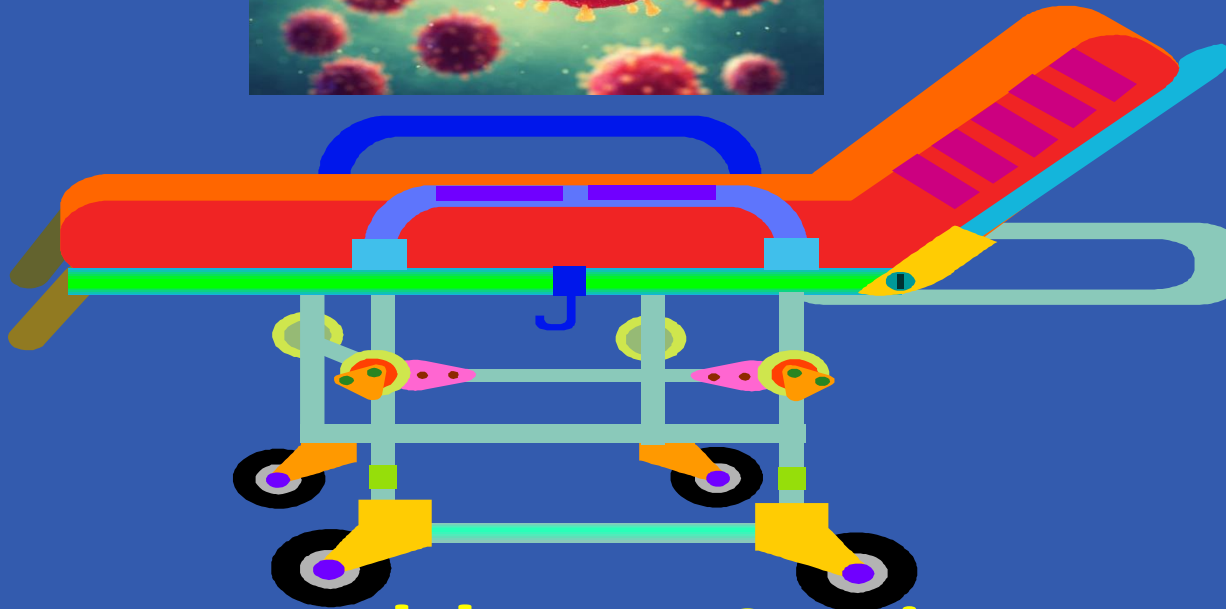
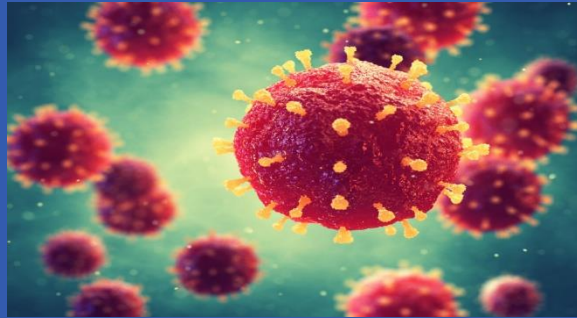


COVID-19

Infection Prevention & Control



In Healthcare Settings

Objectives

- Definition of HCPs and close contacts
- Standard Precautions : HH, PPE, Sharps
- Droplet and Contact Precautions
- Environmental cleaning
- IPC for the safe management of a dead body

Healthcare Personnel (HCP)

All persons, working in healthcare settings engaged in patient care activities, including:

- Patient assessment for *triage*
- *Entering rooms* to provide *care or cleaning*
- Obtaining clinical *specimens*
- Handling *soiled* medical supplies
- Contact with contaminated *environment*

Healthcare Personnel (HCP)

- Physicians
- Nurses, Nursing assistants
- Therapists, technicians
- Emergency medical service personnel
- Dental personnel
- Pharmacists & ...



COVID-19, The Route of Transmission

It is suggested that the route of human-to-human transmission of COVID-19 is either via:

▶ **Respiratory droplets**

OR

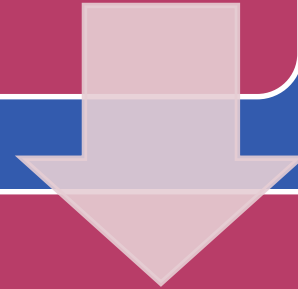
▶ **Contact**

Exposure, Close Contact

Any person who is
in close contact (within 1-2 meter)
with someone who has
respiratory symptoms
(e.g., coughing, etc.) is at risk of
being exposed to potentially
infective respiratory droplets.

Isolation

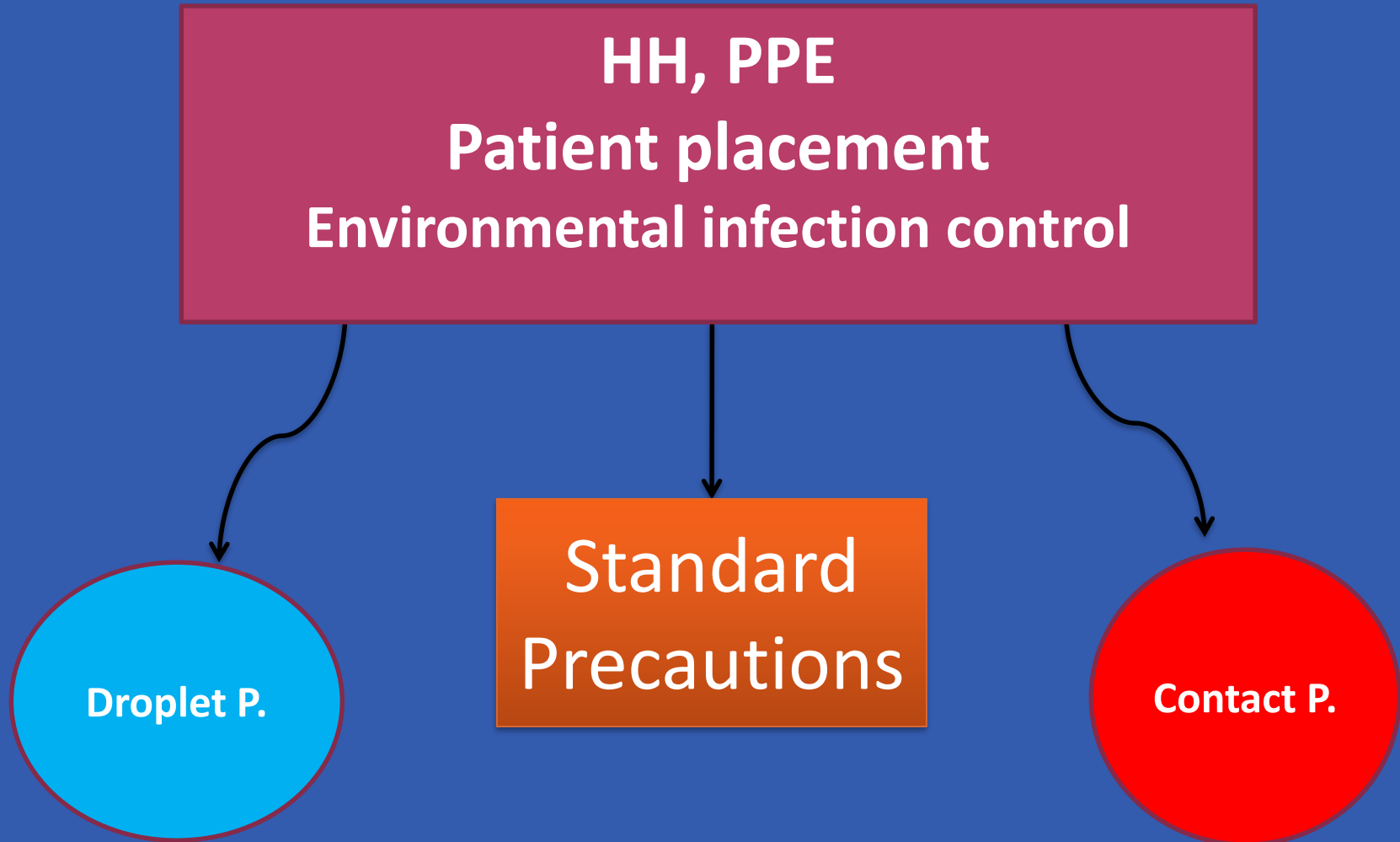
**Standard Precautions
for all patients**



**Implementing empiric
additional precautions**



Infection Prevention Recommendations



Standard Precautions

- Apply to:
 - Blood
 - All body fluids
 - Secretions and excretions
 - Non intact skin
 - Mucous membranes



**Except
sweat**



***Regardless of whether or not
they contain visible blood***

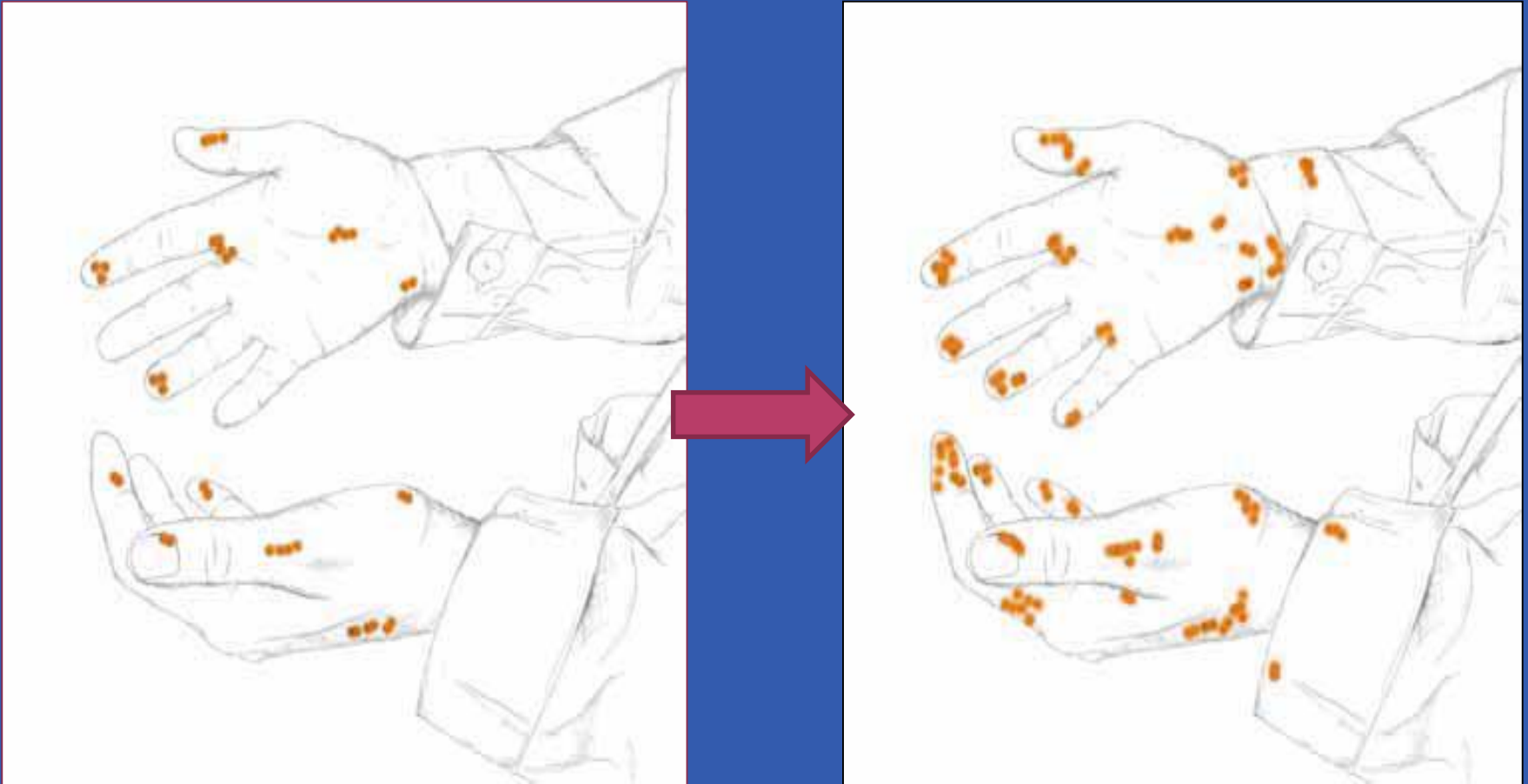
Should be used for the care of *all* hospitalized patients

