

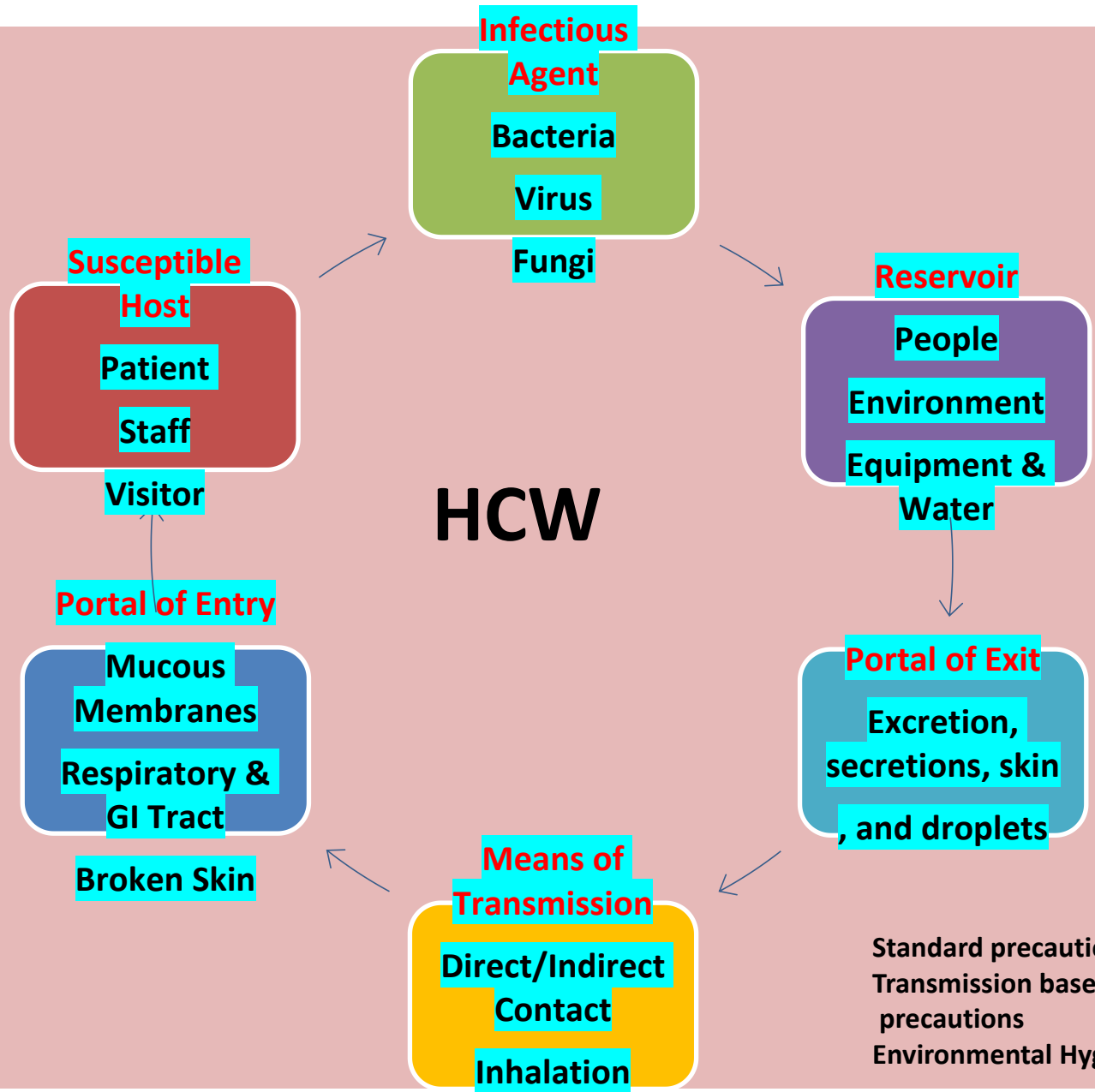


UPDATE ON TRANSMISSION BASED PRECAUTION

DR NURAHAN MANING
HRPZ II
KOTA BHARU

10/22/2018

The Chain of Infection



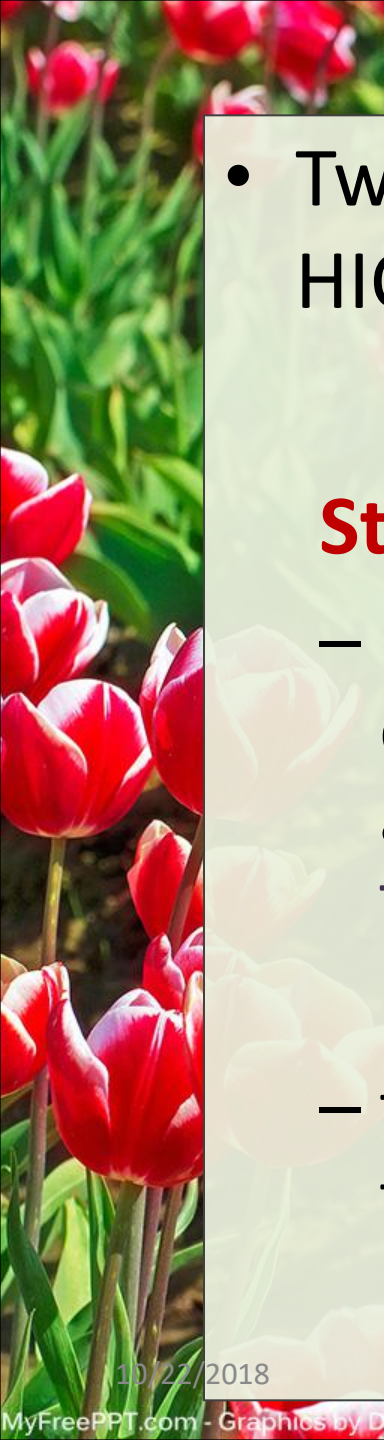
Standard precautions
Personal Hygiene
Transmission Based Precautions
Aseptic Technique Wound/
catheter care

Standard precautions
Transmission based
precautions
Environmental Hygiene



This term refers to a set of practices undertaken when patients are suspected of having, or are known to be infected with an infectious agent.

(Health Protection Scotland, 2014).

- 
- Two-tier approach as described in the CDC-HICPAC guidelines¹:

Standard precautions

