Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

hpsc

Laboratory Protocol for Enhanced Surveillance of Bloodstream Infections Reported to EARSS in Ireland,

Version 3.2, January 2005

Introduction

Bacteraemia is associated with significant morbidity, mortality and healthcare costs. Hospital-acquired bacteraemia is associated with an average 10-14 day extra hospital stay and with an attributable mortality of 25%, figures that are well in excess of those for other forms of hospital-acquired infection.

Data on bacteraemia caused by selected pathogens is currently collected as part of the European Antimicrobial Resistance Surveillance System (EARSS). EARSS has proved very successful in Ireland. EARSS provides valuable data on antimicrobial resistance in Ireland but data on the source, risk factors for and complications of bacteraemia are limited. Additional data on episodes of bacteraemia reported to EARSS is required to determine the impact of bacteraemia on Irish healthcare, to inform prevention and control strategies in participating hospitals and to allow meaningful comparison of Irish and international surveillance data.

Method Overview

A minimal clinical dataset is requested for each episode of bacteraemia reported to EARSS. The dataset has been selected to reflect the type of clinical data routinely gathered as part of clinical liaison by microbiologists. The dataset also allows comparison of Irish data with data from international bacteraemia surveillance systems.

Clinical data may be reported using the "EARSS Enhanced Bacteraemia Surveillance" or by entering the data onto an MS Excel, or similar, spreadsheet. Data should be reported quarterly, along with the corresponding EARSS isolate data.

Definitions

Laboratories should report using current EARSS surveillance definitions. The first invasive isolate of a pathogen under EARSS surveillance per patient per quarter should be reported. For the purposes of this protocol this only includes blood culture isolates of

Staphylococcus aureus, Streptococcus pneumoniae and *Escherichia coli, Enterococcus faecium* and *E. faecalis*. No data on CSF isolates of these organisms are requested as part of this enhanced surveillance but laboratories should continue to report them under the usual EARSS system and, where necessary, should provide meningitis enhanced surveillance data separately.

Clinical Data Collection Form

This form has been produced using Teleforms© and the form should only be marked in the tick boxes and data fields provided. **Any additional comments or clarifications relating to an individual report should be entered in the space provided at the bottom of the data collection form.**

The data collection form may be photocopied. If using a photocopied version of the form please ensure:

- **The square location blocks are present in each of the four corners of the form**
- **The laboratory number is correct for your laboratory** (i.e. you should only photocopy your laboratory forms for use within your own laboratory and not for use by other EARSS participating laboratories)

Laboratories can supply the same information on MS Excel worksheets provided the same data fields as the clinical data form are included. If providing the data using an Excel worksheet the following convention should be followed for naming the Excel file:

EARSSClinDataXXX_ddmmyy

XXX = EARSS Laboratory ID number

ddmmyy = specimen date of the last record entered in the Excel sheet

e.g. For laboratory number 123 reporting for quarter 1 2004, where the last clinical record entered in the Excel sheet relates to an organism isolated from a blood culture taken on 25th March 2004, the file would be named ***EARSSClinData123_250304***

Section 1: Patient details

The data in this section of the collection form are used to match the clinical data for each episode to the corresponding EARSS isolate data for the same episode. Therefore it is vital that the patient number/chart number and date of birth (or age) **match those included in the corresponding EARSS isolate form or WHONET line listing**.

Date of admission refers to the most recent date of admission to the participating hospital. In the case of patients transferred from another institution the date of transfer should be used, not the date of admission to the referring institution.

The **date specimen taken** refers to the date the first positive blood culture, i.e. the blood culture reported to EARSS for that episode, was taken.

Patient admitted from community refers to patients admitted from their usual or temporary residence in the community. This includes sheltered accommodation, retirement homes and other long-term care facilities that **do not** provide continuous nursing care or where the residents are generally ambulatory.

Patient admitted from long-term healthcare facility includes any long-term care facility that provides continuous nursing or medical care, such as nursing homes, psychiatric hospitals or rehabilitation hospitals.

Section 2: Outcome

Please indicate if the patient has been discharged, is deceased or still in hospital. Date of discharge/death should be indicated, as should the location of the patient at the time of form completion, i.e. discharged to community / long-term care facility or transferred to another acute hospital.

If, at the time of form completion, the outcome is unknown or if the patient is still in hospital, then the information should be supplied at the end of the following quarter when the collated, linked data are usually checked. If the information is still unknown or if the patient is still in the hospital at more than 90 days after the date of isolation then further attempts need to be made to obtain this data.

Section 3: Bacteraemia acquisition

This section on hospital or community acquired infection has been extended to include "healthcare associated" as described by Friedman *et al* (2002 *Annals of Internal Medicine* **137:** 791-8).

The infection is categorised as being **community acquired** if the first positive blood culture was collected within 48 hours of admission; as **hospital acquired** if a positive blood culture was obtained from a patient who had been hospitalised for 48 hours or longer; and as **healthcare associated** if a positive blood culture was obtained from the patient at the time of hospital admission or within 48 hours of admission AND the patient fulfilled any of the following criteria:

1. Received intravenous therapy at home, received wound care or specialised nursing care through a healthcare agency, family or friend, or had self-administered intravenous medical therapy within 30 days before the onset of the infection. Patients whose only home therapy was oxygen use are excluded.
2. Attended a hospital or haemodialysis clinic or received intravenous chemotherapy in the last 30 days before the infection.
3. Was hospitalised in an acute care hospital for two or more days on the 90 days before the infection.
4. Residing in a nursing home or long-term care facility.

