

Chapter 2 Risk identification requirements

2.1 Introduction

Risk identification is the process of documenting any risks that could impact on an organisation or program from reaching its objective. NSW Health Organisations are to ensure risks are identified by examining sources of risk, areas of impact, causes and potential consequences of events and scanning the environment (NSW Health, PD2022_023). Effective infection prevention and control is central to providing high quality healthcare for patients, visitors, carers, health workers and contractors, as well as preventing, managing, and controlling healthcare associated infections (HAIs) (NSW Health, PD 2023_025).

All health workers (permanent, temporary or contract) are accountable for managing risk in their day-to-day roles. This includes carrying out their roles in accordance with policies and procedures, identifying risks and inefficient or ineffective controls and reporting these to the appropriate level of management (NSW Health, PD2022_023).

The [Work Health and Safety Act](#) requires employers to have systems and processes to identify hazards and assess and control the risks for patients, visitors and members of the workforce, so far as is reasonably practicable. This means doing what is possible in the circumstances to ensure health and safety and continuity of health service delivery.

Risks that are beyond a health worker's capacity or delegation of authority must be escalated to a higher level of management for review, with subsequent mitigations communicated back to the health worker who identified the risk.

A risk management framework will help to prevent and minimise harm from HAIs. It's critical to understand the means of transmission and how and when to use precautions to prevent and control the spread of infectious agents. Successful Infection prevention and control require the use of a range of strategies. It should be an integral part of standard care, rather than an additional measure. Involving patients and their carers is an essential component of infection prevention and control. Patients need to be sufficiently informed to participate in reducing the risk of transmission of infectious agents. For more information on involving patients and their carers, refer to the [NSQHS Partnering with Consumers Standard](#).

2.2 Risk of healthcare associated infection

Healthcare-associated infections (HAIs) are one of the most common adverse events in care delivery impacting morbidity, mortality, quality of life and incurring increased burden for patients, families, and carers. Patients with HAI are more likely to have a longer hospital stay, require second-line or broad-spectrum and more expensive antimicrobials, and place greater demands on the health system. A significant proportion of HAIs are preventable and there is a growing body of evidence to help raise awareness of the global burden of harm caused by these infections, including strategies to reduce their occurrence (World Health Organization, 2016).

Potentially any microorganism may cause HAI. A common misconception is that HAIs are caused only by multi-drug resistant microorganisms (MROs), such as methicillin-resistant *Staphylococcus aureus* (MRSA). HAIs can be caused by any micro-organism that can be transferred between patients, patients and staff and the environment, including medical devices. Examples of microorganisms that can cause HAIs include *Pseudomonas spp.*, *Enterobacteriales spp.*, *Clostridioides difficile*, *Acinetobacter spp.*, *Candida spp.*, norovirus, scabies, cryptosporidium, SARS-CoV-2, respiratory syncytial virus (RSV) and influenza.

Data from 2022 shows there is an estimate of 170,574 HAIs in adults admitted to public hospitals across Australia, resulting in 7583 deaths. The most common healthcare associated infection is

hospital acquired pneumonia, followed by surgical site, and urinary tract infections (Lydeamore et al., 2022).

HAI remain largely preventable with effective infection prevention and control measures. Under the [NSW Health Practitioner Regulation \(2025\)](#) and the [NSW Health Infection Prevention and Control in Healthcare Settings Policy Directive](#) (PD2023_025), all health workers in New South Wales have a legal, ethical, and professional duty to minimise the risk of harm to patients in their care.

Registered health workers are legally required to comply with standardised infection prevention and control practices, including:

- Hand hygiene and skin cleaning
- Use of personal protective equipment (PPE) such as gloves, gowns, masks, and eye protection
- Safe handling and disposal of sharps and clinical waste
- Disinfection and sterilisation of reusable equipment
- Utilise single-use items when appropriate and ensure their proper disposal after use

These requirements are outlined in Schedule 2 of the Health Practitioner Regulation (NSW) Regulation 2025 and must be followed unless superseded by standards from a relevant National Board. Compliance is mandatory for NSW Public Health Organisations and is a condition of subsidy for public health services.

Implementing and consistently adhering to infection prevention and control strategies is essential not only for preventing the transmission of infectious microorganisms but also for fulfilling the broader duty of care that health workers owe to their patients.

2.3 Standard precautions

A comprehensive risk management framework must address both human and system-level factors that contribute to the transmission of infectious agents. This includes the effective identification, control, and prevention of infections whether they are common pathogens such as gastrointestinal viruses or emerging threats like influenza and multi-drug resistant organisms.

