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CENTRA

Study in a Surgical Trauma Intensive Care Unit Results in 41% Decrease in Surgical Site Infection Rate

ANCC MAGNET RECOGNITION

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BACKGROUND

Surgical site infections (SSIs) are serious complications that account for approximately 20% of health care–related infections.[1] Patients who develop an SSI have longer and more costly hospital stays than those who do not; one recent study found that the presence of an SSI increases length of stay by an average of nearly 10 days and raises costs by almost $21,000.[1,2] Patients who experience an SSI are also twice as likely to die, 60% more likely to spend time in an intensive care unit (ICU), and 5 times more likely to be readmitted to the hospital.[2] Thus programs that decrease the incidence of SSIs reduce morbidity and mortality as well as economic costs to both patients and health care institutions.[2]

Consequences of an SSI*

Patients who develop an SSI:

- have **longer hospital stays** than those who do not
- have **more costly hospital stays**
- are **twice as likely to die**
- are **60% more likely to spend time in an ICU**
- are **5 times more likely to be readmitted** to the hospital

* de Lissovoy G, Fraeman K, Hutchins V, et al. *Am J Infect Control*.2009;37:387–397.
Kirkland KB, Briggs JP, Trivette SL, et al. *Infect Control Hosp Epidemiol*. 1999;20:725–730.

The Institute for Healthcare Improvement *How-to Guide for Reducing Surgical Complications*[3] and The Society for Healthcare Epidemiology of America *Strategies to Prevent Surgical Site Infections in Acute Care Hospitals*[4] provide multiple evidence-based strategies for preventing SSIs. One of the recommendations[4] for preventing SSIs is the reduction of modifiable patient risk factors.

A study by Johnson et al[5] cultured some form of bacteria in 98% of samples obtained from patient bath basins. These findings represent bath basins as a modifiable risk factor. The use of disposable cloths for bathing eliminates the need for exposure to potential bacteria, adding to existing SSI prevention efforts.

OBJECTIVE

One of the objectives of this study was to decrease the incidence of SSIs in a surgical trauma intensive care unit (STICU) by eliminating the modifiable risk factor of bathing with patient bath basins, thereby reducing possible patient exposure to pathogens.

METHODS

The IRB-approved study protocol included both educational and procedural components. Prior to instituting the new protocol in January 2008, STICU staff, faculty from nursing schools, and resource team nurses were educated on appropriate SSI prevention and documented risks related to patient exposure to pathogens. Staff members were instructed to use only prepackaged 8-cloth baths* for cleansing patients in order to prevent patient exposure to potential bacteria in bath basins.

Laminated cards were placed at each bedside as a reminder of the new protocol procedures. Information sheets were distributed to patients and family members to inform them of the study. In February 2008 bath basins were removed from the STICU, and prepackaged baths were placed in a warmer on the unit so as to be readily available for staff.

Data were collected prospectively for one year, from February 1, 2008, through February 1, 2009 (the post-intervention period). These data were then compared with historical data obtained retrospectively from January 1, 2007, through January 1, 2008 (the pre-intervention period). The primary variable was the rate of SSIs.

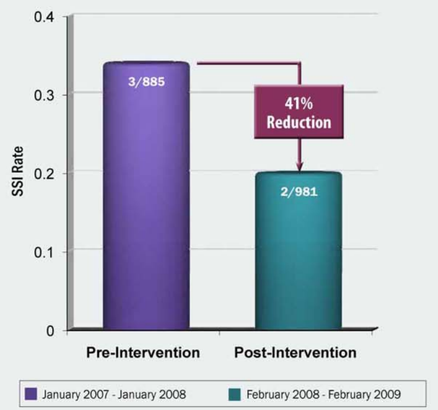
The total number of infections relative to the total number of patients was calculated to obtain the SSI rate. Fisher's exact test was used to calculate the change in SSI rate over time. Significance was defined as an alpha level of 0.05.

RESULTS

A total of 981 patients were enrolled in the study between February 2008 and February 2009. Data from these patients were compared with data from 885 patients between January 2007 and January 2008.

The comparison showed a 41% reduction in the SSI rate, from 0.34 (3/885) per 100 operative procedures to 0.2 (2/981) per 100 operative procedures. Because the historical rate used for comparison was very small, statistical significance could not be shown.

Surgical Site Infections Pre- and Post-Intervention



CONCLUSION

In this study, comprehensive nursing education on SSI prevention and modification of the patient bathing protocol to eliminate bath basins decreased the rate of SSIs by 41% in critically ill surgical patients.

CLINICAL IMPLICATIONS

- A comprehensive nurse education program provides updated, evidence-based guidance for preventing SSIs and highlights the importance of effective infection prevention practices.
- Bathing with prepackaged cloths eliminates potential exposure to bacteria from patient bath basins, which are known to be a cause of SSIs.
- Removal of bath basins helps ensure compliance with the use of prepackaged cloths.
- Staff may remain enthusiastic about quality improvement efforts with the posting of infection data each month to ensure ongoing open communication on study outcomes and efforts.
- Any measure that reduces SSIs results in reduced patient morbidity, mortality, and hospital costs.

* ComfortBath®, Sage Products, Cary, IL

References

1. de Lissovoy G, Fraeman K, Hutchins V, Murphy D, Song D, Vaughn BB. Surgical site infection: Incidence and impact on hospital utilization and treatment costs. *Am J Infect Control*. 2009;37:387–397.
2. Kirkland KB, Briggs JP, Trivette SL, Wilkinson WE, Sexton DJ. The impact of surgical-site infections in the 1990s: Attributable mortality, excess length of hospitalization, and extra costs. *Infect Control Hosp Epidemiol*. 1999;20:725–730.
3. 5 Million Lives Campaign. Getting Started Kit: *Reduce Surgical Complications How-to Guide*. Cambridge , MA : Institute for Healthcare Improvement; 2008. (Available at www.ihi.org)
4. Anderson DJ, Kay KS, Classen D, et al. Strategies to prevent surgical site infections in acute care hospitals. *Infect Control Hosp Epidemiol*. 2008;29:S51–S61.
5. Johnson D, Lineweaver L, Maze LM. Patients' bath basins as potential sources of infection: A multicenter sampling study. *Am J Crit Care*. 2009;18(1):31–40.


Surgical trauma ICU team