- represent a basic list of hygiene precautions designed to reduce the risk of healthcare-associated transmission of infectious agents. These precautions are applied to every patient in a healthcare setting.
- the primary strategy for minimising the transmission of healthcare-associated infections.



Transmission based precaution

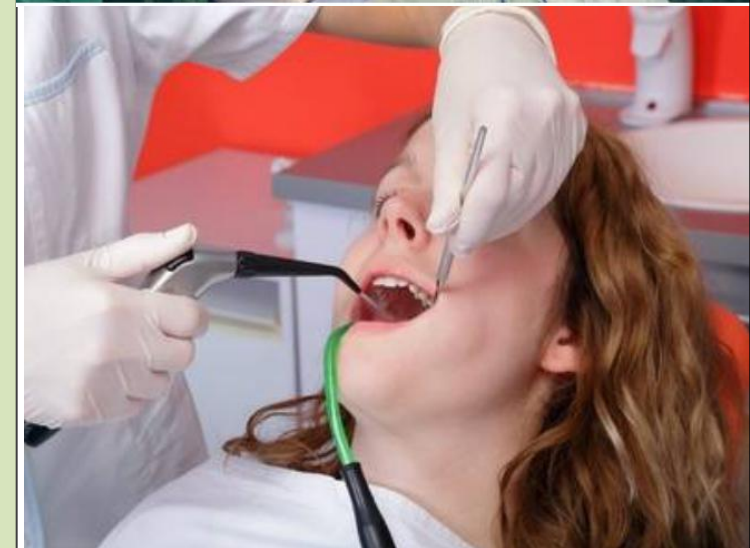
- Extra barrier or isolation precautions (transmission based) are necessary during the care of patients suspected or known for colonization, or an infection with highly transmissible or epidemiologically important pathogens.
- These practices are designed to contain airborne, droplet, and direct or indirect contact transmission.
- The application of transmission-based precautions is particularly important in containing multi-resistant organisms (MROs) and in outbreak management.



