

# HAND HYGIENE

INFECTION PREVENTION AND CONTROL MODULE 1

1

# LEARNING OBJECTIVES

At the end of this training module, participants should be able to:

- Understand what is Healthcare-Associated Infections (HAIs)
- Understand the role of hands in germ transmission.
- Understand the role of Hand Hygiene in the prevention of HAIs
- Understand the ways of the conduct of Hand Hygiene.
- Understand and be familiar with the indications of Hand Hygiene according to WHO's 5 Moments of Hand Hygiene.
- Understand when to do hand washing with soap and water and when to do hand hygiene using alcohol-based hand rub.
- Be familiar with the 6 steps of Hand Hygiene.

# WHAT IS HEALTHCARE-ASSOCIATED INFECTION (HAI)?

- An infection occurring in a patient during the process of care in a hospital or other health-care facility that was not present or incubating at the time of admission.
- Includes:
  - Infections acquired in the hospital but appearing after discharge
  - Infections acquired by staff while working in the hospital or health-care facility (occupational infections)

# EXAMPLES OF HEALTHCARE- ASSOCIATED INFECTIONS

- Central line-associated blood stream infections (CLABSI)
- Catheter-associated urinary tract infections (CAUTI)
- Ventilator-associated pneumonia (VAP)
- Surgical site infections (SSI)



# WHAT IS THE IMPACT OF HEALTHCARE-ASSOCIATED INFECTIONS (HAI) ON PATIENT SAFETY?

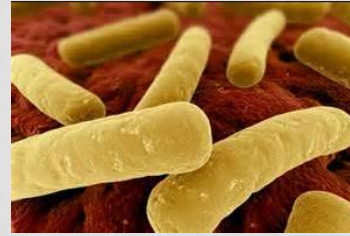
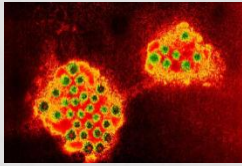
- Healthcare-associated infections occur worldwide
- It affects hundreds of millions of patients both in developed and developing countries.



- In developed countries it complicates between 5-10% of admissions in acute care hospitals.
- In developing countries the risk is 2-20x higher and the proportion of infected patients can exceed 25%.

- It causes:
  - Physical and moral suffering to patients and relatives
  - Incurs a high cost to the health system
  - Consumption of resources that could be spent on preventive measures or other priorities.

# WHAT IS THE ROLE OF HANDS IN GERM TRANSMISSION?



- Microorganisms (germs) responsible for healthcare-associated infections can be:
  - viruses
  - fungi
  - parasites
  - bacteria.

- Healthcare-associated infections can be caused by:
  - Microorganisms already present on the patient's skin and mucosa (endogenous)
  - Microorganisms transmitted from another patient or healthcare worker (HCW) or from the surrounding environment (exogenous)

Hands are the most common  
vehicle to transmit health care-  
associated pathogens

Transmission of health care  
associated pathogens from one  
patient to another via healthcare  
workers' hands requires  
**5 sequential steps**

# 5 STAGES OF HAND TRANSMISSION

one	two	three	four	five
Germs present on patient skin and immediate environment surfaces	Germ transfer onto health-care worker's hands	Germs survive on hands for several minutes	Suboptimal or omitted hand cleansing results in hands remaining contaminated	Contaminated hands transmit germs via direct contact with patient or patient's immediate environment



- In the absence of hand hygiene, the microorganisms are carried on our hands and can spread from:
  - one patient to another
  - one body site to another
  - the environment to the patient
  - the patient to the environment

The risk of transmission and potential harm occurs:

- at any time during the care of our patient
- especially to those who have low immune system
- and/or in the presence of indwelling invasive devices (such as urinary catheter, intravenous catheters, endotracheal tubes, drains etc)

# WHAT IS THE ROLE OF HAND HYGIENE IN THE PREVENTION OF HEALTHCARE-ASSOCIATED INFECTIONS (HAI)?

Hand hygiene is the single most effective way  
of reducing HAI

Noted as early as the 1800s.

**In 1822 –**

**Labarraque**, a French pharmacist- found that solutions containing chlorides of lime and soda could eradicate the foul odours associated with human corpses and could be used as disinfectants and antiseptics.

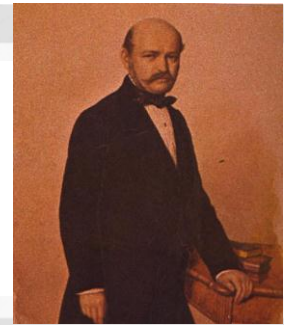
**In 1843 –**

**Holmes-** concluded that puerperal fever was spread by the hands of health personnel and described measures to limit its spread but his recommendations had little impact on obstetric practices at that time

**In 1846-**

**Ignaz Semmelweis** ('father of Hand Hygiene') noted handwashing with chlorinated lime solution markedly reduced maternal mortality from streptococcal infections

