**Organization:** Calvert Memorial Hospital

**Solution Title:** Back to Basics: A Multidisciplinary Team Approach to the Reduction of Surgical Site Infections

**Program Description and Goals:**

**What was the problem to be solved?**

While advances have been made in infection control practices, the number of surgical site infections (SSI’s) continue to be a national area of concern. The CDC healthcare-associated infection (HAI) prevalence survey found that there were an estimated 157,500 surgical site infections associated with inpatient surgeries in 2011.

Calvert Memorial Hospital shares this national concern. Operating in an environment of continuous quality improvement yielding increases in patient safety and satisfaction, CMH took a close at their SSI data over a three year period from 2011 to 2013. The data reflected no substantial improvement over the three year period despite strict adherence to the Surgical Care Improvement Project (SCIP) core measures. Dissatisfied with the current rate of surgical site infections, CMH formulated a task force of multiple disciplines who were committed to making significant improvements to the surgical care of our patients and improving overall safety.

**How was it identified? What baseline data existed?**

The Infection Control department monitors and collects all surgical site data and performs case reviews to identify potential surgical site infections based on the NHSN criteria. The case reviews and surgical outcomes data were brought to surgical services to identify potential trends within the data. Over the three year period, there were a total of 48 SSI, 27% organ space, 48% Deep, and 25% superficial. Of the surgical infection cases the majority were orthopedic surgeries. Upon review there were no commonalities between the infections. Unable to identify a single cause, we analyzed evidenced-based practice and identified multiple areas that needed improvement.

**What were the goals—how would you know if you were successful?**

The goal of the Surgical Site Infection Prevention (SSIP) Task Force was to significantly improve peri-operative patient care by reducing the overall incidences of surgical site infections by 20% over a two year period from 2014 to 2015. The Task Force also wanted to significantly reduce the number of deep and organ space infections.

Various tools to measure progress and/or areas needing intervention were tracked, trended and reviewed monthly at the meetings:

- SSI graphs – including rates, distribution related to location and type of surgery.
- Case reviews and recommendations for provider and practice changes
SSI peer review recommendations
Protocol compliance with MRSA/MSSA testing, CHG bathing and nasal decolonization
Surgical Care Improvement Project (SCIP) measure compliance
Immediate use sterilization rates
Blood Transfusion Rates
CDC recommendations
Process monitoring tests
  o Bioburden Prevalence
  o Biological testing
  o Clean Trace Audit results (ATP testing of environmental surfaces)
OR Traffic – policy, education and monitoring

Process: What methodology or process was used to develop the Solution?

To move towards the goal of reducing SSI incidences at CMH, a multi-disciplinary team was formed to study SSI prevention best practices, share knowledge across the organization, and implement effective changes in behaviors at every patient touch point.

The SSIP team was created with representatives from various departments to include Surgical Services, Infection Control, Quality Management, Medical-Surgical Services, Materials Management, Obstetrical Services, Environmental Services, Plant Operations, Pharmacy and Laboratory. Additionally, the Chief of Surgery and a Hospital Board Member were active participants in the biweekly and monthly meetings.

Led by the Vice President of Quality, the team launched a comprehensive program that encompassed all phases of surgical care from admission to post-operative follow-up.

To establish goals and objectives the group first performed a gap analysis utilizing the AHA Surgical Site Infection Change Package Workbook and developed action plans based on the variances identified. These included the following:

  o Standardized procedure for pre-warming patients
  o Timing of antibiotics given
  o Glucose testing in OR
  o Glycemic control protocol
  o Compounding of irrigation fluids
  o Surgical draping and prepping
  o Timely removal of drains
  o Team Training Program
  o Surgical Clipping

Following the study, team members chose to utilize an action planning format to identify areas of improvement, assign tasks and manage deadlines. To foster accountability, the team agreed to meet monthly to review their action plans and update any areas that needed attention.
Solution: What Solution was developed? How was it implemented?

