Government of **Western Australia**
Department of **Health**

Guidelines for the Screening and Management of Multi-resistant Organisms in Healthcare Facilities

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These guidelines have been released by the Communicable Disease Control Directorate, Public and Aboriginal Health Division, Western Australian Department of Health, to provide consistent and evidence informed advice to agencies involved in the prevention of infections and management of communicable diseases in Western Australia.

ACKNOWLEDGEMENT OF COUNTRY AND PEOPLE

The Communicable Disease Control Directorate at the Department of Health acknowledge the Aboriginal people of the many traditional lands and language groups of Western Australia. We acknowledge the wisdom of Aboriginal Elders both past and present and pay respect to Aboriginal communities of today.

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1. Definitions

Term	Definition
Antimicrobial Resistance (AMR)	The ability of microorganisms – including bacteria, viruses, fungi and parasites – to develop a capability to grow or survive in the presence of antimicrobials, and to pass this trait on via their genes to other microorganisms.
Candida auris	A yeast that is resistant to many antifungal agents, is highly pathogenic and transmissible.
Carbapenem	A class of broad-spectrum antibiotic agents reserved for the treatment of resistant bacterial infections.
Carbapenemase	A class of enzymes that inactivate carbapenem antibiotics (ertapenem, imipenem or meropenem) with those most commonly identified as: *Klebsiella pneumoniae* carbapenemase (KPC); New Delhi metallo-β-lactamase (NDM); Verona integron-encoded metallo-β-lactamase (VIM); Oxacillinases (OXA) and Imipenemase (IMP).
Carbapenemase-producing *Acinetobacter baumannii* complex (CPAB)	Gram-negative bacteria identified as belonging to the *Acinetobacter baumannii* complex which have been shown to produce a carbapenemase enzyme.
Carbapenemase-producing *Enterobacterales* (CPE)	*Enterobacterales* that are non-susceptible to carbapenem via production of a carbapenemase enzyme.
Carbapenemase-producing *Pseudomonas aeruginosa* (CPPA)	Gram-negative bacteria identified as *Pseudomonas aeruginosa* which have been shown to produce a carbapenemase enzyme.
Carbapenemase-producing organism (CPO)	All organisms identified as producing a carbapenemase.
Carbapenem-resistant *Enterobacterales* (CRE)	*Enterobacterales* that are non-susceptible to carbapenem antibiotics. This is usually, but not always, via the production of carbapenemase.
Carbapenemase-producing non-*Enterobacterales*	Gram-negative organisms that have been identified as producing a carbapenemase enzyme but are not in the order *Enterobacterales* such as *Pseudomonas aeruginosa* and *Acinetobacter baumannii* complex.
Carrier	Refers to any person who has a multi-resistant organism isolated. This may represent asymptomatic carriage in the skin/nose/gut flora without an active infection
Cohorting	Refers to the grouping of individuals with the same laboratory confirmed organisms in the same location e.g. room or ward section.
Colonisation	Is the presence of microorganisms without clinical signs of infection.
Community associated MRSA (CA-MRSA)	These strains of MRSA are identified by molecular typing and have adapted to survive and spread successfully in the community. They cause an increasing amount of healthcare associated infections.

Contact precautions	A set of infection prevention practices used to prevent transmission of infectious agents that are spread by direct or indirect contact with the patient or the patient's environment which cannot be contained by standard precautions alone. Contact precautions include the use of gloves with an apron or fluid resistant gown (dependant on the degree of risk of contact with blood and body fluids) and other PPE as required as per standard precautions.
Decolonisation	Is the process of eradicating or reducing asymptomatic carriage of a MRO by the use of topical and/or systemic antimicrobial agents.
Endemic	The constant presence of a disease or infectious agent in a defined area.
Enterobacterales	Gram-negative bacilli that occur naturally in the gastro-intestinal tract. They can spread outside the gastro-intestinal tract and cause serious infections. Clinically important genera include *Escherichia, Klebsiella, Enterobacter, Serratia, Citrobacter, Proteus* and *Morganella.*
Extended-spectrum beta-lactamase (ESBL)	Are enzymes produced by Gram-negative bacteria that are able to break down antibiotics and make them ineffective.
Healthcare associated infections	An infection that occurs as a result of healthcare interventions and may manifest after the patient is discharged.
Healthcare associated Methicillin-resistant *Staphylococcus aureus* (HA-MRSA)	Refers to distinct strains identified by molecular typing. These strains are known to be highly transmissible within and between healthcare facilities and to cause outbreaks. Generally, HA-MRSA do not spread efficiently between people in the community who have no contact with HCFs or RCFs.
Healthcare facility (HCF)	Includes all public hospitals, nursing posts, satellite dialysis centres, child and mental health services. The guidance provided in this document can be adopted by private hospitals, and the same principles, where applicable, applied in residential and primary care settings.
Healthcare workers	Any person whose activities involve the provision of care either directly or indirectly to patients in a healthcare or laboratory setting and includes those who are employed, honorary, contracted, on student placement or volunteering at the facility. The term is generally applied to all persons working in a HCF.
Higher-risk units	Refers to wards/units within acute healthcare facilities that provide care to patients known to be at increased risk of infection e.g. organ and bone marrow transplant, haematology, oncology, adult and neonatal intensive care and burns units Each acute HCF is to identify their higher-risk wards/units.
Infection	The invasion of microorganisms into tissues with replication of the organism. Infection is characterised by isolation of the organism accompanied by clinical signs of infection e.g. fever, inflammation, or pus formation.
Methicillin	A synthetic beta-lactam form of penicillin developed in the 1960's to counteract increasing resistance to penicillin by *S. aureus*. It is no longer used therapeutically due to toxicity issues.

Methicillin-resistant *Staphylococcus aureus* (MRSA)	Those isolates of *S. aureus* that are resistant to methicillin and consequently all other beta-lactam antibiotics.
Micro-alert	A generic term used to describe the flag applied to the medical record in the patient management system to indicate a carrier of or a previously unscreened contact of a person with a MRO.
Microorganism	Microorganisms exist naturally everywhere in the environment and not all cause infection e.g. 'good' bacteria present in the body's normal flora.
Multi-resistant organisms (MROs)	MROs include bacteria, fungi and viruses that have developed resistance to one or more critical classes of antimicrobial and antiviral agents.
Outbreak	An outbreak is defined as when a MRO is detected at rates that are higher than usual. Each HCF needs to consider individual circumstances to decide if the situation defines an outbreak e.g. one case in a higher-risk unit will enact a management plan, whereas two or three cases in a lower-risk area may be required before action is taken.
Patient contact	Any patient who has shared a room, bathroom or toilet facility with another patient known to have a confirmed MRO case for more than 24 hours.
Residential care facility (RCF)	RCF refers to all public facilities registered to provide 24-hour non-acute care to people not able to live independently. This includes nursing homes, transitional care placement, hostels, hospices and mental health facilities. The guidance provided in this document can be adopted by the operators of private facilities, and the same principles, where applicable, applied in residential and primary care settings.
Screening	A process to identify persons at risk of being colonised or infected with a specific microorganism and obtaining appropriate specimens.
Standard precautions	Refers to work practices that are always required to achieve a basic level of infection prevention and control. The use of standard precautions is to minimise, and where possible, eliminate the risk of disease transmission.
Transmission-based precautions (TBP)	Practices used in addition to standard precautions to prevent transmission of infection. TBPs include contact, droplet and airborne precautions and are used for patients known or suspected to be infected or colonised with an epidemiologically significant or highly transmissible pathogens. They are implemented based upon the mode of transmission of the pathogen.
Vancomycin resistant enterococci (VRE)	Enterococci are Gram-positive cocci that are part of the normal human gut flora. VRE are those isolates of enterococci that are resistant to glycopeptides e.g.vancomycin or teicoplanin.

