



Government of **Western Australia**
Department of **Health**
Public and Aboriginal Health Division

Communicable Disease Control Directorate Guideline

Guidelines for using the micro- alert system in Western Australian Public Healthcare Facilities

Guideline 0017 / December 2023

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.

Contents

	1
1. Definitions / Acronyms	3
2. Purpose	4
3. Introduction / Background	4
4. Requirements (of the Guideline)	5
4.1 Governance	5
4.2 Access to micro-alert function	5
4.3 Description	5
4.4 Micro-alert Codes	7
4.4.1 Global codes	7
4.4.2 Restricted code - Micro-alert Y	7
4.4.3 Available codes	8
4.5 Notification of MROs	8
4.6 MRSA typing results	8
4.6 Identification of MRO contacts	8
4.7 Activation and clearance of micro-alerts	9
4.7.1 Activation	9
4.7.2 Inactive status and clearance	9
4.7.3 Deletions	9
4.8 Informing patients of their MRO and micro-alert status	10
5. Relevant Legislation	10
6. Additional Resources	10
7. Guideline Contact	10
8. Document Control	10
9. Approval	10
10. References / Bibliography	11
11. Appendices	12
Appendix A	12

1. Definitions / Acronyms

Term	Definition
BSI	Bloodstream infection
<i>C.auris</i>	<i>Candida auris</i>
CPAB	Carbapenemase-producing <i>Acinetobacter baumannii</i> complex
CPE	Carbapenemase-producing <i>Enterobacterales</i>
CPO	Carbapenemase-producing organism
CPPA	Carbapenemase-producing <i>Pseudomonas aeruginosa</i>
ESBL	Extended spectrum beta-lactamase
GRE	Gentamicin resistant <i>Enterobacterales</i>
HAI	Healthcare-associated infection
HCF	Healthcare facility
HCW	Healthcare worker
HICWA	Healthcare Infection Council of Western Australia (Executive group)
HSS	Health Support Services
iCM	iSOFT Clinical Manager
ICNet	Infection Control Surveillance System
IPC	Infection prevention and control
IPPSU	Infection Prevention Policy Surveillance Unit
MAG	Micro-alert Governance (Group)
MRGNB	Multi-resistant Gram-negative Bacteria
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i>
PAS	Patient Administration System
PVL	Panton-valentine leukocidin
VRE	Vancomycin-resistant enterococci
WAMRO	WA Multi-Resistant Organism (Expert Advisory Group)
WebPAS	Web-based Patient Administration System

2. Purpose

The purpose of this document is to provide information on the use of micro-alerts for infection prevention and control (IPC) staff in Western Australian (WA) public healthcare facilities (HCFs).

3. Introduction / Background

Multi-resistant organisms (MROs) are microorganisms, including bacteria and fungi that have developed resistance to multiple classes of antimicrobials. They pose a serious threat to public health worldwide. In HCFs, MROs are associated with increased morbidity and mortality in vulnerable patients who may acquire a healthcare associated infection (HAI) with an MRO that will have limited treatment options.

MROs can spread readily in HCFs due to the exposure of a high-density, high-acuity patient population to extensive antimicrobial use, frequent contact with healthcare workers (HCW) and contamination of the environment ¹.

Patients may be infected or colonised i.e. have asymptomatic carriage with an MRO and both are a potential source of transmission to other patients. If the MRO status of a patient is known prior to, or during a hospital admission, there are measures that can be taken by HCWs to prevent transmission of that MRO to other patients and also reduce the risk of the patient who is colonised developing an infection.

The assignment of micro-alerts on the patient administration system (PAS) in WA HCFs commenced in 1981 to enable the MRO status of persons, or their contacts, to be known to relevant HCWs during their admission and therefore ensure appropriate infection prevention strategies were implemented. Micro-alerts should be assigned as soon as possible once the MRO is confirmed.

Micro-alerts should also be used as a clinical flag, to guide medical management and ensure appropriate antimicrobial prescribing when required. Medical staff need to be informed of the micro-alert system and how to access relevant information. The current PAS used in public HCFs is a *Web-based Patient Administration System known as WebPAS*.

At no time shall a patient's micro-alert status interfere with the admission, transfer or provision of healthcare in any WA HCF.

The following MROs are micro-alerted on the WA WebPAS:

- *Candida auris* (*C. auris*)
- Carbapenemase-producing organisms (CPO)
 - carbapenemase-producing *Enterobacterales* (CPE)
 - carbapenemase-producing *Acinetobacter baumannii* complex
 - carbapenemase-producing *Pseudomonas aeruginosa*
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Extended-spectrum beta-lactamase (ESBL) producing Gram-negative bacteria and/or gentamicin resistant *Enterobacterales* (GRE)
- Vancomycin-resistant *enterococci* (VRE).

