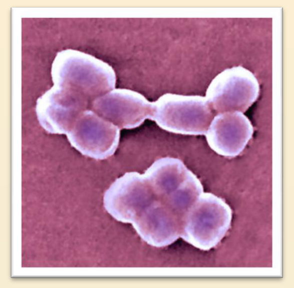
An Intervention to Reduce the Rate of Hospital-Acquired Acinetobacter Infections in an Urban Community Teaching Hospital

Robert B. Hulette, Infection Control and Patient Safety Officer, Nashville General Hospital at Meharry
Adjunct Assistant Professor, Family and Community Medicine, Meharry Medical College

BACKGROUND

Incidence of Acinetobacter infection in hospitals has dramatically increased in recent years becoming a significant global problem. (1,2)



These infections are often very difficult and costly to treat and have a mortality rate that approaches 75% in some settings (1, 2, 3). Moreover, Acinetobacter presents significant infection Control challenges since it may colonize both environmental surfaces as well as skin surviving for many months, may readily cause Hospital-Acquired Infections (HAI), is often resistant to multiple antibiotics, and often infects critically ill patients. (2,4,5,6). Accordingly, hospitals are often forced to take extensive and costly steps to prevent its spread that may be impractical in resource-limited settings. We present an easy to implement program for the reduction of Acinetobacter HAI rates in hospitals.

METHODS

For this project we initiated a program in a 100-bed urban community teaching hospital in the U.S. whereby the Hospital Environmental Services Staff was notified immediately and automatically if any culture of any specimen taken from a hospital inpatient was found to be positive for Acinetobacter. Upon receiving this notification, the EVS staff would augment their standard terminal cleaning procedures by fogging the patient room with a chlorine dioxide solution (Figure 1) at the time of patient discharge in addition to their standard cleaning practices (Figure 2). We then reviewed the rates of infections meeting CDC NHSN definitions for HAI resulting from these pathogens for the 12 month period before and after the initiation of the intervention through active and passive surveillance of laboratory and other clinical records, coding data, and syndromic surveillance as well as the rate of community acquired laboratory-confirmed community acquired infections over this same time frame