Standard Precautions

- Hand hygiene
- PPE
- Cough etiquette
- Patient-care equipment
- Linen
- Needle disposal
- Resuscitation equipment
- Patient placement

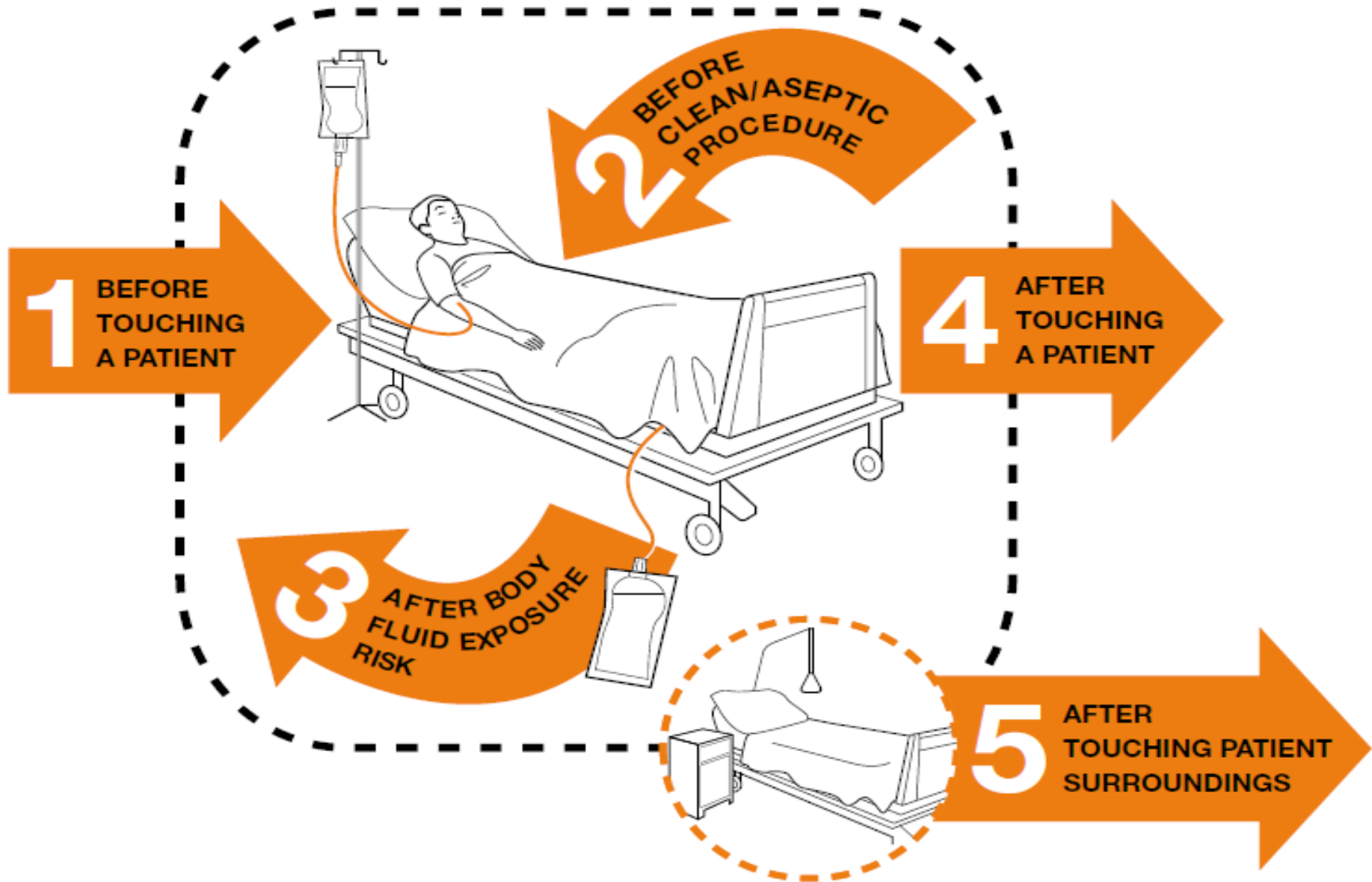


Why Is Hand Hygiene Important?

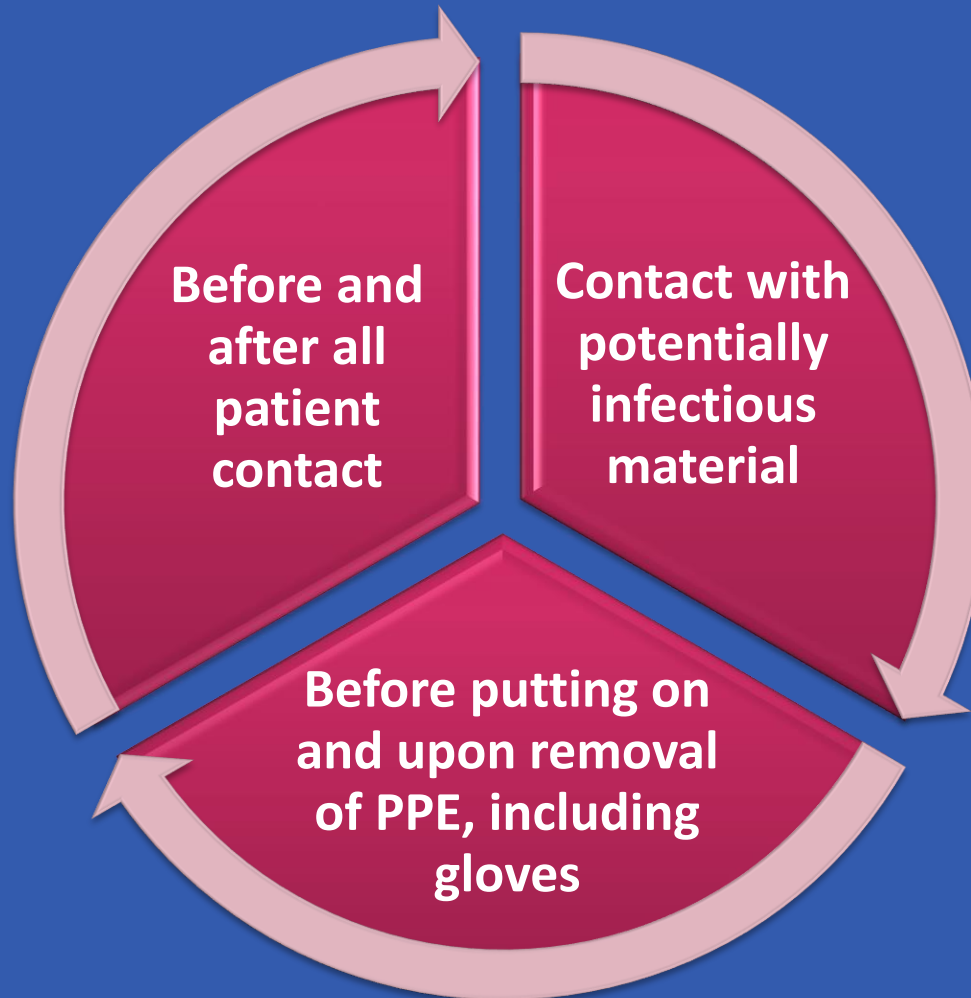


Organism Survival on HCWs' Hands

Hand Hygiene



1. Hand Hygiene



Indications for Hand Hygiene

- After removing sterile or non-sterile gloves

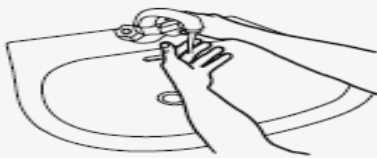


Hand Hygiene Technique with Soap and Water



Duration of the entire procedure: 40-60 seconds

0



Wet hands with water;

1



Apply enough soap to cover all hand surfaces;

2



Rub hands palm to palm;

3



Right palm over left dorsum with interlaced fingers and vice versa;

4



Palm to palm with fingers interlaced;

5



Backs of fingers to opposing palms with fingers interlocked;

6



Rotational rubbing of left thumb clasped in right palm and vice versa;

7



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8



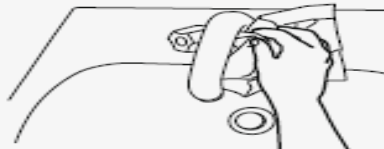
Rinse hands with water;

9



Dry hands thoroughly with a single use towel;

10




Use towel to turn off faucet;

11



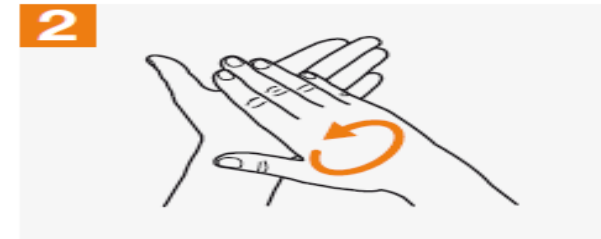
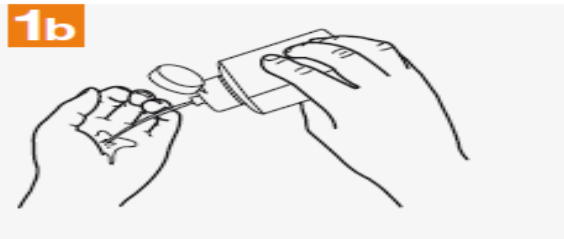
Your hands are now safe.

Hand Hygiene Technique with Alcohol-Based Formulation

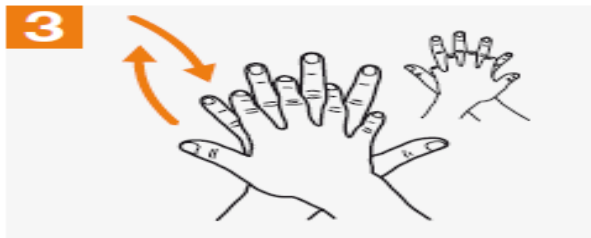
 **Duration of the entire procedure: 20-30 seconds**



1a Apply a palmful of the product in a cupped hand, covering all surfaces;



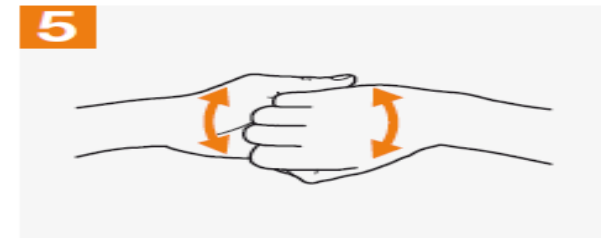
2 Rub hands palm to palm;



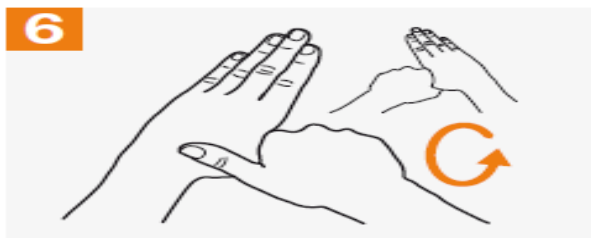
3 Right palm over left dorsum with interlaced fingers and vice versa;



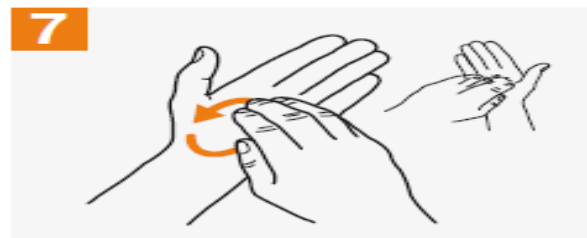
4 Palm to palm with fingers interlaced;



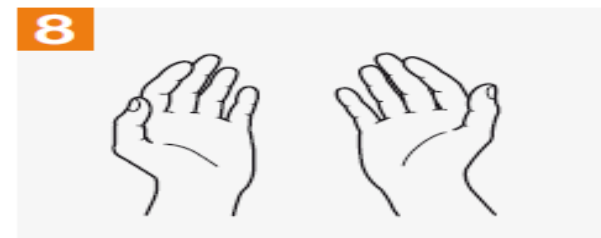
5 Backs of fingers to opposing palms with fingers interlocked;



6 Rotational rubbing of left thumb clasped in right palm and vice versa;



7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;




8 Once dry, your hands are safe.

Hand Hygiene

Hand Wash


Hand Hygiene Technique with Soap and Water

 Duration of the entire procedure: 40-60 seconds

0  Wet hands with water;	1  Apply enough soap to cover all hand surfaces;	2  Rub hands palm to palm;
3  Right palm over left dorsum with interlaced fingers and vice versa;	4  Palm to palm with fingers interlaced;	5  Backs of fingers to opposing palms with fingers interlocked;
6  Rotational rubbing of left thumb clasped in right palm and vice versa;	7  Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;	8  Rinse hands with water;
9  Dry hands thoroughly with a single use towel;	10  Use towel to turn off faucet;	11  Your hands are now safe.