Under (NSW Health, PD 2023_025), all NSW Health Organisations are required to implement infection prevention and control strategies that are grounded in clinical governance and supported by legislative frameworks

Standard precautions are the minimum infection prevention measures that apply to all patient care settings, regardless of suspected or confirmed infection status of the patient.

Standard precautions involve adherence to all the following work practices:

- Performing hand hygiene
- Appropriate and correct use of personal protective equipment (PPE)
- Respiratory hygiene and cough etiquette
- Use of aseptic technique
- Safe use and disposal of sharps
- Performing routine environmental cleaning
- Cleaning and disinfection of shared patient equipment
- Reprocessing of reusable medical devices

- Safe handling and disposal of waste used linen and laboratory specimens.

Detailed explanation on the implementation of each of these components refer to Chapter 5 Risk mitigation.

2.4 Modes and route of transmission

Mode of transmission describes how a microorganism moves from one host to another. Infection prevention and control depend on disrupting the transmission of pathogens from their source (the infected animal or human) to new hosts (animal or human) or locations (environment, medical equipment, food or water). Transmission can occur horizontally, between individuals who are not necessarily related or vertically, from mother to child (National Health and Medical Research Council, 2019c).

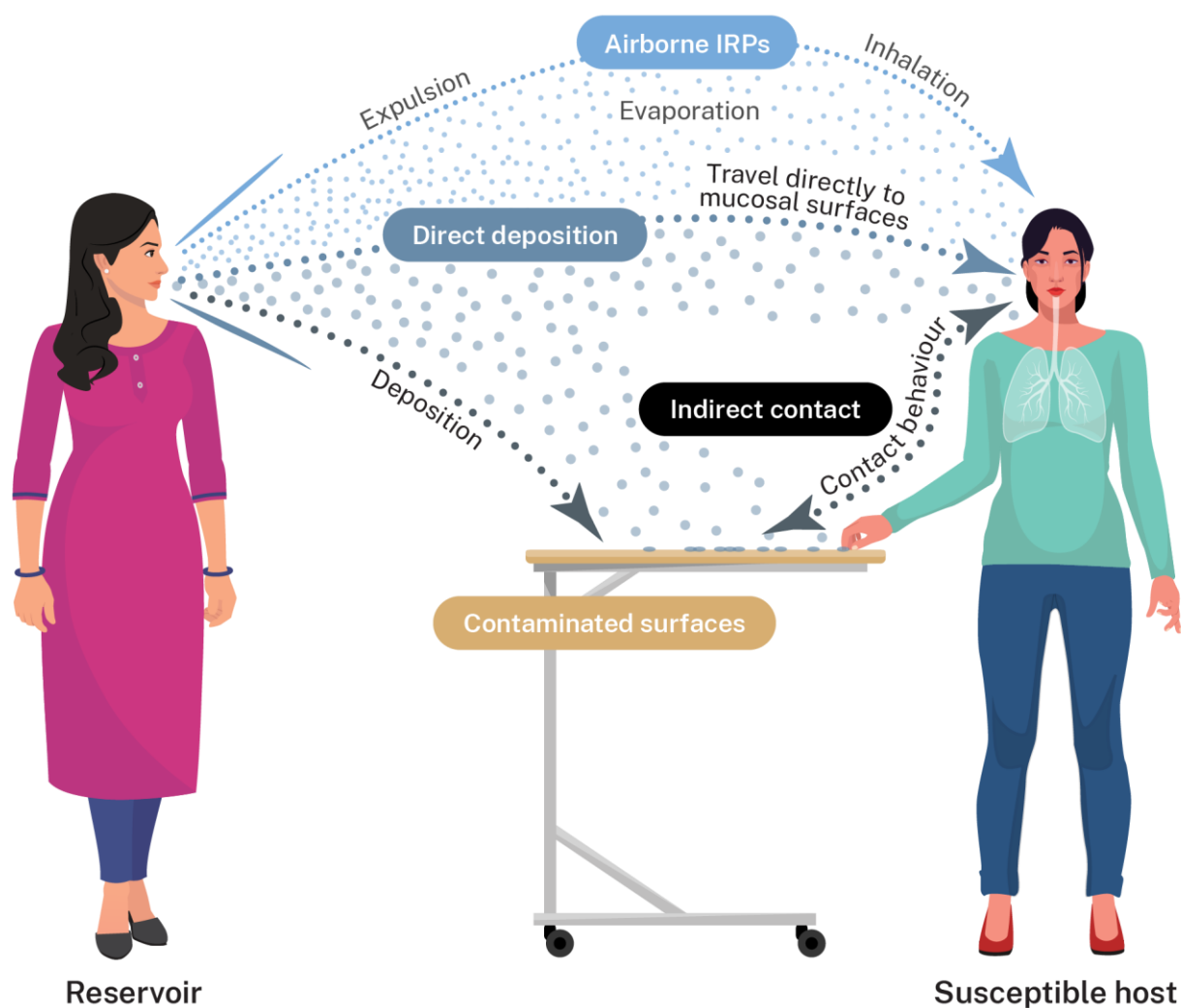
There are certain microorganisms that simultaneously employ multiple transmission routes. For example, norovirus can be spread by direct contact, indirect contact, and common-source transmission through contaminated food.

