

# 1 Concepts on communicable diseases



## 1.1 What are communicable diseases?

Communicable diseases refer to diseases that can be transmitted and make people ill. They are caused by infective agents (pathogens), e.g. bacteria and viruses, which invade the body and multiply or release toxins to cause damages to normal body cells and their functions. In severe cases, they may lead to death. These infective agents can spread from a source of infection (e.g. patients, sick animals) to a person through various routes of transmission.

## 1.2 Chain of infection

Crucial factors for the spread of communicable diseases include the infective agent, the source of infection, the mode of transmission and the host - the so-called 'chain of infection'.

### 1.2.1 Infective agent

An infective agent is a microorganism (e.g. bacteria, viruses, fungi and parasite) that will cause an infection.

## 1.2.2 Source of infection

This refers to the reservoir where infective agents can live, parasitise and breed. It includes humans (e.g. patients, carriers and people with latent infections), livestock, insects and soil. The source of infection will normally form the basis for infective agents to infect humans.

## 1.2.3 Mode of transmission

This refers to the method of transfer by which the infective agent moves or is carried from one place to another. Some communicable diseases have more than one mode of transmission, e.g. chickenpox can be transmitted by airborne, droplet or contact transmission. Please refer to **Section 1.3** for more details about the mode of transmission of communicable diseases.

## 1.2.4 Host

Hosts refer to the susceptible population. Some people are more prone to infection and become hosts. For instance, young children, elderly persons and patients with chronic diseases are more susceptible to infection because of weakened body immunity.

# 1.3 Mode of transmission of communicable diseases and examples

**Table 1-1** elaborates how communicable diseases are transmitted via different modes of transmission and lists some respective examples.

*Table 1-1 Modes of transmission of communicable diseases*

Mode of transmission	Process	Examples of communicable diseases
<b>Contact transmission</b>	<ul style="list-style-type: none"> <li>• Through direct body contact with the infected person, e.g. lifting and assisting in taking baths</li> <li>• Indirectly through contact with objects contaminated by infective agents, e.g. sharing towels, combs and clothes</li> </ul>	<ul style="list-style-type: none"> <li>• Scabies</li> <li>• Head lice</li> <li>• Hand, foot and mouth disease</li> <li>• Acute infectious conjunctivitis</li> <li>• Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) infection</li> <li>• Other multi-drug resistant organisms (MDROs) infection</li> <li>• Chickenpox*</li> </ul>

\* Some communicable diseases have more than one mode of transmission (e.g. chickenpox).

Mode of transmission	Process	Examples of communicable diseases
<b>Droplet transmission</b>	<ul style="list-style-type: none"> <li>• Through droplets expelled during sneezing, coughing, spitting or speaking</li> <li>• Through subsequent touching of mucous membranes of the mouth, nose and eyes, etc. with hands contaminated with infective agents</li> </ul>	<ul style="list-style-type: none"> <li>• Influenza</li> <li>• Common cold</li> <li>• Severe Acute Respiratory Syndrome (SARS)</li> </ul>
<b>Airborne transmission</b>	<ul style="list-style-type: none"> <li>• Infective agents attached on small particles or droplet nuclei, float in the air for some time and enter the body through the respiratory tract</li> </ul>	<ul style="list-style-type: none"> <li>• Chickenpox*</li> <li>• Pulmonary tuberculosis (smear positive)</li> </ul>
<b>Food-borne or water-borne transmission</b>	<ul style="list-style-type: none"> <li>• Infective agents enter the body through ingestion of contaminated food or water, or using contaminated eating utensils</li> </ul>	<ul style="list-style-type: none"> <li>• Food poisoning</li> <li>• Cholera</li> <li>• Bacillary dysentery</li> <li>• Hepatitis A, E</li> <li>• Norovirus infection</li> </ul>
<b>Vector-borne transmission</b>	<ul style="list-style-type: none"> <li>• The infective agents either parasitise or breed in the body of the insects such as mosquitoes, mites, ticks or other vectors via which human are infected</li> </ul>	Mosquito-borne: <ul style="list-style-type: none"> <li>• Dengue fever</li> <li>• Malaria</li> <li>• Japanese encephalitis</li> </ul> Others: <ul style="list-style-type: none"> <li>• Typhus</li> </ul>
<b>Blood or body fluid transmission</b>	<ul style="list-style-type: none"> <li>• Injury by contaminated needles or sharps, or having unprotected sex</li> </ul>	<ul style="list-style-type: none"> <li>• Hepatitis B, C</li> <li>• Acquired Immune Deficiency Syndrome (AIDS)</li> </ul>

\* Some communicable diseases have more than one mode of transmission (e.g. chickenpox).

## 1.4 Principles of controlling communicable diseases

The control of the communicable diseases should focus on controlling the factors of the spread of communicable diseases to break the chain of infection.

*Table 1-2 Control measures for the transmission of communicable diseases*

Factors of transmission	Control measures
<b>Infective agent</b>	<ul style="list-style-type: none"> <li>• Disinfection to kill the infective agents</li> </ul>
<b>Source of infection</b>	<ul style="list-style-type: none"> <li>• Early detection, isolation and treatment of the sick person</li> <li>• Removal of breeding sites of infective agents</li> </ul>
<b>Mode of transmission</b>	<ul style="list-style-type: none"> <li>• Maintenance of good personal, environmental and food hygiene</li> <li>• Adoption of standard precautions and additional infection control measures appropriate to different modes of transmission</li> </ul>
<b>Host (susceptible population)</b>	<ul style="list-style-type: none"> <li>• Building up personal immunity by healthy lifestyle and immunisation</li> <li>• Prophylaxis if appropriate</li> </ul>

## 1.5 Why are residential care homes for the elderly (RCHEs) more vulnerable to outbreaks of communicable diseases?

RCHEs are collective living places where communicable diseases can easily spread through close person-to-person contact. The frailty of the residents also aids the spread. The source of infection can be staff, visitors or residents (e.g. residents newly discharged from hospital). Person-to-person contact then leads to cross-infection, i.e. the transmission of infective agents from one person to another. For instance, staff who fail to perform hand hygiene before and after caring for each resident may spread the infective agents from one resident to another.

## 1.6 Key points on management of communicable diseases in RCHEs

The following principles should be applied in preventing the spread of communicable diseases in RCHEs:

### 1.6.1 Medical surveillance

- Monitor the health condition of residents and staff closely
- Watch out for any sign and symptom of infection
- Maintain residents' personal health records properly

### 1.6.2 Early treatment

- Arrange prompt treatment for the infected person to prevent further spread of infection.

### 1.6.3 Prevention of spread

- Implement standard precautions and additional infection control precautions based on the mode of transmission of respective communicable diseases to prevent evolution into outbreaks such as maintaining proper hand hygiene, enhancing environmental cleaning and disinfection, proper handling and disposal of body fluid, secretion and excreta, wearing surgical masks when having respiratory symptoms.
- If outbreaks of communicable diseases are suspected, promptly notify the Central Notification Office (CENO) of Centre for Health Protection (CHP), the Licensing Office of Residential Care Homes for the Elderly (LORCHE) of Social Welfare Department (SWD) and the Community Geriatric Assessment Team (CGAT) of Hospital Authority (HA) (if applicable) for follow-up investigation.