

# Interim minimal guidance for MDRO admission screening and placement in a NZ hospital

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## Background

Controlling multidrug-resistant organism (MDRO) transmission in healthcare in Aotearoa/ New Zealand (NZ) is important because MDROs:

- are resistant to usual antimicrobial therapy
- increase patient morbidity and mortality
- add to the cost of treatment
- have the potential to spread and act as a reservoir of resistance genes for the transmission to other organisms
- spread easily in hospital.

Identifying, testing, and isolating in Contact Precautions, patients who have a risk of colonisation or infection with an existing MDRO, will limit and control transmission of non-endemic MDROs.

This is an interim and initial guide developed in response to reported outbreaks of VRE in the Waikato region (Te Manawa Taki) hospitals and notification of hospital outbreaks of MDROs in Fijian Hospitals. As this is minimum requirements local policies may exceed the below requirements. This document is a living document and will be updated periodically.

Rates of MDRO, particularly carbapenemase producing Enterobacterales (CPE), multi-resistant *Acinetobacter baumannii* (MRAB), carbapenem resistant *Acinetobacter baumannii* (CRAB), Vancomycin-resistant Enterococcus (VRE) and *Candida auris* (*C. auris*) are high or increasing in most regions of the world, including Europe, South Asia and the Pacific.

## Purpose

This guidance provides a risk assessment framework for local infection, prevention, and control (IPC) and microbiology laboratories to develop policies, procedures and MDRO surveillance as required by [Nga Paerewa/ Health and Disability Services Standard](#)

The guidance aims to support local infection, prevention, and control (IPC) and microbiology laboratories in working toward appropriate screening tools and methods.

## Definitions and abbreviations

**Candida auris (*C.auris*)** is an emerging, multidrug-resistant yeast that causes invasive infections and is transmitted in healthcare settings. It is often multidrug-resistant with some strains resistant to all three available classes of antifungals commonly used to treat Candida infections.

**Colonisation** is the presence and multiplication of microorganisms without tissue invasion or damage.

**Carbapenemase-producing Enterobacteriales (CPE)** are coliform bacteria, usually *E. coli* or *Klebsiella*, that produce an enzyme capable of inactivating carbapenems and other  $\beta$ -lactam antibiotics. They are usually resistant to multiple antibiotic classes and are usually extensively or pan-drug resistant. These organisms should be considered an infection control emergency and are the highest priority for transmission-based precautions.

**Carbapenemase-producing organism (CPO)** includes *P. aeruginosa*, *A. baumannii* as well as CPEs as above.

**Carbapenem-resistant *Acinetobacter Baumannii* (CRAB)** are highly antibiotic-resistant bacteria for which few treatment options exist. *Acinetobacter baumannii* is a gram-negative, aerobic bacterium, which belongs to the family Neisseriaceae. Also known as Multi-resistant *Acinetobacter baumannii* (MRAB).

**Extended Spectrum Beta-Lactamase producing Enterobacteriales (ESBL)** are *E. coli*, *Klebsiella* and sometimes other coliform bacteria that have transmissible (plasmid encoded) resistance to cephalosporins and penicillins but remain susceptible to carbapenems. Resistance to other antibiotic classes is common in these organisms.

**Multi-drug resistant organisms (MDRO)** are those organisms that are resistant to antibiotics to which they should normally be susceptible. Usually this means these organisms are resistant to multiple classes of antibiotics. The important feature is that these organisms are transmissible within healthcare settings.

**Methicillin Resistant *Staphylococcus aureus* (MRSA)** are those strains of *Staphylococcus aureus* resistant to Flucloxacillin (and other beta-lactam antibiotics).

**Non-endemic MDRO** refers to MDROs that are likely to be health care acquired and non-endemic in New Zealand. Because of their drug resistance these MDROs are considered a risk to health care and IPC measures and contact tracing measures should be taken.

Samples:

- Screening samples are those taken specifically to detect organisms of infection control significance.
- Clinical samples are those specimens taken during the course of normal patient care and investigation.

**Vancomycin Resistant Enterococcus (*E. faecalis* or *E. faecium*) (VRE)** is a type of enterococci bacteria that has become resistant to vancomycin.

**Patient minimum testing requirements**

Patient assessment, testing and prompt placement in suitable IPC precautions should occur on hospital admission to avoid potential transmission of MDROs.

N.B. Some districts may choose to screen for MRSA and/or do repeat MDRO screening 4-7 days after initial screen for MDROs. This will be directed by local IPC teams.

<b>Does the patient meet any of these scenarios?</b>	<b>If YES send the following samples</b>	<b>Contact Precautions</b>	<b>Inform IPC team on suspicion</b>
<p><b>A. Has the patient been admitted for &gt; 24 hours or had a high-risk procedure* in an overseas healthcare facility in the last 12 months?</b></p> <p>* High risk procedures include, but are not limited to dental procedures, renal dialysis, oncology procedures or gastroscopy.</p>	<ul style="list-style-type: none"> <li>• MDRO faecal screen (faecal sample or rectal swab) for               <ul style="list-style-type: none"> <li>○ VRE, CPE, ESBL and CRAB</li> </ul> </li> <li>• MDRO skin screen (bacterial swab 1X bilateral axilla, 1X bilateral groin) for               <ul style="list-style-type: none"> <li>○ CRAB, <i>C. auris</i></li> <li>○ MRSA nasal swab as per local protocol</li> </ul> </li> </ul>	<p>YES</p> <p>Until first swabs result negative or as directed by IPC</p>	<p>YES</p>
<p><b>AND additional risk factors as below</b></p> <ul style="list-style-type: none"> <li>○ Endotracheal tube in situ</li> </ul>	<ul style="list-style-type: none"> <li>• Respiratory sample or swab of tracheostomy site for CPE, CRAB, and <i>C. auris</i></li> </ul>		
<ul style="list-style-type: none"> <li>○ Long term IDC</li> </ul>	<ul style="list-style-type: none"> <li>• Urine sample for ESBL, CPE, CRAB and <i>C. auris</i></li> </ul>		
<ul style="list-style-type: none"> <li>○ Any wounds</li> </ul>	<ul style="list-style-type: none"> <li>• Swab for MRSA, ESBL, CPE and CRAB</li> </ul>		
<ul style="list-style-type: none"> <li>○ Neonates</li> </ul>	<ul style="list-style-type: none"> <li>• Umbilical Swab for MRSA, ESBL and CPE</li> </ul>		