INTERVENTION PROCESS

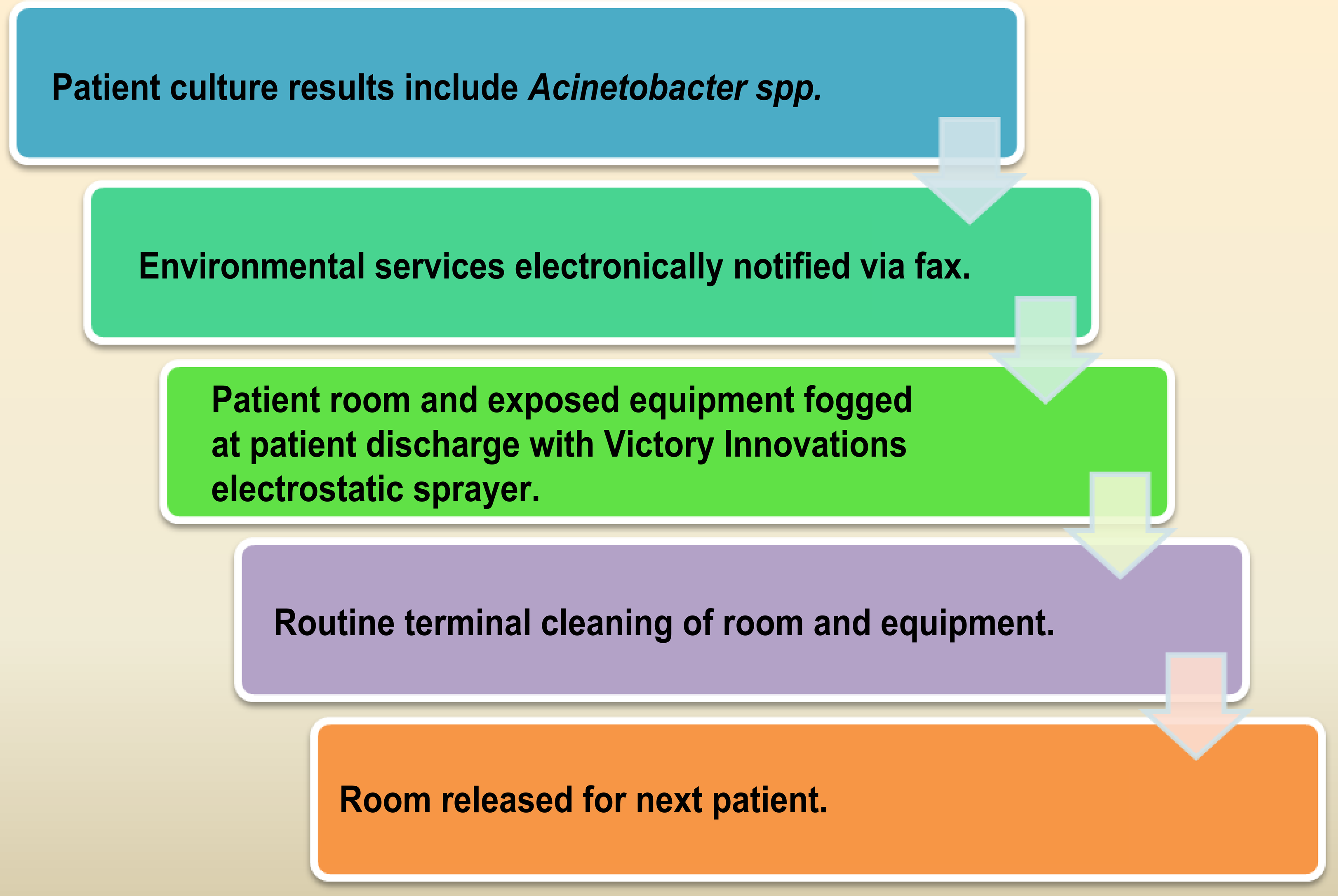


Figure 1. Intervention Process

Figure 2. Chlorine Dioxide Solution and electrostatic sprayer

RESULTS

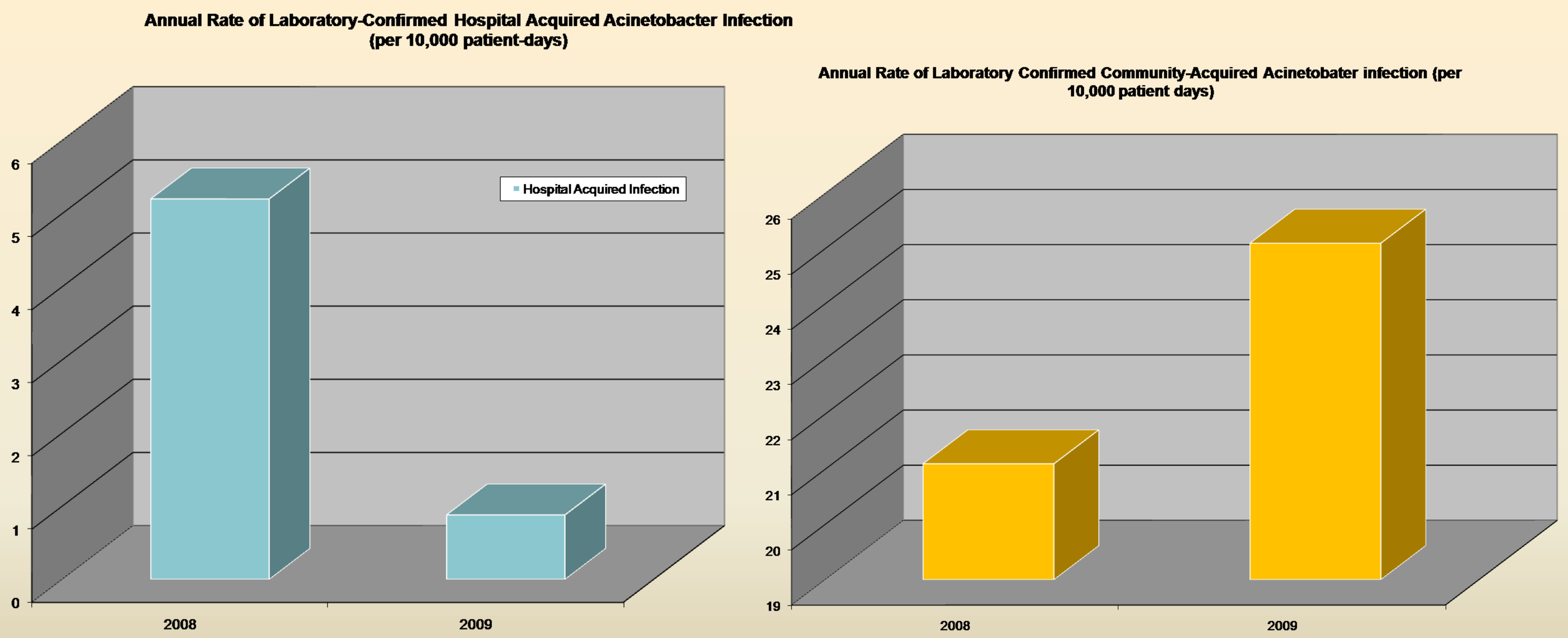


Figure 3. Charts of Results

RESULTS CONT'D

In the 12 month period prior to the intervention, 13 Acinetobacter HAI were identified out of 25089 patient days for an aggregate rate of 5.2/10000 patient days (95% CI 3.0-8.9). For the period of the intervention only 2 Acinetobacter HAI were identified out of 22704 patient days for an aggregate rate of 0.88/10,000 patient days (95% CI 0.2-3.2) a decrease in Acinetobacter HAI Rate of 4.3/10000 (95% CI 1.1-8.0) Over the study period, the incidence of laboratory-confirmed community acquired Acinetobacter infection increased slightly from 4.42/month to 4.75/month.

CONCLUSIONS

The fogging of patient rooms of Acinetobacter infected patients with chlorine dioxide at discharge implemented at our hospital led to significant reductions in Acinetobacter HAI rates without the need for intrusive and costly additional interventions.

ACKNOWLEDGEMENTS

The Author wishes to thank the following:

Mr. Dean Miller and the NGH EVS Team
The Meharry Acinetobacter Study Team (MAST)
