

Unit III

Methods, Universal Precaution and Infection Control Strategies, Policies and Procedures

312 NUR TEAM

outline

- **STANDARD PRECAUTIONS**
- **UNIVERSAL VS STANDARD PRECAUTIONS**
- **Elements of Standard Precaution**
- **Transmission Based Precautions(isolation)**
 - **Contact Precautions.**
 - **Droplet Precautions.**
 - **Airborne Precautions**
 - **Empirical precautions**
 - **Protective precautions**

STANDARD PRECAUTIONS



The Centers for Disease Control (CDC) **defines Standard Precautions as:**

“A set of precautions designed to prevent transmission of HIV, Hepatitis B virus (HBV), and other blood borne pathogens when providing first aid or health care. Under standard precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other blood borne pathogens

UNIVERSAL VS STANDARD PRECAUTIONS

What is the difference?

Universal Precautions: The practice of avoiding contact with bodily fluids, by means of the wearing of nonporous articles such as gloves, goggles, and face shields. The practice was introduced in 1985–88. **In 1996, this term was replaced with the term standard precautions.**

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What is a Blood Borne Pathogen?

- ▶ Blood borne pathogens are microorganisms in the blood or other body fluids that can cause illness and disease in people. These microorganisms can be transmitted through contact with contaminated blood and body fluids
- ▶ **Illnesses that result? Hepatitis B, Hepatitis C, and HIV**

Elements of Standard Precaution

- Hand hygiene
- Personal protective equipment(PPE)
 - Gown
 - Mask
 - Goggles / Face protection
 - Gloves
- Patient care equipment / devices
- Environmental control
- Textile and laundry
- Worker safety
- Patient placement and transport
- Respiratory hygiene / cough etiquette
- Infection control practices for lumbar puncture
- Safe injection practices

Hand hygiene

- One of the most effective method to prevent transmission of pathogens associated with health care

Why should we clean our hands?

- Healthcare-associated pathogens are most often transmitted from patient to patient through the hands of healthcare workers

What are our hands carrying?



Resident flora

- Part of body's natural defense mechanism
- Deep seated
- Difficult to remove
- Associated with infection following surgery/invasive procedures

Transient flora

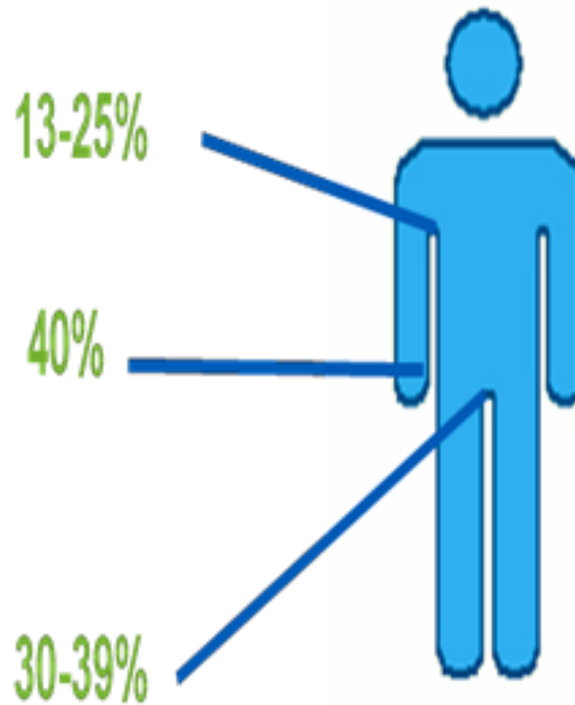
- Superficial
- Transferred with ease to and from hands
- Important cause of cross-infection
- Easily removed with good hand hygiene

Routine hand hygiene removes most transient micro-organisms from soiled hands.

Healthcare Personnel can get 100s to 1000s of bacteria on their hands by doing simple tasks like:

- pulling patients up in bed
- taking a blood pressure or pulse
- touching a patient's hand
- touching the patient's gown or bed sheets
- touching equipment like bedside rails, over bed tables, IV pumps

- Patients often carry resistant bacteria on many areas of their skin, even without wounds or broken skin.



Does Hand Hygiene Reduce the Spread of Microorganisms in Healthcare Settings?

- In a scientific study performed in a hospital nursery
 - 1/2 of the nurses did not wash their hands between patient contacts.
 - 1/2 of the nurses washed their hands with an antimicrobial soap between patient contacts
 - Babies cared for by nurses who did not wash their hands acquired *S. aureus* significantly more often than babies cared for by nurses who washed their hands with an antimicrobial soap.

What are types of Hand Hygiene?



1. HAND WASHING using plain soap and water or disinfectant soap, e.g., soap containing Chlorhexidine

For **40 TO 60 seconds**



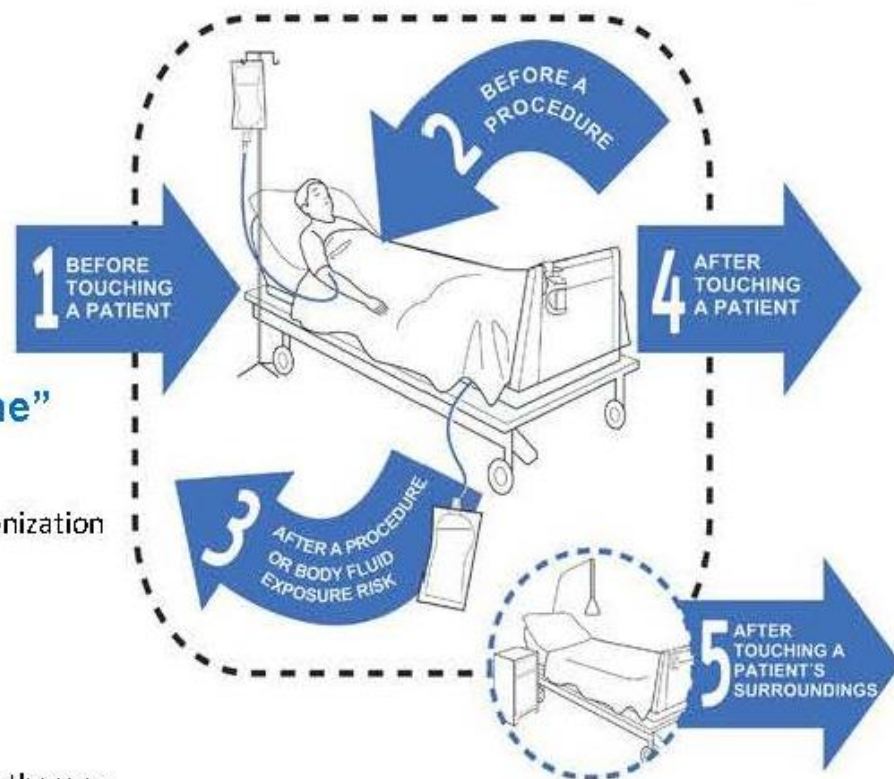
2. HAND RUB using alcohol rub/ gels

For **20 TO 30 seconds**



3. HAND SCRUB first scrub will take about **5 minutes** and subsequent one ranging from **2-3 minutes**. Attention should be taken to clean under nails.

