Surveillance of MRSA Bacteraemia in patients with Renal Disease

Guidance notes

Background

Patients receiving renal replacement therapy have an increased risk of infection (Renal Registry Report 2005), with 25% of mortality related to infection. This increased risk relates to underlying uraemia, increased exposure to the hospital environment and to the method of renal replacement therapy (RRT), in particular the type of vascular access utilised.

Data collected by the Health Protection Agency in the national web-based system for monitoring MRSA bacteraemia (MESS) has shown that a significant proportion of these infections occur in patients receiving dialysis. In order to inform efforts to prevent MRSA bacteraemia MESS has been developed to enable the collection of additional data about patients on dialysis who develop MRSA bacteraemia.

This MRSA bacteraemia renal data set attempts to capture key elements of the at risk dialysis population. It is currently focused on established renal failure (ERF or end stage renal failure, defined as "*ERF is an irreversible, long-term condition for which regular dialysis treatment or transplantation is required if the individual is to survive*.") and is a subset of the overall MESS data, and not a substitution. It forms part of a long term surveillance system for infection in the dialysis population, and may be adjusted or expanded in the future. **Acute renal failure (or acute kidney injury) is specifically excluded from this guidance at present**.

This guidance document provides an overview of the surveillance system. For more detailed guidance on how to enter and manage the data in MESS please see the *User Manual for Renal Units*.

Operational issues

Reporting and data collection must be as close to real time as possible, and certainly within 3 working days of a positive culture result. Each renal centre (main unit and associated satellite units) should have a designated **lead** with prime responsibility, recognised in job planning and their PDP (Personal Development Plan). Each main unit should in addition provide a nominated **link**, responsible for the provision of information to the **Trust Infection Control Lead (ICL)**. Consequently, renal centres will liase with other trusts, where satellite services are based. The **renal infection control lead** is responsible for the monthly reporting cycle and for the overall data provision to the **Trust ICL**. On receipt of a culture result, attributed to a patient receiving RRT the Trust ICL (or designated deputy) should contact the renal link for that area to complete the data collection. In-patient areas may need to redirect the Trust ICL to the relevant link person.

Personnel required: Nominated lead and link (centre unit)
Nominated link (satellite unit)
Trust infection control lead

Reporting the 'renal variables' for the MRSA data capture system

This reporting guidance is based on the modality of dialysis employed, either at the time of the blood culture, or the most recent modality prior to the sample. The definition of a bacteraemia to be reported is that required for the mandatory enhanced MRSA surveillance (see MRSA protocol at http://nww.hcai.nhs.uk/):

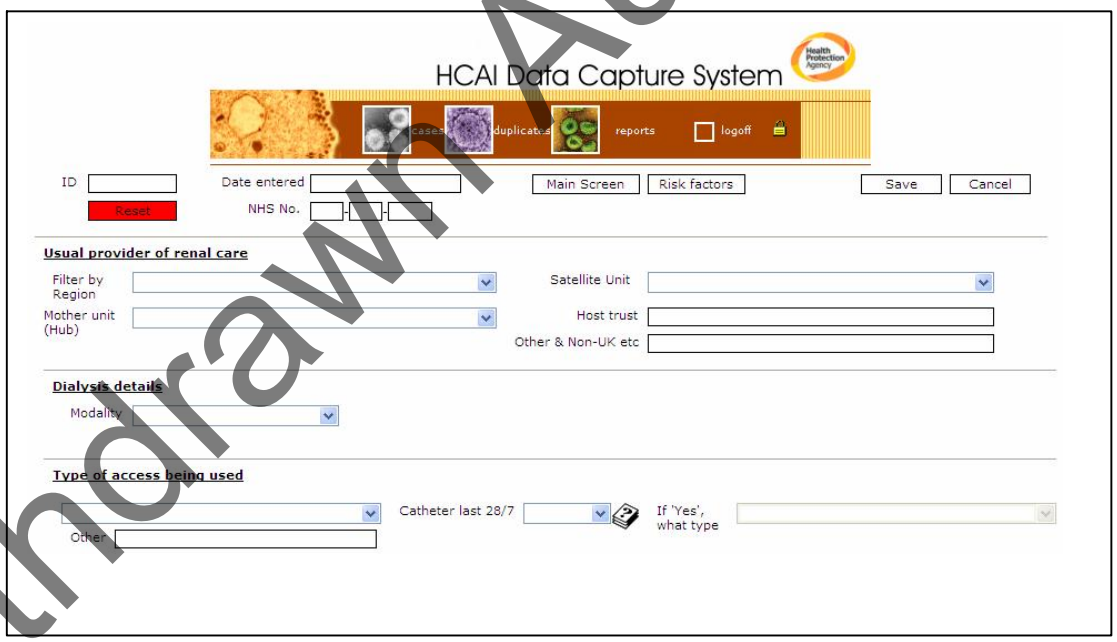
- any blood culture positive for MRSA (regardless of whether treated or considered clinically significant)
- subsequent MRSA positive blood cultures are considered part of the same episode if taken within 14 days

