

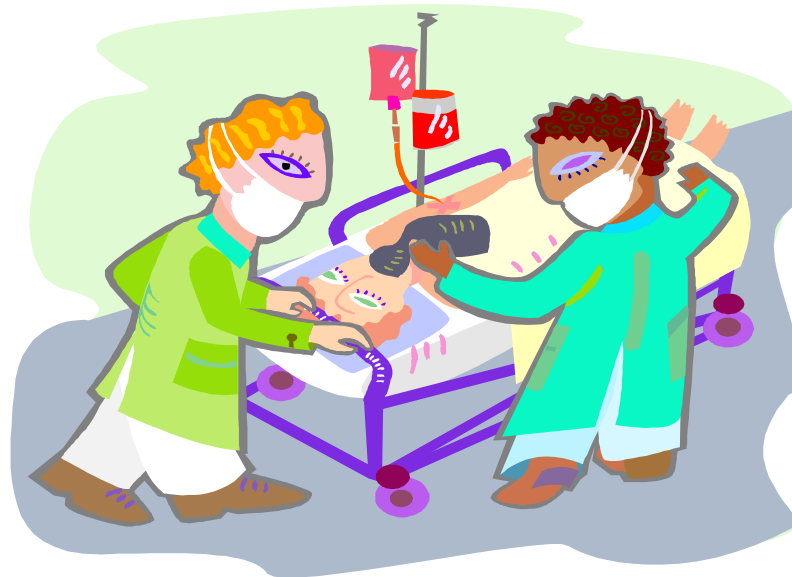


به نام خدای شفیع و صبور

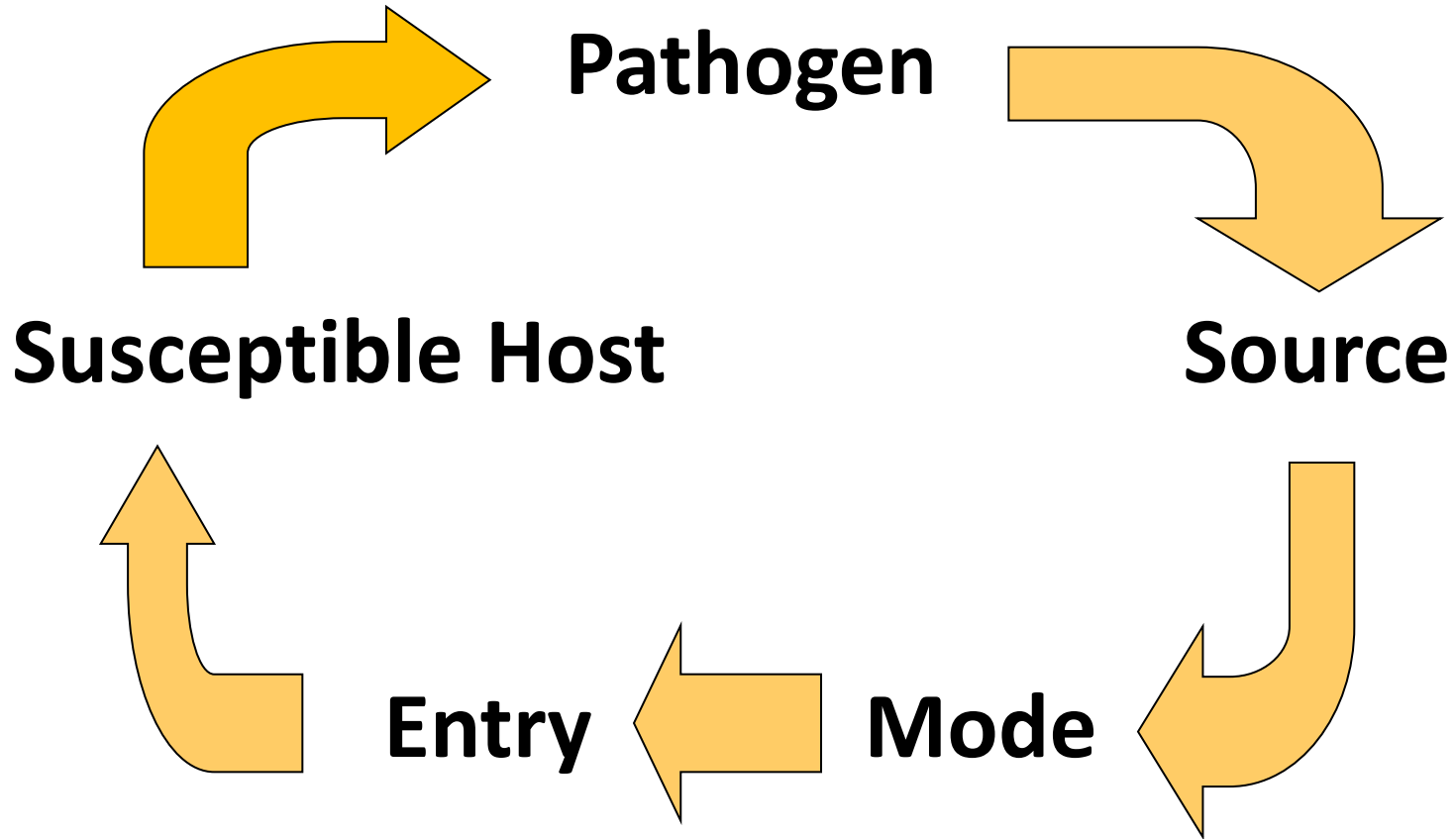
خداوند دانش خداوند نور

Infection Control In Healthcare Settings

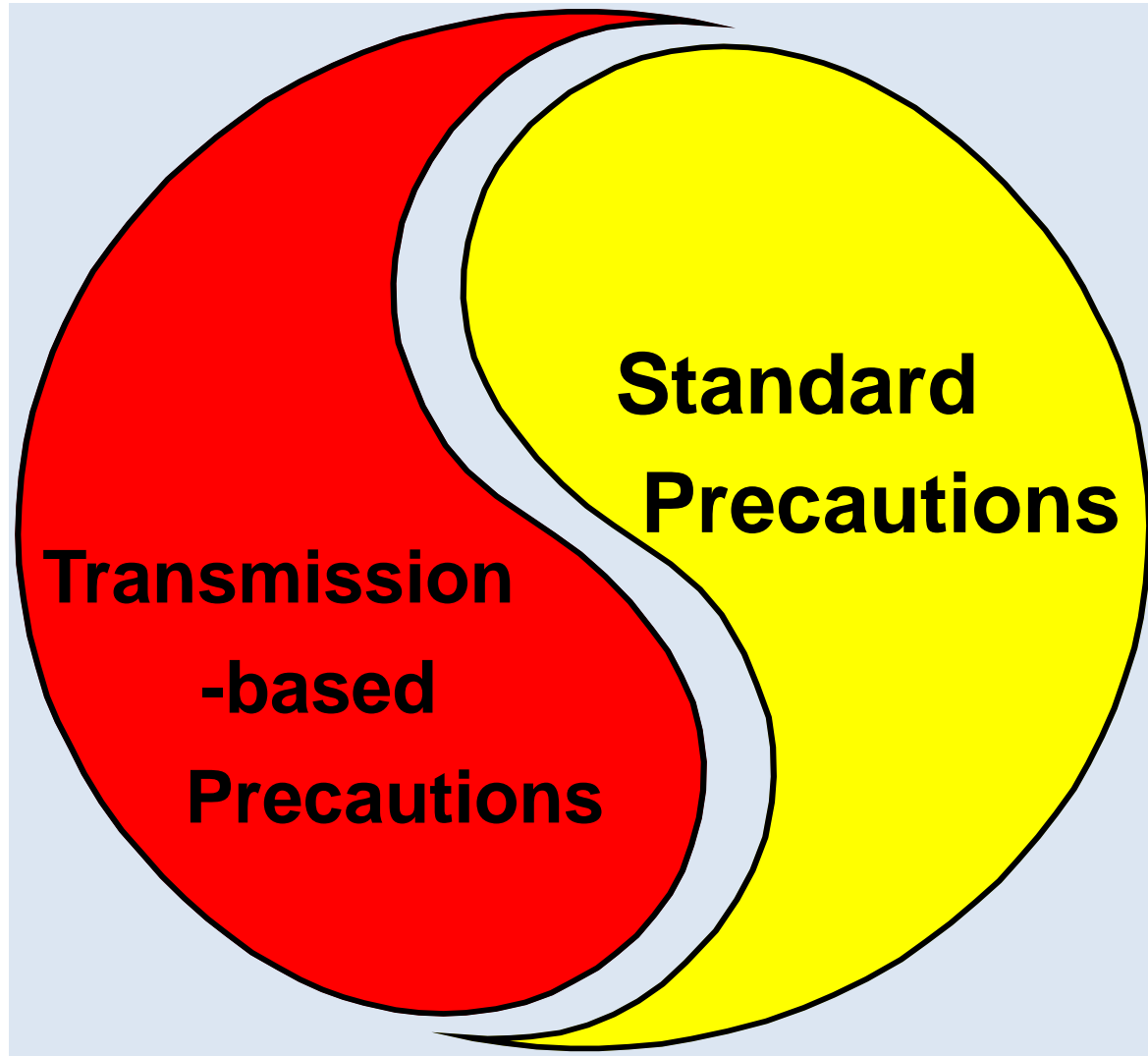
Standard Precautions: Hand Hygiene



Chain of Infection



Isolation Precautions

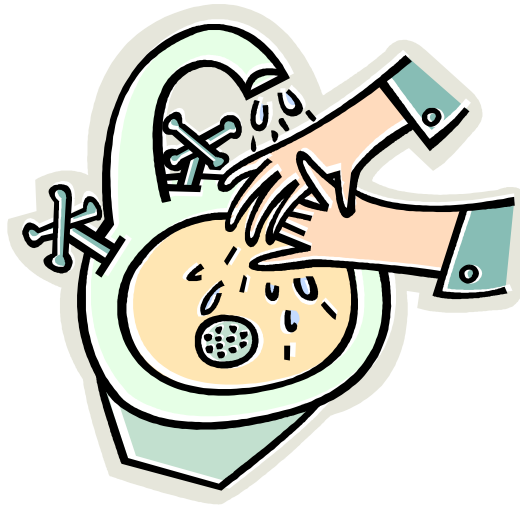