The transmission of microorganisms can be divided into the following five main routes: airborne transmission/ inhalation, direct deposition, direct or indirect contact, oral (ingestion), and vector borne. Microorganisms can transmit between:

- **Person to person:** a common way for infectious diseases to spread is through the direct transfer of bacteria, viruses or other pathogens from one person to another.
- **Animal to person:** exposure to an infected animal such as bites, scratches or exposure to birthing products/matter.
- **Mother to unborn child:** a pregnant woman may pass pathogens that cause infectious diseases to her unborn baby.
- **Food Contamination:** disease causing pathogens can infect us through contaminated food and/or water.
- **Vector borne:** diseases are human illnesses caused by parasites, viruses and bacteria that are transmitted by vectors. Vectors are mostly arthropods, such as mosquitoes, ticks, flies, fleas and lice.
- **Fomite transmission:** A fomite refers to inanimate objects that can carry and spread disease and infectious agents. Fomites can also be called passive vectors. Fomites can become contaminated with microorganisms by direct contact with body secretions or fluids, contact with soiled hands, or contact with aerosolised microorganisms.

The mode of transmission of infectious respiratory particles (IRPs) involves the creation, release, movement, and biophysical or biochemical alterations as they travel from an infected person to another individual (figure 4). Additionally, IRPs can directly land on the mouth, nose, or eyes of another person, potentially causing infection (World Health Organization, 2024a).

Figure 4 Features of infectious respiratory particles and descriptors for modes of transmission



Developed by Health Education and Training Institute 2025, Source: [Global technical consultation report on proposed terminology for pathogens that transmit through the air](#). Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO

2.4.1 Airborne transmission/inhalation

Pathogens expelled from an infected person's mouth or nose through breathing, talking, singing, spitting, coughing, or sneezing should be described as infectious respiratory particles (IRPs). IRPs exist on a continuous spectrum of sizes, and no single cut off points should be applied to distinguish smaller from larger particles.

Airborne transmission or inhalation, for cases when IRPs are expelled into the air and inhaled by another person. Airborne transmission or inhalation can occur at a short or long distance from the infectious person and distance depends on various factors (airflow, humidity, temperature, ventilation). IRPs can theoretically enter the body at any point along the human respiratory tract, but preferred sites of entry may be pathogen specific (World Health Organization, 2024a).

2.4.2 Droplet transmission (direct deposition)

Direct deposition occurs when infectious respiratory particles (IRPs) expelled by an infected person are directly deposited onto the mouth, nose, or eyes of another nearby individual. These particles can then enter the respiratory system of the exposed person, potentially causing infection (World Health Organization, 2024a).

Droplets can contaminate horizontal surfaces close to the source and hands of health workers through direct contact with those surfaces. For example, collection of throat or nasal swabs, suction, chest physiotherapy.

2.4.3 Contact transmission

Contact transmission routes refer to the movement of microorganisms from a colonised or contaminated source to a susceptible host, via either direct or indirect physical contact.

Direct contact transmission occurs when infectious agents are transferred from one person to another without a contaminated intermediate object or person. For example, blood or other body substances from an infectious person may have contact with the skin or mucous membranes of another person. A common scenario would be a health worker with contaminated hands touches a patient without cleaning their hands.

Patients may infect themselves when touching their cannula or uncovered wound sites or mucosal membranes with hands colonised with commensal microorganisms or contaminated by body substances that contain microorganisms (for example, blood, respiratory secretions).