WHO “My five (KEY) moments for hand hygiene”



1 BEFORE TOUCHING A PATIENT

WHY? To protect the patient against colonization & exogenous infection.

Examples before :

- shaking hands,
- helping a patient to move around,
- applying oxygen mask, giving physiotherapy
- taking pulse, blood pressure, chest auscultation, abdominal palpation,

2 BEFORE A PROCEDURE

WHY? To protect the patient against his own germs.

Examples before:

- brushing the patient's teeth,
- skin lesion care, wound dressing, subcutaneous injection
- catheter insertion, opening a vascular access system or a draining system,
- preparation of food, medication.

• WHO “My five moments for hand hygiene”



WHY? To protect you and the environment (after glove removal)

Examples after :

- brushing the patient's teeth,, secretion aspiration
- skin lesion care, wound dressing, subcutaneous injection
- drawing and manipulating any fluid sample, opening a draining system, endotracheal tube insertion and removal
- Clearing- up urines, faeces, vomit,



WHY? To protect you & the environment

Examples after:

- shaking hands,
- helping a patient to move around.
- giving physiotherapy
- taking pulse, blood pressure, chest auscultation,
- abdominal palpation,
- applying oxygen mask



WHY? To protect you & the environment

Examples after :

changing bed linen, with the patient out of the bed

- monitoring alarm
- holding a bed rail
- Clearing the bedside table

Tips for perfect clean hands:



■ Fingernails:

- Should be short, clean, and free from nail varnish as it harbour micro organisms that are not easily removed during hand hygiene.
- Documented evidence of link between artificial nails and a *Pseudomonas* outbreak in a neonatal intensive care unit in the USA.

■ Jewellery:

- No Jewellery are recommended to be worn on the hands & wrists as it become contaminated during work activities and prevent proper hand hygiene procedures .

Personal protective equipment (PPE)

“Specialized clothing or equipment worn by an employee for protection against infectious materials” (OSHA)

- Disposable gloves
- Plastic aprons
- Face masks
- Safety glasses, goggles, visors
- Head protection
- Foot protection
- Fluid repellent gowns



Personal Protective Equipment (Gown, Gloves, Mask, Eye Protection)

Used to protect mucous membranes, airways, skin, and clothing from contact with infectious agents

All health care worker should Assess the Risk of exposure to body substances or contaminated surfaces BEFORE any health care activity.

2. GLOVES

“Hand Hygiene and Medical Glove use”

- ✓ Remove gloves to perform hand hygiene when an indication occurs while wearing gloves
- ✓ Discard gloves after each task and clean your hand –gloves may carry germs
- ✓ Wear gloves only when indicating to Standard and Contact precautions, otherwise they become a major risk for germ transmission

REMINDER: Do not wear the same pair of gloves for the care of more than one patient.

INDICATION FOR GLOVING

GLOVES ON	GLOVES OFF
<ol style="list-style-type: none"> 1) Before a sterile procedure. 2) When anticipating contact with blood or another body fluid, regardless of the existence of sterile conditions and including contact with non-intact skin and mucous membrane. 3) Contact with a patient (and his/her immediate surroundings) during contact precautions. VRE, MRSA, RSV, MRO, ESBL 	<ol style="list-style-type: none"> 1) As soon as gloves are damaged (or non-integrity suspected) 2) When contact with blood, another body fluid, non-intact skin and mucous membrane has occurred and has ended 3) When contact with a single patient and his/her surroundings, or a contaminated body site on a patient has ended 4) When there is an indication for hand hygiene.

"The Glove Pyramid"

- ✓ The Glove Pyramid-to aid decision making on when to wear (and not wear) gloves
- ✓ Gloves must be worn according to **STANDARD** and **CONTACT PRECAUTIONS**
- ✓ Hand hygiene should be performed when appropriate regardless of indication for glove use

STERILE GLOVES INDICATED

Any surgical procedure; vaginal delivery; invasive radiological procedures; performing vascular access and procedures (central lines); preparing total parental nutrition and chemotherapeutic agents.

EXAMINATION GLOVES INDICATED IN CLINICAL SITUATIONS

Potential for touching blood, body fluids, secretions, excretions and items visibly soiled by body fluids.

DIRECT PATIENT EXPOSURE: Contact with blood; contact with mucous membrane and with non-intact skin; potential presence of highly infectious and dangerous organism; epidemic or emergency situations; IV insertion and removal; drawing blood; discontinuation of venous line; pelvic and vaginal examination; suctioning non-closed systems of endotracheal tubes.

INDIRECT PATIENT EXPOSURE: Emptying emesis basins; handling/cleaning instruments; handling waste; cleaning up spills of body fluids.

GLOVES NOT INDICATED (except for CONTACT precautions)

No potential for exposure to blood or body fluids, or contaminated environment

DIRECT PATIENT EXPOSURE: Taking blood pressure, temperature and pulse; performing SC and IM injections; bathing and dressing the patient; transporting patient; caring for eyes and ears (without secretions); any vascular line manipulation in absence of blood leakage.

INDIRECT PATIENT EXPOSURE: Using the telephone; writing in the patient chart; giving oral medications; distributing or collecting patient dietary trays; removing and replacing linen for patient bed; placing non-invasive ventilation equipment and oxygen cannula; moving patient furniture.

3. GOWN

Wear to protect skin and prevent soiling of clothing during activities that are likely to generate splashes or sprays of blood, body fluids, secretions or excretions

Gowns are usually the first piece of PPE to be donned.

