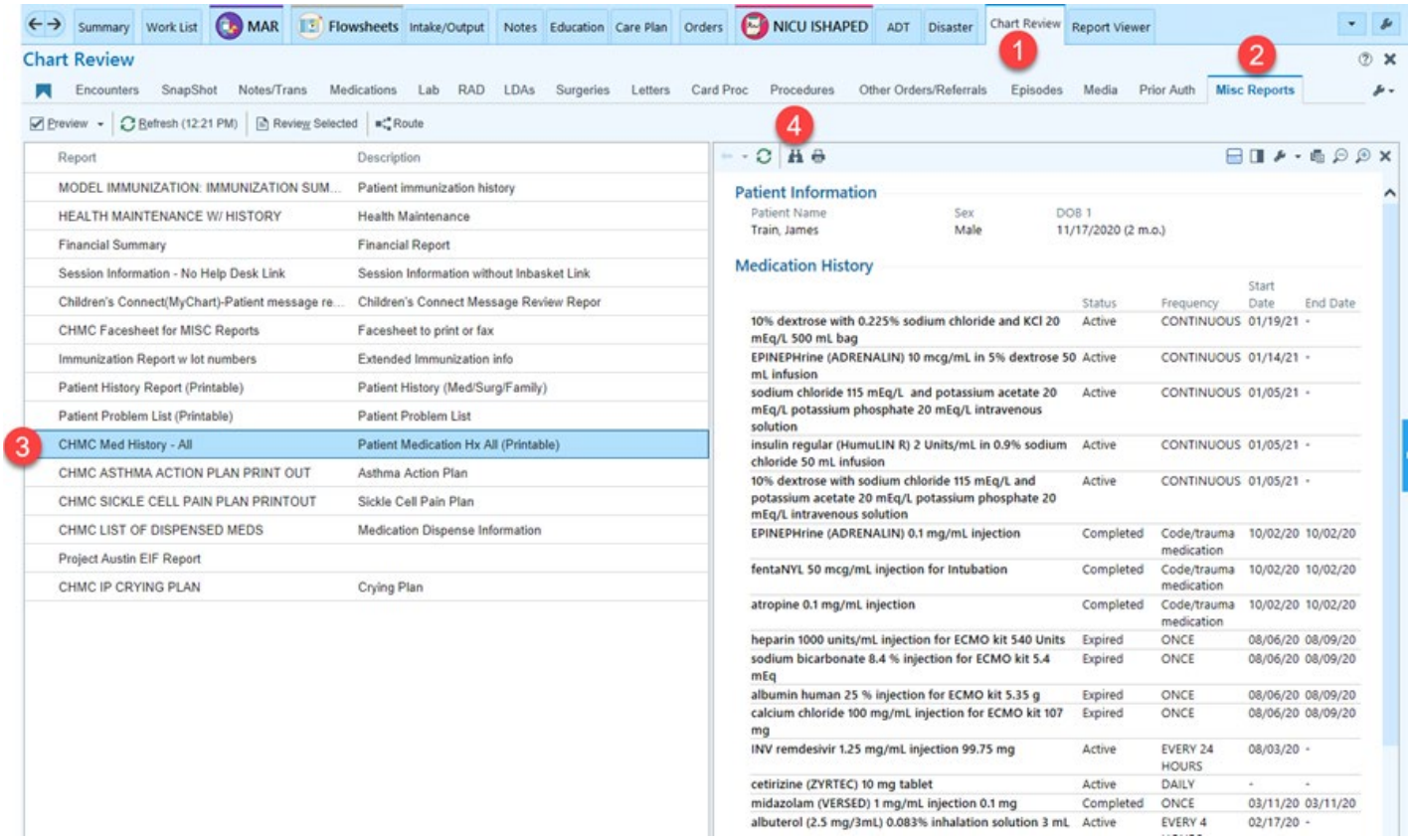
**CLABSI			
**SSI			
**UTI			
**New Arrhythmia requiring treatment			
**Chylothoras requiring intervention			
**Plural effusion/hemothorax requiring chest tube placement			
**Pneumothorax requiring intervention			
**Chest Tube during admission			

Below is an example of an **accordion report**:

The accordion report from Children's of Omaha includes the PI Comprehensive and Peds ICU all are custom but based on an Epic template. This was found on the Epic Userweb: "Make a copy of print group 46620-IP/ICU/ICU Report." To create a report, identify which medications/flowsheet rows to add to the accordion. Here are the print groups that go into it.



