

Journal Watch

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Legislative mandates for use of active surveillance cultures to screen for MRSA and VRE: Position statement from the joint SHEA and APIC task force

In recent times, at least two US states have introduced legislation aimed at controlling antimicrobial resistant pathogens through the use of active surveillance cultures to screen hospitalised patients. As a result, the Society for Healthcare Epidemiology of America (SHEA) and the Association for Professionals in Infection Control (APIC) have released a joint position statement on this issue.

The position statement reviews the legislation and the rationale for using active surveillance cultures, examines the evidence for the use of this strategy and discusses unresolved issues surrounding this legislation. Five consensus points are outlined.

The statement discusses that there is some evidence that active surveillance cultures can reduce transmission of methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE), while recognising that the majority of the evidence is from either outbreak situations or high risk areas such as ICUs. Mathematical models have also suggested that colonisation and infection can be reduced using screening, but these results must be interpreted with caution, recognising limitations and assumptions.

The experience in parts of Europe with 'search and destroy' methods has proven effective in reducing MRSA to the status of an uncommon endemic pathogen in recent years – this has involved a longstanding intensive campaign based around screening of high risk patients and sometimes staff or entire areas.

The European experience has likely influenced the current US initiatives, although it is believed that extrapolating to the US may not be straightforward. The prevalence of MRSA colonisation and infection in some regions of the US is much higher than in Europe when the 'search and destroy' programs were implemented. An unknown is the influence of community-associated MRSA, particularly as this appears to be rapidly spreading. Cost effectiveness of these strategies is also unknown, particularly in all patients as compared with high risk patients.

Unresolved issues and unintended consequences of the legislation are discussed, including impacts on infection control programs and priorities, requirements for data management, validation, monitoring compliance and enforcement. There are many questions surrounding all aspects of active surveillance: epidemiologic, biologic, clinical and logistic, all of which are discussed.

Consensus points include that APIC and SHEA do not support legislation to mandate use of active surveillance cultures to screen for MRSA, VRE or other antimicrobial resistant pathogens. Another consensus is that the SHEA and APIC support the continued development, validation and application of efficacious and cost-effective strategies for reducing infections caused by these pathogens. The APIC and SHEA also support stronger collaboration between state and local public health authorities and infection prevention and control experts.

Weber SG, Huang SS, Oriola S, Huskins WC, Noskin GA, Harriman K, Olmsted RN, Bonten M, Lundstrom T, Climo MW, Roghmann M-C, Murphy CL, and Karchmer TB. *Legislative mandates for use of active surveillance cultures to screen for methicillin-resistant Staphylococcus aureus and vancomycin-resistant enterococci: Position statement from the Joint SHEA and APIC task force.* Am J Infect Control 2007; 35:73-85.

Transmission of *Staphylococcus aureus* from maternity unit staff members to newborns disclosed through spa typing

This study was carried out in three maternity units in Sweden. It had been observed that newborn infants were colonised with *Staphylococcus aureus* in spite of the fact that their mothers were not necessarily carriers of *S. aureus* and that the infants were roomed with their mothers. The rooms had two to four beds with shared changing facilities.

Newborns and their parents were sampled on six occasions during one year. Staff (99% female) were sampled at the first and sixth occasion. A total of 218 infants and 463 parents were included, plus 212 staff and 151 environmental samples. Swabs were taken from the nostrils, ears and fingers of the adults and from the nostrils, ears and umbilical cord of babies just prior to them leaving the ward.

Swabs were cultured and MRSA isolates subjected to typing using the x-region of the spa gene. This allowed investigation of clonality of isolates between the first and sixth cultures. Of 160 isolates, 74 different spa types were found. The three most common spa types were t012 (20 isolates), t015 (10 isolates) and t021 (10 isolates) that were distributed equally between parents, staff and infants and 98 infants were colonised. In 11 cases of *S. aureus* colonisation of infants, colonisation of the father or mother was observed with the same spa type. In 13 cases of infant colonisation where a corresponding spa type was absent in the parents, the colonising spa type was observed among the staff members. In 4 cases this occurred when the parents were colonised with another spa type.

