



**GUIDELINES FOR
HAND HYGIENE
AIIMS KALYANI**
[Standard Operating Procedure]



Prepared by HICC - AIIMS Kalyani



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I. NORMAL MICROBIAL FLORA OF HAND

Microbial flora of hand comprises of the following :

1. **Resident Flora** : the resident flora resides in the stratum corneum and on the surface of the skin. They are mostly non-pathogenic, (e.g., coagulase-negative staphylococci) which can be removed only by vigorous surgical scrub; not by ordinary handwash.

2. **Transient flora** : it colonizes the superficial layers of the skin; comprises of common pathogens causing HAI such as staphylococcus aureus, gram negative bacilli or yeasts.

	Resident Flora	Transient flora
Site	Resides on the stratum corneum and skin surface	Colonizes on the superficial layer of the skin surface
Normal Flora	Yes	No
Pathogenic potential	Non-pathogenic	Pathogenic
Transmission	Not easily transmitted	Easy, by direct or indirect contact
Removal	Difficult by surgical scrub	Easy, by handwash or rub
When reduction is indicated	Only before surgery or aseptic procedure	During routine patient care activities
Examples	Diphtheroids Propionibacterium, CoNS, Malassezia furfur	GNB, MRSA, MSSA, VRSA, VRE, Clostridium difficile, Norovirus



II. DIFFERENCE BETWEEN INDICATIONS OF USING HAND RUB, HAND WASH AND HAND SCRUB

INDICATIONS FOR USING HANDRUB	INDICATIONS FOR USING HAND WASH	INDICATIONS FOR USING HANDSCRUB
<p>1) Handrub should be used during routine clinical rounds and handling the patient</p> <p>2) If the hands are not visibly dirty, not contaminated with blood, or body fluids</p>	<p>1) Hands are visibly dirty, contaminated with blood, or body fluids</p> <p>2) Potential exposure to spore forming organisms (e.g. Clostridiodes difficile); nonenveloped viruses (e.g. Norovirus, Rotavirus, Enteroviruses)</p> <p>3) Handling patients having diarrhoea</p> <p>4) After using restroom</p> <p>5) Before handling medication or food</p>	<p>1) Prior to any surgical procedure and in-between the cases.</p>

III. TRANSMISSION OF PATHOGENS BY HANDS

Transmission of health care-associated pathogens from one patient to another via HCWs' hands require five sequential steps:

1. Organisms are present on the patient's skin, or have been shed onto inanimate objects immediately surrounding the patient;
2. Organisms must be transferred to the hands of HCWs;
3. Organisms must be capable of surviving for at least several minutes on HCWs' hands;



4. Handwashing or hand antiseptics by the HCW must be inadequate or entirely omitted, or the agent used for hand hygiene inappropriate; and
5. The contaminated hand or hands of the caregiver must come into direct contact with another patient or with an inanimate object that will come into direct contact with the patient.

Organisms present on patient skin or the immediate environment:



A bedridden patient colonized with Gram-positive cocci, at nasal, perineal, and inguinal areas (not shown), as well as axillae and upper extremities. Some environmental surfaces close to the patient are contaminated with Gram-positive cocci, presumably shed by the patient.



Organism transfer from patient to HCWs' hands:



Contact between the HCW and the patient results in cross transmission of microorganisms. In this case, Gram-positive cocci from the patient's own flora transfer to HCW's hands.

IV. INDICATIONS FOR HAND HYGIENE

“My 5 Moments of Hand Hygiene”

It is an approach by WHO, which defines the key moments when the HCWs should perform hand hygiene. This is an evidence based, field-tested, user-centered approach designed to make the learning easy, logical, and applicable in a wide range of healthcare settings.

My Five moments of hand hygiene (WHO) :