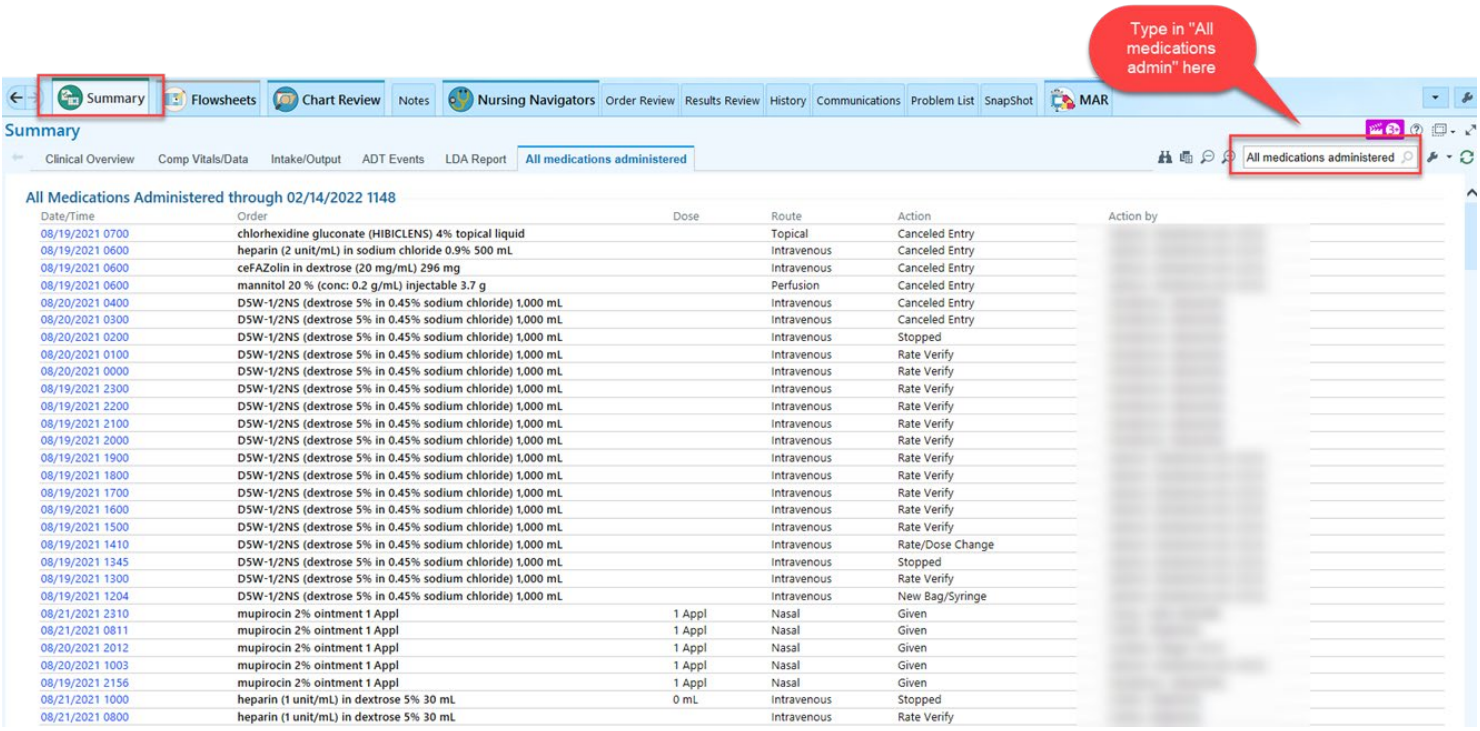
Here is an example of where you can find any medication and use the binoculars to search for a particular one (like digoxin) to see if they've ever been on it.



How to pull Diuretics from Epic

View a step-by-step guide to pulling Diuretics data from Epic on the **website**.

If you do not have the Dose History tab, please see another example in the screenshot below of a Summary report in EPIC that may also provide all the diuretic meds given.