Mechanisms of transmission

- Via **contact**, which involves skin (or mucosa) to skin contact and the direct physical transfer of microorganisms from one patient to another or via hands of an HCP, and indirect via a contaminated equipment or surface
- Via **respiratory droplets larger than 5 μm** , which are not suspended for long in the air and usually travel a distance of less than 1 meter.
- Airborne transmission: **particles 5 μm or smaller** remain suspended in the air for prolonged periods, and therefore can travel longer distances and infect susceptible hosts several meters away from the source.

- Medical and dental procedures increase the risk of transmission of infectious agents.
- Effective work practices to minimise risk of transmission of infection related to procedures require consideration of the specific situation, as well as appropriate use of standard and transmission-based precautions.





Contact Precautions

- Used when there is known or suspected risk of direct or indirect contact transmission of infectious agents that are not effectively contained by standard precautions alone

Indications for Contact Precautions

Contact

- Acute Diarrhoea:
 - *C. difficile*, Rotavirus, Salmonella species diapered or incontinent persons
- Abscess, wound infection: major, draining
 - Wound that cannot be covered
- Respiratory infection in infants & young children
 - RSV
- Burkholderia cepacia
 - patient with cystic fibrosis, infection or colonization
- Conjunctivitis: acute viral
- Decubitous ulcer
- Enteroviral infections (infants & young children)

Contact

- Multidrug-resistant organisms:
 - infection or colonizationPressure ulcer: infected
(MRSA, VRE, VRSA, ESBL, CRE)
- Cutaneous diphtheria
- Hepatitis A & E (diapered or incontinent)
- Skin infections
 - Staph aureus infections - furunculosis, scalded skin syndrome, burns
 - Strep gp A
- Rubella: congenital
- Scabies
- TB draining lesions
- Human metapneumovirus
- Impetigo
- Lice (pediculosis)

Contact Precautions

CONTACT PRECAUTIONS

To prevent the spread of infection,

ANYONE* ENTERING THIS ROOM **MUST WEAR:**



Gloves ✓



Gown ✓

Applies whether or not contact with the patient or the patient's environment is anticipated.

*Patient visitors do not need to wear gloves and a gown, but must **wash hands** upon entering and leaving this room.

Questions? Please call the Department of Infection Control & Prevention at 938-0725

CONTACT PRECAUTIONS

Visitors must report to Nursing Station before entering.



✓ Perform hand hygiene before entering and before leaving room.



✓ Wear gloves when entering room or cubicle, and when touching patient's intact skin, surfaces, or articles in close proximity



✓ Wear gown when entering room or cubicle and whenever anticipating that clothing will touch patient items or potentially contaminated environmental surfaces.



✓ Use patient-dedicated or single-use disposable shared equipment or clean and disinfect shared equipment (BP cuff, thermometers) between patients.

PRECAUCIONES DE CONTACTO

Los visitantes deben presentarse primero al puesto de enfermería antes de entrar. Lávese las manos. Póngase guantes al entrar al cuarto.

- appropriate patient placement in a single patient room if available or cohorting of patients

In long-term and other residential settings, make room placement decisions balancing risks to other patients.

In ambulatory settings, place patients requiring contact precautions in an exam room or cubicle as soon as possible.



10/22/2018

Contact Precautions

- **Limit transport and movement of patients** outside of the room to medically-necessary purposes.
- When transport or movement is necessary, cover or contain the infected or colonized areas of the patient's body.
- Remove and dispose of contaminated PPE and perform hand hygiene prior to transporting patients on Contact Precautions.
- Don clean PPE to handle the patient at the transport location.