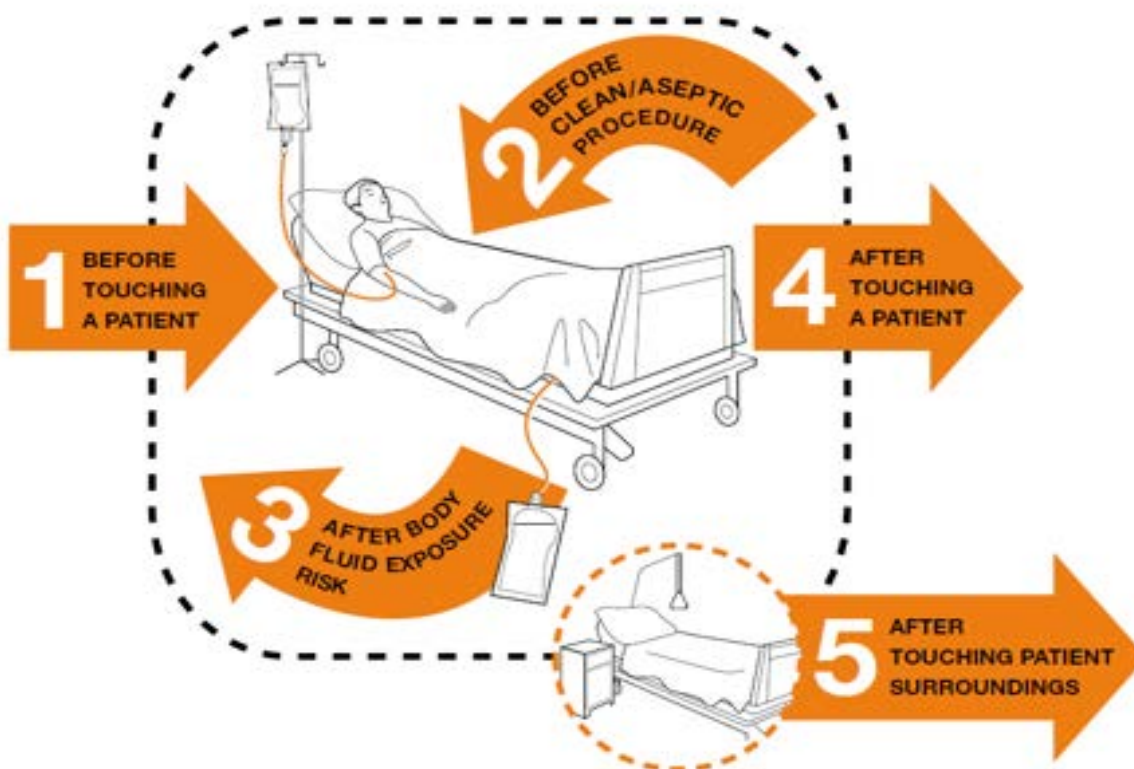
Moment 1: Before touching a patient

Moment 2: Before clean/aseptic procedures

Moment 3: After body fluid exposure/risk

Moment 4: After touching a patient

Moment 5: After touching patient surroundings



Clinical situations when five moments of hand hygiene are to be performed

Moment-1 and 4: Before and after touching a patient	Moment-2 and 3: Before and After Aseptic procedure or body fluid exposure	Moment-5: After touching patient surroundings
Before and after: <ul style="list-style-type: none"> • Taking pulse, blood pressure. • Auscultation and • Palpation • Shaking hands • Helping a patient to move around • Applying oxygen mask 	Before and after: <ul style="list-style-type: none"> • Oral or dental care • Aspiration of secretions or accessing in-situ drains • Skin lesions care, wound dressing • Administering injection • Drawing of blood or sterile fluid • Handling device (catheter, central line, Et tube) 	After contact with: <ul style="list-style-type: none"> • Handling the case sheet • Medical equipment in the immediate vicinity of the patient • Bed or bed rail • Changing bed linen • Decanting urobag



- | | | |
|--|--|--|
| <ul style="list-style-type: none">• Giving physiotherapy• Recording ECG• Use of gloves | <ul style="list-style-type: none">• Clearing up urines, faeces and vomit• Handling bandages, napkin, etc.• Instilling eye drops• Moving from the contaminated body site to another body site during care of same patient. | |
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V. HAND HYGIENE METHOD

There are three methods of hand hygiene:

1. **Handrub**
2. **Handwash**
3. **Surgical Hand Scrub**

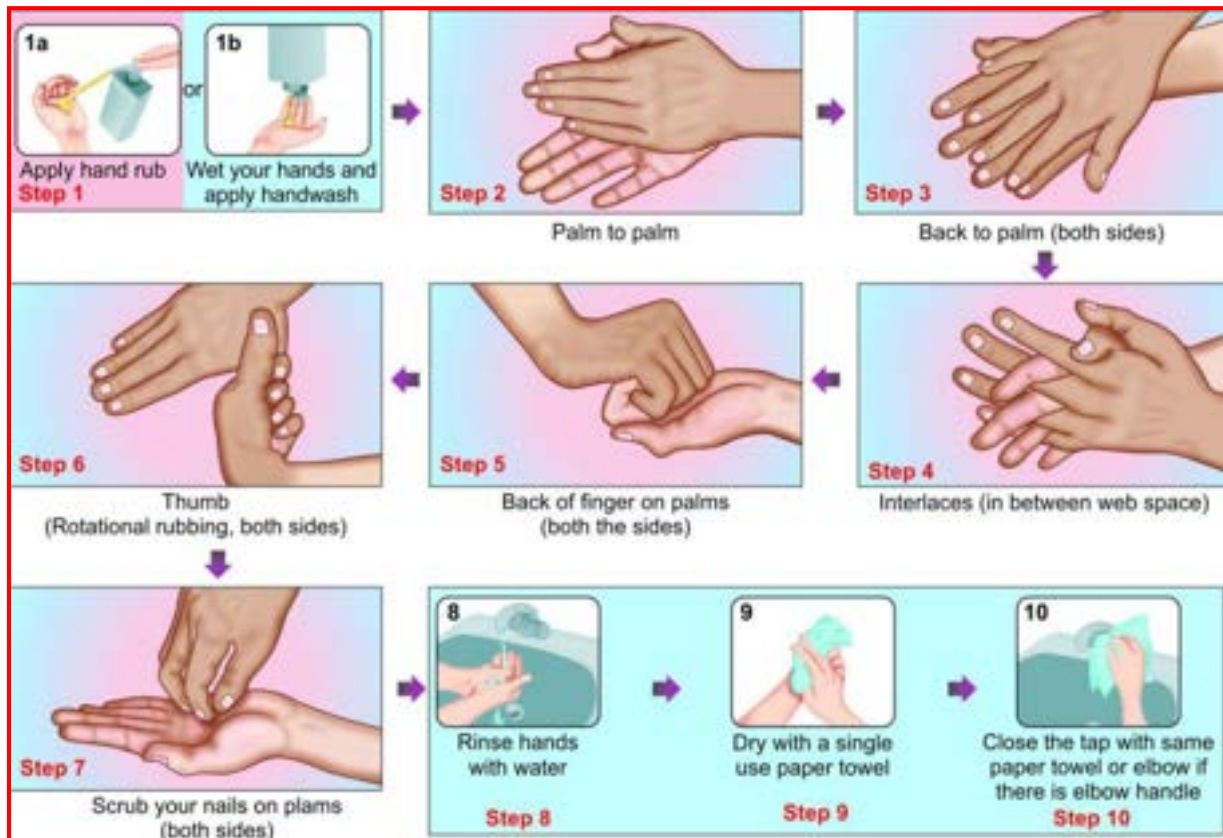
A. STEPS OF HAND RUB

1. Apply a palmful of the handrub in a cupped hand and cover all the surface
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. Back 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 hand with water
9. Dry thoroughly with single use towel. Use towel to turn off faucet.



B. STEPS OF HAND WASH

1. Wet hands with water. Apply enough soap to cover all the surface
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. Back 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 hand with water
9. Dry thoroughly with single use towel
10. Use towel to turn off faucet



C.STEPS OF HAND SCRUB

1. Start timing. Scrub each side of each finger, between the fingers, and the back and front of the hand for 2 minutes.
2. Proceed to scrub the arms, always keeping the hand higher than the arm. This helps to avoid recontamination of the hands by water from the elbows and prevents bacteria-laden soap and water from contaminating the hands.
3. Wash each side of the arm from wrist to the elbow for 1 minute.
4. Repeat the process on the other hand and arm, keeping hands above elbows at all times. If the hand touches anything at any time, the scrub must be lengthened by 1 minute for the area that has been contaminated.
5. Rinse hands and arms by passing them through the water in one direction only, from fingertips to elbow. Do not move the arm back and forth through the water.
6. Proceed to the operating theatre holding hands above elbows.
7. At all times during the scrub procedure, care should be taken not to splash water onto surgical attire.



8. Once in the operating theatre, hands and arms should be dried using a sterile towel and aseptic technique before donning gowns and gloves.

Steps Before Starting Surgical Hand Preparation :-

- Keep nails short and pay attention to them when washing your hands – most microbes on hands come from beneath the fingernails.
- Do not wear artificial nails or nail polish.
- Remove all jewellery (rings, watches, bracelets) before entering the operating theatre.
- Wash hands and arms with a non-medicated soap before entering the operating theatre area or if hands are visibly soiled.
- Clean subungual areas with a nail file. Nailbrushes should not be used as they may damage the skin and encourage shedding of cells. If used, nailbrushes must be sterile, once only (single use). Reusable autoclavable nail brushes are on the market.