<b>Does the patient meet any of these scenarios?</b>	<b>If YES send the following samples</b>	<b>Contact Precautions</b>	<b>Inform IPC team on suspicion</b>
<b>B. Has the patient had overseas travel (without healthcare contact) to a South Asian or South-East Asian country in previous 12 months?</b>	<ul style="list-style-type: none"> <li>• MDRO faecal screen (faecal sample or rectal swab) for               <ul style="list-style-type: none"> <li>○ VRE, ESBL, CPE.</li> <li>○ MRSA nasal swab as per local protocol</li> </ul> </li> </ul>	YES  Until first swabs result negative or as directed by IPC	PRN
<b>AND additional risk factors as below</b>	<ul style="list-style-type: none"> <li>• Respiratory sample or swab of tracheostomy site for CPE</li> </ul>		
Endotracheal tube in situ			
Long term IDC	<ul style="list-style-type: none"> <li>• Urine sample for ESBL, CPE</li> </ul>		
Any wounds	<ul style="list-style-type: none"> <li>• Swab for MRSA, ESBL, CPE</li> </ul>		
Neonates	<ul style="list-style-type: none"> <li>• Umbilical Swab for MRSA, ESBL and CPE</li> </ul>		
<b>C. Has the patient been admitted to a NZ hospital or hospital level aged residential care facility / dementia care in last 12 months?</b>	<ul style="list-style-type: none"> <li>• MDRO faecal screen (faecal sample or rectal swab)               <ul style="list-style-type: none"> <li>○ VRE</li> <li>○ CPE- as regionally directed or if facility outbreak known.</li> </ul> </li> <li>• MRSA nasal swab as per local protocol</li> </ul>	YES - if from outbreak area	PRN
NOTE : Screen own hospital readmissions if outbreak has occurred in last 12 months and transmission risks exists.			
Neonates	<ul style="list-style-type: none"> <li>• umbilical swab for MRSA, ESBL &amp; CPE</li> </ul>		
<b>D. Patient Alert/ NHI national warning for MDRO or MDRO close contact</b>	<ul style="list-style-type: none"> <li>• MDRO alert/NHI national warning placed in last 2 years- No screen required.</li> <li>• MDRO close contact alert/ NHI national warning: as directed</li> </ul>	YES - as directed by alert or local policy  YES - as directed	PRN

### **Declaring an MDRO outbreak**

An MDRO outbreak should be declared by a health care facility/ IPC team if:-

- at least one case is a locally acquired case, and
- there is a plausible epidemiological connection between cases or
- where acquisition from an environmental source is hypothesised, clustering in time and place without a direct patient-to-patient epidemiological link or
- where 2 or more cases are confirmed by molecular typing to represent likely cross-transmission, and all contacts have not been identified. Liaise with microbiologist for support. **Follow outbreak processes in facility outbreak policy. This should include an outbreak meeting with suitable membership.**

### **Notification of an MDRO outbreak**

Te Whatu Ora facilities should notify

- other District Hospital IPC teams and
- Te Whatu Ora via [ipc@health.govt.nz](mailto:ipc@health.govt.nz) and
- other local healthcare providers if appropriate e.g. Private Surgical Hospitals, ARC or disability providers, NZNM, leadership team, Public Health.

Non-Te Whatu Ora facilities should notify their local Te Whatu Ora IPC team if an outbreak of an MDRO is suspected or found.

Notification to colleagues prior to ESR confirmation of a 'probably outbreak' based on epidemiological evidence.

### **How to swab**

Check local SOP from appropriate laboratory. The below is a general guide.

### **MDRO Rectal Swab**

#### **Procedure for taking rectal swab.**

1. With clean hands label swab container and lab form and check patient's details.
2. Using Standard Precautions, while ensuring privacy and consent of patient.
3. Remove swab from packet without touching end of swab.
4. Carefully insert the swab into the rectum to a depth of approximately 1.5 - 2 cm
5. Gently rotate the swab, ensuring some faecal matter is collected.
6. Remove the swab and insert it back into the container – label container.

## **MDRO skin swab**

### **Procedure for collecting the swab.**

1. With clean hands label swab container and lab form and check patient's details.
2. Using Standard Precautions, while ensuring privacy and consent of patient.
3. Remove swab from container without touching end of swab.
4. Firmly rub the soft end of the collection swab as described in the next step. Swab both the axilla and groin with the same swab as described below.
  - Rub all sides of the swab tip over the left axilla skin surface and then the right, targeting the crease in the skin where the arm meets the body (i.e., swab both armpits, swiping back and forth 5 times per armpit).
  - With the same swab used on the axilla, rub both sides of the swab tip over the left groin skin surface, targeting the inguinal crease in the skin where the leg meets the pelvic region and repeat with the right side (i.e., swab the skin of both hip creases, swiping back and forth 5 times per hip crease).
5. Remove the swab and insert it back into the container place with laboratory form in specimen bag.

NB: Specimens should be tested within 4 days of collection, or as otherwise indicated by testing laboratory.

**(See [CDC C. auris guide](#))**

## References

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