4. Requirements (of the Guideline)

4.1 Governance

- The Western Australian Multi-resistant Organism (WAMRO) Expert Advisory Group (EAG) provides advice on the state-wide response to MROs. This group also identifies the MROs that require a micro-alert and endorses over-arching policy and guidelines for the management of these MROs.
- Factors considered by WAMRO in deciding which MROs require a micro-alert include those that are associated with a demonstrated increase in transmissibility within and between HCFs; increased virulence and/or adverse outcomes, specific antimicrobial resistance profiles, and the emergence of new MROs.
- The Micro-alert Governance (MAG) group is a sub-group of WAMRO that provides advice on the administration and functionality of micro-alerts on WebPAS to ensure the requirements of WAMRO and users of the system are met.
- The Infection Prevention Policy Surveillance Unit (IPPSU) is the administrative arm for both WAMRO and MAG and ensures any enhancements or request for changes to micro-alerts are discussed with key stakeholders prior to any changes being made to WebPAS by Health Support Services (HSS).
- HCFs are to report issues with the administration of micro-alerts, or requests for enhancements, to the IPPSU IPPSU@health.wa.gov.au.

4.2 Access to micro-alert function

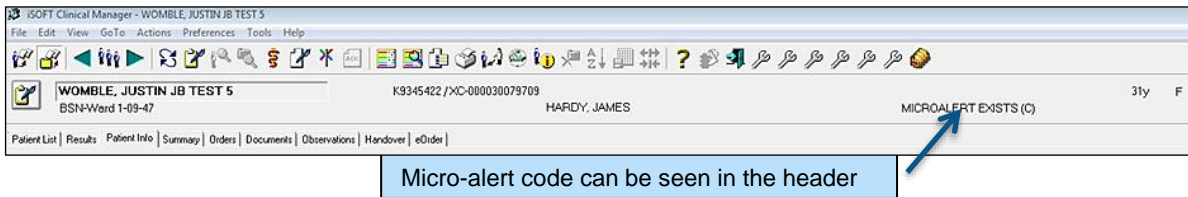
- Personnel are required to apply for personal access to WebPAS by completing an Access Request System form (eHFN-030).
- WebPAS coordinators are appointed for each Health Service Provider (HSP), and they implement a 'no train no access' policy. Training is available by WebPAS technical support teams and on-line packages. Types of access are:
 - *view only* access: the micro-alert status of patients can be viewed but unable to add or clear micro-alerts
 - *full* access: able to add and clear micro-alerts.
- Full access to WebPAS for micro-alerts is restricted to IPC teams and designated medical scientists / laboratory staff.
- Administrative staff do not add or clear micro-alerts unless there are exceptional circumstances and only under the direction of IPC staff, clinical microbiologists and /or infectious diseases physicians.

4.3 Description

- Micro-alerts are accessed and viewed through WebPAS. This patient administration system is a database that contains the names, unique medical record numbers (UMRN) and admission/discharge information of patients presenting at public HCFs.
- Micro-alerts are assigned on WebPAS by the electronic tagging of the patient's UMRN with a MRO specific code for those people who have been identified as MRO-positive (infection or colonisation) and their contacts (Refer to Section 3 and Appendix 1).
- Private HCFs cannot access the public WebPAS but generally have their own internal micro-alert systems.

- Micro-alert data stored on WebPAS includes: the micro-alert code, a descriptor and the date the micro-alert was activated and cleared (if relevant). On WebPAS the name of the HCF initiating the alert will be shown.
- The micro-alerts placed on WebPAS can also be viewed on patient labels printed for medical records and they feed downstream into the iSOFT Clinical Manager (iCM) system and the ICNET Infection Prevention Module allowing all HCWs providing clinical care to view the micro-alert code of a patient on iCM and ICNET at any time. The code can be viewed on both the home and summary pages of iCM (refer to Figures 1, 2 and 3. NB: fictitious data used).

Figure 1 iCM patient home page



Note: if a patient has a medical alert, the micro-alert code(s) may not be visible in the header and will read *Micro-alert exists*. The code and activation date can be viewed on the 'summary page'.