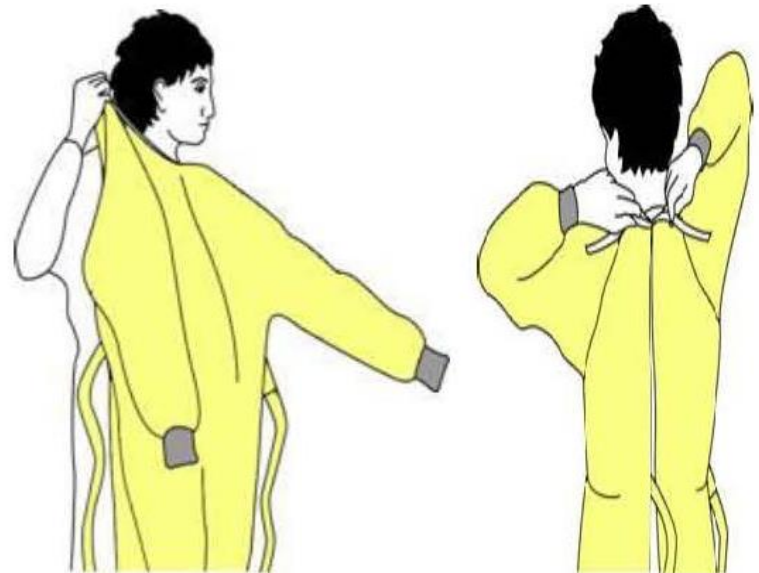
There should be several gown sizes should be available in a healthcare facility.

Full coverage of the arms and body front, from neck to the mid-thigh or below will ensure that clothing and exposed upper body areas are protected.

- ❖ Select appropriate type and size
- ❖ Opening is in the back
- ❖ Secure at neck and waist
- ❖ If gown is too small, use two gowns

Gown #1 ties in front .

Gown #2 ties in back



Gowns should be **removed in a manner that prevents contamination of clothing or skin**. The outer, “contaminated”, side of the gown is turned inward and rolled into a bundle, and then discarded into a designated container for waste or linen to contain contamination



Gowns should be **removed before leaving the patient care area** to prevent possible contamination of the environment outside the patient's room

4. FACIAL PROTECTION (Eyes, Nose, and Mouth)

Type of Eye/face protection will be chosen according to work situations and circumstances of exposure with other PPE used. Even if Droplet Precautions are not recommended for the patient, protection for the eyes, nose and mouth , is necessary when it is likely that there will be a splash or spray of blood any respiratory secretions or other body fluids.

1. Eye protection (eye visor, goggles) or
2. A face shield to protect mucous membranes of the eyes, nose and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions

How to Don Eye and Face Protection

- Position goggles over eyes and secure to the head using the ear pieces or headband.
- Position face shield over face and secure on brow with headband.



- Allow sufficient peripheral vision,
- Must be adjustable to ensure a secure fit



Personal eyeglasses and contact lenses are NOT considered adequate eye protection
Eye protection must be comfortable, allow for sufficient peripheral vision, and must be adjustable to ensure a secure fit.

5. MASKS

SURGICAL MASKS

Used for the following primary purposes in healthcare settings:

- To protect the staff from contact with infectious material from patients e.g., respiratory secretions and sprays of blood or body fluids, consistent with Standard Precautions and Droplet Precautions;
- To protect patients from exposure to infectious agents carried in a healthcare worker's mouth or nose during procedures.
- To limit potential dissemination of infectious respiratory secretions of an infected patient or staff .

HOW TO DON A MASK

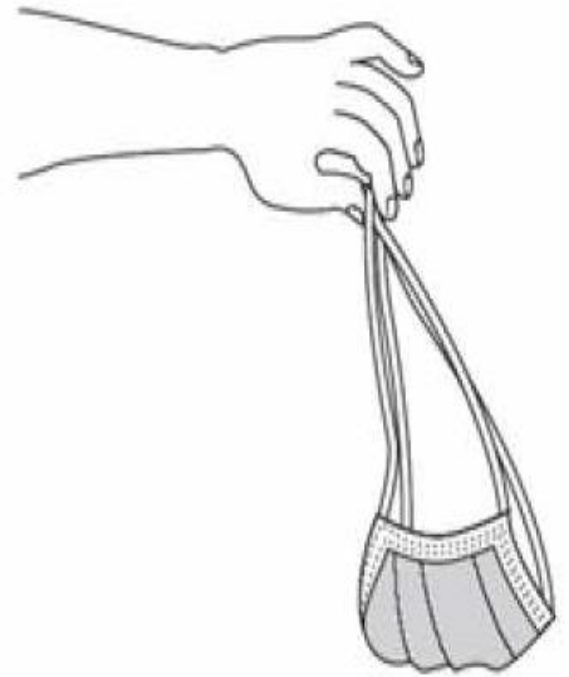
1. Place over nose, mouth and chin
2. Fit flexible nose piece over nose bridge
3. Secure on head with ties or elastic
4. Adjust to fit Place over nose, mouth and chin
5. Fit flexible nose piece over nose bridge
6. Secure on head with ties or elastic

*Masks may be used in combination with goggles / face shield to protect the mouth, nose and eyes to provide more complete protection for the face



REMOVING A MASK

1. Untie the bottom, then top, tie
2. Remove from face
3. Discard.



N95 MASK/ RESPIRATOR

- ☐ Used as a part of airborne precautions to prevent inhalation of small particles that may contain infectious agents transmitted via the airborne route.
- ☐ All hospital staff should be aware about the type and the size of N95 mask that is suitable for them by informing fit testing.
- ☐ Before wearing the respirator the staff should make ensure that it is well sealed over his face features by performing well sealed check. The staff will inhale through the mask and notice little collapse. If exhale through the mask the staff will notice little expansion that will prevent the staff to breathe through mask leakage.
- ☐ N95 mask will be worn outside the patient room (ante-room) and should be disposed outside the patient room (ante-room). It can be used for whole shift / for 8-12 hours. The staff should be careful that the mask will be contaminated from outside.

SH-9550



SH-9550C



SH-9550A



www.parlison.com.tw

SH-9550CV



SH-9550V



How to Don a Particulate Respirator

1. Select a fit tested respirator
2. Place over nose, mouth and chin
3. Fit flexible nose piece over nose bridge
4. Secure on head with elastic
5. Adjust to fit
6. Perform a fit check –
 - Inhale – respirator should collapse
 - Exhale – check for leakage around face



Removing a Particulate Respirator

1. Lift the bottom elastic over your head first
2. Then lift off the top elastic
3. Discard



A simple guide to the correct steps for **PUTTING ON** and **TAKING OFF** your Personal Protective Equipment, as recommended by the Centers for Disease Control.

