SHEA 2015: Pragmatic Lessons Learned in Surgical Infection Prevention Studies

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Disclosures: Conducting a trial (ABATE) in which participating hospitals are receiving CHG contribution from Sage and Molyncke
Objectives

• Define implementation strategies to prevent surgical infections from the STOP SSI AHRQ study experience

• Identify common barriers to adoption and resolutions

• Describe essential components for success in multicenter studies
STOP SSI Study Bundle and Surgical Populations

• Bundle elements were:
  – Screening patients’ nares for *S. aureus*
  – Decolonizing carriers with intranasal mupirocin & chlorhexidine bathing
  – Using vancomycin & cefazolin for perioperative prophylaxis among MRSA carriers
    • AHRQ Contract #HHSA 29022006100021i (Task order 3)

• Study population
  – 20 Hospital Corp. of America (HCA) affiliated hospitals
  – Adult patients having primary hip or knee arthroplasty or primary cardiac operations through median sternotomies
Implementation

• Central coordination from corporate infection prevention team
• Webinars and coaching calls
• Launch of toolkit resources on corporate intranet site
  – Standard protocols
  – Instruction and education sheets to patients and caregivers
  – Electronic and paper ordersets
  – Compliance check tools
• Compliance from common EHR system
Key Stakeholders for Initiative

- Corporate leadership
- Hospital leadership
- Infection prevention
- Surgical Services directors and nursing
- Local study champion
- Information Technology & Systems
- Pharmacy
- Supply chain
- Marketing
- Quality
Coach Teams Routinely

• **Implementation Phase**
  – Communicate the goal / create the vision
  – Define each member’s roles and responsibilities
  – Hospital protocol
  – Electronic order set

• **Deployment Phase**
  – Supply chain requests
  – Nursing education (CHG bathing, mupirocin, documentation)
  – Define process and outcome metrics (compliance, SSI)
  – Study champion reports status

• **Sustainment Phase**
  – Identify opportunities and refine the process
  – Monitor process metrics daily, then weekly, then monthly
## Implementation Activities

| Project Liaison and Physician Champion | Receive protocol training, review materials, ask questions to clarify | Develop local multi-disciplinary implementation team and plan | Revise pre-op orders; obtain medical executive committee approval, facilitate peer adoption of algorithm | Train hospital and outpatient staff on all aspects; retrain as needed; respond to peer questions and concerns | Team develops systems and processes for implementing bundle practices | Collect, submit SSI data (retrospective and prospective) | Participate in group coaching calls and follow up with coordinating center staff | Conduct regular, structured audits; resolve identified obstacles |

IDWeek 2014 and AHRQ 2013
# Implementation Activities

<table>
<thead>
<tr>
<th>Outpatient surgical office staff</th>
<th>Inpatient nursing and pre-op surgical staff</th>
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<tbody>
<tr>
<td>Set up systems and processes to identify eligible outpatients</td>
<td>Set up systems and processes to identify eligible inpatients</td>
</tr>
<tr>
<td>Obtain supplies, CHG liquid, mupirocin and equipment as needed</td>
<td>Set up processes, equipment for MSSA and MRSA screening of urgent or emergent patients admitted through ED or in units</td>
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<tr>
<td>Set up processes for MSSA &amp; MRSA screening 10 to 14 days before operation</td>
<td>Obtain supplies, CHG cloths and warmers, mupirocin</td>
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<tr>
<td>Set up processes, for receiving lab results and communicating information to surgeons pre-op</td>
<td>Establish process to administer, document application of pre-op CHG and mupirocin as indicated</td>
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<tr>
<td>Establish process and materials for educating pre-op patients on use of CHG and mupirocin when indicated</td>
<td>Ensure new, weekend and off-shift staff understand protocol and maintain adherence</td>
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<tr>
<td>Follow up, track, document patient adherence to CHG and mupirocin instructions</td>
<td>Facilitate awareness and adoption of evidence-based practices</td>
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<tr>
<td>Communicate key information to inpatient pre-op health care personnel</td>
<td>Communicate best practices, coordinate across continuum of care</td>
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HCA Clinical Services Group
### Implementation Activities