Hand Rub

Hand Hygiene Technique with Alcohol-Based Formulation

 Duration of the entire procedure: 20-30 seconds

1a  Apply a palmful of the product in a cupped hand, covering all surfaces;	1b  Apply a palmful of the product in a cupped hand, covering all surfaces;	2  Rub hands palm to palm;
3  Right palm over left dorsum with interlaced fingers and vice versa;	4  Palm to palm with fingers interlaced;	5  Backs of fingers to opposing palms with fingers interlocked;
6  Rotational rubbing of left thumb clasped in right palm and vice versa;	7  Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;	8  Once dry, your hands are safe.

Activity of Antiseptics

Antiseptics	Gr + bacteria	Gr - bacteria	Virus enveloped	Virus Non- enveloped	M.B	Fungi	Spores
Alcohol	+++	+++	+++	++	+++	+++	-
Chlorhexidine	+++	++	++	+	+	+	-
Iodophors	+++	+++	++	++	++	++	-/+
QACs	++	+	+	?	-/+	-/+	-
Chloroxylenol	+++	+	+	-/+	+	+	-
Triclosan	+++	++	?	?	-/+	-/+	-
Hexachlorophene	+++	+	?	?	+	+	-

Properties of Antiseptics

Antiseptics	Typical conc. %	Speed of action	Residual activity
Alcohols	60-70 %	Fast	No
Chloroxylonol	0.5-4 %	Slow	Contradictory
Chlorhexidine	0.5-4%	Intermediate	Yes
Hexachlorophene	3%	Slow	Yes
Iodophors	0.5-10 %	Intermediate	Contradictory
Triclosan	0.1-2%	Intermediate	Yes
Quaternary ammonium compounds		Slow	No

Standard Precautions,

2. Personal Protective Equipment(PPE)

- Gloves
- Gowns
- Eye protection(goggles or face shield)
- Respiratory protection

Hair cover
or
Cap



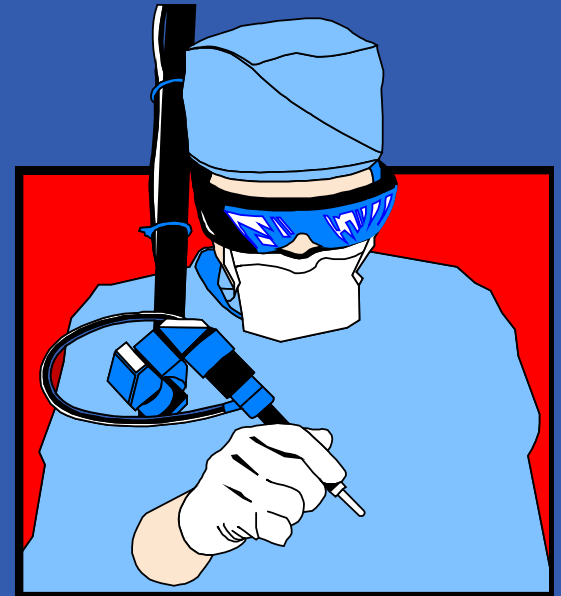
Personal Protective Equipment(PPE)

- Recommended PPE should be worn by HCP upon entry into patient rooms or care areas



Mask, Eye Protection, Face Shield

- During procedures and patient care activities that are likely to generate splashes or sprays of blood , body fluids ,



Medical Masks

Medical masks:

- Are surgical or procedure masks
- Are flat or pleated (some are like cups)
- Are affixed to the head with straps



How to Don a Mask

- Place over nose, mouth and chin
- Fit flexible nose piece over nose bridge
- Secure on head with ties or elastic
- Adjust to fit

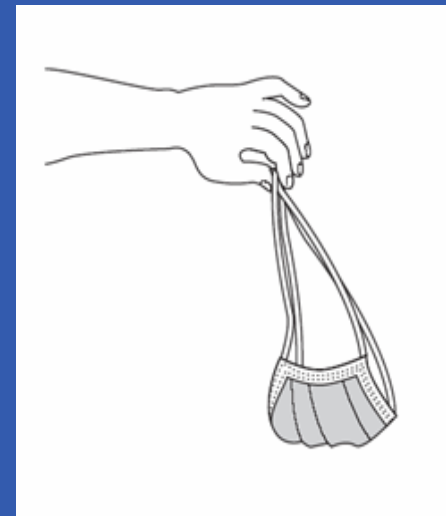
PPE Use in Healthcare Settings



Removing a Mask



- Untie the bottom, then top, tie
- Remove from face
- Discard



Filters for NIOSH-approved Filtering Facepiece Respirators

- **Seven classes** of filters for NIOSH-approved filtering facepiece **respirators**
- **Ninety-five percent (95%):** the minimal level of filtration that will be approved by NIOSH
- **Filter's oil resistance:** N, R , P

High-filtration Respiratory Mask

- ❖ Special microstructure filter disc to flush out particles > 0.3 micron
- These masks are further classified:
 - Oil proof = P
 - Oil resistant = R
 - Not resistant to oil = N



NIOSH-Approved

Particulate Filtering Facepiece Respirators

N95 - Filters at least 95% of airborne particles. Not resistant to oil.

N99 - Filters at least 99% of airborne particles. Not resistant to oil.

N100 - Filters at least 99.97% of airborne particles. Not resistant to oil.

R95 - Filters at least 95% of airborne particles. Somewhat resistant to oil.

P95 - Filters at least 95% of airborne particles. Strongly resistant to oil.

P99 - Filters at least 99% of airborne particles. Strongly resistant to oil.

P100 - Filters at least 99.97% of airborne particles. Strongly resistant to oil

High-filtration Respiratory Mask

- The more a mask is resistant to oil, the better it is
- No. beside mask filtration efficiency:
- N95 mask → 95% efficiency in filtering out particles > 0.3 micron under normal rate of respiration



N95 Masks with Valve



European Standard EN 143 :

Classes of Particle Filters

That Can Be Attached to a Face Mask

Class	Filter penetration limit (at 95 L/min air flow)
P1	Filters at least 80% of airborne particles
P2	Filters at least 94% of airborne particles
P3	Filters at least 99.95% of airborne particles

European Standard EN 149 :

Classes of “Filtering Half Masks”

(“Filtering Face Pieces”)

Class	Filter penetration limit (at 95 L/min air flow)	Inward leakage
FFP1	Filters at least 80% of airborne particles	<22%
FFP2	Filters at least 94% of airborne particles	<8%
FFP3	Filters at least 99% of airborne particles	<2%

Respirators that are entirely or substantially constructed of filtering material

TC # XXX-XXXX – TC-Approval Number

*for products manufactured after September 2008, the TC-Approval number is required to appear on the product

Example of Exterior Markings:

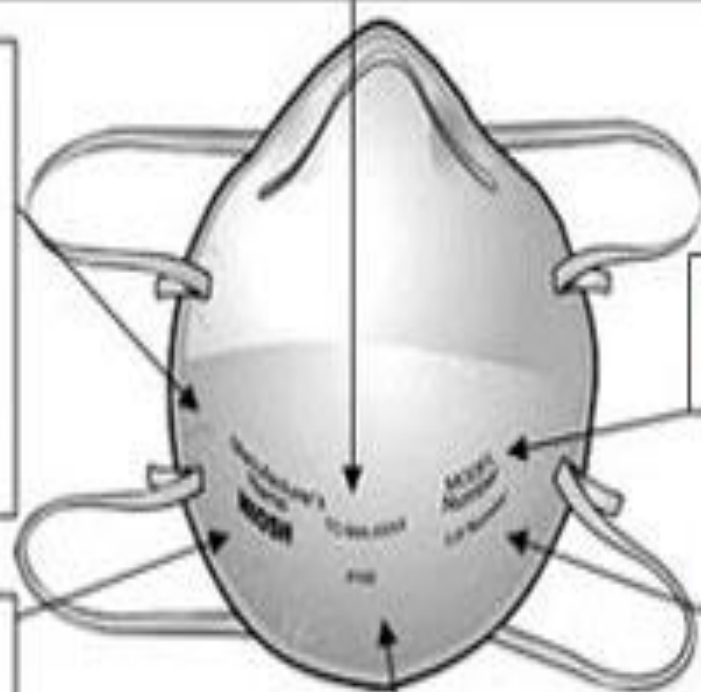
Approval holder business name, a registered trademark manufacturer business name, or an easily understood abbreviation.

If privately labeled, the private label name or logo will appear instead of the approval holder business name.

Model # XXXX – Model Number or Part Number

Lot # XXXX – Lot number and Date of Manufacture (recommended but not required)

NIOSH – NIOSH name in block letters or a NIOSH logo



Exterior View

Filter designation – NIOSH filter series. Alpha-numerical rating followed by filter efficiency level (ex. N95, N99, N100, R95, P95, P99, P100)

How to Don a Particulate Respirator

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



Particulate Mask Seal Check



Step 1

- Cup the respirator in your hand with the nosepiece at your fingertips allowing the headbands to hang freely below your hand.



Step 2

- Position the respirator under your chin with the nosepiece up

Particulate Mask Seal Check



Step 3

- Pull the top strap over your head resting it high at the back of your head.
Pull the bottom strap over your head and position it around the neck below the ears



Step 4

- Place fingertips of both hands at the top of the metal nosepiece. Mould the nosepiece (USING TWO FINGERS OF EACH HAND) to the shape of your nose. Pinching the nosepiece using one hand may result in less effective respirator performance.

Particulate Mask Seal Check



Step 5

- Cover the front of the respirator with both hands, being careful not to disturb the position of the respirator.

Step 5a: Positive seal check


- Exhale sharply. A positive pressure inside the respirator = no leakage. If leakage, adjust the position and/or tension straps. Retest the seal.
- Repeat the steps until the respirator is secured properly.


Step 5b: Negative seal check


- Inhale deeply. If no leakage, negative pressure will make respirator cling to your face.
- Leakage will result in loss of negative pressure in the respirator due to air entering through gaps in the seal.

How To Wear N95 Mask

- 1** Choose a small or medium-sized face-piece that fits the face. Pull the head bands loose. The metallic strip should be uppermost. Pass the hand through the head bands.



- 2** Put on the mask. The head bands should be around the head and neck.


- 3** Press the metallic strip on both sides with the forefingers and middle fingers of both hands.


- 4** **Seal Check:**

Positive pressure checking – cover the mask lightly with both hands. Breathe with deliberation. Air should not leak out from the side of the mask.