DONNING YOUR PPE



DOFFING YOUR PPE



Where to Remove PPE

- ✓ At doorway, before leaving patient room or in anteroom.
- ✓ Remove respirator outside room, after door has been closed.

****Ensure that hand hygiene facilities are available at the point needed, e.g., sink or alcohol-based hand rub***

6. SAFE INJECTION PRACTICES

Use aseptic technique to avoid contamination of sterile injection equipment:

1. Do not administer medications from a syringe to multiple patients, even if the needle or cannula on the syringe is changed.
2. Use single-dose vials for parenteral medications whenever possible.
3. Do not administer medications from single-dose vials or ampules to multiple patients or combine leftover contents for later use.
4. If multi-dose vials must be used, both the needle or cannula and syringe used to access the multi-dose vial must be sterile.
5. Do not use bags or bottles of intravenous solution as a common source of supply for multiple patients



7. PATIENT CARE EQUIPMENT / DEVICES

Ensure that reusable equipment is not used for the care of another patient until it has been cleaned , reprocessed and maintained appropriately according to the manufacturers' instructions.

Ensure that single use items are discarded properly

All such equipment and devices should be handled in a manner that will prevent HCW and environmental contact with potentially infectious material

It is important to have a written policies for cleaning and disinfection of patient care equipment.



8. ENVIRONMENTAL CONTROL

CLEANING

The **removal** of adherent visible soil, blood, protein substances (tissue) and other debris from surfaces **by mechanical or manual process**

- Removes reservoirs of **potential pathogenic organisms**
- Generally accomplished with **water and detergents**

The key to cleaning and disinfecting environmental surfaces is the use of **friction (“elbow grease”)** to physically remove visible dirt, organic material, and debris, thereby removing microorganisms.

- Cleaning schedules and procedures should progress from the least soiled areas to the most soiled and from high surfaces to low ones.
- Minimize air and dust turbulence when cleaning to prevent dispersion of fungal spores. (*e.g. Aspergillus*)

PATIENT CARE AREA

Keep housekeeping surfaces visibly clean on regular basis.

Clean up spills promptly.

Clean and disinfect high-touch surfaces, such as doorknobs, bed rails, light switches, and surfaces in and around toilets on a more frequent schedule.

Clean walls, blinds, and window curtains in patient-care areas when visibly soiled or dusty.

2 Categories of
Environmental
Surfaces



Less frequently-
touched surfaces



PROCEDURE ROOM

Clean horizontal surfaces daily

Clean patient contact surfaces and floor and spot check for blood and body fluids between each case

After last procedure of day, wet vacuum or mop floors with a single use mop and EPA-registered hospital disinfectant.



TERMINAL CLEANING is done after patient discharge, before next patient admission

Surface disinfectant should be approved by environmental protection agency(**EPA**) .It should be tuberculocidal .

For **Special pathogens : MDRO, MRSA** , routine cleaning is performed at the end after cleaning non infected areas using a color coded mob.

For ***Clostridium difficile*** (spore forming organisms) , use hypochlorite – based product for disinfection.

In case of **Vancomycin Resistant Enterococci VRE** , vigorous cleaning is needed .

Wear PPE (e.g., gloves, gown), according to the level of anticipated contamination, when handling patient-care equipment and instruments/devices that is visibly soiled or may have been in contact with blood or body fluids



Clean utility area should be dedicated only for clean item, and dirty utility area only for dirty item .
Do not mix clean item with dirty one.

- Discard all disposable items in accordance with the policy on disposal of infectious wastes.
- Thoroughly clean all horizontal surfaces of furniture, mattress covers and patient care equipment with a disinfectant-detergent solution.
- Wet-vacuum or wet-mop all floors with a disinfectant-detergent solution.

**3 color code mops
are available:**

NO MARK for non
infected areas

YELLOW for
isolated patients

RED for toilet

ALWAYS SEPARATE CLEAN ITEMS FROM DIRTY ITEMS

BLOOD AND BODY FLUID SPILLAGE MANAGEMENT

For **Blood and Body Fluids Spillage**: Use chlorine releasing disinfectant e.g. Household bleach (5.25% sodium hypochlorite solution) . Use a 1:10 dilution (= 10,000 ppm)

1. In **Wet Spillage Granules** should be carefully and evenly sprinkled over the spillage

If the **Blood Spillage has dried**, a dilution of **10,000ppm** (parts per million) solution of sodium hypochlorite is prepared.

If there is sharp object, pick it up with
forceps



2. Cover the spillage with paper towels or white pad, depending on the size of the spillage.
3. Let the disinfectant be in contact with the spillage for a minimum of 2 minutes.(Follow manufacture recommendations) .
4. After the contact period, the resulting residual waste must be carefully removed using disposable paper towel or scooping receptacle and placed into an yellow, clinical waste disposal bag.
5. Once the residual waste has been removed, the area should be cleaned thoroughly using warm water and a detergent. Domestic service staff could be contacted to clean the area after the spill has been dealt with.
6. All disposable items, including gloves and aprons, must be carefully disposed of into an yellow clinical waste disposal bag.
7. Hands must be decontaminated (e.g. washed & dried followed by an application of alcohol hand rub) after disposing of all contaminated materials.

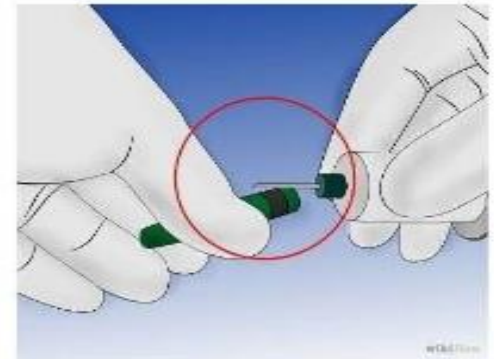
***Do not apply chlorine releasing disinfectant directly onto urine as this may result in rapid release of toxic levels of chlorine**



Dealing with Blood/ Body Fluid Spillage is the responsibility of Area Supervisor

9.WORKER SAFETY

- Remind all health care worker regarding proper care, handling and disposal of sharps and pointed objects
- No needle recapping or manipulation
- Use of sharp boxes for disposal
- Proper use of Personal Protective Equipment (PPE) to protect mucous membranes and non-intact skin from contact with potentially infectious material.
- **Safe Sharps and Needles.** Use of safe sharps and needles available in your area (e.g. retractable needles, needleless connectors).
- **Immunization.** Ensure that all hospital staff received three (3) doses of Hepatitis B Vaccine series which should be taken (at time 0-1month-6month). All vaccinated staff should check their anti-body level to make sure that they are immune.
- Health care personnel who have exudative lesions or weeping dermatitis should refrain from all direct [patient care and from handling patient care equipment until the condition resolves.



