

Prevention Programs

273

Use of Goal Sheets Reduces the Incidence of Ventilator Associated Pneumonia

Melissa F. Perkal, MD¹, Mary Jane Rubino, RN², Bobbie Welch, RN², Karen Rosenbeck, RN², Maureen Levey, CCRN², Kelly Swan, RN², Hilary C. Cain, MD¹, Richard A. Martinello, MD¹.

¹VA Connecticut Healthcare System and Yale University School of Medicine, West Haven, CT, USA, ²VA Connecticut Healthcare System, West Haven, CT, USA.

Background:

Ventilator associated pneumonia (VAP) is a leading cause of healthcare associated infection in intensive care units (ICU) and reflects 60% of all deaths attributable to healthcare associated infections.

Objective:

To decrease VAP rates by the implementation of evidence-based practices using a strategy based on daily ICU goal sheets.

Methods:

Literature review identified 6 clinical practices shown to decrease the risk of VAP and/or the complications of mechanical ventilation; prophylaxis to prevent venous thrombosis and peptic ulcers, elevating the head of bed to >30 degrees, daily sedation vacation, daily readiness to wean assessment and spontaneous breathing trial, if indicated. Education sessions defining these practices and goal sheets were held at the start of the program and educational signs were placed by the head of the beds of all ventilated patients. Compliance with each practice element was determined by documentation on daily goal sheets which were completed by nursing and clinical staff. Surveillance for VAP was performed according to CDC/NHSN guidelines. Cox proportional hazards analysis was used to compare pre and post intervention rates of VAP.

Results:

The pre-intervention phase was between 10/1/04 and 9/30/05, followed by a 3 month washout period, and the intervention phase was between 1/1/06 and 11/30/06. Median goal sheet use was 67% in the SICU and 30% in the MICU (P<0.001). All 6 goal sheet elements were completed for 99% in the SICU and 39% in the MICU (p=<0.001). The elements most commonly not completed by the later group were; daily assessment for sedation vacation (57%), daily assessment for readiness to wean (50%) and daily spontaneous breathing trial (50%). The rate of VAP in the SICU improved 91% from 13.6 to 1.0 VAP/1000 ventilator days (HR 0.09, P=0.02). While the rate of VAP in the MICU decreased 43%, the change was not statistically significant (HR 0.57, P=0.33). The duration of ventilation was found to be significantly less in the MICU during the intervention compared with the pre-intervention phase; median 4 v. 6 days, P=0.04. The median duration of ventilation in the SICU was 2 days during both phases (P=0.39).

Conclusions:

There was a direct relationship between compliance with goal sheet use with completion of all elements with a significant reduction in the rate of VAP. The use of daily goal sheets to track evidence based practice is effective to decrease the rate of VAP.

	MICU	SICU
--	------	------

	Pre	Post	P	Pre	Post	P
Age (median)	70	76	.15	71	68	.49
Gender (M%)	71 (95)	79 (100)	NS	173 (98)	161 (99)	NS
Vent episodes	95	89	-	200	188	-
VAP Rate	14.3	7.2	.33	13.6	1.0	.02

274

Reduction of Contaminant Isolation Using a Blood Culture Maneuver Surveillance Program

Jin Hwa Kim, RN¹, Tae Hyong Kim, M.D. Ph.D.¹, Eun Ju Choo, M.D. Ph.D.², Su Ha Han, RN², Eun Jeung Lee, M.D.¹.

¹SoonChunHyang University Hospital, Seoul, Republic of Korea, ²SoonChunHyang University Hospital, Bucheon, Republic of Korea.

Background

Contaminant isolation caused by wrong blood culture maneuver not only delays the diagnosis of bacteremia but also results in the unnecessary use of antimicrobial agents.

Objectives

The present study attempted blood culture maneuver surveillance monitoring in order to suppress contaminant isolation caused by wrong culture maneuver and to enhance the rate of reliable pathogenic bacteria isolation.

Methods

This study conducted a retrospective survey that statistically processed the positive results of blood culture and blood collection information using a blood culture surveillance OCS program developed using a computer system by a university hospital with 700 beds in Seoul. The blood culture maneuver surveillance and improvement activities were carried out at all wards, and the contents are as follows;

1) periodical education on correct maneuver 2) identification of the real name of blood collectors; 3) self-evaluation of maneuver by blood collectors and evaluation by observers (the persons in charge of the wards) 4) automatic report of the results of blood culture to the physicians in charge through SMS, 5) quarterly evaluation by the infection management office and positive feedback by awarding the Prize of Magic Hand to the blood collector of lowest contaminant isolation rate.

Results

According to the results of culture, contaminants were defined as Coagulase negative staphylococcus, Bacillus and Corynebacterium. During the period from April to September 2005, the number of prescriptions of blood culture microbial test was 2,154, the contaminant isolation rate was 7.7%. In most cases, the quantity of collected blood was less than the recommended standard (10cc per bottle) in literature.

The result of culture during the period from April to September 2006, which was after the research activity, was compared with the result of culture during the control period from April to September 2005. Of data in 2006, outpatients and patients in the emergency room, who were not covered by the surveillance activity, were excluded.

During the period from April to September 2006, the number of prescriptions of blood

culture microbial test was 3,399, the contaminant isolation rate was 6.3%.

Conclusion

The percentage of contaminant isolation cases in the whole of the blood culture cases was 7.7% in the control group and 6.3% in the experimental group. The period from January to March was excluded because interns were shifted during that time, which might affect the results of this research. From April to September, we could observe meaningful differences between before and after the improvement activities. According to the results of analyzing factors related to blood collection, the small quantity of blood collection and blood collection from lower extremity veins were in a statistically significant relation with the increase of the contaminant isolation rate.

