Certification in Infection Control Matters: Impact of Infection Control Department Staffing Characteristics and Hospital Policies on Rates of MRSA Bloodstream Infections

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BACKGROUND:
- Infections due to methicillin-resistant Staphylococcus aureus (MRSA) cause significant morbidity and mortality in the hospital setting.
- Hospitals utilize different interventions to combat MRSA, however, the adoption of these surveillance and infection control interventions is not well described.
- Additionally, there is paucity of data exploring structural (i.e. hospital and infection control department) characteristics that influence MRSA rates.

PURPOSE:
- Describe the use of infection control policies aimed at reducing MRSA in California.
- Assess the relationship between the presence and/or correct implementation of infection control policies, structural characteristics and rates of MRSA BSI.

METHODS
- In 2010, we surveyed 331 acute care hospitals in California using a modified Dillman technique.
- Hospitals provided data on:
  - Hospital-wide MRSA BSI rates
  - Infection control department staffing (i.e. infection control (IC) director certification in infection control, number of infection preventionists (IP) full-time equivalents (FTE) per 100 beds, hours worked by IC director per week)
  - MRSA policies:
    1. Screening all admissions for MRSA
    2. Targeted MRSA admission screening
    3. Periodic screening after admission
    4. Use of isolation/contact precautions (CP) pending a MRSA screen
    5. Use of contact precautions for culture-positive patients
    6. Surveillance of microbiology results for new MRSA cases
- Univariate negative binomial regressions were conducted to assess the relationship between each of the six policies, infection control department staffing and MRSA BSI rates.
- Variables with p-values < 0.2 were entered into a multivariable model.
- First, we explored whether simply having a policy in place was associated with decreased rates.
- Then, we explored the association between full compliance with policies defined as 95% of the time or more (vs. other) and MRSA BSI rates.

RESULTS:
- Demographics:
  - 180 hospitals completed the survey (response rate 54%).
  - The mean BSI rate provided by 91 hospitals was 0.43 MRSA BSI per 1,000 central line days (range = 0 – 8).
- Adoption of MRSA Infection Control Policies
  - Use of targeted admission screening for MRSA was reported by majority of hospitals (87%).
    - Screened groups included readmissions within 30 days (89%), nursing home transfers (86%), ICU (87%), dialysis (77%), and patients with specific medical conditions (55%).
  - Methods for MRSA surveillance included standard culture (37%), MRSA selective agar (32%), and PCR (24%).
  - Reported compliance varied by policy: 84% and 81% of hospitals reported full compliance with other policies was less frequently reported.
- Predictors of MRSA BSI
  - In bivariate analysis, hospitals participating in IHI and those with a certified IC director had significantly lower rates of MRSA BSI (IRR = 0.30 and 0.32, p = 0.01 and 0.02, respectively).
  - The adjusted IRR for hospitals that reported a policy to screen all admissions was 10.2 times higher compared with hospitals that did not report this policy (p = 0.01).
  - Those hospitals with a policy to target new admissions showed significantly lower MRSA BSI rates (IRR = 0.03, p = 0.01), controlling for infection control program characteristics.
  - The presence of a certified infection control director was a significant predictor of lower MRSA BSI rates in the first two models and approached statistical significance in the last two models.
- An examination of the association between full compliance with infection control policies and MRSA BSI rates revealed no statistically significant results.

CONCLUSIONS:
- Although most California hospitals are involved in activities to decrease MRSA, there is variation in specific activities utilized.
- Conducted a year after institution of legislation requiring targeted MRSA admission screening in California, this study shows a lag between implementation of mandates and implementation of policies in hospitals.
- We observed a significant relationship between universal screening and higher rates, which is not surprising since expanding surveillance and reporting to other areas is likely to identify additional cases.
- This study highlights the importance of certification and its significant impact on infection rates. The impact of certification on quality of care and patient outcomes merits further investigation.

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