Date/Time	Order	Dose	Route	Action	Action by
08/19/2021 0700	chlorhexidine gluconate (HIBICLENS) 4% topical liquid		Topical	Canceled Entry	
08/19/2021 0600	heparin (2 unit/mL) in sodium chloride 0.9% 500 mL		Intravenous	Canceled Entry	
08/19/2021 0600	ceFAZolin in dextrose (20 mg/mL) 296 mg		Intravenous	Canceled Entry	
08/19/2021 0600	mannitol 20 % (conc: 0.2 g/mL) injectable 3.7 g		Perfusion	Canceled Entry	
08/20/2021 0400	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Canceled Entry	
08/20/2021 0300	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Canceled Entry	
08/20/2021 0200	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Stopped	
08/20/2021 0100	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/20/2021 0000	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 2300	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 2200	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 2100	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 2000	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1900	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1800	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1700	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1600	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1500	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1410	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate/Dose Change	
08/19/2021 1345	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Stopped	
08/19/2021 1300	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	Rate Verify	
08/19/2021 1204	D5W-1/2NS (dextrose 5% in 0.45% sodium chloride) 1,000 mL		Intravenous	New Bag/Syringe	
08/21/2021 2310	mupirocin 2% ointment 1 Appl	1 Appl	Nasal	Given	
08/21/2021 0811	mupirocin 2% ointment 1 Appl	1 Appl	Nasal	Given	
08/20/2021 2012	mupirocin 2% ointment 1 Appl	1 Appl	Nasal	Given	
08/20/2021 1003	mupirocin 2% ointment 1 Appl	1 Appl	Nasal	Given	
08/19/2021 2156	mupirocin 2% ointment 1 Appl	1 Appl	Nasal	Given	
08/21/2021 1000	heparin (1 unit/mL) in dextrose 5% 30 mL	0 mL	Intravenous	Stopped	
08/21/2021 0800	heparin (1 unit/mL) in dextrose 5% 30 mL		Intravenous	Rate Verify	

Cerner Example

An example **source of truth document** template can be found on SharePoint: Source of Truth Doc_Cerner.xlsx (sharepoint.com)

An example of a **weekly admission report for PC4/PAC^3** can be found on SharePoint: Cerner_PCH PC4-PAC3 Weekly admit De-ID.xlsx (sharepoint.com)

An example **report** for medication events and chest tube output in Cerner can be found on SharePoint: Cerner_PCH Report example_Charting Events De-ID.xlsx (sharepoint.com)

An example of a 7-day and 30-day readmission and death report can be found on SharePoint: Cerner_Death, Readmits De-ID.xlsx (sharepoint.com)

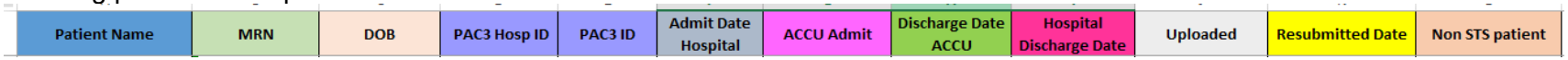
Section 4: Tracking patients site examples

Tracking document examples

Tracking patients through entry:

This Excel spreadsheet keeps track of all PAC^3 patients. This is completed in real time. While I could query the database, this is just a quick view of my current and past patient census, readmission status, complications, and outstanding questions. This allows me to track all encounters during the same hospitalization and/or transferred to another unit that is not CICU (such as rehab, trach floor).

Tracking patients for export:



Tracking Patients for retrospective data entry:

This is an illustration from Pittsburgh displayed at the conference in Michigan

1. Sort by discharge
2. Add some calculations for due, LOS, age-at-admit, etc
3. The red box shows the work to be done. It makes sense begin with the record due the soonest.
4. The green box shows the work you've completed.
5. The yellow box shows what's coming upon discharge.

The "aha" moment is realizing that nothing can get inserted into the middle of the red box – someone in yellow who discharges gets added to the bottom of red (*). You know exactly what work needs to be done, and the order in which to do it, for the next 37 days. Not many other jobs have that kind of visibility.