Hand Hygiene



Introduction

- Hands are the most common mode of pathogen transmission

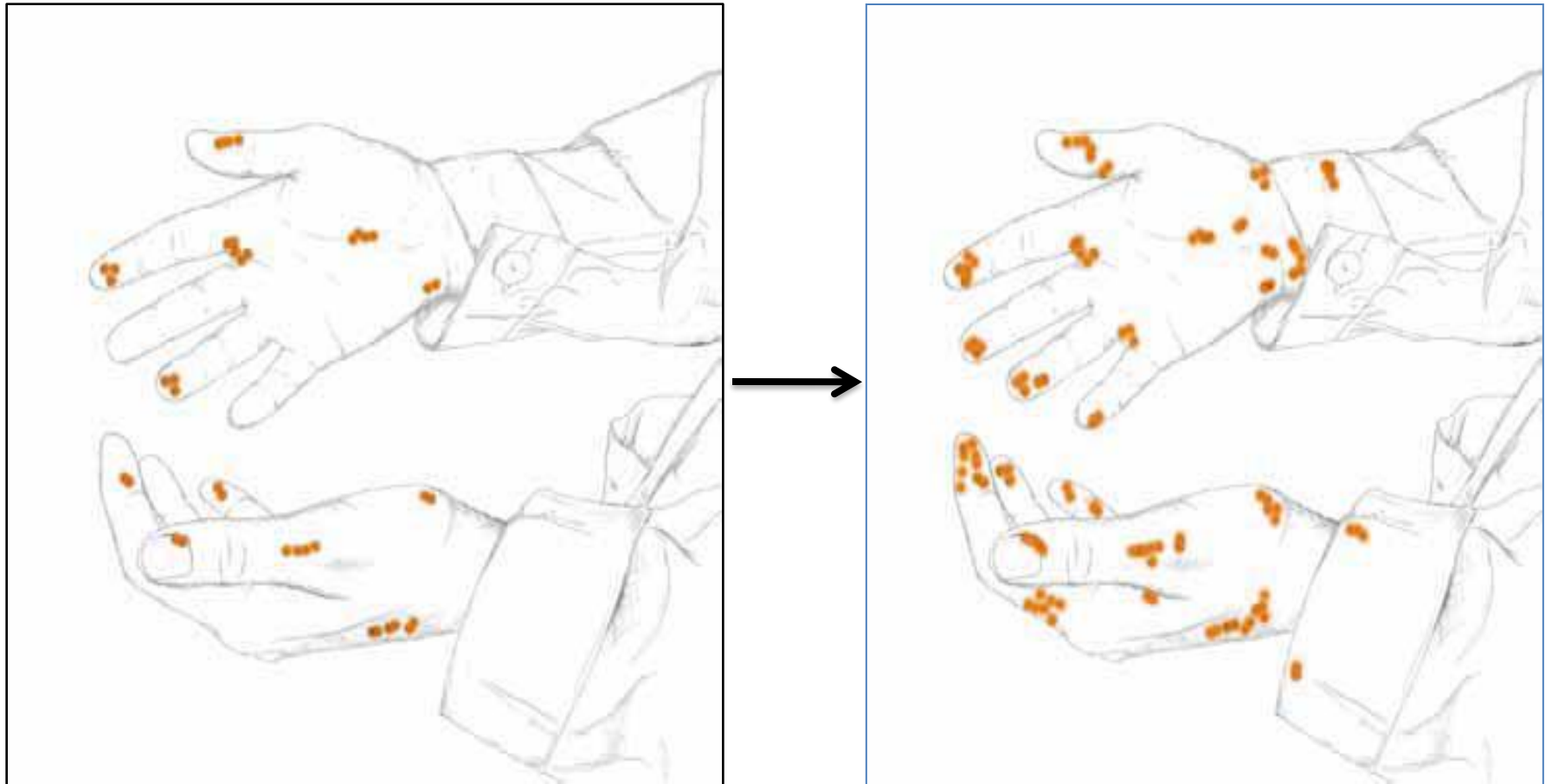


Why Is Hand Hygiene Important?

- Hand hygiene is the most important measure in preventing the spread of infection



Organism Survival on HCWs' Hands



Why Is Hand Hygiene Important?

