The Surgical Site Infection Prevention Collaborative (SSIPC) has been formed under the auspices of the Perioperative Enterprise and Perioperative Executive Committees to facilitate ongoing efforts to reduce surgical site infections (SSI).

CHARGE:
The charges of this committee are to serve as a data resource and data bank for specific ongoing initiatives by diverse groups involved in perioperative infection reduction and to facilitate communication, information flow, and incorporation of successful processes across the perioperative platform.

Summary of projects:
The SSIPC has initiated several early initiatives to improve access to information and reduce the risk of perioperative infectious complications. These include:

1. Perioperative procedures for isolated patients
2. Standardization of Operating Room patient skin prep
3. Enhanced access to perioperative “SCIP” measures
4. Colorectal collaborative
5. Trauma/EGS collaborative
6. Improved maintenance of perioperative normothermia in Trauma & EGS
7. Standardization of preoperative scrub procedures
8. OR dress policy
9. Monitor and review of instrument sterilization
10. Review and reduction of OR traffic
11. Creation of SSIPC website

Progress report for active projects:

1. Perioperative procedures for isolated patients

   The committee undertook revision of transportation and OR practice for patients in isolation. New policies were developed and instituted.
   • Status: completed with on-going monitoring of status

2. Standardization of patient skin prep

   The committee identified variation in skin prep within the ORs as a process issue. The committee reviewed the available literature and established recommendations:
   1) Standardize preps as much as possible
   2) Utilize ChloroPrep (or Hibiclens if alcohol contra indicated) as standard prep.

   The committee undertook the following actions:
   a. Publication of SSIPC recommendation in Modus Operandi
   b. Evaluated standardization ChloroPrep on Trauma/EGS service line
   c. Recommended use of ChloroPrep in all areas except where contraindicated
Due to the presence of contraindications and drug interactions for all of the available products, a single prep cannot be recommended. However, variation can be reduced and the committee seeks to facilitate standardization for each service line.

- **Status:** the table below provides the currently reported primary and secondary prep for each service line. The committee continues its efforts to promote consistency by:
  - Add the neurosurgical line to the initiative
  - Working with individual leaders to reduce variability

<table>
<thead>
<tr>
<th>POD</th>
<th>Service</th>
<th>Primary Surgical Prep</th>
<th>Secondary Surgical Prep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pod 1 GYN</td>
<td>GYN Women’s</td>
<td>Chlorprop</td>
<td>Technicare</td>
</tr>
<tr>
<td>Pod 2 Gen/Gyn/Onc/GU</td>
<td>Chlorprop</td>
<td>Betadine</td>
<td></td>
</tr>
<tr>
<td>Pod 4 ENT</td>
<td>Betadine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pod 5 Head &amp; Neck</td>
<td>Betadine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pod 6 Plastic</td>
<td>Betadine</td>
<td>Hibiclen</td>
<td></td>
</tr>
<tr>
<td>Pod 7 Ophthalmo</td>
<td>Betadine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pod 8 Ortho</td>
<td>Trauma</td>
<td>Chlorprop</td>
<td>Hibiclen</td>
</tr>
<tr>
<td>Pod 9 Ortho</td>
<td>Oncology/Hepatic</td>
<td>Betadine/Betadine</td>
<td></td>
</tr>
<tr>
<td>Pod 10 Ortho</td>
<td>Spine (Elevin)</td>
<td>Chlorprop</td>
<td></td>
</tr>
<tr>
<td>Pod 11 Ortho</td>
<td>Spine (Davis)</td>
<td>Duraprep</td>
<td></td>
</tr>
<tr>
<td>Pod 12 Ortho</td>
<td>Spine (Surgical)</td>
<td>Duraprep/Betadine</td>
<td></td>
</tr>
<tr>
<td>Pod 13 Ortho</td>
<td>Joints</td>
<td>Betadine/Alcohol/Duraprep</td>
<td></td>
</tr>
<tr>
<td>Pod 14 Ortho</td>
<td>Sports</td>
<td>Hibiclen/Alcohol</td>
<td></td>
</tr>
<tr>
<td>Pod 15 AOSS</td>
<td>Trauma/EGS</td>
<td>Chlorprop</td>
<td>Duraprep/Betadine</td>
</tr>
<tr>
<td>Pod 16 Burn</td>
<td>Chlorprop</td>
<td>Betadine</td>
<td></td>
</tr>
<tr>
<td>Pod 17 Hepato</td>
<td>Chlorprop</td>
<td>Duraprep</td>
<td></td>
</tr>
<tr>
<td>Pod 18 Renal</td>
<td>Chlorprop</td>
<td>Duraprep/Betadine</td>
<td></td>
</tr>
<tr>
<td>Pod 19 Vascular</td>
<td>Chlorprop</td>
<td>Duraprep/Betadine</td>
<td></td>
</tr>
<tr>
<td>Pod 20 Cardiac and Thoracic</td>
<td>Chlorprop scrub using scrub brushes, area wiped with alcohol, then chlorprop applied</td>
<td>Two surgeons are still using Duraprep instead of Chlorprep but the steps are the same.</td>
<td></td>
</tr>
<tr>
<td>Pod 21 Thoracic</td>
<td>Chlorprop only</td>
<td></td>
<td></td>
</tr>
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</table>

**Recommendation:**
- Each POD to provide rationale for both primary and secondary prep chosen (if not the recommended prep) so that appropriate contraindications can be maintained while limiting variability.
- The committee requests that the perioperative enterprise committee make this a priority of the POD leadership.

### 3. Enhanced access to perioperative “SCIP plus” measures

Compliance with the several perioperative measures has been shown to reduce infectious complications. These measures are in part reflected in the SCIP initiative, while compliance with an expanded bundle (SCIP plus) likely has benefit across broader populations. Achieving high-level compliance requires the ability to measure and monitor compliance along individual service lines so that local process needs can be identified and addressed.
Proposal:

1) Creation of “SCIP plus” dashboard with reporting of service/POD performance will aid the SSIPC and individual groups in achieving high level compliance.
2) Development of enhanced data reporting capability to enable “drill down” analysis of performance and subsequent process improvement by service line and POD leaders will improve SCIP plus performance.

The perioperative measures that have been demonstrated in randomized trials to reduce infections include:

a. Hair removal with clippers only
b. Appropriate prophylaxis within 1 hour of OR
c. Maintenance of perioperative normothermia
d. Perioperative glycemic control
e. Perioperative O2 supplementation

Additional parameters that affect risk, alter processes of care delivery, and require accurate monitoring are

f. Wound class
g. Case level

The committee continues to work with Dr Higgins, Dr St Jacques, and the VPIMS group to

- increase the parameters reported via VORS
- increase access to encounter specific data for these measures to enable analysis by end users
- create a conglomerate of SCIP plus measures reported to PODS/Services to aid in compliance monitoring and process improvement.

- Status:

  1. The current data elements available through VORs reports and a schematic of reporting needs are provided in Appendix 1.
  2. Encounter specific “raw” data available for EGS/Trauma and Colorectal

Recommendation:

- Perioperative Leadership request the creation of a “SCIP plus” dashboard for reporting of compliance for these parameters
- Perioperative leadership provide a ½ FTE for a data analyst to support the SSIPC and related activities

4. Colorectal Collaborative

The SSIPC established a collaborative effort to assist the Colorectal group in its on-going efforts to limit infectious complications.

- Committee reviewed previous processes instituted by colorectal service and noted the reduction in superficial and deep surgical site infections, but persistently high rate of deep organ space infections
Through discussions with the colorectal leadership, created access to compliance data for measures known to alter infectious complications

Through collaborative effort with Colorectal group, created recommendations for action plan

Committee maintains a repository of action items, timelines, and tools on the SSIPC website (http://www.mc.vanderbilt.edu/root/vumc.php?site=SSIP) for broader application

An executive summary report is available in Appendix II as well as list of tools and processes available on the SSIPC website. The major components of the colorectal initiative are:

− Creation of a core colorectal perioperative OR group to improve compliance and limit variability.
− Standardization of perioperative practices including
  ➢ Skin prep
  ➢ Bowel prep
  ➢ Antibiotics
  ➢ Maintaining sterile fields
− Creation of ordersets and checklists
− Reduction of OR traffic
− OR and instrument cleaning
− Introduction of SWAT approach for evaluation of infectious complications

A listing of tools, order sets, and timelines maintained in the SSIPC website is provided:

1. Colorectal Surgery-Surgical SSI Prevention Project Plan
2. Standardized Bowel Prep Instructions
3. Maintenance Of Sterile Field - Bowel Technique Competency Assessment
4. ChloraPrep Surgical Prep Application Competency Assessment
6. Colorectal Preop Skin prep order
7. Observer Audit tool
8. OR Door Sign - OR Traffic Reduction
9. Vanderbilt Colon and Rectal Surgery Incentive Spirometer teaching tools

• Status: ongoing.

5. Trauma/EGS collaborative

The SSIPC has established a collaborative effort with the EGS/Trauma service to improve perioperative compliance with practices shown to reduce infectious complications. Initiatives within this collaborative include:

− Standardize patient prep to ChloraPrep
− Standardize care in complex cases across service (Appendix III)
− Address perioperative antibiotic dosing documentation and compliance for patients that are either in house or leveled cases (Appendix III)
− Improve/monitor accuracy of wound classification of cases
− Enhanced maintenance of normothermia (see Appendix IV)
Appendix III provides supporting documents for the infection reduction practices including the EGS perioperative protocols, and initiatives to improve antibiotic dosing and timing for in-house and leveled cases.

- **Status:** ongoing.

### 6. Improved maintenance of perioperative normothermia in Trauma & EGS

Studies of perioperative warming demonstrate reduction in infectious complications with tighter compliance to normal temperature, specifically above 36.0°C. Analysis of intraoperative temperature data from the VPIMS – VORS data feed for the trauma and EGS services reveal that roughly 50% of patients have a temperature at or below 36.0°C, most commonly at the induction of anesthesia.

The SSIPC has recently initiated collaboration with the trauma/EGS service to evaluate methods of improved maintenance of normothermia throughout the perioperative period and to develop a system of compliance monitoring. More detailed information can be found in Appendix IV.

- **Status:** initiation of project

### 7. Standardization of preoperative scrub procedures

The SSIPC undertook a review of the literature and local practices for preoperative hand scrub procedures. Avagard was introduced and protocols and educational materials demonstrating the proper performance of application of both the hand scrub and Avagard developed. On-line viewing of educational materials and post-testing was assigned for all perioperative personnel. Materials developed and available on the SSIPC website include:

1. Handscrub poster
2. Surgical Hand Scrub Updates – power point slide presentation
3. Surgical Hand Scrub Protocol
5. Surgical Hand Scrub Audit -V-Survey

These may also be found for review in Appendix V.

- **Status:** completed

### 8. OR dress policy

The SSIPC reviewed and approved the OR dress policy. The committee developed signage and educational materials. However, the members of the committee have not observed significant alteration in compliance practice and believe that further signage/educational efforts are not likely to bring about change.
Several issues have been discussed as potential contributing factors, including inadequate access to scrubs and convenient changing locations. The committee believes that a “top down” culture change would mandate institution of monitoring and compliance system. However, the number of non-OR locations requiring the use of scrubs makes this difficult.

- **Status:** closed

**Recommendation:**
- If the perioperative leadership believes that a significant change in behavior remains desirable, policy and monitoring systems to affect that change will be required and will require a clear mandate from perioperative leadership
- Additional access to scrubs and changing rooms should be considered

9. **Monitor and review of instrument sterilization**

The SSIPC has added to its membership Michael J. Hughes, RN, BSN, MA, CNOR, Assistant Administrative Director--Surgical Support Services, to ensure that concerns and issues regarding sterilization of instruments and instrument processing are appropriately communicated and addressed. The committee regularly reviews “flashing” rates to ensure appropriate processes are being followed. The most recent report is attached below:

- **Status:** ongoing monitoring and reporting to committee.

10. **Review and reduction of OR traffic**

The SSIPC has, at Dr. Ginger Holt’s request, initiated a collaboration to reduce the amount of operating room traffic to limit infectious complications related to airborne exposure. The literature has been reviewed and an initiative to limit traffic in the Orthopedic spine and joint services has been initiated. More details...
may be found in Appendix VI. Tools and policies that are developed and found to be successful are to be provided to other PODs and service lines.

- **Status:** project initiated and awaiting evaluation and report.

### 11. Creation of SSIPC website

To allow access and tracking of processes, the SSIPC has developed a website for storage of documents, data, and information. We continue to evaluate tools that allow tracking of processes across the institution to prevent redundancy of efforts and competition for resources. The site may be found at [http://www.mc.vanderbilt.edu/root/vumc.php?site=ssip](http://www.mc.vanderbilt.edu/root/vumc.php?site=ssip).
APPENDIX I

SSIPC progress report

Proposed data elements and reporting of “SCIP plus” dashboard

Addison May
9/1/2009
Appendix I: SSIPC Progress report

Appendix I: Proposed data elements and reporting of “SCIP plus” dashboard

VPIMS VORS RAW DATA FEED ELEMENTS:

<table>
<thead>
<tr>
<th>AnesCaseNumber</th>
<th>PostopTemp</th>
</tr>
</thead>
<tbody>
<tr>
<td>surgeryDate</td>
<td>HairRemoved</td>
</tr>
<tr>
<td>Location</td>
<td>ClippersUsed</td>
</tr>
<tr>
<td>ORCase</td>
<td>RazorUsed</td>
</tr>
<tr>
<td>Site</td>
<td>MinGlucose</td>
</tr>
<tr>
<td>PrimaryService</td>
<td>MaxGlucose</td>
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<td>MedicalRecord</td>
<td>AvgGlucose</td>
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<td>ADTCaseNumber</td>
<td>FirstTemp</td>
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<td>In_Room</td>
<td>LastTemp</td>
</tr>
<tr>
<td>Time_Out</td>
<td>ProcName</td>
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<tr>
<td>Incision</td>
<td>WoundClass</td>
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<tr>
<td>Incision_Closed</td>
<td>CaseLevel</td>
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<tr>
<td>Out_Of_Room</td>
<td>AntibioticTime</td>
</tr>
<tr>
<td>NoABXReason</td>
<td>AntibioticName</td>
</tr>
<tr>
<td>IntraopDeath</td>
<td>TimeRelativeToIncision</td>
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</table>

VPIMS VORS Summary report draft – request from the SSIPC  

<table>
<thead>
<tr>
<th>EGS</th>
<th>ALL CASES (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cases</td>
<td>143</td>
</tr>
<tr>
<td>Hair Removal</td>
<td>64 (45%)</td>
</tr>
<tr>
<td>With Clippers</td>
<td>64 (100%)</td>
</tr>
<tr>
<td>No hair removal</td>
<td>81 (57%)</td>
</tr>
<tr>
<td>Glucose checked</td>
<td>54 (24%)</td>
</tr>
<tr>
<td>Max Glucose &gt; 200</td>
<td>n x</td>
</tr>
<tr>
<td>Max Glucose &lt; 150</td>
<td>n x</td>
</tr>
<tr>
<td>Min Glucose &lt; 60</td>
<td>n x</td>
</tr>
<tr>
<td>Intraop Temp monitored</td>
<td>127 x</td>
</tr>
<tr>
<td>First temp &lt; 36</td>
<td>n x</td>
</tr>
<tr>
<td>Last temp &lt; 36</td>
<td>16 x</td>
</tr>
<tr>
<td>Post-op temp monitored</td>
<td>n x</td>
</tr>
<tr>
<td>Post-op temp &lt; 36</td>
<td>n x</td>
</tr>
<tr>
<td>Abx administered</td>
<td>96 (67%)</td>
</tr>
<tr>
<td>Abx within 1 hour or @ incision</td>
<td>75 (78%)</td>
</tr>
<tr>
<td>No abx administered</td>
<td>34 x</td>
</tr>
<tr>
<td>Ab not indicated</td>
<td>n x</td>
</tr>
<tr>
<td>Free Abx regimen documented</td>
<td>22 x</td>
</tr>
<tr>
<td>No Abx adm with indication</td>
<td>n x</td>
</tr>
</tbody>
</table>

Would like to be able to create for EGS and Trauma separately and also CRS.