1
Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the dispenser



2
Dip the fingertips of your right hand in the handrub to decontaminate under the nails (5 seconds)



3
Images 3–7: Smear the handrub on the right forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)



4
See legend for Image 3



5
See legend for Image 3



6
See legend for Image 3



7
See legend for Image 3



8
Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your right hand, using the elbow of your other arm to operate the dispenser



9
Dip the fingertips of your left hand in the handrub to decontaminate under the nails (5 seconds)



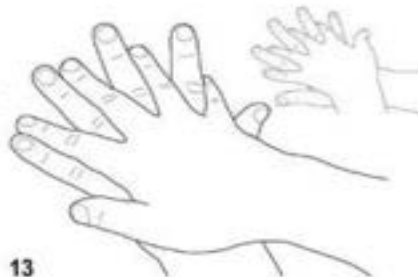
10
Smear the handrub on the left forearm up to the elbow. Ensure that the whole skin area is covered by using circular movements around the forearm until the handrub has fully evaporated (10-15 seconds)



11
Put approximately 5ml (3 doses) of alcohol-based handrub in the palm of your left hand, using the elbow of your other arm to operate the distributor. Rub both hands at the same time up to the wrists, and ensure that all the steps represented in Images 12-17 are followed (20-30 seconds)



12
Cover the whole surface of the hands up to the wrist with alcohol-based handrub, rubbing palm against palm with a rotating movement



13
Rub the back of the left hand, including the wrist, moving the right palm back and forth, and vice-versa



14
Rub palm against palm back and forth with fingers interlinked



15
Rub the back of the fingers by holding them in the palm of the other hand with a sideways back and forth movement



16
Rub the thumb of the left hand by rotating it in the clasped palm of the right hand and vice versa



17
When the hands are dry, sterile surgical clothing and gloves can be donned



VI. HAND HYGIENE PRACTICES AMONG HEALTH CARE WORKERS AND ADHERENCE TO RECOMMENDATION

- HCWs clean their hands on average from 5 to as many as 42 times per shift and 1.7–15.2 times per hour.
- The average frequency of hand hygiene episodes fluctuates; it ranges from 0.7 to 30 episodes per hour.
- The average number of opportunities for hand hygiene per HCW varies markedly between hospital wards; nurses in Pediatrics wards, for example, had an average of eight opportunities for hand hygiene per hour of patient care, compared with an average of 30 for nurses in ICUs.
- In some acute clinical situations, the patient is cared for by several HCWs at the same time and, on average, as many as 82 hand hygiene opportunities per patient per hour of care has been observed at Post-Anesthesia care unit admission.
- The number of opportunities for hand hygiene depends largely on the process of care provided: revision of protocols for patient care may reduce unnecessary contacts and, consequently, hand hygiene opportunities.

VII. PRACTICAL ISSUES AND POTENTIAL BARRIERS TO OPTIMAL HAND HYGIENE PRACTICES

- 1) **GLOVES POLICES** : Medical glove use by HCWs is recommended for two main reasons:
 - a. to reduce the risk of contaminating HCWs' hands with blood and other body fluids;
 - b. to reduce the risk of germ dissemination to the environment and of transmission from the HCWs to the patient and vice versa, as well as from one patient to another
- 2) **APPROPRIATE AND SAFE USE OF GLOVES** :
 - The use of gloves in situations when their use is not indicated represents a waste of resources without necessarily leading to a reduction of cross-transmission.
 - The wide-ranging recommendations for glove use have led to very frequent and



inappropriate use in general.

- Careful attention should be paid to the use of medical gloves according to indications for donning, but also for their removal.

