

LETTERS TO THE EDITOR

Surveillance of Central Venous Catheter-Associated Bloodstream Infection in a Scottish Hematology Unit

To the Editor—In their recent article, Worth et al.¹ suggest a new case definition for central venous catheter (CVC)-associated bloodstream infection (BSI) to be applied in hematology units. Their reasons for not using the established definitions from the National Nosocomial Infection Surveillance (NNIS) system² are that they are complex and resource intensive. We wish to relate our experience in successfully establishing a CVC-associated BSI surveillance system in our unit using the NNIS definitions.

The hematology unit at Ninewells Hospital in Dundee, Scotland, has 13 beds and a day-patient area that cares for approximately 20 patients every weekday. During a 1-year period, data on CVC-associated BSI have been prospectively gathered. The unit's senior nurse has set up a database using Access (Microsoft) to record the number of patients with a Hickman (tunneled) catheter and the number of catheter-days per month. Information on the reason for any line being removed is also collected. The medical microbiologist (who is trained in infection control and who liaises with the unit regarding infections) performs a monthly inquiry for all positive blood culture results from the hematology unit, including the day-patient area, using the microbiology laboratory

computer (LabCentre; CliniSys). Clinical information, entered into the computer by the medical microbiologists when they telephone in positive blood culture results, can be accessed to see details such as which antibiotic was used. The microbiologist then meets with the senior nurse monthly for approximately 1 hour in the hematology unit to review which patients with bacteremia meet the NNIS system diagnostic criteria for CVC-associated BSI. Any cases for which there is still doubt about the diagnosis, the medical notes can be referred to, as these are kept on the unit.

During the 1-year period (from April 2007 to March 2008), there were a total of a 29 cases of infection in 19 patients; 11 cases of infection fulfilled criterion 1 of the NNIS definitions, and 18 cases of infection fulfilled criterion 2. Coagulase-negative *Staphylococcus* was the sole organism found in the blood cultures for 17 (58.6%) of the 29 cases of infection. The hematology unit has seen a decline in the incidence of CVC-associated BSI (albeit from a high level; see Figure), which may partly be due to the implementation of surveillance. The overall rate for that year was 12 cases of infection per 1,000 CVC-days.

A rate of 11.5 cases of infection per 1,000 CVC-days among hematology patients who used tunneled lines has been reported,³ although lower rates of infection have also been found.⁴ Despite possible contributing factors, such as neutropenia and whether the patient was hospitalized or not,⁵ we feel that the surveillance system we have implemented is worthwhile and has played a part in decreasing the incidence of CVC-associated BSI in our hematology unit. The key to