Indirect contact transmission involves the transfer of an infectious agent through a contaminated intermediate object (fomite) or person. Contaminated hands of health workers have been shown to be important contributors to indirect contact transmission. Other examples of indirect contact transmission in the healthcare environment include:

- shared patient equipment which is not cleaned and disinfected between patients
- contaminated environmental surfaces.

Reusable medical devices that are inadequately reprocessed between patients are also implicated in the indirect contact transmission of microorganisms to patients. For example, health worker uses common keyboard to write in patient notes or mobile phone then touches the patient without cleaning their hands. Patient equipment such as trolley, chair or lifter sling is used and not cleaned before it is used on another patient.

2.4.4 Oral (ingestion) transmission

Ingestion of microorganisms can occur from contaminated food or water as well as by licking or chewing on contaminated objects or surfaces. Environmental contamination is most commonly due to secretions, faeces, urine, or saliva. Direct person-to-person transmission is rare.

2.4.5 Vector-borne transmission

Microorganisms are introduced by another organism, such as an arthropod (for example, mosquito, flea or tick) or rodent. Direct person-to-person transmission is not possible.

2.5 Colonisation

Microorganisms are normally found on the skin surface, in the nasopharynx and in the human gut, and cause no harm to their human host when colonised in these usual anatomical locations.

Colonisation is the detection of an organism from a site (usually skin, throat, nose, or perineum, and/ or chronic ulcers) without signs of invasive infection.

The commensal microorganisms of one person may be a pathogen for another person. Patients exposed to health workers and visitors may be at risk of acquiring an infection from these colonised individuals depending on the extent of exposure and their own immune status.

A patient may be visited up to 18 times per hour by health workers or visitors. At least 27% of these visits involve physical contact. Therefore, there are plenty of opportunities for patients to be exposed and infected by microorganisms innocuously carried by health workers and visitors (Cohen et al., 2012).

Colonisation is not harmful to the patient and does not require treatment if they are not considered clinically significant.

2.6 Infection

Infection is the invasion of a host's bodily tissues by microorganisms and their subsequent multiplication, resulting in disease causing symptoms and the reaction of host tissues to these organisms and the toxins they produce.

Infection may be preceded by colonisation. An infection is typically differentiated from colonisation by the presence of clinical signs and symptoms. There may be a systemic response (for example, febrile illness, elevated white cell count) and/or a local response (for example, cough, localised inflammation). Infection may not be easily observable. For example, infected individuals who are elderly and/or immunocompromised may be unable to mount a strong clinical response to infection.

During most infections, an asymptomatic phase precedes the onset of symptomatic clinical illness. Depending on the causative microorganism, an individual may shed infectious material during asymptomatic infection. As an example, the influenza virus is shed prior to the onset of flu symptoms (Morris et al., 2024). If the patient is immunocompromised, pregnant or undergoing certain surgical procedures, having an asymptomatic infection may pose a significant clinical risk (Montgomery et al., 2024).

A number of pathogens demonstrate latency. That is, infection has occurred, which may be asymptomatic, and is controlled by the immune system. Examples include [tuberculosis](#) (TB), [hepatitis B](#), [measles](#) and [varicella-zoster](#). An individual with a latent infection is usually asymptomatic and does not usually shed infectious material. Infection may reactivate secondary to waning of the immune response or if there is immunosuppression, for example when using immunosuppressive therapy.

Under certain conditions, normal flora may become opportunistic pathogens. An opportunistic pathogen is a microorganism that usually does not harm its host, but can cause infection when:

- the host's resistance is low (such as in the elderly, pregnant women, neonates, or those with weakened immune systems)
- a protective barrier (such as the skin or mucous membranes) is damaged or penetrated.

For example, opportunistic pathogens are a common cause of infections acquired from surgical procedures. *Clostridioides difficile* infection, and infections caused by *Candida spp.* may also be opportunistic, as they may occur due to disruption of the normal flora in the body caused by antimicrobial therapy. People can also be infected by transient flora that briefly colonise the body, or from microorganisms directly acquired from an external source, such as other people, medical devices, equipment, or the environment (Australian Commission on Safety and Quality in Health Care, 2022). For more information refer to the Australian Commission on Safety and Quality in Health Care [Infection prevention and control Workbook 2024](#).

2.7 The chain of infection

The transmission of infectious agents occurs via a series of interlinked events called the Chain of Infection. The six links include: the infectious agent, reservoir, portal of exit, mode of transmission, portal of entry, and susceptible host (refer to Figure 5 The chain of infection).

Infectious agent is the microorganism that causes disease.