Will expand to other services in this format if provides useful information and action items.
SSIPC progress report

Colorectal Wound Infection Project

9/1/2009
Colorectal Wound Infection Project Executive Summary

Improvement Initiatives

**Team Forming Activities**

- Implement Dedicated Core Colorectal Surgical Team (Future plans to implement dedicated Anesthesia Provider team members)
- Include team members on the design of the Colorectal Improvement Initiative
- Standardize Staff for Each Case Type
- Collaborate with Michigan University via email correspondence: (This task is deleted due to fact Michigan indicated they were no further along than Vanderbilt in their reduction of Colorectal infections)
- Evaluate Task Force Outcomes & Report to Perioperative Executive Committee and Perioperative Enterprise Committee

**Standardization of Surgical Pre-Surgical (Clinic Preparation, Pre-Operative, Intra-Operative & Post-Operative Care)**

- Standardization of Administrative Practices: Pre-Surgery Care
  - Implement Sage Wipes -Distribute to Patients
  - Sage Wipe (Only for Abdominal preps)and Other At Home Prep
  - Implement Colorectal Patient Clinic Patient Responsibility Form
    - Add antibacterial soap (Dial) in each patient Responsibility packet
  - Train Team on Colorectal EBM Protocols & Order sets
  - Integrate Colorectal Protocol with Home Care Instructions
  - Implement a specific “coder” for Colorectal surgery (pending)
  - Develop Nursing Education for Sage Wipes
  - Implement Sage Wipe Education for Nursing Staff

- Standardization of Chloraprep Application
  - Pilot Chloraprep Application
  - Approve Chloraprep
  - Implement Chloraprep Application Competency
  - Forward the Recommendation to Implement the Chloraprep Surgical Prep across the Perioperative Enterprise to the Surgical Site Infection Prevention Collaborative

- Standardization of Infection Control Practices-Aseptic Technique Practices
  - Implement Competency Assessment for Bowel Technique : Isolation Protocol
  - Pilot Isolation Protocol Tuesday and Wednesday of April 20\(^\text{th}\) Week -Phase I
    - Pilot Isolation Protocol Tuesday and Wednesday of April 20\(^\text{th}\) Week -Phase II
    - Stop Pilot Isolation Phase II
    - Continue Pilot Isolation Protocol Phase I - Towel or Bucket
  - Implement Isolation Protocol for Open Cases
  - Add Isolation Protocol to Colorectal Pathway

- Standardization of Protocols & Order sets-EBM
  - Develop Colorectal EBM Protocol/Order sets (Clipping has been added to the order set and shaving removed)
  - Implement Colorectal EBM Protocol/Order sets (includes Antibiotic administration protocol)

- Standardization of Pre-Intra-Post Care
  - Develop Colorectal Pre-Operative, Intra-operative, and Post-operative Checklist and Process
o Implement Colorectal Pre-operative, Intra-operative, and Post-Operative Checklist
o Monitor Colorectal Pre-operative, Intra-operative, and Post-Operative Checklist
o Implement Intra-operative observation of surgery practice technique on a weekly basis (Initial observation)
o Monitor observation of surgery practice technique on a quarterly basis
o Develop SWAT approach for surgical site infection prevention for the Colorectal Surgery Patients
o Implement SWAT approach for surgical site infection prevention
o Monitor SWAT cases monthly (Pending)

**Infection Control Report with only Colorectal Surgeons**

- Develop and Implement use of Infection Control Report for only Colorectal Surgeons
- Monitor use of Infection Control Report for only Colorectal Surgeons

**OR (Operating Room) Traffic Reduction**

- Post Traffic Control Signs
- Change Doctor Preference Cards to decrease number of times staff move in & out of rooms
- Limit A.M. Breaks by Nursing and Anesthesiology
- Monitor Traffic Flow in all Operating Rooms Performing Colorectal Surgeries

**Operating Room Cleaning and Organization**

- Implement the Lean 5s System in each Operating Room
- Monitor Operating Room cleaning and organization quarterly

**Instrumentation Initiative**

- Observation of Surgical Instrumentation for Sterility: Initial Observation followed by Quarterly Observation

**Foley Catheter Initiative**

- All Colorectal Patient have Foley Catheters inserted at the beginning of surgical procedure and all Foley Catheters remain in place either 24 hours or 48 hours post operatively per Colorectal Post Operative standardized order sets.

**OR Attire Initiative**

- Educate all staff and physicians on the OR Attire Policy
- Monitor OR Attire Policy Compliance for all Colorectal Surgical Patients

**Surgical Site Infection Process and Outcome Monitoring Bundle**

- Monitor Antibiotic Administration for all Colorectal Surgical Patients
- Monitor Antibiotic Redosing for all Colorectal Surgical Patients
- Monitor Antibiotic Choice for all Colorectal Surgical Patients
- Monitor Glucose for all Colorectal Surgical Patients
- Monitor Normothermia for all Colorectal Surgical Patients
- Monitor Hair Removal for all Colorectal Surgical Patients
- Monitor Hand Washing for all Colorectal Surgical Patients
- Monitor Sterile Procedure Hand Scrub Protocol for all Colorectal Surgical Patients
  - Education for New Residents on Hand Washing and Surgical Scrub Protocol
- Monitor Veritas Reports: Break in Practice for all Colorectal Surgical Patients
- Monitor Instrument Flashing for all Colorectal Surgical Patients
- Monitor Foley Insertion for all Colorectal Surgical Patients
- Monitor Line Insertion Data for all Colorectal Surgical Patients