3) INDICATIONS FOR GLOVING AND FOR GLOVE REMOVAL :

Glove use :

- 1) before a sterile condition
- 2) anticipation of a 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

Glove removal :

- 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

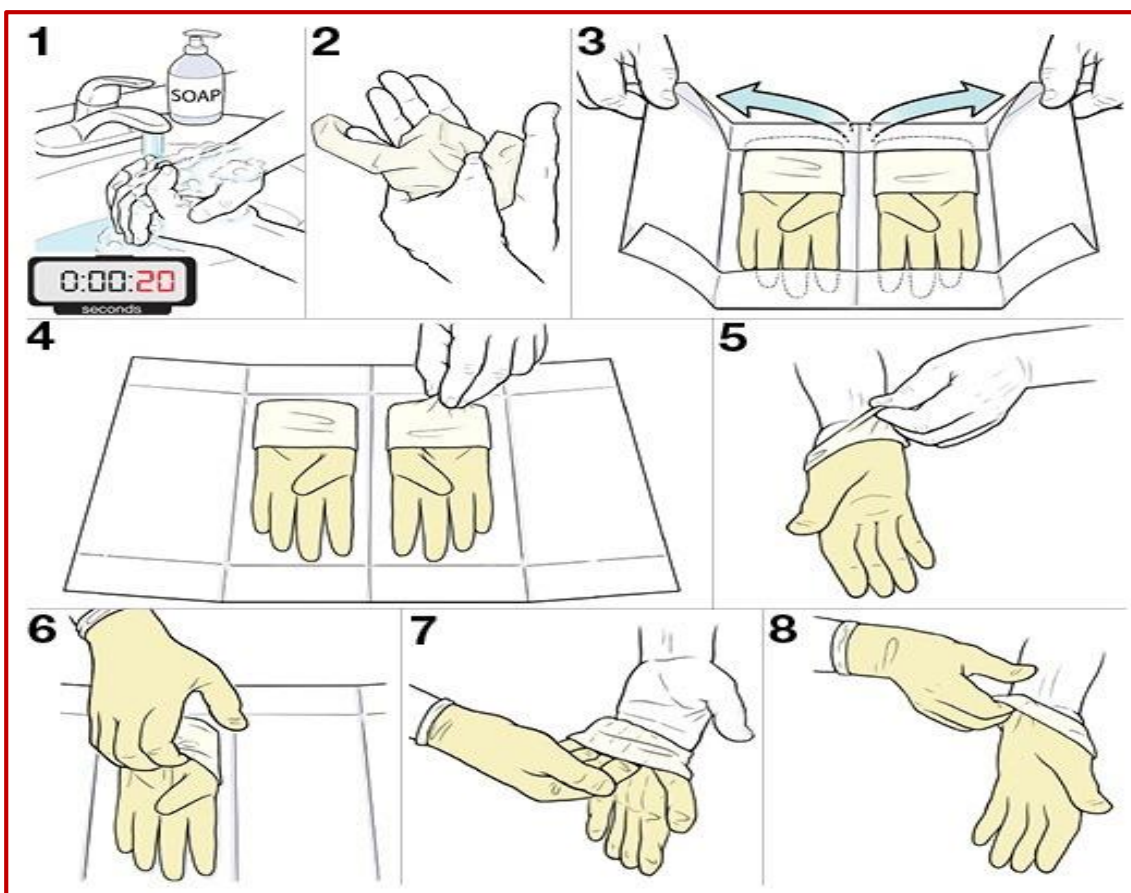


4) SITUATIONS REQUIRING AND NOT REQUIRING GLOVE USE :

STERILE GLOVES INDICATED	EXAMINATION GLOVES INDICATED (CLINICAL SITUATIONS)	GLOVES NOT INDICATED (except for CONTACT precautions)
<p>Any surgical procedure; vaginal delivery; invasive radiological procedures; performing vascular access and procedures (central lines); preparing total parental nutrition and chemotherapeutic agents.</p>	<p>Potential for touching blood, body fluids, items visibly soiled by body fluids.</p> <p>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.</p> <p>INDIRECT PATIENT EXPOSURE: emptying emesis basins; handling/cleaning instruments; handling waste; cleaning up spills of body fluids.</p>	<p>No potential for exposure to blood or body fluids, or contaminated environment</p> <p>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.</p> <p>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.</p>



5) HOW TO DON GLOVES :



Step-1-2 : Hand Hygiene – Turn on the water. Wet your hands and wrists. Use liquid soap from a pump dispenser. Work up a lather. Scrub your hands well for at least 20 seconds. This is about the time it takes to sing the Happy Birthday song twice. Rinse your hands with your fingers pointing down toward the drain. Dry your hands with a paper towel. Use this towel to turn off the faucet.

NOTE : Once you have washed your hands, don't touch anything but your supplies. You must wash your hands again if you touch anything else, such as furniture or your clothes.