10. TEXTILE AND LAUNDRY

Soiled textiles, including bedding, towels, and patient or resident clothing may be contaminated with pathogenic microorganisms

Key principles for handling soiled laundry :

- 1) Not shaking the items or handling them in any way that may aerosolize infectious agents
- 2) Avoiding contact of one's body and personal clothing with the soiled items being handled
- 3) Containing soiled items in a laundry bag or designated bin

***Non-Soiled Linen- BLUE BAG**

*** Soiled Linen (with Blood and Body Fluids) - Water Soluble Transparent Bag**



11. PATIENT PLACEMENTS /TRANSPORT

PATIENT PLACEMENT

Single patient rooms are preferred when there is a concern about transmission of an infectious agent. When there are only a limited number of single-patient rooms, it is prudent to prioritize them according to the following :

1. Patients who have conditions that facilitate transmission of infectious material to other patients (e.g., draining wounds, stool incontinence, uncontained secretions).
2. Patients who are at increased risk of acquisition and adverse outcomes resulting from HAI (e.g., immune-suppression, open wounds, indwelling catheters, anticipated prolonged length of stay, total dependence on HCWs for activities of daily living)

Cohorting is the practice of grouping together. Patients who are colonized or infected with the same organism, to confine their care to one area and prevent contact with other patients.



PATIENT TRANSPORT

Limit the transport of patients under Transmission Based Precaution to essential purposes, such as diagnostic and therapeutic procedures that cannot be performed in the patient's room. When transport is necessary, using appropriate barriers on the patient, that consistent with the route and risk of transmission (e.g., mask, gown, wrapping in sheets or use of impervious dressings to cover the affected area(s) when infectious skin lesions or drainage are present).

Notify healthcare personnel in the receiving area of the impending arrival of the patient and of the precautions necessary to prevent transmission

***Limit the movement and transport of the patient from the room to essential purposes only.**

12. RESPIRATORY HYGIENE/ COUGH ETIQUETTE

Applied to health care personnel, patients , visitors and applies to any person with signs of illness including cough, congestion, rhinorrhea, or increased production of respiratory secretions when entering a healthcare facility.

Person with respiratory symptoms should apply source control measures:

- ✓ Cover nose, mouth when coughing/sneezing with tissue and prompt disposal of used tissues and
- ✓ Use a surgical masks on the coughing person and
- ✓ Perform hand hygiene after contact with respiratory secretions

COUGH ETIQUETTE

COVER YOUR COUGH



- Cover your mouth and nose with a tissue when you cough or sneeze

OR



- Cover your mouth and nose using your upper sleeve, not your hands, when you cough or sneeze

- Put the used tissue in a waste basket

- Wash your hands with soap and water

OR



- Clean them with an alcohol-based hand rub if soap and water are not available

If you're visiting a hospital or personal care home when you have a cough or cold, you may be asked to put on a surgical mask to protect others from infection.



HELP
PREVENT
THE SPREAD OF
INFECTION

1. Education of healthcare facility staff, patients, and visitors.

2. Place acute febrile respiratory symptoms patient at least 1 meter (3 feet) away from others in common waiting areas, if possible.

3. Post visual alert at the entrance to health-care facilities instructing persons with respiratory symptoms to practice respiratory hygiene/cough etiquette.

4. Consider making hand hygiene resources, tissues and masks available in common areas and areas used for the evaluation of patients with respiratory illnesses.

Management of exposure to blood/body fluids summary table

WHEN	WHAT
Immediately after exposure	First aid Relief from duty Risk assessment Post exposure prophylaxis (PEP) – if significant injury
As soon as possible (same day)	Source assessment Documentation of exposure Prevention of transmission and exposure/pre-test counselling Baseline serology if agreed to Referral to specialist physician -if PEP commenced Support of significant others
1-3 weeks	Post-test counselling with results of baseline serology Occupational health and safety review
3 months	Pre HIV test counselling Follow up serology – HIV, HBV, HCV
6 months	Follow up serology - HBV, HCV - HIV (if PEP taken)

Waste Management

4-categories



Health Care
Non-Risk Waste

For Example:

- * Paper / packaging materials
- * Food
- * Cups, plates, utensils
- * Syringe with no needle non-contaminated with blood / body fluids
- * Plastic bottles
- * Feeding Formula bottles/plastic
- * Tissue paper
- * Diaper not contaminated with blood
- * PPE not contaminated with blood/body fluid
- * IV fluid bags with line not contaminated with blood



Health Care Risk Waste (Infectious Waste)

For Example:

- * Gauze / dressing materials
- * IV fluid lines contaminated with blood
- * Foley's Cath & Urinary bag
- * Nasogastric tube
- * Endotracheal tube
- * Thermometer probe
- * PPE contaminated with blood & body fluids
- * Drain tubes & bags
- * Suction catheter
- * Sputum container
- * Test tubes & universal containers containing specimens



Health Care Risk Waste (Pathological Waste)

Pathological Waste (for example)

- * Placenta
- * Body parts
- * Human fetus



Health Care Risk Waste (Sharps Waste)

For Example:

- * Slides, broken vials & ampules
- * Lancets
- * Syringe with needle
- * Cannula needles
- * Scalpels
- * Blades
- * Needles
- * Butterfly needle
- * Saw



Note: Don't re-cap the needles

Transmission Based Precautions

Expanded Precaution

(isolation)

Categories of Transmission Based Precautions include:

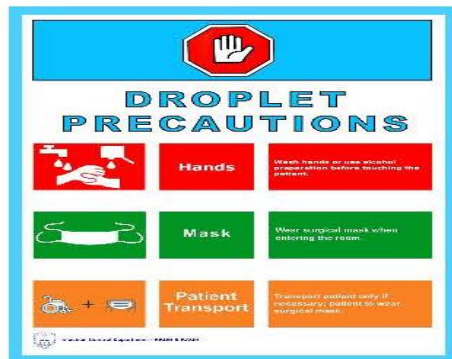
- Airborne Precautions
- Droplet Precautions
- Contact Precautions
- Empirical precautions
- Protective precautions

ISOLATION

The separation of a person with infectious disease from contact with other human beings, for the period of communicability.

□ SYSTEMS IN K.S.U.Hs:

KKUH & KAUH follows Transmission Based Isolation system and under this system three category currently exist.



Airborne Precaution are used in addition to Standard Precautions for patients known or suspected to be infected with microorganisms transmitted by relatively small droplet nuclei (<5microns) that remain suspended in the air for long period of time. These nuclei become dispersed widely with air current within a room or a long distance. Airborne transmission occurs when the widely dispersed nuclei containing microorganisms become inhaled by a susceptible host.

Patients requiring the Precautions:

- Measles (Rubeola)
- Varicella (Including Herpes Zoster if disseminated or in immune-compromised patient)
- Tuberculosis (Laryngeal and Pulmonary TB with positive smear for acid fast bacilli).



AIRBORNE PRECAUTIONS Requirements:

1. Patients Placements:

Place the patient in an Airborne Infection Isolation Room (AIIR) that has been constructed with:

- Room supplied with negative pressure, which is regularly monitored.
- At least 6-12 air exchanges per hour shall be provided.
- Exhaust of air shall be directed to the outside. If it is not possible and air will be returned to the air-handling system or adjacent spaces, all exhaust air should be directed through HEPA filters.
- The AIIR door shall be kept closed when not required for entry and exit.
- The room may be supplied with an anti-room for exit and entry.

Check and document the negative pressure Daily when room is occupied by a patient required airborne precaution.

Post the pink “Airborne Precautions” sign to the door with instructions for Health Care Personnel (HCP) and visitors.

2. Respiratory Protection

- Wear a fit tested Respiratory Protection (N95 or higher level respirator) **before entering the room** of a patient with known or suspected infectious pulmonary or laryngeal tuberculosis.
- To assure good seal the respirator, take a deep breath. Mask should collapse during inhalation and expand during exhalation.
- Susceptible persons should not enter the room of patients known or suspected to have measles (Rubeola) or Varicella (chickenpox) if other immune caregiver is available.
- Remove mask **AFTER LEAVING** patient room in the Ante-Room if available or outside the patient room.



3. Patient Transport

- Limit the movement and transport of the patient from the room to essential purposes only.
- If transport or movement is necessary, minimize patient dispersal of droplet nuclei by instructing the patient to wear a **Surgical Mask**.
- Healthcare personnel transporting patients who are on Airborne Precautions in an **Open area** e.g. hospital corridors, do not need to wear a mask or respirator during transport if the patient is wearing a mask. If in **Closed area** e.g. ambulance; Healthcare worker should wear N-95 mask.
- Inform the receiving department about the type of Precautions for this patient.

4. Linens:

- Linen should be handled according to the Standard Precautions and Linen Laundering policies. Double bagging of linen is not necessary.

5. Patient-Care Equipment:

- Providing patients who are on Transmission-Based Precautions with dedicated noncritical medical equipment (e.g., stethoscope, blood pressure cuff, and electronic thermometer) has been beneficial for preventing transmission.

6. Regulated Medical Waste:

Waste is to be handled according to the Standard Precautions and Regular Medical Waste policies.

7. Cleaning:

- Daily, detail, and discharge cleaning is the same for all isolation rooms. Terminal cleaning can be done after one safety hour without airborne precaution.



8. Discontinuing Airborne Precautions

Airborne Precautions is discontinued when the patients is no longer considered infectious based on clinical and/or laboratory data.

For example:

- In Pulmonary TB, three (3) consecutive negative sputum smear must be obtained usually after 2 weeks from starting effective treatment. Sample should be obtained least one 8 hours in between. At least one sample should be a morning sample.
- In Varicella patients, all lesions should be crusted to discontinue the isolation.

The isolation is discontinued by the infection control team.

Note:

- ✚ Tuberculosis can be pulmonary and extra-pulmonary. Airborne Precaution is implemented only for Laryngeal / Pulmonary Tuberculosis with sputum smear positive for acid fast bacilli.

For suspected TB patients with smear negative for 3 consequent sample, at least 8 hours in between do not need airborne precaution even if sputum culture came out to be positive. See also discontinuation of isolation.

- ✚ For patients with diseases transmitted by multiple routes, follow additional isolation requirements in addition to **Airborne Precautions**. Example: for Varicella zoster (chickenpox) or disseminated Varicella zoster (shingles) **Contact Precautions** should be followed as well as **Airborne Precautions**



AIRBORNE PRECAUTIONS



Hands

Wash hands or use alcohol preparation before and after touching the patient



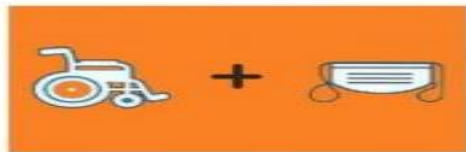
Mask

Wear N95 mask when entering room



Door

Please keep door shut



Patient Transport

Transport patient only if necessary; patient to wear surgical mask.



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AIRBORNE PRECAUTIONS

In addition to *Standard Precautions*, use *Airborne Precautions* for patients known or suspected to have serious illnesses transmitted by airborne droplet nuclei. Examples of such illnesses include:

Measles

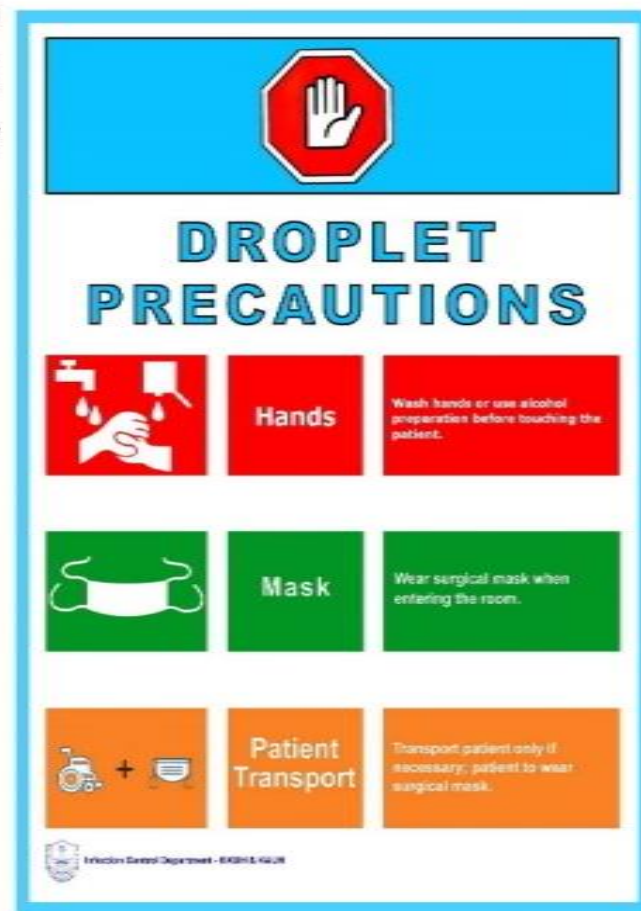
Varicella (including disseminated zoster)

Tuberculosis (Pulmonary and laryngeal)

Droplet Precautions are used in addition to Standard Precautions for patients known or suspected to be infected with microorganisms transmitted by relatively large droplet nuclei (>5Microns).

