

Methicillin Resistant Staphylococcus Aureus (MRSA)

Guidance for nursing staff



Royal College
of Nursing

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Introduction

MRSA is a feature of modern day health care across the world.

In 1998, a national working party of the British Society for Antimicrobial Chemotherapy, Hospital Infection Society and Infection Control Nurses Association was set up. It published recommendations to control methicillin resistant staphylococcus aureus (MRSA) in hospitals. These provided the basis for local policy, giving nurses access to guidance on MRSA in all clinical settings.

Following the working party's report, in March 2000 the Royal College of Nursing (RCN) published *MRSA – guidance for nurses*. This publication updates that original document, however a working party is expected to produce further recommendations and advice in spring 2004. Future RCN guidance will be revised accordingly.

What is MRSA?

Staphylococcus aureus is an organism that colonises the skin, particularly the anterior nares, skin folds, hairline, perineum and umbilicus. It commonly survives in these areas without causing infection – a state known as colonisation. A patient becomes clinically infected if the organism invades the skin or deeper tissues and multiplies to cause a localised or systemic response, for example in septicaemia.

Outbreaks of infection with **antibiotic-sensitive** strains of staphylococcus aureus have been well documented. The first infection control nurses were employed in the early 1960s to help control these outbreaks.

Penicillin resistance was described soon after penicillin became available. Resistance is due to the production of a penicillinase or beta-lactamase enzyme by staphylococcus aureus. New penicillins became available in the 1960s that were not easily destroyed by this enzyme. Methicillin – a forerunner of flucloxacillin – was one example. Although it is no longer used to treat patients, it is still used to test for susceptibility to flucloxacillin – methicillin resistance means the same as flucloxacillin resistance.

Staphylococcus aureus has shown an ability to resist antibiotics during the last 40 years. Strains of the organism differ in their sensitivity to antibiotics. When

there is resistance to methicillin, the bacterium is labelled MRSA. Some strains of MRSA – known as epidemic strains or EMRSA – are more likely to spread. To date, 16 epidemic strains have been identified in the UK. So far, the most common strains to affect hospitals have been EMRSA-15 and EMRSA-16. Individuals may acquire antibiotic-resistant strains as a result of exposure to antibiotics, or from exposure to the organism, for example during a hospital outbreak. The consequences of developing a serious infection with MRSA can be severe. Should infection develop, the range of effective antibiotics is limited, costly and potentially toxic. Therefore it is important to take precautions to prevent transmission, especially in patient groups that are susceptible to infection.

Ethical considerations

Patients and staff colonised or infected with MRSA must be treated sensitively and fairly. Hospitals and nursing and residential homes should have procedures in place for managing infections in general, not just MRSA.

Patients should not be refused treatment, investigations or therapy because of MRSA. The organism is not a risk to healthy people. Nurses should not refuse to care for a person with MRSA, or indeed any other kind of infectious disease. They should have the knowledge, policy, procedures and resources to care for them safely. Likewise insurance policies that cover care homes for infectious disease should not specifically exclude MRSA.

In trying to control the spread of MRSA, there may be potential breaches of confidentiality. Notices and information stickers should be discreet and the patient should be involved in any decision to pass on information about diagnosis.

How is MRSA transmitted?

Staphylococci are common in skin folds, such as the perineum and axillae, and in the anterior nares. They may also colonise chronic wounds, for example in eczema, varicose and decubitus ulcers. MRSA may spread in the same ways as sensitive strains of staphylococcus:

● Endogenous

This occurs when a person with staphylococci spreads the bacteria from one part of their body to another.

Prevent endogenous spread by both encouraging patients to wash their hands and discouraging them from touching wounds or damaged skin.

● Exogenous

This spreads from person to person by direct contact with the skin or via a contaminated environment or equipment. Skin scales may contaminate if they become airborne, for example during activities such as bed making, or if the affected person is heavily colonised, or has a condition such as eczema which causes shedding of high numbers of organisms. Staphylococci that are shed into the environment may survive for long periods in dust. Prevent exogenous spread by:

- hand washing after contact with a colonised person or potentially contaminated equipment
- applying topical treatments to reduce skin carriage
- keeping the environment as clean and dry as possible.