- Reduce spread of antimicrobial resistance
- Prevent health care-associated infections

Persistence of Clinically Relevant Bacteria on Surfaces

Type of bacterium	Duration of persistence
Acinetobacter spp	3days to 5 months
Enterococcus spp.including VRE	5days-4 months
Pseudomonas aeruginosa	6hours-16 months
Staphylococcus aureus,including MRSA	7 days—7 months

IPC - H.H

**Effective IPC measures
could reduce health
care-associated
infections as much as
by 55%.**

**Newborn survival rates
could potentially increase
by 44% when hand washing
and clean birthing kits are in
place.**

H.H & IPC Core Components



**Hand hygiene at the heart of
the core components
for effective IPC programs.**



Question 1

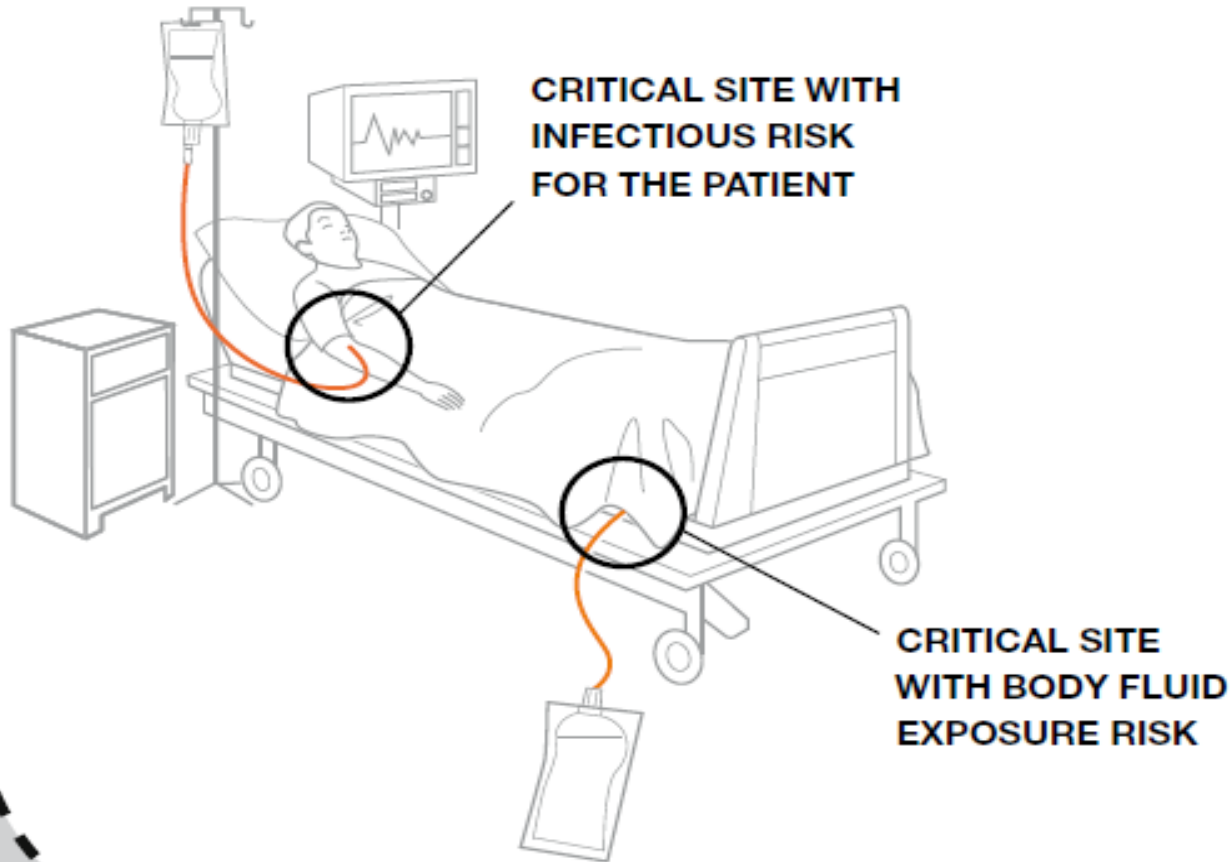
**When do you wash/rub
your hands?**





World Health
Organization

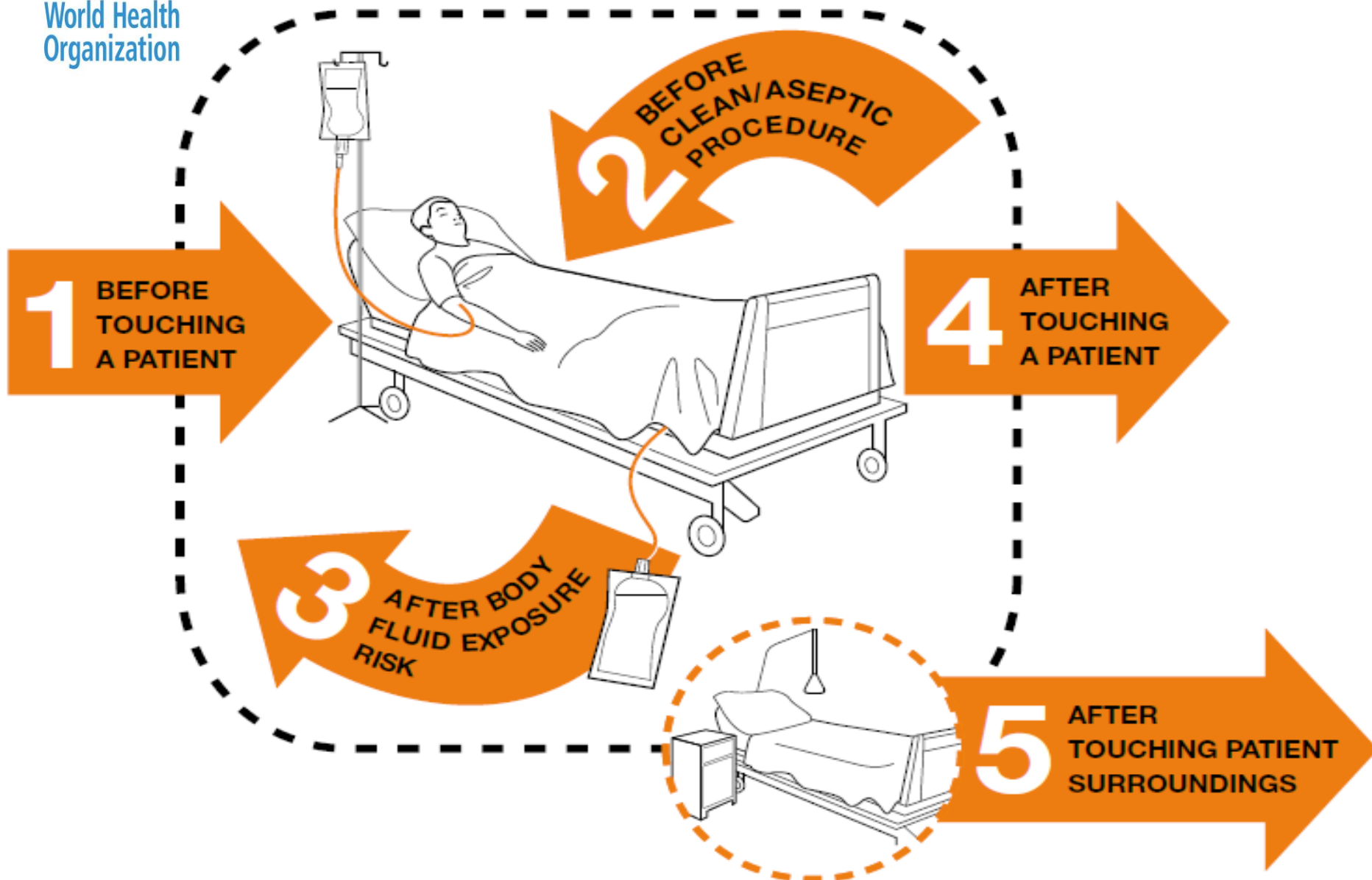
PATIENT ZONE



HEALTH-CARE AREA



World Health Organization



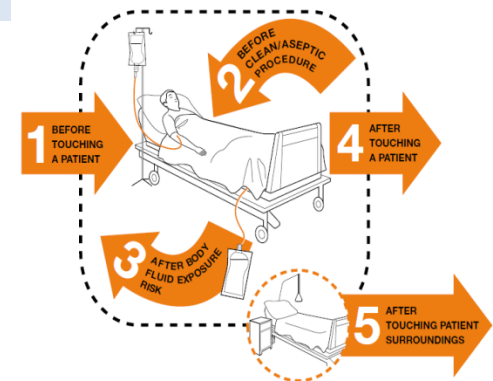
Patient

- Refers to *any part of the patient, their clothes, or any medical device that is connected to the patient*



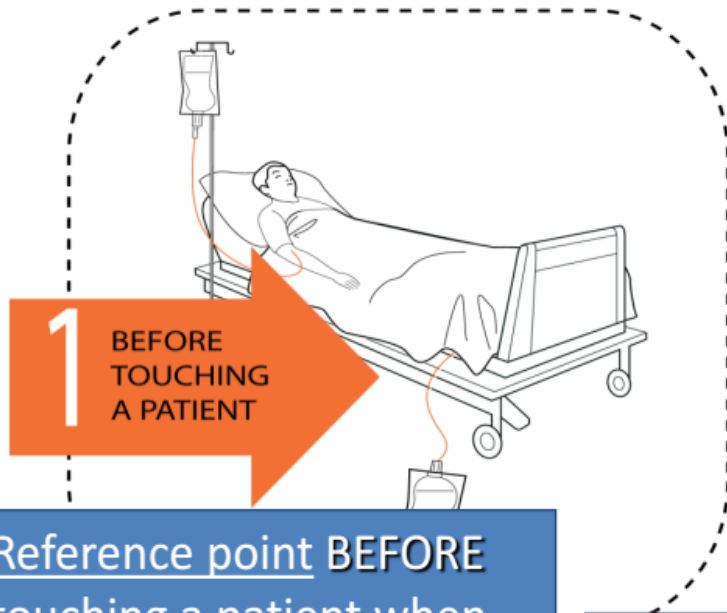
Five Moments for Hand Hygiene

- Before touching a patient
- Before clean/ aseptic procedure
- After body fluid exposure risk
- After touching a patient
- After touching patient surroundings



Moment 1

This indication is determined by the occurrence of the last contact with the health-care area and the next contact with the patient.



Situations illustrating the contact:

- shaking hand
- taking pulse, blood pressure
- chest auscultation
- abdominal palpation
- helping to move around

Since the HCW has not left the patient zone and on condition of no other indication for HH, further contact with patient's skin, clothes and surroundings do not requires any furthermore hand hygiene action

Moment 2

This indication is determined by the occurrence of the last contact with any surface in the health-care area or in the patient zone, and any procedure involving any direct and indirect contact with mucous membranes, non-intact skin or an invasive medical device.

Situations associated with an aseptic task:

- drawing blood sample
- opening a vascular line
- endotracheal suctioning