2. Purpose

The purpose of this *Guideline* is to describe the requirements for the screening and management of patients identified as having a multi-resistant organism (MRO) infection,

are colonised or at risk of carrying these organisms. It also describes the minimum clearance criteria for patients with MROs and their contacts.

This *Guideline* is applicable to all public healthcare facilities (HCFs) managed by Health Service Providers. The guidance provided in this document can be adopted by the operators of private facilities, and the same principles, where applicable, applied in residential and primary care settings.

3. Introduction

Multi-resistant organisms are micro-organisms resistant to multiple antibiotics which makes them difficult to treat. Antimicrobial resistance provides a serious threat to the provision of healthcare. Infections with MROs have limited treatment options, higher morbidity and mortality and impose increased costs to the healthcare system[(1)]. MROs can also spread endogenously in colonised people i.e. when it is transferred from one area of their body to another e.g. from the nose to a wound[(1)]. MROs can spread rapidly in healthcare settings and for this reason, they require targeted screening and management to prevent outbreaks.

MROs included in this *Guideline* are:

- *Candida auris* (*C.auris)*
- carbapenemase-producing organisms (CPO)
- methicillin-resistant *Staphylococcus aureus* (MRSA)
- vancomycin-resistant enterococci (VRE).

For information relating to extended-spectrum beta-lactamases and gentamicin resistant *Enterobacterales* refer to Appendix 2B.

The prevention and management of MROs involves a coordinated and multifaceted approach. This includes:

- policy support and governance around MRO screening and management
- antimicrobial stewardship
- surveillance and monitoring
- promotion and audit of standard precautions e.g. hand hygiene, aseptic technique environmental cleaning and disinfection
- transmission-based precautions.[(1)]

For emergent MROs, HCFs can implement the strategies listed in this *Guideline* to control the transmission of these organisms.

> *At no time, is a person's MRO status to interfere with admission to or the provision of appropriated healthcare in any WA HCF.*

3.1. *Candida auris*

Background

Candida auris is an emerging multi-resistant yeast that is commonly resistant to the "azole" antifungals, with some strains resistant to all antifungal agents[(2)]. Most cases in Australia have a history of overseas hospitalisation or have been contacts of these people[(1)].

Colonisation is asymptomatic and may be identified on many body sites including axilla, nose and throat, groin, rectum, urine, sputum, wounds or indwelling medical devices[2].

C auris is associated with a clinical presentation that ranges from asymptomatic colonisation to severe infection [18]. *C*. *auris* can cause bloodstream infections or localised infections, most commonly of the urinary tract but many other sites have been reported. Mortality associated with invasive infection has been reported at between 30% and 72%[18].

Transmission

The routes of transmission from patient to patient are either by direct contact via carriage of *C. auris* on the hands of healthcare workers (HCWs) or indirectly via contaminated environmental surfaces or shared patient equipment[3]. *C.auris* can persist in the hospital environment and on the surfaces of reusable medical devices such as blood pressure cuffs, oxygen saturation probes, glucometers, and ultrasound machines [18].

Currently the period of communicability is unknown, and all patients who are colonised or infected should be considered colonised indefinitely and must not be cleared.

Risk Factors for Acquisition

Currently in Australia the risk factor for acquisition is primarily overseas hospitalisation, particularly when this admission has been prolonged or required intensive care.

3.2. Carbapenemase Producing Organisms

Background

The term carbapenemase-producing organism (CPO) is a collective term used to refer to bacteria that produce carbapenemase enzymes that are capable of breaking down carbapenem antibiotics. These bacteria include carbapenemase-producing *Enterobacterales* (CPE), carbapenemase-producing *Acinetobacter baumannii* (CPAB) complex and carbapenemase-producing *Pseudomonas aeruginosa* (CPPA).

Carbapenems are a group of penicillin-related (broad spectrum beta-lactam) antibiotics that are effective against most Gram-negative bacteria. Carbapenem antibiotics include: meropenem, imipenem, ertapenem which are often used for treatment for serious infections caused by multi-resistant *Escherichia coli*, *Klebsiella* spp., *Acinetobacter* spp. and *Pseudomonas* spp.

Infections caused by CPOs are difficult to treat due to high levels of antimicrobial resistance (AMR) and are associated with high mortality. Importantly, they have caused numerous outbreaks in hospitals outside of WA [4] by the efficient transmission between patients of mobile genetic elements[5, 6].

CPO colonisation mostly occurs in the lower gastro-intestinal tract and occasionally other sites, such as the urinary tract, can become colonised[6].

Transmission

The routes of transmission from patient to patient are either by direct contact via carriage of CPO on the hands of HCWs or indirectly via contaminated environmental surfaces or shared patient equipment[6].

Certain CPO positive patients are more likely to contaminate the environment and hands of HCWs and include those patients with:

- discharging wounds
- colonised urinary catheters
- endotracheal tubes
- admitted to ICU
- diarrhoea/faecal incontinence including enterostomies or unable to maintain personal hygiene.

Risk Factors for Acquisition

In Australia the major risk factor for acquiring CPOs is overseas travel, especially overseas hospitalisation.

In countries where CPOs are endemic, risk factors for acquisition include broad spectrum antibiotic use, prolonged hospital admission and severe illness requiring ICU or mechanical ventilation[6].

Most often, the epidemiology of CPPA and CPAB within a hospital is well-defined and restricted to a particular patient group, geographic location or service that manages a risk group e.g. severe burn units, intensive care units or cystic fibrosis services. The risks associated with transmission of these pathogens are therefore lower than for CPE [4].

3.3. Methicillin-resistant *Staphylococcus aureus*

Background

Staphylococcus aureus (*S. aureus*) is a Gram-positive bacterium that commonly colonises the skin or nares and can cause significant infection when it enters the body through broken skin, or invasive medical devices such as intravenous catheters. *S. aureus* causes a wide range of clinical disease including skin and soft tissue infection, pneumonia, endocarditis, osteomyelitis, septic arthritis, and bacteraemia[7].

In WA, all cases of methicillin-resistant *S. aureus* (MRSA) are characterised as either healthcare-associated MRSA (HA-MRSA) or community-associated MRSA (CA-MRSA) based on molecular typing. The HA-MRSA and CA-MRSA strains have distinct clinical, bacteriological and epidemiological characteristics[8].

HA-MRSA strains, such as EMRSA-15, Aus-2 and Aus-3, are usually isolated from people who have been exposed to a HCF or a residential care facility (RCF). Successful MRSA control strategies targeting HA-MRSA strains have been in place in WA since the mid-1980s and this is reflected in the low incidence of HA-MRSA strains in WA compared to other Australian jurisdictions[8].

CA-MRSA strains, such as WA-1, WA 121, Qld Clone, were traditionally isolated from healthy people without exposure to healthcare systems and present with skin and soft-tissue infections[8]. However there has been a dramatic increase in notifications of CA-MRSA clones and they are increasingly recognised as a major cause of healthcare associated MRSA infection[8].

Vancomycin-intermediate *S. aureus* (VISA) is a strain of MRSA that has reduced susceptibility to vancomycin. Vancomycin-resistant *S. aureus* (VRSA) is a strain of MRSA that contains the resistance genes Van-A or Van-B. To date all VRSA have contained genes transferred from vancomycin-resistant *Enterococcus*. Generally, VISA and VRSA arise in people who have been colonised or infected with MRSA and have received prolonged courses of vancomycin[9].