Negative pressure checking – cover the mask lightly with both hands. Suck in air with deliberation. The mask should depress slightly inward.



Removing a Particulate Respirator

- Lift the bottom elastic over your head first
- Then lift off the top elastic
- Discard



Time-use Restriction

- **The N filters:** should only use for **eight hours**
- **R filters:** time-use restriction of **eight hours**



The eight hours can be either
continuous or intermittent



Time-use Restriction

➤ Intermittent use:

- ✓ Using the filter short periods of time
- ✓ Sealing it in plastic Ziploc bags between wearings
- ✓ Discard the mask when the amounts of time it was used total eight hours

Time-use Restriction

➤ P series filters do not have any time-use restrictions:

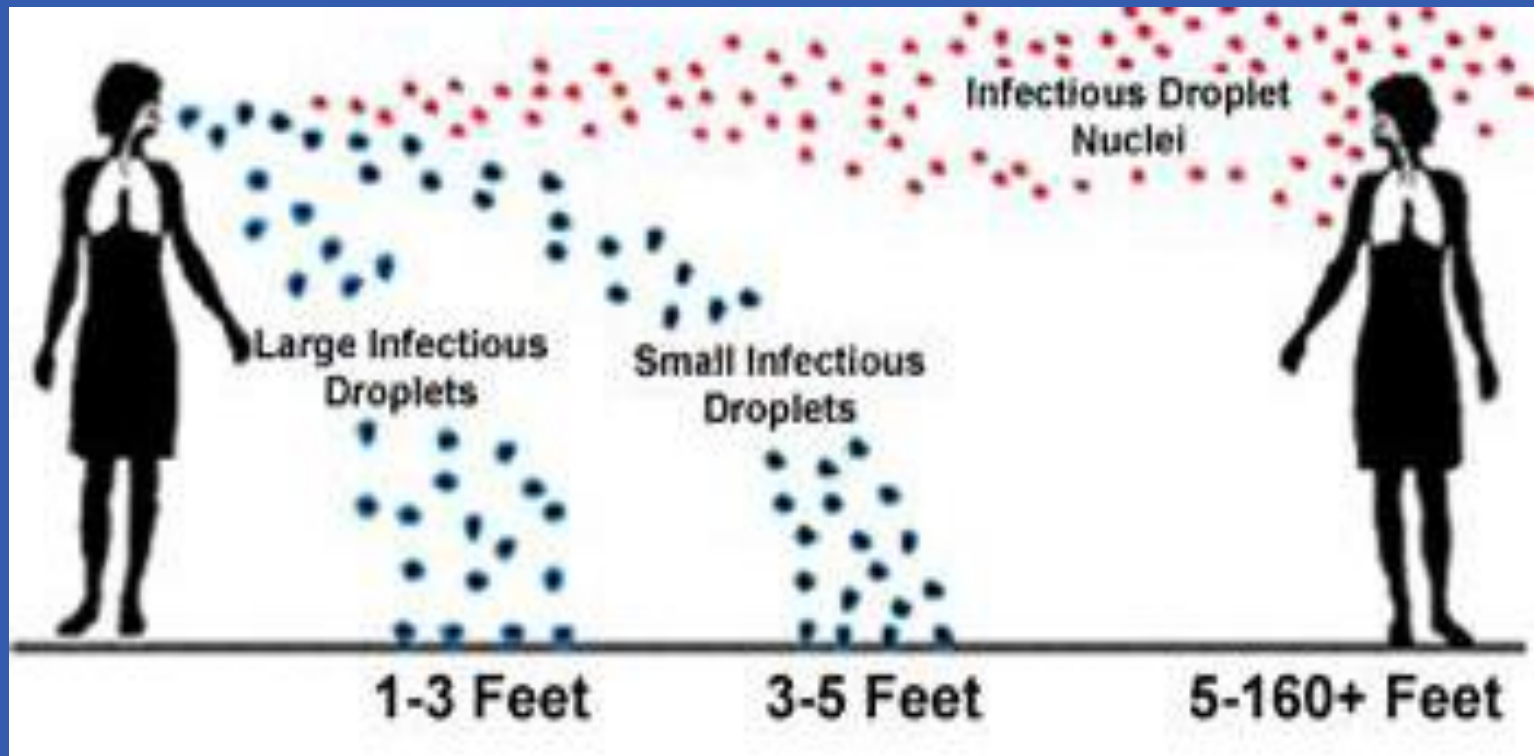


Can be used until:

- ✓ They are soiled, damaged
- ✓ Cause an increase in breathing stress
- ✓ Show some other sign that they are worn out

Transmission: Droplet or Airborne?

- Airborne transmission cannot be ruled out



Bischoff et al. J Infect Dis 2013;207:1037-46

Air Change Per Hour

Time (in minutes) required for removal			
Air changes per hour	90-percent efficiency	99-percent efficiency	99.9-percent efficiency
2	69	138	207
4	35	69	104
6	23	46	69
8	17	35	52
10	14	28	41
12	12	23	35
15	9	18	28
20	7	14	21
50	3	6	8

TABLE 2. Air changes per hour and time required for removal efficiencies of 90 percent, 99 percent, and 99.9 percent of airborne contaminants.

Aerosol Generating Procedures

- Some aerosol-generating procedures have been associated with an increased risk of transmission of coronaviruses



Aerosol Generating Procedures

- Endotracheal intubation
- Extubation
- Endotracheal tube repositioning or breaking of loop of closed ventilation system
- Manual ventilation prior to intubation
- Cardiopulmonary resuscitation
- Bronchoscopy
- Sputum induction



Aerosol Generating Procedures

- Open suctioning of airways (without inline closed suction)
- Nebulizer medication treatment
- High flow nasal cannula
- High frequency oscillatory ventilation
- Positive pressure ventilation (CPAP, BiPAP)
- Upper endoscopy
- Transesophageal echocardiography (TEE)

Aerosol Generating Procedures

- Limiting the number of HCP present during the procedure to only those essential for patient care
- HCP should adhere to PPE precautions
- Conduct environmental surface cleaning

Mask

Use a :

- **Particulate respirator** at least as protective as a US National Institute for Occupational Safety and Health (NIOSH)-certified **N95**,
European Union (EU) standard **FFP2** or equivalent,
- **when performing aerosol-generating procedures**

Masks

- Standard Precautions

Surgical Mask



- Airborne Isolation

N95 Mask



Mask

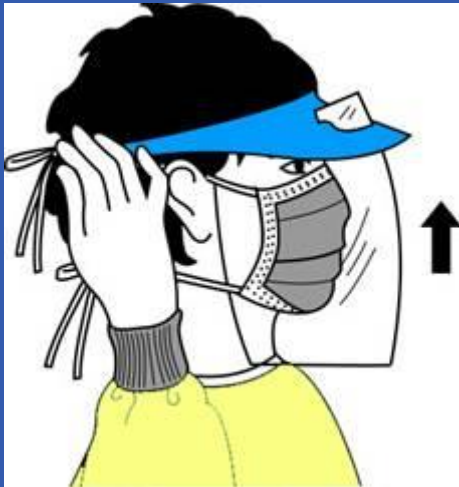
- Do not re-use single-use masks
- Discard single-use masks after use and dispose of them immediately upon removal.



Cloth (e.g. cotton or gauze) masks **are not** recommended under any circumstance.

Masks, Protective Eyewear, Face Shields

- Wear a surgical mask and either eye protection with solid side shields or a face shield to protect mucous membranes of the eyes, nose, and mouth



GLOVES

- WEAR GLOVES :
 - *When touching blood, body fluids,...
 - *Clean gloves **just before** touching mucous membrane and non intact skin



Gloves Classification

Glove Type	Explanation	Advantage
Examination G.	Sterile or non-sterile medical grade g.	Provides protection against blood or body fluid exposure
Surgical G.	Usually sterile, high quality medical grade g.	Provides high quality protection against blood or body fluid exposure
Chemo G.	Gloves that are tested and approved for use with chemotherapy drugs	Provides protection against chemotherapy drug exposure

Powdered G.

Powder-free G.

Gloves Classification

Glove Type	Definition	Advantage	Protection Level
Latex G.	Made of natural rubber	Highest comfort, flexibility, fit and tactile sensitivity	Bacteria, viruses
Nitrile G.	Made of synthetic material	Stretchy, durable	Chemicals, viruses
Vinyl G.	Made of synthetic material, sometimes referred to as synthetic	Cost efficient synthetic option, comfortable	Chemicals

Situations Requiring and Not Requiring Glove Use

Any surgical procedure

STERILE GLOVES INDICATED

EXAMINATION GLOVES INDICATED IN CLINICAL SITUATIONS

GLOVES NOT INDICATED (except for CONTACT P.)

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

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

How To Don Gloves



1. Take out a glove from its original box

How To Don Gloves



2. Touch only a restricted surface of the glove corresponding to the wrist (at the top edge of the cuff)



3. Don the first glove

How To Don Gloves

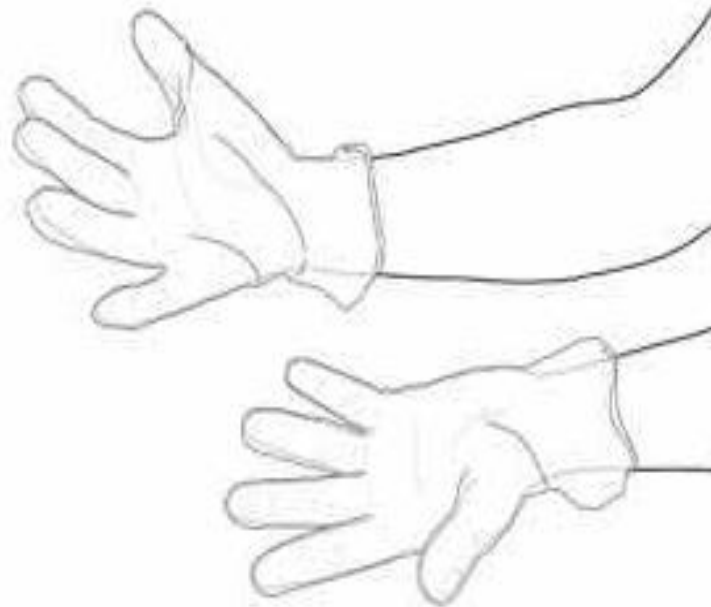


4. Take the second glove with the bare hand and touch only a restricted surface of glove corresponding to the wrist

How To Don Gloves

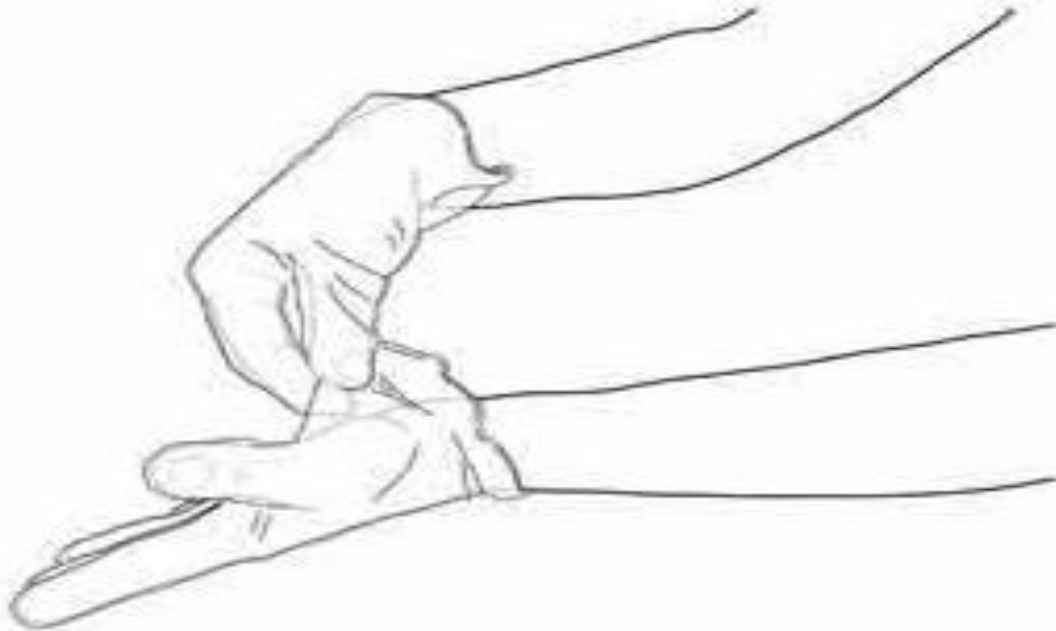


5. To avoid touching the skin of the forearm with the gloved hand, turn the external surface of the glove to be donned on the folded fingers of the gloved hand, thus permitting to glove the second hand