Figure 2 iCM patient summary page

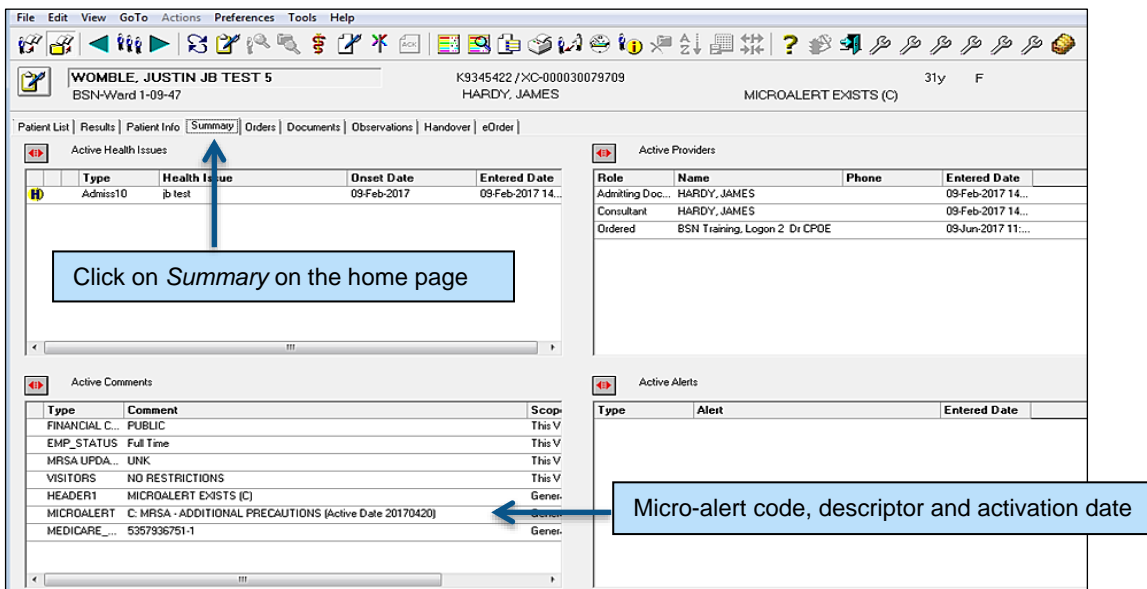


Figure 3 ICNET patient banner and tags tab

Tags: ✓ Haemodialysis, ✓ MRSA, ✓ MRSA - B, ✓ VRE - V Reviewed ✓

Address 9/143 DURLACHER ... Phone and email 0474111 ... Observations and Vitals (3) Location and diagnosis Allergies

Micro-alerts visible in the patient banner

Showing Active tags Add Tag

Name	Application date	Expiry date	Last modification	Original source	Actions
Active tags					
MRSA	07-Oct-2019 00:00		11-Oct-2019 11:20	Labsift	✎ 🗑
MRSA - B	07-Oct-2019 00:00		14-Oct-2020 15:02	PAS Import	✎ 🗑
VRE - V	05-May-2016 00:00		14-Oct-2020 15:02	PAS Import	✎ 🗑
Haemodialysis	28-Oct-2015 00:00		18-Sep-2020 22:50	Observation Import	✎ 🗑

Source of Tags = PAS Import indicating that these tags are from WebPAS (ie: Micro-alert)

4.4 Micro-alert Codes

- The micro-alert codes and management of MROs are described in the WA Department of Health [Screening and Management of Multi-resistant Organisms in Healthcare Facilities Policy](#) and [Guidelines for the Screening and Management of Multi-resistant Organisms in Healthcare Facilities](#)
- MRO specific codes and the descriptor on WebPAS are summarised in [Appendix 1](#).

4.4.1 Global codes

- Global micro-alert codes are defined as codes that are viewed on WebPAS in all WA public HCFs.
- All positive carriers (infection or colonisation) of *C.auris*, CPO, MRSA, or VRE, and their contacts are assigned a global micro-alert (Refer to [Appendix 1](#)).
- WebPAS is programmed to automatically remove the following codes one year after the date of activation:
 - W (MRSA contact)
 - F (VRE contact)
 - Y (ESBL and/or GRE)
- WebPAS is programmed to automatically remove micro-alert H (CPO contact) five years from activation.

4.4.2 Restricted code - micro-alert Y

- Micro-alert Y has been a restricted code for ESBL producing Gram-negative bacteria and/or GRE. . It is only assigned at King Edward Memorial Hospital (KEMH), Perth Children's Hospital (PCH) and Fiona Stanley Hospital (FSH) where neonates in high-level intensive care units are at higher risk of a ESBL and/or GRE bloodstream infection (BSI). Mothers of neonates identified with ESBL and/or GRE are also assigned an alert due to their close contact with neonates.
- Micro-alert Y code placed at KEMH, PCH and FSH are broadcast and viewed globally on WebPAS and iCM due to the design of these systems. It is not possible to suppress this micro-alert Y at other HCFs. A patient with a micro-alert Y may present at other HCFs and therefore it is important that an explanation and information on management of ESBL and/or GRE and micro-alert Y is provided in individual HCF IPC policy.