(*) – assuming you have sound method for identifying your census

As of October 23rd

Add due date

(fake)FIN	(fake)NAME	(fake)DOB	Admit	Discharge	plus 37 days	LOS	Detailed Feeds	Date submitted
7795640329	LORI	10/8/18	8/31/19	9/1/19	10/8/19	1	Feeds	10/1/19
7668536329	JACK	6/3/18	8/30/19	9/2/19	10/9/19	3		10/2/19
5784529529	SCOTT	8/26/14	8/28/19	9/4/19	10/11/19	7		10/7/19
8269286328	MARTY	5/17/16	6/9/19	9/4/19	10/11/19	87		10/8/19
8316049728	JEFF	7/24/19	7/24/19	9/4/19	10/11/19	42	Feeds	10/7/19
7602570829	CJ	5/28/12	8/29/19	9/5/19	10/12/19	7		10/10/19
2827035629	JARED	11/10/05	9/4/19	9/6/19	10/13/19	3		10/11/19
5296285829	CONNOR	7/18/05	9/9/19	9/10/19	10/17/19	1		10/10/19
7839906029	LINDSAY	5/8/17	9/9/19	9/11/19	10/18/19	2		10/11/19
8310922629	EVAN	7/14/19	9/10/19	9/12/19	10/19/19	2	Feeds	10/17/19
8290654629	KYLE	6/27/19	8/15/19	9/12/19	10/19/19	28	Feeds	10/18/19
3946386929	ANDY	9/12/08	9/10/19	9/13/19	10/20/19	3		10/19/19
5383368329	SUSIE	11/14/02	9/12/19	9/14/19	10/21/19	2		10/19/19
8277316129	TODD	3/20/06	9/16/19	9/17/19	10/24/19	1		10/21/19
8540679128	STACY	1/24/19	8/12/19	9/19/19	10/26/19	38	Feeds	10/22/19
6846633129	KALEY	4/14/16	9/9/19	9/19/19	10/26/19	10		
8573996229	MARGARET	9/8/19	9/9/19	9/20/19	10/27/19	11	Feeds	
1446023028	CHARLIE	9/26/16	9/20/19	9/22/19	10/29/19	2		
2628570129	BOB	1/3/95	9/20/19	9/23/19	10/30/19	3		
8334032529	ROSEMARY	6/26/19	9/23/19	9/24/19	10/31/19	1	Feeds	
7931364229	MAGGIE	2/28/18	9/11/19	9/25/19	11/1/19	14		
6828589929	WINNIE	2/8/16	9/27/19	9/30/19	11/6/19	3		
8552817329	HATTIE	9/7/16	9/5/19	10/4/19	11/10/19	29		
3421413629	SAM	4/20/95	10/1/19	10/7/19	11/13/19	6		
5665070329	MARY	4/5/03	10/11/19	10/12/19	11/18/19	1		
7983207327	LARRY	2/5/19	2/5/19	10/15/19	11/21/19	252	Feeds	
8551644729	SAM	8/14/16	10/17/19	10/19/19	11/25/19	2		
1705035429	DIANE	7/6/17	9/9/19	10/22/19	11/28/19	43		
7858613827	COACH	12/19/18	3/21/19			216	Feeds	
8555932629	NORM	8/30/19	8/30/19			54	Feeds	
8305365829	CLIFF	11/15/16	10/17/19			5		
8540299029	CARLA	8/10/19	10/18/19			4	Feeds	
5815404529	WOODY	10/12/14	10/20/19			2		
5665070329	REBECCA	4/5/03	10/21/19			1		
2698049629	PAUL	5/7/91	10/22/19			0		

Section 5: Process for internal review of cases site examples

Site A example: Single data champion

- Monthly meeting with data champion and clinical champion
- Review 5 cases:
  - One adult, two <1-year-olds, MRT, and surgical admission
- Advantages:
  - Enhanced communication regarding knowledge deficiencies
  - Spotting trends, new areas for future internal projects
  - Improved data collection moving forward
- Disadvantages
  - May have to reschedule based on clinical champion schedule
  - Selecting patients with specific criteria may limit scope

Site B example: Multiple data champions

- Quarterly Review of 3 cases with data team and clinical champion
  - At least one patient with PC^4 & PAC^3 encounter that includes a surgery and/or Cardiac Cath
  - At least one patient that was a medical admission
  - At least one neonate (to calculate feeds)
  - Picked by Data Champion
- All data fields reviewed
- Random Case Selection/Include Clinical Champion
- Advantages:
  - Unbiased selection of cases
  - Includes feedback/perspective from Clinical Champion
- Disadvantages:
  - Scheduling
  - No peer-to-peer feedback

