

INFECTIOUS DISEASES - CONSTRUCTION

LEARNING OUTCOME

Describe how to manage infectious disease hazards at work and the statutory requirements for the notification of work-related infectious diseases.

ASSESSMENT CRITERIA

- Identify three infectious diseases that are relevant to the construction industry and describe ways to manage the risk
- Describe the statutory requirements for the notification of work-related infectious diseases.

REFERENCES

- Work Health and Safety Regulation 2011 s699 – Incident Notification – prescribed serious illness
- [How to Manage Work Health and Safety Risks Code of Practice 2011](#)
- [First Aid in the Workplace Code of Practice 2014](#)
- [Managing the Work Environment and Facilities Code of Practice 2013](#)
- [Office of Industrial Relations, Biological Hazards homepage](#)
- [Office of Industrial Relations Vaccine-preventable Diseases and Immunisation Programs fact sheet](#)
- [Office of Industrial Relations, Skin Penetrating Injuries fact sheet](#)
- [Hepatitis Queensland Fact sheet 15 The Workplace and Hepatitis](#)
- [Queensland Health Communicable Diseases Control Guidance](#)
- [Queensland Health Occupational Immunisations](#)
- AS/NZS 3666 Set 2011 - Air Handling and Water Systems of Buildings
- [Loddone Mallee Region Infection Control Resource Centre \(2014\), Infection Control Principles for the Management of Construction, Repairs and Maintenance within Health Care Facilities](#)
- [Centres for Disease Prevention and Control \(2014\) Histoplasmosis – Protecting Workers at Risk](#)

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INFECTIOUS DISEASES

Infectious diseases (also called 'communicable diseases') are illnesses caused by infectious agents (also called 'germs' and 'pathogens'). Many infectious diseases are mild and short-lived but some have the potential to cause serious and life threatening illness.

Infectious diseases are a hazard for some occupations. This includes workers who have contact with:

- infectious people, human blood and body substances, medical sharps such as needles and syringes, and waste (e.g. health care workers, those who work with children, waste industry workers)
- animals, animal blood and body substances, veterinary sharps such as needles and syringes, animal products such as wool and hides, and animal waste (e.g. farmers, those who work with livestock, veterinarians, zoo workers, wildlife carers). Infectious diseases that spread from animals to people are called 'zoonoses'.
- the environment including soil, water, vegetation and insects (e.g. construction workers, horticultural workers, farmers, landscape gardeners).

CHAIN OF INFECTION

The spread of infectious diseases can be represented by a chain which has three links: a source of infection, a way of spreading from the source and a person who is susceptible to infection. Each link in the chain must be connected for infection to spread. Breaking any link in the chain can stop the spread of infection.



Source: Regional Public Health www.rph.org.nz

SOURCE OF INFECTION

Infectious agents belong to one of four main groups: bacteria, viruses, fungi and parasites.

Bacteria are widespread in the environment. Many are harmless or even beneficial but some cause disease. Examples of infectious diseases caused by bacteria include staphylococcal ('staph') and streptococcal ('strep') skin infections, legionella infection (Legionnaires' disease and Pontiac fever) and leptospirosis (a disease of animals). Some bacteria form spores which are able to survive in the environment for prolonged periods (e.g. Q fever, tetanus and anthrax spores).

Viruses can only replicate if they are inside a living cell. Examples of infectious diseases caused by viruses include hepatitis A and influenza.

Fungi are widespread in the environment and are often found in moist, warm places. Disease causing fungi generally cause a superficial infection of the skin and mucous membranes (the lining of the body's organs and cavities such as the eyes, nose and mouth), for example tinea. However some fungi can cause more serious disease, particularly in people whose immune system is weakened (also known as being 'immunocompromised').

Parasites obtain their nourishment by living on or inside a person. Examples of parasitic infections (called 'infestations') include head lice and scabies.

Workers in the construction industry may be at risk of exposure to sources of infection at work, for example:

- human waste (e.g. untreated sewage)
- medical sharps (e.g. discarded needles and syringes)
- contaminated water, soil and vegetation (e.g. mud, flood water)
- blood and body substances (e.g. first aid activities)
- insects (e.g. mosquitoes and ticks)
- animals and their waste (e.g. work at places like abattoirs and farms).

MODE OF TRANSMISSION

Each infectious agent has one or more ways of spreading from its source to infect a person; this is called its 'mode of transmission'. These include the following ways:

Contact transmission

Contact transmission is the most common way that infectious diseases spread. It occurs when a person has contact with:

- an infectious person and their blood and body substances
- an infectious animal and its blood, body substances and products
- a source of infection in the environment (e.g. soil, water and vegetation)
- an inanimate object (e.g. contaminated surfaces and equipment).