- oro-dental care
- rectal examination
- eye drop instillation
- wound dressing
- preparing food, medication



Reference point:
IMMEDIATELY BEFORE
a contact with a critical site with
infectious risk for the patient

Moment 3

This indication is determined by the occurrence of contact (even if minimal and not clearly visible) with blood or another body fluid and the next contact with any surface, including the patient, the patient surroundings or the health-care area

Situations associated to a potential or effective exposure to a body fluid :

- drawing blood sample
- oro-dental care
- vaginal examination
- removing a wound dress
- manipulating fluid sample
- clearing excreta
- cleaning soiled material and areas **xxx?**

Reference point:

IMMEDIATELY AFTER

the task involving exposure risk to body fluids has ended



Moment 3

- Actual or potential contact with:
 - Blood, Lochia
 - Saliva or tears
 - Mucous, wax, or pus
 - Breast milk, Colostrum
 - Vomitus
 - Urine, faeces, semen, or meconium
 - Pleural fluid, ascitic fluid or CSF
 - Tissue samples, including biopsy specimens, organs, bone marrow, cell samples

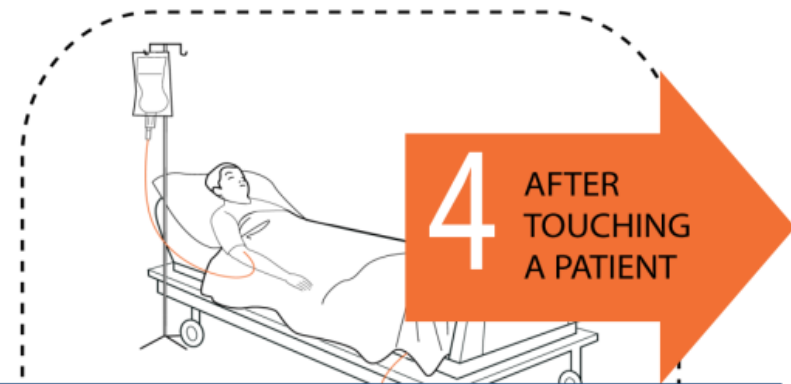
Moment 4

This indication is determined by the occurrence of the last contact with intact skin or the patient's clothing or a surface in the patient's surroundings (following contact with the patient), and the next contact with a surface in the health-care area

Situations illustrating the contact:

- shaking hand
- taking pulse, blood pressure
- chest auscultation
- abdominal palpation
- helping to move around

Situations containing the indication “before touching a patient contact” will contain the indication “after touching a patient” necessarily



Reference point:

AFTER

having touched the patient, when leaving the patient's side

Moment 5

The indication occurs between the last contact with the patient surroundings, without having touched the patient, and any contact with a surface in healthcare environment without having touched the patient

Situations illustrating the limited contact with inanimates:

- adjusting perfusion speed
- clearing monitoring alarm
- changing bed linen
- holding a bed rail
- clearing the bedside table

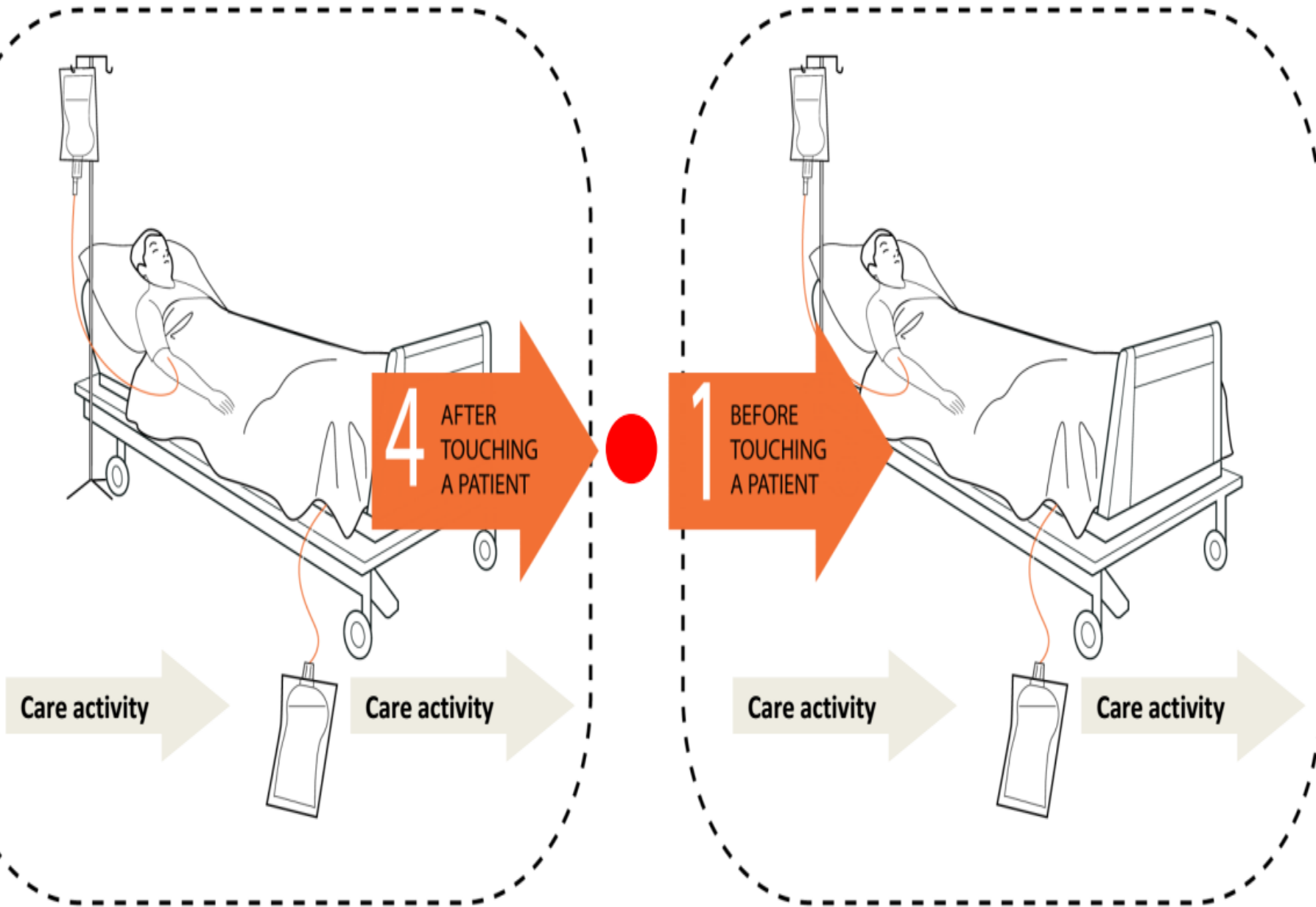
Reference point:

AFTER

touching any object or furniture when leaving the patient surroundings



Coincidence of Two Indications



Compliance With Hand Hygiene

- There is no indication 'Before Patient Environment'.

Hands Need to be Cleaned When

- Visibly dirty
- After touching contaminated objects with bare hands
- Before and after patient treatment (before glove placement and after glove removal)



Question 2

**HCWs ask you:
“When they wear gloves,
is it necessary
to wash their hands?”**

Hand Hygiene is Necessary

1. Before patient treatment

2. After patient treatment



Hand Hygiene

1. Before glove placement

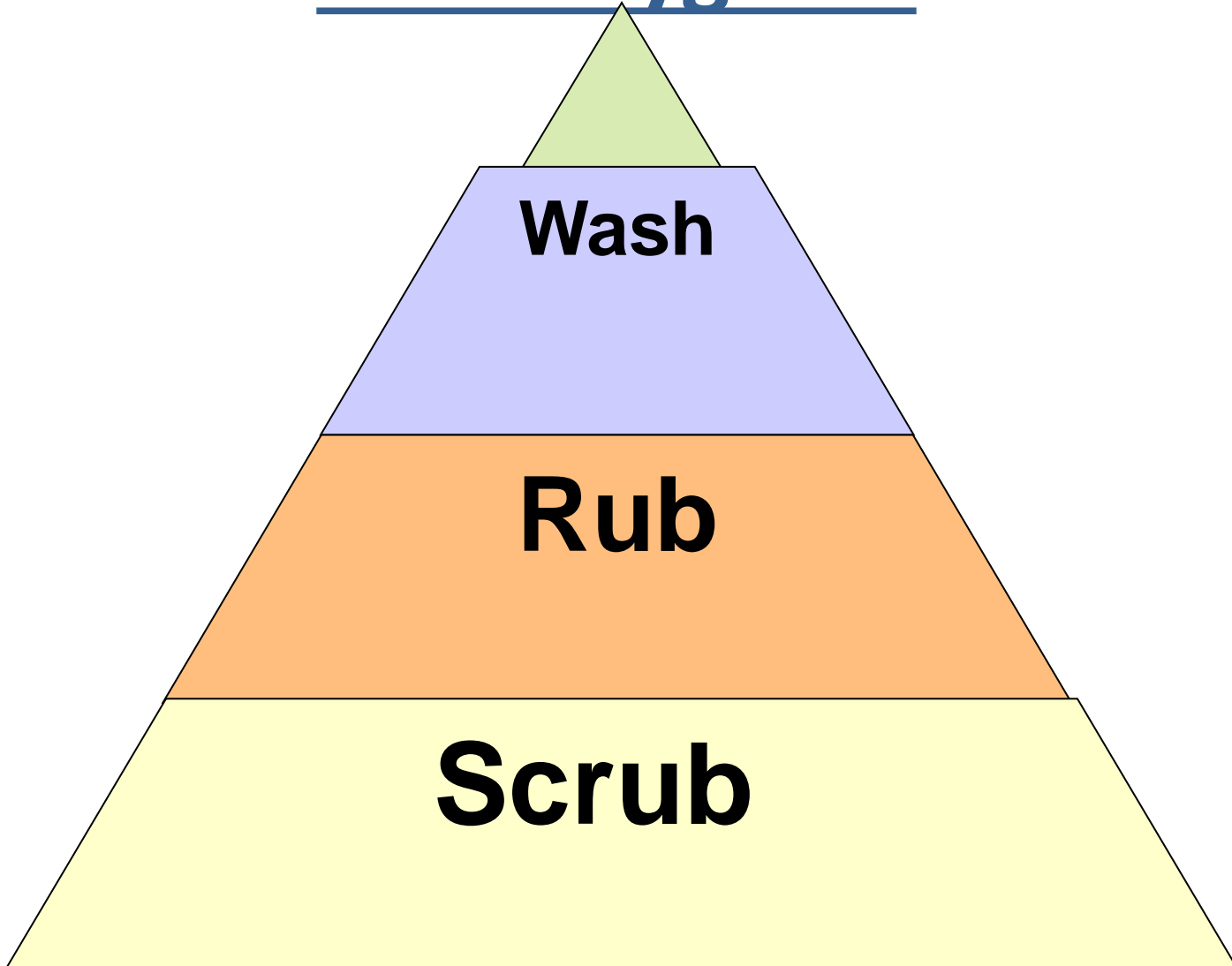
2. After glove removal



Sterile or non-sterile gloves



Hand Hygiene



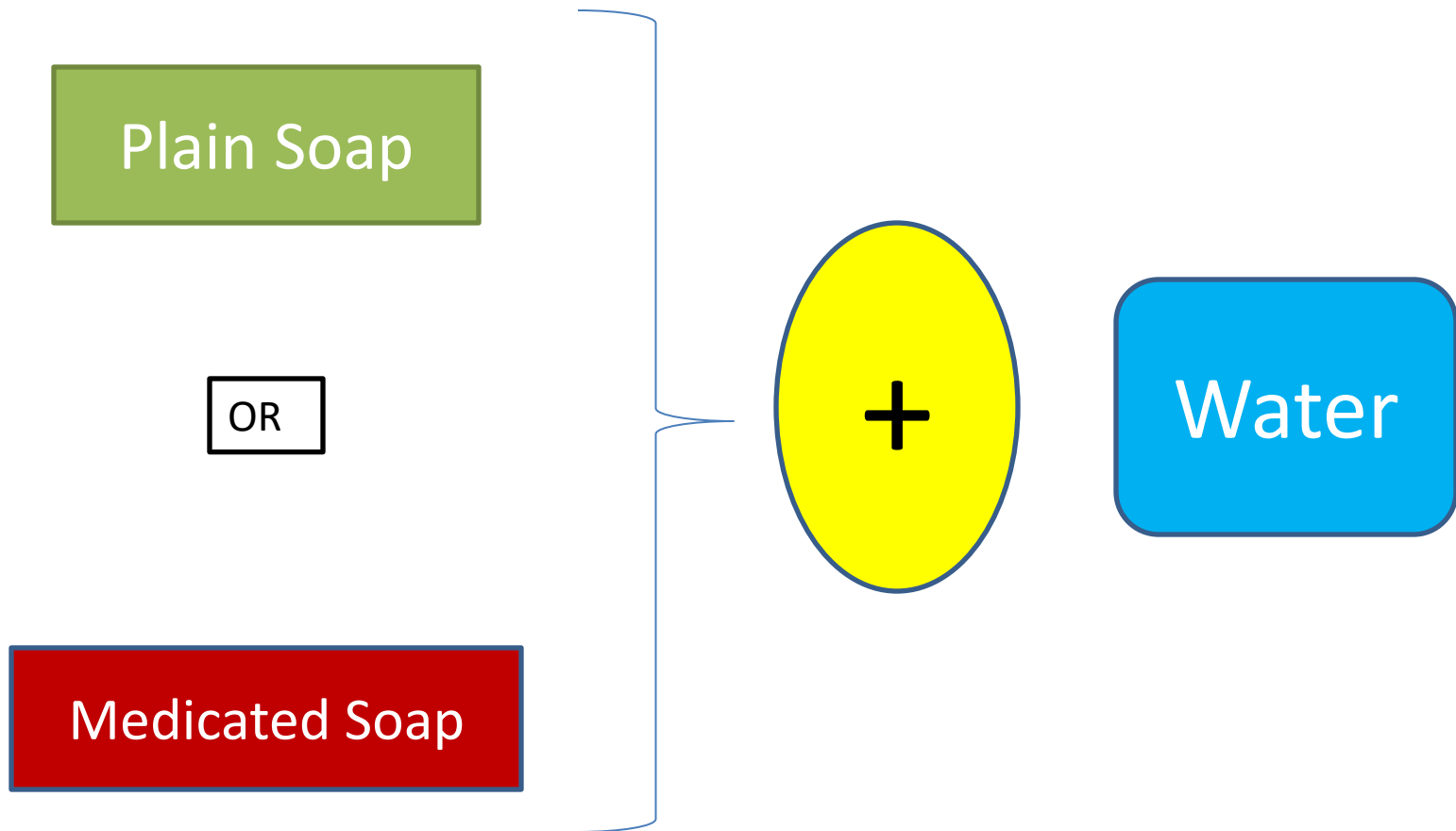
Hand Hygiene Definitions

- **Handwashing**
 - Washing hands with plain soap and water
- **Antiseptic handwash**
 - Washing hands with water and soap or other detergents containing an antiseptic agent

Hand Hygiene Definitions

- **Alcohol-based handrub**
 - Rubbing hands with an alcohol-containing preparation
 - Rub hands until the agent is dry
- **Surgical antisepsis**

