

## Surgical site infection: More mandates than data

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Despite the routine use of prophylactic antibiotics and other Surgical Care Improvement Project guidelines, surgical site infection (SSI) continues to be a significant problem, with an cost exceeding \$1 billion annually in the United States alone. These infections number approximately 500,000 per year, among an estimated 27 million surgical procedures and account for approximately one quarter of the estimated 2 million nosocomial infections in the United States each year. Indeed, the Institute of Medicine's «100 Initial Priority Topics for Comparative Effectiveness Research» includes a reduction in health care associated infections including SSI in its 25 medical needs of highest priority.

### THERE ARE FEW PROVEN STRATEGIES TO PREVENT SURGICAL SITE INFECTION:

*Antibiotics:* Guidelines exist in many countries for the use of prophylactic IV antibiotics, e.g. SCIP Guidelines address specific antibiotics (procedure specific), and state that the antibiotic must be initiated within 1h prior to skin incision (2h for vanco or fluoroquinolone), and that if dosing is continued postoperatively prophylactic systemic antibiotics should not be continued for more than 24 h (exception cardiac surgery 48 h ok). Unfortunately, as will be discussed in the lecture, there are little data supporting the specific timing

of antibiotics. For example, the Classen et al study (NEJM 1992), upon which the SCIP guidelines are based, was observational, and did only supports a several hour window for antibiotic timing, not the 60 minute period specified by the SCIP guidelines.

*Normothermia:* SCIP guidelines in the US require maintenance of normothermia in almost all surgeries. Unfortunately, this mandate is largely based on a single randomized study (Kurz et al. NEJM 1996) involving 200 patients undergoing colorectal surgery. Patients randomized to convective warming had fewer SSIs, however, its results should generalized cautiously given the relative few patients enrolled, as well as the fact that 155 of the 200 patients were enrolled in one center minimizing the «multicenter» aspect of this trial.

*Surgical skin preparation:* Recent data suggest that the type of surgical skin preparation may have a significant impact on the risk of SSI. A recent 849 patient clinical trial by Darouiche et al. (NEJM, 2010) comparing chlorhexidine alcohol and povidone iodine for reduction of SSI showed that chlorhexidine-alcohol resulted in significantly fewer SSI. However, chlorhexidine has not yet been recommended as a first line agent for surgical skin preparation for 2 reasons: 1) The promising results by Darouiche et al have not been confirmed in a large multicenter trial, and 2) as highlighted in a NEJM Letter to the Editor, FDA physicians cautioned that use of chlorhexidine is associated with OR/patient fires, which is a rare but serious complication.

These and other potential interventions will be discussed.

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