Step-3 : Open the inner packaging of the gloves with the fingers pointed towards you and the thumb clearly visible. This is to ensure that the gloves are in the correct position for application.



Step-4-5 : Put on the first glove : Take the hand you write with and grasp the glove for your other hand at the folded edge of the cuff. Pick up the glove by the folded edge. Put your hand inside the glove. Keep your hand flat and your thumb tucked in. Pull the glove on. Be careful not to touch the outside of the glove. Touch only the part of the glove that will be next to your skin. Leave the cuff on the glove folded.

Step-6 : Put on the second glove : Now, slip the fingers of your gloved hand into the folded cuff of the other glove.

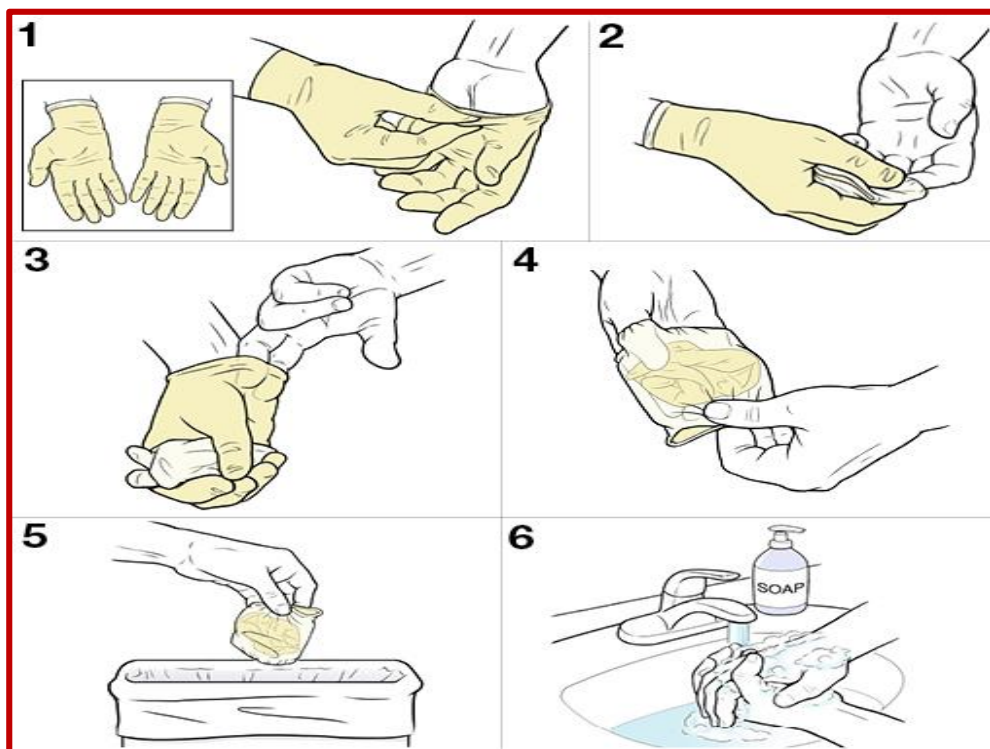
Step-7 : Lift up the second glove. Put the glove over your fingers. The hand that you are putting the glove on should stay flat. Keep the gloved thumb up and back to keep from touching your bare palm or wrist.

Step-8 : Pull the glove over your hand. Adjust each glove to get a snug fit. Adjust the fingers after both hands are gloved. Reach under the cuffed part to pull up or adjust.

Step-9 : Once both gloves are donned, position your hands in a manner that would ensure they are not inadvertently touched. This should ideally be in front of you, and very close to your chest.



6) HOW TO REMOVE GLOVES :



Step-1-2 : When removing gloves, touch only the outside of the glove. Do not touch your wrist or skin with contaminated gloves. Grasp the outer surface of the glove below your thumb. Be careful not to touch the skin under your glove. Grasp the glove and peel the glove off, so that it is inside out. Keep the discarded glove in the remaining gloved hand.

Step-3-4 : With your ungloved hand, put two fingers underneath the cuff of the remaining glove, taking care not to touch the outside of the dirty glove. Peel glove off your hand in the direction towards your fingers, away from your body. As you remove the glove, turn it inside out into the other discarded glove. This keeps the soiled gloves together with their dirty surfaces folded inside, rather than on the outside. This prevents risking contaminating your hands with the soiled gloves.

Step-5-6 : Discard gloves and wash your hands as outlined in the hand washing procedure.



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