- WebPAS automatically removes the micro-alert Y one year after date of activation.

4.4.3 Available codes

- These are global codes that can be activated in response to a threat from new emerging MROs.
- There are eleven codes (A, D, E, L, M, N, P, Q, R, S, T,) that are available for use. Activation of new codes will only be implemented via the IPPSU following endorsement by WAMRO.

4.5 Notification of MROs

- It is essential that IPC staff utilise ICNet to review all notifications of all positive *C. auris*, CPO, MRSA, ESBL/GRE and VRE isolates from specimens obtained at their HCF, including outpatient and emergency departments.
- ICNet is automated to notify IPC staff of all organisms of concern and ‘tags’ have been created for all micro-alerted MROs.
- HCFs that assign micro-alerts based on antibiotic susceptibility when the initial results are reported i.e. prior to receiving the final typing results, need to review confirmatory typing results and modify the micro-alert on WebPAS if required.

4.6 MRSA typing results

- New MRSA cases are entered on WebPAS as a micro-alert B or C according to the following classifications reported by the PathWest Gram-positive Reference laboratory:
 - micro-alert B PVL negative (strain not identified)
 - micro-alert B PVL positive (strain identified)
 - micro-alert C (strain identified).
- The laboratory distributes the MRSA typing results (refer to Figure 4) to the referring laboratory, and also to the generic IPC e-mail address, at the relevant HCF. It is essential that IPC personnel ensure their e-mail address is maintained. The majority of reports are sent within four days of the MRSA isolate being received by PathWest.

Figure 4 Sample MRSA HCF report from typing laboratory

		PathWest Laboratory Medicine-WA Department of Microbiology Fiona Stanley Hospital and ACCESS Typing and Research, Curtin University				
		Results for Tuesday, 30th May 2017 for PathWest - BROOME				
EPI No.	URMN #	Name	Site	Lab No.	PVL PCR	POC
<hr/>						
Micro-alert B, PVL negative MRSA.						

4.7 Identification of MRO contacts

Identifying MRO contacts for screening and/or micro-alerting requires tracking the location of MRO-positive patients during an admission and identifying patients that have shared a room, bathroom or toilet with them as per definitions in the relevant [Screening and Management of Multi-resistant Organisms in Healthcare Facilities Policy](#) (MP 0177/23)

The use of WebPAS and ICNET for electronic contact tracing is recommended due to the potential for multiple internal transfers of patients during an admission. WebPAS coordinators and ICNET Super Users can provide further information.

4.8 Activation and clearance of micro-alerts

4.8.1 Activation

- Prior to activating an alert, it is essential that IPC personnel ensure that the isolate is a laboratory-confirmed MRO of relevance for micro-alerting.
- The micro-alert code is assigned on WebPAS by personnel at the HCF where the specimen was identified, including from emergency and outpatient departments. PathWest provide support for adding C, G, H, J, and V alerts for MROs identified in the private sector.
- Automatic upload of micro-alert B identified in the private sector will be uploaded weekly.
- The date of collection of the first specimen that resulted in a positive MRO result (infection or colonisation) is to be recorded as the date activated.
- With the activation of an alert, when WebPAS data is transferred into ICNET the alert will automatically create a tag on the ICNET patient record

4.8.2 Inactive status and clearance

- There is no requirement for a micro-alert to be made inactive before a clearance date is entered. **The inactive field is not to be used.**
- Patients can be cleared of a micro-alert only when clearance criteria outlined in the [Screening and Management of Multi-resistant Organisms in Healthcare Facilities Policy](#) (MP 0177/23) is met. This applies to MRSA or VRE positive patients and contacts and CPO and *C. auris* contacts. There is no clearance policy for ESBL/GRE, CPO or *C. auris*, positive patients.
- The date of clearance is to be entered in the End Date (date cleared) field on the Update page in WebPAS. This will result in the micro-alert code being removed from global view on WebPAS and ICM. The tag will not automatically be removed from ICNET, therefore the person clearing the alert from WebPAS will need to also remove the tag from the patient record in ICNET.
 - IPC staff can still view the history and date cleared on the *Update* page in WebPAS
 - on WebPAS the date the micro-alert is cleared will show in the *Inactive/Exp End date* field on the micro-alert home page
 - clearance history is not shown on iCM.
- Private hospitals who have obtained screening swabs for *C. auris*, CPO, MRSA and VRE clearance or contact clearance can send copies of the results to IPPSU@health.wa.gov.au.