National guidelines of 1998

A significant increase in the prevalence of MRSA during the 1990s led to infection control teams developing local policies and procedures for the management and control of the organism. However, wide variations in local management caused problems with both staff and patients. Many of these difficulties related to a lack of definitive evidence of effective control measures. To address this concern and to provide comprehensive guidance upon which to base local policies, an expert working party was established and guidelines developed. **Further revised guidelines are expected from April 2004.**

The working party reported on factors that increase the risk of infection with staphylococci, and therefore MRSA. These factors included intravenous devices, surgical wounds, pressure sores and care in intensive care units (Coella et al, 1997). They recommended four categories of risk – each related to the potential to develop serious infection as a result of acquiring MRSA. See the table on this page.

They advised staff to take precautions to prevent spread in high-risk areas where patients are particularly vulnerable, for example, by screening all admissions and contacts of known cases. See the Appendix for a summary of the recommendations to date.

When patients with MRSA are transferred from a low-risk to a high-risk environment, or vice versa, it is important to explain fully to patients and their relatives – who will notice the change of emphasis in infection control care – why the patient has been moved.

There will be variations between hospitals in the number of MRSA cases, and in the available resources and facilities. Some will have very few cases per year, while others will identify many new cases per week. Some hospitals will have national or regional centres on site. Others will have an isolation unit or plenty of single rooms. Infection control teams will adapt the guidelines to suit local circumstances.

Table Risk category			
High	Moderate	Low	Minimal
<ul style="list-style-type: none"> ● Intensive care ● Special care baby unit ● Burns unit ● Transplant unit ● Cardio-thoracic ● Orthopaedic ● Trauma ● Vascular ● Regional, national, international referral centres 	<ul style="list-style-type: none"> ● General surgery ● Urology ● Neonatal ● Gynaecology ● Obstetric ● Dermatology 	<ul style="list-style-type: none"> ● Elderly (acute) ● General medical ● Children (not neonate) 	<ul style="list-style-type: none"> ● Elderly (long stay) ● Psychiatric ● Psycho-geriatric

Individuals may have specific factors, which either increase their own risk of developing infection or pose an increased risk to others. For example, in an elderly care ward (minimal risk) there may be a patient or staff member with psoriasis, or a patient with an invasive device in situ. In these situations there may be a need to take specific precautions to reduce the infection risk.

