

Quarterly report methods and caveats for the surveillance of *Staphylococcus aureus* (*S. aureus*) bacteraemia infection in Scotland

Reporting

Incidence rates of *S. aureus* bacteraemias including MRSA and MSSA are presented by NHS board. Each case is allocated to an NHS board based on the location of the diagnostic laboratory where the specimen was tested. The surveillance does not distinguish between cases from acute, non-acute hospitals, and the community (all cases are included in the numerator). It is currently assumed that all cases have been in contact with the healthcare system and therefore can be classified healthcare associated cases. Duplicates have been removed. If a case is diagnosed twice within a 14-day period the second positive test will be considered a duplicate.

The exact date of onset of illness is not reported: instead, the **date of collecting specimen** from the patient is taken as a proxy for the onset of illness for the ECOSS reports. When this date is not available the date of receiving the specimen or date of reporting is used. Before entering the data into the dataset each diagnostic laboratory has the opportunity to review their own data.

Data analysis

Calculation of rates

The incidence rate of *S. aureus* bacteraemias per NHS board for patients was calculated as follows:

$$\text{Rate per 100 000 acute occupied bed days} = \frac{\text{number of } S. \textit{aureus}, \textit{MRSA} \textit{ or } \textit{MSSA} \textit{ cases} * 100\,000}{\text{AOBDs in NHS board}}$$

The denominator for acute occupied bed days (AOBDs) excludes patients in psychiatric bed or a care of the elderly long stay bed (see protocol).

Identification of outliers

Funnel plots are presented for the current quarter. Incidence rates of *S. aureus* bacteraemia, MRSA and MSSA per 100 000 bed days are plotted against the number of acute occupied bed days in 100 000s, along with 95% confidence limits. Incidence rates outside of the 95% confidence limits are considered outliers.

Quarterly and Annual comparison of rates

Quarterly comparison of rate comparing the current quarter with the previous quarter will be compared at a national level for all *S. aureus* bacteraemias, MRSA and MSSA. Yearly comparisons year ending to current quarter compared to year ending to the quarter of the previous year will be carried out for individual board and nationally. Increase or decreases will only be reported if statistically significant.

Analysis of trends

Quarterly incidence rates of *S. aureus* bacteraemia, MRSA and MSSA per 100 000 bed days, with 95% confidence limits, are plotted from Q2 2005 onwards.

Incidence rates of *S. aureus* bacteraemia, MRSA and MSSA over the most recent twelve quarters were analysed using Statistical Process Control (SPC) charts. Quarterly incidence rates are plotted with a 3 standard deviation control limit (upper warning limit).

Caveats

A number of important caveats associated with the data in this report must be highlighted:

- Regional differences in healthcare provision and the age distribution of the population are factors likely to affect the number of persons acquiring *S. aureus* bacteraemia in each NHS board area;
- The quarterly data produced by HPS are based on interim data for both bed occupancy and incidence. These data are subject to revision as finalised data

becomes available. Therefore there may occasionally be minor numeric discrepancies between reports, reflecting the availability of such updated data;

- Small numbers should be interpreted with caution.