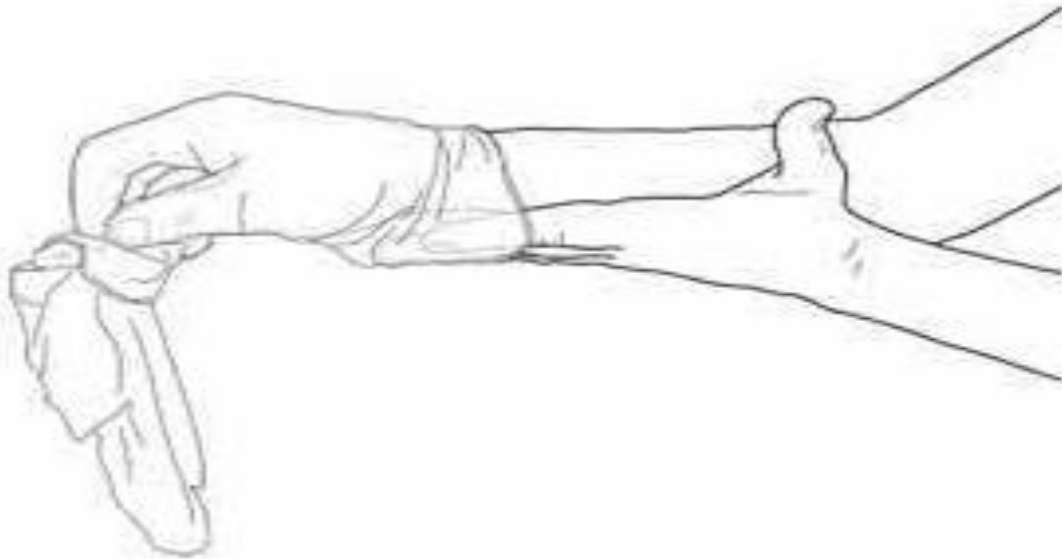
6. Once gloved, hands should not touch anything else that is not defined by indications and conditions for glove use

How To Remove Gloves



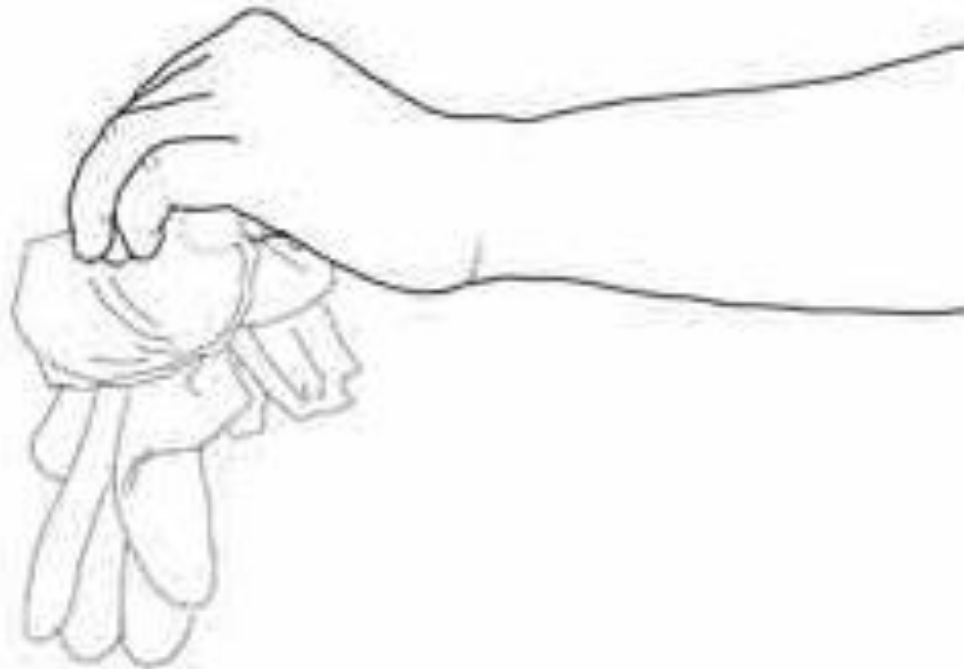
1. Pinch one glove at the wrist level to remove it, without touching the skin of the forearm, and peel away from the hand, thus allowing the glove to turn inside out

How To Remove Gloves



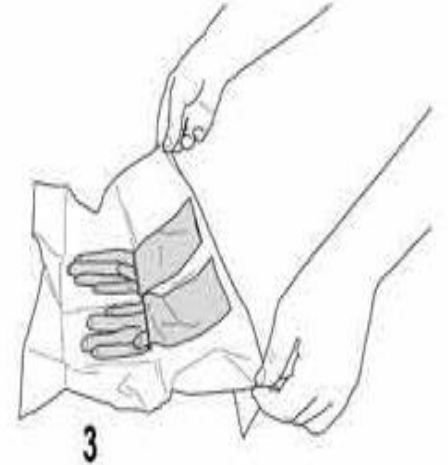
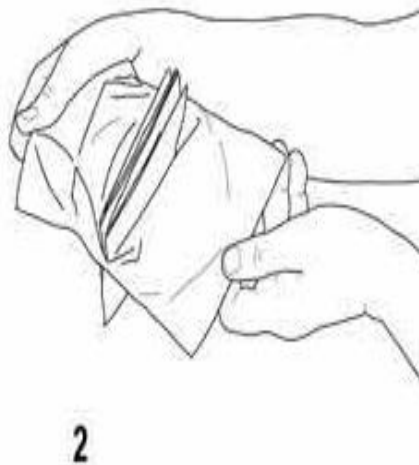
2. Hold the removed glove in the gloved hand and slide the fingers of the ungloved hand inside between the glove and the wrist. Remove the second glove by rolling it down the hand and fold into the first glove

How To Remove Gloves

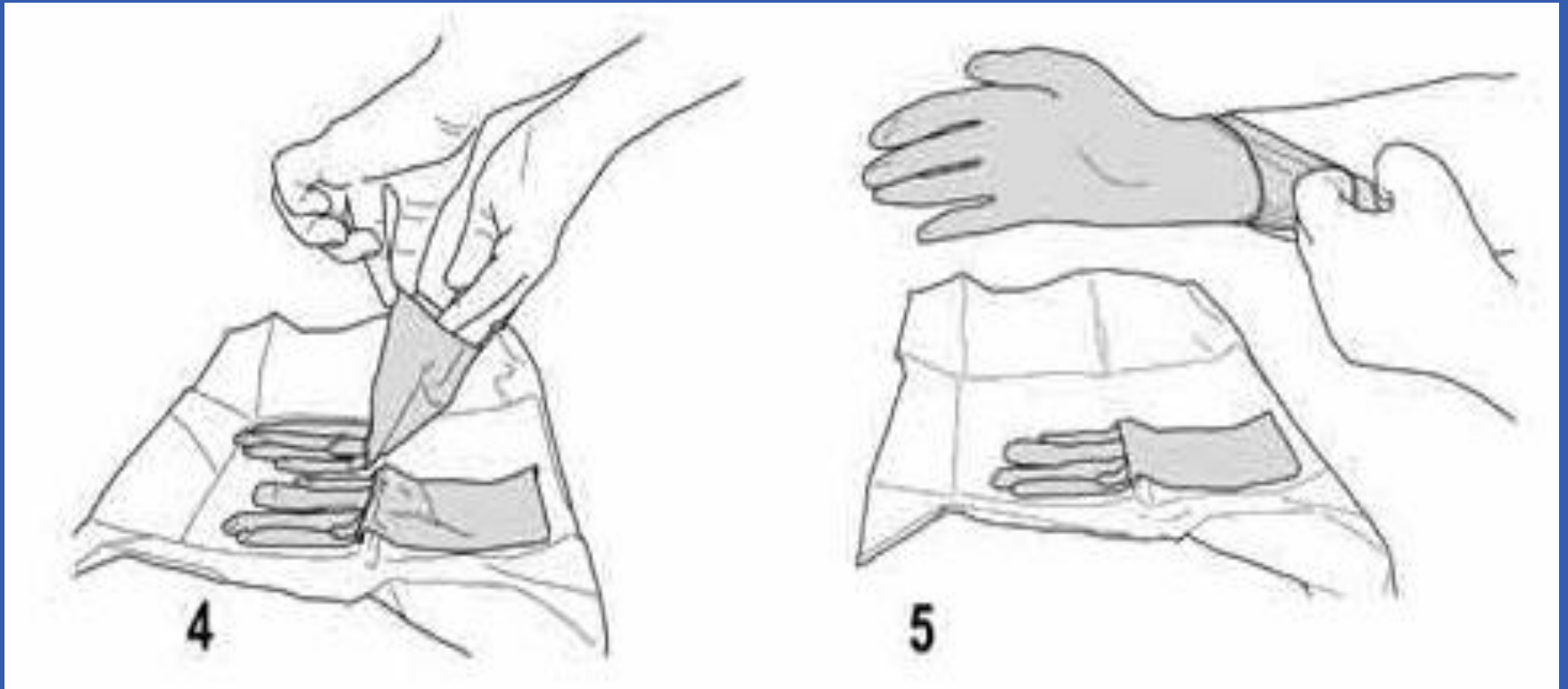


3. Discard the removed gloves

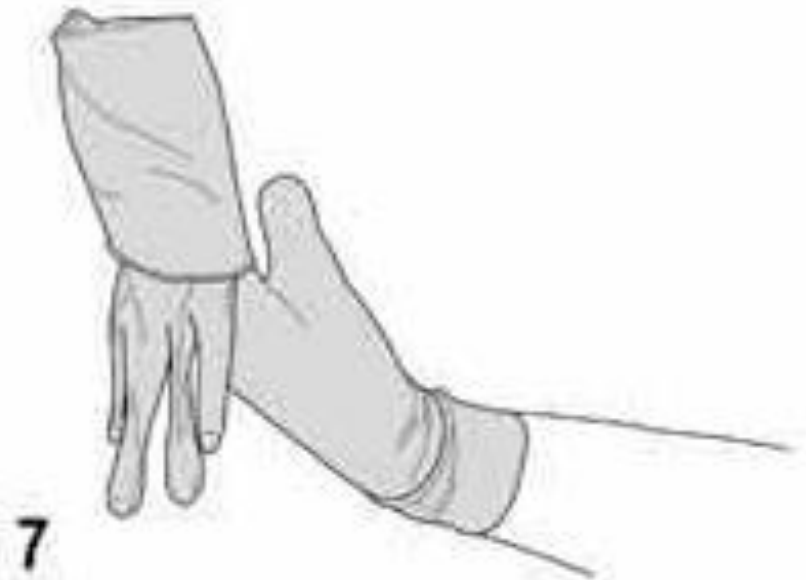
How To Don Sterile Gloves



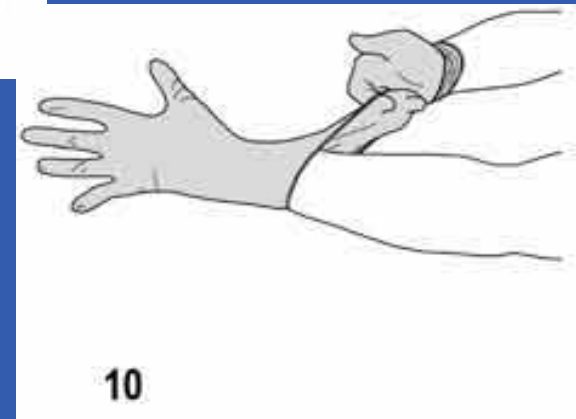
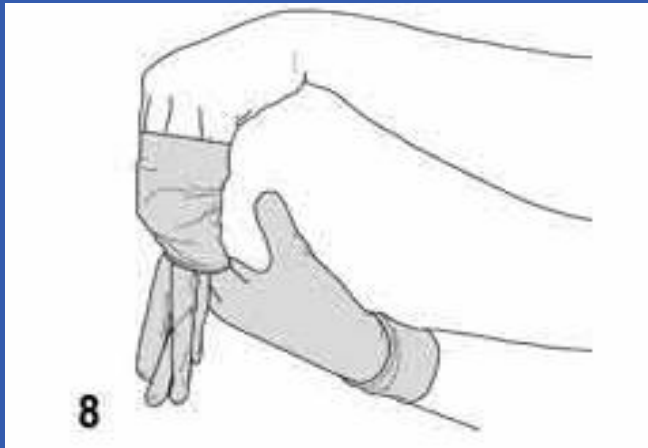
How To Don Sterile Gloves



How To Don Sterile Gloves



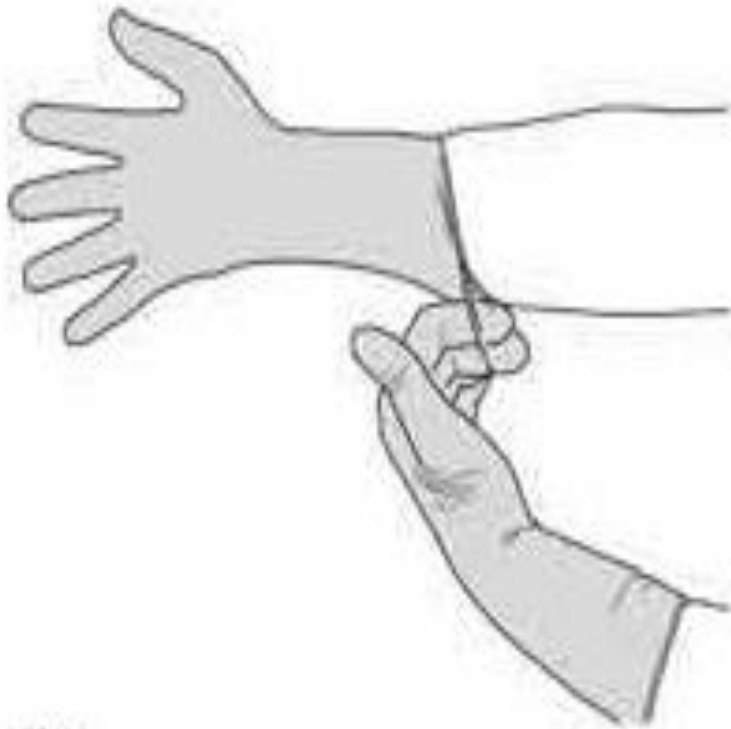
How To Don Sterile Gloves



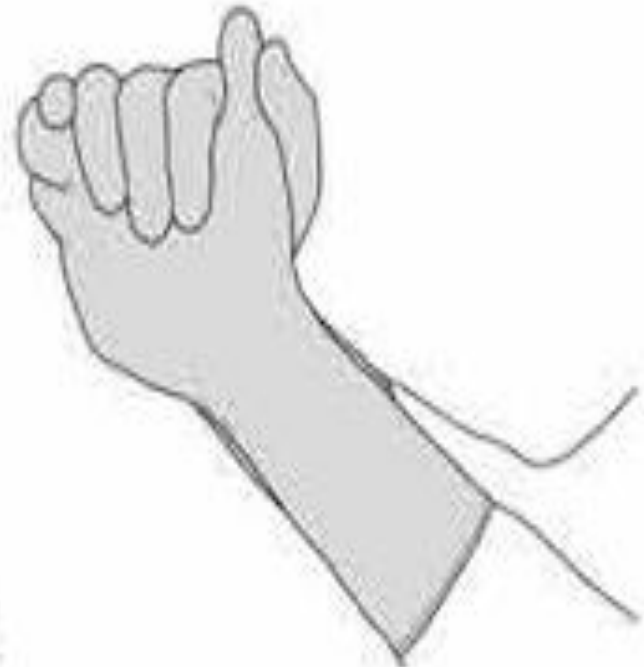
How To Don Sterile Gloves



How To Don Sterile Gloves

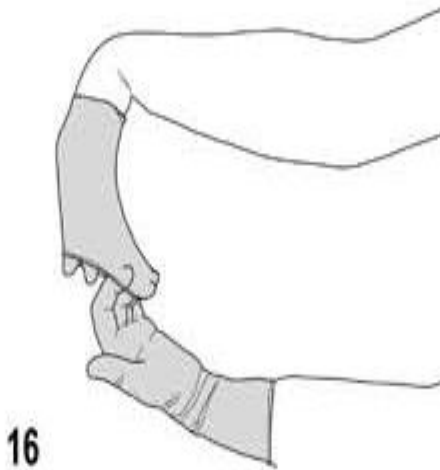
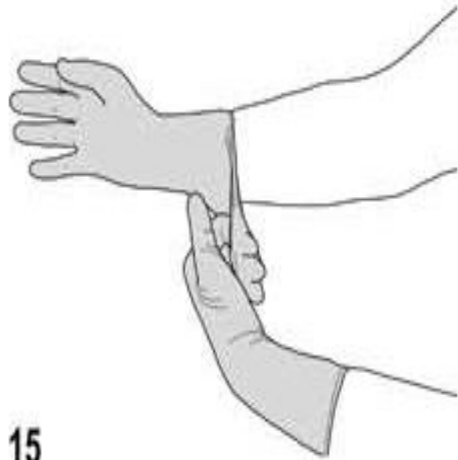


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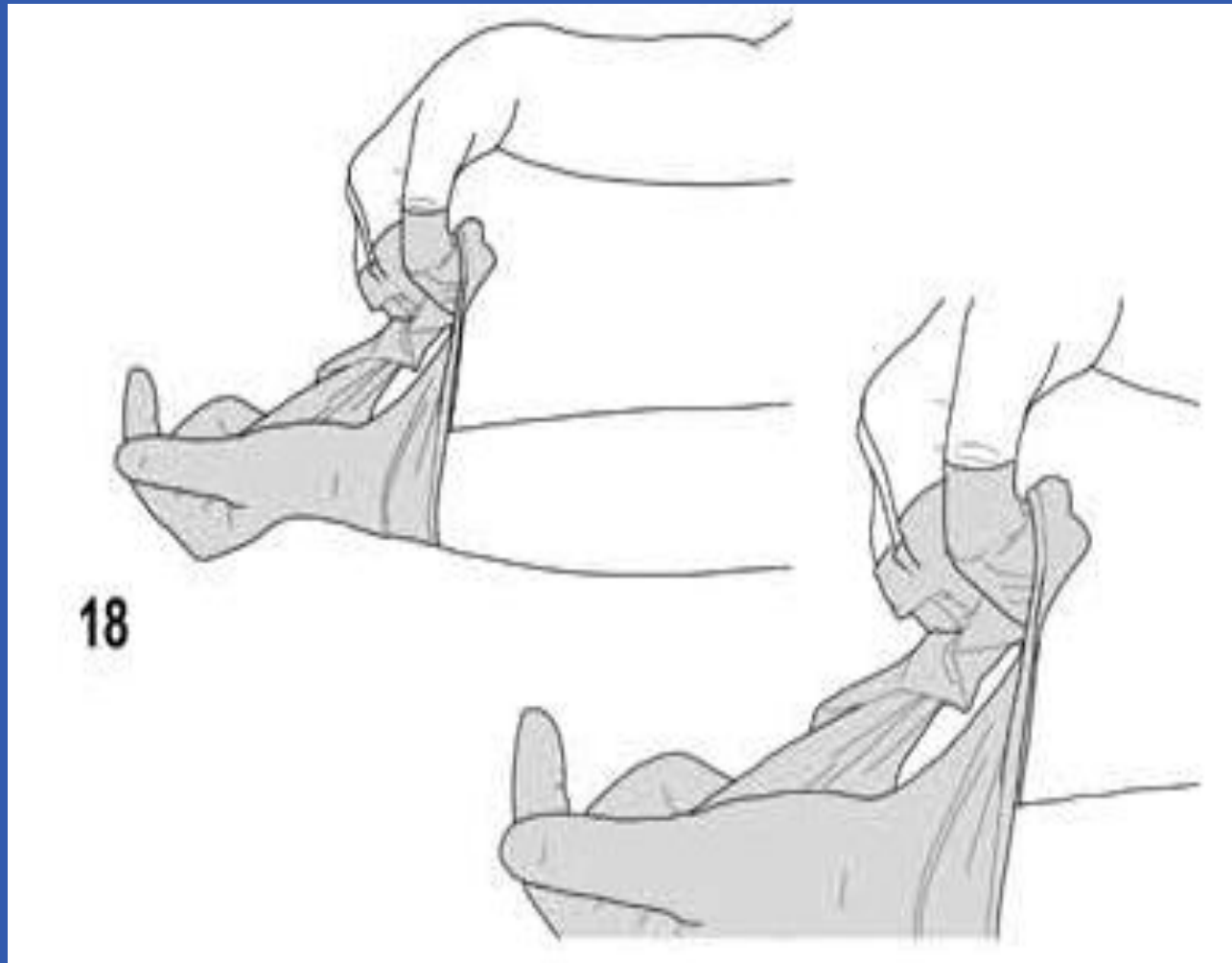


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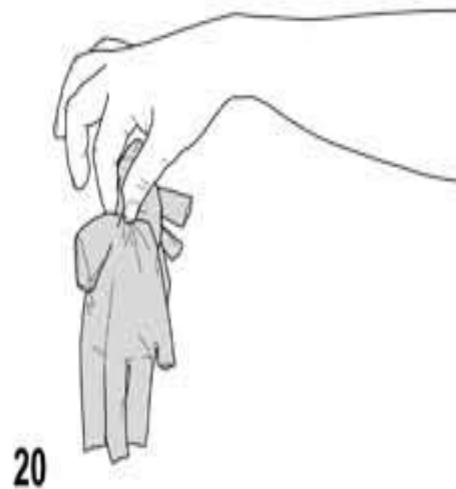
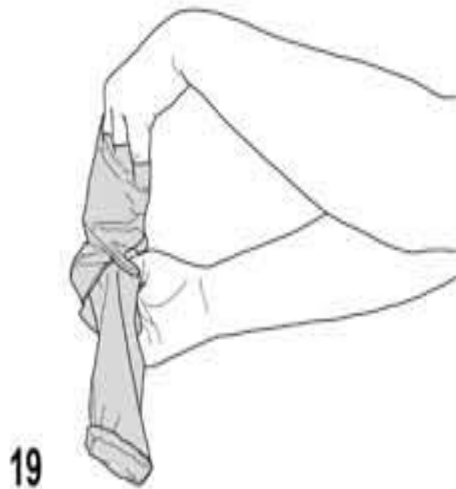
How To Remove Sterile Gloves



How To Remove Sterile Gloves



How To Remove Sterile Gloves



Recommendations for Gloving

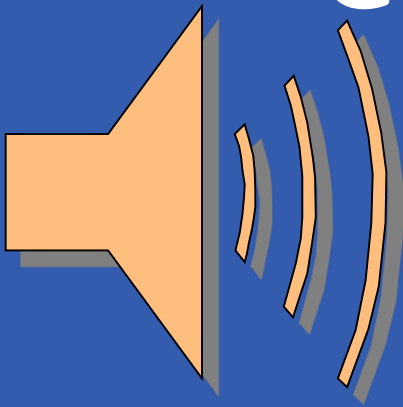
Remove gloves that are torn, cut or punctured



Do not wash, disinfect or sterilize gloves for reuse

Gloving

Gloving does *not* replace
handwashing

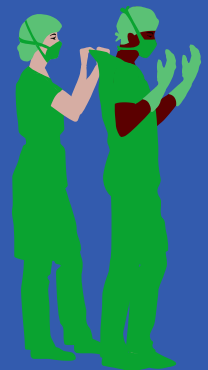


GOWN

- **Wear** a clean gown to protect skin and prevent soiling of clothing during procedures that are likely to generate splashes or sprays of blood ,
- **Remove** a soiled gown as promptly as possible



HANDWASHING



Protective Clothing

- Remove all barriers before leaving the work area
- Protective clothing should be changed at least daily or when becomes visibly soiled.



