



DEPARTMENT OF VETERANS AFFAIRS (VA)

Unique Factors Rural VA Hospitals Face in Implementing Healthcare-associated Infection Prevention Initiatives

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Introduction

Healthcare-associated infections (HAIs) affect nearly 2 million hospitalized patients annually¹ and is both costly and potentially life-threatening. Though most HAIs associated with the use of medical devices may be avoidable, studies have found considerable variation in ways U.S. hospitals go about preventing such infections.^{2,3,4} Most of these studies, however, have focused on large, urban hospitals which differ significantly from rural hospitals in regard to location, patient type, number and type of services offered, as well as resources and staffing.⁵ Studies focusing on rural hospitals have found that they face unique factors in implementing HAIs prevention initiatives, including lack of specialized staff, limited resources, and a low prevalence of infection.^{5,6,7} Rural hospitals are also more likely to be affected by resource-intensive regulations such as state mandates for reporting HAIs.^{8,9} Given that 2000 U.S. hospitals are considered rural,^{10,11} they constitute a significant focus of concern when considering the challenges faced in enforcing HAIs patient safety.

Rural VA hospitals provide an apt setting for study of HAI in rural hospitals since such VA hospitals resemble rural hospitals in general, but must respond to larger healthcare system mandates, including those having to do with HAIs. The purpose of this study was to investigate the practices used to prevent HAIs in rural

Key Findings

Rural VA hospitals use key practices to prevent healthcare-associated infections (HAIs) such as catheter-associated urinary tract infection (CAUTI), ventilator-associated pneumonia (VAP), central-line associated bloodstream infection (CLABSI), and methicillin-resistant *Staphylococcus aureus* (MRSA). However, certain efforts to prevent CLABSI and MRSA lag behind other efforts to some extent.

The study also revealed that rural VA hospitals face specific challenges regarding HAIs prevention, including

- Health care staff shortages
- Relative difficulty in accessing new knowledge in infection control
- Disconnects between local needs and upper-level mandates

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VA hospitals and explore the unique factors these hospitals face in adopting such practices.

Methods

This study used a sequential, mixed methods approach, utilizing both survey data and telephone interviews followed by selected site visits. A VA hospital was defined as “rural” in terms of both its physical location and the number of patients it serves that are living in rural areas.¹²

Initial data collection

Survey questionnaires were sent to the infection prevention coordinators of all VA hospitals operating acute care beds (n=119) in March 2009. The survey included questions regarding the frequency and use of four practices used to prevent HAI, focusing specifically on prevention of 1) catheter-associated urinary tract infection (CAUTI), 2) ventilator-associated pneumonia (VAP), 3) central-line associated bloodstream infection (CLABSI), and 4) methicillin-resistant *Staphylococcus aureus* (MRSA). Information was also collected regarding general hospital characteristics such as number of hospital and Intensive Care Unit beds, academic affiliation, and employment of hospitalists. Safety culture and support for the hospital’s infection prevention program were also investigated.

Focused telephone interviews

Data obtained from the above surveys were used to conduct 8 semi-structured phone interviews with key personnel at 4 rural VA hospitals. Through the initial contact other personnel were suggested for interviews

to gather additional information regarding hospital organization and HAIs prevention strategies.

Hospital site visits

Two of the 4 rural hospitals were chosen for site visits based on contrasting characteristics. In order to obtain a variety of perspectives, staff from all levels within the hospitals’ organization were interviewed, including follow-ups of those who had previously been interviewed by phone. Nineteen face-to-face interviews were conducted.

Data analysis

Survey data were intended to be primarily descriptive. Rural and non-rural VA hospitals were compared.

Respondents rated frequency of use of particular HAIs prevention practices on a scale of 1 to 5 (one being never and five being always).

Content analysis was used for the qualitative investigation. Themes that were developed were from both the preset question categories and respondents’ responses. The interview responses were used to inform the survey responses as a way to arrive at a more holistic view of infection prevention initiatives in rural settings.

Findings

The **survey** found that the administrative leadership of the majority of rural VA hospitals (82%) expressed good to excellent support of infection prevention, yet less than 1/3 of rural VAs had an epidemiologist

Figure 1.