When a relevant positive blood culture result, attributable to a patient receiving long term dialysis, becomes known, the Trust ICL lead will 'share' the record with the nominated renal lead for the main unit. The Renal Lead will then be responsible for completing the required renal data on the record. If the patient does not receive dialysis from that main centre, the Renal lead should contact the Trust ICL directly to arrange for the record to be corrected. The MESS website can be accessed using the username and password issued to each Renal Unit Infection Control Lead at:

http://nww.hcai.nhs.uk/

For patients in satellite centres the process is identical. The main unit Renal Infection Lead should be notified, and data completion may require liaison with the satellite nominated link. Infection teams in trusts with satellite units should be made aware of the main unit Renal lead contact details.

The 'Renal' page will have the following format:



When a record for a patient with MRSA bacteraemia is entered and identified as being in established renal failure the relevant main renal unit will requested to complete the following data items, using the above MESS screen:

1) Usual provider of renal care
Where applicable indicate the satellite unit where the patient receives dialysis.

2) Dialysis details
Indicate what type of RRT the patients was receiving at the time the blood culture was taken:

- Haemodialysis
- Haemodiafiltration
- Peritoneal
- Unknown

3) Type of access being used
Indicate what type of access was being used at the time the blood culture was taken. *There are 9 possible responses.*

- Unknown
- AVF (arteriovenous fistula) – simple
- AVF – complex
- AVG (arteriovenous graft)
- Tunnelled catheter (jugular or subclavian placement)
- Tunnelled catheter (femoral or other venous placement)
- Non-tunnelled catheter (jugular or subclavian placement)
- Non-tunnelled catheter (femoral or other placement)
- Other access type (please specify in free text box)

4) Use of other dialysis catheter in last 28 days

a) If a patient has also had RRT using a venous catheter in the past 28 days (but at the time of the blood culture used either a fistula or graft) this should be recorded as ***Yes***, otherwise record ***no*** or ***unknown***. Only catheters used for the purpose of renal replacement therapy should be included. Other central venous catheters are recorded in other fields within MESS.

b) If the answer is 'Yes', then record the type of catheter, If more than one type of catheter had been used, then record the least favourable (Femoral or other non-tunnelled worse than non tunnelled IJ or SC worse than femoral or other tunnelled worse than IJ/SC tunnelled)

Possible catheter usage:

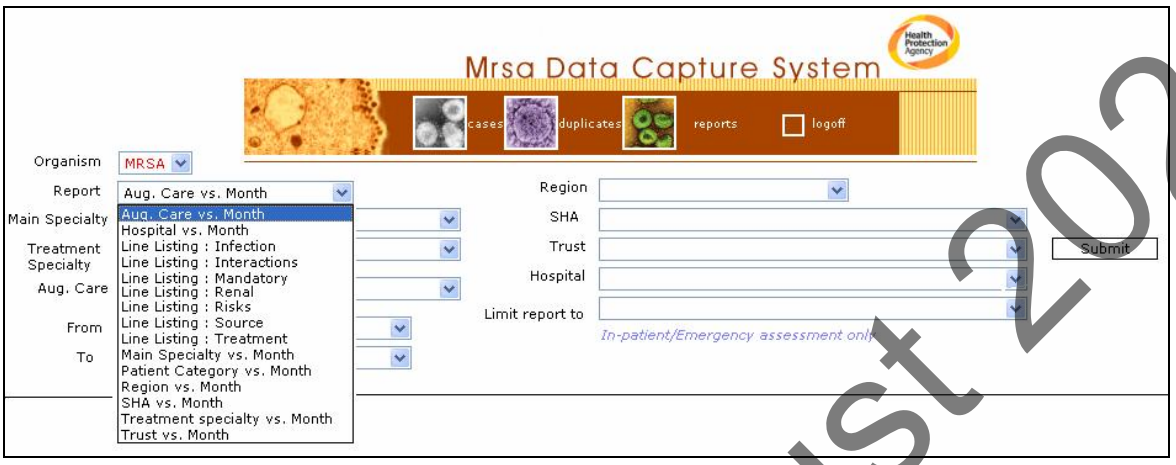
- Tunnelled catheter (jugular or subclavian placement)
- Tunnelled catheter (femoral or other venous placement)
- Non-tunnelled catheter (jugular or subclavian placement)
- Non-tunnelled catheter (femoral or other placement)
- Unknown

