ISOLATION METHODS

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ISOLATION

- Infected and colonized patients

  other patients,

  hospital visitors

  health personnel

  prevention of transmission of micro-organisms

Chain of infection

- Factor (agent)
- Source
- Exit door
- Transmission path
- The entrance gate
- Susceptible hosts

Factor (agent)

- Bacteria
  Rickettsiae, chlamydiae, mycoplasma,
- Viruses
- Fungus
- Protozoa
- Helminths

- The agent
  Infective dose
- Pathogenicity
  virulence
- The distinction of being invasive
- Antigenic variations
- Resistance
- Host specificity

Source of infection

- The patient's own flora
- Other patients (infected, colonized, the carrier)
- Health care workers
- Chronic carriers
- Medical Equipment
- Water, weather, environmental factors
- Visitors to patients
- Vectors

Exit gate

- Factors lead to spread of infectious
- Respiratory system:
  - Cough
  - Sneeze
  - Speech
  - aspiration
- Genitourinary system:
  - Foley catheters
  - STD

Exit gate

- Gastrointestinal tract:
  - Feces
  - vomiting
- Skin / mucous membranes wounds
  - skin cuts
- Transplacental
- Blood
  - needle prick
  - Blood transfusion

Transmission path

- Infectious agent migrated to the susceptible host from source
  - Contact (direct or indirect)
  - Airway
  - Droplet
  - Vector-mediated

Entrance gate

- To susceptible host agent reaches by the
  - Respiratory tract
  - Genitourinary system
  - Gastrointestinal tract
  - Skin / mucous membranes
  - Transplacental
  - Parenteral

Susceptible hosts

- Host response
  - Colonization
  - asymptomatic carriers
  - clinical disease
- Factors that affect the host response to
  - Age
  - Statement of the underlying disease
  - Antibiotics, corticosteroids or immunosuppressive drugs
  - invasive procedures

History

- 1877 - published the first isolation precautions suggestions
- "Infectious Diseases Hospitals" created
- Infectious disease patients are deposited in separated areas
- Using aseptic techniques to prevent the spread of diseases

History

- Since 1910;
  - Hospital staff began to wear uniforms among patients
  - After contact with the patient, hand hygiene with antiseptic solutions was started among patients
  - Disinfection of the patient environment

History

- 1970 - The first handbook about isolation published by the CDC
- "Isolation Techniques for Use in Hospitals"

"Isolation Techniques for Use in Hospitals"

- According to the 7 categories suggested:
  - Full isolation
  - Respiratory isolation
  - Protective isolation
  - Isolation of enteric
  - Wound and skin precautions
  - Drainage precautions
  - Blood precautions

History

- 1980 - hospitals,
  - multi-drug resistant microorganisms began to experience new problems endemic and epidemic nosocomial infections
  - İt was born to need for different isolation methods
  - 1983 - CDC new "Insulation Guide" published

History

- 1985 - Universal precautions described
  - HIV
  - HBV
  - Blood-borne infections
- 1996 - HICPAC isolation precautions book relased

Isolation methods

- Standard precautions
- Precautions for the path of infection
  - contact precautions
  - droplet precautions
  - precautions of airway (respiratory)

Standard precautions

- Applied to all patients regardless of whether the patient's diagnosis and infection

Standard precautions

- Blood
- All body fluids (semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids)
- Impaired the integrity of the skin
- Mucous membranes

Standard precautions

- Gloves:
  - Gloves must be wear before touching blood, body fluids, secretions, contaminated items, mucous membranes, impaired skin
  - Gloves should be replaced in the same patient for different initiatives
  - After use gloves , hand hygiene must be done

Standard precautions

- Potential blood and body fluids of all patients with HIV, HBV, and other blood-borne pathogens must be considered might include contaminated

Standard precautions

- The presence of the possibility of contact with blood and body fluids of patient:
  - Gloves, masks and protective gowns / dresses should be worn
  - Hand hygiene

Standard precautions

- Mask, face-to-eye protection:

  During the process of body fluids, secretions, and blood is likely to splash the eyes, nose and mouth should be used to protect

Standard precautions

- Apron:
  - During the process of body fluids, secretions, and blood can spread skin and to prevent soiling of clothing worn
  - Removed without touching the outer surface of the apron
  - Hands should be washed

Standard precautions

- Patient care products:
  - After visiting patient room removed without contaminating other patients and the environment
  - A disposable materials should be discarded immediately
  - Appropriate sterilization and disinfection methods to be used for nondisposable materials

Standard precautions

- After using needles must be collected in puncture-resistant containers
- Bed linen be sent to the laundry room without contaminating the environment
- Directly from mouth to mouth resuscitation should not be done

İsolation methods

- Three way is acceptable today
  - Contact isolation,
  - Droplet isolation,
  - Respiratory isolation,

Contact isolation

- Contact isolation methods is use to prevention of the contamination.

- Direct contact with the patients which is infected or colonized by the microorganisms or indirect contact (contact with infected objects)

Contact isolation

Single room or cohort application

HCW's must use clean non-sterile gloves and apron before contact with the patient or the surrounding inanimate surfaces

Contact isolation

Gloves and gowns should be removed before leaving the patient's room

Hand hygiene must be done

Gloves and aprons once it must be removed and after hand hygiene, HCW's are not contact with the patient and the environment

HCW's should be avoided that medical materials do not transfer between rooms and patients.

Indication of contact isolations

Epidemiological significance of multiple-resistant bacteria:

MRSA, Acinetobacter, P. aeruginosa
ESBL-positive Klebsiella, E. coli,

Other
C. difficile, enterohaemorrhagic E. Coli 0157: H7, Shigella, hepatitis A, rotavirus
Cutaneous diphtheria, herpes simplex, impetigo, lice, scabies, V.zoster,Lassa, Ebola, Crimean-Congo,RSV, or enteroviral infections

Droplet isolations

- Droplet isolation is used for large particles (> 5µm).
- Because of the large particles are collapses to the ground

- For the risk of the contamination from sick patiets to the sensitive person is required less than 1 meter

Droplet isolations

- Sensitive people are infected through the conjunctiva, nose and mouth:
  - Infected patients, speech, cough or nasal deletion,
  - aspiration, intubation, during procedures such as bronchoscopy.

Droplet isolation of patients to be

- Invasive H. influenzae type B infection
  - Meningitis, pneumonia, epiglottitis, and sepsis
- Invasive Neisseria meningitidis infection
- Diphtheria
- Mycoplasma pneumoniae
- Pertussis
- Pneumonic plague
- Children with streptococcal (group A)
  - pharyngitis, pneumonia and scarlet fever

Droplet isolation of patients to be

- Serious viral infections spread through droplet:

  adenovirus

  influenza

  mumps

  parvovirus B19

  rubella

Droplet isolations

- The patient must stay alone in the room
- If you need to share the same room with patients diagnosed with different disease distance between beds should be at least 1 m

Droplet isolations

- Special ventilation is not required
- The room door may be open
- Health personnel should wear a mask when working in close proximity to the patient than 1 meter
- The patient should not very unnecessarily out of the room.
- If the patient go to out of the room should be wear a surgical mask

Respiratory isolations

- Respiratory isolation is used for small particles (<5µm)
- The particles remain suspended in the air
- These particles can go very far distances

Respiratory isolation of patients to be

- Tuberculosis,
  Measles,
  Chicken Pox
  Common zoster infection,
  SARS
  Viral hemorrhagic fever
  Ebola, Lassa, Marburg, Crimean-Congo

Respiratory isolations

- Special ventilation or ventilation system is required
- Air flow should be in the room down the hall (negative pressure)
- 6-12 air changes per hour should be provided
- Should be filtered air is ejected out of the room
- The room door must be kept closed
- Removed unless the patient out of the room very valid reasons. If you need to come fitted surgical masks