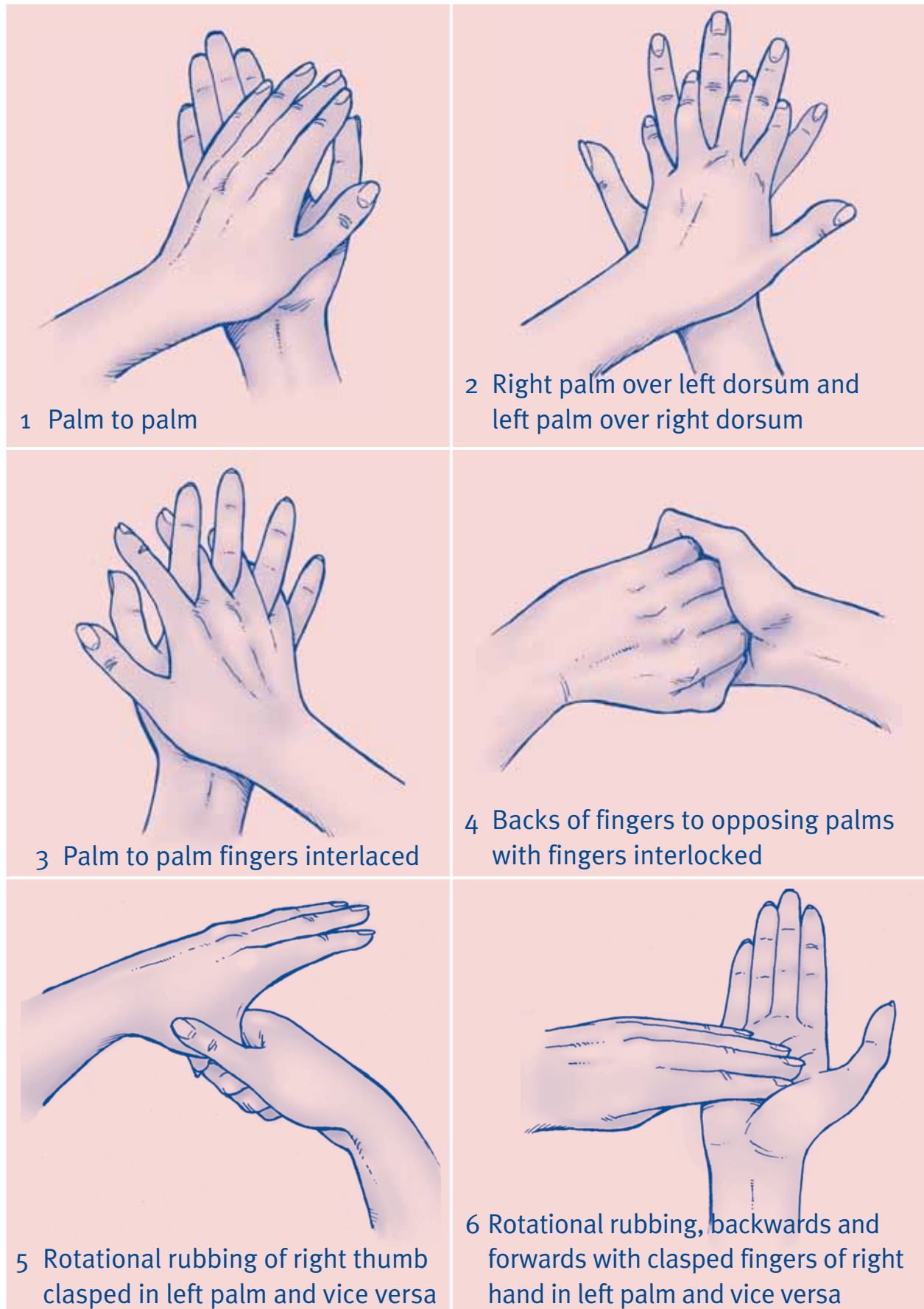
Standard infection control precautions

The following measures are **essential** in preventing cross infection and should be carried out at all times and with **all** patients.

- Cover all cuts, abrasion and lesions – especially those on hands and forearms – with a waterproof dressing.

Copy this diagram and display it in your workplace

Diagram 1 Hand washing technique



- Maintain hand hygiene:
 - before and after each patient contact
 - after handling body fluids and items contaminated with body fluids
 - after removing protective clothing
 - before handling invasive devices
 - before handling food.

Soap and water is usually adequate, but alcohol hand rub can be used instead, if hands are socially clean. An antiseptic product may be useful during outbreaks. In the community, in the absence of soap and water, apply alcohol hand rub to socially clean hands. Use the six-step technique (see the diagram) to ensure all areas of the hands are thoroughly cleaned.

- Maintain cleanliness of:
 - general environment – horizontal surfaces, sinks, baths
 - patient-related equipment – beds, furniture, monitors, IV pumps
 - soft furnishings – curtains, bedding.
- Use disposable gloves and aprons when handling body fluids.
- Dispose of waste safely.
- Maintain a safe staff to patient ratio.
- Avoid overcrowding patients.
- Avoid unnecessary patient transfers between wards.
- Isolate patients with a known or suspected infection.

Additional precautions for MRSA

The following precautions may need to be taken to help prevent MRSA transmission. The choice depends on the specific circumstances – for example, the risk category and nature of an outbreak – and will be determined by local policy.