Preparations Used for Hand Hygiene









Efficacy of Preparations in Reduction of Bacteria

Good

Better

Best



Plain Soap

Antimicrobial
soap

Alcohol-based
handrub

Source: <http://www.cdc.gov/handhygiene/materials.htm>

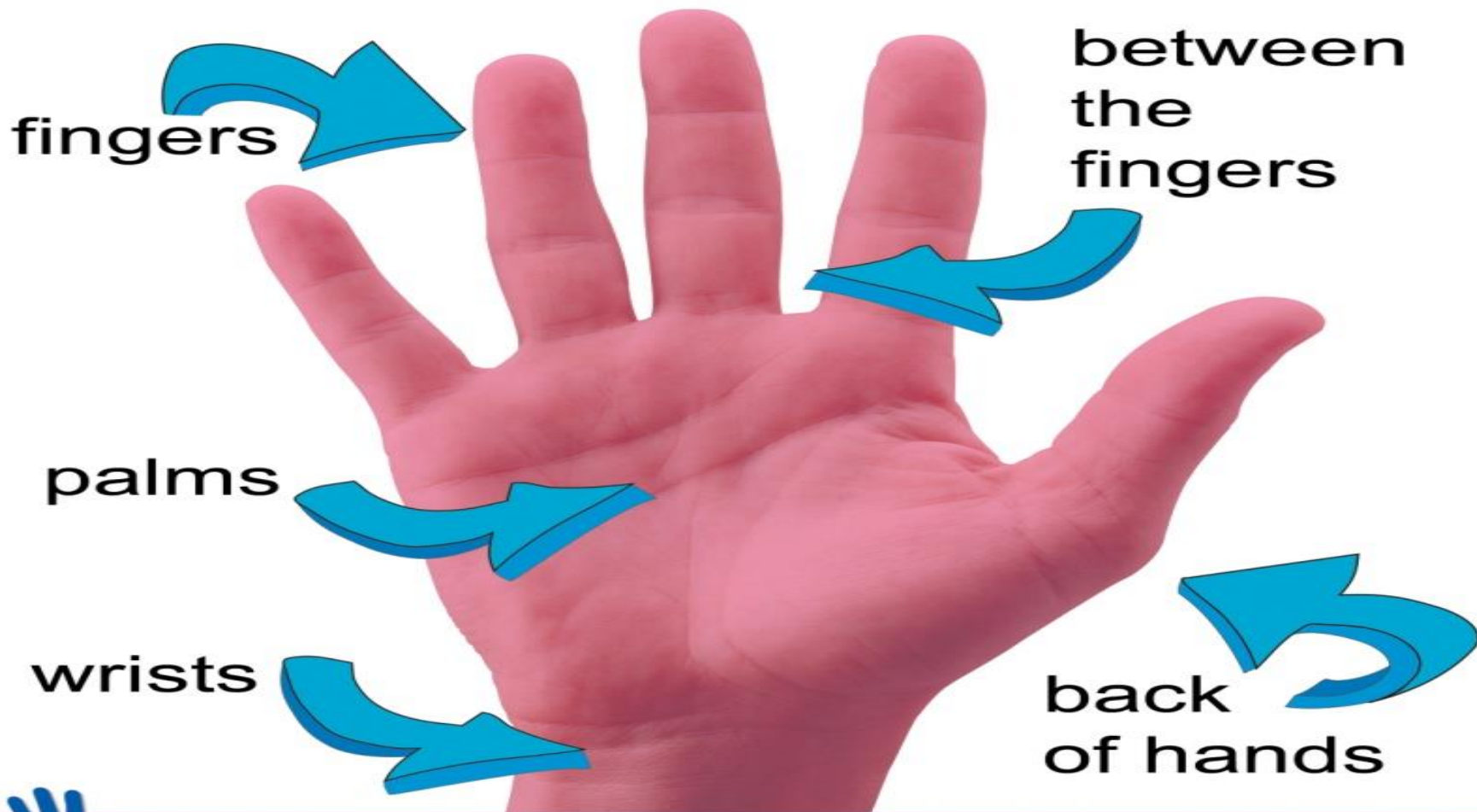
MISSED SPOTS WHEN HAND-WASHING




- MOST FREQUENTLY MISSED
- LESS FREQUENTLY MISSED
- NOT MISSED

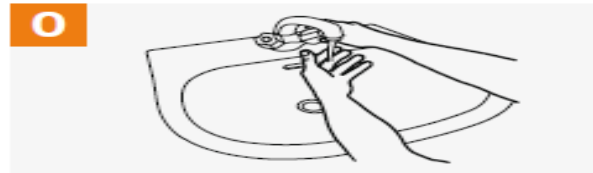
WHERE TO WASH

Wash all surfaces thoroughly

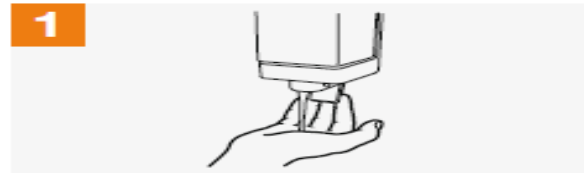


Hand Hygiene Technique with Soap and Water

 Duration of the entire procedure: 40-60 seconds



0 Wet hands with water;



1 Apply enough soap to cover all hand surfaces;



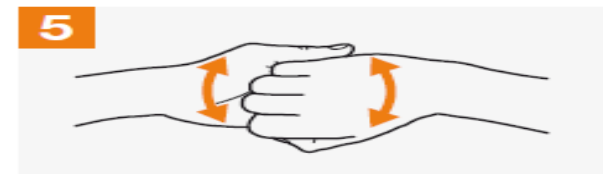
2 Rub hands palm to palm;



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;



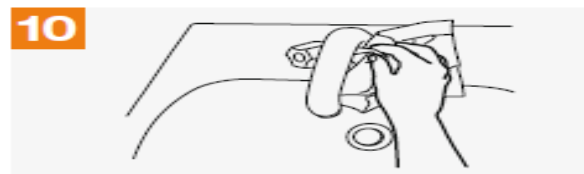
7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



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.

CLEAN YOUR HANDS



1

Rub hands palm to palm.



2

Rub the back of both hands.



3

Palm to palm, fingers interlaced.



4

Back of fingers to opposing palm, with fingers interlocked.



5

Rotational rubbing of right thumb clasped in left palm. Vice versa.



6

Rotational rubbing backward and forward on right palm with clasped fingers. Vice Versa.



7

Wrap left hand over right wrist using rotational movements up to elbow. Vice versa.



8

Use paper towel to turn off faucet.

Hand Rub

Question 3

- Which antiseptic is better for hand rub?



Pocket Bottle



Hand Antiseptics

Alcohols

Chlorhexidine

Hexachlorophene

Iodine and iodophors

Quaternary ammonium compounds

Triclosan

Activity of Antiseptics

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

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

Preparations Used for Hand Hygiene

Alcohol-based
hand rub

Alcohols

- Ethanol
- Isopropanol
- N-propanol
- A combination of two of these products

Alcohols

In general, ethanol has greater activity against viruses than isopropanol

Ethanol \geq **Isopropanol**

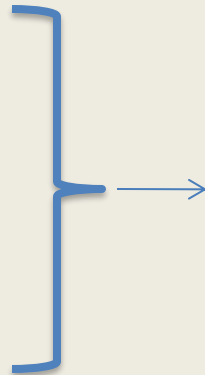
Alcohol-based (hand) Rub

An alcohol-containing preparation:

Liquid

Gel

Foam



For application to the hands
to inactivate microorganisms
and/or temporarily suppress
their growth

Question 4

**For 5 moments of hand hygiene,
which one is better?**

- **Hand washing?**
- **Hand rubbing?**

Alcohol-based Preparations

Benefits

- Rapid and effective antimicrobial action
- Improved skin condition
- More accessible than sinks

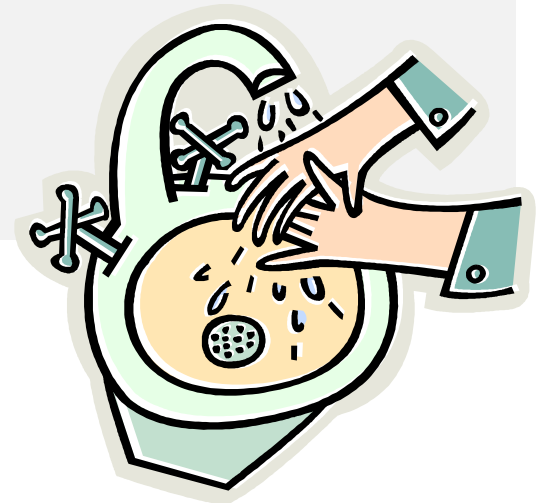


Limitations

- Cannot be used if hands are visibly soiled
- Store away from high temperatures or flames
- Hand softeners and glove powders may “build-up”

Indications For Hand Wash

- Wash hands with soap and water:
 - When visibly dirty or visibly soiled with blood or other body fluids
 - After using the toilet



Alcohols

- **Not good cleansing agents**
- **Not recommended when:**
 - ▶ **Hands are dirty** **or**
 - ▶ **Visibly contaminated with proteinaceous materials**

Alcohols

- Virtually **no activity against:**
 - ▶ bacterial spores
 - ▶ protozoan oocysts
- **Very poor activity against:**
 - ▶ some non-enveloped(non-lipophilic) viruses

Question 5


- A patient in ICU has developed antibiotic-associated colitis with *C. difficile*. To prevent the spread of infection, what kind of hand hygiene do you recommend?
Wash or rub or both?

