American Journal of Infection Control 42 (2014) 1039-43

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major article

Clinical, patient experience and cost impacts of performing active surveillance on known methicillin-resistant *Staphylococcus aureus* positive patients admitted to medical-surgical units

Jennifer C. Goldsack MChem, MA, MS [a,*], Christine DeRitter BSN, RN-BC [b], Michelle Power BSMT(ASCP), CIC [c], Amy Spencer MSN, RN-BC [b], Cynthia L. Taylor RN, MS, CRN, BSN [c], Sofia F. Kim MD [d], Ryan Kirk [a], Marci Drees MD, MS [d]

[a] *Value Institute, Christiana Care Health System, Newark, DE*
[b] *Nursing, Christiana Care Health System, Newark, DE*
[c] *Infection Prevention Department, Christiana Care Health System, Newark, DE*
[d] *Department of Medicine, Christiana Care Health System, Newark, DE*

Key Words:
Methicillin-resistant *Staphylococcus aureus*
Cost
Patient experience
Surveillance
Isolation

Background: There is a large and growing body of evidence that methicillin-resistant *Staphylococcus aureus* (MRSA) screening programs are cost effective, but such screening represents a significant cost burden for hospitals. This study investigates the clinical, patient experience and cost impacts of performing active surveillance on known methicillin-resistant *S aureus* positive (MRSA+) patients admitted to 7 medical-surgical units of a large regional hospital, specifically to allow discontinuation of contact isolation.

Methods: We conducted mixed-methods retrospective evaluation of a process improvement project that screened admitted patients with known MRSA+ status for continued MRSA colonization.

Results: Of those eligible patients on our institution's MRSA+ list who did complete testing, 80.2% (130/162) were found to be no longer colonized, and only 19.8% (32/162) were still colonized. Forty-one percent (13/32) of interviewed patients in contact isolation for MRSA reported that isolation had affected their hospital stay, and 28% (9/32) of patients reported emotional distress resulting from their isolation. Total cost savings of the program are estimated at $101,230 per year across the 7 study units.

Conclusion: Our findings provide supporting evidence that a screening program targeting patients with a history of MRSA who would otherwise be placed in isolation has the potential to improve outcomes and patient experience and reduce costs.

Copyright © 2014 by the Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a primary cause of hospital-acquired infections.[1,2] The Society for Healthcare Epidemiology of America and Centers for Disease Control and Prevention guidelines both recommend contact isolation for patients with MRSA infection or colonization[3-5]; however, the duration of contact precautions for patients who are colonized or infected remains undefined.

There is a large and growing body of evidence that MRSA screening programs are cost effective,[6-19] but such screening represents a significant cost burden for hospitals.[20,21] Increasingly, a targeted approach to screening strategies has been recommended.[22-24] As part of this targeted approach to MRSA control, it is commonly presumed that patients with a history of MRSA are likely to be still colonized when they are readmitted to the hospital. Rather than performing active surveillance cultures on patients with known MRSA history, many hospitals maintain lists of these methicillin-resistant *S aureus* colonized positive (MRSA+) patients and automatically place them in isolation on readmission, despite the duration of MRSA colonization being highly variable and poorly defined.[25]

* Address correspondence to Jennifer C. Goldsack, MChem, MA, MS, Research Associate, Christiana Care Health System, Value Institute, John H. Ammon Medical Education Center, 4755 Ogletown-Stanton Rd, Ste 2E55, Newark, DE 19718.
E-mail address: jgoldsack@christianacare.org (J.C. Goldsack).

Conflict of interest: None to report.

0196-6553/$36.00 - Copyright © 2014 by the Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.ajic.2014.07.011

Many studies show that contact isolation effectively controls MRSA in the hospital setting.[26-30] However, isolation patients receive fewer visits from health care providers, have less contact time with clinicians during their hospital stay, and may suffer both clinically and psychologically as a consequence.[31-35] Hospitals have an ethical obligation to implement policies that optimize the risk-benefit ratio of contact isolation measures; this includes maximizing benefits by protecting the patient population who are not already colonized with MRSA and minimizing negative impacts on patients placed in contact isolation.[36] This study investigates the clinical, patient experience and cost impacts of performing active surveillance on known MRSA+ patients admitted to 7 medical-surgical units of a large regional hospital, specifically to allow discontinuation of contact isolation. The rationale was that opportunities may exist for reducing costs while simultaneously improving outcomes and patient experience by challenging the assumption that most patients with a history of MRSA readmitted to the hospital remain colonized.