Tools, Order Sets and Timelines for Colorectal Initiative:
1. Colorectal Surgery-Surgical SSI Prevention Project Plan
2. Standardized Bowel Prep Instructions
3. Maintenance Of Sterile Field - Bowel Technique Competency Assessment
4. ChloraPrep Surgical Prep Application Competency Assessment
6. Colorectal Preop Skin prep order
7. Observer Audit tool
8. OR Door Sign - OR Traffic Reduction
9. Vanderbilt Colon and Rectal Surgery Incentive Spirometer teaching tools
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
<th>Resource Names</th>
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<tbody>
<tr>
<td>1</td>
<td>Colorectal Wound Infection Project</td>
<td>482.25 days?</td>
<td>Thu 9/11/08</td>
<td>Mon 7/19/10</td>
<td>Cindy Brown, Dr. Alan Herline</td>
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<tr>
<td>2</td>
<td>Team Forming Activities</td>
<td>327 days</td>
<td>Wed 10/1/08</td>
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<td>3</td>
<td>Implement Dedicated Core Colorectal Surgical Team</td>
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<td>Wed 10/1/08</td>
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<td>4</td>
<td>Collaborate with Michigan University via email correspondence</td>
<td>6 mons</td>
<td>Wed 10/1/08</td>
<td>Tue 3/17/09</td>
<td>Cindy Brown, Lorrie Ingram</td>
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<td>5</td>
<td>Evaluate Task Force Outcomes &amp; Report to Periop Exec</td>
<td>216 days</td>
<td>Thu 3/5/09</td>
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<td>Infection Control Practices-Aseptic Technique Practices Standardization</td>
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<td>Thu 9/11/08</td>
<td>Mon 7/19/10</td>
<td></td>
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<td>7</td>
<td>Request new scrub sinks and dispensers</td>
<td>31 days</td>
<td>Thu 3/19/09</td>
<td>Thu 4/30/09</td>
<td>Cindy Brown</td>
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<tr>
<td>8</td>
<td>Implement Competency Assessment for Bowel Technique: Isolation Protocol</td>
<td>68 days</td>
<td>Wed 10/1/08</td>
<td>Fri 1/2/09</td>
<td>Emily Coleman, Rachael Poff, Ann Benco, Cindy Garcia</td>
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<td>9</td>
<td>Pilot Isolation Protocol Tuesday and Wednesday of April 20th Week - Phase I</td>
<td>3 days</td>
<td>Tue 4/28/09</td>
<td>Thu 4/30/09</td>
<td>Peggy Tibbs (Scrub Nurse), Dr. Alan Herline, Cindy Garcia, Ann Benco</td>
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<tr>
<td>10</td>
<td>Pilot Isolation Protocol Tuesday and Wednesday of April 20th Week - Phase II</td>
<td>3 days</td>
<td>Tue 4/28/09</td>
<td>Thu 4/30/09</td>
<td>Peggy Tibbs (Scrub Nurse), Dr. Alan Herline, Cindy Garcia, Ann Benco</td>
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<td>11</td>
<td>Stop Pilot Isolation Phase II</td>
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<td>Thu 4/30/09</td>
<td>Peggy Tibbs (Scrub Nurse), Dr. Alan Herline, Cindy Garcia, Ann Benco</td>
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<tr>
<td>12</td>
<td>Continue Pilot Isolation Protocol Phase I - Towel or Bucket</td>
<td>11 days</td>
<td>Thu 4/30/09</td>
<td>Thu 5/14/09</td>
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<td>Start</td>
<td>Finish</td>
<td>Resource Names</td>
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<td>Implement Isolation Protocol for Open Cases</td>
<td>23 days</td>
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<td>14</td>
<td>Add Isolation Protocol to Colorectal Pathway</td>
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<td>Fri 5/29/09</td>
<td>Dana Johnson, Dr. Alan Herline, Cindy Brown</td>
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<td>15</td>
<td>Standardize Chloraprep Application</td>
<td>3 days</td>
<td>Mon 4/13/09</td>
<td>Thu 4/16/09</td>
<td>Audrey Kuntz, Charge Nurses, Perioperative Educators</td>
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<td>16</td>
<td>Pilot Chloraprep Application</td>
<td>10 days</td>
<td>Thu 4/16/09</td>
<td>Wed 4/29/09</td>
<td>Peggy Tibbs (Scrub Nurse), Emily Coleman, Cindy Garcia</td>
</tr>
<tr>
<td>17</td>
<td>Approve Chloraprep</td>
<td>12 days</td>
<td>Wed 4/29/09</td>
<td>Thu 5/14/09</td>
<td>Audrey Kuntz, Ann Benco, Beth Keith, Cindy Brown, Cindy Garcia, Dr. Alan Herline, Emily Coleman, Derrick McLean, Lorrie Ingram, Rachael Poff, Peggy Tibbs (Scrub Nurse)</td>
</tr>
<tr>
<td>18</td>
<td>Implement Chloraprep Application Competency</td>
<td>130 days</td>
<td>Mon 11/3/08</td>
<td>Fri 5/1/09</td>
<td>Emily Coleman</td>
</tr>
<tr>
<td>19</td>
<td>Forward the Recommendation to Implement the Chloraprep Surgical Prep across the Perioperative Enterprise to the Surgical Site Infection Prevention Collaborative</td>
<td>14 days</td>
<td>Thu 5/14/09</td>
<td>Tue 6/2/09</td>
<td>Cindy Brown</td>
</tr>
<tr>
<td>20</td>
<td>Develop Infection Control Report with only Colorectal Surgeons</td>
<td>2.8 months</td>
<td>Thu 10/2/08</td>
<td>Thu 12/18/08</td>
<td>Tom Talbot, Lorrie Ingram, Brian Nelson</td>
</tr>
<tr>
<td>21</td>
<td>Implement use of Infection Control Report with only Colorectal Surgeons</td>
<td>152 days</td>
<td>Thu 10/2/08</td>
<td>Fri 5/1/09</td>
<td>Dr. Alan Herline, Cindy Brown, Lorrie Ingram</td>
</tr>
<tr>
<td>22</td>
<td>Monitor use of Infection Control Report with only Colorectal Surgeons</td>
<td>176 days</td>
<td>Fri 5/1/09</td>
<td>Fri 1/1/10</td>
<td>Cindy Brown, Dr. Alan Herline, Rachael Poff, Safety Officer, Lorrie Ingram</td>
</tr>
<tr>
<td>ID</td>
<td>Task Name</td>
<td>Duration</td>
<td>Start</td>
<td>Finish</td>
<td>Resource Names</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------------</td>
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<td>-------------------------------------</td>
</tr>
<tr>
<td>23</td>
<td>Implement Reduction in OR Traffic Flow in all OR Performing Colorectal Surgeries</td>
<td>332 days</td>
<td>Wed 10/1/08</td>
<td>Thu 1/7/10</td>
<td>Rachael Poff, Val Moralde, Charge Nurses</td>
</tr>
<tr>
<td>24</td>
<td>Post Traffic Control Signs</td>
<td>89 days</td>
<td>Wed 10/1/08</td>
<td>Mon 2/2/09</td>
<td>Rachael Poff</td>
</tr>
<tr>
<td>25</td>
<td>Change Doctor Preference Cards to decrease number of times staff move in &amp; out of OR rooms</td>
<td>34 days</td>
<td>Mon 3/2/09</td>
<td>Thu 4/16/09</td>
<td>Rachael Poff</td>
</tr>
<tr>
<td>26</td>
<td>Standardize Staff for Each Case Type</td>
<td>34 days</td>
<td>Mon 3/2/09</td>
<td>Thu 4/16/09</td>
<td>Rachael Poff</td>
</tr>
<tr>
<td>27</td>
<td>Limit A.M. Breaks</td>
<td>34 days</td>
<td>Mon 3/2/09</td>
<td>Thu 4/16/09</td>
<td>Rachael Poff</td>
</tr>
<tr>
<td>28</td>
<td>Monitor Traffic Flow in all OR Performing Colorectal Surgeries</td>
<td>332 days</td>
<td>Wed 10/1/08</td>
<td>Thu 1/7/10</td>
<td>Rachael Poff, Charge Nurses</td>
</tr>
<tr>
<td>29</td>
<td>Monitor OR Cleaning for all Colorectal Surgical Patients</td>
<td>367 days</td>
<td>Wed 10/1/08</td>
<td>Thu 2/25/10</td>
<td>Val Moralde</td>
</tr>
<tr>
<td>30</td>
<td>Develop Colorectal Pre-Operative, Intra-operative, and Post-operative Checklist and Process</td>
<td>30 days</td>
<td>Mon 3/2/09</td>
<td>Thu 4/30/09</td>
<td>Cindy Brown, Rachael Poff, Beth Keith, Emily Coleman</td>
</tr>
<tr>
<td>31</td>
<td>Implement Colorectal Pre-operative, Intra-operative, and Post-Operative Checklist</td>
<td>23 days</td>
<td>Thu 4/30/09</td>
<td>Mon 6/1/09</td>
<td>Cindy Brown, Rachael Poff, Beth Keith, Emily Coleman</td>
</tr>
<tr>
<td>32</td>
<td>Monitor Colorectal Pre-operative, Intra-operative, and Post-Operative Checklist</td>
<td>360.25 days</td>
<td>Mon 7/19/10</td>
<td>Thu 6/25/09</td>
<td>Cindy Brown, Rachael Poff, Beth Keith, Emily Coleman</td>
</tr>
<tr>
<td>33</td>
<td>Implement the Lean 5s System in each OR</td>
<td>31 days</td>
<td>Thu 5/14/09</td>
<td>Thu 6/25/09</td>
<td>Cindy Brown, Susie Leming-Lee</td>
</tr>
<tr>
<td>34</td>
<td>Implement intraoperative observation of surgery practice technique on a weekly basis</td>
<td>259 days</td>
<td>Mon 1/5/09</td>
<td>Thu 12/31/09</td>
<td>Cindy Brown, Audrey Kunz, Perioperative Educators</td>
</tr>
<tr>
<td>35</td>
<td>Monitor observation of surgery practice technique on a weekly basis</td>
<td>259 days</td>
<td>Mon 1/5/09</td>
<td>Thu 12/31/09</td>
<td>Ann Benco, Cindy Garcia</td>
</tr>
<tr>
<td>36</td>
<td>Observation of Surgical Instrumentation for Sterility</td>
<td>5 days</td>
<td>Mon 1/5/09</td>
<td>Thu 4/30/09</td>
<td>Ann Benco, Cindy Garcia</td>
</tr>
<tr>
<td>ID</td>
<td>Task Name</td>
<td>Duration</td>
<td>Start</td>
<td>Finish</td>
<td>Resource Names</td>
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<td>---------------------------------------</td>
</tr>
<tr>
<td>37</td>
<td>Develop SWAT approach for surgical site infection prevention for the Colorectal Surgery Patients</td>
<td>217 days?</td>
<td>Thu 11/6/08</td>
<td>Fri 9/4/09</td>
<td>Lorrie Ingram, Cindy Brown, Susie Leming-Lee</td>
</tr>
<tr>
<td>38</td>
<td>Implement SWAT approach for surgical site infection prevention</td>
<td>35 days</td>
<td>Thu 11/6/08</td>
<td>Wed 12/24/08</td>
<td>Cindy Brown, Lorrie Ingram, Brian Nelsen</td>
</tr>
<tr>
<td>40</td>
<td>Add: Debrief to SWAT Surgical Checklist</td>
<td>3.67 days</td>
<td>Thu 5/14/09</td>
<td>Tue 5/19/09</td>
<td>Derrick McLean, Cindy Brown, Susie Leming-Lee</td>
</tr>
<tr>
<td>41</td>
<td>Approve SWAT Surgical Checklist</td>
<td>103 days</td>
<td>Thu 1/8/09</td>
<td>Thu 5/28/09</td>
<td>Colorectal Task Force Members</td>
</tr>
<tr>
<td>42</td>
<td>Implement SWAT Surgical Checklist</td>
<td>34 days</td>
<td>Mon 4/13/09</td>
<td>Thu 5/28/09</td>
<td>Derrick McLean, Rachael Poff, Cindy Brown</td>
</tr>
<tr>
<td>43</td>
<td>Monitor SWAT cases monthly</td>
<td>183 days</td>
<td>Wed 12/24/08</td>
<td>Fri 9/4/09</td>
<td>Dr. Alan Herline, Cindy Brown, Lorrie Ingram, Brian Nelsen</td>
</tr>
<tr>
<td>44</td>
<td>Implement Foley catheter placement questions in the Intraoperative phase of care 1) At Insertion of Foley catheter? 2) Observed aseptic technique in the insertion of Foley catheter, 3) at end of case, &quot;remove Foley catheter?&quot;</td>
<td>195 days</td>
<td>Wed 10/1/08</td>
<td>Tue 6/30/09</td>
<td>Cindy Brown, Dr. Alan Herline, OR Staff Nurse, Charge Nurses, Rachael Poff</td>
</tr>
<tr>
<td>45</td>
<td>Educate all staff and physicians on the OR Attire Policy</td>
<td>195 days</td>
<td>Wed 10/1/08</td>
<td>Tue 6/30/09</td>
<td>Rachael Poff, Jodie Thomas</td>
</tr>
<tr>
<td>46</td>
<td>Monitor OR Attire Policy Compliance for all Colorectal Surgical Patients</td>
<td>195 days</td>
<td>Wed 10/1/08</td>
<td>Tue 6/30/09</td>
<td>Cindy Brown, Rachael Poff</td>
</tr>
<tr>
<td>47</td>
<td>Sage Wipe and Other At Home Prep</td>
<td>115.67 days</td>
<td>Fri 10/10/08</td>
<td>Fri 3/20/09</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Develop Nursing Education for Sage Wipes</td>
<td>0.78 mons</td>
<td>Fri 10/10/08</td>
<td>Fri 10/31/08</td>
<td>Perioperative Educators, Cindy Brown, Rachael Poff</td>
</tr>
<tr>
<td>49</td>
<td>Implement Sage Wipe Education</td>
<td>0.55 mons</td>
<td>Fri 10/31/08</td>
<td>Fri 3/20/09</td>
<td>Audrey Kuntz, Perioperative Educators</td>
</tr>
</tbody>
</table>

**Aim:** To reduce colorectal surgical infections

Project: COLORECTAL SURGERY- S
Date: Fri 8/28/09

**Project Summary:**

- **Task Progress:**
- **Summary:**
- **External Tasks:**
- **Deadline:**

**Page 4**
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
<th>Resource Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Implement Sage Wipes - Distribute to Patients</td>
<td>0 mons</td>
<td>Fri 10/31/08</td>
<td>Fri 10/31/08</td>
<td>Cindy Brown, Clinic Office Staff</td>
</tr>
<tr>
<td>51</td>
<td>Add antibacterial soap (Dial) in each patient Responsibility packet</td>
<td>21 days</td>
<td>Thu 11/20/08</td>
<td>Thu 12/18/08</td>
<td>Clinic Office Staff, Jodie Thomas</td>
</tr>
<tr>
<td>52</td>
<td>Surgical Site Infection Bundle</td>
<td>346 days</td>
<td>Thu 9/11/08</td>
<td>Thu 1/7/10</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Monitor Antibiotic Administration for all Colorectal Surgical Patients</td>
<td>326 days</td>
<td>Thu 10/9/08</td>
<td>Thu 1/7/10</td>
<td>Lorraine Ingram, Brian Nelsen, Cindy Brown, Dr. Alan Herline</td>
</tr>
<tr>
<td>54</td>
<td>Monitor Antibiotic Redosing for all Colorectal Surgical Patients</td>
<td>326 days</td>
<td>Thu 10/9/08</td>
<td>Thu 1/7/10</td>
<td>Lorraine Ingram, Brian Nelsen, Cindy Brown, Dr. Alan Herline</td>
</tr>
<tr>
<td>55</td>
<td>Monitor Antibiotic Choice for all Colorectal Surgical Patients</td>
<td>326 days</td>
<td>Thu 10/9/08</td>
<td>Thu 1/7/10</td>
<td>Lorraine Ingram, Brian Nelsen, Cindy Brown, Dr. Alan Herline</td>
</tr>
<tr>
<td>56</td>
<td>Monitor Glucose for all Colorectal Surgical Patients</td>
<td>326 days</td>
<td>Thu 10/9/08</td>
<td>Thu 1/7/10</td>
<td>Lorraine Ingram, Brian Nelsen, Cindy Brown, Dr. Alan Herline</td>
</tr>
<tr>
<td>57</td>
<td>Monitor Normothermia for all Colorectal Surgical Patients</td>
<td>326 days</td>
<td>Thu 10/9/08</td>
<td>Thu 1/7/10</td>
<td>Lorraine Ingram, Brian Nelsen, Cindy Brown, Dr. Alan Herline</td>
</tr>
<tr>
<td>58</td>
<td>Monitor Hair Removal for all Colorectal Surgical Patients</td>
<td>326 days</td>
<td>Thu 10/9/08</td>
<td>Thu 1/7/10</td>
<td>Lorraine Ingram, Brian Nelsen, Cindy Brown, Dr. Alan Herline</td>
</tr>
<tr>
<td>59</td>
<td>Monitor Hand Washing for all Colorectal Surgical Patients</td>
<td>247 days</td>
<td>Wed 10/1/08</td>
<td>Thu 9/10/09</td>
<td>Cindy Brown, Rachael Poff, Val Moralde</td>
</tr>
<tr>
<td>60</td>
<td>Monitor Sterile Procedure Hand Scrub Protocol for all Colorectal Surgical Patients</td>
<td>221 days</td>
<td>Thu 11/6/08</td>
<td>Thu 9/10/09</td>
<td>Val Moralde</td>
</tr>
<tr>
<td>61</td>
<td>Education for New Residents on Hand Washing and Surgical Scrub Protocol</td>
<td>22 days</td>
<td>Wed 12/3/08</td>
<td>Thu 1/13/09</td>
<td>Perioperative Educators, Audrey Kuntz</td>
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<tr>
<td>62</td>
<td>Monitor Veritas Reports - Break in Practice for all Colorectal Surgical Patients</td>
<td>221 days</td>
<td>Thu 11/6/08</td>
<td>Thu 9/10/09</td>
<td>Cindy Brown, Audrey Kuntz, Rachael Poff</td>
</tr>
<tr>
<td>ID</td>
<td>Task Name</td>
<td>Duration</td>
<td>Start</td>
<td>Finish</td>
<td>Resource Names</td>
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<tr>
<td>63</td>
<td>Monitor Instrument Flashing for all Colorectal Surgical Patients</td>
<td>221 days</td>
<td>Thu 11/6/08</td>
<td>Thu 9/10/09</td>
<td>Mike Hughes</td>
</tr>
<tr>
<td>64</td>
<td>Monitor Foley Insertion for all Colorectal Surgical Patients</td>
<td>221 days</td>
<td>Thu 9/11/08</td>
<td>Thu 7/16/09</td>
<td>Rachael Poff, Cindy Brown</td>
</tr>
<tr>
<td>65</td>
<td>Monitor Line Insertion Data for all Colorectal Surgical Patients?</td>
<td>166 days</td>
<td>Thu 11/27/08</td>
<td>Thu 7/16/09</td>
<td>Lorrie Ingram, Tom Talbot</td>
</tr>
<tr>
<td>66</td>
<td>Standardization of Administrative Practices</td>
<td>166 days</td>
<td>Thu 11/27/08</td>
<td>Thu 7/16/09</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Implement Colorectal Patient Clinic Patient Responsibility Form</td>
<td>6.45 mons</td>
<td>Mon 12/1/08</td>
<td>Thu 5/28/09</td>
<td>Cindy Brown, Clinic Office Staff</td>
</tr>
<tr>
<td>68</td>
<td>Implement a specific &quot;coder&quot; for Colorectal surgery</td>
<td>8.3 mons</td>
<td>Thu 11/27/08</td>
<td>Thu 7/16/09</td>
<td>Clinic Office Staff, Cindy Brown, Dr. Alan Herline, Vicki Brinsko</td>
</tr>
<tr>
<td>69</td>
<td>Protocols &amp; Order sets-EBM</td>
<td>181 days</td>
<td>Thu 11/6/08</td>
<td>Thu 7/16/09</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Develop Colorectal EBM Protocol/Order sets (Clipping has been added to the order set and shaving removed)</td>
<td>181 days</td>
<td>Thu 11/6/08</td>
<td>Thu 7/16/09</td>
<td>Shari Just, Cindy Brown, Dr. Alan Herline, Beth Keith, Dana Johnson</td>
</tr>
<tr>
<td>71</td>
<td>Integrate Colorectal Proctocol with Home Care Instructions</td>
<td>181 days</td>
<td>Thu 11/6/08</td>
<td>Thu 7/16/09</td>
<td>Dana Johnson</td>
</tr>
<tr>
<td>72</td>
<td>Train Team on Colorectal EBM Protocols &amp; Order sets</td>
<td>22 days</td>
<td>Thu 12/4/08</td>
<td>Fri 1/2/09</td>
<td>Perioperative Educators, Clinic Office Staff</td>
</tr>
</tbody>
</table>
Bowel Preparation Instructions

Purpose: To cleanse the bowel before surgery. This will promote healing and help to prevent infection after your surgery.