Following contact, infectious agents gain entry via:

- cuts, abrasions, dermatitis and other non-intact skin
- the mucous membranes of the person's eyes, nose and mouth (e.g. when a person touches their face with contaminated hands)
- ingestion (e.g. when a person touches their mouth with contaminated hands)
- puncture wounds (e.g. sharps (needlestick) injury and animal bites and scratches).

Examples of infectious diseases that spread by contact transmission include blood-borne viruses (hepatitis B, hepatitis C and human immunodeficiency virus (HIV), 'staph' skin infections and gastrointestinal infections ('gastro').

Droplet transmission

Droplet transmission occurs when large droplets (i.e. spray, splash or spatter) of infectious substances are deposited onto the lining of a person's eyes, nose and mouth.

Droplets can be generated from:

- respiratory secretions when an infectious person or animal coughs or sneezes
- other human or animal body substances (e.g. urine or vomit) and contaminated water.

Some types of work activities, such as cleaning contaminated objects, may generate infectious droplets.

Droplets generally only travel over a short distance from the source of infection and so close contact is needed for infection to spread.

Infectious diseases that spread by droplet transmission often also spread by contact transmission. For example, droplets may settle out of the air and contaminate the surfaces on which they land, and these then become a source of infection if touched.

Examples of infectious diseases that spread by droplet transmission include influenza and leptospirosis (a disease of animals).

Airborne transmission

Airborne transmission occurs when very small particles (called 'droplet nuclei') contained in infectious aerosols and dust are breathed in (inhaled) by a person.

Aerosols can include:

- respiratory secretions that are generated when an infectious person coughs and sneezes
- other substances such as animal faeces and contaminated water.

Some types of work activities may generate infectious aerosols and dust, such as cleaning bird droppings from surfaces using a high pressure water hose or by dry sweeping.

Infectious aerosols remain suspended in air currents and can travel over long distances.

Only a small number of infectious diseases spread by airborne transmission. This includes legionella infection, some uncommon fungal infections associated with disturbing soil enriched with bird or bat droppings (e.g. histoplasmosis) and Q fever (a disease of animals).

Other modes of transmission

Some infectious diseases also spread by:

- insects, such as ticks, fleas and mosquitoes (e.g. the spread of Ross River virus by mosquitoes)
- contaminated food and water (e.g. the spread of disease-causing strains of *E. coli* from consuming undercooked or contaminated food)
- a mother to her unborn child (called 'congenital infection'). Workers who work with patients, children and animals may be exposed to infectious diseases that pose additional risks for pregnant women. These include diseases such as Q fever and leptospirosis.

When selecting control measures for an infectious disease it's important to know about how it spreads. For example, hand hygiene, covering cuts and keeping the work environment clean are important ways to prevent the spread of infection by contact transmission, whereas ventilation controls and respiratory protective equipment are important ways to prevent the spread of infection by airborne transmission.

SUSCEPTIBLE PERSON

A susceptible person is someone who is at risk of becoming infected by a disease.

Some people are more susceptible to infection. This includes the very young and the elderly, those whose immune system is weakened because of a medical condition or treatment (e.g. chronic renal or liver disease, diabetes mellitus, organ transplantation and cancer treatment) and pregnant women.

Workers who do not have immunity to a vaccine-preventable disease at work are susceptible to infection and vaccination is important way to protect these workers.

MANAGING INFECTIOUS DISEASES AT WORK

A risk management approach should be taken to eliminate or minimise, so far as is reasonably practicable, hazards and risks arising from infectious diseases at work. You may need to seek advice from a suitably qualified person.

Identifying hazards

Find out about the hazards at your workplace. These may not be readily apparent because infected people or animals may not show signs of illness, or the source of infection could be an inanimate object such as contaminated soil or water.

Identify hazards by:

- conducting a survey of the workplace and tasks to identify potential sources of infection (e.g. contact with human or animal blood and body substances untreated sewage, flood water and discarded needles and syringes)
- reviewing first aid records and injury and illness incident reports
- consulting with workers and their representatives
- reviewing available information (e.g. industry and government resources).

Consider who may be exposed to the hazard, including workers, volunteers, contractors, labour hire workers, maintenance workers, trainees, visitors and members of the public.

Assessing risks

Consider the risks associated with each hazard, including the likelihood of a person acquiring an infectious disease at work and the consequences should this occur. Evaluate the existing control measures including whether these are sufficient to properly manage the risk.

