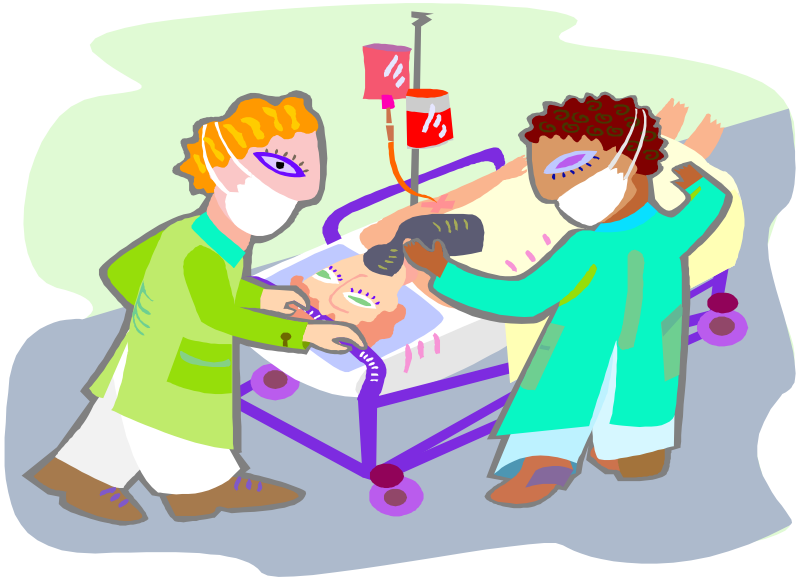
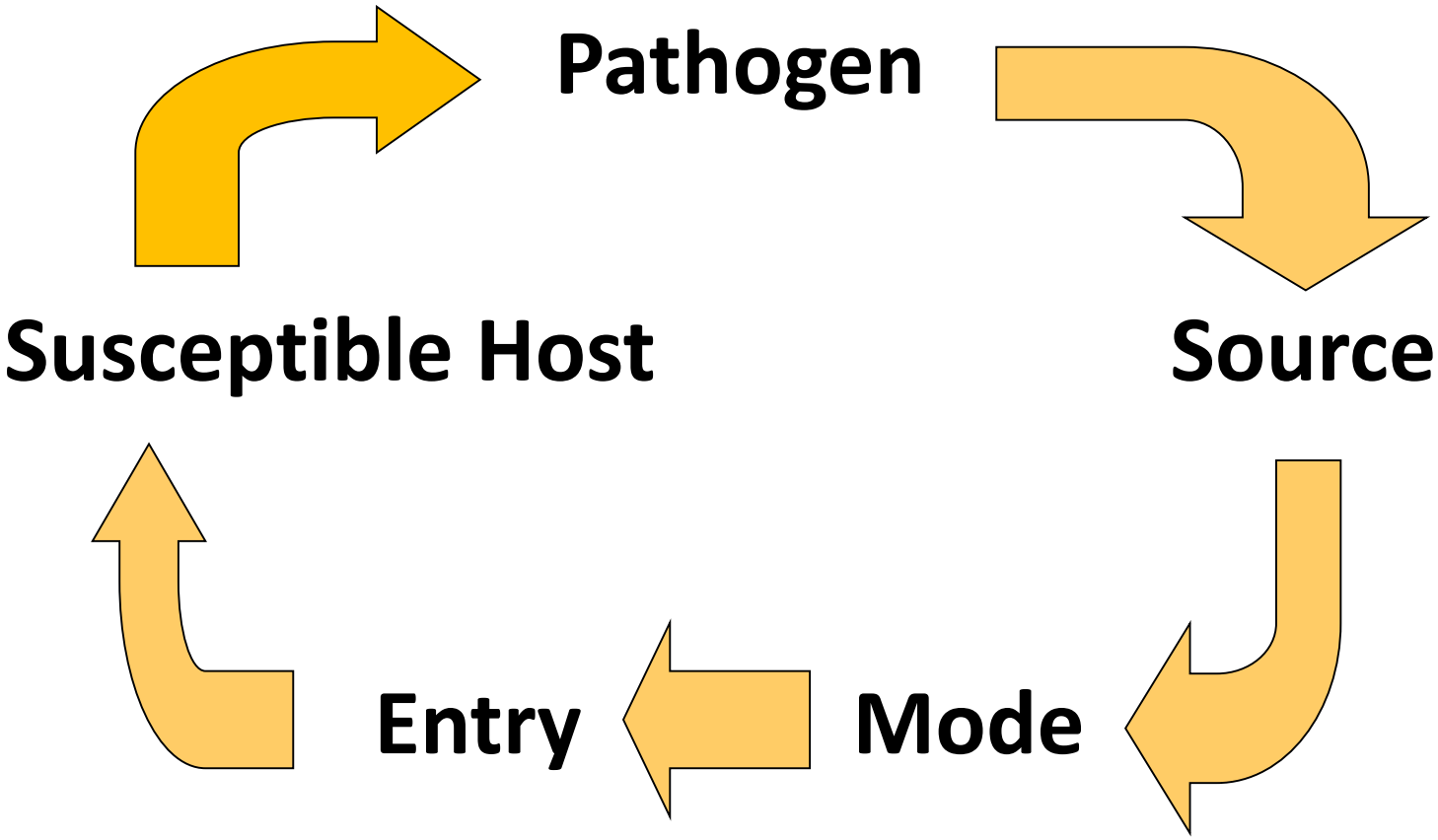
Infection Control In Healthcare Settings

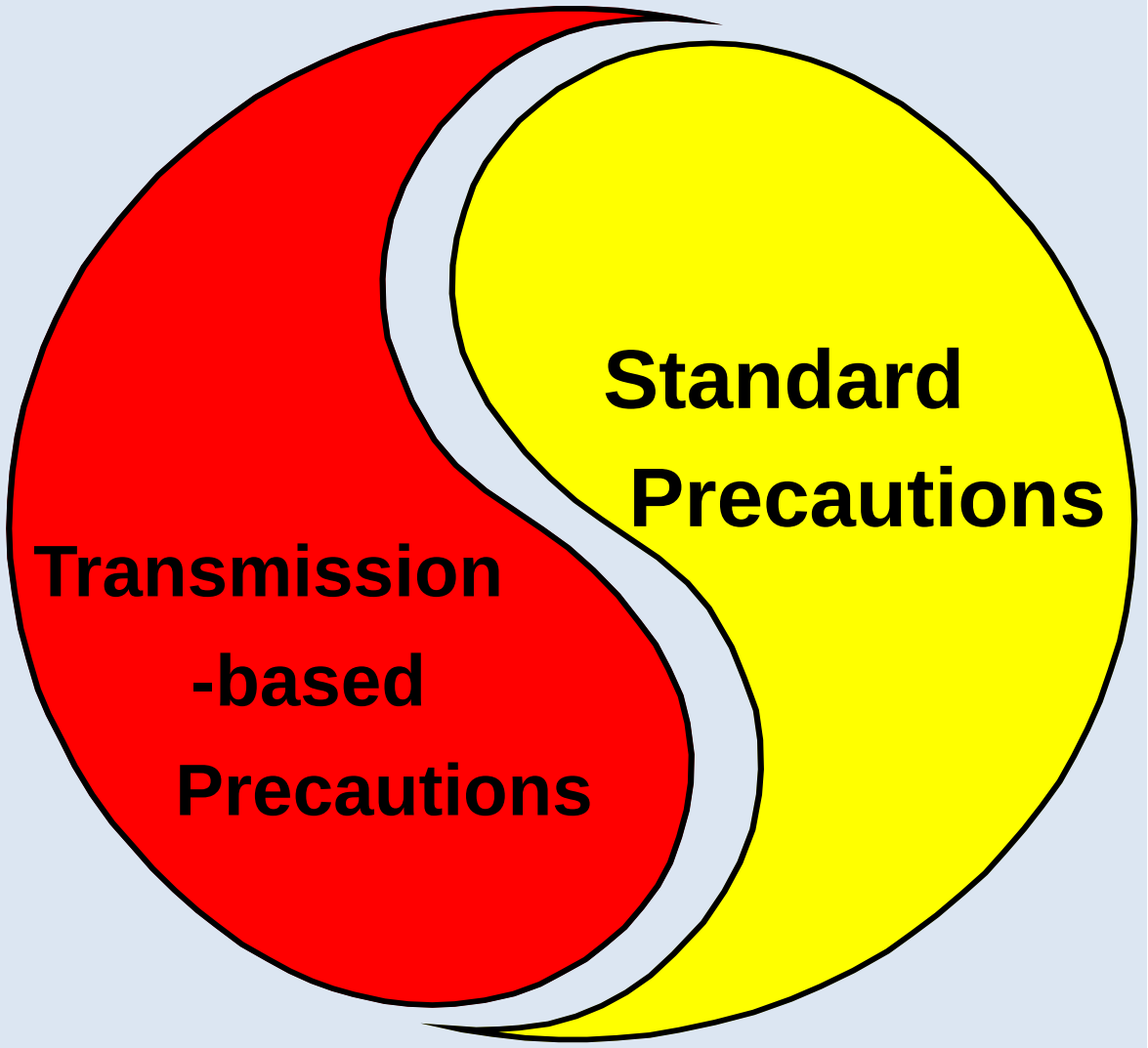
Standard Precautions: Hand Hygiene



Chain of Infection



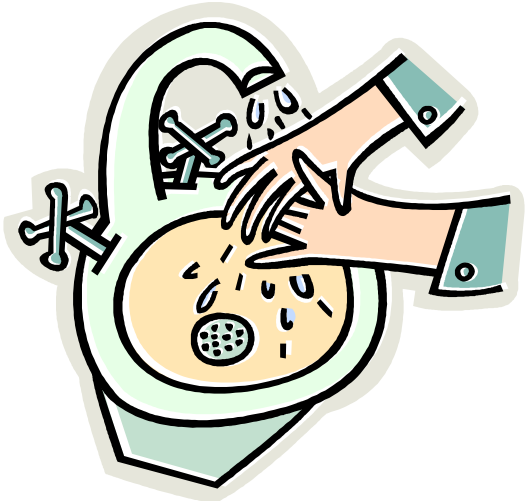
Isolation Precautions



Hand Hygiene

Introduction

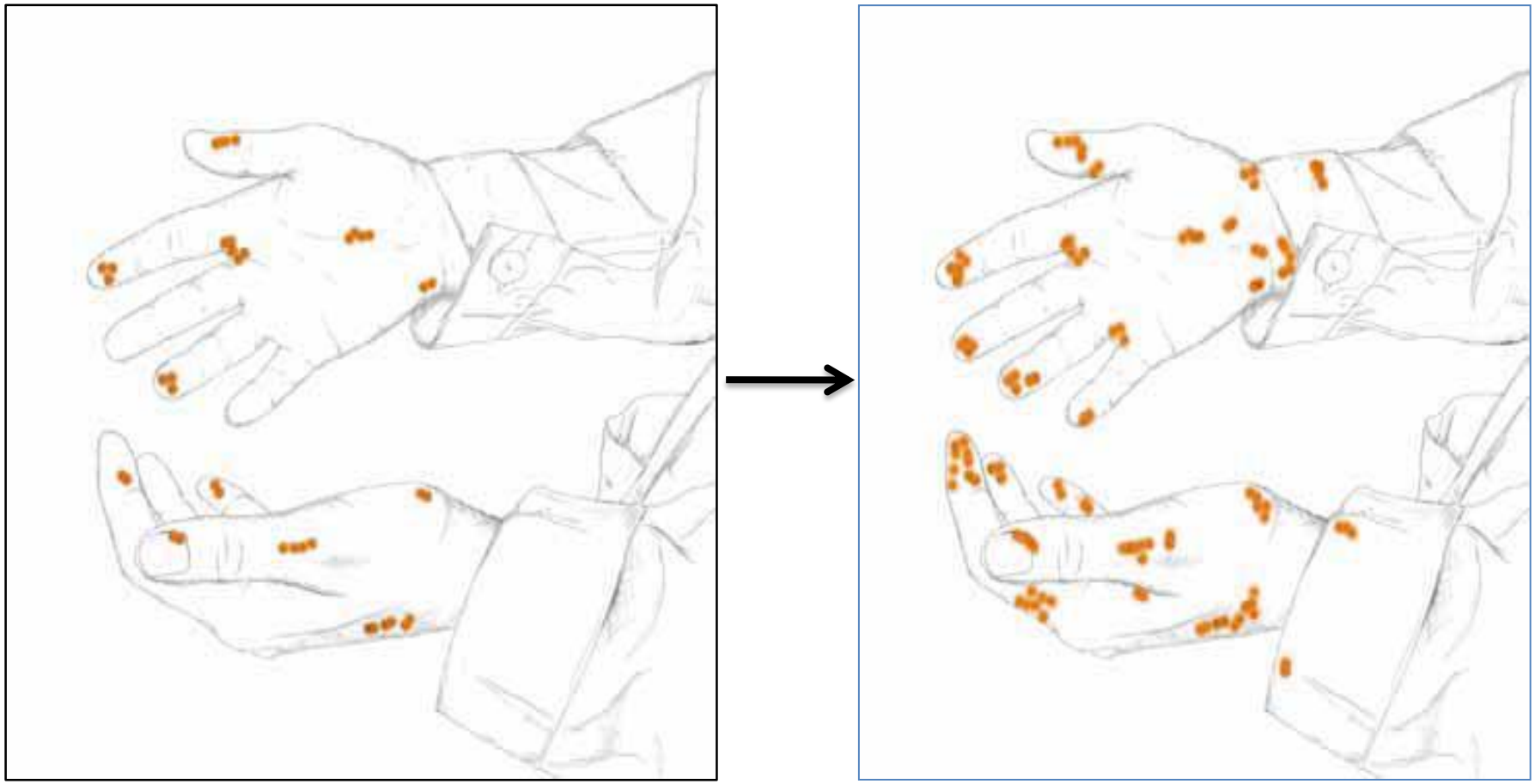
- Hands are the most common mode of pathogen transmission



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
Enterococcuc spp.including VRE	5days-4 months
Pseudomonas aeruginosa	6hours-16 months
Staphyloccus 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

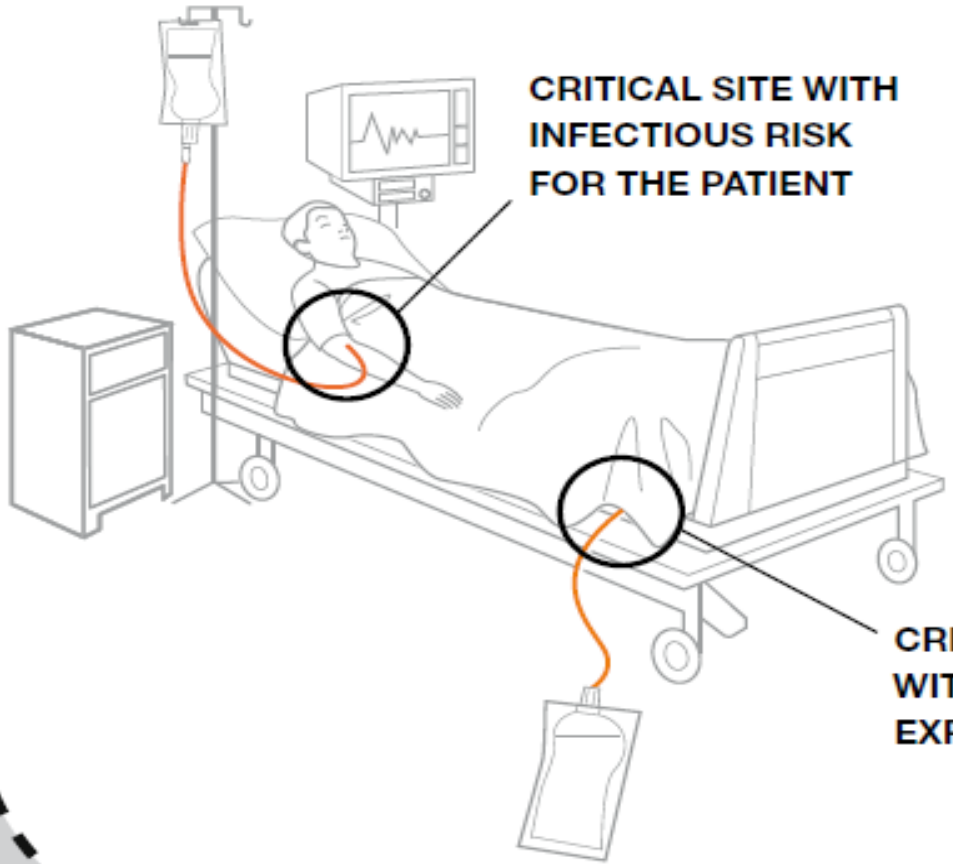
Hand hygiene at the heart of the core components for effective IPC programs.

Question 1

When do you wash/rub your hands?

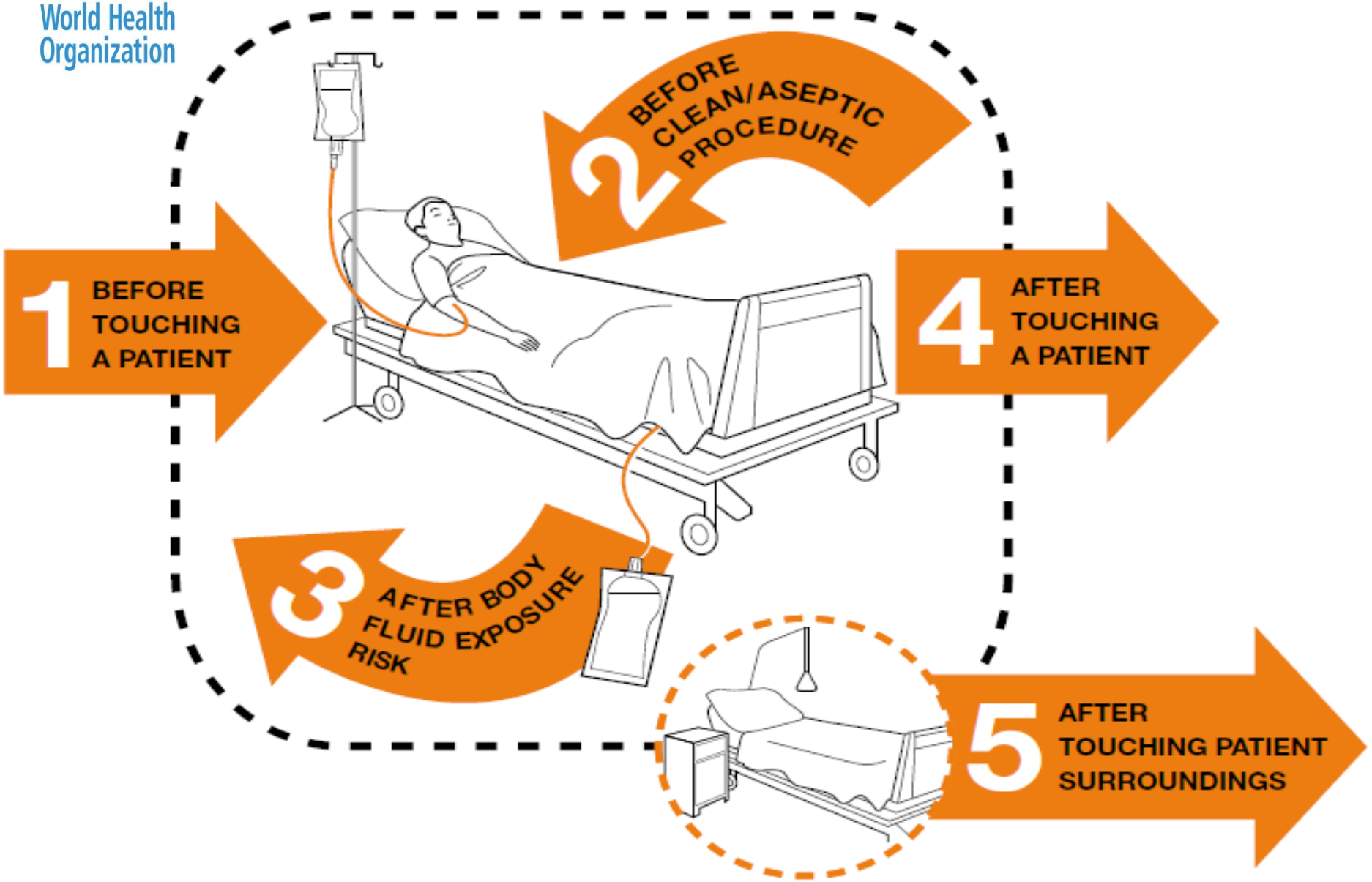
World Health Organization

PATIENT ZONE



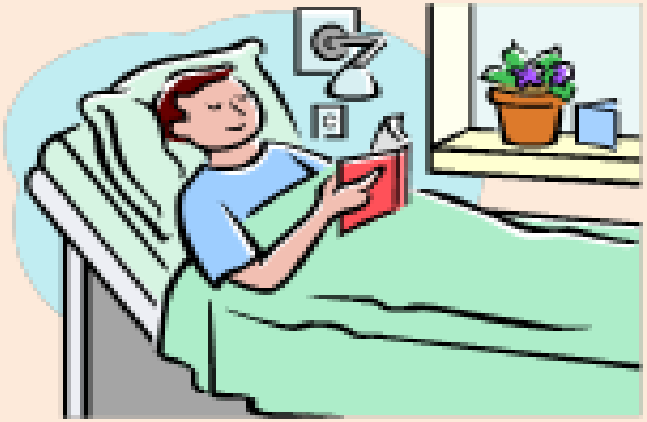
HEALTH-CARE AREA

World Health Organization



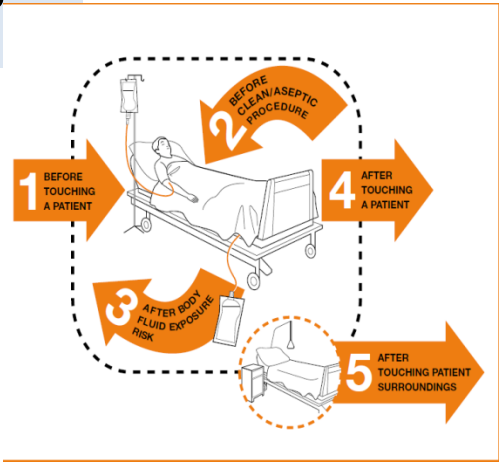
Patient

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



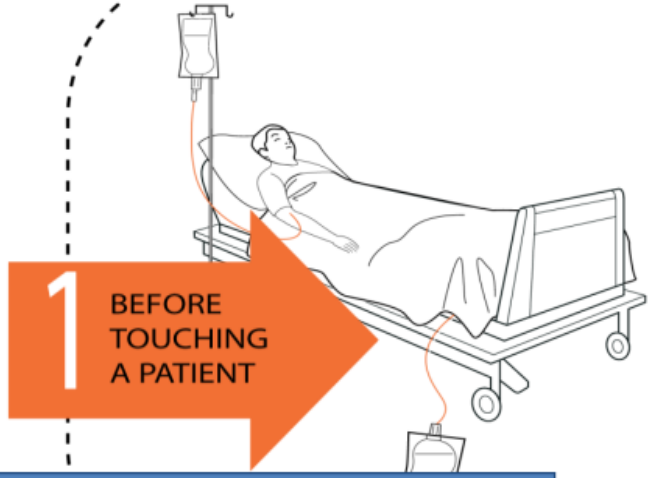
Five Moments for Hand Hygiene

- 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.



Reference point BEFORE touching a patient when approaching her/him

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 1

When:	Examples:
Touching a patient in any way	Shaking hands, Assisting a patient to move, most Allied health interventions, Touching any medical device connected to the patient (e.g. IV pump, IDC)
Any personal care activities	Bathing, Dressing, Brushing hair, Putting on personal aids e.g. Glasses
Any non-invasive observations	Taking a pulse, Blood pressure, Oxygen saturation, Temperature, Chest auscultation, Abdominal palpation, Applying ECG electrodes, CTG
Any non-invasive treatment	Applying an oxygen mask or nasal cannula, Fitting slings/braces, Application of incontinence aids (including condom drainage)

Moment 1

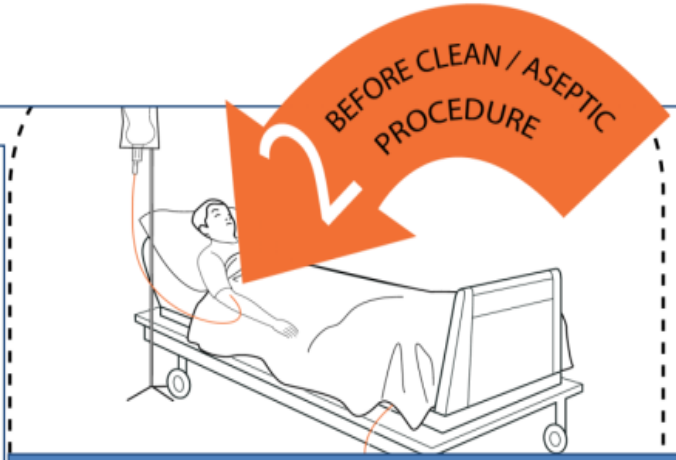
When:	Examples:
Preparation and administration of oral medications	Oral medications, Nebulised medications
Oral care and feeding	Feeding a patient, Brushing teeth or dentures

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 suctionning
- 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 2

When:	Examples:
Insertion of a needle into a patient's skin, or into an invasive medical device	Venipuncture, Blood glucose level, Arterial blood gas, Subcutaneous or Intramuscular injections, IV flush
Preparation and administration of any medications given via an invasive medical device, or preparation of a sterile field	IV medication, NGT feeds, PEG feeds, Baby tube feeds, Dressing trolley
Administration of medications where there is direct contact with mucous membranes	Eye drop installation, Suppository insertion, Vaginal pessary

Moment 2

When:	Examples:
Insertion of, or disruption to, the circuit of an invasive medical device	Procedures involving the following: ETT, Tracheostomy, Nasopharyngeal airways, Suctioning of airways, Urinary catheter, Colostomy/ileostomy, Vascular access systems, Invasive monitoring devices, Wound drains, PEG tube, NGT, Secretion aspiration
Any assessment, treatment and patient care where contact is made with non-intact skin or mucous membranes	Wound dressings, Burns dressings, Surgical procedures, Digital rectal examination, Invasive obstetric and gynaecological examinations and procedures, Digital assessment of newborns palate

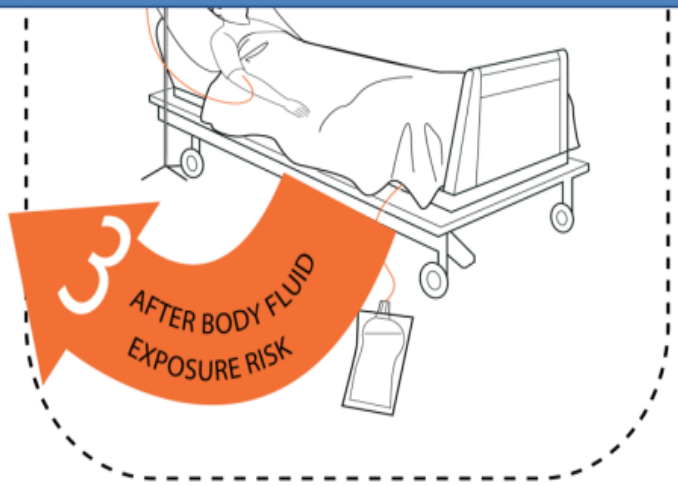
Moment 3

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

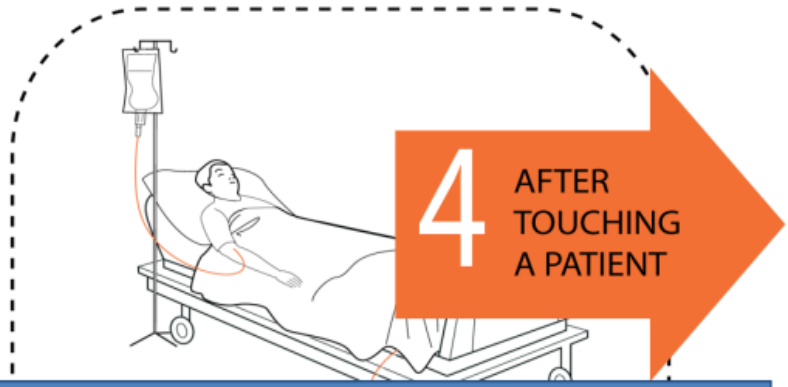
- Actual or potential contact with:
  - Blood, Lochia
  - Saliva or tears
  - Mucous, wax, or pus
  - Breast milk, Colostrum
  - Vomitus
  - Urine, faeces, semen, or meconium
  - Pleural fluid, ascitic fluid or CSF
  - Tissue samples, including biopsy specimens, organs, bone marrow, cell samples

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



Reference point:
AFTER

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

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

Moment 5

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

Reference point:

AFTER

touching any object or furniture when leaving the patient surroundings

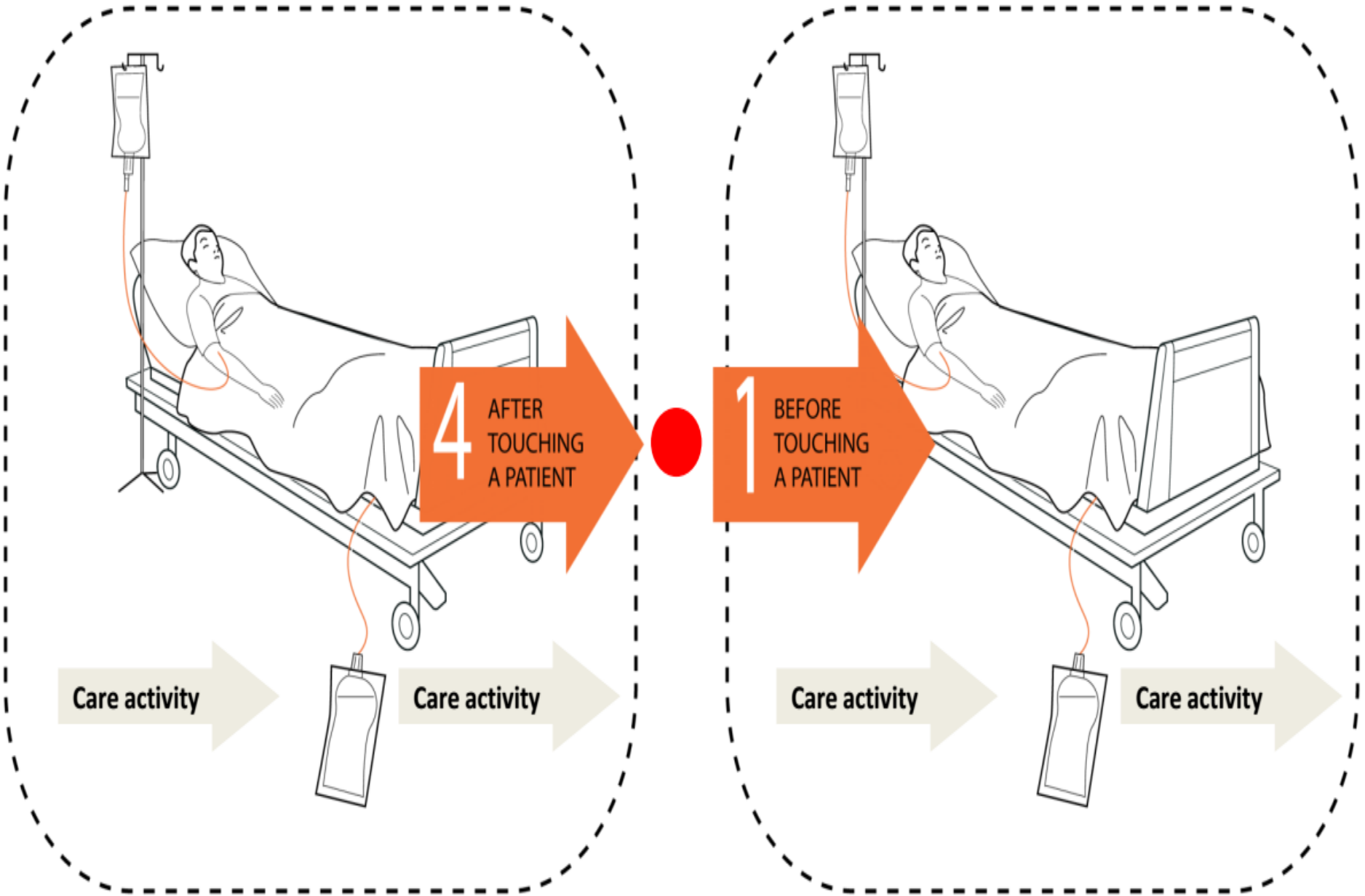
Situations illustrating the limited contact with inanimates:

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

Moment 5

When:	Examples:
After touching the patient's immediate surroundings when the patient has not been touched	Patient surroundings include: Bed, Bedrails, Linen, Table, Bedside chart, Bedside locker, Call bell/TV remote control, Light switches, Personal belongings, Chair, Foot stool, Monkey bar

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

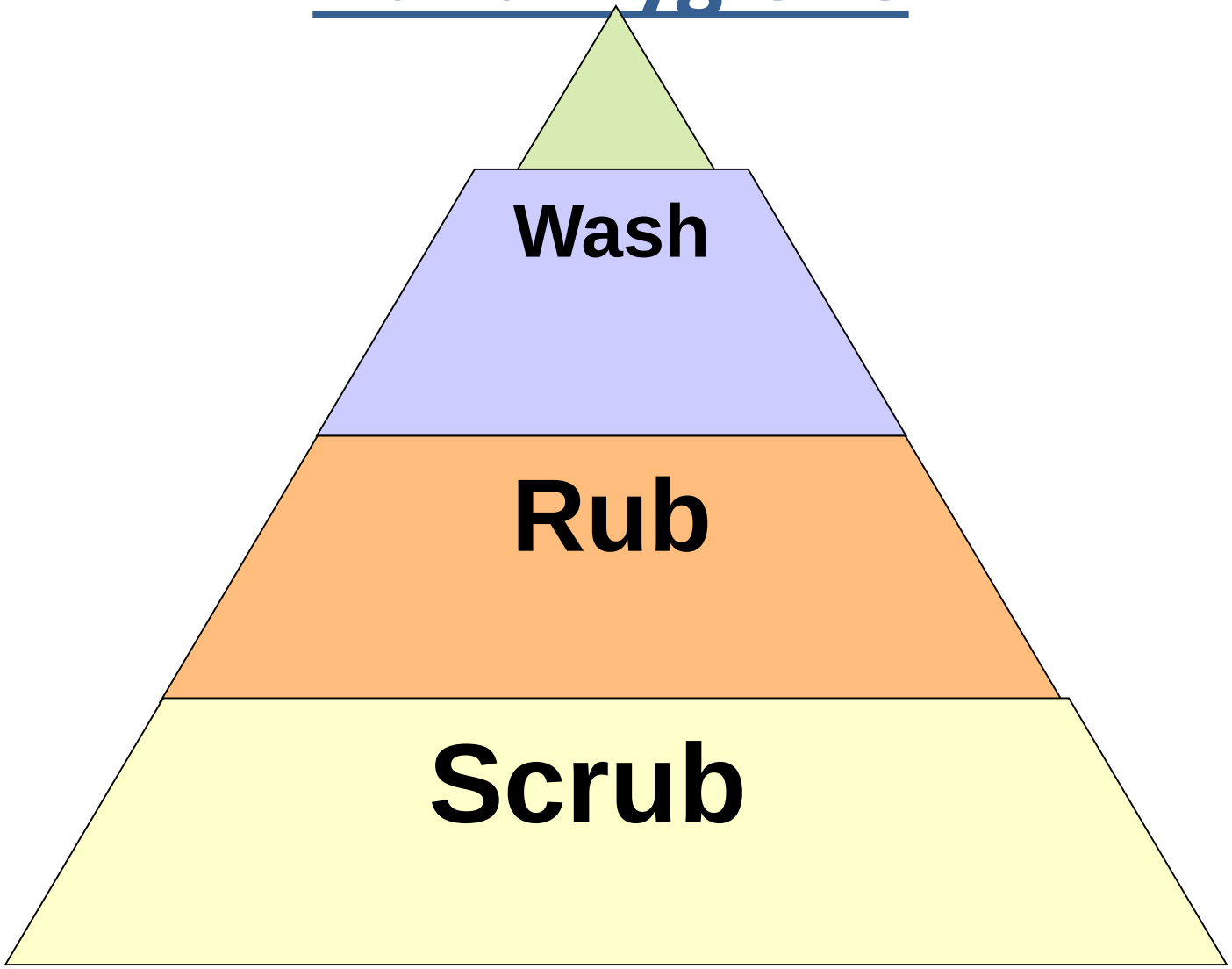
Hand Hygiene

1. Before glove placement

2. After glove removal

Sterile or non-sterile gloves

Hand Hygiene



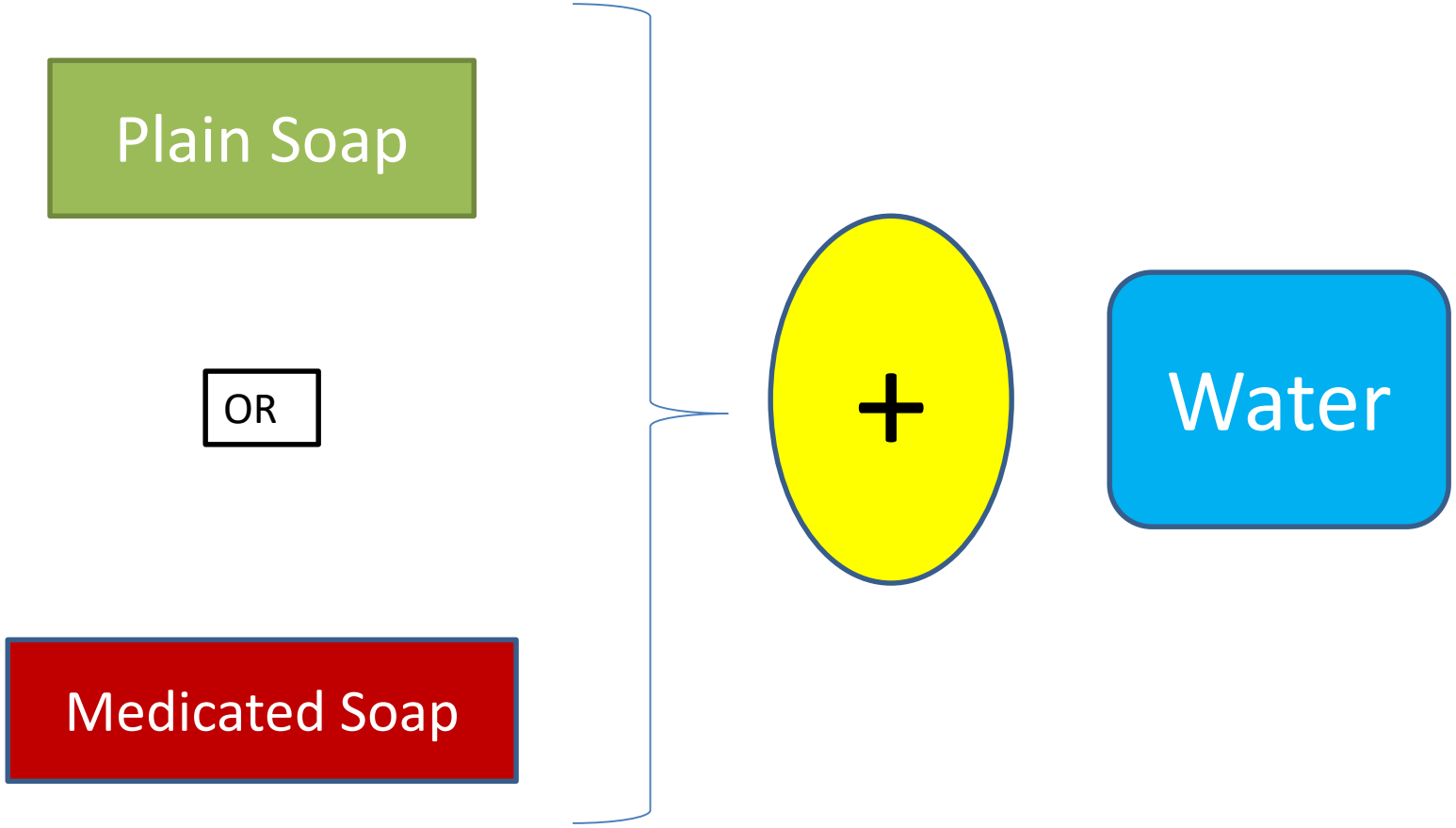
Hand Hygiene Definitions

- **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




Gel alcoolique pour la désinfection des mains
Alcohol-based hand gel
Clean Care is Safer Care
HUG
World Alliance for Patient Safety
World Health Organization


100 ml

Efficacy of Preparations in Reduction of Bacteria

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

MISSED SPOTS WHEN HAND-WASHING

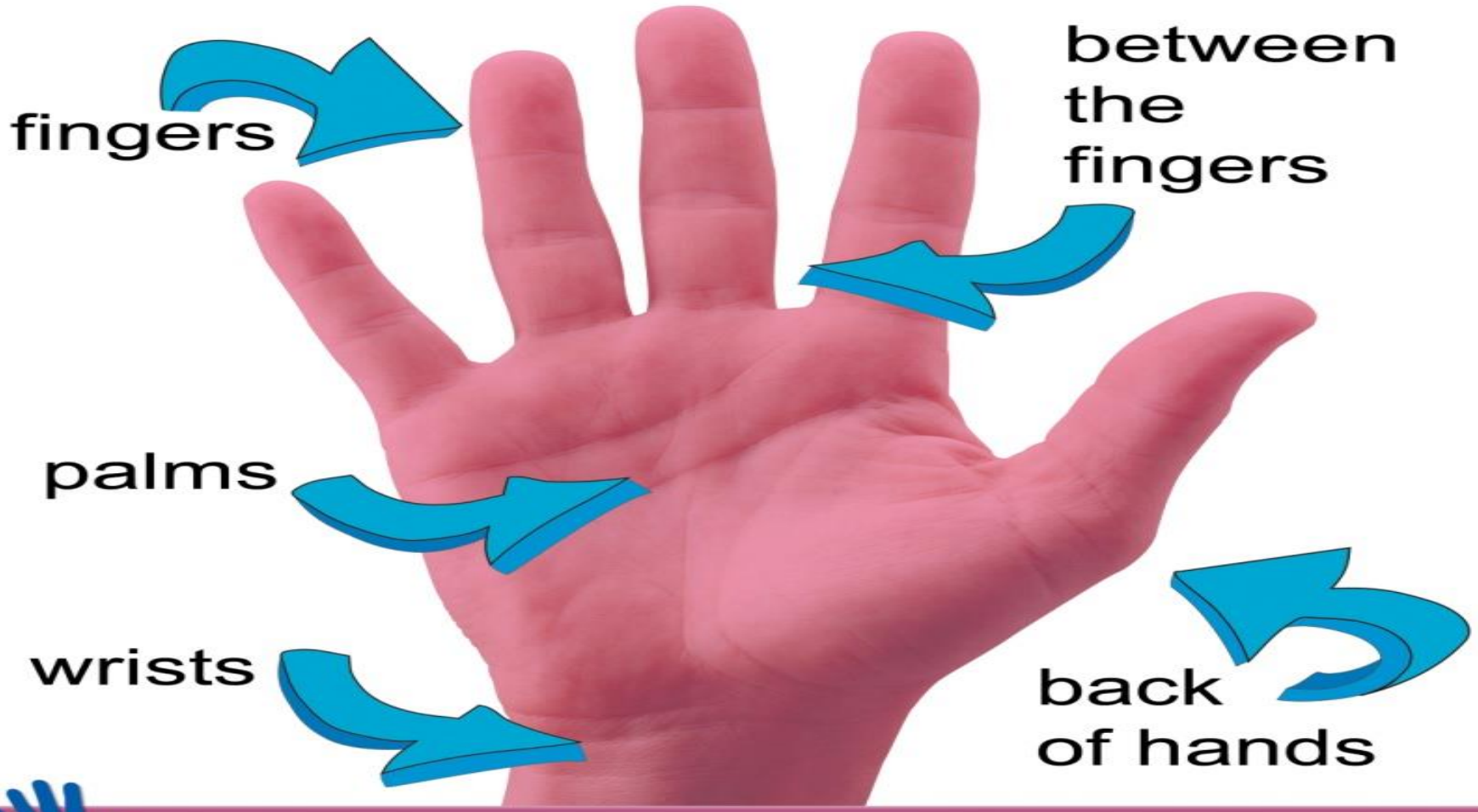
MOST FREQUENTLY MISSED

LESS FREQUENTLY MISSED

NOT MISSED

Where to Wash

Wash all surfaces thoroughly



Infection: Don't Pass It On

www.publichealth.va.gov/InfectionDontPassItOn

Department of Veterans Affairs

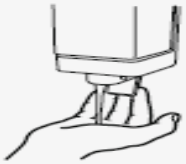
Hand Hygiene Technique with Soap and Water

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;

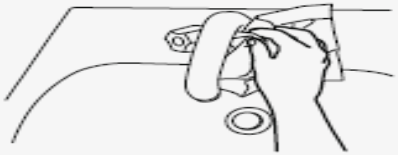
8

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
Chloroxylenol	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

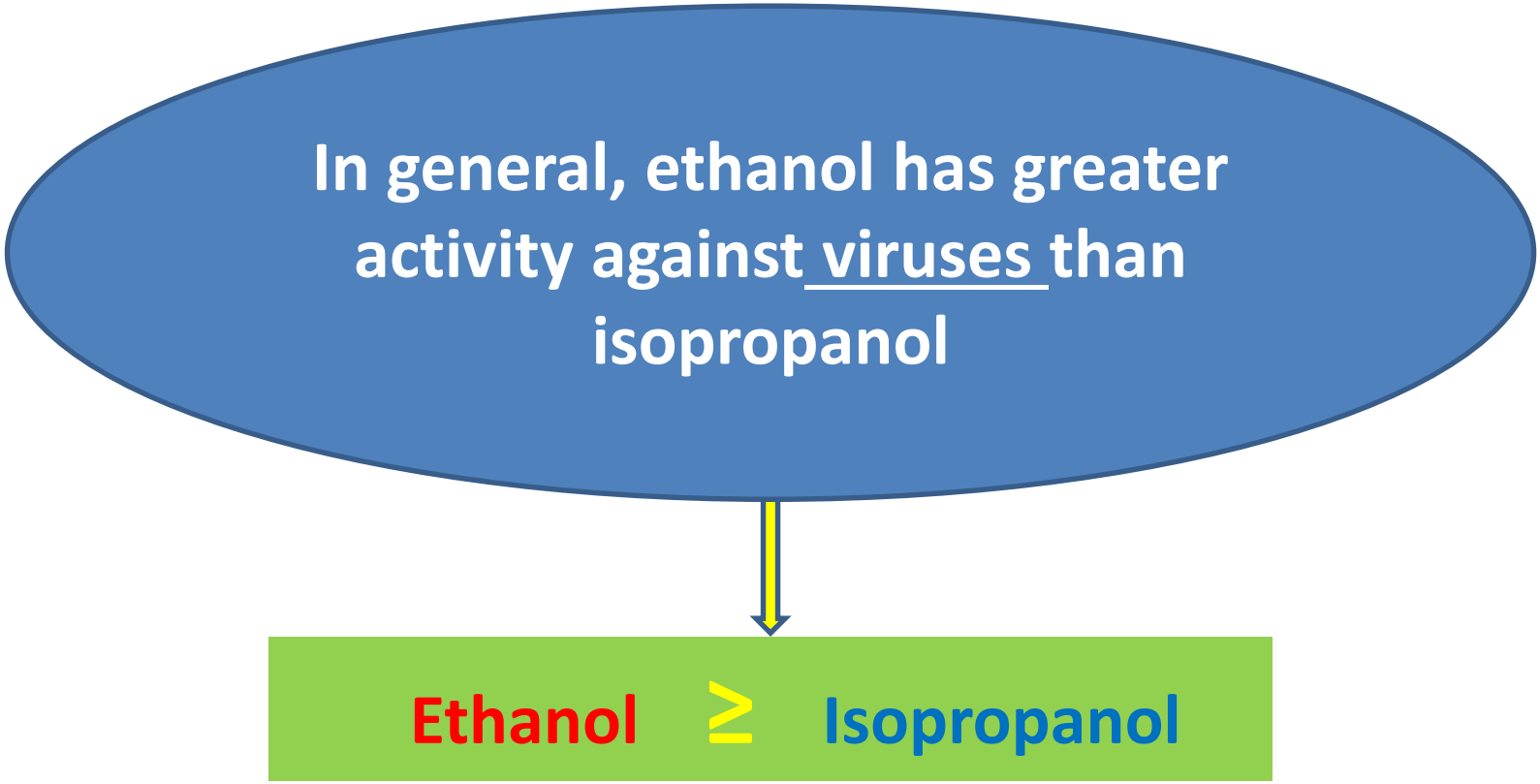
Preparations Used for <u>Hand Hygiene</u>

Alcohol-based hand rub

Alcohols

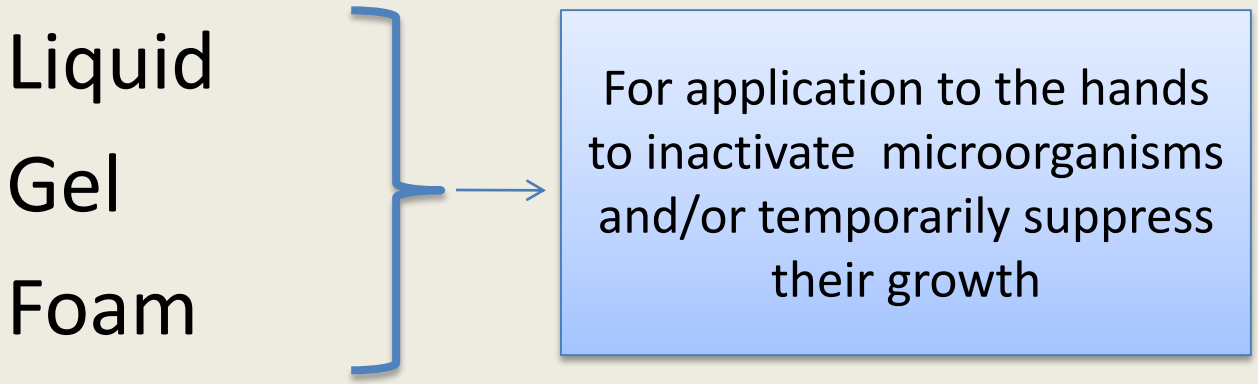
- Ethanol
- Isopropanol
- N-propanol
- A combination of two of these products

Alcohols


In general, ethanol has greater activity against viruses than isopropanol
Ethanol ≥ Isopropanol

Alcohol-based (hand) Rub

An alcohol-containing preparation:



Question 4

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

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

Alcohol-based Preparations

Benefits

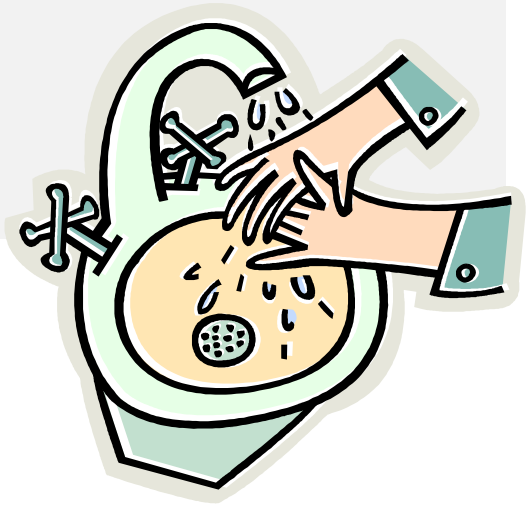
- Rapid and effective antimicrobial action
- Improved skin condition
- More accessible than sinks

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?