_______ Clear liquid diet

You will be on a clear liquid diet the day before surgery. Examples of clear liquids are: water, tea, coffee (no cream or milk), clear broths, carbonated beverages, fruit juices without pulp, ginger ale, popsicles, Gatorade/sports drinks and jello. Red clear liquids are allowed.

Begin your clear liquid diet on _______________________. Stay on this diet until midnight and then **nothing to eat or drink after midnight**. Be sure to drink plenty of fluids to prevent dehydration.

_______ Magnesium Citrate

Take one bottle of Magnesium Citrate around 5:00pm on the evening of __________________. You can get this over the counter at any pharmacy, it will be in the laxative section and usually comes in a green glass bottle.

_______ Fleets enema(s)

You will need to do one Fleets (saline) enema at the following times: __________________. This is also found over the counter in the laxative section of the pharmacy.

Please call 615-322-2063 and then use option 4 for any questions concerning this bowel preparation.
### Perioperative Services Competency Assessment - Vanderbilt University Medical Center

<table>
<thead>
<tr>
<th>Required Competency or Skill:</th>
<th>For each required competency/skill the Orientee will complete a pre-clinical self assessment.</th>
<th>Self Assessment</th>
<th>Preceptor Validation</th>
<th>Interpretation</th>
<th>Rational</th>
<th>Self Assess Score</th>
<th>Preceptor Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bowel Technique</strong></td>
<td>In the Clinical area the Preceptor will validate the required competency/skill + method used.</td>
<td><strong>1= Experienced</strong>&lt;br&gt;<strong>2= Needs Practice/Assistance</strong>&lt;br&gt;<strong>3= Never Done</strong>&lt;br&gt;<strong>NA= Not Applicable</strong></td>
<td><strong>D= Return Demonstration</strong>&lt;br&gt;<strong>V= Verbal Understanding</strong>&lt;br&gt;<strong>O= Observation</strong></td>
<td><strong>1. Prepare large basin for instruments, suture, equipment, and sponges for use during bowel anastomosis.</strong>&lt;br&gt;<strong>i. towels x 2, needle book, bowel stapler, needle holder x 2, debakey x 2, curved mayo, new suction tip, allis x 3, sponge stick x 1.</strong></td>
<td><strong>1. Isolation of instruments, suture, equipment, and sponges which crush, sever or are used within organs contain resident bacteria or chemicals and enzymes destructive to tissue.</strong></td>
<td></td>
<td><strong>Initials + Eval Method</strong></td>
</tr>
<tr>
<td>A. Demonstrates case preparation for bowel isolation technique</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Demonstrates bowel isolation technique</td>
<td>1. Prior to anastomosis, drape area where surgeon places instruments and wound with towels.&lt;br&gt;2. Place a towel over mayo stand.&lt;br&gt;3. Place new needle book, 2 needle drivers, debakey x 2, and suture scissors on mayo.&lt;br&gt;4. Have large basin available for grossly contaminated instruments/stapler/specimen.&lt;br&gt;5. Do not place contaminated instruments on back table.&lt;br&gt;6. Place all needles on isolation needle book from the beginning of the anastomosis until completed.&lt;br&gt;7. Upon completion of final anastomosis, remove all dirty towels.&lt;br&gt;8. Pass off large isolation basin.&lt;br&gt;9. Scrub changes gloves.&lt;br&gt;10. Scrub will assist with re-gowning/gloving all other scrub team members (attending, resident and students).</td>
<td>1. All items used during bowel anastomosis are contaminated with resident bacteria, chemicals and/or enzymes.</td>
<td></td>
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</tr>
</tbody>
</table>

I have successfully demonstrated the competency in the area indicated as stated in the above criteria and understand that I am accountable for applying the above criteria to clinical practice.

Employee Signature: ____________________________ Date: ________________

Employee has successfully demonstrated the competency in the area indicated as stated in the above criteria in the Classroom.

Educator Signature: ____________________________ Date: ________________ Method of Evaluation for above criteria:________

Employee has successfully demonstrated the competency in the area indicated as stated in the above criteria in the Clinical Setting.

Preceptor Signature: ____________________________ Initials: _________ Date: ________________

Preceptor Signature: ____________________________ Initials: _________ Date: ________________
### Perioperative Services Competency Assessment - Vanderbilt University Medical Center

**Required Competency or Skill:** ChloraPrep Application

**For each required competency/skill the Orientee will complete a pre-clinical self assessment.**

**In the Clinical area the Preceptor will validate the required competency/skill + method used.**

<table>
<thead>
<tr>
<th>Interpretation</th>
<th>Rational</th>
<th>Self Assessment</th>
<th>Preceptor Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Demonstrates sterile application of ChloraPrep</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Scrub sets up prep stand with ½ sheet, 4 sterile towels, ChloraPrep Applicators with 4 cotton swabs. (If osteomy present- add small basin with betadine or technicare if allergic to betadine, 4 X 4s) <strong>OR</strong> agrees to hand off towels and applicators to circulator.</td>
<td>Provides sterile field for prep components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Ask anesthesia provider to lower OR bed to lowest position.</td>
<td>Chloraprep cannot be used on mucus membranes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Circulator dons sterile gloves (double glove if osteomy is present).</td>
<td>Provide sterile barrier between circulator and patient and defines area to be prepped.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Towel off site to be prepped by placing sterile towels. Tuck towel over gloved fingers to prevent contaminating sterile gloves.</td>
<td>Preserve skin integrity and prevents skin injury.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. If osteomy is present – dip 4 X 4 in alternate solution – place over osteomy.</td>
<td>Releases solution inside applicator.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Place sterile towel over osteomy. Remove top pair of gloves.</td>
<td>Application per manufacturer’s guidelines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Abdomen (First ChloraPrep Applicator):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Hold cotton swabs to sponge to load with prep solution.</td>
<td>Alcohol and alcohol-based preparations may cause fires if not allowed to dry before applying drapes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. Gently press applicator against treatment area to evenly distribute solution throughout the sponge.</td>
<td>Peeling towels away from the surgical site with two hands prevents towel edges from contaminating prep site.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. Once solution is visible on the skin, use a back-and-forth motion to prep the incision site for at least 30 seconds.</td>
<td></td>
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</tr>
<tr>
<td>v. Continue to work outward to the peripheral areas in a circular motion.</td>
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</tr>
<tr>
<td>vi. Discard first applicator.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>vii. If osteomy present, remove towel/sponge, prep osteomy site with clean solution soaked 4 X 4 from outside to inside. (clean to dirty)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Perineal Area (Second ChloraPrep Applicator):</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>i. Hold ChloraPrep applicator and pinch lever until ampules break.</td>
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</tr>
<tr>
<td>ii. Gently press applicator against treatment area to evenly distribute solution throughout the sponge</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iii. Use a back-and-forth motion to prep the pfannenstiel incision site.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>iv. Prep each thigh in a back-and-forth motion.</td>
<td></td>
<td></td>
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<tr>
<td>v. Prep pubis in a back-and-forth motion to labia on females and penis on males.</td>
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<tr>
<td>11. Remove towels in reverse order of placement by grasping towel with two hands and peeling away from prep site.</td>
<td></td>
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<tr>
<td>12. Allow to air-dry before draping.</td>
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<tr>
<td>13. Do not blot or wipe away. Discard applicator.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14. Prep ostomy</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

I have successfully demonstrated the competency in the area indicated as stated in the above criteria and understand that I am accountable for applying the above criteria to clinical practice.

Employee Signature: ____________________ Date: __________

Employee has successfully demonstrated the competency in the area indicated as stated in the above criteria in the Classroom.

Educator Signature: ____________________ Date: __________ Method of Evaluation for above criteria: __________

Employee has successfully demonstrated the competency in the area indicated as stated in the above criteria in the Clinical Setting.

Preceptor Signature: ____________________ Initials: __________ Date: __________

Preceptor Signature: ____________________ Initials: __________ Date: __________

© VUMC Perioperative Services 0309- Intraoperative Practice
© Evaluation/Validation Methodologies: D = Return Demonstration V = Verbal O = Direct Observation
Areas for Chloraprep Applicator Use

1st Applicator

2nd Applicator

Option - set up prep stand **OR**
- scrub hands off to circulator

Walk around table to place towel # 2.
Vanderbilt University Hospital
Checklist for Prevention of Surgical Site Infections
**COLORECTAL**

*Working Document* version 02/10/2009

Applies to: Patients undergoing colorectal surgery; Pre-surgery Care Units; VUH Operating Rooms.

Instructions: Respond to each question by checking the appropriate box as it relates to this case. Where applicable, note comments.

**DATE:** ___/___/2009     **Case ID:** ____________     **Patient Status:** ☐EMA ☐Inpatient

<table>
<thead>
<tr>
<th>CHARACTERISTICS: <strong>HOLDING ROOM PHASE</strong></th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-OPERATIVE:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Contract returned DOS?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Clear liquid diet day before surgery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium Citrate taken night before surgery</td>
<td></td>
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</tr>
<tr>
<td>Use an enema night before surgery and the morning of surgery. <em>(verbally verified)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Shower night before surgery with Dial soap <em>(verbally verified)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use 2 packages of 2% Sage wipes after shower. <em>(verbally verified)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Hair clipped per protocol and removed from patient and bed</td>
<td></td>
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<tr>
<td>Wipe down body using 3rd package of 2% Sage wipes.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5 Patient dons Bair Paws Temp controlled gown.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHARACTERISTICS: <strong>OPERATING ROOM PHASE</strong></th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Room Preparation:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Have any additional equipment and supplies already in room prior to start of procedure.</td>
<td></td>
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</tr>
<tr>
<td>7 Room temp is elevated and remains elevated until patient is anesthetized (68°-73° F)</td>
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<tr>
<td>Record in room time and temperature.</td>
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</tbody>
</table>

In room Time: Room Temp (F):
### Patient Skin Prep:

<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
</table>
| 8 | Two Chloraprep applicators should be used on abdominal cases.  
Two sterile towels are used to towel out area to be prepped. |   |   |
| 9 | Prep stick and cotton tip applicators should be used per manufacturer’s recommendations. |   |   |
| 10 | Chloraprep is to remain on the skin post-op. |   |   |
| 11 | Betadine paint (only) is used on the rectal area, unless surgeon request a betadine scrub prior to paint.  
If patient is allergic to betadine, Technicare should be used. |   |   |

### CHARACTERISTICS: OPERATING ROOM PHASE

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Antimicrobial Prophylaxis:</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>
| 12 | Cefoxitin 2gm or Metronidazole given as ordered (unless contraindicated) 30 minutes prior to incision. Re-dose q3h if skin still open.  
Record time of 1st dose  
Record time of re-dose |   |   |   |   |
| Operating Room Environment: |   |   |   |
| 13 | Verbally verify if Foley catheter needs to be inserted.  
If inserted, by whom; aseptic technique followed?  
After positioning, upper body Bair Hugger is placed and left on patient throughout surgical procedure to control body temperature. |   |   | Initials: |
| 14 | Operating room doors kept closed except as needed for passage of equipment, personnel and the patient. |   |   |
| 15 | Personnel entering the operating room are limited to only necessary personnel. |   |   |
Vanderbilt University Hospital
Checklist for Prevention of Surgical Site Infections
**COLORECTAL**

<table>
<thead>
<tr>
<th>CHARACTERISTICS: OPERATING ROOM PHASE</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sterilization of Surgical Instruments:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Unit-based sterilization performed only for patient care items that will be used immediately. (unit based sterilization is not to be used for convenience)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of instruments &quot;unit sterilized&quot;:</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Surgical attire:</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>17 Surgical mask worn to cover the mouth and nose when entering the operating room if an operation is about to begin or is already underway or if sterile instruments are exposed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Cap or hood worn to fully cover hair on the head and face when entering the operating room. No long sleeved shirts or outside jackets worn in OR Bags brought into the operating suite are to be placed in a plastic bag prior to entering in the operating room</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Asepsis and Surgical Technique:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 A scope warmer should be used to keep irrigation warm for all colorectal cases</td>
<td></td>
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</tr>
<tr>
<td>20 Prior to GI tract opened: Re drape the affected area with sterile towels. Cover mayo stand with sterile towels to reduce cross-contamination. Prepare large blue basin for isolation of instruments and supplies needed for the anastomosis.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
**Vanderbilt University Hospital**  
**Checklist for Prevention of Surgical Site Infections**  
**COLORECTAL**

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<th>COMMENTS</th>
</tr>
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<tbody>
<tr>
<td><strong>Asepsis and Surgical Technique:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>After GI tract closure: All instruments and supplies used during the anastamosis should be placed in the blue basin and passed off field after bowel tract is closed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>The surgical team will re-gown and glove after bowel tract is closed and anastamosis is finished.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHARACTERISTICS: PACU PHASE</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Record arrival time to PACU and body temp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Bair Paws gown worn and turned on.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Does Foley catheter need to be removed?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature (auditor): ____________________________ Date: ___/___/_____
**CRS Preop Skin Prep**

Last modified: 2009-01-23 09:53:19

**Faculty Owners: Dr A. Herline, Dr R. Muldoon, Dr P. Wise**

- **1. NURSING:** (Colorectal Surgery Skin Prep- night before surgery) Patient should shower or have a bed bath. Wash hair with shampoo until it is clean. Then wash entire body with soap.
- **+ NURSING:** (Colorectal Surgery Skin Prep- night before surgery) Wait until skin is completely dry before using cloths (about 1 hour). Do not use lotions, deodorants, powder, perfume, after-shave or creams after your shower.
- **+ NURSING:** (Colorectal Surgery Skin Prep - night before surgery) Open clear outer plastic wrap of the SAGE 2% chlorhexidine cloths. DO NOT use the Chlorhexidine cloths on the patient's eyes, face, ears, mouth or any vaginal mucosa area.
- **+ NURSING:** (Colorectal Surgery Skin Prep - night before surgery) Be sure to rub sage2% chlorhexidine cloths firmly, applying pressure to skin. Cloth #1: Apply to chest and upper stomach (to navel area/belly button).
- **+ NURSING:** (Colorectal surgery skin prep-night before surgery) Cloth #2: Apply to lower stomach and groin area (below belly button to upper thighs). Be sure to rub the cloth between any folds of skin on stomach and inguinal folds.
- **+ NURSING:** (Colorectal Surgery Skin Prep- night before surgery) Cloth #3: Apply to buttocks/backside and perineum area. Not for internal use-external only. For men, apply to perineal and scrotal areas.
- **+ NURSING:** (Colorectal Surgery Skin Prep- night before surgery) Allow skin to dry for one minute. DO NOT RINSE. Skin may feel sticky for a short time while it dries.
- **+ NURSING:** (Colorectal Surgery Skin Prep- night before surgery) Document prep in HED under hygiene section of assess/intervention tab. Select "surgical Prep", check "Antimicrobial/scrub", then annotate "per CRS pre-op skin prep protocol"
- **+ NURSING:** (Colorectal Surgery Skin Prep- night before surgery) Apply bactroban antibiotic ointment as directed for patient's nose and document in MAR
- **+ NURSING:** (Colorectal Surgery Skin Prep - morning of surgery) Second skin prep to be done in holding room per protocol.
- **+ NURSING:** (Colorectal Surgery Skin Prep - morning of surgery) Apply bactroban to nose as directed and document on MAR
- **+ NURSING:** (Colorectal Surgery Skin Prep - morning of surgery) Document am prep in HED under hygiene section of assess/intervention tab. Select "surgical Prep", check "Antimicrobial/scrub' and annotate "per CRS pre-op skin prep protocol"
Instructions: Respond to each question by checking the appropriate box as it relates to this case.