Section 6: Standards for maximizing partnerships with clinical teams site examples

Example of team meetings: UCSF

Weekly in person meeting

- PAC^3, PC4, IMPACT and STS represented
- Review previous weeks discharges
- Surgical diagnosis and procedures reviewed weekly with the surgeon (surgical conference combination of in person and zoom)
- Each team member assigned a task:
    - clinical champions review data in data entry platform,
    - PC4 and PAC^3 data champion run the list and review the shared spread sheet
    - IMPACT and STS data collector review the data in data entry platform
    - One data collector has EMR open to the case
- Review and reconcile shared fields → Fundamental diagnosis, medical diagnosis, procedure and encounter CT diagnosis, surgical procedures performed, non-cardiac anomalies, syndromes, complications
- Discrepancies can be more efficiently resolved with a group meeting.
- Encounters submitted at the end of the meeting
- Discuss data definitions & challenges, submit questions to DCC as needed

Clinical team chart abstraction aid example: Children's of Alabama

The following document is completed on rounds by bedside providers for each PAC^3 patient.

ENCOUNTER INFORMATION			
Name (Last, First):			Admit date/time:
MRN:	Reason:		Transfer unit of origin:
If from home, was this encounter planned?	Y or N	h/o treated arrhythmia ?	Y or N
Weight upon admission:			
Any non-cardiothoracic surgery during this encounter?	Y or N	If yes, specify:	
On transplant list at admission?	Y or N	PPM or AICD at admission?	Y or N
If yes or if listed during admission, date listed:		If yes or if placed during admission, date placed:	

RESPIRATORY SUPPORT						
Tracheostomy?	Y or N	If yes, by which method?	collar	pos. pressure	both	unknown
NC at encounter start?	Y or N	at encounter end?	Y or N	Last date:		
HFNC at encounter start?	Y or N	at encounter end?	Y or N	Last date:		
Noninvasive PPV at encounter start?	Y or N	at encounter end?	Y or N	Last date:		
CPAP/BiPAP at encounter start?	Y or N	at encounter end?	Y or N	Last date:		
Major respiratory decline requiring change in support?		Y or N	If yes, date:			
Chylothorax requiring intervention?	Y or N	If yes, treatment type & start date:				
Pleural effusion/hemothorax requiring chest tube?		Y or N	If yes, date placed:			
Pneumothorax requiring intervention?	Y or N	If yes, treatment type & start date:				

VASCULAR ACCESS					
Any venous lines during this encounter?			Y or N		
Site:			Site:		
Start date/time: End date/time:			Start date/time: End date/time:		
Access:	percutaneous	cut-down	Access:	percutaneous	cut-down
Type:	PICC PAC	CVL-percutaneous CVL-tunneled	Type:	PICC PAC	CVL-percutaneous CVL-tunneled
Venue:			Venue:		

MEDICATIONS					
milrinone infusion? If yes, highest dose:	Y or N	dopamine infusion? If yes, highest dose:	Y or N	dobutamine infusion? If yes, highest dose:	Y or N
ACE inhibitor (IV or PO)? If yes, highest dose:	Y or N	Beta-blocker (IV or PO)? If yes, highest dose:	Y or N	Heparin infusion? If yes, dose strategy:	Y or N

Enoxaparin? Y or N If yes, start date:	Prostaglandin E1? Y or N If yes, start date:	Anti-convulsant therapy? Y or N If yes, start date:
Anti-arrhythmia medication? Y or N	If yes, answer the following for EVERY medication:	
Medication: start date/time: end date/time:	Medication: start date/time: end date/time:	Medication: start date/time: end date/time:
Medication for reflux/motility? Y or N	If yes, answer the following for EVERY medication:	
Medication: start date/time: end date/time:	Medication: start date/time: end date/time:	Medication: start date/time: end date/time:

OTHER THERAPY

New therapy for PHTN? Y or N	If yes, select type(s): oral IV inhaled SQ	date/time initiated:
Chronic therapy for PHTN? Y or N	If yes, select type(s): oral IV inhaled SQ	present at encounter start? Y or N

FEEDING INFORMATION

Gastric tube present at encounter start? Y or N	Nissen fundoplication at encounter start? Y or N

Feeding/nutrition route(s) present at encounter start? Circle all that apply:

IV fluid (non-nutriton) G-tube NG NJ TPN GJ-tube ND oral unknown
oral-breast feeding oral-bottle

If G-tube, NG, ND, and/or NJ -> circle feeding method: continuous bolus/intermittent both unknown

For patients ≤ 1 year old at encounter start answer the following:

PO ad lib at encounter start? Y or N Caloric density at encounter start (kCal/oz):

If caloric density is >0, record total volume for firstr 24 hours in either cc/day or kCal/kg/day then split into PO and tube:

total vol.:	PO:	tube:
cc/day =	cc/day +	cc/day
kCal/kg/day =	kCal/kg/day +	kCal/kg/day

If any tube/oral feeds, formula used at the start of encounter: standard/regular breast milk elemental low-fat

On PO feeds during the encounter? Y or N If yes, earlist date:

Tube fed during the encounter? Y or N If yes, earlist date:

Therapies during the encounter (circle all that apply and fill in the date it was started):

video swallow study/FEES speech-language pathology _____ occupational therapy _____

physical therapy _____ ENT Consult _____

Gastric tube present at encounter end? Y or N

CARDIOVASCULAR

Temporary pacing during this encounter? Y or N If yes, choose type(s): back-up therapeutic/dependent both

VAD present during this encounter? Y or N Start date/time _____ End date/time _____

Cardiac arrest? Y or N If yes, record the following for EVERY arrest:

Arrest date/time:_____ ECPR? Y or N

Arrest date/time:_____ ECPR? Y or N

Arrest date/time:_____ ECPR? Y or N

Pericardial effusion? Y or N If yes, date/time:_____ If drain placed, date/time:_____

New arrhythmia requiring therapy? Y or N If yes, list type and treatment for each:

Type:_____ Treatment:_____

Type:_____ Treatment:_____

Type:_____ Treatment:_____

Venous thrombus? Y or N If yes, record type and diagnosis date and time for EVERY venous thrombus:

Type:_____ Treatment:_____

Type:_____ Treatment:_____

Type:_____ Treatment:_____

Arterial thrombus? Y or N If yes, record the following for EVERY arterial thrombus:

Cath related? Y or N Dx date/time:_____ Pulse loss? Y or N if yes, date/time:_____

Cath related? Y or N Dx date/time:_____ Pulse loss? Y or N if yes, date/time:_____

Cath related? Y or N Dx date/time:_____ Pulse loss? Y or N if yes, date/time:_____

INFECTIOUS DISEASE

Endocarditis? Y or N If yes, diagnosis date:_____ Sepsis? Yor N If yes, diagnosis date:_____

CLABSI? Y or N If yes, record the following for EVERY CLABSI:

Date:_____ Organism: gram-negative gram-positive mixed fungal unknown

Date:_____ Organism: gram-negative gram-positive mixed fungal unknown

Date:_____ Organism: gram-negative gram-positive mixed fungal unknown

Superficial SSI? Y or N

If yes, dx date:_____

Deep SSI? Y or N

If yes, dx date:_____

If yes to deep SSI, record the following for EVERY deep SSI:

Date:_____ Organism: gram-negative gram-positive mixed fungal unknown

Pneumonia (non VAP)? Y or N

Date:_____	Organism:	gram-negative	gram-positive	mixed	fungal	unknown	If yes, dx date:_____		
Date:_____	Organism:	gram-negative	gram-positive	mixed	fungal	unknown	Viral infection? Y or N		
UTI? Y or N	If yes, record the following for every UTI:						If yes, dx date:_____		
date:_____	CA-UTA? Y or N		date:_____	CA-UTA? Y or N			Other Infection? Y or N		
date:_____	CA-UTA? Y or N		date:_____	CA-UTA? Y or N			If yes, dx date:_____		

ENCOUNTER END INFORMATION

Encounter end date/time: _____

End weight (kg):_____

Transfer unit/destination (circle one): current hospital-CICU current hospital-PICU outside facility home current hospital-CICU via OR/procedure suite current hospital-rehab unit deceased current hospital-NICU current hospital-other inpatient unit

If destination is "current hospital-CICU" or "CICU via OR/procedure suite" answer the following:

reason for transfer to the CICU: _____ mechanism for transfer:_____

Intubated within 60 minutes of transfer? Y or N CPR initiated within 60 minutes of transfer? Y or N