Transmission

The routes of transmission from patient to patient are either by direct contact via carriage of MRSA on the hands of HCWs or indirectly via contaminated environmental surfaces or shared patient equipment.

Certain people with MRSA are more likely to contaminate the hands of HCWs and the environment and include those with:

- active exfoliative skin conditions e.g. psoriasis, eczema
- discharging wounds
- MRSA respiratory tract infections
- incapable of maintaining their own personal hygiene.

Risk Factors for Acquisition

People who have an increased risk of acquiring MRSA in a healthcare setting include those who have prolonged admissions, are critically unwell or undergo invasive procedures.

3.4. Vancomycin-resistant Enterococci

Background

Enterococci are Gram-positive bacterium that are part of the normal flora of the human gastrointestinal tract and are inherently resistant to most antibiotics. Antibiotic therapy for enterococcal infections usually involves the use of penicillins or vancomycin. Most enterococcal infections are caused by a person's own normal flora, however, transmission between patients in HCFs does occur. Although not highly pathogenic, these bacteria can be significant pathogens in immunocompromised patients. There are several different enterococci but those of importance in the context of vancomycin resistance are *Enterococcus faecium* and *Enterococcus faecalis*[(10)].

In Australia, national antimicrobial surveillance programs continue to show an increase in the number of clinical VRE isolates which is of concern due to the limited antimicrobial agents available and the potential for the vancomycin resistance gene to be transferred to other more pathogenic organisms i.e. *S. aureus.*

Transmission

Enterococci are capable of prolonged survival for months on environmental surfaces. The routes of transmission from patient to patient are either by direct contact via carriage of VRE on the hands of HCWs or indirectly via contaminated environmental surfaces or shared patient equipment[(11)].

Certain VRE-positive patients are more likely to contaminate the environment and hands of HCWs and include those with:

- diarrhoea, faecal incontinence, enterostomies or are unable to maintain their own personal hygiene
- discharging wounds
- catheterised patients with VRE colonisation/infection of the urinary tract.

Risk factors for acquisition

People who have an increased risk of acquiring VRE in a healthcare setting include those who share the bed space, bathrooms or toilets with VRE-positive patients or have a prolonged admission. People who are colonised with VRE are at increased risk of VRE infection if they are critically unwell, are solid organ or bone marrow transplant recipients or are immunosuppressed.

4. Guideline Requirements

WA HCFs must align their local policies and procedures with this *Guideline* for the management of patients identified with a MRO.

5. Micro-alert System

The micro-alert system is used in the WA public hospital system as an electronic flag in the patient administration system to alert HCFs of patients known to be colonised or infected with a MRO or those identified as unscreened contacts of a MRO positive patient[12].

All patients identified with a MRO covered by these *Guidelines* must be assigned the appropriate micro-alert as soon as possible as described in Appendix 1.

Refer to the Guidelines for using the micro-alert system in Western Australian public health facilities [12].

6. Surveillance Screening

Screening is a process to identify patients at risk of being colonised with a microorganism and if risk factors are present, obtaining appropriate specimens.

All HCFs are required to have screening protocols in place that are applied for all patients admitted to their facility, to determine the infection prevention requirements, including the need for any microbiological surveillance.

A risk assessment is to be conducted at patient admission to identify people who require screening for specific MROs, such as interstate or overseas hospitalisation or RCF stay outside of WA. The current recommendations for MRO surveillance screening are described in Table 1.

The requirement to screen patients with a history of overseas hospitalisation refers to any hospital presentation including day procedures, emergency department presentation and in-patient admission, due to increasing medical tourism, use of medi-hotels providing high level care and the prevalence of MROs.

Screening swabs are to be collected as soon as possible after admission and preferably within the first 24 hours of the patient admission.

In the absence of a micro-alert or outbreak notification, routine MRO screening is not required for patients who have been hospitalised within WA acute care HCFs.

Table 1 MRO screening recommendations

Patient Category	Screening recommendations			
	C.auris	CPO	MRSA	VRE
Repatriation from any overseas hospital or hospitalised for any period, or resided in a RCF overseas in the last 12 months	✓	✓	✓	✓
Any person who has been hospitalised overnight* or resided in a RCF outside of WA (interstate) in the last 12 months	X	**Only for CPE**	✓	✓
Any person who has resided in a RCF within WA in the last 12 months **	X	X	✓	X
Haemodialysis patients (in-centre and satellite) following dialysis outside WA	**Only if overseas**	**Only for CPE**	✓	✓
Patients admitted to higher risk ward/units	X	On admission and either weekly or on discharge from unit		
Contacts of known MRO positive case***	✓	✓	✓	✓

* HSPs with single room capacity may choose to consider any hospitalisation as per the overseas requirement.

** Any resident from RCF that is screened for MRSA then represents to hospital within a two-week period does not require repeat screening for that admission

***Any patient identified as a contact or admitted with a micro-alert indicating they are a previously identified contact of a patient with a known MRO must be screened for the identified MRO. Micro-alert descriptions are described in Appendix 1.

6.1. Haemodialysis Units

In-centre and satellite unit haemodialysis patients are to be screened for VRE on admission to the unit **only** if they have had dialysis outside of WA, in addition to the screening outlined in Table 1. Three monthly routine screening is not required.

6.2. Higher-risk Wards

Each acute HCF is to identify their higher-risk wards/units that require routine screening of patients for MROs. It may be appropriate to screen patients admitted to higher-risk wards/units for MROs:

- on admission to the ward/unit, and
- either weekly or on discharge/transfer out of the ward/unit
- neonatal ICU, babies born to mothers known to be infected or colonised with a MRO.

6.3. Outbreak Scenario

Increased screening for any MRO in the event of an outbreak must be guided by local infection prevention and control (IPC) teams and is in addition to any routine surveillance screening requirements.

6.4. Specimen Collection

When requesting screening, it is important to accurately record on the pathology request form the MRO being screened, the site of specimen collection and any relevant clinical history.

Any swab collected from a dry site e.g. nostrils or non-discharging lesions are to be pre-moistened with sterile water or normal saline. Swabs collected from moist sites e.g. discharging wounds, do not need to be pre-moistened. All swabs are to be placed directly into transport medium, excluding those for *C. auris* testing which requires a dry swab (with no transport medium) for collection.

6.5. Specimen collection procedures

Nasal swab

- rotate a single swab, 2-3 times around the inside of the nostril, using the same swab for both nostrils.

Pharyngeal/ throat

- swab the posterior pharynx and lateral walls of the pharynx i.e. ‘tonsillar’ area, without touching the buccal mucosa or tongue.

Rectal

- insert swab 1cm into rectum and gently rotate 360 degrees
- for patients with enterostomies a stomal specimen is required
- faeces must be evident on these swabs.

6.6. MRO specimen collection requirements

The specimen requirements for each MRO are described in Appendix 2.

6.7. Patient Placement Awaiting Screening Results

As a minimum standard to reduce the risk of transmission of MROs, all patients undergoing admission screening should be cared for in a single, non-carpeted room, preferably with dedicated bathroom facilities and contact precautions implemented.

If single rooms are unavailable, bed placement must be managed in consultation with the HCFs IPC team. However, patients with increased risk of colonisation or infection with a MRO i.e. direct hospital transfer from outside WA, or a history of recent hospitalisation outside of WA must be prioritised for single room accommodation.

Where there is no single room available and cohorting is required, this must be done in consultation with the local IPC team. Avoid cohorting with other patients who are at increased risk of adverse outcomes from infection e.g. immunocompromised patients, have open wounds, pre-operative patients or anticipated prolonged length of stay.

Any patient awaiting MRO clearance results refer to section 10 for patient management.