Contact Precautions



- Use personal protective equipment (PPE) appropriately, including gloves and gown.
- Wear a gown and gloves for all interactions that may involve contact with the patient or the patient's environment.
- Donning PPE upon room entry and properly discarding before exiting the patient room is done to contain pathogens.



10/22/2018



- **Use disposable or dedicated patient-care equipment** (e.g., blood pressure cuffs).
- If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before use on another patient.

- **Prioritize cleaning and disinfection of the rooms of patients on contact precautions** ensuring rooms are frequently cleaned and disinfected (e.g., at least daily or prior to use by another patient if outpatient setting) focusing on frequently-touched surfaces and equipment in the immediate vicinity of the patient.

Droplet Precautions

- Use Droplet Precautions for patients known or suspected to be infected with pathogens transmitted by respiratory droplets that are generated by a patient who is coughing, sneezing, or talking.
- Droplet precautions relate to infectious agents that may be spread from the respiratory tract by coughing, sneezing or even talking.



Their ability to spread is limited, as they only remain in the air for short periods of time and cannot travel further than a metre. This means the spread is limited to close contact
(Health Protection Agency, 2012).

Examples of infectious diseases that would require droplet precautions include influenza and bacterial meningitis

(HPS, 2014).

Droplet

- Diphtheria: pharyngeal
- Influenza virus: seasonal
- Meningitis:
 - H. influenzae type b, N. meningitidis, Streptococcus
- Mumps
- Parvovirus B19: erythema infectiosum
- Pertussis (whooping cough)
- Plague: pneumonic
- Pneumonia: Adenovirus, H. influenzae type b, Strep gp A,(infants and children),
 - *Mycoplasma pneumonia*
- Rhinovirus
- Rubella
 - Streptococcus group A disease: pharyngitis and scarlet fever (infants and young children)
- Viral haemorrhagic fevers due to Lassa, Ebola, Marburg, Crimean- Congo fever viruses

DROPLET PRECAUTIONS

To prevent the spread of infection,

ANYONE ENTERING THIS ROOM **MUST** WEAR:



Surgical Mask ✓

N-95 Respirators should **not** be used for personal protection of patients in droplet precautions.

Questions? Please call the Department of Infection Control & Prevention at 936-0725  Vanderbilt Infection Control & Prevention



DROPLET PRECAUTIONS



Visitors must report to Nursing Station before entering.



✓ Perform hand hygiene before entering and before leaving room



✓ Wear mask when entering room
Visitors and health care workers



✓ Dietary may not enter
No debe entrar el dietista

PRECAUCIONES DE GOTAS DIMINUTAS

Los visitantes deben presentarse primero al puesto de enfermería antes de entrar. Lávese las manos. Póngase máscara al entrar al cuarto. No debe entrar el dietista.

HO 1025 Rev. 10/05

Droplet Precautions

- Ensure appropriate patient placement in a single room if possible.
- In *acute care hospitals*, if single rooms are not available, utilize the recommendations for alternative patient placement considerations in the Guideline for Isolation Precautions.
- In *long-term care* and other residential settings, make decisions regarding patient placement on a case-by-case basis considering infection risks to other patients in the room and available alternatives.
- In *ambulatory settings*, place patients who require Droplet Precautions in an exam room or cubicle as soon as possible and instruct patients to follow Respiratory Hygiene/Cough Etiquette recommendations.



10/22/2018

Droplet Precautions



- **Use personal protective equipment (PPE) appropriately.** Don mask upon entry into the patient room or patient space.
- **Limit transport and movement of patients** outside of the room to medically-necessary purposes.
- If transport or movement outside of the room is necessary, instruct patient to wear a mask and follow Respiratory Hygiene/Cough Etiquette.



10/22/2018

Airborne Precautions

- **Use Airborne Precautions for patients known or suspected to be infected with pathogens transmitted by the airborne route**
- Airborne precautions help to prevent the spread of infectious agents that have the ability to travel distances and remain infectious when suspended in the air
(HPA, 2012).
- These include bacteria such as *Mycobacterium tuberculosis* and viruses such as measles
(HPS, 2014).
- Negative-pressure rooms are required for patients who have, or are suspected of having, multidrug-resistant *Mycobacterium tuberculosis*
(National Institute for Health and Care Excellence, 2011).

Airborne

- Influenza A: avian H7N9, Asian H5N1
Measles
MERS-Coronavirus: Middle East acute respiratory syndrome
Mycobacterium tuberculosis: laryngeal and pulmonary disease, extra-
- pulmonary draining lesion
Smallpox
Varicella-zoster: disseminated disease, localized disease in
- immunocompromised patient

Airborne Precautions



UCSF Medical Center
UCSF Benioff Children's Hospital



AIRBORNE ISOLATION PRECAUTIONS

Visitors ~ See Nurse before entering



Clean Hands ~ N-95 or PAPR ~ Negative Pressure / Door Closed



PAPR for High Hazard Procedures (See other side)

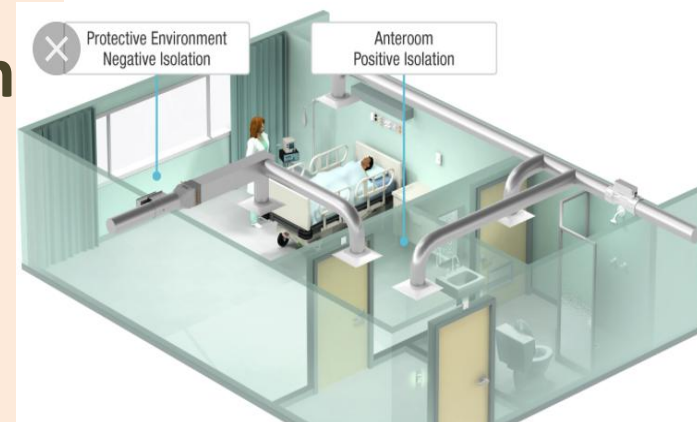
- **Use personal protective equipment (PPE) appropriately.**
- **Don mask upon entry into the patient room or patient space.**
- **Limit transport and movement of patients outside of the room to medically-necessary purposes.**
- **If transport or movement outside of the room is necessary, instruct patient to wear a mask and follow Respiratory Hygiene/Cough Etiquette.**



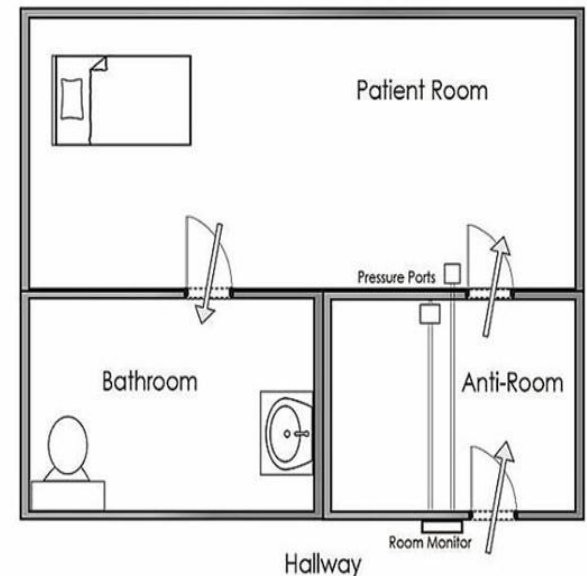
Airborne Precautions

Ensure appropriate patient placement in an airborne infection isolation room (AIIR) constructed according to the Guideline for Isolation Precautions.

In settings where Airborne Precautions cannot be implemented due to limited engineering resources, masking the patient and placing the patient in a private room with the door closed will reduce the likelihood of airborne transmission until the patient is either transferred to a facility with an AIIR or returned home.



Airborne Infection Isolation Room



Airborne Precautions



- **Restrict susceptible healthcare personnel from entering the room of patients known or suspected to have measles, chickenpox, disseminated zoster, or smallpox if other immune healthcare personnel are available.**
- **Use personal protective equipment (PPE) appropriately, including a fit-tested NIOSH-approved N95 or higher level respirator for healthcare personnel.**



Airborne Precautions

- **Limit transport and movement of patients** outside of the room to medically-necessary purposes.

If transport or movement outside an AIRR is necessary, instruct patients to wear a surgical mask, if possible, and observe Respiratory Hygiene/Cough Etiquette.

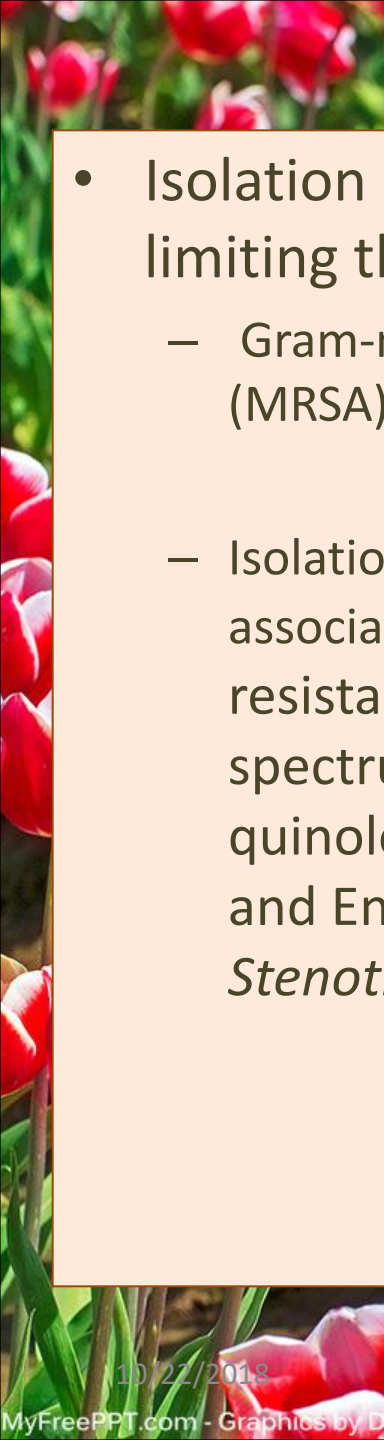
Healthcare personnel transporting patients who are on Airborne Precautions do not need to wear a mask or respirator during transport if the patient is wearing a mask and infectious skin lesions are covered.

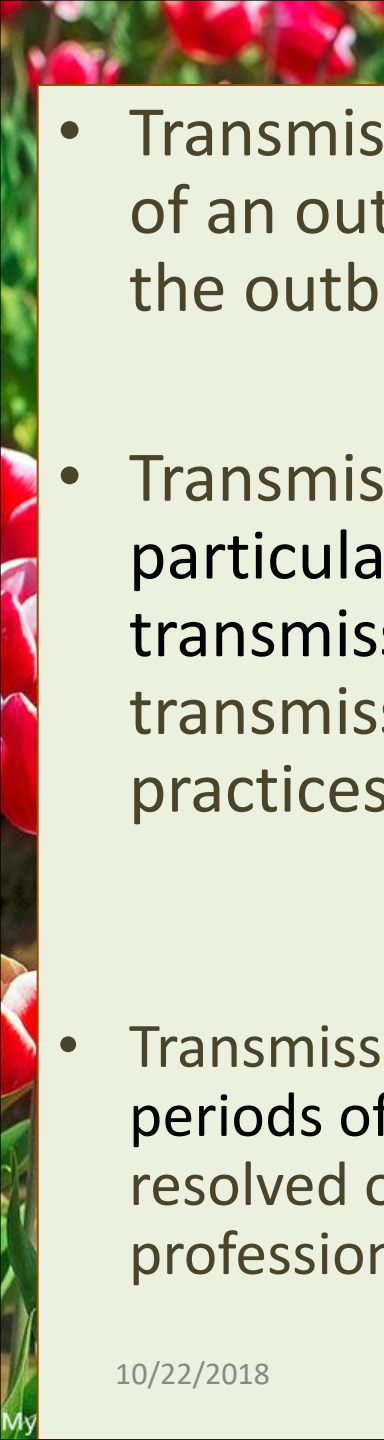




Airborne Precautions

- **Immunize susceptible persons as soon as possible following unprotected contact with vaccine-preventable infections (e.g., measles, varicella or smallpox)**