New vasoactive drug infusion started within 60 minutes of transfer? Y or N ECMO initiated within 60 min. of transfer? Y or N

Ever fed enterally prior to transfer to CICU? Y or N If yes, date/time of last feeding prior to transfer: _____

Antibiotics being administered prior to the event resulting in the transfer to the CICU? Y or N

HOSPITAL DISCHARGE INFORMATION

Discharge date/time: _____

New diagnosis of diaphragm dysfunction during this admission? Y or N If yes, date:_____

New diagnosis of vocal cord dysfunction during this admission? Y or N If yes, date:_____

Ever had a chest tube during this hospital admission? Y or N If yes, removal date:_____

Ever on CICU attending service during this hospital admission? Y or N

Feeding Discharge Information

PO ad lib at encounter end? Y or N

If no, caloric density at encounter end: _____ kCal/oz (Enter '0' if no oral or tube feeding)

If caloric density is >0, volume for the final 24 hours (record total in either cc/day or kCal/kg/day then split into PO and tube):

total vol.:	PO:	tube:
cc/day =	cc/day +	cc/day
kCal/kg/day =	kCal/kg/day +	kCal/kg/day

If any tube/oral feeds, which formula was being used at the end of the encounter? (circle all that apply):

breast milk standard/regular elemental low-fat

READMISSION INFORMATION (IF APPLICABLE)

Readmitted to this hospital within 7 days?		Y or N	If yes, readmit date/time:_____		
Was the readmission planned?	Y or N	If unplanned, answer the following questions about the readmission:			
Intubated within 24 hours (excluding intubation for procedures)?	Y or N		Inotropic support within 24 hours?		Y or N
Unplanned intervention within 24 hours?	Y or N		Fluid resuscitation (2+ boluses) within 24 hours?		Y or N
MRT/RRT within 24 hours?	Y or N	Code within 24 hours?	Y or N		
Death within 24 hours?	Y or N	If yes, death date/time:_____			
Readmitted within 30 days? Y or N		30 day post-discharge mortality status:	Alive	Deceased	Unknown

Section 7: Mentor Hospital Support

Suggested Questions to start the Mentor/Mentee conversation:

- What is going well with your data collection so far?
- What has been the most challenging part of data abstraction?
- What questions do you have for me?
- Tell me about your process for identifying eligible patients
- Do you typically enter patients as they travel through their inpatient stay (prospectively) or after they are discharged (retrospectively)?
- Tell me about your typical communication with your clinical champion and your team. How often do you meet, do you have a system in place for getting questions answered, etc.?
- Have you come up with a “source of truth” for the data elements?
- Are there any data definitions that you would like more clarity on?
- Have you found any areas outside the EMR that have helped save you time? (e.g. rounding, assistance from caregivers on the floor, communication with other registries)
- Tell me about your system to track patients from identification to submission
- Have you developed and internal auditing process?
- In a perfect world, what other resources would you want to ensure your data was timely and accurate?

These questions are meant to help start a conversation; there is no requirement to ask any or all of them.

References

- SharePoint: Data Entry QI project: https://dallaschildrens.sharepoint.com/teams/PAC-3/Shared%20Documents/Forms/AllItems.aspx?newTargetListUrl=%2Fteams%2FPAC%2D3%2FShared%20Documents&viewpath=%2Fteams%2FPAC%2D3%2FShared%20Documents%2FForms%2FAllItems%2Easpx&id=%2Fteams%2FPAC%2D3%2FShared%20Documents%2FRegistry%2FGetting%20Started%20Toolkit&viewid=333d14d1%2D35b5%2D4b01%2D8deb%2D38bbf686f591
- SharePoint: Registry FAQ, Data collection resources: https://dallaschildrens.sharepoint.com/teams/PAC-3/Shared%20Documents/Forms/AllItems.aspx?newTargetListUrl=%2Fteams%2FPAC%2D3%2FShared%20Documents&viewpath=%2Fteams%2FPAC%2D3%2FShared%20Documents%2FForms%2FAllItems%2Easpx&id=%2Fteams%2FPAC%2D3%2FShared%20Documents%2FRegistry&viewid=333d14d1%2D35b5%2D4b01%2D8deb%2D38bbf686f591