



Why and How



This is Not Rocket Science

A19/B19: Reducing Surgical Site Infections



This is HARD WORK

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There is No Excuse for Not Doing
What We Should Be Doing for Our
Patients

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Steps Toward Improvement

- Common Barriers to Change
- Common Mistakes
- Common Sense Science
- Doing the Work

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Four Components

- Appropriate Antibiotic Use
- Appropriate Hair Removal
- Post Operative Glucose Control
- Post Operative Normothermia

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Appropriate Antibiotics

- Common Sense Science:
 - Not all surgery is the same. Not all infections are the same. Certain surgeries need certain antibiotics to be given to prevent infection.
 - In order to prevent surgical site infections with antibiotics, the antibiotics should be present in the tissue that is going to be operated on at the time that the incision is made and throughout the time the wound is open.
 - It takes a certain amount of antibiotic in order to work.

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Appropriate Antibiotics: Selection

- Use guidelines from specialty society recommendations
- The Medical Letter
- Consensus among surgeons and infectious disease specialists
- Create guidelines for antibiotic selection and consider integration into standard orders or protocols

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Protocols, protocols, protocols

- Design protocols based on surgery type
- Initiate protocol as a standard
 - Nursing and/or pharmacy drives protocol
 - No reliance on individual physician memory
- Include guidance for exceptions
 - Beta Lactam allergy
- Use your own formulary to narrow choices
 - Makes protocol easier and saves costs

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Appropriate Antibiotics: Timing of the first dose

- It is not as easy as it sounds to give antibiotics in a fixed time interval.
- Every hospital/clinic has unique conditions and requires unique solutions.
- Solutions exist for every setting.

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Appropriate Antibiotics: Timing of the first dose

- Identify owners clearly: who starts it and who documents it
- Synchronize your clocks
- Set a narrower performance margin
 - If goal is 0-60, strive for 10-45
 - A few strays will still be within the goal
- Take advantage of habits and patterns
 - Dose of antibiotic started when staff “hit button” to open door to OR – easy to remember

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Appropriate Antibiotics: Timing of the first dose

- Verify prior to incision time
 - Final check at pre-procedural briefing or time-out
 - Write the dose time on a “white board” in the OR
- Reliable procedures take coordination between preoperative nursing and anesthesia services.

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Appropriate Antibiotics: Timing of the first dose

- For many antibiotics given for prophylaxis, the solution may be to give the antibiotic as a rapid IV infusion or as an IV push.
- For Vancomycin, which requires a longer infusion time, special procedures are often needed.

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Appropriate Antibiotics: Discontinuation of antibiotics

- Opt-out vs. Opt-in
 - Discontinuation of antibiotics should be automatic
 - If multiple doses are required, times should be set by nursing or pharmacy to end within 24 hours
 - Allow options for appropriate clinical exceptions – UTI, fever, etc

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Appropriate Antibiotics: Next Steps

- Consider increasing dose for increased size
- Consider re-dosing of antibiotics in cases that exceed 4 hours in length

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Appropriate Hair Removal

- Common Sense Science:
 - Razors damage the skin more than clippers do because razors cut the hair AGAINST the skin and clippers cut the hair ABOVE the skin
 - Damaged skin is less resistant to infection
 - There is no evidence that supports the use of razors to prepare the surgical site in order to prevent infection

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Appropriate Hair Removal: How

- Work with surgeons who agree with you
 - Find a champion
- Educate
 - Be prepared with references
- Train EVERYONE who might use clippers how to use them
- Make clippers available everywhere they may need to be used

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Appropriate Hair Removal: How

- Make razors hard or impossible to use
 - Work with Central supply to cut them off at the source
 - If you must keep some – lock them up and monitor use
- Consider a “Razor Roundup” or “Razor Ban”
- Continue to Monitor after they are gone
 - They come back when you’re not watching

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Appropriate Hair Removal: How

- The use of Razors is deeply ingrained in the Surgical Culture
 - Expect resistance in the face of evidence
 - Many surgeons have not ever considered another way – you must take that into consideration
 - Work first with those who will work with you – most will



Glucose Control: Cardiac Surgery

- Common Sense Science:
 - Every physician “knows” that diabetics are more “prone” to infection than other patients
 - Few physicians understand why
 - White blood cells do not work well when blood sugars are elevated
 - This effect is REVERSIBLE
 - Patients whose blood sugars are controlled have fewer infections



Glucose Control: Cardiac Surgery - HOW

- A number of protocols are available to guide management
- The “Portland Protocol” is available on the web and is widely used
- Many hospitals have moved beyond that protocol
 - Tighter control

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Glucose Control: Cardiac Surgery - HOW

- Start small
- Work with surgeons and ICU nursing
- Work with infectious disease and endocrinologist
- Use a Protocol to guide management
- Easiest to do in ICU
- Can be done in a step down setting
 - Does not require an insulin drip in this setting

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Glucose Control: Next Steps

- Consider extending glucose control to all patients in the ICU setting:
 - Medical and Surgical
- The ICU is an ideal environment for tighter control
- Fewer infections and lower mortality have been shown

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Normothermia

- Common Sense Science:
 - When we are cold, blood is naturally diverted away from the skin to the internal organs to maintain temperature
 - When blood flow to the skin is reduced, delivery of white blood cells and antibiotics decreases
 - Hypothermia is associated with an increased incidence of wound infections

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Normothermia: Colon and Rectal Surgery

- The single randomized controlled trial in the literature that showed that normothermic patients have fewer surgical site infections was done with patients undergoing colon and rectal surgery
- Other surgical patients probably benefit from being kept normothermic
- No one wants to be cold

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Normothermia: How

- Control those things that you can control
- Start with the easiest
- Work with anesthesia
- Warm the patient prior to surgery if they are cold
- Warm IV fluids
- Consider thermal caps and blankets

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Normothermia: How

- Use warming devices in the operating room
 - Forced air blankets, warm fluid blankets
- Work with anesthesia to monitor temperature in the operating room
- Consider the use of temporal artery thermometers in all areas for consistent measurements

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Normothermia: How

- Have warm blankets readily available
- Consider passive/active warming of inspired gases – particularly on prolonged cases

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Mistakes We Make

- Starting too big
- Starting in a “Hostile” or non-supportive environment
- Trying to take care of every exception from the beginning
- Starting without leadership support

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The Way Around the Barrier

- Start small
- Start where you have support
- Start only after you have the support of leadership
- Start in the group of patients that will be the most uniform and present the fewest challenges
 - If it won't work there it won't work anywhere!

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General Rules for Change

- Educate everyone
- Train everyone
 - Let everyone know what you are doing and why
- Make doing the right thing the “default”
- Make doing the right thing easy
- Measure what you are doing

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General Rules for Change

- Use standard orders to limit options
- Settle on one way of doing things
- Use reminders/posters
 - Use results to motivate further change

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DON'T FORGET THE CULTURE

- Culture is everywhere
- Culture is stable and reliable
- Culture is the “real” way we do things around here
- Culture is difficult to change

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DON'T FORGET THE CULTURE

- White Boards
 - Names
 - Roles
 - Important information
 - Things we may be monitoring
 - Was the antibiotic given on time?
 - Was the preop briefing done?

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DON'T FORGET THE CULTURE

- Briefings
 - More than a “Time Out”
- Debriefings

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Questions

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