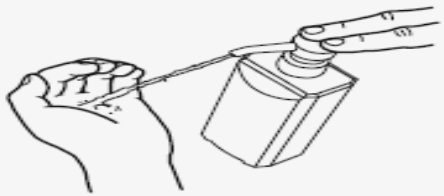
Indications for Hand Hygiene

- 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**

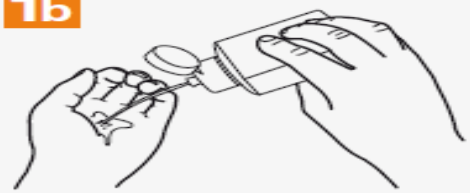
Hand Hygiene Technique with Alcohol-Based Formulation

Duration of the entire procedure: 20-30 seconds

1a



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;

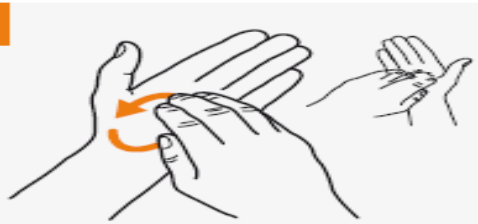
5

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.

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;

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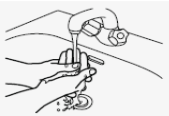
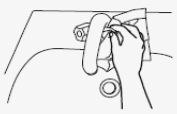

Rinse hands with water;

9

Dry hands thoroughly with a single use towel;

10

Use towel to turn off faucet;

11

Your hands are now safe.

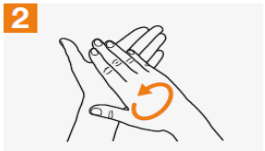
Hand Rub

Hand Hygiene Technique with Alcohol-Based Formulation

Duration of the entire procedure: 20-30 seconds

1a
1b

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

2

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4

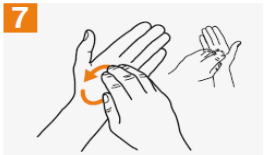
Palm to palm with fingers interlaced;

5

Backs of fingers to opposing palms with fingers interlocked;

6

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

7

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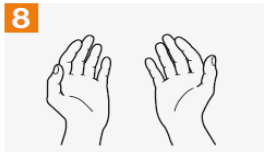
8

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

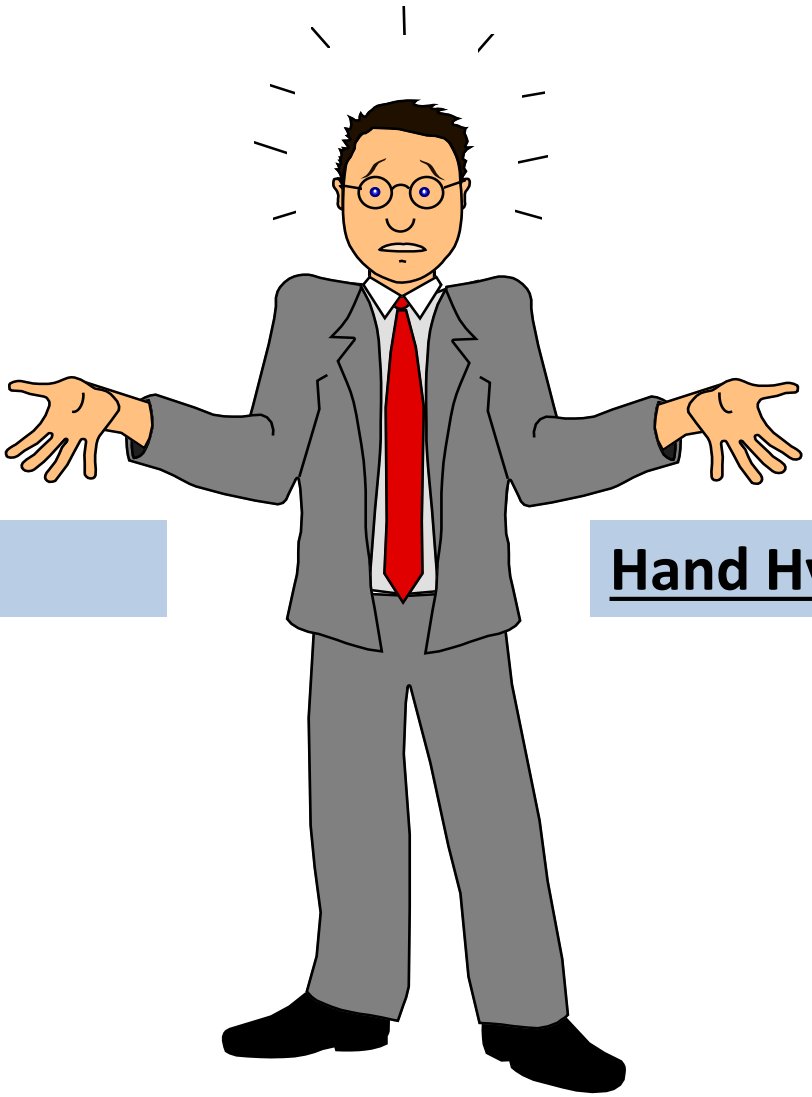
World Health Organization

SAVE LIVES
CLEAN YOUR HANDS

UNITE FOR SAFETY CLEAN YOUR HANDS

#HandHygiene

What to Do
To Improve Hand hygiene?

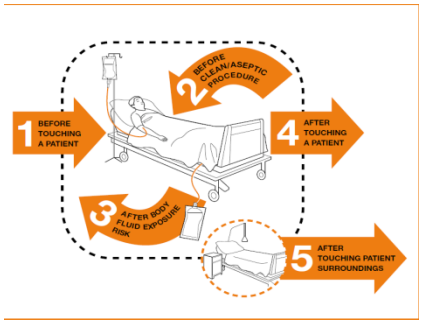


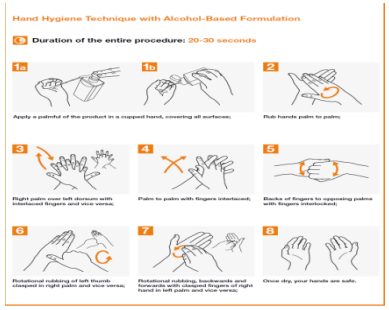
IPC Interventions

Hand Hygiene

IPC Multimodal Strategies,

Indicator : Hand Hygiene

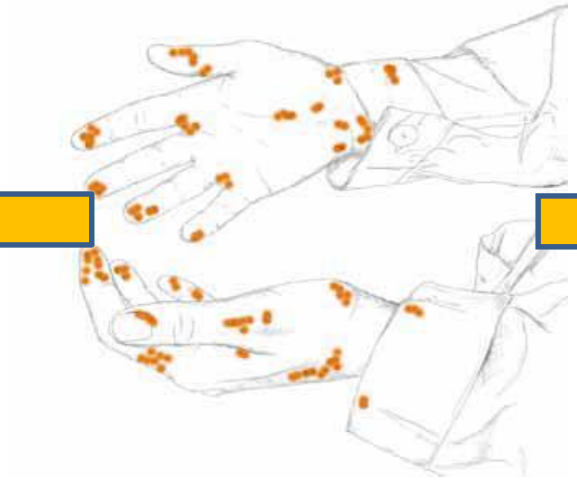




Hands

= The most common mode of pathogen transmission

Antimicrobial resistance



Health care associated infections

Conclusion

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

Hand Hygiene

- Hands are the most common mode of pathogen transmission