Analysis and reporting of MESS Renal Dialysis data

Generating reports from data collected locally

Within MESS there is a reporting tool. Data on patients with MRSA bacteraemia that have been shared with the Renal unit will appear in the 'Line listing: Renal report' and their data can be viewed via the renal unit logon. In addition, this data can also be exported into Excel for further analysis.

The list of report options will be the same as for the acute trusts (see sample screen below). However, the various "Line Listings" (including "Line Listing: Mandatory") will only return records that the logged-on renal unit has a share on. Bear in mind that it is likely that not all of these will be owned by one acute trust.



National reports

Rate of MRSA bacteraemia by NHS Trusts are reported by the Health Protection Agency (HPA) quarterly and published on the HPA website (www.hpa.org.uk). The HPA also publishes aggregate results from the surveillance of MRSA bacteraemia annually in the autumn.

The Renal Registry will undertake more detailed analyses of the renal dataset using Renal registry returns as the basis for denominator data. Denominator data will be taken from the latest renal registry returns. In the pilot such data was based upon a monthly return. This was deemed cumbersome and did not enhance the dataset. However, units should still pursue policies to improve the data collection of vascular access.

Further information

The web based reporting tool is straightforward to use. However, queries will undoubtedly arise. Detailed guidance on entering data into MESS can be found in the User Manual for Renal Units. Copies of this are available on the MESS website and from the HPA. Your local Infection Control Lead for MESS should be able to help you with any queries you have about the system. Alternatively, you can email queries to the HPA at mandatory.surveillance@hpa.org.uk

If you have other questions about the system or the dataset send them in an email to: Richard.fluck@derbyhospitals.nhs.uk.

Definitions of terms

Established renal failure and renal replacement therapy: "ERF is an irreversible, long-term condition for which regular dialysis treatment or transplantation is required if the individual is to survive. If the kidneys fail the body is unable to excrete certain waste products, excess water and salts, or control the body's acidity, resulting in death. In addition kidneys help influence haemoglobin production, blood pressure and bone formation."

From the Renal NSF part 1 http://www.dh.gov.uk/assetRoot/04/13/73/31/04137331.pdf (Complete definitions for non-physicians may be found in the Renal Registry Report 2005 Appendix C)

PD: Peritoneal dialysis – encompasses CAPD, CCPD and APD.

HD or HDF: In the context of this document these terms are short hand for all forms of blood purification.

Venous Catheters: Venous catheters include tunnelled or non-tunnelled catheters. The entry into the circulation is defines as jugular, subclavian, femoral or other. This generates four potential catheter answers as indicated above.

Arteriovenous Grafts: These are arteriovenous connections using prosthetic materials. These normally employ synthetic material, although some biological grafts can be used.

Arteriovenous Fistulae: These are surgically created anastomoses between an artery and a vein converting the vein to a high flow blood vessel, for example radio cephalic or brachio-cephalic fistulae. For the purpose of this question set they are divided into simple and complex procedures. ***Simple*** encompasses wrist and brachial anastomoses (i.e. primary procedures involving vessels of the forearm and hand). ***Complex*** includes all other AVF procedures, including transpositions.

Other access types: This is for other forms of vascular access – for example implantable port devices.

Catheter usage: The type used is defines as per the catheter guidelines given above. It only applies to catheters placed for the purpose of delivering RRT (whether used or not). Other catheter access is defined elsewhere in the MRSA dataset.

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