275

Impact of Two Different Levels of Performance Feedback on Compliance with Infection Control Process Measures in Two Intensive Care Units

Susan Assanasen, MD, Michael B. Edmond, MD, MPH, MPA, Gonzalo M. L. Bearman, MD, MPH.

Virginia Commonwealth University Medical Center, Richmond, VA, USA.

Background:

Healthcare-associated infections (HAIs) cause serious morbidity and mortality in intensive care units (ICUs). Evidence-based guidelines for infection control exist, but compliance with these standards among health care workers remains low. Education alone aimed at improving compliance is frequently of short-term benefit. Performance monitoring and feedback of infection control process measures is an important method for improving compliance.

Objective:

To determine the relative impact of different levels of infection control process measure feedback on compliance in an ICU setting.

Methods:

Proportion of head of bed (HOB) elevation, hand hygiene (HH) compliance, and proportion of femoral catheter (FC) to all central venous catheter days were observed in a medical ICU (MICU) and a surgical ICU (SICU) from April 2004 to June 2006. After a 3-month baseline observation phase (P1), we provided quarterly feedback on process measure compliance to unit leaders (medical director and nurse manager) from July 2004 to June 2005 (P2). From July 2005 to June 2006 (P3), process measure performance was provided to unit leaders and to all staff via highly visible color posters that also summarized the impact of HAIs and emphasized NI risk reduction practices. Process measure compliance was compared after each intervention (P1 vs P2, P2 vs P3). A survey was performed to assess the influence of the posters.

Results:

The analysis included 6,948 HOB observations, 1,576 HH opportunities, and 16,572 catheter-days. Comparing P1 with P2, MICU and SICU HOB elevation rates improved, from 55% to 97% ($P<0.001$) and from 46% to 78% ($P<0.001$), respectively. A decline in FC use was observed in P2: 18% vs. 10% ($P<0.001$) for MICU and 8% vs. 3% ($P<0.001$) for SICU. No significant difference in HH compliance was observed in P2 for MICU: 32% vs. 42% ($P=0.19$) or SICU 50% vs. 51% ($P=0.88$). In P3, a significant improvement in HH

compliance was observed in both ICUs: 78% ($P < 0.001$) for the MICU and 65% ($P < 0.001$) for the SICU. In P3, SICU HOB elevation rates increased from 78% to 90% ($P < 0.001$). However, MICU HOB elevation rates decreased to 95% ($P = 0.01$). There was no significant change in FC use in P3 for MICU (10%) or SICU (3%). There were 47 survey respondents, with a response rate of 33%. Respondents were nurses (83%), physicians (8.5%), and other healthcare personnel (8.5%). Two-thirds reported that the poster information changed their practices. Nearly all respondents (93%) knew that their HH practices were being observed, however, 57% claimed that HH compliance was not influenced by observation.

Conclusions:

Feedback of infection control process measures to unit leadership significantly improved compliance with HOB elevation rate and FC use but not HH. Improvement in HH was observed following feedback directly to unit staff and leadership through strategically placed educational posters.

276

Physician's Perception, Belief, Attitude, and Knowledge Concerning Antimicrobial Resistance

Carla M. Guerra¹, Luci Correa¹, Carlos A. P. Pereira¹, Armando R. Neves Neto¹, Henrique L. Godoy¹, Armando R. Neves Neto¹, Denise M. Cardo².

¹UNIFESP, Sao Paulo, Brazil, ²Centers for Disease and Control and Prevention, Atlanta, GA, USA.

Background:

Efforts have been directed to improve the robustness of tools needed for effective antimicrobial resistance control. These interventions include guidelines and educational programs. In practice, providing information and increasing awareness of a problem do not equate with appropriate behavior change.

Objectives:

To assess the knowledge, beliefs, and physicians' practices about antimicrobial use and resistance. In addition, to know their barriers and suggestions about antimicrobial resistance control in order to design more effective interventions.

Methods:

A cross sectional survey was conducted in a teaching hospital, with 680 beds, from July 1st through September 30th 2005. We designed a self-administered questionnaire to assess the physician's cognitive factors about antimicrobial resistance. The survey consisted questions in five content areas: experience with antimicrobial use, perceptions of the problem of antimicrobial resistance, continuing medical education, causes of antibiotics resistance or possible barriers to compliance with infections control precautions, and suggestions for preventing the antimicrobial resistance. The suggestions for preventing the antimicrobial resistance were extracted from CDC's Campaign to Prevent Antimicrobial Resistance in Health-Care Settings.

Results:

The survey was completed by 310 physicians. Antibiotic resistance was perceived as a very important problem by 99% of the respondents. Most of physicians (86.7%) agreed antibiotics are overused in general and 97.7% of them believed that widespread and

inappropriate antibiotic use were important causes of resistance. The strategies “Target antimicrobial therapy to likely pathogens and local antibiogram”, “Physicians’ education about antimicrobial therapy”, and “To known pathogens and antimicrobial susceptibility test results” were the three most commonly cited strategies as most important to preventing antimicrobial resistance. On the other hand, “Campaigns about antimicrobial resistance prevention”, “Vaccination of at-risk hospital patients and healthcare personnel”, and “Practice antimicrobial control” were the three most commonly cited strategies as least important to preventing antimicrobial resistance. Most physicians tended to underestimate the prevalence of antibiotic resistance and 20.0% of the respondents reported that didn’t know the prevalence of antibiotic resistance for 3 bug-drug combinations.

Conclusions:

Interventions are more likely to be effective if professional’s beliefs, perceptions and attitudes were known. Thus, a better understanding of what physicians know and believe about issues of antimicrobial use and resistance can enhance the effectiveness of interventions targeted at improving in-hospital antimicrobial use.