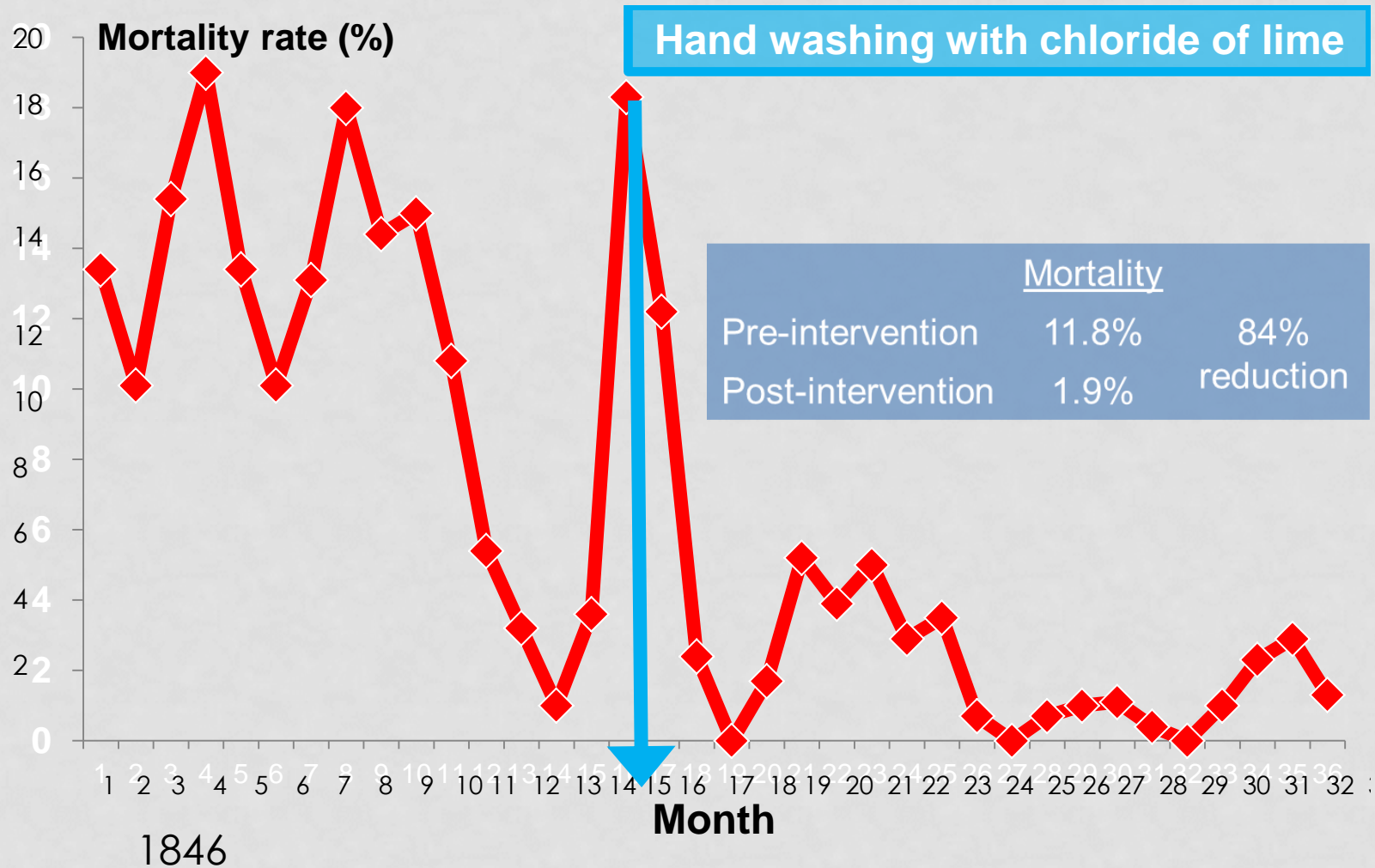
# IGNAZ SIMMELWEIS



- Couldn't understand why women on the street did better than those receiving care.
- Proposed “cadaveric contamination”
  - Noted physicians who went directly from the autopsy suite to the obstetric ward had a disagreeable odor on their hands despite washing with soap and water
  - insisted the students and physicians clean their hands with chlorine solution between each patient in the clinic







Semmelweis I. Etiology, Concept and Prophylaxis of Childbed Fever, 1863.

Hand Hygiene is part of:

- *Standard Precautions*
- *Transmission-Based Precautions*
  - *'Bundles' of care*

# HOW DO WE PRACTICE HAND HYGIENE?

We can perform hand hygiene by:  
1. Handwashing with soap and water



2. Rubbing hands with an alcohol-based handrub (ABHR)



**WHEN TO USE ALCOHOL-BASED HAND  
RUB (ABHR) AND WHEN TO HANDWASH  
WITH SOAP AND WATER?**

- In any clinical situation, hand hygiene can be performed either by using alcohol based hand rub (ABHR) or by using soap and water.
- Whenever it is available, ABHR is the preferred means for routine hand antisepsis.

# HANDWASHING WITH SOAP AND WATER

However in the following situations, hand hygiene **must** only be performed by **handwashing with soap and water** and not with alcohol-based hand rub:

- When hands are visibly soiled
- When exposure to spore-forming organisms (e.g. *Clostridium difficile* or diarrhoeal illness (e.g. norovirus) is strongly suspected or proven
- After using toilet

Do not do handwashing and  
handrubbing with ABHR  
simultaneously or in sequence



**WHY MUST WE WASH HANDS WITH SOAP AND  
WATER WHEN EXPOSED TO SPORE-FORMING  
ORGANISMS?**

## REASON:

the spores are not eliminated by  
alcohol

WHAT IS THE DURATION FOR HAND  
HYGIENE WITH ABHR AND  
HANDWASHING?