Respiratory droplets are generated when an infected person coughs, sneezes, talk or during procedures such as suctioning, endotracheal intubation, cough induction by chest physiotherapy and cardiopulmonary resuscitation

These droplets do not remain suspended in the air; they drop within 3 feet.



Examples of such illnesses include:

Invasive Haemophilus influenza type B disease, including meningitis, pneumonia, epiglottitis and sepsis

Invasive Neisseria meningitides disease, including meningitis, pneumonia and sepsis.

Other serious bacterial respiratory infections spread by droplet transmission, including:

Diphtheria (pharyngeal)

Mycoplasma pneumonia

Pertussis

Pneumonic plague

Streptococcal (group A) pharyngitis, pneumonia or scarlet fever in infants and young children

Serious viral infections spread by droplet transmission include:

Adenovirus infection

Influenza

Mumps

Parvovirus B19 Infection

Rubella

DROPLET PRECAUTIONS Requirements:

1. Patient Placement

- Place patient in private room (negative pressure room is not indicated)
- When a private room is not available, place a patient in a room with other patients who have infection with the same microorganism but with no other infection. (*cohorting*)

Post the blue “**Droplet Precautions**” sign to the door with instructions for Health Care Personnel (HCP) and visitors.

2. Respiratory Placement

- In addition to wearing a **surgical mask** as outlined under standard precautions, wear a surgical mask when working within 3 feet of the patient.
- Wear a mask **before entering the room** of a patient under Droplet Precautions.
- Remove mask **BEFORE LEAVING** patient room.



3. Patient Transport

- Limit the movement and transport of the patient from the room to essential purposes only
- If transport or movement is necessary, minimize patient dispersal of infectious droplet by instructing the patient to wear surgical mask, and to observe Respiratory Hygiene/Cough Etiquette
- Inform the receiving department about the type of Precautions for this patient.

4. Linens

- Linen should be handled according to the Standard Precautions and Linen Laundering policies. Double bagging of linen is not necessary.

5. Patient-Care Equipment

- Providing patients who are on Transmission-Based Precautions with dedicated noncritical medical equipment (e.g., stethoscope, blood pressure cuff, and electronic thermometer) has been beneficial for preventing transmission

6. Regulated Medical Waste

- Waste is to be handled according to the Standard Precautions and Regular Medical Waste policies

7. Discontinuing Droplet Precautions

- Droplet Precautions is discontinued when the patients is no longer considered infectious according to communicability of each disease based on clinical and/or laboratory data.

The isolation is discontinued by the infection control team.

NOTE:

Patient with MERS- CoV positive lab result should be under contact and droplet precautions . Airborne precautions will be implemented in case of performing aerosolized procedures e.g. bronchial lavage . Isolation will be discontinued 48 hours after recovery of patient signs and symptoms and to have at least one negative lab result



DROPLET PRECAUTIONS



Hands

Wash hands or use alcohol preparation before touching the patient.



Mask

Wear surgical mask when entering the room.



Patient Transport

Transport patient only if necessary; patient to wear surgical mask.



Infection Control Department - KKUH & KAUH

DROPLET PRECAUTIONS

In addition to *Standard Precautions*, use *Droplet Precautions* for patients known or suspected to have serious illnesses transmitted by large particle droplets. Examples of such illnesses include:

Invasive *Haemophilus Influenzae* type B disease, including meningitis, pneumonia, epiglottitis, and sepsis

Invasive *Neisseria meningitidis* disease, including meningitis, pneumonia, and sepsis.

Other serious bacterial respiratory infections spread by droplet transmission, including:

Diphtheria (pharyngeal)

Mycoplasma pneumonia

Pertussis

Pneumonic plague

Streptococcal (group A) pharyngitis, pneumonia, or scarlet fever in infants and young children.

Serious viral infections spread *by droplet transmission* include:

Adenovirus Infection

Influenza

Mumps

Parvovirus B19 Infection

Rubella

Contact Isolation

Contact Transmission can be:

Direct-contact Transmission

Involves direct contact with infected materials.

Indirect- Contact Transmission

Involves contact with a contaminated intermediate object, usually inanimate, such as contaminated instruments or surfaces.



In addition to Standard Precautions, use Contact Precautions for patients known or suspected to have serious illness transmitted by contact transmission.

Contact Precautions Requirements:

1. Patient placement

- Place patient in a private room (negative pressure room is not indicated).
- When a private room is not available, place the patient in a room with a patient/s who has/have infection with the same microorganism but with no other infection (Cohorting).
- Post the yellow **“Contact Precautions”** sign to the door with instructions for Health Care Personnel (HCP) and visitors
- Place the appropriate PPE (gloves and gowns) outside the patient room

2. Hand Hygiene

5 moments of Hand Hygiene should be strictly adhered.

Examples of such as illnesses include:

- **Infective diarrhea** in diaper / incontinent patient e.g., Enterohemorrhagic Escherichia Coli, Hepatitis A, Rotavirus and Shigellosis.
- **Clostridium Difficile Enterocolitis**
- **Respiratory Syncytial Virus** (infants, children, immunocompromised)
- **Parainfluenza Virus** (infants, children)
- **Herpes Simplex Virus**
- **Impetigo**
- **Multiple Drug Resistant Microorganisms** (MDRO) e.g., Methicillin Resistant Staphylococcus Aureus (MRSA), Escherichia coli Extended Spectrum Betalactamase (ESBL) and Vancomycin Resistant Enterococcus (VRE)
- **Streptococcal Group A**, Staphylococcus Aureus (major skin wound or burn infection)
- **Viral Conjunctivitis**

3. Required Personal Protective Equipment (Gloves and Gowns)

- Wear the gloves and gown **before entering the room** of a patient under Contact Precautions.
- Remove the gloves and gowns **BEFORE LEAVING** patient room and dispose it properly.