Indications for Hand Hygiene

- If exposure to potential spore-forming pathogens is strongly suspected or proven, including outbreaks of *Clostridium difficile*, ***hand washing with soap and water is the preferred means***

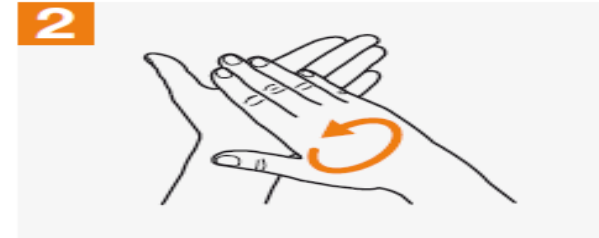


Hand Hygiene Technique with Alcohol-Based Formulation

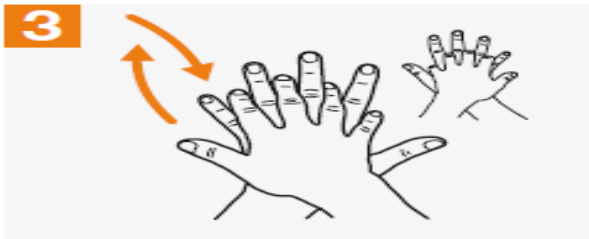
 **Duration of the entire procedure: 20-30 seconds**



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



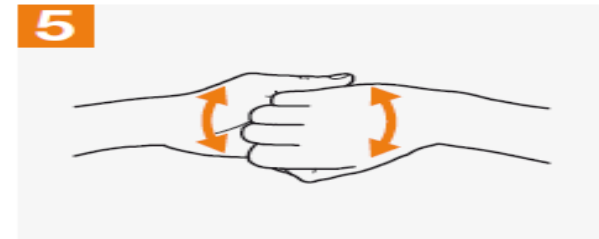
Rub hands palm to palm;



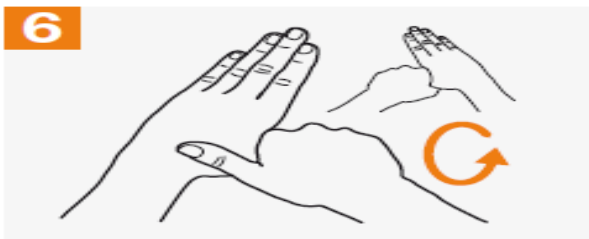
Right palm over left dorsum with interlaced fingers and vice versa;



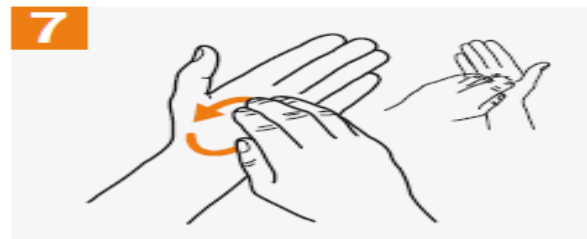
Palm to palm with fingers interlaced;



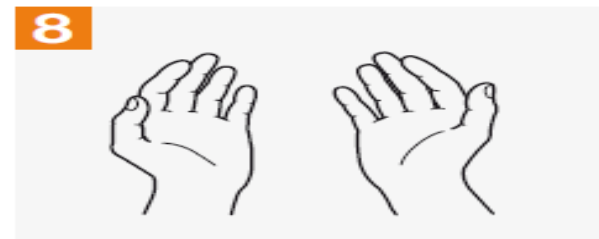
Backs of fingers to opposing palms with fingers interlocked;



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



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



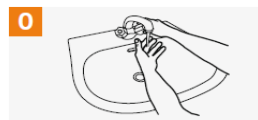
Once dry, your hands are safe.

Hand Hygiene

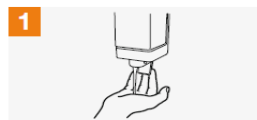
Hand Wash

Hand Hygiene Technique with Soap and Water

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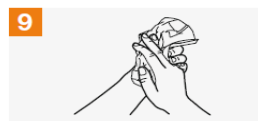
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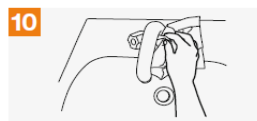
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.

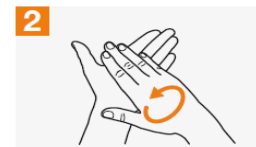
Hand Rub

Hand Hygiene Technique with Alcohol-Based Formulation

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



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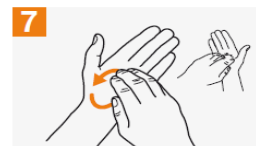
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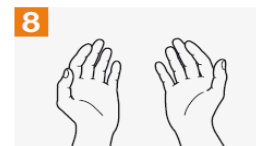
Backs of fingers to opposing palms with fingers interlocked;



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



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



Once dry, your hands are safe.

Question 6

- For skin care of HCWs, which preparation is better, petroleum or lotion?

Special Hand Hygiene Considerations

- Keep fingernails short
- Avoid artificial nails
- Avoid hand jewelry that may tear gloves



**World Health
Organization**

**SAVE LIVES
CLEAN YOUR HANDS**



**UNITE
FOR SAFETY
CLEAN
— YOUR —
HANDS**

#HandHygiene

What to Do To Improve Hand hygiene?

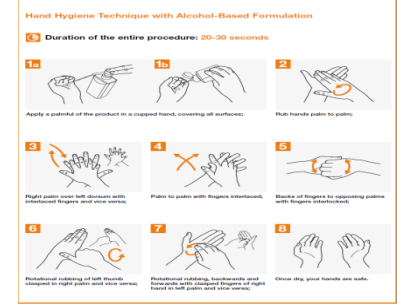
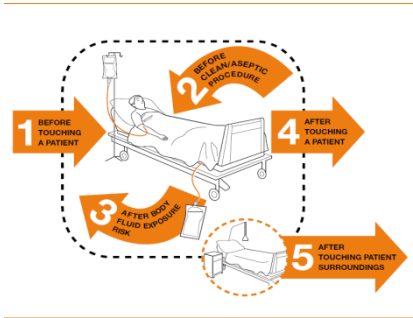


IPC Interventions

Hand Hygiene

IPC Multimodal Strategies,

Indicator : Hand Hygiene



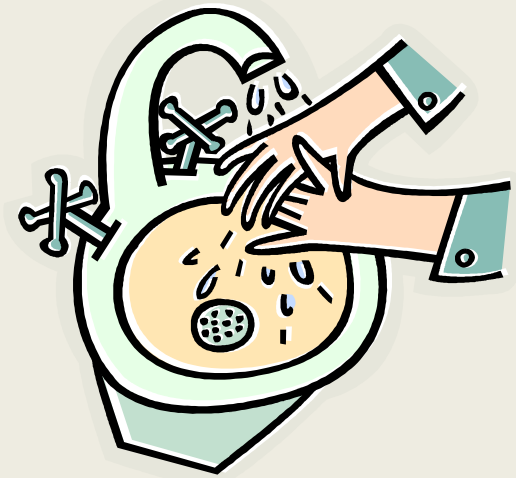
Hands

= The most common mode of pathogen transmission



Conclusion

- Clean Care is Safer Care.
- Wash your hands.
- Rub your hand.



Hand Hygiene

- Hands are the most common mode of pathogen transmission