# DURATION FOR HAND HYGIENE WITH ABHR



**20 – 30 s**



# DURATION FOR HANDWASHING WITH SOAP AND WATER



**40 – 60 s**

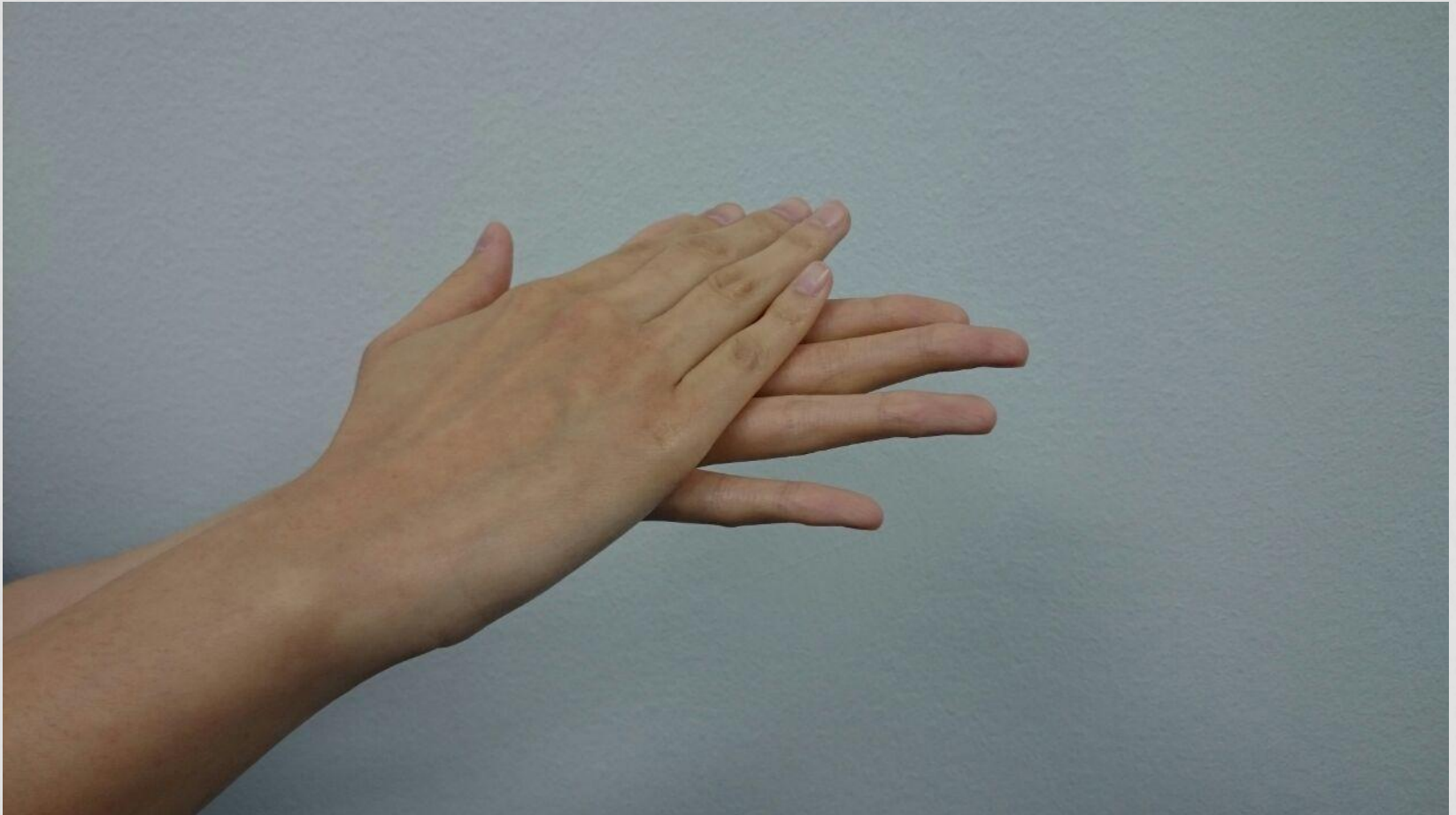


# HOW TO PERFORM HAND HYGIENE?

## THE 6 STEPS OF HAND HYGIENE

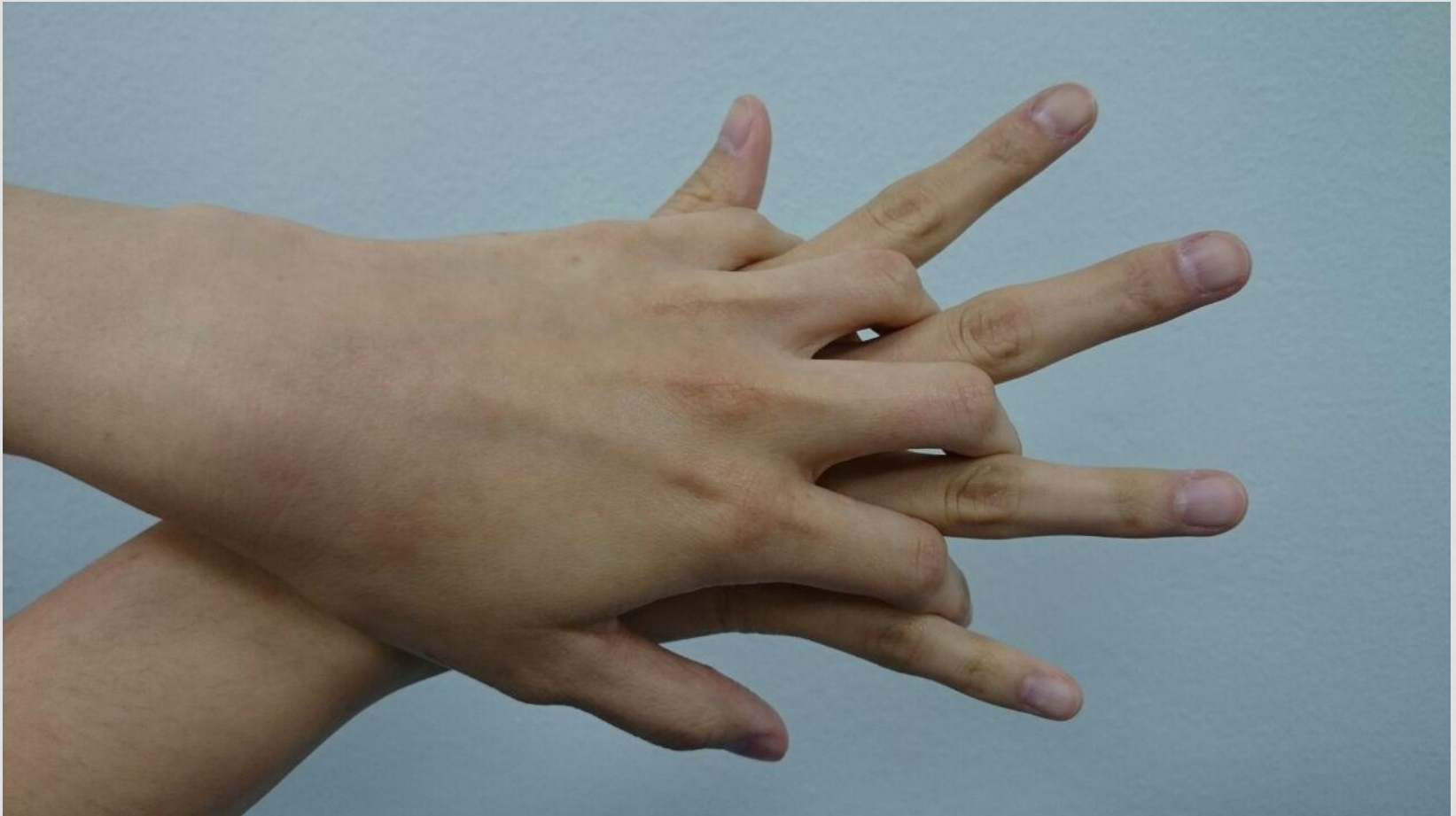
# STEP 1

## - RUB HANDS PALM TO PALM



## STEP 2

- RIGHT PALM OVER LEFT DORSUM WITH INTERLACED FINGERS AND VICE VERSA