The level of risk will generally increase as the likelihood and/or consequences of infection increase. For some infectious diseases, there may be a low likelihood of infection occurring but serious consequences should this occur (known as 'low likelihood-high consequence hazards').

Controlling risks

Whenever you identify an infectious disease that presents a hazard at work, you should find out about the links in the chain of infection to help you find the best way to break the chain and so control the risk.

The control measures you choose should be consistent with the outcome of the risk assessment, how the disease spreads, whether it is preventable by vaccination and the hierarchy of control measures.

Consider whether the hazard can be eliminated. If this is not possible, you may be able to remove potential sources of infection (e.g. by removing potential mosquito breeding sites such as containers that collect water) or stop unsafe work practices (e.g. the unsafe disposal of discarded needles and syringes).

If it is not possible to eliminate the hazard then the risk must be minimised, so far as is reasonably practicable, by:

Consider higher order controls including:

- substituting the hazard with one which presents a lower risk, for example using water under low pressure or a wet cleaning method to remove accumulations of bird droppings from buildings and structures rather than using water under high pressure or dry sweeping
- isolating the source of infection, for example by disposing of discarded sharps in a suitable sharps container, restricting access to spills of untreated sewage, using barriers to contain construction dust
- engineering controls, for example by installing surfaces and using equipment that can be readily cleaned, vaccination of workers, ensuring a suitable number and placement of hand washing facilities, installing splash guards and screens to contain droplets, using ventilation controls to capture aerosols and airborne dust, separating clean and dirty tasks and equipment, using single-use equipment such as first aid equipment to prevent reuse

If a risk still exists, consider lower order controls including:

- administrative controls, e.g. policy and procedures, information, training, instruction and supervision, and signage (e.g. hand washing signage).
- personal protective equipment (PPE) e.g. gloves, protective clothing, eye/face protection, safety footwear and respiratory protective equipment.

A combination of control measures will generally provide the best solution.

MONITORING AND REVIEWING CONTROL MEASURES

Review the control measures regularly to ensure they are working as planned, are properly managing the risk and are not creating new issues.

The [How to Manage Work Health and Safety Risks Code of Practice](#) provides more information about managing risks at work.

INFORMATION, INSTRUCTION, TRAINING AND SUPERVISION

Workers must be provided with any information, training, instruction and supervision necessary to ensure health and safety. This may include:

- infection risks at work and how to protect against the risk

- vaccination requirements if workers are at risk of exposure to a disease that is preventable by vaccination
- safe work procedures
- hygiene practices (e.g. hand washing)
- the wearing and use of PPE
- reporting requirements to follow in the event of incidents occurring at work such as:
 - a sharps injury or other exposure to blood and body substances
 - if a person acquires an infectious disease and the carrying out of work is a significant contributing factor
 - an outbreak of an infectious disease
 - an uncontrolled escape, spillage or leakage of a potentially infectious substance
- medical conditions which may increase susceptibility to, or the seriousness of, infection (e.g. immunosuppression, pregnancy)
- when to seek medical attention and to tell the doctor about the person's work to assist with diagnosis and treatment.

STANDARD PRECAUTIONS

Standard precautions are work practices which provide a basic level of infection prevention and control. Initially developed for the healthcare industry, the principles of standard precautions can be applied to any work where infection risks exist.

Standard precautions include the following measures:

- cover cuts and other non-intact skin with a water-resistant dressing
- regular hand hygiene
- handle and dispose of sharps safely
- clean the work environment regularly and maintain good housekeeping
- clean spills of blood and body substances promptly
- clean, and where necessary disinfect, contaminated equipment after use
- handle and dispose of waste safely
- handle laundry safely
- wear sufficient PPE to protect against contact with blood and body substances
- manage incidents such as sharps injuries and other blood and body substance exposures, for example by providing adequate first aid facilities, medical referral and counselling.

Standard precautions should always be adopted whenever there is exposure to potential sources of infection at work, such as contact with human or animal blood and body substances. This helps protect workers against both known and unrecognised sources of infection at work.

Hand hygiene

Hand hygiene using soap and water, or a waterless alcohol-based hand rub if the hands are visibly clean, is an important way to stop the spread of infection. Workers must be provided with adequate and accessible washing facilities and should be instructed to perform hand hygiene if they are exposed to infection risks. This may include:

- before eating, drinking and smoking
- after any work activity involving contact with potential sources of infection
- after removing PPE
- after using the bathroom.

