

4. Modes of Transmission

Breaking the chain at the 'mode of transmission' is one of the most important ways to interrupt the spread of infection. This is where infection prevention and control strategies can be most successful.

Microorganisms are transmitted in health care settings by four main routes:

- Contact
- Droplet
- Airborne
- Common vehicle

Routine Practices are designed to reduce the risk of transmission.

Microorganisms vary by size, the length of time that they survive on surfaces or in the air and the method of getting around. These factors plus the variability in virulence, the complications of treatment and the complex symptoms may require special treatment of some patients. These 'Additional Precautions' are grouped, based on the mode of transmission of the infectious agent.

See:

Section 7: Additional Precautions

Section 9: Personal Protective Equipment.



Table of Survival Times of Microorganisms on Hard Inanimate Surfaces

Organism	Survival Time
Adenovirus	Up to 3 months
Clostridium difficile	Up to 5 months
Coronavirus	3 hours
E. coli	Up to 16 months
Influenza	1-2 days
MRSA	Up to 7 months
M. tuberculosis	Up to 4 months
Norovirus	Up to 7 days
RSV	Up to 6 hours

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Contact



Contact is the most frequent mode of transmission of health care associated infections and can be divided into: direct and indirect. An example of contact transmitted microorganisms is Noroviruses which are responsible for many gastrointestinal infections.

- Direct: involves direct body surface to body surface contact and physical transfer of microorganism between an infected or colonized person to another person by touch.
- Indirect: involves contact between a person and a contaminated object. This is often a result of unclean hands contaminating an object or environment. The microorganism remains on this surface to be picked up by the next person who touches it.

Droplet



Transmission occurs when droplets containing microorganisms generated during coughing, sneezing and talking are propelled through the air. These microorganisms land on another person, entering that new person's system through contact with his/her conjunctivae, nasal mucosa or mouth. These microorganisms are relatively large and travel only short distances (up to 6 feet/2 metres). However these infected droplets may linger on surfaces for long periods of time, so these surfaces (within the range of the coughing/sneezing person) will need additional cleaning. For this reason there may be both Droplet and Contact Precautions required at the same time.

Examples of microorganisms that are spread by droplet transmission are: influenza, colds, respiratory syncytial virus (RSV) and some organisms causing pneumonia.

Airborne



Airbone transmission of infectious agents occurs either by:

- Airborne droplet nuclei (small particles of 5 mm or smaller in size)
- Dust particles containing infectious agents.

Microorganisms carried in this manner remain suspended in the air for long periods of time and can be dispersed widely by air currents. Because of this, there is risk that all the air in a room may be contaminated.

Some examples of microorganisms that are transmitted by the airborne route are: *M. tuberculosis*, rubeola, varicella and hantaviruses.

Common Vehicle



Applies to microorganisms that are transmitted by contaminated items such as food, water, medications, medical devices and equipment.

To inhibit the transmission of microorganisms by this mode:

- Clean patient equipment between uses with different patients
- Handle, store and prepare food properly
- Careful store and draw up doses of medication from multidose medication vials.