The solutions identified were multi-pronged and involved various departments, which required collaboration across the organization. Each member were assigned tasks for correction and provided feedback to the team related to their progress. The following corrective actions were implemented based on the problem and solution identified:

a. Replacement of old equipment to include position pads and tables.
b. Introduction of new single use items to include blood pressure cuffs and custom room turnover packs.
c. Intra-operative glucose control—reinforced need for compliance.
d. Review and updating of policies to include surgical attire, traffic control, workflow modifications, and environmental cleaning procedures.
e. Surgical clipping and cast removal moved to pre-operative area.
f. Physician engagement—presentation of SSI data, case reviews forwarded to Chief of Surgery and physician, review of products.
g. Surgical incision management – introduction of silver impregnated occlusive dressings.
h. Introduction of new technology—UV light disinfection and ATP testing.
i. Board member input – streamline processes to increase efficiency.
j. Re-education and one-to-one feedback from pharmacists to surgeons for antibiotic selections and dosing.

Measurable Outcomes: What are the results of implementing the Solution? Provide qualitative and/or quantitative results to data. (Please include graphs, charts, or tools).

The results of implementing the solution were significant. CMH experienced a 63% reduction in SSIs from the start of the initiative in 2013 to 2015, exceeding our original 20% reduction goal. In addition, organ space SSIs were reduced to zero and sustained for two years. Deep tissue infections also decreased by 50% from previous years. Orthopedic infections have been reduced from 13 to 4 in just 2-years. Improvements were expanded and positively impacted universal protocol revision, room turnover checklists and terminal clean checklists, changes in the C-section suite (aquacel dressing, CHG scrub), peri-operative/SDS clipping, CHG wiping of site on all cases and expanding joint protocols to hip fx patients. The solution significantly lowered staff turnover for breaks in the OR and resulted in increased staff productivity.
# Yearly Comparison of Superficial, Deep and Organ/Joint Space Surgical Site Infections

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Organ/Joint Space</th>
<th>Deep</th>
<th>Superficial</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>4</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>2012</td>
<td>5</td>
<td>8</td>
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<td>2013</td>
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<tr>
<td>2015</td>
<td>0</td>
<td>2</td>
<td>4</td>
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Sustainability: What measures are being taken to ensure that results can be sustained and spread?

The SSIP team continues to meet on a monthly basis to review compliance with the initiatives that have been implemented. We continue to review evidence-based practices and hospital policies in an effort to provide the best possible care for our patients. The Operating Room has identified SSI rate reduction as a yearly departmental goal. Any cases that involve an SSI are discussed at staff meetings so that the staff has an opportunity to discuss areas for improvement in the future. ATP testing continues and results are reported at the Infection Control Committee Meetings. The department conducts ongoing monitoring of traffic control and SSI monitoring and reporting to physicians and IC Committee.

Role of Collaboration and Leadership: What role did teamwork and collaboration play in the Solution? What partners and participants were involved? Was the organization’s leadership engaged and did they share the vision for success? How was leadership support demonstrated?
Teamwork was the backbone of the SSI improvement program. With diverse representation across the organization, including the Board of Directors, the team was able to leverage talent in a way that promoted a culture of patient safety and best practice. Leadership was engaged from the beginning and strongly encouraged staff to become an active part of the initiative. Our Chief of Staff served as the physician champion and was a role model to others regarding our initiatives. The SSIP Team was recognized at our last Annual Employee Banquet with a special TEAM Award. This award was a testament to the value that leadership has for the work and progress that this team was able to accomplish.

**Innovation: What makes this Solution innovative? What are its unique attributes?**

The SSI improvement team did not “reinvent the wheel” but rather used existing human resources, supported by a robust problem-solving and decision-making environment that created the network needed to fully identify the problem, create a solution, implement improvements, modify the culture and sustain the process. Staff participants on the team were afforded the time to meet and conduct the work associated with the goal, but the effort required no additional staffing expenses.

Additionally, the success of the effort can largely be attributed to the use of a multi-stakeholder approach. This approach facilitated a platform for identifying problems and solutions beyond the usual perceived area of SSI concern – the operating room.

**Related Tools and Resources:**

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