The [Managing the Work Environment and Facilities Code of Practice](#) provides more information about the provision of adequate facilities at work.

Personal protective equipment

Workers should be provided with suitable PPE to protect against infection risks at work. This may include:

- gloves for tasks that involve contact with blood, body substances and other potentially infectious substances or the risk of puncture wounds (e.g. sharps injury, animal bites and scratches). Examples of gloves include disposable gloves, heavy duty rubber gloves and puncture resistant gloves
- eye/face protection if the eyes or face could be splashed with blood, body substances and other potentially infectious substances. Examples of eye/face protection include safety glasses, safety goggles, face shields and surgical/medical masks
- protective clothing if personal clothing could be contaminated with blood, body substances and other potentially infectious substances. Examples of protective clothing include aprons, overalls and gowns
- protective footwear if footwear could be contaminated with blood, body substances and other potentially infectious substances or if there is a risk of contact with sharps. Examples of protective footwear include safety footwear and rubber boots
- respiratory protective equipment if there is exposure to potentially infectious aerosols. The minimum level of respiratory protection is a properly fitted disposable P2 respirator.

Workers must be instructed in the proper use and wearing of PPE. This should include how to correctly put on the PPE to ensure that it is properly fitted and how to correctly remove the PPE to avoid accidental contamination.

Vaccination

Vaccination is an important way to protect workers who are at risk of acquiring a vaccine-preventable disease at work.

Vaccinations that are relevant to the construction industry include:

- tetanus vaccination for workers who are at risk of tetanus prone wounds including dirty and penetrating wounds.

- hepatitis A vaccination for plumbers and other workers who have regular contact with untreated sewage.

Additional vaccinations may be required as determined by a risk assessment, for example:

- Q fever vaccination for workers who carry out work at workplaces where Q fever risks exist (e.g. abattoirs, rendering plants, pet food manufacturing plants, livestock industries)
- hepatitis B vaccination for workers who have regular contact with human blood and body fluids and used needles and syringes (e.g. some first aiders).

Queensland Health provides a fact sheet with guidance on occupational vaccinations.

The Office of Industrial Relations provides a fact sheet with guidance on managing vaccine-preventable diseases and immunisation programs at work.

Blood-borne viruses

Blood-borne viruses (hepatitis B, hepatitis C and HIV) deserve special mention because these can cause serious health risks where there is a significant risk of exposure at work, but can cause unnecessary fear and prejudice where the risk is low.

Workers are exposed to blood-borne viruses from contact with infectious human blood and body substances. Sharps injuries pose the highest risk for the spread of infection and health care workers are most at risk.

Blood-borne viruses do not spread by general contact between people at work, such as by shaking hands or from contact with toilets, cutlery or work equipment. Because of this, people who are infected with blood-borne viruses pose a negligible risk at most workplaces. Infected workers are not required to disclose their condition to an employer and this information should not be sought during employment processes.

Blood-borne viruses should be managed by treating all human blood and body substances as potentially infectious. Standard precautions should always be adopted for contact with blood and body substances and when handling needles and syringes, regardless of whether the source is known to have an infectious disease or not. Workers who have regular contact with blood, body substances and used needles and syringes should be vaccinated against hepatitis B.

The [First Aid in the Workplace Code of Practice](#) provides information about managing infection risks in the first aid setting.

STATUTORY REQUIREMENTS FOR THE NOTIFICATION OF INFECTIOUS DISEASES

Some infectious diseases are serious illnesses for the purposes of the Work Health and Safety Act 2011 and must be notified to Workplace Health and Safety Queensland. This includes:

- Any infection to which the carrying out of work is a significant contributing factor, including any infection that is reliably attributable to carrying out work:
 - with microorganisms
 - that involves providing treatment or care to a person

- that involves contact with human blood or body substances
- that involves handling or contact with animals, animal hides, skins, wool or hair, animal carcasses or animal waste products.

It also includes the following occupational zoonoses contracted in the course of work involving handling or contact with animals, animal hides, skins, wool or hair, animal carcasses or animal waste products:

- Q fever;
- anthrax;
- leptospirosis;
- brucellosis;
- Hendra Virus;
- avian influenza;
- psittacosis.

Section 699 of the Work Health and Safety Regulation 2011 provides more information.

MANAGING WORKERS WITH INFECTIOUS DISEASES

Should a person acquire an infectious disease related to their work, they should receive appropriate first aid, medical treatment and rehabilitation as necessary. The incident should be investigated and control measures reviewed to ensure that all reasonably practicable steps are being taken to eliminate or minimise the risk.

