

# Personal Protective Equipment

## If full personal protective equipment needs to be worn before entering the patient care area

There has been much debate about the order for putting on and taking off personal protective equipment. The order for putting on personal protective equipment is not important, however, for practicality, the following sequence is given as an example:

- Wash hands.
- Wear scrub suit or old set of thin clothes before entering the designated changing room or area.
- Wear boots /or shoe covers with trousers tucked inside.
- Wash hands.
- Wear cap.
- Wear the mask.
- Wear the gown.
- Wear an impermeable apron if splashes of blood or body fluids are expected.
- Wear protective eye wear/ goggles.
- Wash hands and dry them.
- Wear gloves with gown sleeve cuff tucked into glove.

## Removing personal protective equipment when leaving the patient care area

The order in which personal protective equipment is removed is not as important as the principle behind choosing such an order. The key principle is that when removing personal protective equipment the wearer should avoid contact with blood, body fluids, secretions, excretions and other

contaminants. When hands become contaminated they should be washed or decontaminated with 70% alcohol solution.

The following is an example of how to remove personal protective equipment:

- Using gloved hands, untie the gown string if tied in front and remove shoe covers.
- Remove gloves (fingers under cuff of second glove to avoid contact between skin and outside of gloves) and discard in an appropriate manner.
- Wash hands.
- Remove gown and apron, without contaminating clothing underneath. Touch only inside of gown and apron while removing. Place in appropriate disposal bag.
- Remove goggles, mask, and cap and place in an appropriate container. Dispose according to the health care facility protocol. Remove boots (if worn) and place in appropriate container.
- Wash hands up to wrists thoroughly with soap and water, dry and decontaminate hands using 70% alcoholic hand-rub before leaving facility.

## Use of full personal protective equipment



Full Personal Protective Equipment

- Hair cover (Cap)
- Eye wear (goggles)
- Mask
- Gown
- Apron
- Gloves
- Shoe covers



## Boots/shoe covers

Boots/shoe covers are used to protect the wearer from splashes of blood, body fluids, secretions and excretions.

Waterproof boots should be worn for heavily contaminated, wet flooring and floor cleaning.

## Selecting boots/shoe covers

Shoe covers should be disposable and waterproof.

Waterproof boots should be washable.

## Wearing boots/shoe covers

Wear waterproof boots if needed,

or

wear shoe covers over your personal shoes so as to cover your shoes adequately.

## Removing boots/ shoe covers

Remove shoe covers first with gloved hands and discard.

Remove boots last, before leaving the room and disinfect.

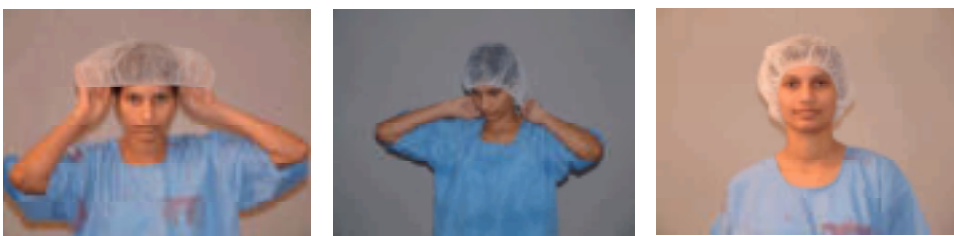
Wash hands thoroughly.

## Caps

Caps that completely cover the hair are used when splashes of blood and body fluids are expected. They should protect the hair from aerosols that may otherwise lodge on the hair and be transferred to other parts of the health care worker such as face or clothing by the hands or onto inanimate objects.

### *Selecting cap*

Use a disposable, waterproof cap of an appropriate size which completely covers the hair.



### *Wearing cap*

Place or tie cap over the head so as to cover hair completely.

### *Removing cap*

Remove by holding inside of the cap lifting it straight off head and folding inside out.

