

# Supporting bed allocation and patient flow for infection prevention and control

## Introduction

Bed allocation or patient flow for patients with a known or suspected communicable disease or a multidrug-resistant organism (e.g., COVID-19, influenza, tuberculosis, varicella zoster, carbapenemase-producing enterobacteriales) can be complex, requiring careful planning to ensure the most suitable choice of ward and bed placement. To ensure the safe and timely placement of a patient, decisions should be made in conjunction with the patient flow team and local infection prevention and control (IPAC) service wherever possible in business hours (with local procedures for after hours).

Reducing unnecessary movement of patients within a hospital can help to reduce the:

- number of high-risk contacts if a patient has a communicable disease or infection.
- risk of patient disorientation and adverse outcomes.

## Risk assessment and risk mitigation process

As part of any risk mitigation process, patient placement needs to consider the principles of [IPAC hierarchy of controls](#). Prioritisation of single rooms for isolation or for other important uses beyond the management of infectious diseases (ID) – such as providing end-of-life care, falls risk, patient vulnerability to communicable diseases (e.g., immunocompromised) or ensuring appropriate patient security and safety – should be embedded in the decision-making process. Where possible, patient rooms, including isolation rooms need to be allocated to minimise any additional unnecessary movement of patients during their admission.

On arrival, patients must be promptly assessed for infection risk at the care area (if possible, prior to accepting a patient from another care area) and this should be continuously reviewed throughout their stay. Patient placement decisions should be based on risk assessment, which should consider the route of transmission of the organism or infection, alongside patient factors and symptoms that increase the risk of cross transmission. These principles should be applied in emergency department (ED) and ward areas, including outpatient areas. Assessment should include the potential infection, route of infection transmission and potential spread of infection, risk factors associated with exposure to blood and body fluids, and spatial considerations.

## Prioritisation of single rooms or isolation rooms

A single-bed room with ensuite should be considered as a minimum for patients on airborne precautions and is preferred for patients on droplet and contact precautions. The ongoing need for isolation should be reassessed based on transmission or infectious period and patients' clinical signs and symptoms.

Local risk assessment should determine the appropriate room placement considering any other patient safety risks (e.g., falls risk, other co-morbidities and mental health).

When single-bed rooms are limited, prioritisation for single-bed rooms should be for patients who have conditions that increase the risk of infection transmission to other patients (e.g., draining wounds, stool incontinence and uncontained secretions) and those who are at increased risk of acquisition and adverse outcomes resulting from healthcare associated infection (HAI); for

# Supporting bed allocation and patient flow for infection prevention and control

example, immunosuppression, open wounds, invasive devices, anticipated prolonged length of stay, total dependence on health workers (HWs) for activities of daily living.

Placing a patient in isolation may increase the risk of stress, depression or anxiety. Where isolation is required, the reason should be clearly explained to the patient and their carers to minimise these risks.

A decision to isolate the patient should be made carefully after consultation with treating clinicians and the IPAC service and/or an ID team, and be regularly reviewed. The reason for isolation must be documented in the patient's healthcare records and reviewed by the IPAC service.

The following order of prioritisation should be considered with all patient allocations:

- **FIRST:** airborne precautions – priority access to negative pressure room with or without anteroom, followed by isolation rooms that may be 100% exhaust or negative airflow. Where these category of isolation rooms are not available use a single room with door closed and dedicated bathroom facilities.
- **SECOND:** droplet precautions – single room where available (e.g., acute respiratory infections ARIs).
- **THIRD:** contact precautions – transmission risk assessment to be conducted (e.g., wet contact – diarrhoea, vomiting and open wound).

## Patient placement in a cohort or mixed inpatient area

Where single rooms are not available or where the demand for single rooms for management of patients with same communicable pathogens is unable to be met, cohorting patients with the same confirmed infectious pathogen may need to occur. This includes settings such as EDs.

A cohort area is a bay or a ward in which a group of patients (a “cohort”) with the same infection are placed together. Cohorts are created based on clinical diagnosis, microbiological confirmation when available, epidemiology, and mode of transmission of the infectious agent.

A decision to cohort patients should be made based on IPAC principles and, where possible, in consultation with treating clinicians and the IPAC service and/or an ID physician. If placement in mixed gender accommodation is being considered, refer to the [NSW Health Policy Directive: Same Gender Accommodation](#).