6.7.1 *C. auris* patient placement

An interim *C. auris* screening result will be issued by the laboratory after approximately 48 hours followed by a final result after ten days. All patients who are direct transfers from an overseas HCF or who are contacts of a *C. auris* positive case are to remain isolated in a single room, with ensuite facilities, under contact precautions until three consecutive negative **final** screening swab results are available.

If patient isolation poses significant stress on bed management, patients who are being screened due to hospitalisation outside of Australia, but are not direct transfers, may be removed from isolation if the interim *C. auris* screening result is negative, as long as the screening results for CPAB, CPE, CPPA, MRSA and VRE are also negative.

7. Notification

Colonisation and/or infection with a *C. auris,* CPAB, CPE, CPPA, MRSA or VRE is a notifiable condition under the *Public Health Act 2016.* Notification is via laboratory notification. All laboratories, including private laboratories, are to ensure the following processes are undertaken:

- All MRSA and VRE isolates are to be sent to the PathWest Gram-positive Typing Laboratory based at Department of Microbiology, Fiona Stanley Hospital.
- All carbapenem-resistant isolates are to undergo a mCIM (carbapenem inactivation method) test and if positive, sent to the QE11 Network, PathWest for molecular testing for carbapenemase production. QE11 laboratory will enable reporting of relevant CPO to the *CARAlert system.
- *C.auris* isolates are to be notified by the identifying laboratory directly to the Communicable Disease Control Directorate at the Department of Health.
- All private and public laboratories that identify *C. auris* are required to refer all isolates to the Mycology Department at PathWest Fiona Stanley Hospital for molecular typing and enable reporting to the national *CARAlert system.
- The medical practitioner and treating team are promptly notified of the MRO.

*Critical antimicrobial resistance alert (CARalert) collects data on nationally agreed priority organisms with critical resistances to last-line antimicrobial agents. These are resistance mechanisms or profiles that are known to present a serious threat to the effectiveness of last-line antimicrobial agents.

8. Consumer Engagement

The provision of education to patients and their visitors is an effective way to reduce further spread of infection within the HCF and in the community.

The HCF must provide specific information to patients who are colonised or infected with a MRO, with written notification of their status and an information sheet including how to prevent transmission whilst in hospital and how it is managed once discharged.

When a contact is discharged prior to completion of screening, it is recommended the HCF notifies the patient of their status and the need for screening should they be readmitted to a HCF. Further information can be found on IPPSU tools and resources page.

8.1. Evaluating the delivery of information to consumers

As part of a HCFs commitment to quality and consumer focused care, all IPC consumer information should be evaluated to ensure that the information provided is clear, relevant, easily understood and meets the needs of the healthcare consumer. Examples of this include:

- review of information by consumer advisory groups
- consumer surveys or focus groups
- testing on a small number of patients.

9. Antimicrobial Stewardship

Antimicrobial stewardship (AMS) is a mandatory requirement of the National Safety and Quality Health Service Standards [13]. It ensures appropriate antimicrobial use, minimises adverse events, and prevents the development of antimicrobial resistance. All WA acute care HCFs must ensure:

- an antimicrobial stewardship program is in place
- the clinical workforce prescribing antimicrobials have access to endorsed therapeutic guidelines on antibiotic use
- surveillance of antimicrobial use and resistance with appropriate education and feedback to the clinical workforce
- the micro-alert system is used to guide appropriate antimicrobial prescribing.

10. Management of MRO-Positive Patients

All patients with a MRO are managed with standard and transmission-based contact precautions[1]. The required measures should be communicated clearly by signage outside the patient's room. The recommended approach to patient management for specific MROs is outlined in Table 2.

The MROs described in this *Guideline* primarily spread via direct and indirect contact, however an individual risk assessment is essential to determine appropriate management in specific healthcare settings. The risk assessment must take into consideration:

- the type of MRO and the micro-alert in place
- the risk factors for transmission that the patient may have e.g. discharging wound/s, enterostomies, indwelling devices, incontinence
- the type of unit the patient is admitted to e.g. acute care, higher-risk ward.

In all HCFs there needs to be a strong focus on ensuring high level compliance with standard precautions e.g. hand hygiene, aseptic technique, use of appropriate personal protective equipment (PPE), cleaning and reprocessing of reusable patient equipment and environmental cleaning and disinfection.

In some circumstances, it may be appropriated to manage some MRO-positive patients with standard precautions e.g. CA-MRSA, VRE, if they have no risk factors for transmission and the patient population has a low risk of acquiring an infection. However, this needs to be determined on a case-by-case basis and in consultation with the HCFs IPC team. Information on risk management can be found in the *Australian Guidelines for the Prevention and Control of Infection in Healthcare - Overview of risk management in infection prevention and control.* Refer to Appendix 3 for the management of MRO-patients in specific settings.

Any patient awaiting MRO clearance results, including those patients identified as a contact of a MRO-positive patient, are to be managed as per the requirements of a MRO positive-patient until results are obtained. For management of patients and residents with a MRO in other settings refer Appendix 3 MRO Management in Specific Setting.

All patients identified with a MRO must receive written information on the organism and be advised of the use of the micro-alert system in WA HCFs. When a patient is colonised or infected with an MRO, there is potential for adverse effects such as anxiety, mood disturbances, perceptions of stigma and reduced contact with HCWs. Clearly explaining to patients, the measures being undertaken and why they are necessary may help to alleviate these effects[1].

10.1 Patient Clearance Screening

Any patient with a current micro-alert should undergo a review to determine if they meet the criteria for MRO clearance or removal of MRO contact status. Refer to Appendix 2. Currently there is no evidence to support the routine clearance of patients identified with *C. auris* or a CPO and repeated screening of positive patients is not required.

Table 2 Infection prevention and control measures for MRO positive in-patients

Criteria	Recommendations
Standard precautions shall be applied to all patients at all times, as per the *Australian Guidelines for the Prevention and Control of Infection in Healthcare.*[1]	
Room placement and preparation	• Single, non-carpeted room, with ensuite facilities is preferred. • If not available, a single room with a dedicated bathroom facility or single room with dedicated commode. • Signage advising of contact precautions evident outside the room. • Remove all non-essential equipment. • Ensure impermeable mattress and pillow covers intact. • Patient notes and bedside charts to remain outside patient room.
Cohorting	• Cohorting of patients with the same MRO may be considered in certain situations under the direction of the IPC team.
Hand Hygiene	• Strict adherence to the '5 moments' for hand hygiene, in addition to the requirements associated with donning and doffing PPE. • HCWs shall adopt a bare below the elbows, with exception of gloves if required. • Wearing gloves does not negate the need to perform hand hygiene.
Personal protective equipment	• PPE must be readily available and accessible. Supplies are to be available outside the patient room or in the anteroom if present. Gloves are to be available in the patient room. • PPE is donned prior to entering a patient room if direct patient contact is anticipated. • Minimum requirement is a plastic apron or disposable long sleeve fluid resistant gown. • Masks, eyewear and gloves are worn if indicated as per standard precautions. Gloves must be changed, and hand hygiene performed between different care activities on the same patient to prevent cross contamination of body sites or when gloves become soiled. • When gloves are worn, avoid touching, and therefore contaminating environmental surfaces e.g. light switches, door handles.

