

From the Chief Medical Officer  
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AN ROINN

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agus Sábháilteachta Poiblí**

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To: Chief Executives HSC Trusts  
Medical Directors HSC Trusts (*for onward dissemination to all Medical Staff*)  
Nursing Directors HSC Trusts (*for onward dissemination to all Nurses*)  
Infection Prevention and Control Leads, HSS Trusts  
Consultant Microbiologists, HSC Trusts  
Infection Control Nurses, HSC Trusts  
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CCDCs HSC Boards  
Regional Epidemiologists, CDSC Northern Ireland  
Director, Head of Skeletal Services, Belfast Trust  
Director, Healthcare Associated Infections  
Surveillance Centre (HISC)  
Director, Critical Care Network

Dear Colleague

## **BEST PRACTICE ON SCREENING FOR METICILLIN RESISTANT *STAPHYLOCOCCAL AUREUS* (MRSA) COLONISATION**

1. The purpose of this paper is to outline current best practice in relation to screening policies for MRSA and to identify a number of actions required by Trusts in this regard. All Trusts should consider the recommendations in this document and review their own Screening and Decolonisation Policies with a view to reducing the risk of MRSA infection and the spread of MRSA to vulnerable patients.

### **Background**

2. One effective way of reducing the transmission of MRSA and the risk of MRSA infection (including MRSA Bacteraemia) is to use measures to identify MRSA carriers as potential sources and treat them to reduce the risk of transmission. This requires a risk assessment and screening of patients either before or on admission to hospital to identify carriers, ensure appropriate isolation or cohorting and, if necessary, implement a decolonisation regime. To date there has been little definitive advice from DHSSPS on which patients to screen, how to screen them and when it should be undertaken. We know that Infection Prevention and Control Teams in Trusts in Northern Ireland are aware of the most up-to-date guidance and are already implementing Screening and Decolonisation Policies in a number of patient groups. However there is some degree of

variability and practice across the HSC Services and it would be beneficial to move to a consistent practice across all our hospitals here. A reduction in MRSA infections may be achieved with an increase in the level of screening, more rigidly enforced control of infection practices, use of appropriate isolation and cohorting facilities, and decolonisation.

3. The normal habitat of staphylococci including MRSA, is human skin, particularly in the nares (nose), axilla (armpit), and perineum (groin). Clinical infection with MRSA (including MRSA Bacteraemia) occurs either from the patients own resident MRSA (if he or she is an asymptomatic carrier) or by transmission from another person (patient, staff or visitor) who could be an asymptomatic carrier or have a clinical infection. Patients with a clinical infection caused by MRSA should, where feasible, be cared for in a single room/isolation to minimise the risk of transmission.

### Which Patient Groups should be Screened?

4. This document outlines options for screening of specific patient groups and are drawn from approaches found to be practicable and effective across various clinical settings. Trusts should review their patient population and MRSA infection data to identify those groups most at risk of MRSA infection and implement a screening policy based on these assessments. Good evidence and/or strong consensus for screening applies to the following patient groups:
  - (i) **Pre-operative patients in certain surgical specialties** – In some surgical specialties the impact of MRSA can be particularly serious, eg elective orthopaedics, cardiothoracic surgery and neurosurgery. These patients should be targeted for pre-operative screening for MRSA.  
**Action** – all Trusts providing services in these surgical areas should now develop approaches for the pre-operative screening for MRSA in these patient groups. In addition Trusts should look at the feasibility of designating relevant surgical wards, especially orthopaedic wards, as ring fenced ‘MRSA free’ zones.
  - (ii) **Emergency orthopaedic and trauma admissions** – Many patients in this group are elderly and may be admitted from residential, nursing or care homes. They thus have an increased risk of being colonised with MRSA. While it is not possible to screen them prior to admission to hospital, they are a group with high rates of infection which may be reduced by screening on admission. **If a patient within this group is considered to be at risk there is a good case for instituting decolonisation on admission and discontinuing this when the screening test result is known to be negative for MRSA.**
  - (iii) **Critical Care (including intensive care and high dependency units)** – Patients in intensive care units and high dependency units have the highest risk of acquiring MRSA and of developing MRSA bacteraemia. The risk factors are either patients on the units with established MRSA infection (who will be known to staff) or patients admitted to critical care who are colonised, which may cause subsequent infection in themselves or be transmitted to other patients.

**Action** – All patients being admitted to critical care should be screened for MRSA carriage on admission and then at weekly intervals for those whose stay is prolonged. All positive patients should receive a full decolonisation.

However unless a rapid screening method is used results of screening are unlikely to be available immediately. There is a reasonable case for considering a system where all patients being admitted to ICU or HDU are started on a decolonisation regime immediately and discontinued if their screening test is negative for MRSA.

- (iv) **Renal Medicine** – There is evidence that patients of renal units on dialysis have a high risk of MRSA bacteraemia.

**Action** – All patients on dialysis should be screened for MRSA on admission to the programme and then at regular intervals determined by local practice in the light of national guidance and local epidemiological information. All patients should be screened for MRSA prior to creation of vascular or peritoneal access.

### Other Patient Groups

5. There are a number of other patient groups for whom pre-admission or admission screening for MRSA might be appropriate. This should be determined on the basis of a local risk assessment and the practicality of implementing screening in individual Trusts. Such patient groups may include:

- a. **All patients previously known to be MRSA positive** – These patients should be screened on admission but also treated as a positive case, discontinuing if their screening test is negative.
- b. **All elective surgical patients** – Screening this group would extend the approach used generally in orthopaedics, cardiothoracic and neurosurgery. Screening could be done at pre-admission clinics.
- c. **Oncology/chemotherapy patients** – These patients are at particular risk of MRSA Bacteraemia because of their immune suppression and because procedures for vascular access are an essential part of their treatment.