In lower risk areas, such as rehabilitation units, long term care settings, outpatient day treatment settings or patient transport services, a risk assessment should be undertaken to establish the level of risk and benefit to patient treatment.

Where a patient's presentation involves acute gastrointestinal symptoms/infection (vomiting, diarrhoea); acute respiratory infection or acute skin infection or infestation, the preferred room allocation for these patients is a single room with own bathroom (if available). For more information on the risk assessment considerations, refer to CEC's [Infection Prevention and Control Practice Handbook, Chapter 6 Risk Mitigation: patient placement](#).

While awaiting pathology results, patients should be cohorted based on the symptomatology and risk assessment. However, patients not yet confirmed (suspected) should not be cohorted together with confirmed infections.

# Supporting bed allocation and patient flow for infection prevention and control

Patients screened for respiratory viruses, viral/infective gastroenteritis or airborne diseases (based on symptomatology and period of infectivity for the causative organism) need to be isolated immediately until negative test results are available.

- Patients who are identified as close contacts of positive COVID-19/ acute respiratory infection (ARI) should not be cohorted with patients who have had no exposure.
- Patients who are identified as close contacts of positive COVID-19/ARI should be risk assessed for differing exposure times / dates before cohorted together as their infection risk period may vary.

Patients screened for multi-resistant organisms can remain in their allocated bed with appropriate precautions applied at the patient bedspace until results are available.

When single rooms with dedicated toilets are not available, a dedicated commode (where practical and feasible) should be assigned. Cleaning and disinfection of patient care items and surfaces is essential where shared equipment or environments are used.

## **Key considerations when allocating a bed space or moving a patient with suspected or confirmed communicable diseases:**

- Refer to local guidelines or procedures when allocating beds.
- Isolation should not compromise care. Consider the patient acuity and care needs including wandering, cognitive impairment, or other risk factors (e.g., falls risk) for patients requiring isolation.
- Risk assessments should consider patient factors and bed availability and done in consultation with the Patient Flow team and local IPAC/ID. Navigate patients through the health systems to prevent delays.
- Does the patient's move create additional bed capacity or reduce capacity temporarily "closing" beds"?
- The decision needs to consider other important uses beyond the management of ID, such as falls risk, providing end-of-life care, or ensuring appropriate patient security and safety.
- Conversations with patients, families and carers about the risks and benefits of the bed move should be ongoing. Placement into an isolation or cohorting area should occur early and documented in the clinical record.

## Zoning

During a COVID-19/ARI or any other communicable disease outbreak or pandemic, designated areas or zones may be considered and divided into different patient zones. An example of managing COVID-19/ARI in a health facility may include:

1. **Red zone** – COVID-19/ARI positive cases.
2. **Amber zone** – COVID-19/ARI high risk contacts or suspected cases.
3. **Green zone** – patients/clients that have been cleared of being COVID-19/ARI cases or contacts.
4. **Blue zone** – areas only accessed by staff.

# Supporting bed allocation and patient flow for infection prevention and control

The organisation of zones depends on factors such as:

- physical building space.
- availability of single or shared rooms in a specific area.
- ability of patients to be relocated.
- staffing capacity.
- number of suspected or confirmed COVID-19/ARI or other infectious cases.
- acuity of positive cases.
- number of contacts.
- clinical condition and vulnerability of patients.
- access to bathrooms, toilets, and utility rooms.

## Staffing

A risk assessment should be undertaken on the appropriate allocation of HWs. This may involve dedicating HWs to specific patients or cohort groups.

Where this is not possible, adherence to hand hygiene, standard and transmission-based precautions is essential to reduce the risk of transmission of infection.

All HWs need to be vigilant for symptoms suggestive of COVID-19/ARI or other transmissible infections. If symptoms occur, staff need to notify their manager as soon as practicable and follow local procedures.

## Discontinuing isolation

Individual patient risk factors should be considered (e.g., there may be prolonged shedding of certain microorganisms in immunocompromised patients) along with clinical judgement before discontinuing isolation. Clinical and molecular tests to show the clearance of microorganisms may also be considered and consultation of HWs involved in the patient care and IPAC team before making the decision regarding isolation discontinuation.