- Systemic antibiotics or topical treatment for affected patients.
- Use of an isolation unit, ward or side-room.
- Keeping the isolation room door closed as much as

possible, especially during bed making, wound care, suctioning or moving the patient.

- Screening of other patients, looking at contacts, admissions, discharges and transfers.
- Screening of staff lesions and skin sites.
- Careful deployment of agency or bank nurses.

In outpatient or specialist departments, patients with MRSA should be seen last if possible. They should not be left in crowded waiting rooms for long periods. Wear gloves and aprons and clean any surfaces the patient has had direct contact with. Decontaminate hands after contact.

NHS Estates, an agency of the Department of Health, offers a wealth of advice on maintaining hospital hygiene. See the 'useful information' section at the end of this publication for more details.

In addition to caring for patients' physical requirements, audit can be used to check that psychological needs are being met. As a result of isolation, some MRSA patients may suffer from the lack of contact with others and from fear and stigma attached to being labelled infectious (Oldman, 1998), (Gammon, 1999).

Treatment

Treating MRSA depends on:

- local policy
- the individual's risk to others – for example, where they are being nursed
- the individual's own risk factors – for example, the presence of invasive devices
- whether the individual is colonised or infected.

Individuals with a clinical infection will usually require a course of systemic antibiotics. The choice of antibiotic depends upon the site of infection and on the particular strain of MRSA. Some antibiotics may only be given intravenously, and may be toxic or expensive.

Applying an antiseptic lotion, containing triclosan or chlorhexidine, may eradicate skin colonisation. To further reduce colonisation, some policies recommend applying hexachlorophene talcum powder to the axillae and groin, but this should not be used on broken areas of skin.

Applying mupirocin ointment to the anterior nares three times daily for five to seven days may eradicate nasal colonisation. Prolonged use of mupirocin can cause resistance to develop, which may limit its subsequent use to control outbreaks. Use of mupirocin should be restricted to no more than two five-to-seven day courses.

Applying topical antiseptics – such as povidone iodine, silver sulphadiazine or mupirocin, – may help to eliminate wound colonisation. It is important to check that the agent used is appropriate for the wound. You should also avoid prolonged application of these topical agents. However, the value of applying topical antiseptics to chronic wounds – for example, pressure sores and leg ulcers – continues to be the subject of heated debate. Local wound care policies should be followed.

The presence of an invasive device – such as a PEG tube, tracheostomy or urinary catheter – often extends the period of colonisation. Topical agents may not be appropriate here. Use an aseptic technique when handling the device and remove it as soon as clinically possible.

Care in the community

While the risk of serious infection with MRSA is low in the community, it still exists. In 1996, the Department of Health issued guidelines for managing MRSA in nursing and residential homes. This stresses the importance of standard infection control procedures (see page 3). It also advises against isolating MRSA-positive patients in community homes, instead recommending that patients socialise as normal. However, they should not share a room if they have a chronic open wound or invasive device, such as a urinary catheter.

In the patient's own home there should be no restrictions to a normal life and people with MRSA can work and socialise as usual. They do not need to restrict contact with friends, children or the elderly. If they are admitted to hospital, where the risk of infection is increased, the ward should be informed so the patient is screened on admission and nursed appropriately.

Community health care workers should practise standard infection control precautions, such as aseptic technique for wound care. They must decontaminate their hands before and after giving care, either by using soap and water or an alcohol hand rub.

Communication

Some health care and support staff share the concern felt by patients and visitors about MRSA. Anxiety about MRSA is often based on ignorance about the organism, the risks of infection and the precautions to prevent transmission.

Nurses can do a great deal to allay fears by communicating effectively, without breaking confidentiality. For example, nurses should:

- provide information leaflets for patients, visitors and staff
- provide notices which describe the precautions needed
- include support staff in team meetings during outbreaks
- tell the patient how their care might be affected by MRSA and how long precautions will be needed
- ensure that other staff understand the actions they need to take – for example, if the community nurse needs to continue care at home
- inform general practitioners on discharge or transfer if their patient has acquired MRSA.

