Monitoring Central Line-Associated Bloodstream Infection Prevention Efforts

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Problem

Central Line-Associated Bloodstream Infections (CLABSIs) have significant impact on patient wellness and the healthcare system. In addition to increased LOS and unnecessary healthcare costs, thousands of patients die each year from this type of preventable hospital acquired infection. Reduction of the CLABSI rate is a measure on the UCM Clinical Priority Scorecard. This scorecard is a key metric of the Annual Operating Plan. CLABSI process measures were audited and recorded in REDCap. Each week, the REDCap data was manually extracted for an obsolete dashboard. A solution was needed to transform over 30,000 records into usable data to further drive infection prevention efforts.

Goal

To create a useful dashboard for tracking unit-level compliance with process measures known to prevent CLABSIs. Having unit-level data would allow nurse managers, frontline staff, Infection Prevention and Control (IPC), and the CLABSI Committee to identify areas of opportunity for improvement and identify units meeting expectations. The dashboard should also have a data source that does not require manual extraction, freeing up valuable time for IPC to focus on more impactful work. As infection prevention needs evolve, a flexible design would allow the dashboard to accommodate changes in process measures.

Intervention Design

- Infection Prevention and Control (IPC), CLABSI Committee, and DSA teams met to discuss key metrics, audience, and actions that will be taken from a data solution
- A wireframe was created to design a dashboard that shows both a high level overview of process metric performance and a detailed metric deep dive to discover the most pressing opportunities
- Alteryx software was utilized to automatically pull data from the REDCap software and transform it into the optimal format for Tableau
- The dashboard design intuitively displays metric performance relative to targets to make it easy to find opportunities
- The interactive opportunity finder displays a group's performance relative to others another across all measures at once. This limits the need to filter and scroll which can minimize time to insight.
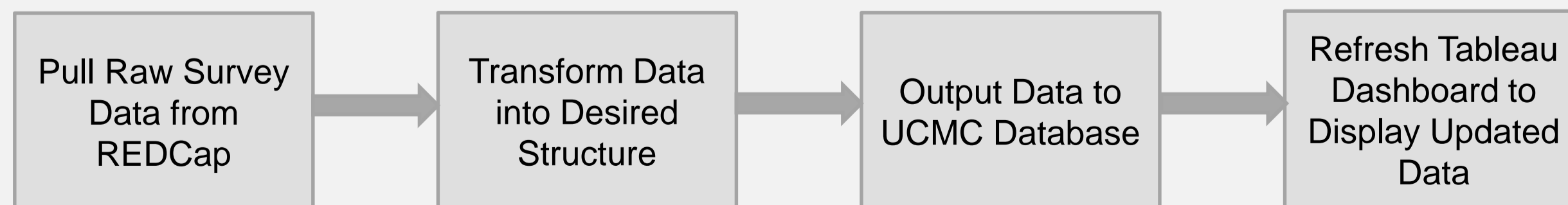- To centralize relevant information, the dashboard includes a link to the REDCap survey.

Figure 1: Overview of automated data extraction, transformation, and output process

Results

Engagement:

- Tableau dashboard launched in April 2024 as an addition to the existing CLABSI-Central Line CHG Treatment dashboard

- Dashboard demonstrated at CLABSI Committee Report Out meeting showing how a unit leader could use the dashboard

- Automated subscriptions sent to unit leadership

- Many leaders now rely on dashboard for current status; information is shared through huddles, unit quality display boards, meetings, and newsletters to engage staff on specific prevention measures

- Engagement seen with CLABSI dashboard has inspired CAUTI Taskforce to explore new ways to assess data

Efficiency:

- Eliminated the need for manual data extraction from REDCap

- An estimated 4 to 8 hours per month are saved for IPC team, increasing the team's efficiency. IPC could spend this time directly supporting units on areas of opportunity for improvement

- Intuitive design makes it much quicker for units to see their performance across all metrics compared to their peers

