Building an Interactive Dashboard - an Opportunity for Data-Driven Performance Feedback for Surgical Site Infection Prevention

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BACKGROUND

Data-driven performance feedback can improve professional practice and outcomes when it is relevant, timely, and actionable.

- **Surgical site infection (SSI)** increases morbidity and mortality risk, pain, and hospital resource utilization.
- Cleansing, prophylactic antimicrobial coverage, and perioperative normothermia maintenance are bundled preventative strategies used to reduce this risk.
- The **Pediatric National Surgical Quality Improvement Program's (P-NSQIP)** clinical reviewers create compliance reports (Figure 1), which are effective but time-consuming and neither easily shared nor timely.

PROJECT AIM

To develop dashboards for clinicians to improve institutional SSI prevention strategy compliance and share feedback efficiently to identify opportunities for quality improvement (QI) as part of a learning health system.

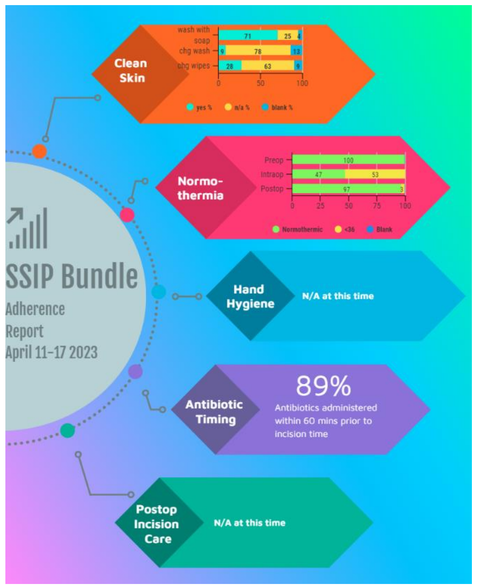

Figure 1: Example of a manual compliance report for SSI prevention bundles.

We designed and deployed dynamic dashboards for on-demand, clinical team review of bundle compliance and SSI rates as part of a learning health system

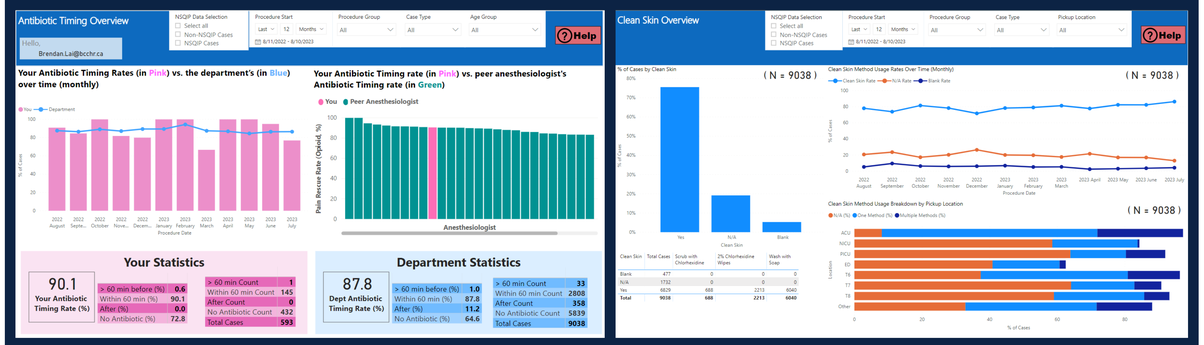

Figure 3: Visualizing relevant SSI prevention bundle elements in the prototype dashboard: The left subplot shows antibiotic timing; the right subplot shows preoperative skin cleaning.

We will conduct further iterative design, as well as automation of data extraction, linking, and usability testing

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METHODS

As a QI project, the requirement for ethical review was waived under TCPS2 Article 2.5.

BC Children's Hospital routinely captures metrics relevant to SSI in their electronic medical record:

- preoperative bath/shampoo and appropriate application of preoperative 2% chlorhexidine gluconate wipes
- antibiotic timing before surgical skin incision
- perioperative temperature maintenance

Dashboard design

Iteratively co-designed with input from nursing, anesthesia, and surgical domain experts, starting Jan/2023.

Designs implemented in the institutional PowerBI services platform and shared with local surgical leaders for feedback in Apr/2023.

Prototype SSI prevention dashboards contain population characteristics (Figure 2) and SSI prevention bundle compliance trends (Figure 3) and allow users to explore details across different groups and outcomes.

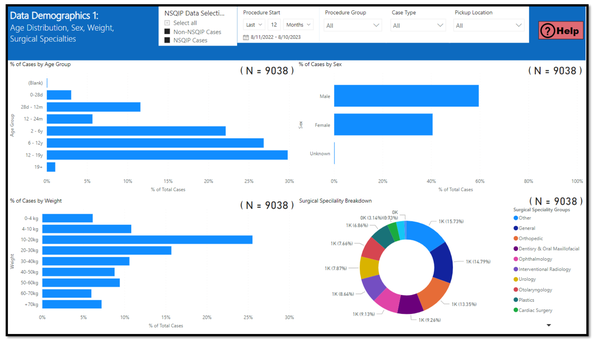

Figure 2: Demographic overview component of the dashboard prototype. The data shown include age, weight, procedure duration, and prevalence of surgical site infection.

SIGNIFICANCE

This digital innovation encourages direct clinician interaction with patient-level data, including patient risk factors, SSI occurrence, and compliance with SSI prevention measures.

Once live, we will improve reporting frequency and expect incremental improvement in compliance with SSI prevention strategies.