- 
- Isolation and barrier precautions have also proven successful in limiting the epidemic spread of multidrug-resistant organisms
 - Gram-negative bacilli, methicillin resistant *Staphylococcus aureus* (MRSA), and vancomycin resistant enterococci (VRE).
 - Isolation precautions are also assumed effective in other healthcare-associated transmissions caused by vancomycin intermediate or resistant *Staphylococcus aureus* (VISA, VRSA), extended-spectrum beta-lactamase (ESBL) producing Enterobacteriaceae, quinolone- or carbapenem resistant *Pseudomonas aeruginosa* and Enterobacteriaceae, and multi-drug resistant *Stenotrophomonas maltophilia*, and *Acinetobacter* spp.

- 
- Transmission-based precautions are also used in the event of an outbreak (e.g. gastroenteritis), to assist in containing the outbreak and preventing further infection.
 - Transmission-based precautions should be tailored to the particular infectious agent involved and its mode of transmission. They may have multiple routes of transmission. This may involve a combination of practices. (e.g varicella, adenovirus, SARS, Viral hemorrhagic fevers)
 - Transmission-based precautions remain in effect for limited periods of time until signs and symptoms of the infection have resolved or according to recommendations from infection control professionals specific to the infectious agent

A vertical strip of red tulips is visible on the left side of the slide, extending from the top to the bottom. The tulips are in various stages of bloom, with some fully open and others as buds.

Protective isolation

- Protective isolation may be necessary for patients who are severely immune compromised and need to be nursed in a protective environment (DHSSPS, 2008).
- This may include the use of a positive-pressure isolation room.
-

A vertical strip of red tulips is visible on the left side of the slide, extending from the top to the bottom.

PPE for specific infectious agents

- Certain infectious agents, including ebola, require specific PPE that may not fit into the usual guidance for contact, droplet or airborne precautions.
- Specific guidance is usually provided at the time by health organisations and government departments; for example, in the case of ebola.
-



- Healthcare workers should ensure that their patients understand why certain practices are being undertaken, and that these practices are in place to protect everyone from infection.
- Patients and visitors should also be aware of their role in minimising risks by following basic hand hygiene and respiratory hygiene and cough etiquette and informing staff about aspects of their care or services if necessary.

A vertical strip of red tulips is visible on the left side of the slide, extending from the top to the bottom.

Psychosocial concerns

- Patients who are isolated in a single room may become anxious, withdrawn and/or depressed
- Good communication with both patient and relatives can minimise distress.
- Availability of isolation rooms can also be limited, if too few are available, cohort nursing of patients in designated areas may be necessary.



Precaution	Contact	Droplet	Airborne
Patient room	Private	Private	Private Specific ventilation requirements
Gloves	Before entering the room, as in Standard Precautions		
Hand hygiene	Hand antiseptics, as in Standard Precautions		
Gown	If direct contact with patient or environment	As in Standard Precautions	
Mask	Standard	< 1 meter of patient	Before entering room Special requirements
Other	Limit patient transport		

Summary of Transmission-based Precautions

- Isolate patient in a single room
- Cohorting patients colonised or infected with the same infectious agent and antibiogram in a room together
- Wearing specific personal protective equipment
- Providing patient-dedicated equipment
- Perform daily / terminal cleaning of patient's cared areas with registered disinfectants
- Using specific air handling techniques
- Restricting movement both of patients and healthcare workers.

A scenic landscape featuring a calm lake in the foreground, reflecting the sky and surrounding greenery. The lake is bordered by lush green fields and dense trees. In the background, a range of mountains stretches across the horizon under a bright blue sky with scattered white clouds. A small white boat is visible on the left side of the lake.

Thank you