# STEP 3

## - PALM TO PALM WITH FINGERS INTERLACED



## STEP 4

- BACKS OF FINGERS TO OPPOSING  
PALMS WITH FINGERS INTERLOCKED



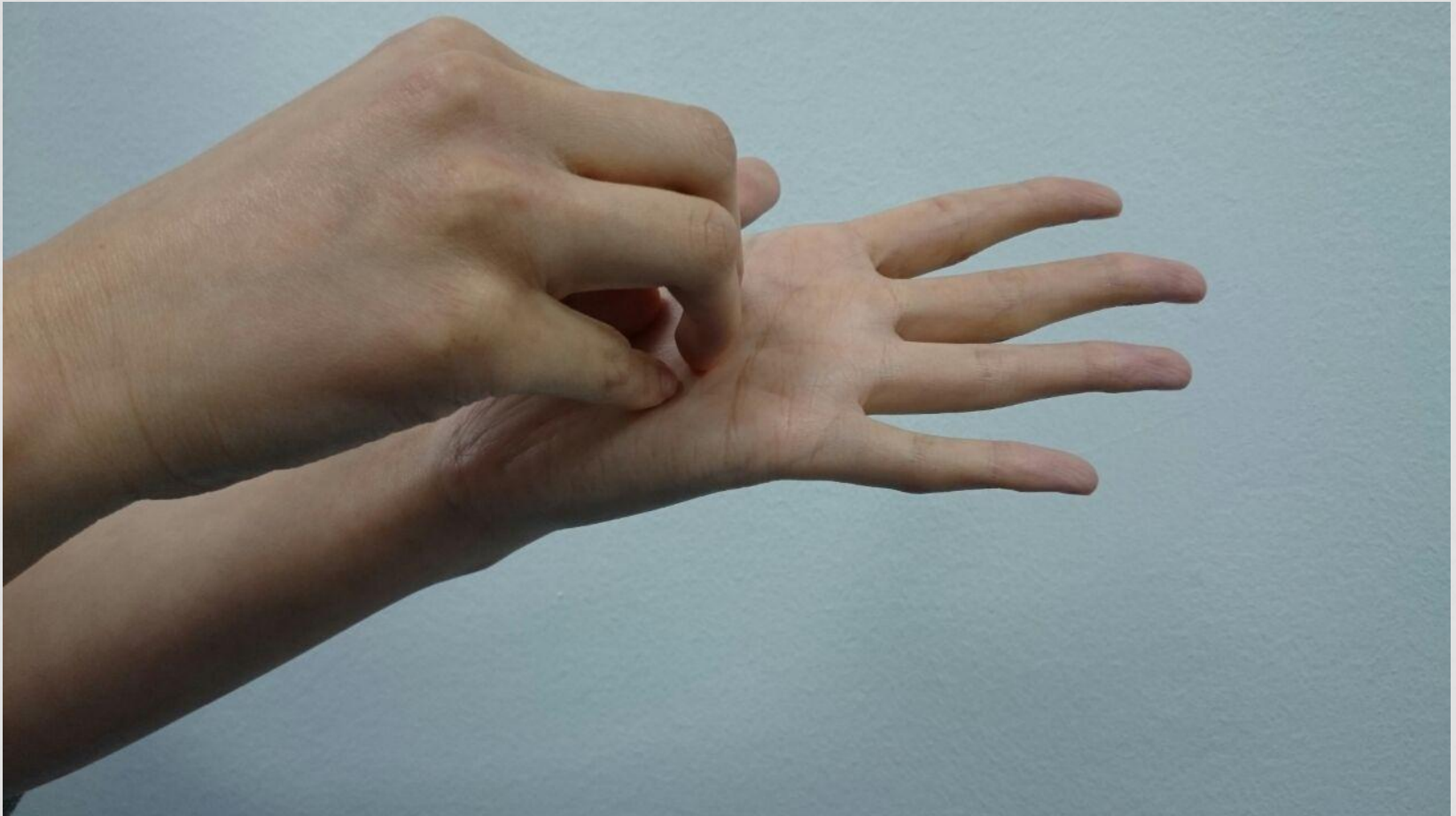
## STEP 5

- ROTATIONAL RUBBING OF LEFT THUMB  
CLASPED IN RIGHT PALM AND VICE VERSA



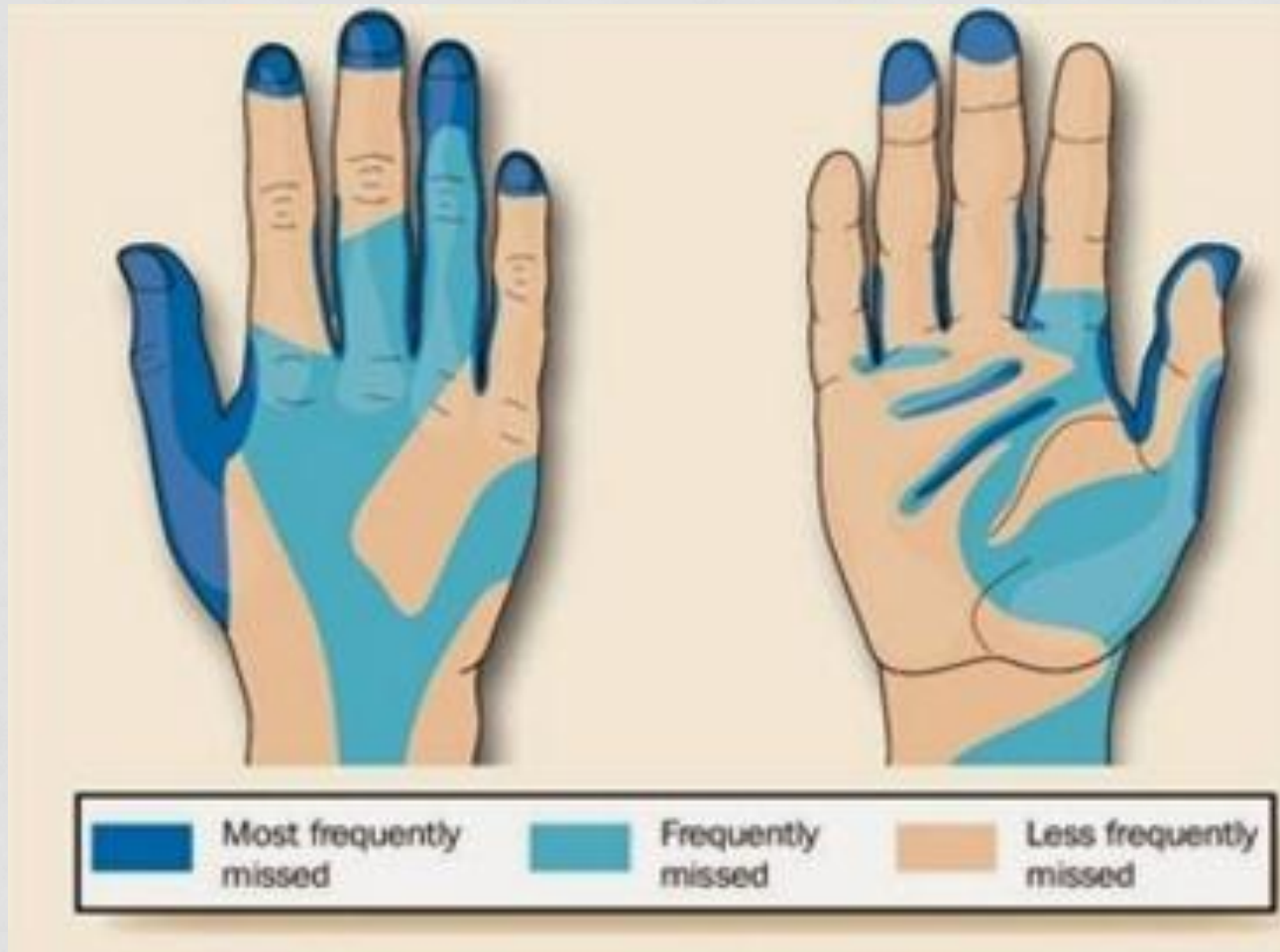