Section 4: Organism and laboratory

Laboratory number

This is the EARSS laboratory number and should match the number included on EARSS isolate forms or WHONET reports.

Pathogen
The EARSS pathogen being reported should be indicated and must match the isolate reported on **the corresponding EARSS isolate form or WHONET line listing**.

Laboratory specimen number
The specimen number must match the number given on **the corresponding EARSS isolate form or WHONET line listing.** Particular care should be taken to ensure the specimen number reported on both forms match in the situation where a patient has more than one positive blood culture with the same organism as part of the same infective episode.

Clinical significance
EARSS is primarily designed for surveillance of antimicrobial resistance and so does not distinguish clinically significant invasive isolates from contaminants or clinically insignificant isolates. For the purposes of clinical surveillance, and to allow comparison with international surveillance systems, it is important to indicate whether or not an isolate is considered clinically significant. A clinical data form should still be completed, even if the isolate is not considered to be clinically significant.

In most instances the decision on whether an isolate is clinically significant or not should be made by the clinical microbiologist at the participating hospital and/or the clinician responsible for the patient's care.

Section 5: Risk factors

Any intrinsic or extrinsic risk factors that may be associated with the bacteraemia should be indicated. If a patient has a risk factor not included on the given list then this should be detailed in the text box provided.

If data on risk factors are not available please tick the box marked **"Unknown"**.

If none of the risk factors listed is present and there are no other known risk factors please tick the box marked **"No identifiable risk factor".**

Intensive care unit
Tick this box if the patient was in the intensive care unit (ICU) at the time the blood culture was taken **or** was in ICU in the 48 hours prior to the blood culture being taken. Note that ICU does **not** include coronary care units and other high dependency units. If the patient has been in ICU please enter the date of admission to the ICU and date of discharge from the ICU.

If, at the time of completion of the form, the patient is still in the ICU then this information should be supplied at the end of the following quarter when the collated, linked data are usually checked.

Section 6: Primary source of bacteraemia

The most likely primary source for the bacteraemia, if known, should be indicated. In most cases the clinical microbiologist in the participating hospital and/or the clinician responsible for the patient's care should determine this.

If the likely primary source is not included on the given list this should be detailed in the text box provided.

If data on the primary source are not available please tick the box marked **"Unknown"**.

If no primary source can be identified, despite the availability of relevant clinical data, please tick the box marked **"No identifiable primary source".**

Central venous catheter

If a central venous catheter (CVC) is considered as the primary source of bacteraemia, please indicate whether this fulfils microbiological or clinical criteria, using the following definitions:

One or more positive blood cultures from a patient with an indwelling CVC, **or** one or more positive blood cultures taken within 48 hours of removal of the CVC **and:**

Microbiological criteria (one or more of the following)

- Quantitative CVC culture $\geq 10^3$ CFU/ml or semi-quantitative CVC culture > 15 CFU (same organism as blood culture isolate)
- Quantitative blood cultures with CVC blood sample to peripheral blood sample ratio of >5 (same organism from both specimens)
- Differential delay of positivity of blood cultures: CVC blood sample culture positive 2 hours or less before peripheral blood culture (blood samples drawn at the same time and same organism from both specimens)
- Positive culture from pus from insertion site with the same organism as blood culture

Clinical criteria (one or more of the following in the absence of microbiological criteria)

- Local inflammation or purulent discharge from CVC insertion site
- Resolution of fever within 12 hours of catheter removal and no other source of bacteraemia identified

Section 7: Secondary focus of bacteraemia

If the bacteraemia affects one or more secondary sites these should be indicated. If an abscess or collection has developed as a result of the bacteraemia the abscess/collection site(s) should be detailed in the text box provided.

If a secondary focus is not included on the given list this should be detailed in the text box provided.

If data on secondary foci are not available please tick the box marked **"Unknown"**.

If no secondary focus can be identified, despite the availability of relevant clinical data, please tick the box marked **"No identifiable foci".**

Data Feedback & Confidentiality

Each participating hospital will receive their own complete disaggregate dataset to allow detailed local analysis the surveillance data. This may include additional denominator data where available.

Each participating hospital will also receive a quarterly analysis of their local data. These individual analyses will only be sent to the relevant participating hospitals.

Only aggregate data will be reported nationally and individual hospitals will not be identified in any national reports.

Note that it is not possible for NDSC to identify individual patients on the basis of the information provided on the clinical data collection form. Such identification should only be possible within the participating hospital.

Data confidentiality statement

- NDSC abides by the rules for data protection, set out in the Data Protection Acts 1988 and 2003, i.e.:
    - Information is obtained and processed fairly
    - Information is only kept for specified, explicit and lawful purposes
    - Information is only used and disclosed in ways compatible with these purposes
    - Information is kept safe and secure
    - Information is kept accurate, complete and up-to-date
    - Information is adequate, relevant and not excessive
    - Information is retained for no longer than is necessary for the purpose or purposes
    - A person may obtain a copy of his/her personal data on request
- NDSC will not, and has no desire to, identify individual patients on the basis of data collected as part of bacteraemia surveillance

References

Anon. Protocol for Surveillance of Hospital-Acquired Bacteraemia. **April 2001**. HPA (formerly PHLS), London, UK.

Karchmer A W. Nosocomial Bloodstream Infections: Organisms, Risk Factors, and Implications. *Clinical Infectious Diseases*. **2000**; 31(Suppl 4):S139-43.