Hair Cover/ Cap

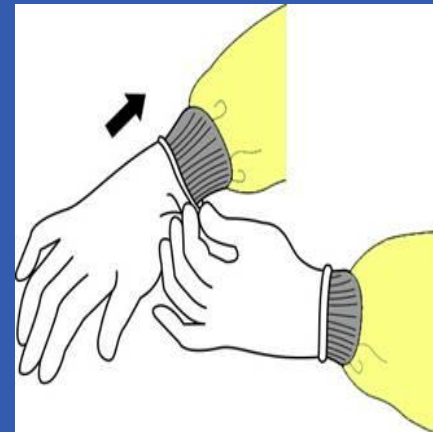


Sequence* for Donning PPE

- Gown first
- Mask or respirator
- Goggles or face shield
- Cap
- Gloves

*Combination of PPE will affect sequence – be practical

Putting On PPE



Sequence for Removing PPE

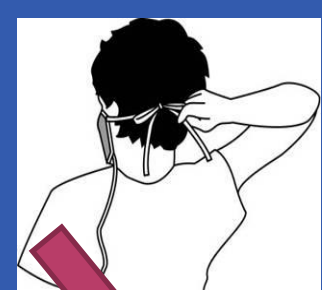
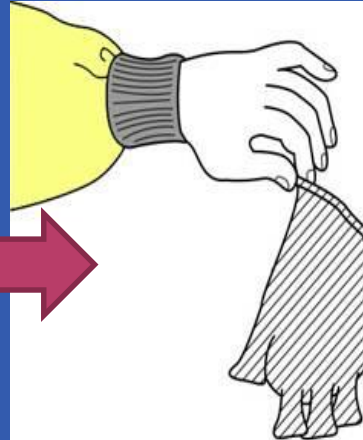
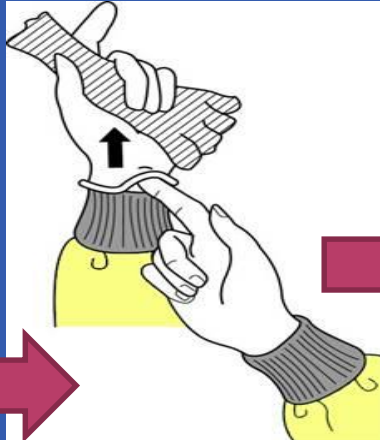
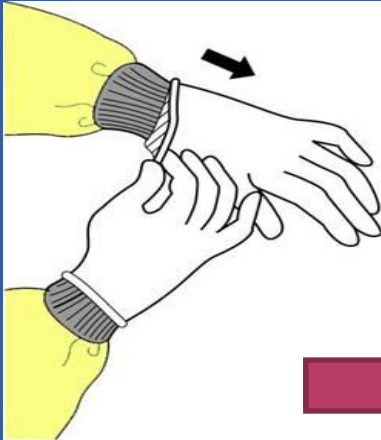
Option 1

- **Gloves**
- **Face shield or goggles**
- **Gown**
- **Mask or respirator**

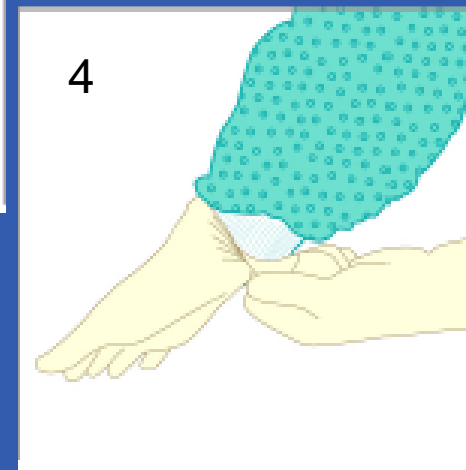
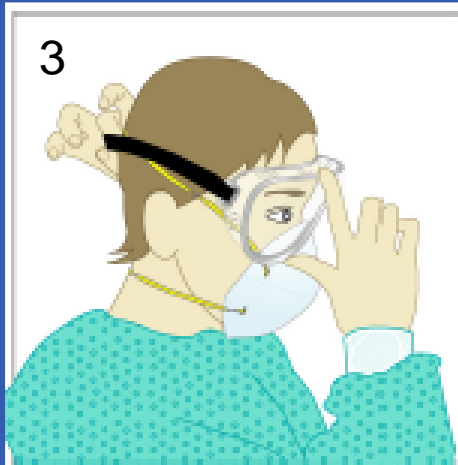
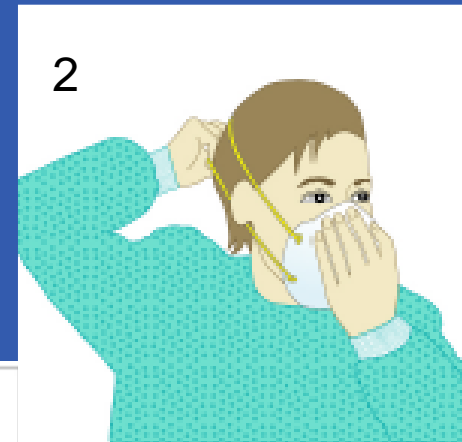
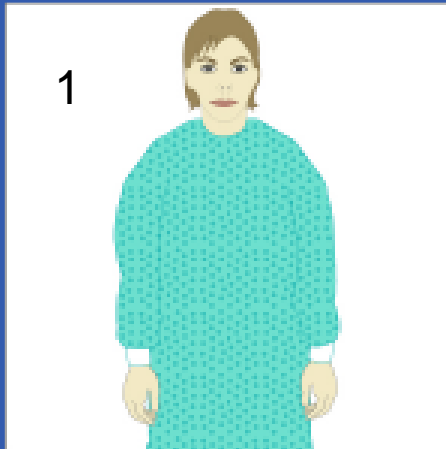
Option 2

- **Gloves & gown**
- **Face shield or goggles**
- **Mask or respirator**

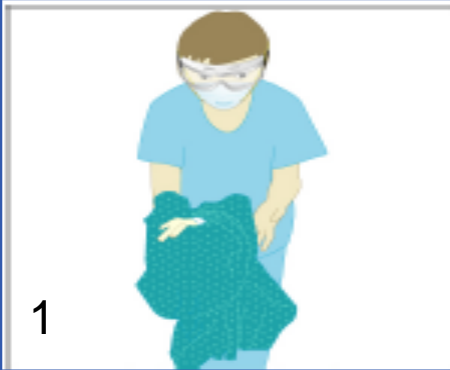
Removing PPE



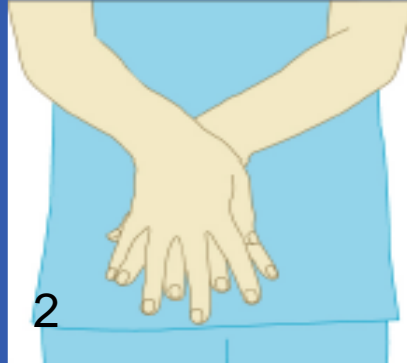
Putting on PPE (When all PPE items are needed)



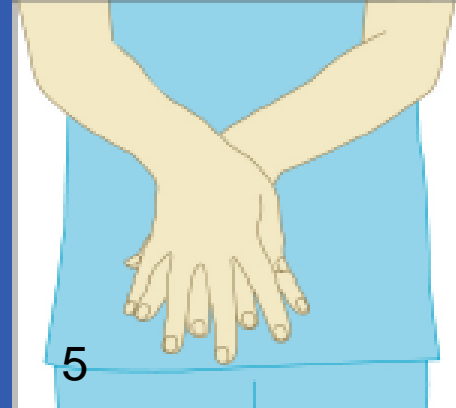
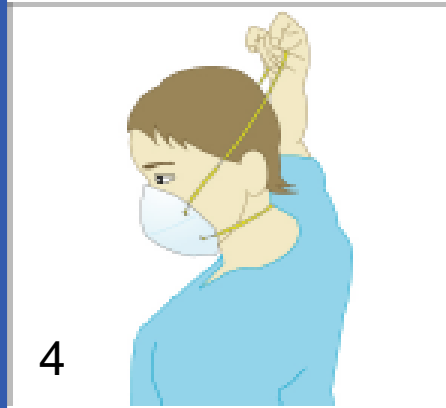
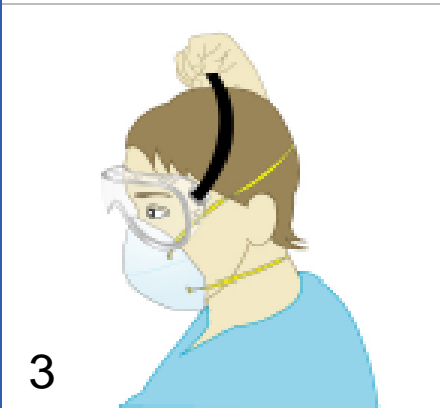
Taking off PPE



Remove gloves & gown



Perform hand hygiene



- Remove cap (if worn)
- Remove goggles from behind
- Put goggles in a separate container for reprocessing

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene



HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container

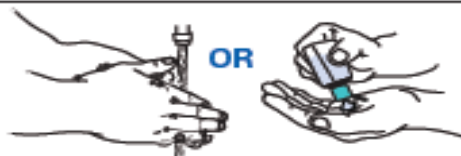


4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS
BECOME CONTAMINATED AND IMMEDIATELY AFTER
REMOVING ALL PPE**

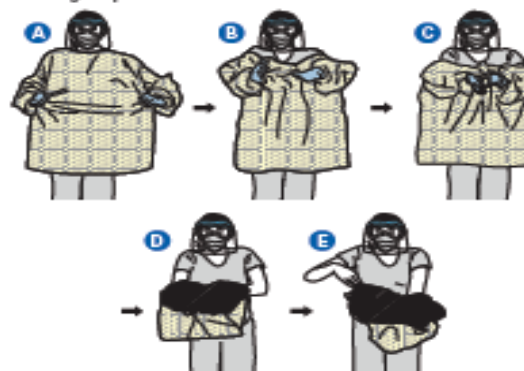


HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container



2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

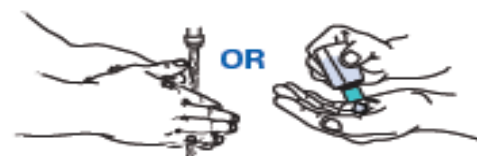


3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS
BECOME CONTAMINATED AND IMMEDIATELY AFTER
REMOVING ALL PPE**



PPE, COVID-19

- HCWs should wear:
 - Eye protection(goggles) or face shield to avoid contamination of mucous membranes
 - A clean, non-sterile, long-sleeved gown
 - Gloves

The use of a mask alone is insufficient to provide the adequate level of protection and other equally relevant measures should be adopted.