If a worker is known to have an infectious disease, this information must be treated as confidential. It is unlawful to breach the worker's confidentiality or privacy in the belief that others have a right to know about their condition, or otherwise treat the worker unfairly.

If a person is known to have attended work while infectious with a contagious disease (an infectious disease that spreads readily, such as measles), the risk should be communicated to other workers in a way which does not identify the infected person. Contact Queensland Health for advice.

Appendix 1

This table provides examples of infectious diseases that are relevant to the construction industry. It is not intended to be a comprehensive list of diseases and associated control measures and other hazards may exist.

Table 1: Examples of infectious diseases relevant to the construction industry

Infectious disease	Examples of at-risk persons and activities	Examples of control measures
Aspergillosis	Hospitalised patients who are severely immunocompromised are at risk of fungal infections from exposure to	• Consult with the healthcare facility's infection prevention and control team before commencing work • Use work methods that minimise construction dust, for example dust barriers, ventilation controls (e.g.

	construction dust	negative pressure HEPA filtration units), good housekeeping, and the safe handling, storage, transport and disposal of materials, tools and waste
Blood-borne viruses (hepatitis B, hepatitis C and HIV)	Workers who have regular contact with human blood, body substances and used needles and syringes	• Hepatitis B vaccination • Standard precautions, including hand hygiene, cover cuts and other non-intact skin, safe handling and disposal of sharps, and sufficient PPE to protect against contact with blood and body substances • Manage sharps injuries and other accidental blood and body substance exposures
Fungal infections (e.g. histoplasmosis and cryptococcosis) associated with disturbing soil that is enriched with bird or bat droppings	Workers who disturb or clean accumulations of bird or bat droppings (e.g. from buildings and bridges). Persons with a weakened immune system are most at risk	• Work methods that minimise aerosols of bird and bat droppings • Ventilation controls • Respiratory protective equipment • Workers who are more susceptible to infection should take special care
Gastrointestinal infections ('gastro')	Plumbers and other workers who have regular contact with untreated sewage or other sources of animal or human faeces	• Standard precautions, including hand hygiene and sufficient PPE to protect against contact with untreated sewage and faeces
Hepatitis A	Plumbers and other workers who have regular contact with untreated sewage Workers who work in specific remote communities	• Hepatitis A vaccination • Standard precautions, including hand hygiene and sufficient PPE to protect against direct contact with untreated sewage
Legionella infection (Legionnaires' disease and Pontiac fever)	Ventilation engineers, maintenance workers and others who work with air handling and water systems in buildings Workers who handle compost and soil (e.g. landscape gardeners)	• Manage air handling and water systems in accordance with AS/NZS 3666 • Respiratory protective equipment • Hand hygiene
Leptospirosis (a disease of animals including cattle, pigs and rodents)	Workers who have contact with water contaminated with animal urine (e.g. flood water)	• Standard precautions, including cover cuts and other non-intact skin, hand hygiene and sufficient PPE to protect against contact and droplets of animal urine and contaminated water • Rodent control
Melioidosis	Workers who have contact with mud and surface water, especially in tropical	• Standard precautions including cover cuts and other non-intact skin, hand hygiene and sufficient PPE to protect against contact with wet soil, mud and

	regions Persons with a weakened immune system are most at risk	surface water • Work practices that minimise aerosols of soil and mud • Wash off accidental contact with soil and mud • Workers who are more susceptible to infection should take special care
Mosquito and tick-borne diseases (e.g. Ross River virus, Queensland tick typhus)	Workers who work outdoors or in bushland or scrubland areas	• Manage potential mosquito breeding sites at work (e.g. rainwater tanks, drain sumps, containers that hold water) • Insect repellent • Long clothing
Q fever (a disease of animals including cattle, sheep, goats and kangaroos)	Workers who work at Q fever risk workplaces (e.g. abattoirs) Workers who work with animals, animal products and animal waste	• Q fever screening and vaccination • Ventilation controls • Safe work practices that minimise exposure to potentially infectious aerosols and dust
Skin infections	Workers who are at risk of wounds and other non-intact skin, who work with people or animals or who work in contaminated environments	• Safe work practices to minimise the risk of injuries • Standard precautions, including cover cuts and other non-intact skin, hand hygiene and sufficient PPE to protect against contact with potential sources of infection
Tetanus	Workers at risk of dirty and penetrating wounds	• Tetanus vaccination • Medical attention for tetanus prone wounds

Version	Date	Author
1	30/06/2018	WHSQ