**DATE:** ____/____/2009  **MR#:** _______________  **Surgeon:** _____________________

### CHARACTERISTICS: OPERATING ROOM PHASE

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Skin Prep:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Chloraprep is used on abdominal cases. Sterile towels are used to towel out area to be prepped. Umbilicus should be swabbed using sterile cotton tip applicators and Chloraprep solution. Prepping the abdomen should begin starting at umbilicus and working outward in a circular pattern just below the nipple line and down to the pubis, and to the top of the thighs. Chloraprep is to remain on the skin post-op. Betadine paint is used on the rectal area unless surgeon request a betadine scrub prior to paint. If patient is allergic to betadine, Technicare should be used.</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Surgical mask worn to cover the mouth and nose when entering the operating room if an operation is about to begin or is already underway or if sterile instruments are exposed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Cap or hood worn to fully cover hair on the head and face when entering the operating room.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>24</td>
<td>Scrubbed surgical team members wear sterile gloves. (gloves are put on after donning sterile gown)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Permeability of gowns and drapes is not compromised as evidenced by “strike through”.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>26</td>
<td>Scrub suits that are visibly soiled, contaminated, and or penetrated by blood or other potentially infectious materials are changed.</td>
<td></td>
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</tbody>
</table>

### Surgical attire and Drapes:

<p>| | |</p>
<table>
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</table>

### Asepsis and Surgical Technique:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>28</td>
<td>Prior to GI tract opened, the affected area will be re-draped with sterile towels. Mayo stand also will be re-draped with sterile towels to reduce cross-contamination.</td>
</tr>
<tr>
<td>29</td>
<td>Once GI tract is opened a flat tray is used to pass contaminated instruments, stapler, suture needles, etc.</td>
</tr>
<tr>
<td>30</td>
<td>A separate needle book should be used for contaminated needles and placed on flat tray</td>
</tr>
<tr>
<td>31</td>
<td>Instruments, extra needles, stapler, suction tip, etc used during the anastamosis should be placed on a flat tray and passed off field after bowel tract is closed.</td>
</tr>
<tr>
<td>32</td>
<td>The surgical team will re-gown and glove after bowel tract is closed and anastamosis is finished.</td>
</tr>
</tbody>
</table>

Signature (auditor): _____________________________________________  Date: ____/____/_____
Please draw and label a diagram of operating room layout, including entrance(s), OR table, back tables, mayo, anesthesia machine, equipment, staff etc.

Note if layout impacts transit within the room or other flow.

Comments:
Step-by-Step Observations - -What are you seeing? Be as descriptive as possible, targeting isolation portion(s) of the case.

1. 

2. 
Debriefing Notes:

**Team**
- What was done well - Best practices:

- Areas for improvement:

**Observers**
- What was done well - Best practices:

- Areas for improvement (breaks in technique etc):
ATTENTION ANESTHESIA STAFF
In order to minimize traffic in and out of this room please call the anesthesia provider at __________
before entering OR to check on breaks.
Thanks You!

ESSENTIAL STAFF ONLY
1. **Incentive Spirometer Use:**

**What is an incentive spirometer?**

An incentive spirometer or “IS” is a small hand held tool with a breathing tube and air chamber. It is used to measure your inspiratory volume. This means measuring how well you are filling your lungs with air with each breath.

**Why do I need to use an incentive spirometer?**

Deep breathing helps the alveoli (al-v-o-li) fully expand and fill like a balloon. Alveoli are small air sacs deep in your lungs. Normally, you take many breaths each hour and are not aware that you are doing this for the alveoli. These deep breaths are taken when you sigh or yawn.

Sometimes after surgery, your normal breathing pattern changes and you take more shallow breaths in an effort to lessen pain after the abdominal surgery. The IS helps you to take the slow deep breaths and expand the alveoli in order to prevent breathing problems such as pneumonia.

**How do I use the incentive spirometer correctly?**

It is very important to use the incentive spirometer correctly in order to help prevent breathing problems. The following steps tell you how to use your IS correctly:

1. Hold or stand the IS in an upright position
2. Breath out (exhale) normally. Then place your lips tightly around the mouthpiece.
3. Breath in slowly (inhale) to raise the ball or piston in the chamber. Continue inhaling and try to raise the top of the piston as high as possible. Pay attention to the level at which you are able to move the ball or piston and slide the pointer to the marking at that point after exhaling.
4. Exhale normally. After you exhale, you should occasionally cough as this will help to bring up secretions and clear them from your airway.

** You will need to complete this exercise **10 times every hour** while awake. Remember to do this even if you are awake during the night. As you are doing this, you will find you are able to move the ball or piston higher because you are able to breathe more deeply. Remember to adjust the pointer to where you are currently able to move the ball or piston. Set goals and always attempt to move the ball or piston higher than you were able to the previous times.

2. **Turn Cough and Deep Breath**

In addition to using the incentive spirometer, you will need to cough deeply and turn in bed every hour. Holding a pillow against your abdomen will help in decreasing the discomfort. If you are unable to turn in the bed by yourself, ask the nursing staff to assist you.

3. **Ambulating**

You will also be asked to get up into a chair on the evening of your surgery and to ambulate several times a day, beginning the day after surgery. This will help stimulate bowel activity, prevent respiratory complications, and prevent blood clots in your legs.

Thank you for actively partnering with us in the recovery process!
# Colorectal Preop Skin Prep Evidence

Prepared by Shari Just, RN, BSN  
EBM Office of Case Management  
January 2009

| Shaving: | C. RECOMMENDATIONS  
|---|---|
| Guideline for the prevention of Surgical Site infection, 1999 | 1. Preoperative  
a. Preparation of the patient  
1. Whenever possible, identify and treat all infections remote to the surgical site before elective operation and postpone elective operations on patients with remote site infections until the infection has resolved. *Category IA*  
2. Do not remove hair preoperatively unless the hair at or around the incision site will interfere with the operation. *Category IA*  
3. If hair is removed, remove immediately before the operation, preferably with electric clippers. *Category IA* |
Performance measure SCIP-Inf-6 or HQID-78: Percentage of eligible surgical patients 18 years or older with surgical site hair removal with clippers or depilatory or with no surgical site hair removal |

| Skin Prep: | C. RECOMMENDATIONS  
|---|---|
| Guideline for the prevention of Surgical Site Infection, 1999 | 1. Preoperative  
a. Preparation of the patient  
7. Require patients to shower or bathe with an antiseptic agent on at least the night before the operative day. *Category IB*  
See excerpts from guidelines regarding mechanism and spectrum of activity of antiseptic agents commonly used for Preoperative Skin preparation (next page) |
14. No recommendation to preoperatively apply mupirocin to nares to prevent SSI. *Unresolved issue* |

**Performance measure:**  
National Hospital Quality Measure by The Joint Commission (2008), National Hospital Quality Measure by the Centers for Medicare and Medicaid Services (CMS, 2008), Premier Hospital Quality Incentive Demonstration Measure by the CMS (2008).

**Summary**

**Using mupirocin ointment to reduce staphylococcus aureus infection rates in people who are nasal carriers of staphylococcus aureus.**

*Staphylococcus aureus* (*S. aureus*) is the main hospital acquired pathogen and although the focus has been on preventing cross-infection between patients, it has been shown that a large number of *S. aureus* infections start from the patient's own flora. Nasal carriage of *S. aureus* is a risk factor for infection in hospital patients and using a local antibiotic treatment of mupirocin ointment is often used to eradicate nasal *S. aureus*. It has been found that if people are nasal carriers of *S. aureus* then using mupirocin ointment reduces the level of *S. aureus* infections.

---

**Bowel prep:**


**Summary**

**Mechanical bowel preparation for elective colorectal surgery may not improve outcome for patients**

Until recently it was thought that vigorous preoperative mechanical cleansing of the bowel (mechanical bowel preparation), together with the use of oral antibiotics, reduced the risk of septic complications after non-emergency (elective) colorectal operations. Mechanical bowel preparation was performed routinely prior to colorectal surgery until 1972, when this procedure started to be questioned. Well designed clinical trials were published, and their results caused colorectal surgeons to doubt this traditional belief. Preoperative bowel preparation is time-consuming and expensive, unpleasant to the patients, and even dangerous on occasion (increased risk for inflammatory processes).

This review has identified all known trials that compared any kind of mechanical bowel preparation with no preparation in patients receiving elective colorectal surgery. Five new trials have been included in this second update of the review, bringing the total number of
included trials to 14 (4821 participants). Analysis of these 14 trials showed no statistically significant differences in how well the two groups of patients (mechanical bowel preparation group and the no preparation group) did after surgery in terms of leakage at the surgical join of the bowel, mortality rates, peritonitis, need for reoperation, wound infection, and other non-abdominal complications. Consequently, there is no evidence that mechanical bowel preparation improves the outcome for patients. Further research on mechanical bowel preparation versus no preparation in patients submitted for elective colorectal surgery is warranted.

Pre-operative mechanical bowel cleansing or not? an updated meta-analysis.

Wille-Jørgensen P, Guenaga KF, Matos D, Castro AA.

Department of Surgery K, Bispebjerg Hospital, Copenhagen, Denmark.
pwj01@bbh.hosp.dk

CONCLUSION: There is no evidence that patients benefit from mechanical bowel preparation. On the contrary taking colorectal surgery as a whole, pre-operative bowel cleansing leads to a higher rate of anastomotic leakage. The dogma that mechanical bowel preparation is necessary before elective colorectal surgery has to be reconsidered.

PMID: 15932549 [PubMed - indexed for MEDLINE]
Excerpt from Guideline for the prevention of Surgical Site Infection, 1999:

### TABLE 4
Operations, Likely Surgical Site Infection (SSI) Pathogens, and References on Use of Antimicrobial Prophylaxis

<table>
<thead>
<tr>
<th>Operations</th>
<th>Likely Pathogens</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal</td>
<td>Gram-negative bacilli; anaerobes</td>
<td>200, 238, 256, 287-299, 485-490</td>
</tr>
</tbody>
</table>

### TABLE 6
Mechanism and Spectrum of Activity of Antiseptic Agents Commonly Used for Preoperative Skin Preparation and Surgical Scrubs

<table>
<thead>
<tr>
<th>Agent</th>
<th>Mechanism of Action</th>
<th>Gram-Positive Bacteria</th>
<th>Gram-Negative Bacteria</th>
<th>Mtb</th>
<th>Fungi</th>
<th>Virus</th>
<th>Rapidity of Action</th>
<th>Residual Activity</th>
<th>Toxicity</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Deactivate proteins</td>
<td>E</td>
<td>E</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>Most rapid</td>
<td>None</td>
<td>E</td>
<td>Drying, volatile, Otitis, keratitis SP, SS</td>
</tr>
<tr>
<td>Chlorhexidine</td>
<td>Disrupt cell membrane</td>
<td>E</td>
<td>G</td>
<td>P</td>
<td>F</td>
<td>F</td>
<td>Intermediate</td>
<td>E</td>
<td>E</td>
<td>SP, SS</td>
</tr>
<tr>
<td>Iodine/Iodophors</td>
<td>Oxidation/substitution by free iodine</td>
<td>E</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>Intermediate</td>
<td>Minimal Absorption from skin with possible toxicity, skin irritation</td>
<td>E</td>
<td>SP, SS</td>
</tr>
<tr>
<td>PiniX</td>
<td>Disrupt cell wall</td>
<td>G</td>
<td>F*</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>Intermediate</td>
<td>G</td>
<td>More data needed</td>
<td>SS</td>
</tr>
<tr>
<td>Triclane</td>
<td>Disrupt cell wall</td>
<td>G</td>
<td>G</td>
<td>G</td>
<td>P</td>
<td>U</td>
<td>Intermediate</td>
<td>E</td>
<td>More data needed</td>
<td>SS</td>
</tr>
</tbody>
</table>

**Notes:**
- *F* indicates *Pseudomonas* spp., activity improved by addition of chelating agent such as EDTA.
- Abbreviations: E, excision; P, pain; G, good; Mtb, Mycobacterium tuberculosis; P, poor; PiniX, para-nitro-meta-xylene; SP, skin preparation; SS, surgical scrub; U, unknown.
- Data from Larson E.199

---

* Excerpt from Guideline for the prevention of Surgical Site Infection, 1999:
APPENDIX III

SSIPC progress report

Trauma / EGS Collaborative

Addison May
9/1/2009
INFECTION REDUCTION RELATED PROTOCOLS:

I. Pre-operative:
   1. Weight reduction
      - If obese or above baseline weight, refer to weight loss clinic (Mary Huizinga 3-1529)
      - Council regarding daily routine walking 30 min to 1 hour
   2. Smoking cessation
      - Pre-op IS for smokers +/- MDI
      - Prescribe Chantix and/or patch X 1 month prior to OR
      - goal of total abstinence for 3 weeks prior to OR
      - perform urine test for compliance in office prior to OR
   3. Hibiclens shower the morning of OR
   4. Bowel preparation for those patients undergoing abdominal or colon surgery
      a. Ventral Hernia (No STSG)
         i. Clears x 1 day
         ii. Mechanical Bowel Prep
            - Bottle of magnesium citrate the afternoon prior to surgery
      b. Planned Ventral with STSG
         i. Clears for 1-2 days
         ii. Mechanical bowel prep
            - Bottle of magnesium citrate the afternoon prior to surgery
      c. Large Bowel Procedure
         i. Clears for 1-2 days
         ii. Mechanical bowel prep
            - 2 bottles of magnesium citrate the afternoon prior to surgery
            - Fleets Sodium phosphate enema the pm before OR
         iii. Oral antibiotics for low rectal anastomosis
   5. Previous MRSA infection or colonization:
      a. Mupirocin (Bactroban) nasal ointment, available by prescription, is used to eliminate bacteria from the nose. A small amount should be squeezed onto a cotton swab applicator (Q-tip), and rubbed in a circular motion into the inside of one nostril. This should then be repeated with a clean cotton swab on the other nostril. Ointment should be applied twice a day (morning and night) for 7 days.
      b. To get rid of staph from the skin, an over-the-counter chlorhexidine soap (like Hibiclens) should be used in the bath or shower twice a day for seven days. It is important to do this during the same week as the antibacterial ointment is used in the nose. The liquid chlorhexidine soap should be applied to the enter body with a washcloth to insure all skin surfaces are treated.
      c. In addition to the chlorhexidine showers, bathing in bleach has been reported to be effective. Take ½ cup of bleach, and add to a full bath. Soak for 15 minutes. This should be done twice during the same week as the nasal ointment is used.
      d. Consider rifampin (300 mg twice daily) and doxycycline (100 mg twice daily) for 7 days

II. Perioperative:
   1. Peri-op Antibiotics
      i. Clean – none
      ii. Clean + implant – ancef 2 gms or levaquin 500 mgs(Pen allergy)
      iii. Elective Biliary – 2 gms cefoxitin
      iv. Elective Bowel or ECF Case – Invanz 1 gm(Levaquin 500mg /flagy 500mg for Pen allergy)
      v. Add Vancomycin 1 gm for known history of MRSA wound infection or colonization
   2. Peri-op preparation
i. Hair removal with clippers
ii. ChloraPrep (or Hibiclens when alcohol contraindicated)
iii. Rectal irrigation for colostomy takedown (NS +/- Betadine)
   • Rigid sigmoidoscopy to document length, rule out stricture
   • Consider foley placement to assist in identifying stump

3. Operative
   i. Maintenance of normothermia (36.5C or above) with
      – Warm fluids
      – Blankets in holding area
      – Elevate room temperature
      – Bear Hugger
      – Warm vent gases
   ii. Closed suction drains for large potential space or fluid collections
   iii. Pulse irrigation
      – All patients with significant flaps, obesity, contamination, prosthetic insertion
      – 6 liters with PulseEvac
      – ¼% Dacons solution
   iii. Utilize PDS Plus, Vicryl Plus, Monocryl Plus sutures when non-absorbable sutures are appropriate (antiseptic eluting)
   iv. If fluid collections are likely, place closed suction drains
   v. Betadine gel in wound
      – Consider for patients with significant obesity, clean/contaminated cases
   vi. Silverlon dressings for contaminated or clean-contaminated cases

Measures for future collaboration with anesthesia:

1. Use of 80% supplemental oxygen
2. Glucose control
   – to be measured and determined by collaboration with anesthesia
Statement of the problem:
Perioperative antibiotic administration and subsequent documentation for patients admitted through the emergency department and requiring urgent or emergent surgical procedures in SCIP compliant fashion remains problematic.

Identified contributing factors:
Several factors contribute to this issue related to patient needs and system limitations. These include but are not limited to:

- Patient needs therapeutic AB administration at the time of diagnosis and is frequently beyond the time window for periop dosing
- Meds (including AB) given in the ED are not charted though the normal intra-hospital systems
- Meds given in the ED are frequently not captured in VPIMS (our system to monitor compliance)
- Verbal orders for meds are frequently delayed in getting entered into WIZ

Case example:
On the 4th quarter SCIP report compiled by Barbara Martin, Stephen Douglas, MR 23190168, fell out as non-complaint for AB dosing within hr of incision.

- This patient was urgently admitted though the ED with a cecal volvulus after having undergone a transperitoneal esophageal resection for CA several weeks prior.
- He was given Invanz in the ED at 7 am and was posted as a level 2 (should have been within 2 hrs).
- He presented to the OR at 11:15, with incision at 11:45.
- VPIMS documents Ancef given without any indication of time

Invanz is specifically chosen due to its long ½ life and once per day dosing. However, this will fall out regardless.

Possible solutions for problem resolution:
This example illustrates issues that contribute to other potential medication related errors beyond AB administration and documentation as we have discussed previously. Thus, I believe a two level approach should be taken:

1. To ensure appropriate tissue levels of AB, timing, and documentation – a second dose of AB should be given and documented at incision
   a. Our research with the PharmD’s input supports that toxicity would not be a problem.
   b. Would need an order set similar to the in-house patients that has the AB (with MAR) delivered with the patient to anesthesia for administration

2. The institution and ED should advance the systems of order entry and medication documentation to allow rapid, real time documentation of medication orders and administration history

Documentation of ED orders and meds:

<table>
<thead>
<tr>
<th>Medications and IV therapies</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ertapenem injection: invanz</td>
<td>done 11/06 07:01</td>
</tr>
<tr>
<td>morphine injection: 4 mg iv stat</td>
<td>done 11/06 07:14</td>
</tr>
<tr>
<td>ibus bolus 1000 ml iv stat</td>
<td>done 11/06 07:01</td>
</tr>
</tbody>
</table>
Perioperative antibiotic dosing and documentation of patients admitted through the Emergency Department

**VPIMS data**

| EXPLORATORY LAPAROTOMY, EXPLORATORY CELIOTOMY W/WO BX(S) (SEP PROC) | Clean/Cont. | 2 | cefazolin |
Periop-dosing of Antibiotics for EGS/Trauma

Statement of the problem:
- VUMC’s systems for perioperative dosing and documentation of antibiotics do not function well for non-elective and in-house patients
- For this reason, documented perioperative dosing of patients on the Trauma/EGS services is poor
  - **Summary analysis of VPIMS data for Trauma and EGS for May 2009:**
    (by Sloan Flemming)
    - 278 total trauma/EGS cases from 5/1/09 – 6/1/09 (136 EGS, 142 trauma)
    - For ALL 278 patients:
      - # given within 60 min prior to incision = 113/278 (41%)
      - # given within 60 min prior to incision OR had reason noted that no abx needed/pt already on abx = 178/278 (64%)
    - Abx time of administration noted for 155/278 (56%)
    - no abx time (123/278, 44%)
      - 67 had a reason noted (no abx necessary = 5, omitted in error = 2, patient on abx regimen = 60)
      - 56 with no abx time and no reason

- Of the 155 with abx time:
  - 2 given at incision
  - 131 given before incision
  - 22 given after incision
  - # given within 60 min prior to incision = 113/155 (73%)

Underlying issues identified:
- Attempting to improve our process of pre-op antibiotic administration (and documentation) within 60 min prior to incision since early 2008.
- We identified two issues with in-house patients:
  1. No standardized ordering process to limit variation and create consistent appropriate orders to ensure adequate timing and dosing
  2. VUMC’s current process of utilizing the “MAR” from HED for handover of medications does not contain medications due to be given but have not previously been dosed (ie. All state, one time, now, or pre-op orders).
- Patients admitted as level -1 trauma or via the ER have separate issues as medication documentation does not get carried to VPIMS at present

Solutions:
- Creation of standardized pre-op order set for all patients to ensure adequate tissue levels at the time of incision (regardless of existing AB orders as tissue levels may be inadequate) – attached below
- Creation of a medication reporting document that includes all meds (on-going scheduled and new orders) – see attached.

Implementation:
- **STEPS TO MOVE FORWARD:**
  1. Make new medication report “live” in HED – Nancy Rudge
  2. Educate MRS and RN staff on use of new report --- MR to print both new report and old report to send with patient AND antibiotic(s) to OR – Sloan/Sarah
  3. Educate persons in HR on use of new report – Dr. May
  4. Pilot for x time period on 10N
Trauma Pre-Op Antibiotic Order

Clean Operative Case
1. cefazolin inj: ancef 2000mg iv now x1 "to or w/patient administer w/in 1 hr of incision and document!"

If PCN allergy:
2. clindamycin inj: cleocin 900mg iv now x1 "to or w/patient administer w/in 1 hr of incision and document!"

Clean Contaminated / Contaminated / Dirty
3. cefoxitin inj: mefoxin 2000mg iv now x1 "to or w/patient administer w/in 1 hr of incision and document!"

If PCN allergy:
4. clindamycin inj: cleocin 900mg iv now x1 "to or w/patient administer w/in 1 hr of incision and document!"
   + ciprofloxacin inj: cipro 400mg iv now x1 "to or w/patient administer w/in 1 hr of incision and document!"

5. ¾ Return to previous list

this orderset last modified: 02-17-09 13:02
<table>
<thead>
<tr>
<th>Medication RN: BELL, KATHERINE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Room:</strong> 1000 3</td>
</tr>
<tr>
<td><strong>Med Rec Id:</strong> 029704129</td>
</tr>
</tbody>
</table>

**13-JUN-2009 18:00**
- **117 (8)-1** IVS MORPHINE 1MG/ML FOR PCA 30 ML See_Comment: 0 ml/hr ROUTE: IV **HEO ORDER # 117** BASEL: NONE MG/HR DEMAND: 1MG Q6MIN LOCKOUT MG/4 HOURS; DBL CHECK REQD BY 2ND RN PRIOR TO ADMIN NURSE TO REASSESS PAIN PER PCA PROTOCOL AND DOCUMENT IN HED

**13-JUN-2009 18:03**
- **121 (9)-1** IVS D5 LR 1000 ML See_Comment: 1 ml/hr ROUTE: IV **HEO ORDER # 121**

**14-JUN-2009 10:00**
- **186 (12)-1** IVS D5 1/2 NS + 20 MEQ KCL/L 1000 ML See_Comment: 1 ml/hr ROUTE: IV **HEO ORDER # 186**

**15-JUN-2009 09:32**
- **230 (49)** MEDS CEFOTIXIN IN NS 100ML (MBF) (CEFOTIXIN) 2000 MG=1 SOLN IV NOW ONCE TO OR W/PATIENT ADMINISTER W/N 1 HR OF INCISION AND DOCUMENT!

**15-JUN-2009 18:00**
- **167 (34)** MEDS FAMOTIDINE 20 MG=1 TAB PO BID RTN
- **177 (36)** MEDS INSULIN HUMAN (REGULAR SLIDING SCALE) 4-20 UNIT=0.04-0.2 ML SUBCUT Q4HRS RTN: BG < 60 D50W 50ML + NHO; BG 61-160 = NO ACTION; BG > 161 USE (BG - 100) / 15 = INSULIN DOSE; NHO BG > 400 DBL CHECK REQD BY 2ND RN PRIOR TO ADMIN
- **188 (40)** MEDS DOUCOSUATE SODIUM (DOK) 100 MG=1 CAP PO BID RTN
- **205 (41)** MEDS BACITRACIN EYE OINTMENT (BACITRACIN) 0.5 INCH EYE OINT EACH EYE Q6HRS RTN DO NOT CONTAMINATE: FOR SINGLE PT USE
- **211 (45)** MEDS CLONIDINE 0.1 MG=1 TAB PO Q12HRS RTN

**15-JUN-2009 22:00**
- **177 (36)** MEDS INSULIN HUMAN (REGULAR SLIDING SCALE) 4-20 UNIT=0.04-0.2 ML SUBCUT Q4HRS RTN: BG < 60 D50W 50ML + NHO; BG 61-160 = NO ACTION; BG > 161 USE (BG - 100) / 15 = INSULIN DOSE; NHO BG > 400 DBL CHECK REQD BY 2ND RN PRIOR TO ADMIN
- **210 (44)** MEDS CEFAZOLIN PREMIX IN DEXTROSE (CEFAZOLIN IN DEXTROSE (ISO-OS)) 1000 MG=50 ML PGBK IV Q8HRS RTN

**16-JUN-2009 00:00**
- **39 (23)** MEDS ASCORBIC ACID INFUSION 1000 MG=100 ML SOLN IV Q8HRS RTN INFUSE 1000 MG OVER 1 HR
- **96 (36)** MEDS SILVER SULFADIAZINE 1% (THERMAZENE) 1 APPLICATION CREAM TOPICAL TID RTN

**16-JUN-2009 02:00**
- **205 (41)** MEDS BACITRACIN EYE OINTMENT (BACITRACIN) 0.5 INCH EYE OINT EACH EYE Q6HRS RTN DO NOT CONTAMINATE: FOR SINGLE PT USE

**16-JUN-2009 09:32**
- **177 (36)** MEDS INSULIN HUMAN REGULAR SLIDING SCALE 4-20 UNIT=0.04-0.2 ML SUBCUT Q4HRS RTN: BG < 60 D50W 50ML + NHO; BG 61-160 = NO ACTION; BG > 161 USE (BG - 100) / 15 = INSULIN DOSE; NHO BG > 400 DBL CHECK REQD BY 2ND RN PRIOR TO ADMIN
SSIPC progress report

OR temperature compliance summary

Addison May
9/1/2009
OR temperature compliance summary

Statement of issue: Studies on perioperative rewarming demonstrate reduction in infectious complications with tighter compliance to normal temperature.

- A randomized study by Kurz in elective colorectal cases demonstrated that warm fluids and forced warm air at 40°C decreased infections. However, no mention of ambient OR temperature was made. Graphical display of temperature appears to demonstrate a mean lowest temperature in the study group of just below 36°C.

- A small randomized study by Wong, et al of patients undergoing major abdominal surgery demonstrated a reduction in complications when an “Inditherm” mattress at 40°C for 2 hrs before and continued until 2 hrs post op was added to warm fluids and forced warm air at 40°C. The Core temperature in the control group at the beginning of the case was 36.0°C while the temperature in the treatment group was 36.4°C. Taken together, these studies suggests that efforts to maintain core temperature at a near normal level >36°C throughout the OR would provide benefit.