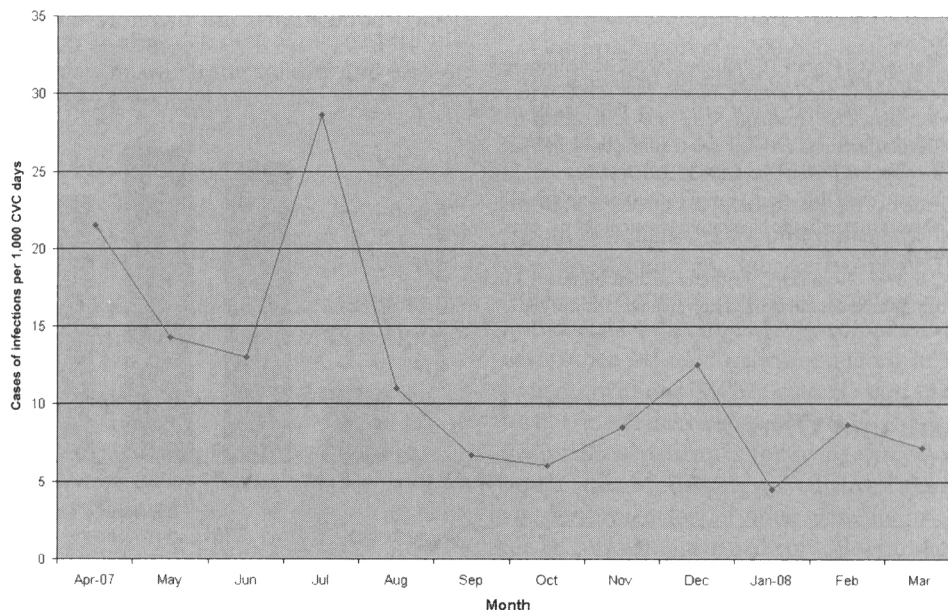


FIGURE. Monthly rates of central venous catheter (CVC)-associated bloodstream infection in the hematology unit at Ninewells Hospital during the period from April 2007 to March 2008.

establishing successful surveillance has been the collaboration between the senior nurse, who was responsible for the unit's Hickman line protocols, and the medical microbiologist, who is familiar with NNIS definitions because of interaction with other hospital areas, such as the intensive care unit, and can ensure that the bacteremia data are complete. Use of the NNIS definitions has not been onerous, and has the advantage of being well established in many countries, and therefore data can be compared between centers. Creating separate case definitions for CVC-associated BSI in patients in a hematology unit could be counterproductive, because units considering using surveillance, faced with an expanding choice of definitions, may be less likely to do it at all.

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Reply to Graham and Olver

To the Editor—We thank Graham and Olver¹ for their interest in our study² of catheter-associated bloodstream infection (BSI) in hematology units, and for reporting their own experience of successfully applying the National Nosocomial

Infection Surveillance (NNIS) system definition in a Scottish hematology unit. We agree that a standard definition will be employed and that this is essential if benchmarking is to be performed, and we do not support the use of ad hoc or poorly validated case definitions.

Evidently, the work flow and size of the Scottish hematology unit enabled collaboration and regular review by a medical microbiologist. It is not clear, however, how many other hematology units have devoted nursing staff and a medical microbiologist with sufficient time to perform surveillance activities for infection. It would be helpful to know the number of hours required of these nurses during the surveillance period, as a measure of resource requirements. During the first 6 weeks of our study, the number of hours required for review by an infection control practitioner for application of NNIS methodology was monitored (see Figure), and the mean number of hours required was 1.6 hours per 10 beds per week.

Furthermore, Graham and Olver¹ report experience with long-term central venous catheters (CVCs; ie, Hickman catheters), for which data on dates of insertion and removal may be more readily available to assist with the calculation of the denominator (ie, number of devices used per 1,000 CVC-days). In contrast, we studied medium-term CVCs² (peripherally inserted and nontunneled), of which a larger number of individual devices are used, recording of the dates of insertion and removal may not be as reliable, and closer direct monitoring is required by surveillance staff to ensure accurate data collection. A standardized strategy must be practical for a range of tunneled, nontunneled, and implanted devices, if it is to be applied to a more broad population of hematology patients.³

NNIS methods have been employed in intensive care unit (ICU) populations, and therefore interhospital comparisons

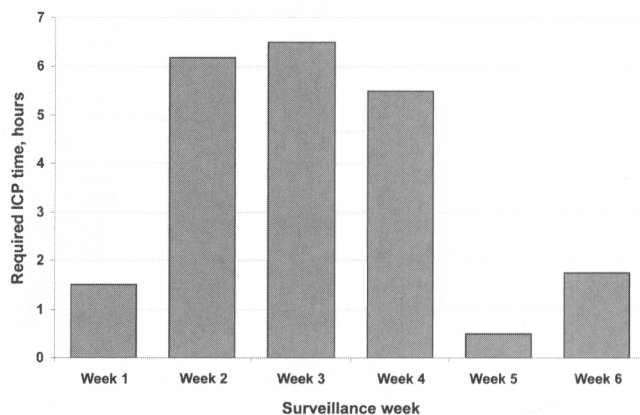


FIGURE. Number of hours required for surveillance of central venous catheter-associated bloodstream infection by an infection control practitioner (ICP) during the first 6 weeks of our study² in a 23-bed hematology unit.