Mr. James Burnett

Acinetobacter image courtesy of Case Western Reserve University
http://www.case.edu/think/breakingnews/Bacteria.html

Funding for this project was provided solely by Nashville General Hospital at Meharry.
The author reports no conflicts of interest.

LITERATURE CITATIONS

1. Sunenshine, R.H, Wright, M. et. al.(2007) Multidrug-resistant Acinetobacter Infection Mortality Rate and Length of Hospitalization. Emerging Infectious Diseases . Vol. 13, No. 1. pp 97-103
2. Munoz-Price, L.S. and Weinstein, R.A (2008) Acinetobacter Infection. N Engl J Med;358:1271-81
3. Falagas, M.E. and Rafailidis,P. (2007) Attributable mortality of Acinetobacter baumannii: no longer a controversial issue. Critical Care, 11:134
4. Perez, F. et al (2010) Antibiotic resistance determinants in Acinetobacter spp and clinical outcomes in patients from a major military treatment facility. American Journal of Infection Control. 38:1. Pp63-65
5. Y. Doi, et. al (2009) . Extensively Drug-Resistant Acinetobacter baumannii. Emerging Infectious Diseases.15:6 pp. 980-981
6. Houang,, E.T.S. et al (2001) Epidemiology and Infection Control Implications of Acinetobacter spp. in Hong Kong. Journal of Clinical Microbiology. 39:1 pp 228-234.