Criteria	Recommendations
	• PPE is to be removed at the patient door and prior to exiting or in anteroom if present. PPE is not to be worn outside the immediate area in which it is used. • All aprons / gowns are single use only and are not to be left hanging in the patient room for subsequent use.
Cleaning and disinfection	• HCFs must implement policies and procedures for environmental cleaning, in accordance with the NSQHS Standards[13] and the *Australian Guidelines for the Prevention and Control of Infection in Healthcare* [1] A risk-based cleaning schedule and regular cleaning audits should be implemented[1, 4, 14]. • Routine environmental cleaning must include daily cleaning and disinfection of the patient room and bathroom and all frequently touched surfaces and patient care equipment. • Following patient discharge, the room, bathroom, toilet and all frequently touched surfaces and items must be cleaned and disinfected. Refer to Appendix 4 for detailed information. • For confirmed cases of *C.auris,* privacy screens shall be laundered or disposed of on discharge.
Patient equipment	• Dedicate non-critical items to the patient room e.g. stethoscope, wheelchair, commodes and use disposable, single-use patient equipment wherever possible e.g. tourniquet, BP cuff. • Minimal stocks of disposable items e.g. dressings, are to be stored in patient room. On patient discharge these items are to be discarded. • Any reusable equipment must be cleaned and disinfected after use and before use on another patient.
Catering	• Meal trays can be delivered to the patient by catering staff. • Catering staff must perform hand hygiene when they are leaving the patient room/area. • Routine management for washing trays, crockery or eating utensils. • Disposable crockery / cutlery is not required.
Linen	• Handle linen with care. • A linen skip should be placed at the point of patient care to minimise handling of used linen. Linen skips must not be filled beyond ¾ full • Linen that is heavily soiled or wet, should be placed in a designated clear plastic bag before placing into linen skip. • Do not stockpile linen or supplies in patient rooms.
Waste	• Routine waste segregation and disposal as per local hospital policy.
Patient transfer	**Internal** • Limit non-essential patient movements whenever possible. • Notify receiving department of patient's status prior to transfer. • Contaminated PPE must be doffed and disposed of, and hand hygiene performed prior to patient transfer. Clean PPE is to be donned prior to transfer. **External** • The receiving facility must be notified of patient's micro-alert status prior to transfer to ensure appropriate bed allocation occurs. • All relevant medical and nursing documentation accompanying the patient must clearly state details of the patient's history and include their risk assessment for MRO transmission.

Criteria	Recommendations
Patient Education	• Educate the patient and/or carer/family regarding the identified MRO. • Reinforce the importance of hand hygiene, especially after toileting. • Patients shall be provided with appropriate access to hand hygiene facilities. Including to enable patients with limited mobility or those confined to bed, to perform hand hygiene e.g. alcohol-based hand rub (ABHR) or hand wipes for their use. • Reinforce hand hygiene practices for the patient when leaving the room and ensure wounds are covered / dressed. • On discharge all MRO-positive patients are to be provided with information (verbal and/or written) on the risk of transmission, the importance of notifying healthcare providers of their micro-alert status and informed of any clearance procedures if applicable.
Visitors	• Visitors are to be advised to perform hand hygiene prior to entering, and on leaving, the patient room and following any patient contact. • Visitors are not to use patient bathrooms or toilets. • PPE is not required to be worn by visitors.
Duration of precautions	• Contact precautions are to continue for the length of the patient stay unless clearance is achieved.

10.2 Outbreak Management

An outbreak is defined as an increase in the number of cases (colonisation or infection) above the number normally occurring in a particular HCF over a defined period[(1)]. All acute HCFs are to have an outbreak management plan to ensure early and appropriate management is taken to minimise outbreaks. Depending on the severity and location of an outbreak the HCF Executive should consider:

- convening a MRO specific outbreak management team with representation across all relevant departments that meets regularly until the outbreak is contained
- convening dedicated environmental cleaning and disinfection teams led by an appropriately trained supervisor
- restricting patient bed transfers unless essential for patient management
- informing their Health Service Executives and Board of any contingency plans that have significant resource implications and/or affect business continuity.

All HCFs are to notify MRO outbreaks to the Infection Prevention, Policy and Surveillance Unit (IPPSU) at the Communicable Disease Control Directorate (CDCD), by use of the outbreak notification form as soon as the outbreak is identified. The IPPSU is responsible for communication to other HCFs, and key stakeholders as required.

10.3 Post outbreak reporting

Once an outbreak is declared over, all individuals and agencies involved in the investigation should be notified of the same. Details of the investigation should be documented including investigation management, findings, and recommendations. A summary report of the outbreak is to be finalised and sent to IPPSU. All outbreak reports are tabled at the WA Multi-resistant Organism Expert Advisory Group meeting.

11 Relevant Legislation

Reporting of *C. auris*, CPE, CPAB, CPPA, MRSA and VRE is a mandatory requirement pursuant to Part 9, Division 2 *Public Health Act 2016*.

12 Additional Resources

PPE donning and doffing in healthcare settings poster

13 Guideline Contact

Enquiries relating to this *Guideline* may be directed to:

Infection Prevention and Policy Surveillance Unit

Directorate: Communicable Disease Control Directorate

Email: IPPSU@health.wa.gov.au

14 Document Control

Guideline number	Version	Published	Review Date	Amendments
0010	v.2	16/02/2024	16/02/2027	Inclusion of requirement to screen for MROs for any history of hospitalisation outside of WA or overseas. Inclusion of Appendix 2B-ESBL/GRE information, management, and use of micro-alert Y. Inclusion of Appendix 2A VRE clearance protocol. Inclusion of *Candida auris* as a Notifiable Infectious Disease / Condition.
0010	v.1	29/03/2023	29/03/2026	Original version

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16 Appendices

Appendix 1 Micro-alert Codes and Descriptions

MRO and Code	Definition
Candida auris	
Micro-alert J	**Positive status.** Laboratory confirmed *C. auris.*
Micro-alert K	**Contact status**. Any person who has shared a patient room, bathroom or toilet facility with a known positive *C. auris* patient (infection or colonisation) within the period 28 days prior to first isolation of *C. auris* and for whom screening has not been completed prior to discharge.
Carbapenemase-producing organisms	
Micro-alert G	**Positive status.** Laboratory confirmed CPO - requires confirmed presence of a carbapenemase producing enzyme, including but not limited to, KPC, NDM, VIM, OXA and IMP.
Micro-alert H	**Contact status.** Any person who has shared a patient room, bathroom or toilet facility with a CPO positive patient prior to implementation of contact precautions and for whom screening has not been completed prior to discharge. Micro H alerts will automatically drop off via WebPAS five years from activation.
Methicillin-resistant *Staphylococcus aureus*	
Micro-alert B	**Positive status**. Laboratory confirmed MRSA clones with increased anti-microbial resistance and/or virulence factors and **have not** demonstrated high transmissibility in hospitals. Detailed MRSA clone nomenclature and classification is described in Guidelines for the micro-alert system in Western Australian Public Healthcare Facilities
Micro-alert C	**Positive status.** Laboratory confirmed MRSA clones with increased antimicrobial resistance and/or virulence factors and/or demonstrated high transmissibility in hospitals, as determined by the WAMRO Expert Advisory Group.
Micro-alert W	**Contact status**. Any person who has shared a patient room with a micro-alert C positive patient prior to the patient having contact precautions initiated and for whom screening has not been undertaken or completed prior to discharge. Micro W alerts will automatically drop off via WebPAS at one year from activation.
Vancomycin-resistant enterococci	
Micro-alert V	**Positive status.** Laboratory confirmed vancomycin resistant *Enterococcus faecalis* and *Enterococcus faecium* (vanA and vanB).
Micro-alert F	**Contact status.** Any patient who has shared a patient room, bathroom or toilet facility with a VRE positive patient prior to implementation of contact precautions and for whom screening has not been completed prior to discharge. Micro F alerts will automatically drop off via WebPAS at one year from activation.
Extended-spectrum beta-lactamase (ESBL) producing bacteria and/or gentamicin resistant *Enterobacterales* (GRE)	
Micro-alert Y	**Positive status**. This is a restricted code for ESBL producing bacteria and/or gentamicin resistant *Enterobacterales* and is only assigned at KEMH, PCH and FSH. WebPAS automatically removes the micro-alert Y one year after date of activation. Refer to appendix 2B.