Staff health issues

Infection control staff, occupational health staff, the personnel department and trade unions should work together to produce a policy on staff health and MRSA. Local policies must apply to agency and bank staff as well as permanent employees.

Nurses who are colonised or infected with MRSA will most probably have acquired the organism through their work. Nasal carriage is most common and usually transient, in some cases lasting only a matter of hours. For this reason, routine screening of staff for MRSA carriage is not recommended. Pre-employment screening of staff for MRSA carriage is also unnecessary.

A few individuals may be persistently colonised, particularly those with chronic skin lesions such as psoriasis and eczema. Nurses should keep their skin in good condition, recognise the signs of deterioration and take action quickly. Nurses with skin conditions can help to prevent colonisation, for example by wearing a semioclusive dressing over lesions, or avoiding clinical

care of people who have MRSA. The local infection control and occupational health departments can help to assess the risks.

If a nurse does become infected by MRSA, the condition should be seen as occupationally acquired and should be treated by the occupational health department free of charge. As such it becomes reportable under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (1995). Treatment is very effective in otherwise healthy individuals, so most nurses will quickly be clear of the organisms and should suffer no adverse effects. It is often unnecessary for staff to be excluded from work during treatment. However, individual risk factors will need to be determined by the local occupational health and infection control staff.

Individuals who are suspended for medical reasons are entitled to receive remuneration at normal pay levels, with no loss of expected bonus or overtime payments. Suspension should not count as sickness absence on the nurse's record. For contractual reasons, this does not apply to agency or bank nurses.

Requiring staff who are colonised with MRSA to take sick leave will lead to staff shortages and can affect the employment prospects, career opportunities and income of these staff.

Redeployment may be necessary in a few cases where eradication is not possible and where the nurse works with a high-risk client group. Nurses should not have their contract of employment terminated as a result of persistent colonisation or infection.

Appendix: Recommended action in an acute hospital where MRSA is endemic

Clinical risk area				
Action	High	Moderate	Low	Minimal
Isolation of MRSA positive patients	Yes	Yes	If possible	No
Isolation of higher risk patients* until results known	Yes	Yes	Yes	No
Screen index case - to assess carriage sites - to assess clearance (3 negative results)	Yes Yes	Yes Yes	Yes Yes	No No
Screen patient contacts of cases	Yes	If spread to others	If spread to others	No
Screen others - on admission - on discharge	Regional units, yes Other units, higher risk patients* Transfers to other units	Higher risk patients*	Higher risk patients*	No
Consider screening staff, particularly those with skin lesions	Yes	Yes	Yes	Yes
Eradicate carriage in patients and staff	Yes	Yes	Yes	On clinical grounds
Emphasise good infection control practice (hand hygiene, general hygiene)	Yes	Yes	Yes	Yes

* Higher risk patients: previously positive, admitted from a hospital or home with a known MRSA problem, transferred from a hospital abroad

Adapted from Working Party of the British Society for Antimicrobial Chemotherapy, Hospital Infection Society, Infection Control Nurses Association (1998) Revised guidelines for the control of methicillin-resistant *Staphylococcus aureus* infection in hospitals.

Conclusion

Clusters or outbreaks of MRSA may indicate problems with infection control practice within health care settings. The precautions used to control MRSA are essentially the same as those used to control other infections. Implementing these in a proactive manner will help to prevent and control the spread of MRSA, as well as contain outbreaks. Communicating effectively with all those involved will help to reduce anxiety and promote good practice.

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Useful information

NHS Estates has produced a variety of guidance under its clean hospitals programme. This includes: *National standards for cleanliness of the NHS; Cleaning standards toolkit* and audit materials. Visit: www.nhsestates.gov.uk for more information and downloadable copies.

The Health Protection Agency (HPA) has produced an information leaflet for patients. Visit their website at: www.hpa.org.uk

In December 2003, the Chief Medical Officer published a report, *Winning ways – working together to reduce healthcare associated infection in England*. It is available on the Department of Health website: www.dh.gov.uk/cmo



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