4.8.3 Deletions

- A micro-alert is not to be deleted from webPAS even if it has been created in error e.g. wrong patient or the final laboratory results confirm the isolate is not a significant MRO that requires a micro-alert. If a micro-alert is created in error insert the same date in **inactive/End Date** as **Date Activated** then click the **Update** button. This process will ensure the Alert icon disappears from the Patient Banner and tag in ICNet to expire.

4.9 Informing patients of their MRO and micro-alert status

- Transparent management of personal information and open communication between the health service provider and health consumer are important for balancing the dual goals of providing the flow of information to HCWs who need to know and steps to meet patient privacy requirements.
- The MRO policy requires that a person who is identified as MRO-positive and micro-alerted at a HCF is to receive written notification of their MRO status and provided with an information sheet on the MRO isolated.
- When a MRO contact is identified and discharged prior to notification and completion of screening it is recommended that hospitals provide written information in a letter.
- Standardised MRO positive case letters, contact letters and consumer resources are available on the [IPPSU tools and resource page](#).

5. Relevant Legislation

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

6. Additional Resources

[Screening and Management of Multi-resistant Organisms in Healthcare Facilities Policy \(MP 0177/23\)](#)

7. Guideline Contact

Enquiries relating to this Guideline may be directed to:

Infection Prevention, Policy and Surveillance Unit (IPPSU)

Directorate: Communicable Disease Control Directorate

Email: IPPSU@health.wa.gov.au

8. Document Control

Guideline number	Version	Published	Review Date	Amendments
0017	V.1	10/12/2023	December 2026	Transfer to Guideline of existing document. Updated to reflect revision of the micro Y alert and micro-alert status, updated with ICNet references

9. Approval

Approved by	Dr Jelena Maticcevic Director, Communicable Disease Control Directorate, Department of Health
Approval date	08/12/2023

10. References

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11. Appendices

Appendix 1 Micro-alert definitions

MRO and micro-alert code	Definition
<i>Candida auris</i>	
Micro-alert J	Positive status. Laboratory confirmed <i>C.auris</i>
Micro-alert K	Contact status. Any person who has shared a patient room, bathroom or toilet facility with a known positive <i>C. auris</i> patient (infection or colonisation) within the period 28 days prior to first isolation of <i>C. auris</i> and for whom screening has not been completed prior to discharge.
Carbapenemase-producing Organisms	
Micro-alert G	Positive status Laboratory confirmed CPO with 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 <i>Staphylococcus aureus</i>	
Micro-alert B	<p>Positive status. Laboratory confirmed MRSA clones with increased anti-microbial resistance and/or virulence factors and have not demonstrated high transmissibility in hospitals.</p> <p>Micro-alert B PVL negative clones are WA community MRSA clones and are not typed further.</p> <p>Micro-alert B PVL positive clones - Nomenclature (MLST-SCCmec) include: Qld clone (ST93-IV) Western Samoan (WSPP) (ST30-IV) Taiwan CA-MRSA (ST59/952-V_T) European CA-MRSA (ST80/583/728-IV) WA 121 (ST-5-IV); WA 3 (ST5-IV); WA 62 (ST-923-IV); WA 2 (ST78-IV); WA 124 (ST30-V); WA 137 (ST1-V); WA 89 (ST1633-V); WA 51 (ST6-IV); WA 66 (ST6-IV); WA 1 (ST-1-IV); WA 117 (ST88-V).</p>
Micro-alert C	<p>Positive status. Laboratory confirmed MRSA clones with increased anti-microbial resistance and/or virulence factors and/or demonstrated high transmissibility in hospitals, as determined by the WAMRO EAG.</p> <p>Micro-alert C clones - Nomenclature (MLST-SCCmec) includes: UK 15/EMRSA-15,16 (ST22-IV, ST36-II) Aus-2/3 (ST-239-III) New York/Japan/USA 100 (ST5-II) USA300 (ST8-IV) (PVL-positive) Bengal Bay (ST772-V) (PVL-positive)</p>

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-alert W will automatically drop off via WebPas at one year from activation
Vancomycin-resistant enterococci	
Micro-alert V	Positive status. Laboratory confirmed vancomycin resistant <i>Enterococcus faecalis</i> and <i>Enterococcus faecium</i> (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-alert F will automatically drop off via WebPas at one year from activation.
Extended-spectrum beta-lactamase (ESBL) producing Gram-negative bacteria and/or gentamicin resistant <i>Enterobacterales</i> (GRE)	
Micro-alert Y	This is a restricted code for ESBL and/or GRE and is only assigned at KEMH, PCH and FSH. Micro-alert Y will automatically drop off via WebPas at one year from activation.

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