Appendix 2 MRO specimen collection requirements and clearance criteria

<table>
<tr><th colspan="4">Screening Samples for MROs</th></tr>
<tr><td colspan="4">Additional samples are required from the following sites if present for all MRO screening:
any wounds, ulcers, skin lesions or wound drain fluid
any invasive device sites e.g. PEG, tracheostomy, intravascular device
urine specimen from indwelling or suprapubic urinary catheters
endotracheal aspirate.
Note: patients with an enterostomy must have a stomal swab collected instead of a rectal swab.</td></tr>
<tr><th>MRO</th><th>Alert</th><th>Criteria for Clearance</th><th>Swabs to collect</th></tr>
<tr><td rowspan="3">C. auris</td><td>J</td><td>No clearance screening and repeated screening is not required.</td><td>Not applicable</td></tr>
<tr><td>K

or screening as per Table 1</td><td>Clear when all 3 sets of screening results are final.</td><td>Collect samples on 3 consecutive days. A single swab i.e. a composite swab 1 swab-4 sites, without transport medium. Sample both axillae, then both sides of the groin by rubbing the swab tip firmly back and forth in skin crease, 3-5 times for each site. Swab can be pre-moistened with sterile water. Use of a double headed swab will increase the sensitivity.</td></tr>
<tr><td colspan="2">NB: At risk patients should ideally be screened while off anti-fungal medications for at least 7 days and not within 48 hours of using antiseptic body washes as these treatments may result in false negative screens.</td></tr>
<tr><td rowspan="3">CPO</td><td>G</td><td>No clearance screening and repeated screening is not required.</td><td>Not applicable</td></tr>
<tr><td>H</td><td>Clear on receipt of 3 sets of negative results.</td><td>3 rectal swabs (or stomal) pre-moistened with sterile water or faecal specimen collected on 3 consecutive days following the last known contact.</td></tr>
<tr><td>Screening as per Table 1</td><td>Clear on receipt of negative results</td><td>A single rectal (or stomal) swab pre-moistened with sterile water or a faecal specimen, separate to VRE swab.</td></tr>
<tr><td rowspan="3">MRSA</td><td>B or C</td><td>Can only be obtained 3 months after last known positive result. Person must not have used any topical antiseptics for the past week and is not on antibiotics at time of screening. Clear on receipt of 2 sets negative results.</td><td>Two sets of nasal and two sets pharyngeal swabs pre-moistened with sterile water. Sets can be taken consecutively on the same day.</td></tr>
<tr><td>W</td><td>Clear on receipt of negative results.</td><td>One set of nasal and pharyngeal swabs pre-moistened with sterile water.</td></tr>
<tr><td>Screening as per Table 1</td><td>Clear on receipt of negative results.</td><td>One set of nasal and pharyngeal swabs pre-moistened with sterile water. The pharyngeal swab is particularly important if decolonisation is planned. An umbilical swab is required from neonates.</td></tr>
</table>

MRO	Alert	Criteria for Clearance	Swabs to collect
VRE	**V**	Not to be cleared within one year of a positive result.	Not applicable
		If four years or more since last positive specimen, then no specimens are required. Micro-alert can be cleared.	No specimens required.
		If between one and four years since last positive specimen further screening required. On receipt of negative results micro-alert can be cleared. Refer to Appendix 2A VRE Clearance Protocol	3 rectal swabs (or stomal) pre-moistened with sterile water or a faecal specimen collected on 3 consecutive days following the last known contact
		Note: There is currently no VRE clearance process for haemodialysis patients	
	F	Unscreened contact	3 rectal swabs (or stomal) pre-moistened with sterile water or a faecal specimen collected on 3 consecutive days following the last known contact
	Screening as per Table 1	Clear on receipt of negative result	A single rectal swabs (or stomal) pre-moistened with sterile water or a faecal specimen separate to CPO swab.
ESBL/ GRE	**Y**	Currently there is no clearance screening protocol for micro-alert Y.	

Appendix 2 A VRE Clearance Protocol

A clearance protocol for patients previously identified with VRE was introduced in WA in April 2016 and endorsed by the WAMRO Expert Advisory Group and the Healthcare Infection Council of WA (HICWA).

Investigation Process

Investigation for clearance of VRE is preferably conducted when the patient is admitted to hospital. Reasonable efforts are to be made to identify the date of the patient's last VRE positive specimen.

Private hospitals without access to the WA Health micro-alert system

1. Contact IPPSU@health.wa.gov.au to identify the date the micro-alert V was activated and if any further testing for VRE has been undertaken in the public sector.
2. Check for positive VRE specimens, from the date activated to the date of the investigation, with the laboratory providing service to your hospital.
3. Ask the patient or family if they have been admitted to any other HCF between the date activated and the date of the investigation. If yes, contact infection prevention and control (IPC) at that HCF regarding positive VRE specimens since activation date.
4. Email details and send to IPPSU@health.wa.gov.au.The IPPSU will contact the initiating hospital to arrange for the clearance of the micro-alert from the WA Health micro-alert system.

All WA public hospitals

1. Identify the date the micro-alert V was activated. This can be viewed in ICNET in the 'TAGS' tab, in Alerts on webPAS, or the summary page of iSOFT Clinical Manager.
2. Conduct a search of laboratory results for positive specimen results from the date activated to the date of the investigation.
3. Ask the patient or family if they have been admitted to any other private HCF between the date activated and the date of the investigation. If yes, contact IPC at that HCF regarding positive VRE specimens since activation.
4. WA public hospital IPC staff are to update the micro-alert system in webPAS by recording the *Date Cleared*. It is not required to notify the hospital that initiated the alert or the IPPSU.