METHODS

Study overview and setting

We conducted a mixed-methods retrospective evaluation of a process improvement project that screened admitted patients with known MRSA+ status for continued MRSA colonization. The project was implemented from February 8-November 8, 2013, in 7 medical-surgical units at Christiana Hospital, a 907-bed hospital in Newark, Delaware. Christiana Hospital is the primary hospital of Christiana Care Health System, a not-for-profit, nonsectarian, independent academic medical center. The study was approved by the Christiana Care Institutional Review Board.

Intervention design and implementation

Hospital policy allowed for MRSA colonization testing beginning 1 year from last prior positive MRSA culture, but this information was not readily available to clinicians caring for the patients because the MRSA+ list was maintained in the infection prevention department. The MRSA clearance program was designed collaboratively by a bedside nurse, a nurse educator, infection preventionists, and a physician. The goal of the program was to facilitate communication of which MRSA+ patients were eligible for screening for removal of contact isolation.

Study population

All inpatients admitted to the study units who were known MRSA+ in the institutional records were considered for inclusion. Those with any positive MRSA culture within the last 12 months were excluded, as were patients who received any of the following antibiotics in the previous 72 hours: trimethoprim/sulfamethoxazole; mupirocin (nasal route only); ceftaroline; clindamycin; daptomycin; all tetracyclines (tetracycline, doxycycline, minocycline); levofloxacin and all other fluoroquinolones; linezolid; rifampin; tigecycline; and vancomycin (oral or intravenous).

Screening process

Anterior nares specimens were collected from eligible patients using ESwab (Copan Diagnostics, Murrieta, CA). Both nares were sampled using a single swab. The swab was inserted approximately 2 cm into the nares and rotated against the anterior nasal mucosa for 3 seconds. Using the same swab this was repeated for the other nares for each patient being screened. For any patients whose original MRSA infections sites were still open, an additional specimen was also collected from this site. A second set of nares specimens were obtained for those patients with negative first culture results. Laboratory staff used CHROMagar MRSA (CHROMagar Microbiology, Paris, France) plates to identify MRSA using standard methodology.[37]

Program implementation

Staff training began 2 weeks prior to program implementation. Training was delivered to staff nurses and nurse leadership by a staff development specialist, infection preventionists, and the project nurse through Web education and presentations at staff meetings. Training included communication of the protocol, clear instructions, and demonstrations of how to collect specimens and contact information for any questions that arose during the program. The slides used during training are available from the authors on request.

Unit nurses reported admissions of patients on our institution's MRSA list, identified through an electronic code on their patient record, to the infection preventionists. Of those with a code for MRSA, the unit's assigned infection preventionist then searched departmental records to determine those patients whose most recent MRSA+ culture was 12 months ago, or more. The infection preventionists notified the units of these eligible patients, prompting staff nurses to order swabs for them in accordance with the nursing-driven study protocol.

Results of all MRSA tests were shared with infection preventionists, who then removed patients with 2 negative cultures from the institution MRSA+ list and removed the electronic code from the patient record.

Evaluation of the MRSA clearance program

Clinical evaluation

The primary clinical outcome was the percentage of patients who were tested and found to be no longer colonized. The number of patients on the institution's MRSA+ list for whom testing could not be completed because of discharge or administration of antibiotics was also recorded.

We conducted a retrospective chart review of patients in the study population and recorded patients' age, sex, number of hospitalizations in 12 months prior to screening, number of hospitalizations since their initial MRSA diagnosis, and comorbidities.

Patient experience evaluation

A nonprobability, convenience sample of 32 patients in isolation as a result of known prior MRSA+ culture were surveyed after the project period. Patients were sampled from each of the 7 study units. Patients with cognitive impairments or who did not speak English were excluded. A research assistant surveyed patients at the bedside, using our questionnaire, which included questions about patients' knowledge and understanding of their MRSA status, how MRSA isolation impacted their hospital stay, and any emotional impact of their MRSA isolation. We developed this questionnaire after a review of the literature did not reveal any validated or published instruments. During its development, 1 member of the team provided a patient viewpoint as they had experienced MRSA isolation during a previous hospitalization.

Cost evaluation

The annual cost impact of screening across all 7 study units was calculated based on the cost of the screening program itself and the estimated cost burden of unnecessary isolation.

The cost of MRSA screening included the use of an ESwab and culture using CHROMagar, each per screening test ordered. Each patient could have 1 or 2 screening tests. Laboratory material and personnel costs were reported by our institution's pathology laboratory based on standard laboratory methodology.

دانلود مقاله

http://daneshyari.com/article/2636890


daneshyari
دانشیاری

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات