Prevention of Surgical Site Infection

Preventive Measures in Operating Theatre
Good Practice

Appropriate use of prophylactic antibiotics
Appropriate hair removal

Patient education (Pre-op)
OT control (Intra-op)
Observation (Post-op)
Appropriate use of prophylactic antibiotics

- Indicate in dirty or contaminated wound
- Initial dose 1/2 hour before surgical incision
- Not exceed 24 hours
- Complete the infusion before the tourniquet is inflated.
- Aware of allergy
## Contributing factors

<table>
<thead>
<tr>
<th>Patient</th>
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<tbody>
<tr>
<td></td>
<td>• age group—when very young/old</td>
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<td></td>
<td>• rheumatoid arthritis</td>
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<td>• size/weight—eg, obese</td>
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<td>• nutritional status</td>
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<td>• malignancy</td>
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<td>• acute infection prior to surgery</td>
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<td>• underlying diseases</td>
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<td>• renal failure</td>
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<td>• diabetic</td>
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<td>• blood transfusions</td>
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<td>• steroid/cytotoxic therapy</td>
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<td>• foreign bodies</td>
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<thead>
<tr>
<th>Surgery</th>
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<tr>
<td></td>
<td>• surgical wound classification</td>
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<tr>
<td></td>
<td>• emergency surgery</td>
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<tr>
<td></td>
<td>• operative site</td>
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<td>• length of surgery</td>
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<td>• wound contamination during surgery</td>
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<td>• use of drains</td>
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<td>• surgical technique</td>
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<td>• wound closure</td>
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<td>• length of incision</td>
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<td>• implants in situ</td>
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<table>
<thead>
<tr>
<th>Situation</th>
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<tr>
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<td>• ultra clean OR—clean air systems,</td>
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<td>stringent cleaning at end of OR list</td>
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<td></td>
<td>• length of preoperative stay</td>
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<td></td>
<td>• presence of other infections</td>
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<td>• preoperative preparation</td>
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<td>• skin preparation</td>
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<td>• number of people in OR</td>
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<td>• traffic volume during the surgery</td>
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Recommendations on Prevention of Surgical Site Infection
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12. Quality Measures
13. Other Relevant Issues
Pre-operative Surgical Hand Preparation of Surgical Team

Surgical Scrubbing Technique
New Concept

NO BRUSHES
New Concept

Nail Cleaner
New Concept

NO WATER
Waterless Brushless Scrubless

THREE PUMP APPLICATION

- First application of the day, clean under nails with a 3M™ Avagard™ Nail Cleaner.
- Apply to clean, dry hands and nails.

STEP 1
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 just above the elbow.

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

STEP 3
Dispense final pump (2 ml) of hand prep into either hand and reapply to all aspects of both hands up to the wrists. Rub hand prep into hands until completely dry.

TIPS
- Do not use water.
- Be sure hands are dry prior to using Avagard antiseptic hand prep.
- Per OSHA Bloodborne Pathogen Rule, wash hands with soap and water after surgical procedure.

For more information, contact your local 3M representative or call: 3M Health Care Customer Helpline at 1-800-228-3957
Surgical Gloving

Open method

Close method
New Concept
Ventilation and Environment in the Operating Theatre

Air Flow

Room design/Room size

Exert traffic control
Airflow of Operating Theatre

Positive Pressure
Air exchange/ temperature/ humidity
HEPA filter VS Laminar flow
Double/ Single Door
Limited movement/ personnel
Negative pressure system in OT
Positive air pressure
Negative air pressure
Double door
The operating room should be of adequate size to accommodate the fluoroscopy unit, fluoroscopy monitor and video monitor. The room set-up is as diagrammed above for a right-sided disc.
Skin Preparation

• Remove hair only when it interferes with the operation.
• Perform hair removal immediately before surgery and preferably with a clipper
• Razors are not recommended.
Skin Preparation

- Chlorhexidine is a more effective skin disinfectant
- indicated for surgical patients with known MRSA in or in Cluster of MRSA
- Povidone Iodine is another choice
New Product