4. Patient Transport

- Limit the movement and transport of the patient from the room to essential purposes only.
- If transport or movement is necessary, minimize patient contamination to hospital environment. Ensure that contaminated sites (wound, drain) are well contained to prevent transmission of the infection. Clean and disinfect the wheelchair or stretcher with the approved disinfectant.
- Inform the receiving department about the type of Precautions for this patient.



5. Linens:

- Linen should be handled according to the Standard Precautions and Linen Laundering policies. Double bagging of linen is not necessary

6. Patient-Care Equipment

Providing patients who are on Transmission-Based Precautions with dedicated noncritical medical equipment (e.g., stethoscope, blood pressure cuff, and electronic thermometer) has been beneficial for preventing transmission

7. Regulated Medical Waste:

Waste is to be handled according to the Standard Precautions and Regular Medical Waste policies

8. Discontinuing Contact Precautions

Maintaining contact precaution is a disease specific duration, according to its communicability. Check the isolation card and consult with infection control nurse prior to discontinuing isolation.

- ❖ For MDRO Send swab from previously positive sites for culture. 3 negative laboratory results are needed to discontinue the isolation.
 - The 1st sample will be sent to the laboratory when patient is clinically improving and 48 hours after cessation of antimicrobial therapy.
 - The 2nd sample will be sent if the first sample was negative.
 - The 3rd sample will be sent if the 1st and 2nd samples were negative.



CONTACT PRECAUTIONS



Hands

Wash hands or use alcohol preparation before touching the patient.



Gowns Gloves

Wear gown and gloves when entering the room.



Patient Equipment

Use dedicated or single use disposable patient equipment, or disinfect before use with another patient.



Before Leaving

Discard gloves and gowns and wash hands before you leave the room.



Patient Transport

Transport patients only if necessary, contain drainage/ cover wounds.



Infection Control Department - KKUH & KAUH

Common Conditions

Infection / Condition	Duration of Isolation	Precautions
Multidrug-resistant organisms (MDROs), MRSA, VRE, ESBL, <i>B.cepacia</i>	Until 3 consecutive -ve results	In addition to standard precaution , Contact Precaution is recommended.
Major uncontained abscesses, burns, pressure ulcers or skin infections	Duration of illness	If no dressing does not contain drainage adequately, otherwise, standard precautions. Also droplet precaution in major cases.
Parainfluenza virus respiratory infection in infants and pediatric	Duration of illness	In immunocompromised patients, extend the duration of Contact Precautions due to prolonged shedding.
RSV infection in infants, young children and immunocompromised adults	Duration of illness	In immunocompromised patients, extend the duration of Contact Precautions due to prolonged shedding.
Rotavirus	Duration of illness	Ensure consistent environmental cleaning and disinfection and frequent removal of soiled diapers.
Viral hepatitis A, E. coli diarrhea, or Rotavirus in diapered or incontinent patients	Variable	Maintain Contact Precautions in infants and children <3 years of age for duration of hospitalization; for children 3-14 years of age for 2 weeks after onset of symptoms; >14 years of age for 1 week after onset of symptoms.
C. Difficile enterocolitis	Duration of illness	Dedicate non critical items and toilet; ensure consistent environmental cleaning and disinfection. Hypochlorite solutions may be required for cleaning if transmission continues. Handwashing with soap and water preferred.

Impetigo, Scabies, Pediculosis head, Group A streptococcal infection	24 hours after treatment	Pediculosis transmitted person to person through infested clothing. Wear gown and gloves when removing clothing; bag and wash clothes.
Adenovirus Pneumonia	Duration of illness	Also droplet infection precaution. In immunocompromised hosts, extend duration of Droplet and Contact Precautions due to prolonged shedding of virus.
Varicella Zoster	Until lesions dry and crusted	Also Airborne Precaution. Susceptible HCWs should not enter room if immune caregivers are available. In immunocompromised hosts with Varicella pneumonia, prolonged duration of precautions for duration of illness.
Herpes Simplex	Until lesions dry and crusted	Susceptible HCW's should not enter room if immune caregivers are available; In immunocompromised hosts with Varicella pneumonia, prolonged duration of precautions for duration of illness.
Acute viral (Acute hemorrhagic) Conjunctivitis	Duration of illness	Highly contagious; outbreaks in eye clinics, pediatric and neonatal settings, institutional settings reported. Eye clinics should follow Standard Precautions when handling patients with conjunctivitis.
Smallpox (variola)	Duration of illness	Until all scabs have crusted and separated (3-4 weeks). Non-vaccinated HCWs should not provide care when immune HCWs are available.

Patient Placement: private room where available, or Cohorting of like conditions: For *C. difficile*, dedicated toileting equipments if private room is unavailable.

Equipment & Supplies: Use disposable items or dedicate non-critical items. Proper cleaning and disinfection of shared items between patients. Do not overstock supplies in patient room.

Linens: Place in the water soluble transparent bag. Avoid undue agitation of linens to prevent creation of aerosols.

Personal Protective equipments: Wear PPEs before entry to the room, and remove/dispose from inside, before exit, except respirator (N95).

Transport: Minimize patient's movement except for essential procedures. Cover wounds and contain secretions. Gown the patient. HCW to wear gloves for direct contact. Inform receiving area prior shifting the patient. Clean wheelchair or stretcher after use.

For more information: Refer to chapter 5 of the Infection Control Manual, or call the Infection Control team on 469 9352.

PROTECTIVE ISOLATION

- It is implemented for immunocompromised patient.
- Patient is placed in positive pressure room. With HEPA-FILTER for air supply.
- Sick people are not allowed to visit the patient.
- Pets and plants are also not allowed.



PROTECTIVE PRECAUTIONS



Perform hand hygiene before entering and before leaving room.



No person with infections may enter



No dried or live plants or flowers



Use of Gowns, Gloves, Masks are not required for routine entry unless indicated for Standard Precautions & Transmission Based Precautions.



Infection Control Department - KKUH & KAUH

EMPERIC ISOLATION

- The risk of infection transmission may be highest before a definitive diagnosis can be reached, therefore, patients with certain clinical syndromes should be isolated empirically until we have a definitive diagnosis.

EXAMPLE:

1. Patient with previous admission of MRSA from Diabetic Foot

Should be under **EMPERIC CONTACT ISOLATION** until **Laboratory Result of wound swab** is received, if it is **Positive** continue the **Contact Isolation**; if **Negative** discontinue the isolation

* So we can implement **EMPERIC CONTACT/ DROPLET/ AIRBORNE** according to patients clinical signs and symptoms.