<table>
<thead>
<tr>
<th>Information Technology Staff</th>
<th>Pharmacy and Laboratory Staff</th>
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<tbody>
<tr>
<td>Healthcare system IT staff</td>
<td>Obtain equipment and supplies as needed from supply chain management</td>
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<tr>
<td>create EHR screens document practices and run reports</td>
<td>Communicate lab results to pharmacy and other health care personnel</td>
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<tr>
<td>Standardized screens, reports shared with IT staff at each site</td>
<td>Pharmacy reviews new orders against protocol for eligible patient to ensure orders match up with screening results</td>
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<tr>
<td>Standardized screens shared with IT staff at each site; training</td>
<td>As needed, assist with renewing or discontinuing mupirocin orders post-op</td>
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<tr>
<td>Local IT installs updates</td>
<td>Local IT analyst, nurse managers and educators train staff on new screens</td>
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</table>
Provide Routine Feedback to Stakeholders

• Quality of CHG bathing
  ➢ Random direct observation

• Compliance with bundle elements
  ➢ Nares Screening: standard lab test and report
  ➢ CHG: electronic reports from nursing documentation
  ➢ Mupirocin: electronic reports from medication administration
  ➢ Perioperative antibiotics administered

• Surgical documentation
  ➢ Use of standardized order sets
Identify Outliers and Address Individually

• **Are providers resistant of the combined protocol?**
  – Provide the evidence
  – Provide support through peer to peer conversations

• **Is the process optimal?**
  – Listen and understand the issue/s
    • Supplies out-of-stock or not being used?
    • Baths being missed the day of surgery?
    • Patients refuse CHG bath?
    • Mupirocin not purchased before surgical visit

• **Are nursing staff/techs unsupportive?**
  – Review the science and purpose
  – Ensure supplies are convenient to workflow
Institutional Context: Healthcare Network

■ **Facilitators:**
  ▲ Corporate physician champion (e.g., site visits, phone calls)
  ▲ Infrastructure & resources (e.g., centralized IRB & training, shared electronic health record [EHR], supply chain)
  ▲ Project team support

■ **Barriers:**
  • Time necessary to resolve hospital-level barriers (e.g., development of order sets & reports in EHR)

IDWeek 2014 and AHRQ 2013
Organizational Context: Hospital Level

**Facilitators:**
- Establishing order sets in local EHRs
- Educating & cross-training personnel

**Barriers:**
- Obtaining committee approval
- Developing processes for urgent/emergent operations
- Hardwiring practice across shifts
- Documenting bundle compliance
- Ensuring supplies were available
Individual Action: Hospital staff & surgeons

**Facilitators:**
- Strong local champion
- Personalized education/training

**Barriers:**
- Resistance & autonomous decision making
- Time constraints (e.g., documenting, auditing)
Patterns of Interaction:

■ **Facilitators:**
  ▲ Communication & partnerships among surgeons, clinics & hospitals
  ▲ Information technology used for alerting & documenting
  ▲ Solutions (e.g., patient education material & checklists) shared during coaching calls

■ **Barriers:**
  ▲ Priorities conflict
  ▲ Decentralized offices
  ▲ Complex communication channels among patients & providers, & among care sites
  ▲ Healthcare network or hospital demands
Conclusions

• Concordant with current SSI prevention guidelines.

• Implementation readiness varies:
  – Two sites ready within 2 months
  – Eleven sites ready within 3 months
  – Eight sites ready within 4 months

• Relatively simple to maintain because it does not require expensive technology or additional staff.

• Generalizability:
  – May be limited to apply within large academic health centers or to hospitals without strong infrastructures for quality improvement.