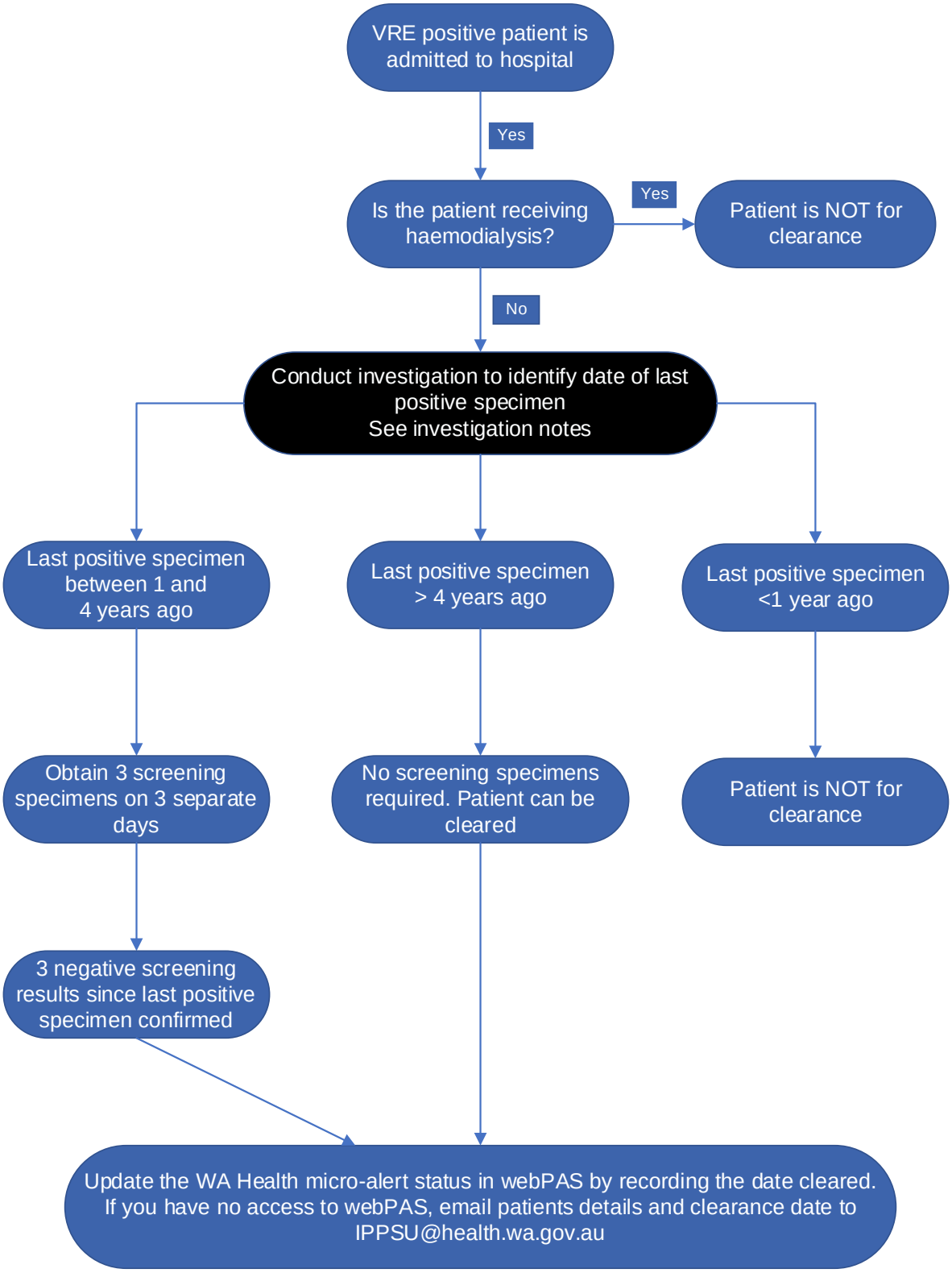
Clearance on the micro-alert system

Only IPC staff trained to update the micro-alert system in webPAS are to clear micro-alerts.

- Changes to micro-alert status can only be made in webPAS.
- The Date Cleared is to be entered and this can be viewed on the Update page in webPAS.
- ICNET data is automatically updated from the webPAS interface.

VRE alerts are never to be made ‘inactive’ or deleted on the micro-alert system. There are no criteria for the use of the ‘inactive’ status and no requirement for a micro-alert to be made inactive before a clearance date is entered. Micro-alerts are only to be deleted if entered in error e.g. wrong patient or laboratory confirms non-VRE.

Flow chart for VRE clearance



Appendix 2 B Micro-alert Y Extended-spectrum beta-lactamase (ESBL) producing Gram-negative bacteria and / or gentamicin resistant *Enterobacterales* (GRE)

Multi-resistant Gram-negative bacteria are now prevalent in the Australian community and around 10% of *Escherichia coli* clinical isolates produce an extended spectrum beta-lactamase (ESBL) enzyme. Internationally, many countries have higher levels of ESBL resistance mechanisms in *E. coli* and *Klebsiella* species, and rates of ESBL carriage will likely increase. ESBL-producing bacteria can cause local infection e.g. urinary tract or wound infection, or systemic infection e.g. sepsis. Often ESBL carrying bacteria harbour resistance to multiple antibiotics which makes these infections difficult to treat, and results in poor outcomes for patients.

ESBL organisms can cause high consequence outbreaks in neonatal intensive care units and in addition many of these isolates are also gentamicin resistant where the empiric early and late onset sepsis protocols rely heavily on gentamicin. A micro-alert for ESBL/GRE, has the potential clinical utility in early escalation of antibiotic regimens for sepsis to effective agents against ESBLs and gentamicin resistant *Enterobacterales* and initiating infection prevention and control measures[16].

For this reason, the micro-alert Y is a restricted code for ESBL and/or gentamicin resistant *Enterobacterales* and only assigned at King Edward Memorial Hospital (KEMH), Perth Children's Hospital (PCH) and Fiona Stanley Hospital (FSH).

Maternal colonisation with ESBL organisms is a risk factor for neonatal colonisation and can be the source of serious outbreaks in NICUs[16]. Mothers of neonates identified with ESBL and/or GRE are also assigned the micro-alert Y due to their close contact with the neonate. Management of adult maternity inpatients colonised or infected with ESBL and/or GRE at KEMH and FSH shall be risk managed by the IPC team to determine IPC precautions required.

Outside of the paediatric and neonatal setting studies have identified low transmission rates of ESBL-producing *Enterobacterales* (in particular *E. coli*) when managed by standard precautions and a risk-assessment approach in acute hospital settings outside of outbreak situations[17].

There is no nationally or internationally agreed protocol for clearance screening for ESBL carriage. In WA, the WAMRO EAG has endorsed an automatic 'drop off' of the micro-alert Y to occur 12 months after the initial activation. For further information on the use of the micro alert system refer to the Guidelines for using the micro-alert system in Western Australian Public Healthcare Facilities

Appendix 3 MRO Management in Specific Settings

A3.1 Non-inpatient Areas

- Standard precautions
- Wear PPE as per standard precautions
- Patients should perform hand hygiene prior to entering and leaving the area
- Reusable equipment is to be cleaned and disinfected prior to further use.

A3.2 Haemodialysis Unit

- Individual risk assessment to determine placement and transmission-based precautions to be implemented
- Patients should perform hand hygiene prior to entering and leaving the area
- Reusable equipment is cleaned and disinfected prior to further use
- Clean and disinfect areas in contact with the patient with a 2-step clean or 2-in-1 clean on discharge. See Appendix 4 for further information on environmental cleaning.

A3.3 Operating Theatre

- Patients do not need to be scheduled last on the list, however, ensure there is sufficient time allowed between cases for appropriate cleaning and disinfection post procedure
- HCW in close contact with the patient must wear appropriate PPE over theatre clothes as per standard precautions for exposure to blood and body fluid.
- Strict adherence to the '5 Moments' for hand hygiene and standard precautions, including appropriate use of gloves is to be adhered to.
- Reusable equipment is cleaned and disinfected prior to further use
- On completion of case clean and disinfect with a 2-step clean or 2-in-1 clean. See Appendix 4 for further information on environmental cleaning.

A3.4 Acute Mental Health Units

The number of acute mental health patients requiring routine screening i.e. direct transfers or those hospitalised outside of WA in the last 12 months is considered to be low. However, routine screening applies in this setting due to the higher prevalence of MROs in HCFs outside of WA. It is acknowledged that screening may not be possible due to valid consent issues or a patient's mental capabilities. Consideration should be given on an individual basis and risk assessment approach.

Management of any MRO-positive patient in this setting needs to be based on an individual patient risk assessment by the HCFs IPC team. Where possible, the procedures outlined in this document should be followed to reduce the transmission between patients, as transfer of acutely ill mental health patients to higher-risk hospital units may occasionally occur.

A3.5 Residential Care Facilities

Although it is recognised that a RCF is the resident's home, and it is optimal not to place restrictions on their mobilisation, socialisation or their room allocation, there is also a need to ensure appropriate IPC occurs in this setting.

Residents colonised or infected with MROs and who have risk factors for transmission or in whom basic personal hygiene practices may be compromised by cognitive or functional impairment, are more likely to contaminate their own environment. This confers an increased risk of transmission of MROs to other residents and transient carriage by HCWs,

and the real risk of MROs becoming endemic in the facility if standard and transmission-based precautions are not adhered to.