Reservoir includes places in the environment where the microorganism lives. This includes people, animals and insects, medical equipment, and soil and water.

Portal of exit is the way the microorganisms leave the reservoir. This can be through open wounds, aerosols, and splatter of body fluids including coughing, sneezing, and saliva.

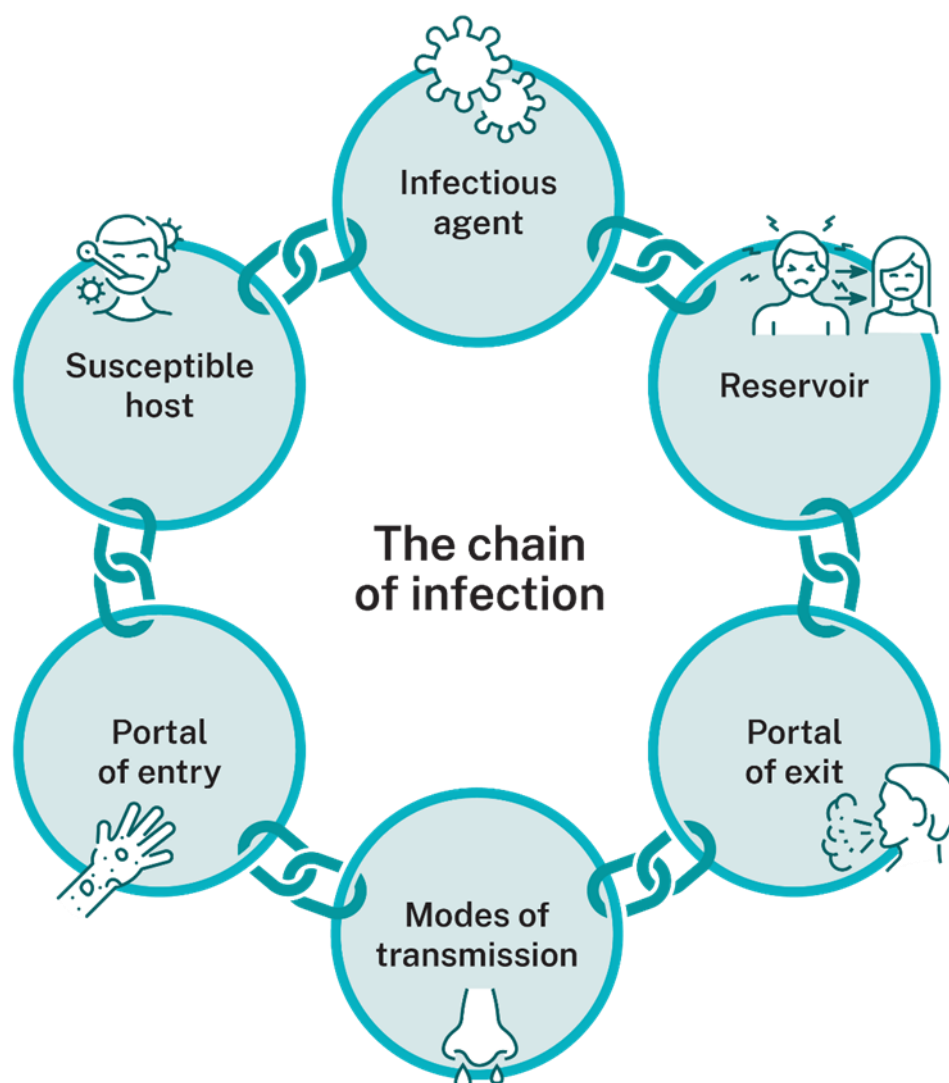
Mode of transmission is the way the microorganisms can be passed on. Modes can be through direct or indirect contact, ingestion, or inhalation.

Portal of entry is the way the microorganisms can enter a new host. Entry can be through broken skin, the respiratory tract, mucous membranes, and catheters and tubes.

Susceptible host can be any person, the most vulnerable of whom are receiving healthcare, are immunocompromised, or have invasive medical devices including lines, devices, and airways.

The objective of infection prevention and control is to interrupt the chain of infection.

Figure 5 The chain of infection



Source: [The Australian Commission on Safety and Quality in Health Care](#)

The disruption to the links breaks the chain of infection. The principles of infection prevention and control aim to break the ongoing transmission of microorganisms in the healthcare setting (Australian Commission on Safety and Quality in Health Care, 2022). For more information refer to the Australian Commission on Safety and Quality in Health Care [Infection prevention and control Workbook 2024](#).