Figure 2: CLABSI process metric Tableau scorecard (some metrics not displayed)
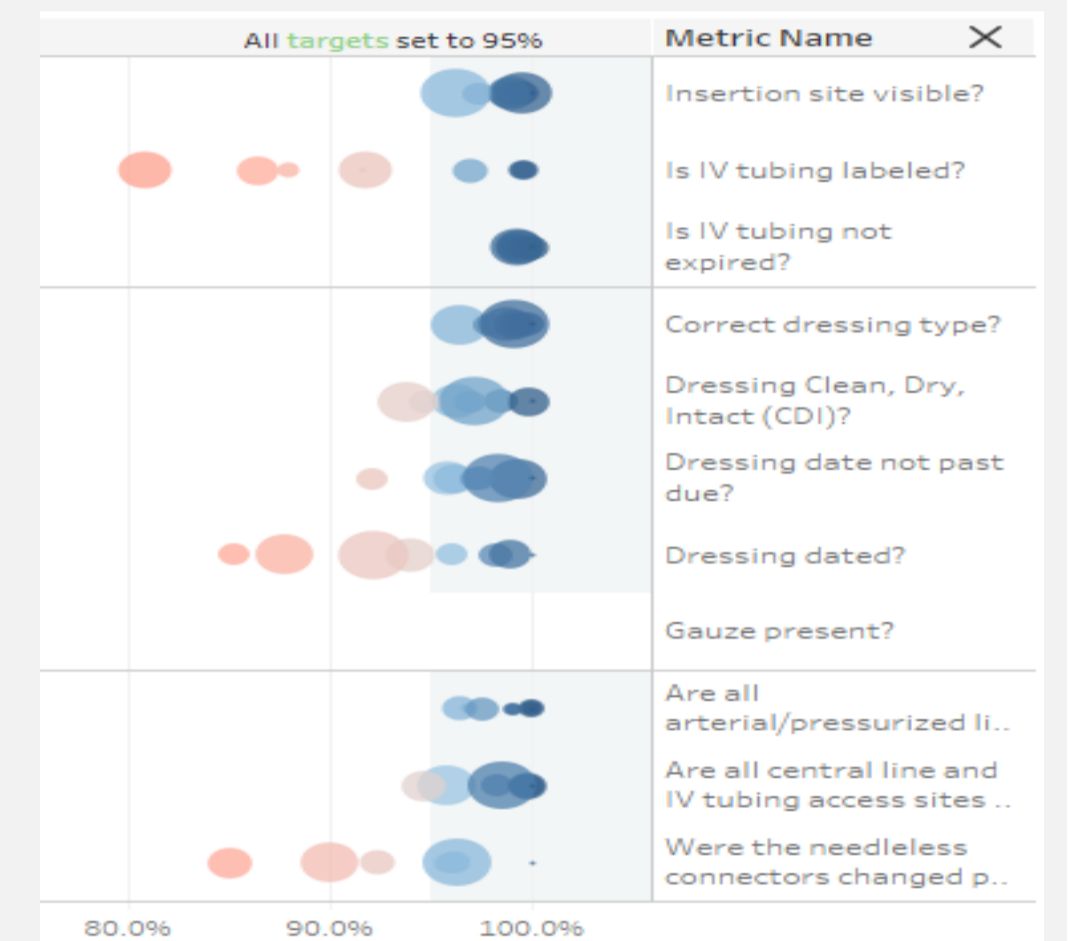

Figure 3: A component of the Opportunity Finder tab displaying performance by service line across all metrics

Lessons Learned and Next Steps

- The user-friendly dashboard is accessed by many. CLABSI quality reviews rely on the Opportunity Finder tool to identify areas for improvement.
- Untested updates to REDCap survey can negatively impact the function of the dashboard. For continued success, all stakeholders (i.e. IPC, DSA, etc.) should be consulted and careful planning is needed before making changes.
- With positive reviews from frontend users on utility and design, next steps include promoting more engagement with CLABSI prevention efforts. Units could observe each other or observers can "buddy up" to record process measures completed to learn from each other.
- Automated email subscription was a welcomed feature of the dashboard. Next enhancements could include unit-specific subscriptions providing a customized report and building an Equity and Opportunity lens to explore health disparities.

Acknowledgements