## Vulnerable patients, protective precautions and isolation

Vulnerable patients requiring protective precautions are a priority for isolation. There are specific patient groups for whom isolation may provide protection from infection. The following groups of patients would be considered as vulnerable and may require protective isolation:

- any patient whose blood neutrophil count falls below or is expected to fall below  $0.5 \times 10^9/L$  as a result of chemotherapy.
- patients receiving haematopoietic stem cell transplant, particularly allogeneic transplants.
- patients with extensive skin loss due to burns or trauma.
- patients within 6 months of a solid organ transplant.
- preterm babies.

# Supporting bed allocation and patient flow for infection prevention and control

Please refer to [IPAC Guidance for Assessment and Management of Acute Respiratory Infection \(ARI\)](#) for further information.

**TABLE 1: PATIENT PLACEMENT PRIORITY GUIDE**

Type of precaution	Priority level for single room allocation	Isolation Management	Examples
<b>Airborne</b>	Highest	Negative pressure room	<ul style="list-style-type: none"> <li>○ HCID</li> <li>○ Measles</li> <li>○ Pulmonary tuberculosis</li> <li>○ Varicella (Chickenpox)</li> <li>○ Disseminated zoster</li> </ul>
		Negative pressure room or single room with doors closed. Own bathroom.	<ul style="list-style-type: none"> <li>○ COVID-19 suspected or confirmed</li> <li>○ Respiratory AGPs on patients with ARIs</li> </ul>
<b>Protective precautions and isolation</b>	High	Place in single room with own bathroom* <u>Note:</u> neutropenic patients usually placed in positive pressure rooms: assess infectious status	Patients with significant neutropenia and transplant recipients may require protective precautions and isolation Utilisation of high-risk ward environment e.g., oncology, transplant
<b>Droplet</b>	High	Single room	<ul style="list-style-type: none"> <li>○ ARIs</li> <li>○ Pertussis (Whooping cough)</li> <li>○ Meningococcal disease (first 24 hours of antibiotics)</li> <li>○ Mumps</li> </ul>
<b>Droplet</b>	Moderate	Single room where available.	Other respiratory viral illnesses such as human metapneumovirus, parainfluenza, RSV, Norovirus
<b>Contact</b>	High	Single room with ensuite where available or dedicated bathroom facility.	Order of priority for single room allocation: <ul style="list-style-type: none"> <li>○ Candida auris</li> <li>○ CPE</li> <li>○ Infectious diarrhoea (3 or more loose stools within 24 hours. Risk assess clinical symptoms for the duration of isolation)</li> </ul>
<b>Contact</b>	Moderate	Single room where available with ensuite. For cohorting: dedicated bathroom or designated commode. Cohorting can occur in this category (VRE, MRSA).	<ul style="list-style-type: none"> <li>○ MRSA</li> <li>○ VRE</li> <li>○ Varicella Zoster (Shingles) if localised</li> </ul>

\*May consider cohorting with same transplant patients based on local risk assessment

# Supporting bed allocation and patient flow for infection prevention and control

**TABLE 2: SUGGESTED PRIORITISATION OF RESOURCES BASED ON INFECTION RISK**

Priority	Disease or presentation	Precautions ( <i>Standard precautions always apply</i> )
FIRST	High consequence infectious disease (HCID)*	Airborne + contact + droplet
	Respiratory viruses of concern e.g., Middle East respiratory syndrome coronavirus (MERS-CoV),	Airborne + droplet
	Pulmonary tuberculosis	Airborne + contact
	Measles	Airborne
	Chickenpox/disseminated varicella zoster virus	Airborne + contact
	Candida auris	Contact
	COVID-19	Airborne + droplet
SECOND	Clostridioides difficile infection (with active diarrhoea)	Contact
	Infectious diarrhoea†, vomiting including norovirus	Contact + droplet
	Carbapenem-resistant organisms (e.g., carbapenem-resistant Enterobacterales)	Contact
	Influenza	Droplet
	Pertussis	Droplet
	Mumps	Droplet
	Meningococcal disease	Droplet
Respiratory syncytial virus (RSV)	Droplet	
THIRD	Other multi-resistant organisms as designated by your facility (e.g., MRSA, VRE)	Contact
	Scabies	Contact
	Varicella Zoster (localised & uncovered)	Contact

† Some types of infectious diarrhoea only require contact precautions.

\* For more information, refer to NSW Health [Guidelines for management of specific high consequence infectious diseases](#).

**Note:** protective precautions may apply to vulnerable patients.