Discard in proper container.

Wash hands immediately.

## Masks

A surgical mask protects health care providers from inhaling respiratory pathogens transmitted by the droplet route. It prevents the spread of infectious diseases such as varicella (chickenpox) and meningococcal diseases (meningococcal meningitis).

An N95 mask protects health care providers from inhaling respiratory pathogens that are transmitted via the airborne route. This helps to prevent the spread of infectious diseases such as TB, MDR-TB.

In order to prevent the spread of infection, the appropriate mask should be worn by health care providers and visitors when attending to a patient suffering from a communicable disease that is spread via the airborne or droplet route.

The patient with a communicable disease spread via the droplet or airborne route should wear a surgical mask when being transferred to other departments or hospitals.

Disposable masks are for single use only and should be discarded after 4–6 hours use. They should not be stored in bags and re-used, shared or hung around neck, etc. If a mask is splashed wet, it should be changed using clean gloves and strict hand washing.



## Selecting a mask

A surgical mask should be worn in circumstances where there are likely to be splashes of blood, body fluids, secretions and excretions or when the patient has a communicable disease that is spread via the droplet route.

An N95 respirator mask needs to be chosen for those circumstances when a patient has a communicable disease that is spread via the airborne route.

A mask with a higher level of filtration may be required when dealing with highly transmissible diseases such as viral haemorrhagic fever.

Type of mask	When to wear	Comments
N95 or P2	Open/active pulmonary TB, pneumonic plague, SARS	Ideally recommended; but single-use, cost and continuous availability may restrict the use. In such situations, standard surgical masks may be used
N100 or P3	During invasive procedures, collection of respiratory secretions, laboratory work and work in an environment where organisms in concentrated form may be encountered	Ideally recommended; but the fact that filters need to be kept continuously available and can be used only once, may mean that cost considerations restrict their use. In such situations, standard surgical masks may be used.
Standard surgical splash proof masks (not gauze mask)	Mainly when dealing with droplet infections; use for airborne infections when N95 masks are not available	Change mask when wet, soiled or contaminated. Do not reuse Discard according to health care facility protocol

Examples of different types of N95 masks



For more information about respiratory masks see: <http://www.cdc.gov/niosh/npptl/respirators/respsars.html>

### *Wearing the mask*

Wash hands and dry.

Remove the clean mask from the container with clean hands.

Ensure the mask is fitted properly. Each N95 mask/respirator is different and must be appropriately fitted to each health care worker– called a “fit test”. Health care workers must ensure they know how to properly fit a respirator according to the manufacturers’ instructions.

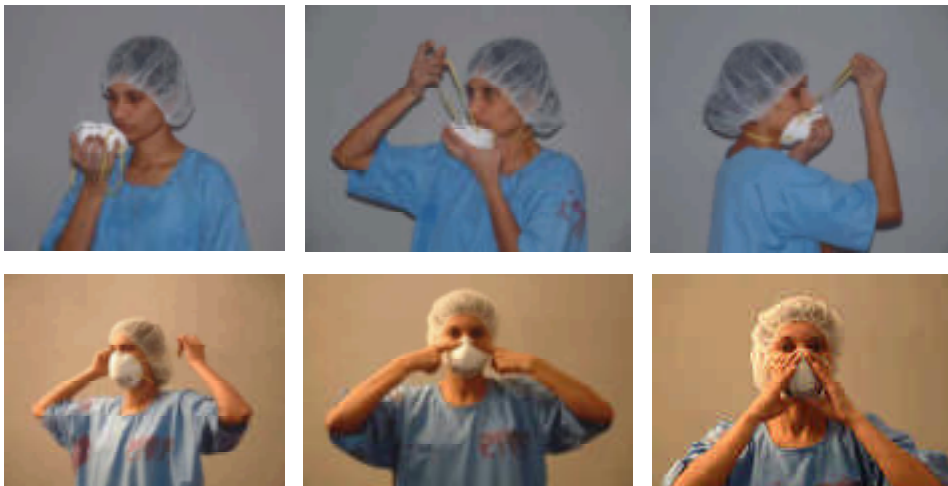
If glasses are worn, fit the upper edge of the mask under the glasses. This will help to prevent them from clouding over. A secure fit will prevent both the escape and the inhalation of micro-organisms around the edges of the mask and fogging of the eyeglasses.