EGS and Trauma – VPIMS VORS feed Aug 1-23, 2009

190 cases (Aug 1-23, 2009).
- 22 level 1, 42 level 2, 5 level 3, 119 elective
- Of 119 elective cases, 111 cases with first temp data
- 47 of 111 tempt 36 or below (42%)

42% of elective cases have first tempt recorded at or below 36.

182 cases with either first or last temperature data:
- 85 of 182 cases have either one or both temperature recordings as 36 or below.

47% of all cases have first or last temp less than or equal to 36

Colorectal - VPIMS VORS feed Aug 1-28, 2009:

131 cases recorded during time period
- 111 cases with first temperature data recorded
- 46 of 111 cases had their first temp ≤ 36.

41% of colorectal cases begin with temp below target
- 111 cases have first or last temp data recorded.
- 58 of 111 cases have either first or last temp ≤ 36.

52% of cases have either the first or last temp recorded below target
Summary of temperature and rewarming methods in 3 randomized studies:

- In the Kurz study of colorectal patients with warm fluids + forced air intra-op only,
  - the study groups mean lowest temp appears to be just below 36 °C
  - the mean final core temp was 36.6°C
- In the Melling study of elective clean cases with 30 minutes of pre-op warming only
  - initial core temp – 36.6 (timing not defined)
- In the Wong study of major abdominal surgery, all patients underwent warm fluid and forced air warming. The study group also was on Inditherm mattress 2 h before, during and up to 2 h after surgery
  - Core temp adm: treatment 36.5 control 36.5
  - Core temp before start of surgery: treatment 36.4 control 36.0
  - Core temp at end of study: treatment 36.3 control 36.2

References


**OR temperature compliance summary**


200 pts - patients 18 to 80 years of age who underwent elective colorectal resection for cancer or inflammatory bowel disease – randomly assigned to hypothermia vs normothermia grp.

At the time of the induction of anesthesia, each patient was randomly assigned to one of the following two temperature-management groups with computer-generated codes maintained in numbered, sealed, opaque envelopes: the normothermia group, in which the patients’ core temperatures were maintained near 36.5 °C, and the hypothermia group, in which the core temperature was allowed to decrease to approximately 34.5 °C. In both groups, intravenous fluids were administered through a fluid warmer, but the warmer was activated only in the patients assigned to extra warming. Similarly, a forced-air cover (Augustine Medical, Eden Prairie, Minn.) was positioned over the upper body of every patient, but it was set to deliver air at the ambient temperature in the hypothermia group and at 40 °C in the normothermia group.

Supplemental oxygen was administered through nasal prongs at a rate of 6 liters per minute during the first three postoperative hours and was then gradually eliminated while oxygen saturation was maintained at more than 95 percent.

They administered 15 ml of crystalloid per kilogram per hour throughout surgery and replaced the volume of blood lost with either crystalloid in a 4:1 ratio or colloid in a 2:1 ratio. Fluids were administered intravenously at rates of 3.5 ml per kilogram per hour for the first 24 postoperative hours and 2 ml per kilogram per hour for the subsequent 24 hours.

![Core Temperatures during and after Colorectal Surgery in the Study Patients](image)

The mean (±SD) final intraoperative core temperature was 34.7±0.6°C in the 96 patients assigned to hypothermia, who received routine thermal care, and 36.6±0.5°C in the 104 patients assigned to normothermia, who were given extra warming. The core temperatures in the two groups differed significantly at each measurement, except before the induction of anesthesia (first measurement) and after six hours of recovery.

**Table 2. Postoperative Findings in the Two Study Groups.**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>NORMOTHERMIA (N=104)</th>
<th>HYPOThERMIA (N=96)</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection</td>
<td>6 (6)</td>
<td>18 (19)</td>
<td>0.009</td>
</tr>
<tr>
<td>ASRPSIS score</td>
<td>7±10</td>
<td>13±16</td>
<td>0.002</td>
</tr>
<tr>
<td>Collagen deposition</td>
<td>328±135</td>
<td>254±114</td>
<td>0.04</td>
</tr>
<tr>
<td>µg/cm²</td>
<td>Days to first solid food</td>
<td>5.0±2.5</td>
<td>6.5±2.0</td>
</tr>
<tr>
<td>Days to suture removal</td>
<td>9.8±2.9</td>
<td>10.9±1.9</td>
<td>0.002</td>
</tr>
<tr>
<td>Days of hospitalization</td>
<td>12.1±4.4</td>
<td>14.7±5.5</td>
<td>0.001</td>
</tr>
<tr>
<td>Uninfected patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of patients</td>
<td>98</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Days to first solid food</td>
<td>5.2±1.6</td>
<td>6.1±1.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Days to suture removal</td>
<td>9.6±2.6</td>
<td>10.6±1.6</td>
<td>0.003</td>
</tr>
<tr>
<td>Days of hospitalization</td>
<td>11.8±4.1</td>
<td>13.5±4.5</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*Pre-minus values are means ±SD.

**Table 3. Multivariate Analysis of Risk Factors for Surgical-Wound Infection.**

<table>
<thead>
<tr>
<th>RISK FACTOR</th>
<th>ODDS RATIO (95% CONFIDENCE INTERVAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco use (yes vs. no)</td>
<td>10.5 (3.2–34.1)</td>
</tr>
<tr>
<td>Group assignment (hypothermia vs. normothermia)</td>
<td>4.9 (1.7–14.5)</td>
</tr>
<tr>
<td>Surgical site (rectum vs. colon)</td>
<td>2.7 (0.9–7.6)</td>
</tr>
<tr>
<td>NNISS score (per unit increase)*</td>
<td>2.5 (1.2–5.3)</td>
</tr>
<tr>
<td>Age (per decade)</td>
<td>1.6 (1.0–2.4)</td>
</tr>
</tbody>
</table>

*NNISS denotes National Nosocomial Infection Surveillance System.

Methods 421 patients having clean (breast, varicose vein, or hernia) surgery were randomly assigned to either a non-warmed (standard) group or one of two warmed groups (local and systemic). We applied warming for at least 30 min before surgery. Patients were followed up and masked outcome assessments made at 2 and 6 weeks.

Findings Analysis was done on an intention-to-treat basis. We identified 19 wound infections in 139 non-warmed patients (14%) but only 13 in 277 who received warming (5%; p=0.001). Wound scores were also significantly lower (p=0.007) in warmed patients. There was no significant difference in the development of haematomas or seromas after surgery but the non-warmed group were prescribed significantly more postoperative antibiotics (p=0.002).

Interpretation Warming patients before clean surgery seems to aid the prevention of postoperative wound infection. If applied according to the manufacturers' guidelines these therapies have no known side-effects and might, with the support of further studies, provide an alternative to prophylactic antibiotics in this type of surgery.

Patients were judged eligible if they were having an elective hernia repair, varicose vein surgery, or breast surgery that would result in a scar longer than 3 cm in length.

Patients in the systemic warming group received the same standard preoperative care, plus the addition of a minimum 30 min preoperative warming to the whole body using a forced-air, warming blanket. Patients assigned to the local warming group also received the standard care and a minimum 30 min preoperative warming to just the planned wound area using a noncontact, radiant heat dressing. A research registrar (BA) and operating theatre nursing staff applied the warming devices before surgery. Both warming devices were left in situ until just before surgery.

<table>
<thead>
<tr>
<th></th>
<th>Systemic warming</th>
<th>Local warming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute risk reduction (95% CI)</td>
<td>7-9% (1-0-14-8)</td>
<td>10-1% (3-6-16-6)</td>
</tr>
<tr>
<td>Relative risk reduction</td>
<td>57-7%</td>
<td>73-7%</td>
</tr>
<tr>
<td>Numbers needed to treat</td>
<td>15 patients</td>
<td>10 patients</td>
</tr>
</tbody>
</table>

Table 3: The effects of warming therapies compared with standard treatment

Methods: All patients admitted for elective major abdominal surgery and fulfilling the inclusion criteria were randomized into control or warming groups. Both groups were warmed during surgery, but patients in the warming group were additionally warmed 2 h before and after surgery using a conductive carbon polymer mattress.

All patients were placed on an Inditherm warming mattress (Inditherm, Rotherham, UK) 2 h before transfer from the ward to the operating theatre. This mattress has a conductive carbon polymer encased in foam, with pressure relieving properties, and can provide sustained heat up to 40°C. Patients in both groups remained on the Inditherm mattress 2 h before, during and up to 2 h after surgery. In the warming group, the mattresses were switched on 2 h before the surgery and kept on at 40°C throughout the surgery and recovery. In the control group, the mattresses were switched off. It was standard practice to deliver systemic warming during all major surgery using a forced air warming device (Bair Hugger; Arizant Healthcare, Eden Prairie, Minnesota, USA) set at 40°C and with a fluid warmer (Ranger Blood/Fluid Warming System; Arizant Healthcare). Therefore all the patients in this study were warmed during surgery.

Results: The trial recruited 103 patients (56 in the control group, 47 in the warming group). Both groups were well matched for age, sex and clinical state. Patients in the warming group had lower blood loss (median 200 (range 5-1000) ml versus median 400 (range 50-2300) ml in the control group; P = 0.011) and complication rates (15 (32 per cent) of 47 versus 30 (54 per cent) of 56 in the control group; P = 0.027). There were three deaths; two in the control group (P = 0.566).

<table>
<thead>
<tr>
<th>Complications</th>
<th>Control group (n = 56)</th>
<th>Warming group (n = 47)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical-site infection</td>
<td>15</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Chest infection</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Ileus</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Pelvic collection</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Cardiac complications</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Renal failure</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Anaesthetic complications</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clostridium difficile diarrhea</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pressure ulcer</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
All mentally competent adult patients (age ≥ 18 years) presenting to the surgical unit with clinical evidence of peritoneal inflammation in two or more quadrants (i.e., guarding and rebound tenderness), but not necessarily requiring surgical intervention, were recruited. The series included patients with a perforated abdominal viscus or generalized peritonitis after intestinal obstruction or ischemia and pancreatitis, to give a few examples.

All patients recruited were placed on an Inditherm Medical Products warming mattress (Inditherm PLC, Rotherham, United Kingdom) on admission to the surgical ward. This mattress comprises a conductive carbon polymer encased in foam, with pressure-relieving properties, which is capable of providing sustained heat up to 40°C. In the warmed group, the mattress was switched on at 40°C after entry to the study, whereas in the control group, the mattress remained switched off.

Results: Thirty-three patients were recruited. The APACHE II scores on admission were comparable (median 9.0 [range 2–23] and 9.0 [0–20], respectively, for the control and warmed groups (p = 0.70; Mann-Whitney U test)). No patient showed any adverse effects of warming. There were statistically significant improvements in APACHE II scores (p = 0.028; Wilcoxon signed ranks test) and the magnitude of its change (p = 0.048; Mann-Whitney U test) in the warmed group compared with the control group.

### Table 3. APACHE II Scores and Predicted Mortality Rates (Median [Range])

<table>
<thead>
<tr>
<th></th>
<th>Control (n = 18)</th>
<th>Warmed (n = 15)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APACHE II score</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission</td>
<td>9.0 (2–23)</td>
<td>9.0 (0–20)</td>
<td>0.70</td>
</tr>
<tr>
<td>End of period</td>
<td>8.5 (1–21)</td>
<td>6.0 (0–14)</td>
<td>0.11</td>
</tr>
<tr>
<td><strong>Predicted mortality rate, %</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission</td>
<td>9.9 (3.8–46.0)</td>
<td>9.9 (2.6–35.5)</td>
<td>0.70</td>
</tr>
<tr>
<td>End of period</td>
<td>9.5 (3.3–38.9)</td>
<td>6.7 (2.9–18.6)</td>
<td>0.082</td>
</tr>
<tr>
<td><strong>Change in APACHE II score at end of study period</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 (−9.0–4)</td>
<td>0.0 (−7.0–2)</td>
<td>0.048</td>
</tr>
<tr>
<td><strong>Change in predicted mortality rate at end of study period, %</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.7 (−27.4–9.8)</td>
<td>0.0 (−19.0–1.2)</td>
<td>0.044</td>
</tr>
</tbody>
</table>

*Mann-Whitney U test; APACHE = Acute Physiology and Chronic Health Evaluation.
APPENDIX V

SSIPC progress report

Standardization of preoperative scrub procedures

9/1/2009
Choose your preferred hand scrub method and apply following the guidelines below:

**Water Based Hand Scrub**

**Three Minute Scrub**

**Step One**
Wet hands and arms up to the elbows. Use nail pick to clean nails under running water.

**Step Two**
Wet sponge and squeeze to work up lather. Wash each finger, hand, and arm to two inches above the elbows using the non abrasive sponge for a total scrub time of three minutes.

Note: Use brush side only on nails and cuticles or on areas of visible soil.

**Step Three**
Rinse hands and arms from finger tips to elbows. Dry hands and arms with a sterile towel.

**Alcohol Based (Avagard)**

Apply to clean, dry hands and nails. For the first use of each day, wash hands and clean under nails with a nail stick. Note: Any time debris is present, wash & dry hands before application.

**Pump 1**
Dispense one pump (2ml) into the palm of one hand. Dip fingertips of the opposite hand into the hand prep and work under fingernails. Spread remaining hand prep from wrist to 2” above the elbow.

**Pump 2**
Dispense one pump (2ml) and repeat procedure with opposite hand.

**Pump 3**
Dispense final pump (2ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists.
Surgical Hand Scrub Updates
Objectives

• Review facts on Pathogens
• Review AORN and CDC guidelines for hand scrubs
• Review updates in Vanderbilt protocol for hand scrubs
• Review steps to Water-based hand scrub application
• Review steps to Avagard application
Facts on Pathogens

• The contribution of the surgical scrub is critical in reducing the incidence of operative wound infections.

• It is known that the individual person is the primary source of nosocomial bacteria in the operative setting.

• Handwashing results in a significant reduction in pathogen carriage.[i]

Products

Ideally the surgical hand scrub product should have the following properties

• Broad spectrum of action
• Fast acting
• Persistent
• Non-irritating to the skin
Categories of antiseptics for scrubs

• **Alcohols**
  
  Alcohols are effective against most gram positive and negative bacteria, as well as most fungi and viruses.[i]


• **Chlorhexidine Gluconate (CHG)**
  
  CHG is more effective against gram-positive than gram-negative bacteria and also provides action against enveloped viruses[ii,iii]. CHG is not as effective as other agents at immediately reducing bacterial counts, but its action is more persistent than others, lasting at least 6 hours.