PPE, COVID-19

The use of:

- Boots
- Coverall
- Apron



is not required during routine care

Notice

- After patient care:
 - ▶ Appropriate doffing all PPEs **and**
 - ▶ Disposal of all PPE's **and**
 - ▶ **Hand hygiene**

should be carried out

Hand Hygiene

- Perform hand hygiene immediately after removing PPE.
 - If hands become visibly contaminated during PPE removal, wash hands before continuing to remove PPE
- **Wash hands with soap and water** or use an alcohol-based hand rub

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

3. Respiratory Hygiene/Cough Etiquette



Minimize Potential Exposures

- Upon Entry and During Visit:



Ensure all persons with
respiratory symptoms
adhere to cough etiquette,
hand hygiene



Respiratory Hygiene & Cough Etiquette

- Cover the nose/mouth when coughing or sneezing



- Perform hand hygiene if contact respiratory secretions and contaminated objects



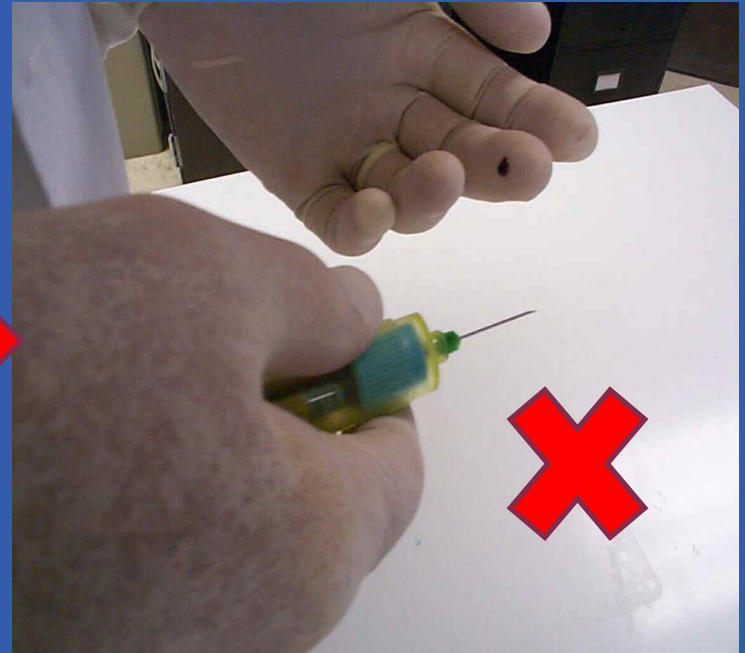
- Use tissue paper to contain respiratory secretions and dispose in the waste receptacle



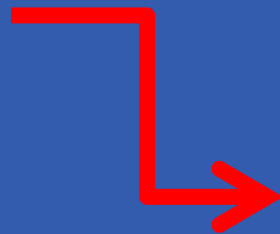
- Put on a surgical mask



4. Sharps Management



Sharps Management



Sharps Management

Scoop Technique



Implementing Empiric Additional P. Droplet & Contact Precautions



Transmission - Based Precautions

- Supplement to Standard Precautions
- For use with patients *documented* or *suspected* to be **infected** or *colonized* with highly transmissible or *epidemiologically* important pathogens

Airborne P.

Droplet P.

Contact P.

Droplet Precautions

Droplet precautions + Standard Precautions for a patient known or suspected to be infected with microorganisms transmitted by **droplets *larger* than 5 microns** that can be transmitted by **coughing, sneezing , talking**



Droplet Precautions

- **Patient placement :**
 - *Private room or
 - *Cohorting or
 - *Separation of at least 3 feet between the infected patient and other patients and visitors
- **Masking** when working within 3 feet of a patient
- **Patient transport**



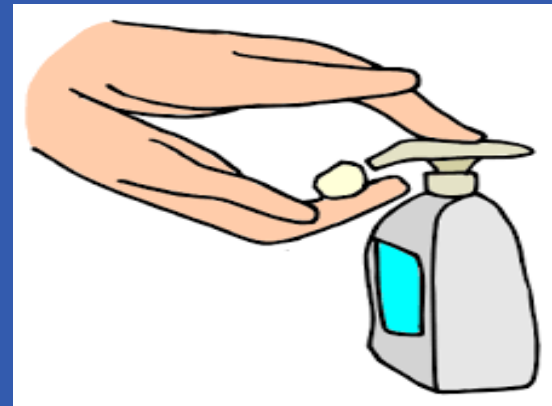
Droplet Precautions

- HCP should don a medical facemask when **entering the room** of a patient with suspected or confirmed cases with COVID-19



Droplet Precautions

- **When leaving the patient's room:**
- Remove the facemask
- Dispose of the facemask in a waste container
- Perform hand hygiene



Contact Precautions



Contact Precautions

Contact precautions should be used +
Standard p. for a patient *known* or
suspected to be *infected* or *colonized* with
epidemiologically important MOs that can be
transmitted by
hand or skin-to-skin contact or
Indirect contact with environmental surfaces
or patient-care items in the patient's room.

Patient Placement

- Private room



- Cohorting



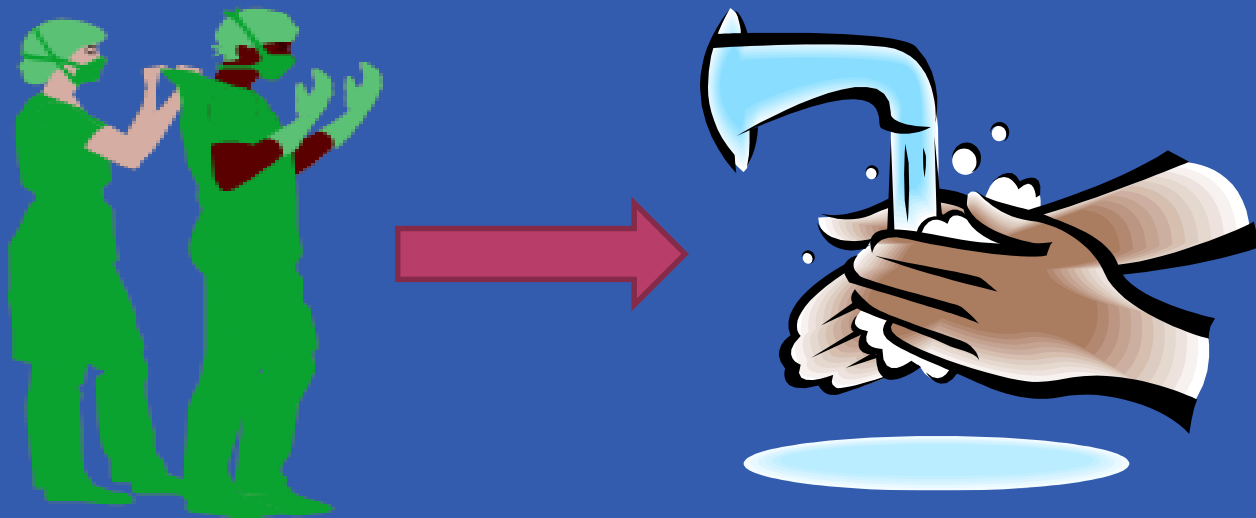
Patient Placement

- Separation of at least 3-6 feet(1m) between the infected patient and other patients and visitors



Contact Precautions

- After patient care, appropriate doffing and disposal of all PPE's and hand hygiene should be carried out



Contact Precautions, COVID Outbreak

A new set of PPE is needed, when care is given to a different patient



**Resource
Limitation**

Contact Precautions

- Single use or dedicated equipment
- If sharing is needed, clean and disinfect it between use for each patient
- Limit number of HCWs and visitors

Contact Precautions

HCWs should refrain from touching eyes, nose or mouth with potentially contaminated gloved or bare hands

Patient Transport

- If transport is required, use predetermined transport routes to minimize exposure for staff, other patients and visitors, and have the patient using a medical mask



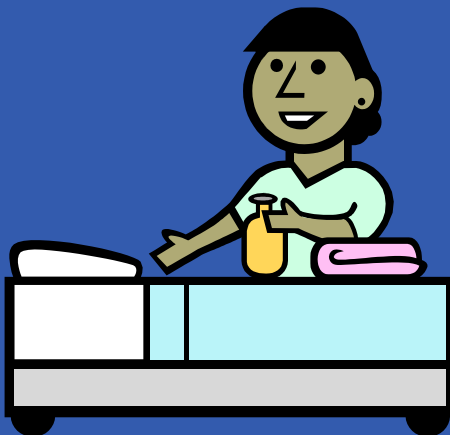
Patient Transport

- Ensure that HCWs who are transporting patients perform hand hygiene and wear appropriate PPE



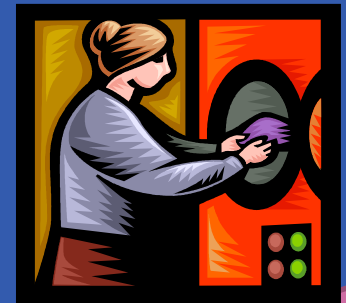
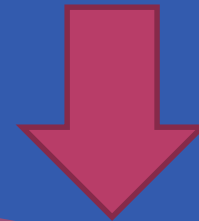
Environmental control

- Ensure that patient care items, bedside equipment, and frequently touched surfaces receive at least daily cleaning



Environmental Infection Control

Hospital policy and manufacturers' instructions,
for cleaning and/or disinfection of:



- Environmental surfaces and equipment
- Textiles and laundry
- Food utensils and dishware



COVID-19 Persistence

- Up to 3 h. in the air post-aerosolization
- Up to 4 h. on copper
- Up to 24 h. on cardboard
- Up to 2-3 days on plastic and stainless steel

2h – 9d.

4°C ≥ 28d.

**50%
relative humidity**

Environmental Infection Control

Cleaning environmental surfaces

- Water and detergent
- Commonly used hospital disinfectants (**sodium hypochlorite**) is an effective and sufficient procedure

COVID-19 Disinfection

- Ethanol
- Benzalkonium chloride
- sodium hypochlorite
- Glutaraldehyde
- Orthophthaldehyde
- H₂O₂





**Infection Prevention and Control
for the Safe Management of
a Dead Body
in the Context of COVID-19**

IPC for the Safe Management of a Dead Body in the Context of COVID-19

- Except in cases of hemorrhagic fevers (such as Ebola, Marburg) and cholera, dead bodies are generally not infectious.
- Only the lungs of patients with pandemic influenza, if handled improperly during an autopsy, can be infectious.

IPC for the Safe Management of a Dead Body in the Context of COVID-19

- Otherwise, cadavers do not transmit disease.
- To date there is **no evidence** of persons having become infected from exposure to the bodies of persons who died from COVID-19

Equipment for Procedures in Mortuary

Management of COVID-19 Bodies

Equipment	Details
Hand hygiene	Alcohol-based hand rub Hand wash
PPE	
Waste management and environmental cleaning	Disposal bag for bio-hazardous waste <ul style="list-style-type: none">• Soap and water, or detergent• Disinfectant for surfaces – hypochlorite solution 0.1% (1000 ppm), 70% ethanol, or hospital-grade disinfectant

Equipment for management of dead bodies in the context of COVID-19

Equipment for Procedures in Mortuary Management of COVID-19 Bodies

Equipment	Details
PPE	<ul style="list-style-type: none">• Gloves (single use, heavy duty gloves)• Boots• Waterproof plastic apron• Long sleeve gowns• Anti-fog goggles• Face shield• Medical mask• N95 or similar level respirator (for aerosol-generating procedures only)

Use of PPE in the Mortuary

Management of COVID-19 Bodies

Procedure	Hand hygiene	Disposable gloves	Medical mask	Respirator (N-95 or similar)	Long sleeved gown	Face shield (preferred) or anti- fog goggles	Rubber gloves	Apron
Packing and transport of the body	Yes	Yes			Yes			
Mortuary care	Yes	Yes	Yes		Yes	Yes		
Autopsy	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Religious observation – care of body by family members	Yes	Yes			Yes OR Apron			Yes



Duration of Infection Control Precautions

- Standard precautions should be applied at all times
- Additional contact and droplet precautions should continue until the patient is asymptomatic



Management of Clinical Specimens

- Use appropriate PPE :
 - Eye protection
 - Medical mask
 - Long-sleeved gown
 - Gloves