### *Precautions*

Avoid talking, sneezing, or coughing if possible.

Masks cannot be worn with beards/unshaven faces.

The mask should completely seal the face at all times to ensure effective filtering of micro-organisms



### *Removing the mask*

Wash hands and remove mask – handle only the strings.

Discard in an appropriate bag/container and seal the bag.

Wash hands.

### *Gown*

Gowns made of impervious material are worn to protect the wearer's clothing/uniform from possible contamination with micro-organisms and exposure to blood, body fluids secretions and excretions.

The gown should be used only once for one patient and discarded or sent for laundering. Health care workers should remove gowns before leaving the unit.

### *Selecting a gown*

Gowns should be clean and non-sterile. The gown should be impervious and water repellent. It should be long enough to cover the clothing of the wearer and should have long sleeves and high neck. Disposable gowns are preferable. If they are not available, cotton reusable gowns can be used with a plastic apron underneath.

### *Wearing the gown*

Wash hands, and dry.

Hold the gown at the neck on the inside permitting to unfold.

Slide hands and arms down the sleeves.

Fasten the ties at the neck.

Overlap the gown at the back as much as possible and secure the waistband. Request assistance to fasten the waist ties.



## *Removing the gown*

Remove the gown after removing gloves.

Untie the waist-band with a gloved hand if it is tied in front before removing the gloves.

Remove gloves and wash hands.

Untie the neck-ties (be sure not to touch outside of the gown).

Slide the gown down the arms and over the hands by holding in inside of the sleeves.

Hold the gown with both the hands (inside the shoulders) at the shoulder seams.

Turn the gown inside out (contaminated side in). The hands are then brought together and the gown is rolled and discarded in the container provided.

Discard appropriately

Remove a soiled gown as promptly as possible and wash hands immediately to avoid transfer of micro-organisms to other patients or environments.

If reusable – discard if visibly contaminated. If there is shortage of gowns they may be reused during one shift for the same patient. Hang gown with outside facing in when not in use. Discard at the end of each shift.

Wash hands thoroughly before touching anything else.

## *Apron*

An apron protects the wearer and the uniform from contact with the contaminated body fluids. Plastic aprons are used over the gown when caring for patients where possible splashes with blood and body substances may occur.

Need not be used if the gown is of impermeable material.

## *Selecting the apron*

Select water repellent, plastic aprons, which are disposable



If disposable ones are not available then reusable plastic aprons can be used.

Size: long enough to protect the uniform and the gown but should not touch the ground. Should cover the front and sides. It should open in the back. A tie around the waist keeps the apron in place.

### *Wearing the apron*

Wash hands.

Ensure that the sleeves are rolled above the elbows before putting on the apron.

Wear the apron over the uniform and tie around the waist at the back.

### *Removing the apron*

Wash hands and dry.

Remove, touching only the inside part of apron.

Discard, folding the outside part in.

Decontaminate or dispose according to the health care facility guidelines.

Wash hands thoroughly before touching anything else.

The inside of the apron is considered clean, the outside is considered contaminated. The neck of the apron is considered clean because that part is not touched with contaminated hands.

### *Protective eyewear/goggles*

Protective eyewear/goggles should be worn at all times during patient contact when there is a possibility that a patient's body fluids may splash or spray onto the caregiver's face/eyes (e.g. during throat, endotracheal and tracheostomy suctioning, removal of indwelling catheter etc). The amount of exposure can be reduced through the use of protective eyewear. Full face shields may also be used to protect the eyes and mouth of the health care worker in such high-risk situations.