## STEP 6

- ROTATIONAL RUBBING, BACKWARDS AND FORWARDS WITH CLASPED FINGERS OF RIGHT HAND IN LEFT PALM AND VICE VERSA



# WHY THE 6 STEPS OF HAND HYGIENE?

# REASON: THERE ARE AREAS OF THE HANDS THAT ARE NOT ADEQUATELY CLEANED



# WHEN DO WE PERFORM HAND HYGIENE?

**WHO'S 5 MOMENTS OF HAND HYGIENE**

# WHO'S 5 MOMENTS OF HAND HYGIENE?

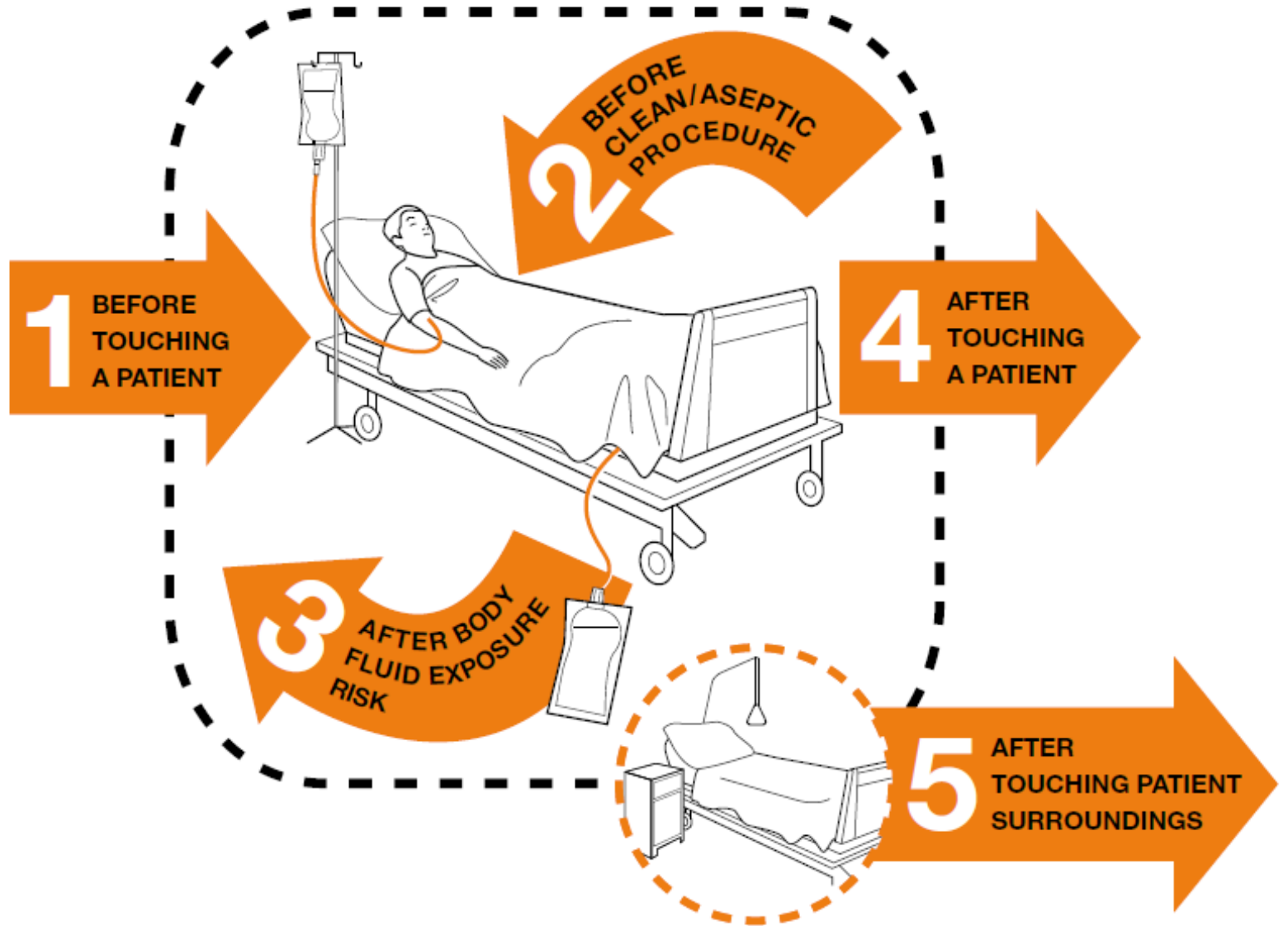
Remember:

- 2 'Before's
- 3 'After's

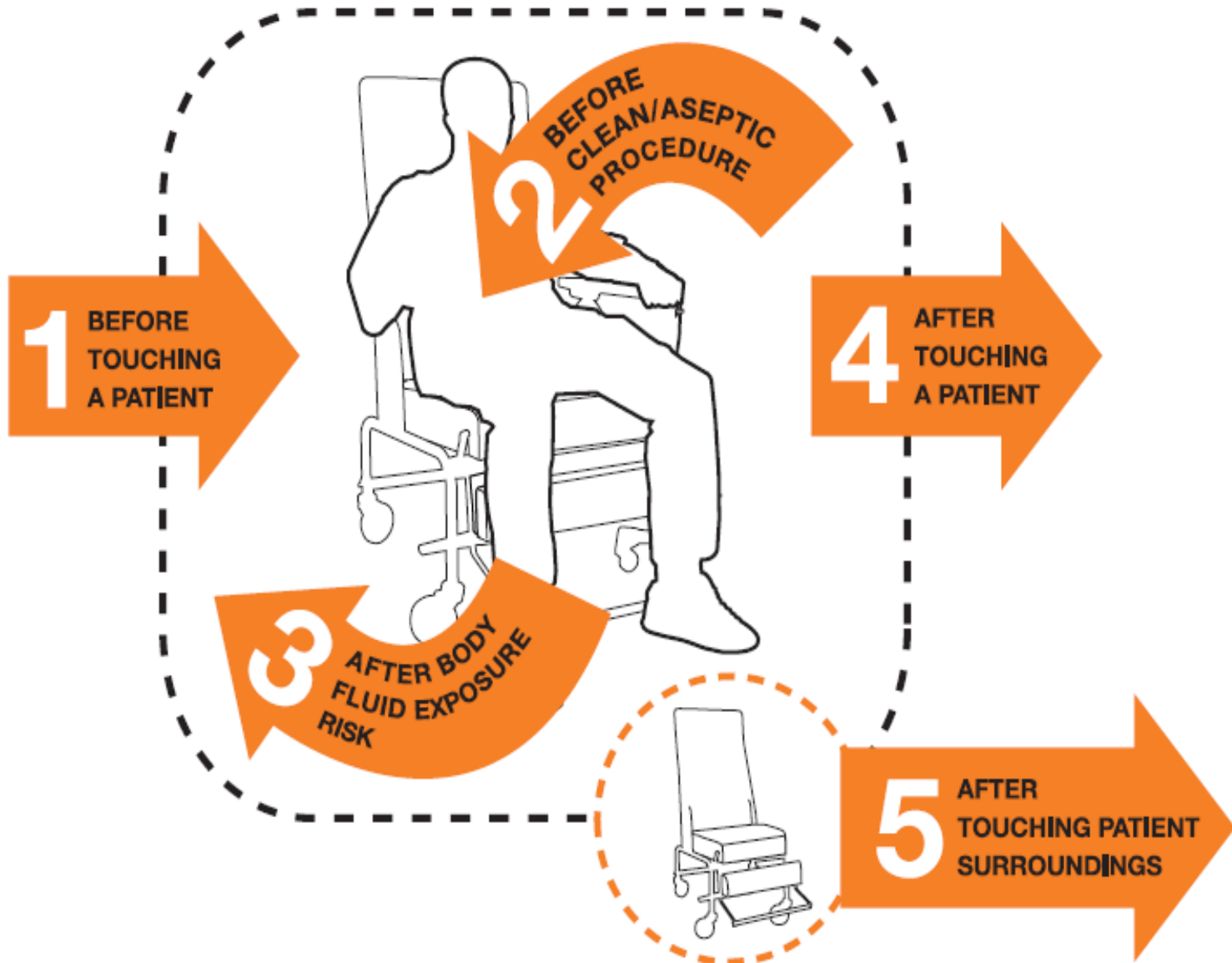


The 5 Moments of Hand Hygiene  
can be applied to any clinical  
situation, whether inpatient or  
outpatient