Respiratory isolations

- Diagnosis of pulmonary tuberculosis or patients with suspected;
  - N95 respiratory mask should be worn when entering the room
- Measles, chicken pox patients who have been diagnosed;
  - Sensitive people must not be in the room
  - If you need to do to enter must take the N95 respirator mask
  - There is no need to wear a mask if they are immune to the diseases

Protective equipment

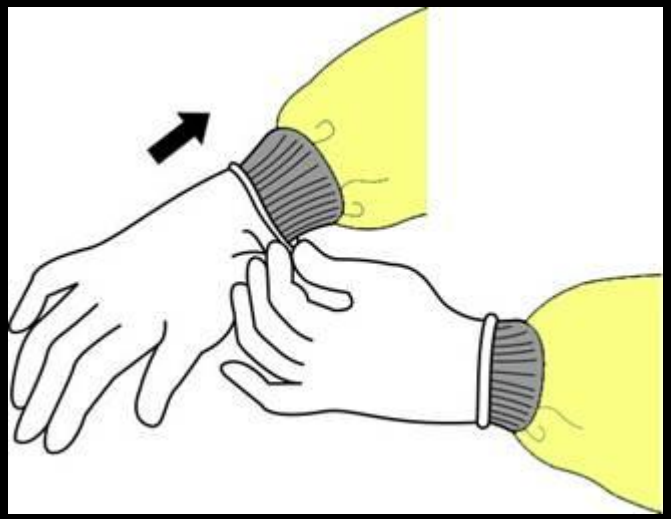
- The order of wearing
  - Apron
  - Mask
  - Glasses-face protection
  - Gloves

When using mask

- Should be changed when wet with saliva or secretions
- Should not be used again
- Sholud not be shared

When using gloves

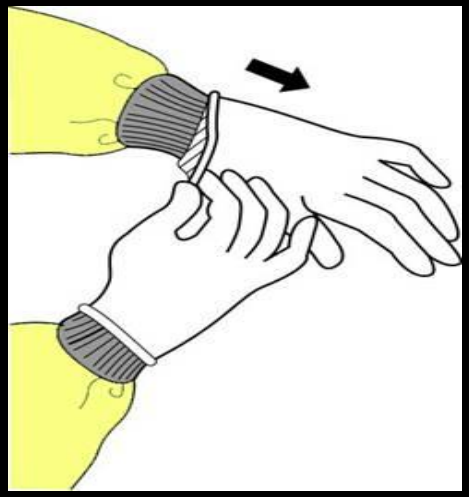
- Gloves should be worn the most recent
- Choose the correct type and size of gloves
- Wash hands before putting on gloves
- Apron, arm cuffs pulled on

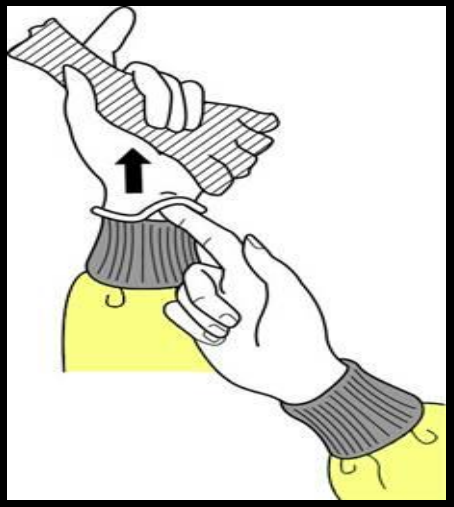


Protective equipment

- Removing the sequence
  - Gloves
  - Glasses-face protection
  - Apron
  - Mask

When you take off gloves





When you take off glasses

When you take off apron

Important points

- Health care providers, patients and patients' families be informed by the Infection Control Team about the importance of isolation precautions