Ordinary spectacles do not provide adequate protection, although caregivers may wear their own glasses with extra protection added at the sides. Goggles that fit over glasses are available. Protective eyewear should be changed after each shift.

Protective eyewear should be washed and decontaminated after removal and in between use.

### *Selecting protective eyewear*

Goggles should be made of clear polycarbonate plastic with side and forehead shields. These should be optically clear, antifog and distortion-free.

Goggles that fit over glasses are also available. Disposable goggles are preferred but reusable ones can be used after cleaning and decontamination.

### *Wearing protective eye wear*

Wear the eyewear by securing it over the bridge of the nose and also over the mask.

### *Removing protective eye wear*

Remove and place in appropriate container for cleaning and decontamination prior to reuse by next person.

Examples of Goggles/Eye protection



## Gloves

Use gloves when there is potential exposure to blood, body fluid, excretions or secretions.

Change gloves between patients, between tasks and procedures on the same patient, and when they become soiled.

Remove gloves promptly after touching contaminated items and environmental surfaces and before moving to another patient.

Remove gloves before leaving the patient's bedside and decontaminate hands immediately.

After glove removal and hand washing, ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient's room.

Discard gloves after attending to each patient.

The reuse of single-use gloves is not recommended as they are contaminated or do not provide adequate protection after reprocessing.

### *Selecting gloves*

Use disposable gloves that are:

- Clean/non-sterile for routine care of the infectious patients;
- sterile for invasive procedures.

Use heavy-duty rubber gloves for cleaning instruments, handling soiled linen or dealing with spills of blood and body fluids. They can be washed and reused.

Choose gloves that fit properly.

Check there is no puncture in gloves. Do not use gloves if they are torn, as punctured gloves do not provide protection.

Clean, nonsterile, disposable, single use gloves are recommended for routine care of patients with highly transmissible infections.

### *Wearing gloves*

Wash hands and dry them.

Pick up the first glove by its cuff.

Wear the first glove. Bunch the glove up and then pull it onto the hand; ease fingers into the glove.

Repeat for the other hand.

### *Removing gloves*

When removing personal protective equipment, remove gloves first.

Grasp the outside of one glove, near the cuff, with the thumb and forefinger of the other hand. Pull the glove off, turning it inside out while pulling and holding it in the hand that is still gloved.

Hook the bare thumb or finger inside the remaining glove and pull it off by turning it inside out and over the already removed glove to prevent contamination of the ungloved hand.

Roll the two gloves together taking care not to contaminate the hands. (See pictures below.)

Discard appropriately.

Wash hands and decontaminate with 70% alcohol hand rub/solution.



## Annex 3

# Infection Control: A Quick Reference Guide for SARS

## Summary list of precautions for infection control practitioners

- Any article that is brought into the room must be cleaned or placed into a clean bag before it is removed from the environment. People should clean hands and remove the outside layer of clothing before exiting the room. Equipment should be placed into a container for cleaning and disinfecting or for removal to the sterilizing department.
- A suspect or probable SARS patient should be placed in a single room – if possible, one with negative pressure.
- Only staff/visitors who have been educated about SARS should enter the room.
- All staff/visitors who enter the room should sign a log book.
- All health care workers (and visitors) must wear personal protective equipment when entering the room.
- The patient must wear a surgical face mask when in contact with staff/visitors.
- The infection control SARS equipment trolley should remain outside the door (see Annex 4).
- Patients should have clinical equipment (e.g. sphygmomanometer, thermometer) dedicated to their exclusive use
- Sterile items should be disposable where possible. Reusable items should be placed in a plastic bag and then into another plastic bag inside the equipment collection bin on the trolley. Request the sterile service department to collect.
- Alcohol-based hand-rub should be located in and outside the room.
- The patient's room must be cleaned each day – including all horizontal surfaces.