Categories of antiseptics for scrubs

• Iodophors
  
  Exhibit a rapid onset of antimicrobial activity, due to the action of free iodine.
  
  They are effective against a broad range of microbes including gram-positive and negative bacteria, some bacterial spores, fungi and viruses[i].
  
  They have a limited duration of action due to neutralizing properties of organic matter[ii], and are also commonly associated with skin irritation and damage.

Current Products

Cardinal Health Scrub Care

• (Chlorhexidine Gluconate Solution, 4%) – brush & sponge

• (15% Povidone-Iodine) – brush & sponge.

3M

• Avagard Waterless Hand Antiseptic (Chlorhexidine Gluconate 1% Solution and Ethyl Alcohol 61%)
PREVIOUS PROTOCOL
FOR SURGICAL HAND SCRUB at VANDERBILT

• Surgical Hand Scrub:
  • 30 second pre-wash before all scrubs.
• First scrub of the day:
  • 10 minutes for Ortho
  • 5 minutes all others
• Subsequent scrubs:
  • 5 minutes Ortho
  • 3 minutes all others
• Avagard use:
  • Had to be preceded by a traditional first scrub of the day and a pre-wash in between cases.
AORN and CDC Recommendations

• AORN recommends for facilities to standardize scrub times and has presented studies to show that scrub times of three to four minutes are as effective as five-minutes scrubs.[1]

• The CDC has stated that former traditional 10 minute scrubs are not necessary and frequently leads to skin damage, and sites studies that scrubbing for 2 or 3 minutes reduced bacterial counts to acceptable levels.[2]


New Protocol

Choose your preferred hand scrub method and apply following new guidelines:

**Water Based Hand Scrub**
Three Minute Scrub

**Avagard**
Apply to **clean**, dry hands and nails. For the first use of each day, wash hands and clean under nails with a nail stick. **Note**: Any time debris is present, wash & dry hands before application.
AORN- Surgical Scrub Brush

• AORN outlines that the use of a brush for surgical hand scrubs is not necessary and scrubbing with a brush is associated with an increase in skin cell shedding.[1]

• AORN published an article that states that brushless scrubbing is believed to be less caustic and abrasive to the skin than traditional scrubbing and can aid in maintaining skin integrity, even after repeated use in the preoperative setting.”[2]

CDC- Surgical Scrub Brush

• The CDC states that use of a brush results in increased shedding of bacteria from the hands. [1]

• Neither a brush nor a sponge is necessary to reduce bacterial counts on the hands of surgical personnel to acceptable levels, especially when alcohol-based products are used. [2]

[2] Ibid.
Step One: Water based hand scrub

**Step One**
Wet hands and arms up to the elbows.
Use nail pick to clean nails under running water.
Step Two: Water based hand scrub

Wet sponge and squeeze to work up lather. Wash each finger, hand, and arm to two inches above the elbows using the non abrasive sponge for a total scrub time of three minutes.

Note: Use brush side only on nails and cuticles or on areas of visible soil.
Step Three: Water based hand scrub

Rinse hands and arms from finger tips to elbows. Dry hands and arms with a sterile towel.
Avagard: Pump 1

Dispense one pump (2ml) into the palm of one hand. Dip fingertips of the opposite hand into the hand prep and work under fingernails. Spread remaining hand prep from wrist to 2” above the elbow.
Avagard: Pump 2

Dispense one pump (2ml) and repeat procedure with opposite hand.
Dispense final pump (2ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists. Allow to dry Do not use towels!
Reference sheets for scrub sinks

**Surgical Hand Scrub Protocol**

Choose your preferred hand scrub method and apply following the guidelines below:

**Water Based Hand Scrub**

**Three Minute Scrub**

- **Step One**
  - Wet hands and arms up to the elbows.
  - Use nail pick to clean nails under running water.

- **Step Two**
  - Wet sponge and sponge to work up lather.
  - Wash each finger, hand, and arm to two inches above the elbows using the non abrasive sponge for a total scrub time of three minutes.
  - Note: Use brush side only on nails and cuticles or on area of visible nail.

- **Step Three**
  - Rinse hands and arms from finger tips to elbows.
  - Dry hands and arms with a sterile towel.

**Avagard**

- Apply to **clean** dry hands and nails. For the first use of each day, wash hands and clean under nails with a nail stick. Note: Any time debris is present, wash & dry hands before application.

- **Pump 1**
  - Dispense one pump (2ml) into the palms of one hand. Dip fingertips of the opposite hand into the hand prep and work under fingernails. Spread remaining hand prep from wrist to 2” above the elbow.

- **Pump 2**
  - Dispense one pump (2ml) and repeat procedure with opposite hand.

- **Pump 3**
  - Dispense final pump (2ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists.
Summary of Hand Scrub Updates

• Choice of Water based hand scrub or Avagard

• Water based:
  – 3 minute scrub time
  – Use brush only on nails and cuticles- or visible soil
Summary of Updates, continued:

• Avagard:
  – Wash hands and pick nails before first application
  – Wash and dry hands if soiled before any subsequent applications.
  – Apply product following manufacturer’s recommendations.
Traditional Surgical Hand Scrub:
The traditional surgical hand scrub, used as the initial scrub of the day, or for
scrubs occurring after contamination, will be standardized to a three minute scrub
procedure.
AORN recommends for facilities to standardize scrub times and has presented
studies to show that scrub times of three to four minutes are as effective as five-minutes
scrubs. The CDC has stated that former traditional 10 minute scrubs are not necessary
and frequently leads to skin damage, and sites studies that scrubbing for 2 or 3 minutes
reduced bacterial counts to acceptable levels.

Surgical Hand Scrub Procedure for Traditional Scrub:
• Wet hands and arms to the elbows.
• Clean the subungual areas of both hands under running water using a
disposable nail cleaner.
• Wet sponge and squeeze to work up lather.
• Visualize each finger, hand, and arm as having four sides. Wash all four
sides effectively to two inches above the elbows using the non-abrasive
sponge. (Note: use brush side only on nails and cuticles or on areas of
visible soil).
• Repeat this process for opposite fingers, hand, and arm.
• Rinse hands and arms from finger tips to elbows holding hands higher
than elbows.
• In the OR, dry hands and arms with a sterile towel before donning a sterile
surgical gown and gloves.

AORN outlines that the use of a brush for surgical hand scrubs is not
necessary and scrubbing with a brush is associated with an increase in skin cell
shedding. AORN published an article that states that brushless scrubbing is
believed to be less caustic and abrasive to the skin than traditional scrubbing and
can aid in maintaining skin integrity, even after repeated use in the preoperative
setting.

The CDC states that use of a brush results in increased shedding of bacteria
from the hands. They also state that several studies indicate that neither a brush
nor a sponge is necessary to reduce bacterial counts on the hands of surgical
personnel to acceptable levels, especially when alcohol-based products are used.

Publications, 401.
2 Center for Disease Control Hand Hygiene Guidelines, http://www.cdc.gov/handhygiene/ (Retrieved on
10/16/08).
3 AORN, Perioperative Standards, 402.
4 Berman, Mara One Hospital’s Clinical Evaluation of Brushless Scrubbing. AORN Journal, (Volume 79,
5 CDC, Hand Hygiene Guidelines http://www.cdc.gov/handhygiene/
6 Ibid.
**Subsequent Surgical Hand Scrub:**
For subsequent surgical hand scrubs, the traditional scrub is an option when there is no visible soil, or a requirement in the presence of visible soil. If a traditional scrub has been completed for the first scrub of the day, and no visible soil is present, a waterless, alcohol based agent (Avagard) can be used in between cases.

**Procedure for Avagard Application**
- Dispense one pump (2 ml) into the palm of one hand. Dip fingertips of the opposite hand into the hand prep and work under fingernails. Spread remaining hand prep over the hand and up to 2 inches about the elbow.
- Dispense one pump (2ml) and repeat procedure with opposite hand.
- Dispense final pump (2ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists.
- Allow to dry. Do not use towels.

**Surgical Hand Scrub Products:**
*Traditional scrubs:*
- Cardinal Health Scrub Care (Chlorhexidine Gluconate Solution, 4%) – brush & sponge. (Cat. 4458A)
- Cardinal Health Scrub Care (15% Povidone-Iodine) – brush & sponge. (Cat.4452B)

*Subsequent applications:*
- 3M Avagard Waterless Hand Antiseptic (Chlorhexidine Gluconate 1% Solution and Ethyl Alcohol 61%)
Clean Care is Safer Care: A New Sterile Procedure Hand Scrub Protocol

Surgical site infections arise when sufficient microorganisms enter the surgical site during the procedure to overwhelm the host's natural defense mechanisms.[1] The contribution of the sterile procedure hand scrub is critical in reducing the incidence of surgical site infections. The introduction of bacteria may arise from several sources, one of which is the operating surgeon or proceduralist. The process of handwashing results in a significant reduction in pathogen carriage and surgical site infections. [2]

The Perioperative Surgical Site Infection Prevention Collaborative (SSIPC) whose members represent Vanderbilt University Adult Hospital, the Monroe Carell Jr. Children’s Hospital, The Vanderbilt Clinics, and multiple clinical ancillary departments, has been charged with developing strategies and protocols for specific ongoing initiatives by diverse groups involved in surgical infection reduction. The SSIPC with the assistance of Perioperative Services’ Educator Cindy Garcia, BSN, RN, CNOR, has been working to reduce the variation in sterile procedure hand scrub protocols used and to standardize to those supported by the AORN and the CDC recommendations.

Here is information you need to know to provide clean, safer care for our patient population:

What is new in the sterile procedure hand scrub process?

• AORN recommends for facilities to standardize scrub times and has presented studies to show that scrub times of three to four minutes are as effective as five-minutes scrubs.[3]

• The CDC has stated that former traditional 10 minute scrubs are not necessary and frequently leads to skin damage, and sites studies that scrubbing for 2 or 3 minutes reduced bacterial counts to acceptable levels.[4]

• AORN outlines that the use of a brush for surgical hand scrubs is not necessary and scrubbing with a brush is associated with an increase in skin cell shedding.[5]

• AORN published an article that states that brushless scrubbing is believed to be less caustic and abrasive to the skin than traditional scrubbing and can aid in maintaining skin integrity, even after repeated use in the preoperative setting.”[6]

• The CDC states that use of a brush results in increased shedding of bacteria from the hands.[7]

• Neither a brush nor a sponge is necessary to reduce bacterial counts on the hands of surgical personnel to acceptable levels, especially when alcohol-based products are used.[8]

The CDC and AORN’s new approach to the surgical hand scrub process has lead to the development of a new Sterile Procedure Hand Scrub Protocol for Perioperative Services, shown here:

New Protocol
Choose one of these hand scrub methods and apply following new guidelines:

Water Based Hand Scrub
Three Minute Scrub

Alcohol Based
(Avagard or Endure 450)

Either-Or

Apply to clean, dry hands and nails. For the first use of each day, wash hands and clean under nails with a nail stick. Note: Whenever debris is present, wash & dry hands before application.
Summary of Sterile Procedure Hand Scrub Updates

- **Choice of Water based hand scrub or alcohol based hand scrub (Avagard or Endure 450)**
- **Water based:**
  - 3 minute scrub time
  - Use brush only on nails and cuticles- or visible soil
- **Alcohol based (Avagard or Endure 450):**
  - Wash hands and pick nails before first application
  - Wash and dry hands if soiled before any subsequent applications.
  - Apply product following manufacturer’s recommendations.

The Sterile Procedure Hand Scrub Protocol posters below will be displayed at all scrub sinks:

Please help us to promote this safer system, clean care does save lives!

The new Sterile Procedure Hand Scrub Protocol is a subset of larger body of work, the Hand Hygiene Policy; the details on this policy will be forth coming. Hand Hygiene, IC 10-10.07
To see the entire Sterile Procedure Hand Scrub Protocol:
http://www.mc.vanderbilt.edu/programs/perioperative/Surgical_Hand_Scrub_Updates.ppt
Author: Susie Leming-Lee, MSN, RN, CPHQ
    Director of Perioperative Quality Management
Practice Tracer

Surgical Hand Scrub Observation Tool - Water Based Scrub

Reason for Practice Tracer:
To promote correct hand washing procedures.

Directions:
This is an observational audit. Reminder: Reminders and prompts are part of peer coaching and promote a safer environment for patients and staff.

Date | ID | Entered By | Setting | Practitioner
--- | --- | --- | --- | ---

Surgical Hand Scrub Observation Tool - Water Based Scrub

1. Date of Observation
   Date: / /

2. Role - indicate role of staff member observed.
   Choose One: Surgeon
   Scrub Nurse/Tech
   Other - i.e., Med Student, Tech Student
   Please add comments below:

3. Department/Specialty
   Short Answer:

4. Observer Name:
   Short Answer:

5. Washes each finger, hand, and arm to 2 inches above the elbow.
   Independent: Performs correctly without prompting
   Prompts: Performs correctly with prompting
   Needs Improvement: Performs inadequately even after prompting.

6. Uses brush only on nails/cuticles
   Independent: Performs correctly without prompting
   Prompts: Performs correctly with prompting
   Needs Improvement: Performs inadequately even after prompting.

7. Uses sponge only on skin.
   Independent: Performs correctly without prompting
   Prompts: Performs correctly with prompting
   Needs Improvement: Performs inadequately even after prompting.
|---|-------------|--------------------------------------------------|--------------------------------------------|-------------------------------------------------------------|
SSIPC progress report

Review and reduction of OR traffic

9/1/2009
Proposal to Limit O. R. Traffic / Reduce the Number of People in the O. R. For Arthroplasty Cases

1. Call in room for patient status.
2. Anesthesia to take blood samples to door/minimize door space opening.
3. Staff to call in room for break status.
4. Reduce the number of people in room for blocks. Ideally all blocks in holding area.
5. Use core entrance for necessary trips in/out.
6. No breaks (scrub staff) during a primary joint.
7. If not participating in the case, do not enter the room.
8. Call in room to check for equipment (Lead, tourniquet cuffs, etc.)
   • Intercom system or walkie-talkie system?

References


ATTENTION ANESTHESIA STAFF
In order to minimize traffic in and out of this room please call the anesthesia provider at ________ before entering OR to check on breaks. Thanks You!

ESSENTIAL STAFF ONLY