Microbial Sealant
Highly effective with a variety of prep solutions

Reduction of bacteria recovered *in vivo* using a cup scrub sampling technique four hours and twenty-four hours post treatment\(^6\)

<table>
<thead>
<tr>
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<th>Four hours post treatment</th>
<th>Twenty-four hours post treatment</th>
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<tr>
<td><strong>Povidone Iodine</strong></td>
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<tr>
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**Log** \(_{10}\) **CFU/cm\(^2\) Reduction**

- **Log** \(_{10}\) \(= 10,000,000,000 \equiv 10^{10}\)

**CFU** = Colony Forming Units (of bacteria)
Surgical Attire and Drapes
(Surgical site barrier)

- Surgical Gowning Technique
- Use of Surgical Helmet
- Woven fabrics VS Non Woven fabrics
Gowning Technique
Every surgical team deserves the ultimate in comfort & protection from their Surgical Helmet system.

The FreedomAire 2 Surgical Helmet System delivers the features your surgical team has asked for:
- Lightweight, Compact Helmet with Comfortable Secure Headgear
- High Airflow with Smooth Quiet Operation
- Ergonomically Designed to Help Reduce Neck Fatigue
- No Cumberstone Chin-Guard to Interfere with Head Movements
- Optically Correct – Impact Resistant Lens
- UV Protection and Wide Field of Vision
- Rigid Lens to Withstand Wiping During Surgical Procedures
- Powerful Lightweight Battery Pack with Charge Level Indicator

The FA2 Helmet combined with FreedomAire TOGA or Lens Hood, offers protection from blood and body fluid splatters, potentially infectious microorganisms while providing your surgical team with a cool, comfortable work environment.

Airflow:
- 5 airflow settings - 8 to 16 clm – allow each user to choose an airflow setting to maximize their personal comfort and provide a cool comfortable breathing environment
- Patent inner pleats design circulates a continuous high volume of cool fresh air throughout the entire helmet system

Helmet:
- At 16 clm, the FA2 Helmet is lightweight and compact to help reduce neck strain - yet durable for long lasting use
- Revolutionary multi adjustable headgear provides a comfortable secure customized fit
- Ergonomically balanced for smooth quiet operation
- Designed without a cumbersome chin-guard which can interfere with head and body movements

Battery:
- Run time of 9 hours on high setting - over 12 hours on low
- Lithium Ion technology for a long lasting and dependable charge
- ON/OFF, Airflow Settings and Battery Charge Indicator all are conveniently located on battery face for easy access
- LED display for visual confirmation of remaining battery charge
- Vibratory low level warning feature
- Lightweight - clip on scrub belt band or fit inside pocket
- Compact 8 bay charger displays Charged, Charging or Fault for accurate status of each battery's charge

Lens:
- Optically correct "Bubble" Lens helps reduce eye strain while providing clear accurate vision
- Impact resistant polycarbonate lens provides additional facial protection from surgical debris while the rigid design withstands wiping during surgery
- UV protection for specialized procedures
Recommendation

6.3 Surgical gowns and drapes should be sterile and resistant to liquid penetration and remain effective barriers when get wetted.

6.7 Change surgical gowns and scrub suit if visibly soiled or penetrated by blood or body fluids.
Linen Drape
Non Woven Drape

- impermeable to moisture & bacteria
- absorbent non-woven top layer
- abrasion resistant
- extremely low linting
- highly conformable
Non Woven Drape
Drape with Pouch
Drape for Fluoroscope
Drape for Fluoroscope
Drape for Fluoroscope

C-ARM Draping Guideline
Pre-op preparation
Sterilization of Surgical Instruments

Not the duty of TSSU staff only

Team
Sterilization of Surgical Instruments

New recommendation

- Pre mature release on Plasma Sterilization
- Cidex treatment
Surgical Technique

9.1 Maintain good operative technique during the operation, such as gentle tissue handling to minimize trauma .........
Use of Retractor
Use of Skin Knife
Use of Drain
Choice of dressing
Culture of Safety Is the key To Prevent SSI
Thank You !