It is essential that RCFs engage with their IPC staff to ensure appropriate management occurs to ensure residents are not placed at an increased risk of becoming colonised or infected. In addition, appropriate management will reduce health care costs associated with managing residents with MROs.

The following are essential requirements for managing MRO-positive residents in a RCF:

Prior to transfer of a MRO-positive patient to a RCF, the transferring facility shall:

- ensure the receiving facility is aware of the patient's status
- ensure a risk assessment is performed to determine if the patient has risk factors for transmission
- discuss the risk assessment with the receiving facility to establish if appropriate accommodation is available at the RCF.

Prior to receiving a MRO-positive patient the RCF shall:

- ensure notification to their IPC staff of the pending transfer
- ensure appropriate room allocation occurs based on the risk assessment for transmission of the MRO
- ensure their HCWs are informed and have appropriate knowledge of what the MRO is and the importance of reducing the transmission of this organism within their RCF.

If the MRO-positive resident has no risk factors for transmission the patient can be transferred to the RCF and managed with standard precautions. If the MRO-positive resident does have risk factors for transmission the resident should be placed in a single room with ensuite facilities and managed as per these guidelines.

All RCFs should have an antimicrobial stewardship program in place in accordance with the National Safety and Quality Health Service Standards.

Appendix 4 Environmental Cleaning

Cleaning and disinfection of surfaces and reusable equipment remains an important infection prevention and control measure to minimise the risk of transmission of multi-resistant organisms. Cleaning is essential to both reduce environmental burden of microorganisms on surfaces and to reduce potential transmission of microorganisms from surfaces to HCW. Persistence of environmental reservoirs of pathogens is usually related to a failure to follow recommended cleaning procedures rather than specific cleaning and disinfectant agents.

A4.1 Cleaning

Cleaning entails using a detergent and warm water or detergent wipes to remove organic matter, allowing the disinfectant to work. This process does not necessarily kill microorganisms but reduces their numbers and the risk of spreading infection[15].

Cleaning is to be completed in a methodical way to prevent cross contamination of surfaces. When cleaning, it is important to clean from high to low, from clean to dirty and wipe in an 'S' shape pattern. Use of a damp dusting technique prevents dust particle dispersion when dusting surfaces (refer Figure 1)[15].

Figure 1: Important methods for surface cleaning

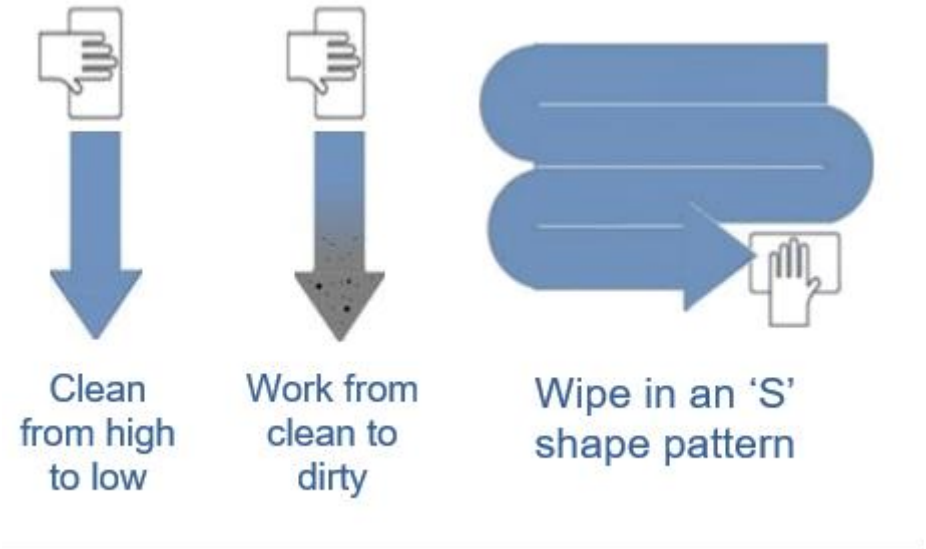


Photo credit: Gama Healthcare.

A4.2 Disinfection

For a disinfectant to be effective it must be made and used in line with the manufacturer's instructions and have full contact with the surface being disinfected. Note disinfectant products may have a minimum contact time that the solution needs to remain wet on the surface to be effective. Hospital grade disinfectants must be listed on Australian Register of Therapeutic Goods (ARTG).

Products used to clean and disinfect medical devices are regulated by the Therapeutic Goods Administration (TGA) and must be included in the ARTG as Goods as a Class I or Class IIb accessories to medical devices.

A4.3 Cleaning and disinfection processes

Physical (mechanical or manual) cleaning is the most important step in cleaning. Sole reliance on a disinfectant without physical cleaning is not recommended as organic matter can avert effective disinfection either by preventing surface contact or affecting how well a disinfectant works. It is recommended that all rooms and non-critical medical devices used for patients with an MRO undergo cleaning and disinfection with either a 2-step clean or a 2-in-1 clean[15].

2-step clean and disinfection

A physical clean using a detergent followed by a disinfection clean using a TGA-listed hospital-grade disinfectant with specific claims or a chlorine-based product such as sodium hypochlorite, where indicated for use [1, 15].

2-in-1 clean and disinfection

A physical clean using a combined detergent and TGA-listed hospital grade disinfectant with specific claims or a chlorine-based product such as sodium hypochlorite, where indicated for use i.e. a combined detergent/disinfectant wipe or solution could be used if this process also involves physical cleaning[1, 15] .

A4.4 Daily cleaning

Clean and disinfect the patients room and ensuite facilities on a daily basis and ensuring frequently touched surfaces including door handles, bedrails, beside trolleys, bedside commodes, doorknobs, light switches, tap handles are included. Increased frequency of cleaning is recommended if the patient has risks factors for dissemination, such as diarrhoea [15].

A4.5 Discharge cleaning

Cleaning must not commence until all the personal effects have been removed from the room. Non-disposable privacy curtains and window curtains, if present, should be removed for laundering prior to cleaning commencing. Disposable curtains, if present, should be replaced as per manufacturer's guidance and local schedule.

The room and all patient care equipment remaining in the room must be physically cleaned and disinfected prior to use by the next patient. This includes all furniture, equipment, horizontal surfaces, frequently touched surfaces e.g. light switches, call buttons and the bathroom/toilet/shower areas. Any items that are unable to be cleaned shall be discarded.

A4.6 Key cleaning principles

All HCFs must ensure:

- cleaning and disinfection is performed on a daily basis and on patient discharge
- high-touch surfaces are cleaned and disinfected at a minimum of once a day
- higher-risk wards/units have enhanced cleaning and disinfection schedules and consider having dedicated cleaning teams with trained supervisors
- during outbreaks, the frequency and efficiency of environmental cleaning and disinfection is increased
- any equipment designated reusable is cleaned and disinfected prior to use on another patient

- manufacturer’s instructions are followed and only use approved products to clean any electronic equipment as some cleaning products and disinfectants may damage electronic equipment.

A4.7 Workplace procedures, training and auditing

All HCFs must have documented cleaning and disinfection schedules for all areas of the facility. This includes having cleaning and disinfection processes documented and readily available for all staff. Content must include the surfaces to be cleaned, cleaning processes, cleaning and disinfection products, and scheduled frequency[15].

Cleaning staff should be trained and undergo regular education in appropriate use of cleaning and disinfection procedures, products to be used and in the use of any PPE that may be required[14] .

Cleaning practices must be regularly audited, and frequency of audits may vary depending on the functional risk rating of the area[14].

This document can be made available in alternative formats on request for a person with disability.