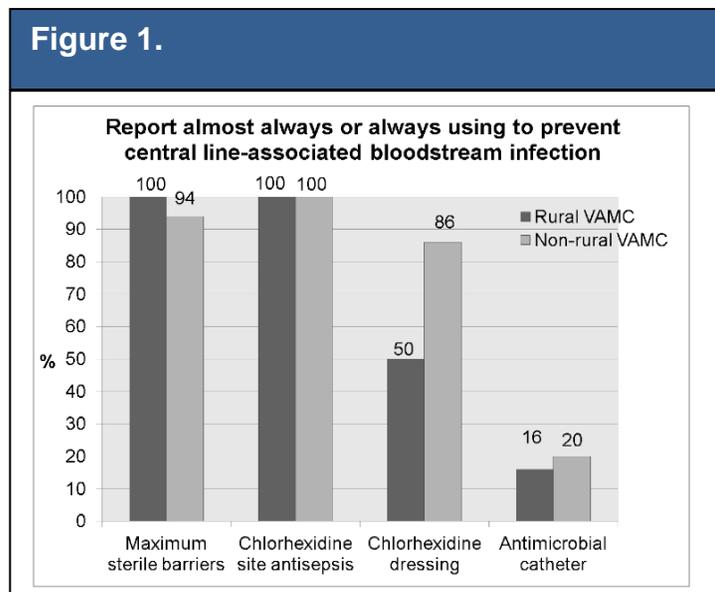


Figure 2.

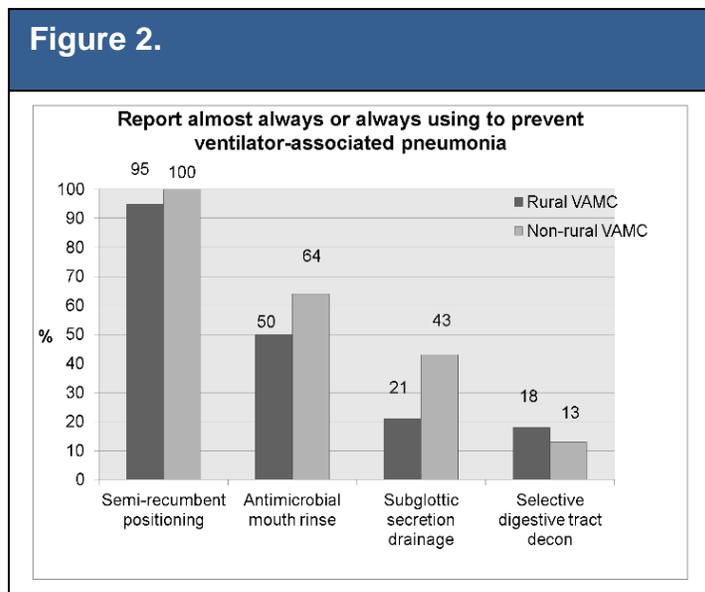


Table 1. 2009 Characteristics of Rural versus Non-rural VA Hospitals

	Rural VA's	Non-Rural VA's
	(N = 22)	(N = 50)
Number of facility beds*, mean (range)	179 (44 - 449)	325 (57 - 967)
Number of facility beds, * %		
< 100	41	4
100 - 249	27	50
≥ 250	32	46
Number of acute care beds, mean (range)	50 (10 - 150)	120 (13 - 300)
Number of acute care beds, %		
< 25	20	3
25 - 49	45	21
50 - 99	25	21
≥ 100	10	55
Number of ICU beds, mean (range)	8 (0 - 18)	18 (0 - 45)
Have hospitalists, %	77	79
Affiliated with a medical school, %	50	86
Number of full-time equivalent infection preventionists (IP), mean (range)	1.2 (.5 - 2)	2.3 (1 - 6.8)
Have hospital epidemiologist, %	23	67
Lead infection preventionist certified in infection control, %	50	70
Participate in a collaborative effort to reduce HAIs, %	73	90
Level of support for infection control by administrative leadership (good, very good or excellent), %	82	72
Leadership driving us to be a safety-centered institution (agree or strongly agree), %	82	82

*Sum of all individual bed counts obtained from AHA annual survey database, so can include non-acute as well as acute care beds

on staff. Rural hospitals employed 1.2 full-time employee infection preventionists compared to 2.3 among non-rural hospitals, and only 50% had a *certified* infection preventionist (Table 1, with other results). Survey results also showed that most rural and non-rural VA hospitals were using key practices to prevent CLABSI (Figure 1) and VAP (Figure 2).

Specific practices to prevent CAUTI were reported by a lower percentage of both rural and non-rural VA hospitals (Figure 3),

while active surveillance of MRSA was nearly universal (Figure 4), though other MRSA practices were less common in rural VA hospitals.

The **interviews** revealed three prominent themes:

1) **Lack of human capital.** The largest issue facing rural VA hospitals was recruitment and retention of physicians, requiring recurring staff education.

2) **Difficulty in accessing new knowledge.** Since rural VA hospitals are less likely than non-rural VA hospitals to have academic affiliations, their access to new knowledge was found to be relatively limited. Thus, rural HAIs preventionists are often forced to improvise ways to access needed expertise, relying, for example, on the Veterans Integrated Service Network (VISN), cultivating a relationship with a state Association for Professionals in Infection Control, or becoming more reliant on tele-medicine.

3) **Mandate conflicts.** All VA hospitals are generally expected to implement mandates issued at both national and VISN levels. These “top-down” mandates are not always universally effective or relevant at local levels, and may divert funds and energy from more needed activities. Difficulties in implementing such mandates as well those involved in assuring general HAIs prevention in outlying rural VA clinics were also described.

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Figure 3.

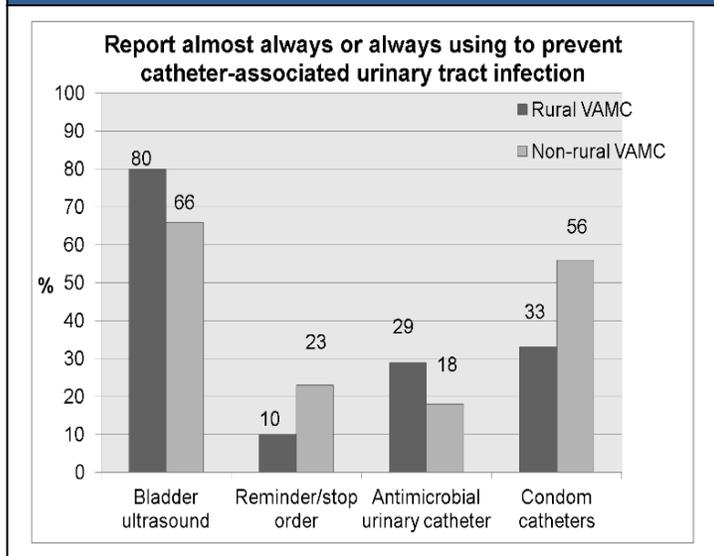
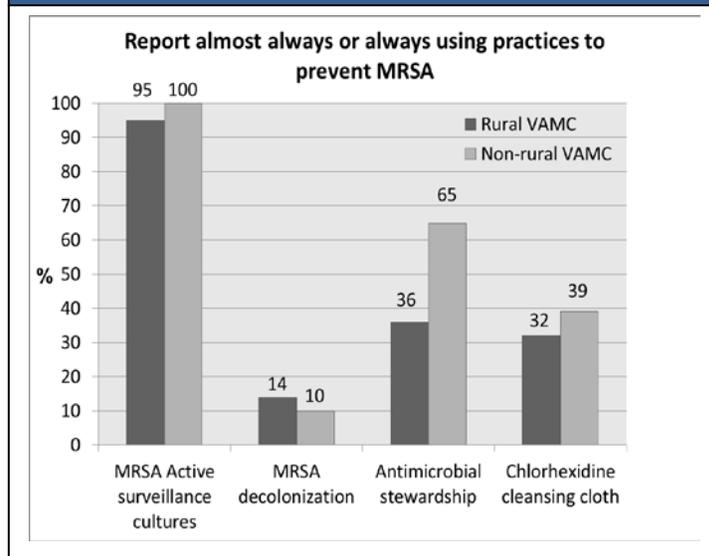


Figure 4.



Impact

Though rural VA hospitals do implement useful HAIs prevention strategies, certain factors affect how and when these practices are used. These factors include

- staff expertise
- isolated context
- occasional poor fit between upper-level mandates and grass-roots realities.

Further understanding of these factors is necessary to achieve greater effectiveness in rural VA hospitals' prevention of HAIs.

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