The study showed rapid colonisation of newborns with *S. aureus*, and to a higher frequency (45%) than in parents (33%) or staff members (27%). A diverse clonality of isolates was shown and the role of staff members in the spread of *S. aureus* was highlighted. Among newborns who were colonised with a *S. aureus* strain that was not recovered from their parents, the strain could often be isolated from staff members. The study supported previous evidence that staff can play a major role in the colonisation of infants with *S. aureus*.

Matussek A, Taipalensuu J, Einemo, I-M, Tiefenthal M, Löfgren S. Transmission of Staphylococcus aureus from maternity unit staff members to newborns disclosed through spa typing. Am J Infect Control 2007; 35:12-5.

Antibiotic prophylaxis and the risk of surgical site infections following total hip arthroplasty: Timely administration is the most important factor

Data regarding 1,922 patients undergoing elective hip arthroplasty were collected prospectively at eleven hospitals in The Netherlands. The specific purpose of this study was to examine the effect of the various parameters of surgical antibiotic prophylaxis on the risk of surgical site infections (SSI) following hip arthroplasty.

The multicentre study included a reasonably large number of patients and a twelve-month follow-up for all patients. However, most comparisons of risk factors failed to demonstrate significant differences. This is often difficult when the rate of infections is low (in this study it was 2.6% overall). However, in spite of this problem, the study adds weight to the evidence already in existence that timely administration of surgical antibiotic prophylaxis is important in reducing SSI rates. Rates were lower in the groups of patients where prophylaxis was administered within 60 minutes prior to surgery and lowest when it was administered within 30 minutes.

As with previous studies, multiple post-operative dosing did not contribute to reduction of the incidence of SSI.

Van Kasteren MEE, Manniën J, Ott A, Kullberg B, de Boer AS, Gyssens IC. Antibiotic Prophylaxis and the Risk of Surgical Site Infections following Total Hip Arthroplasty: Timely Administration is the Most Important Factor. CID 2007; 44(1 April):921-27.

Comparisons of healthcare-associated infections identification using two mechanisms for public reporting

Many US states are currently legislating for hospitals to report healthcare-associated infections (HAI). This article compared two methods currently in use by different states: 1. Selected infections based on using administrative discharge data (Agency for Healthcare

Research and Quality [AHRQ] Patient Safety Indicators [PSI]); 2. Centers for Disease Control and Prevention (CDC) protocols for central line-associated bloodstream infections (CLABSI).

These two mechanisms were not designed or developed to measure the same phenomena. However, both are currently being used in similar ways to meet legislative requirements for public reporting HAI. This study compared cases identified using the two methods (PSI-7) and CDC CLABSI in an elderly patient population.

Patient data was obtained and examined to compare patients identified as acquiring an infection with PSI-7 with those identified as acquiring an infection with CDC CLABSI definitions. The full sample comprised records from 14,637 patients from 41 intensive care units in 24 hospitals. Identified as having CLABSI using the CDC definition were 89 patients and using the PSI-7 method 89 patients. However, only 8 of these cases were identified using both methods. Assuming the CDC surveillance is the reference group, this translates to a specificity of 99.18% and sensitivity of only 8.99% for the identification of HAI using PSI-7. There were no significant differences between patients or settings identified using either method.

The authors note that some lack of congruence between the methods was to be expected. For example, CDC protocols include only infections that can be associated with an ICU stay. Therefore, if a patient developed a BSI three days after discharge from ICU this would be considered an HAI but would not be included in CDC surveillance. Additionally the PSI-7 indicator was not intended to capture only BSI associated with central lines but included other lines, and also inflammations as well as infections.

The reason for the lack of identification of infections using administrative data is less clear. One criticism has been that administrative data may be more representative of coding and billing practices than of health service utilisation.

The authors concluded that the discord between PSI-7 and CDC CLABSI is of concern, given that Florida is utilising PSI-7 for mandatory reporting of HAI. They note that AHRQ never intended the PSI to be used in this manner. On the other hand the CDC method for identification of HAI has been recognised as being the most valid and reliable method available. Given that public reporting is seen as a potential tool for improvement of quality of care they emphasise the need for standardisation and validation of reporting mechanisms, and for new methods for identification of HAI to be compared with current methodology.

Stone PW, Horan TC, Shih H-C, Mooney-Kane C, Larson E. Comparisons of healthcare-associated infections identification using two mechanisms for public reporting. Am J Infect Control 2007; 35:145-9.