**Action** – All Trusts who have oncology/chemotherapy inpatients in their population should consider a screening programme for MRSA appropriate to their patient groups and consistent with local MRSA surveillance information.

- d. **Patients admitted from high risk settings** – Patients who have frequent contact with healthcare services and are a resident in nursing or care homes are at higher risk of being colonised with MRSA. Some studies have shown that 20% of nursing and care home residents are colonised with MRSA. These patients are at high risk of developing MRSA Bacteraemia or of transmitting MRSA to other patients. Some Trusts already screen any patients transferred to them from another hospital. If the initial hospital has screened the patient the results should be notified to the receiving Trust.

**Action** – Trusts should consider how local risk assessment can be done and screening implemented for these groups of patients.

- e. **All emergency admissions** – Many of the MRSA bacteraemias occur in patients admitted as emergencies, predominantly to medical wards. These patients include a high proportion of elderly patients and may be linked to nursing or care homes. Trusts should consider whether or not individual risk assessment is practical and whether it places too much reliance and responsibility on admission staff with the result that a significant portion of those who should be screened or tested do not have appropriate tests done. It may simpler, more reliable and better received by staff to include screening as a universal test carried out on all patients admitted through Accident and Emergency or who are admitted as direct medical admissions.

## Screening all admissions

6. It may appear logical that the most appropriate approach to the reduction in MRSA carriage in the population, and resultant MRSA infections, is the universal screening of all admissions to hospital (either at pre-admission clinics for elective admissions or immediately on admission for emergency admissions). However there is currently a lack of evidence to show that this will lead to a fall in prevalence of MRSA infections. The most recent publication to reach this conclusion in an NHS setting was the Scottish Health Technology Assessment report of November 2007 – *The clinical and cost effectiveness of screening for meticillin-resistant Staphylococcus aureus (MRSA)*, [http://www.nhshealthquality.org/nhsqis/controller?p\\_service=Content.show&p\\_applic=CC&pContentID=3780](http://www.nhshealthquality.org/nhsqis/controller?p_service=Content.show&p_applic=CC&pContentID=3780). This report recommends that a primary study should be set up in acute inpatient care within a whole NHS Board area in Scotland (which should include a tertiary referral hospital and one or more large general hospitals) to assess whether screening all patients for MRSA is effective in preventing MRSA infection. Data from this study should be collected for at least one year to decide whether MRSA screening results in a reduction in prevalence of MRSA. On 26 March 2008 the Scottish Health Secretary announced the commencement of a year long pilot study in Scotland. The results of this study will provide a more robust evidence base to inform future MRSA screening policy.

## Screening methods

7. Sample collection is the responsibility of the staff member admitting patients or running pre-admission clinics. This requires training and a few minutes of extra time for each admission to collect the swabs (or instruct the patient to do this), complete the forms (with pre-printed labels) and place the samples in the despatch box.

**Samples:** The essential site to sample is the anterior nares (nose). This is the most common carriage site for MRSA and most patients positive at other sites have positive results from nose samples (but a small proportion do not). The secondary sites are the axilla (armpit) and perineum (groin). Any skin lesion should also be sampled. Evaluations of the PCR rapid test (see below) indicate that the nose sample alone would be adequate for a routine test if this method is used. If broth enrichment methods are being used (see below), it is feasible for admissions staff to place the swab(s) directly into a vial of broth. Staff can easily be trained to swirl the swab(s) in the broth and then discard them before recapping the vial and sending it to the laboratory. This can reduce the time needed to get a result and also save laboratory time.

## Testing methods

8. Three testing methods are in use in laboratories in the UK: direct culture on an MRSA-selective agar; broth enrichment with a sub-culture; and PCR rapid test. Currently, the choice is a matter for local assessment.
  - Direct plating on MRSA-selective agar (chromogenic agar with cefoxitin): This is a less sensitive test than broth enrichment but has the advantage that positive results (shown as coloured colonies of MRSA) as well as negative results are known after incubation for 24 hours.
  - Enrichment broth with selective agent and indicator: The sensitive culture result is obtained by broth enrichment culture for 24 hours and then plating on MRSA-selective agar (chromogenic). The inclusion of selective agents in the broth and an indicator of growth (or observation of turbidity) means that a negative result can be reported within 24 hours; a positive broth requires confirmation as MRSA by sub-culture on selective agar, requiring a total time of 48 hours. Initiating broth culture at the earliest opportunity (by the admissions staff placing the swab(s) directly into a vial of broth) provides a culture result in the shortest time.
  - PCR rapid test: This is licensed only for nose samples; other evaluations are currently under way. A result can be obtained two hours after receipt of the sample in the laboratory. Specialist, dedicated, PCR equipment and reagents are required.
9. Rapid testing, perhaps even at the point of care, is expected to be the norm in the future, which may not be too distant. In order to get the benefit of a rapid result, the laboratory testing service should be available when needed for the chosen patient groups, and the clinical services need to be able to take immediate action to decolonise a patient on receipt of a positive result.

## Decolonisation

10. As soon as a patient is identified as an MRSA carrier, a decolonisation regimen should be started. This comprises the use of an antibacterial shampoo and body wash daily, and the application of an antibacterial nasal cream three times a day for five days. This should be done irrespective of whether facilities are available to isolate the patient. The purpose of decolonisation is to reduce the risk of:
  - the patient developing an MRSA infection with their own MRSA during medical or surgical treatment; and
  - transmission of MRSA to another patient.

The decolonisation regimen is only 50–60% effective for long-term clearance, but as soon as the procedure is implemented the presence and shedding of MRSA are reduced significantly and the risk of the patient infecting themselves or transmitting MRSA to another patient is much reduced.