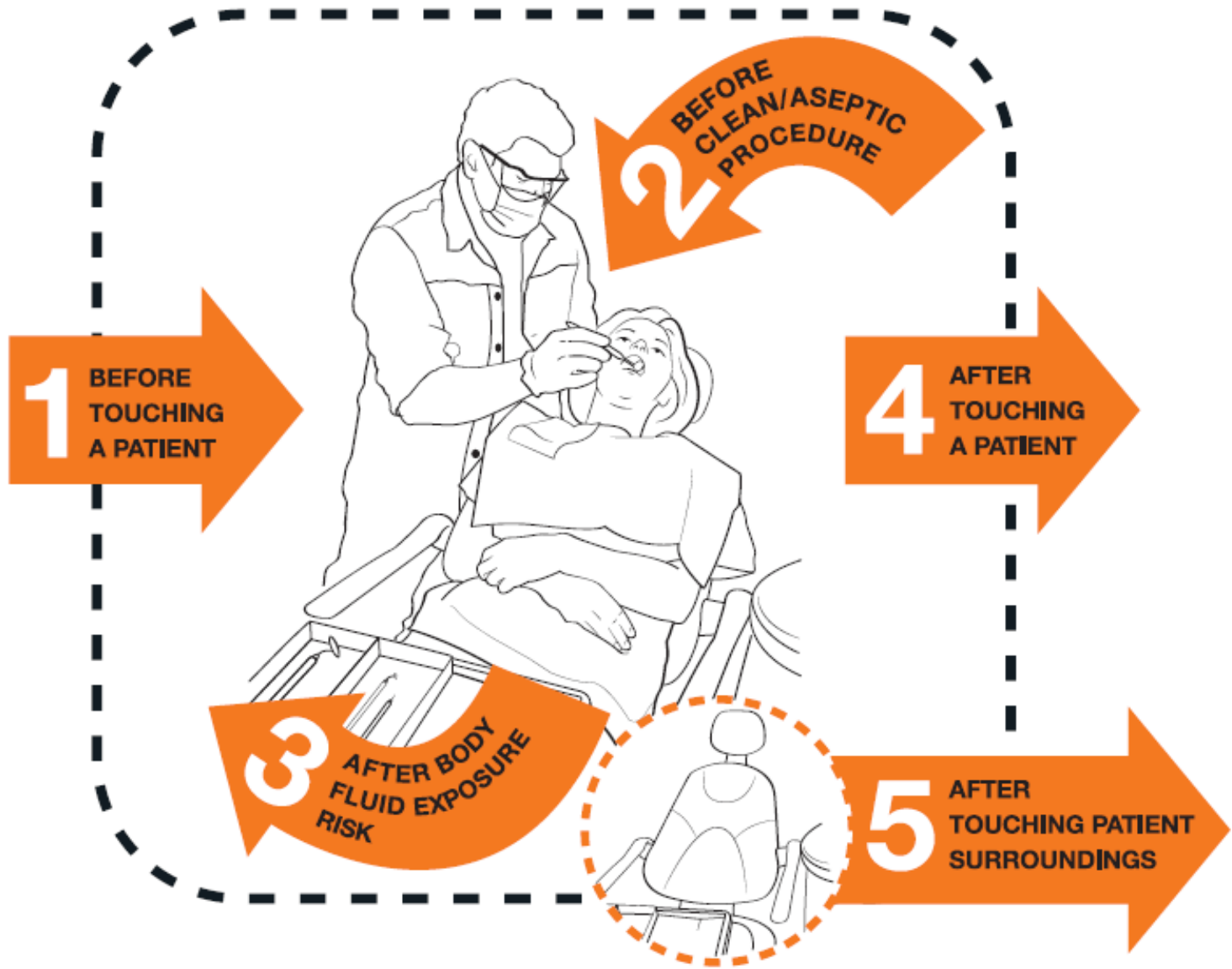
# Inpatient Care



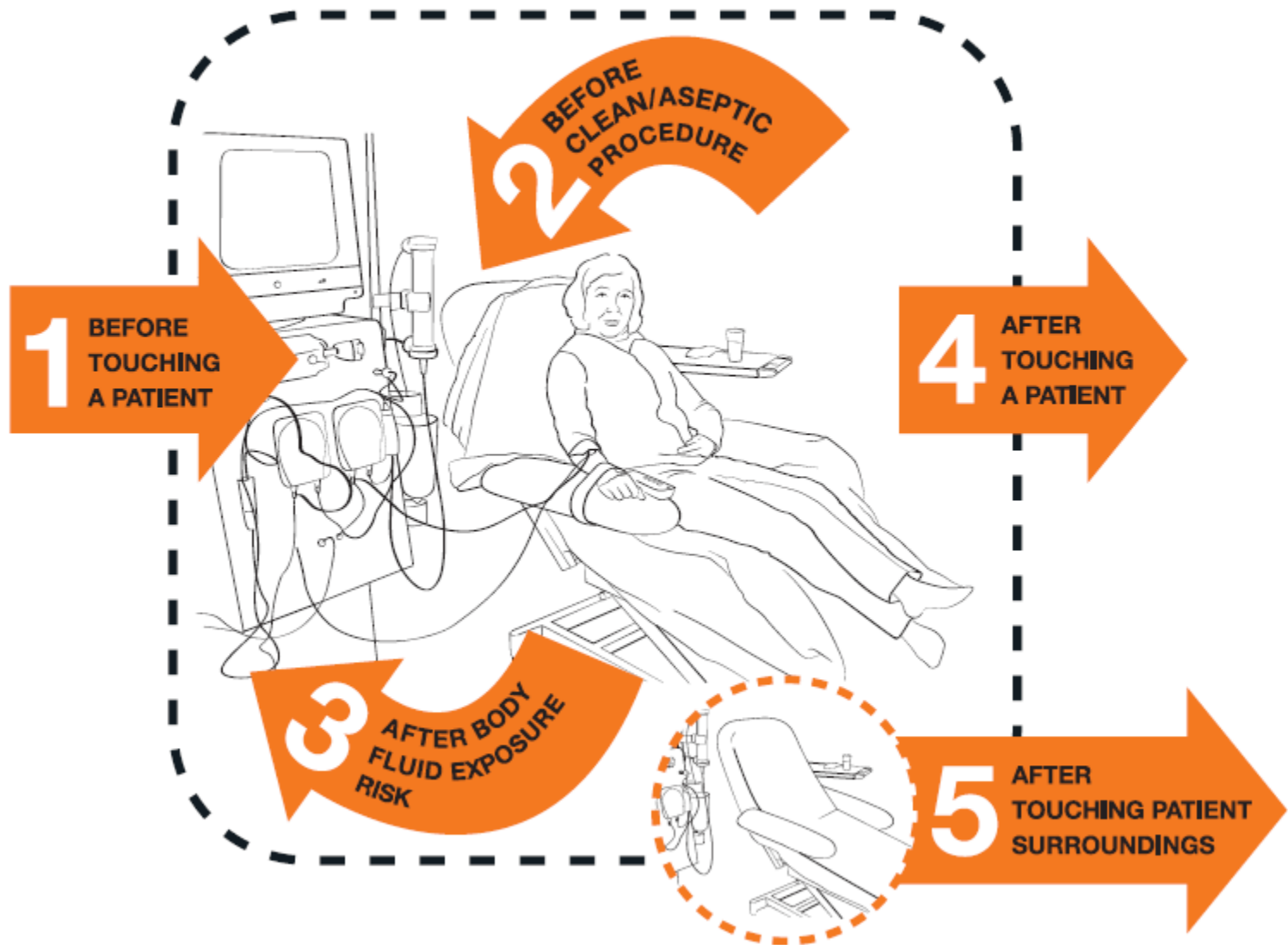
# OUTPATIENT CARE



# Dental Care

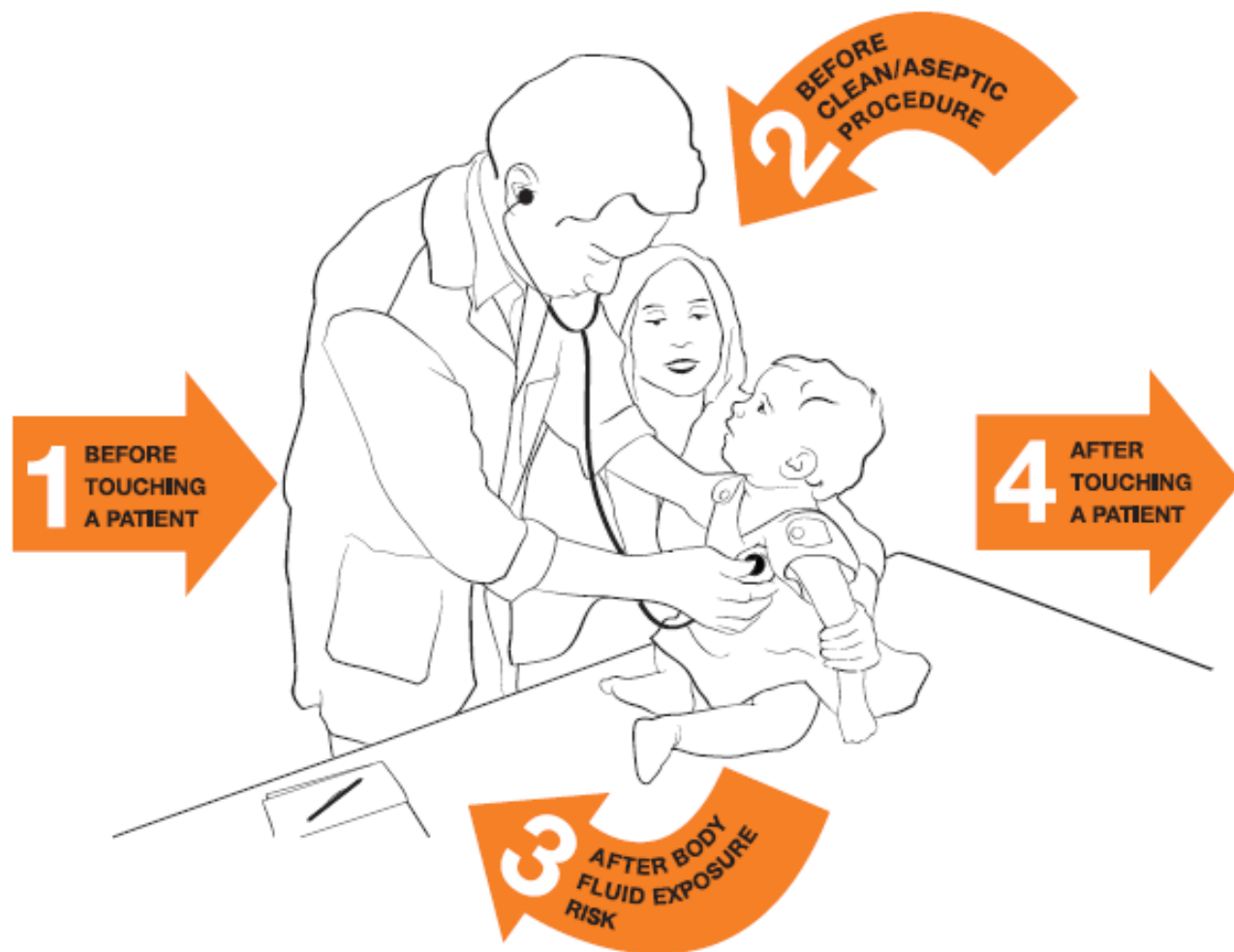


# Haemodialysis in ambulatory care



# Your Moments for Hand Hygiene

## Paediatric Consultation



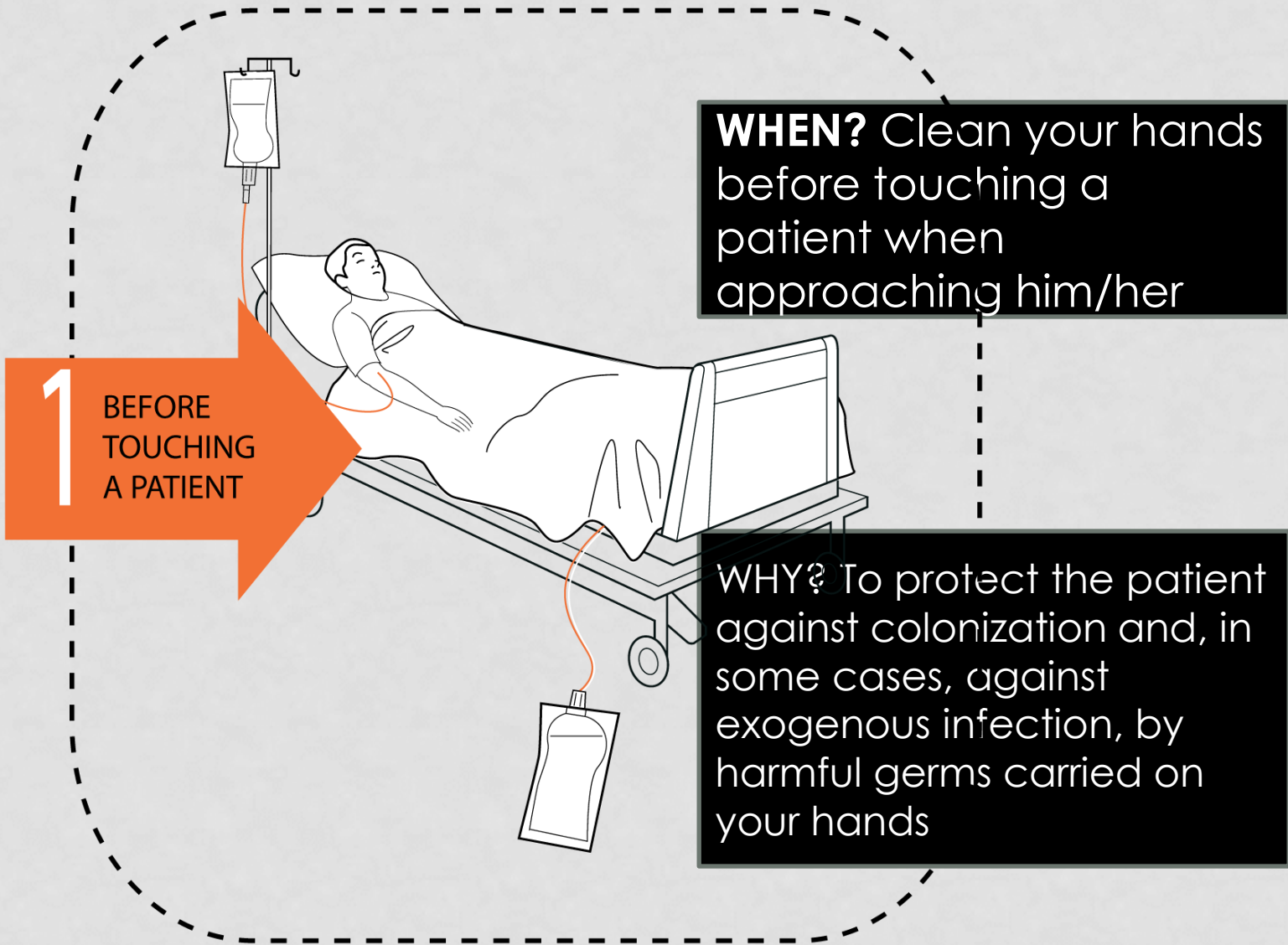
# WHY THE 5 MOMENTS OF HAND HYGIENE?

For universal understanding to minimize differences in how Hand Hygiene is understood and applied by healthcare workers (HCWs), trainers and observers



- The 5 Moments correspond to the indications during care of delivery with the risk of germ transmission
- These indications are the ones being observed in HH Compliance Audit

**MOMENT 1:**  
***BEFORE TOUCHING A PATIENT***



# EXAMPLES OF MOMENT 1 ACTIVITIES (BEFORE TOUCHING PATIENT)

Before touching a patient in any way

- Shaking hands
- Assisting a patient to move
- Allied health interventions
- Touching any medical device connected to the patient  
(eg. IV pump, Indwelling urinary catheter)

Before helping patients with any personal care activities

- Bathing
- Dressing
- Brushing hair
- Putting on personal aids such as glasses

# EXAMPLES OF MOMENT 1 ACTIVITIES (BEFORE TOUCHING PATIENT) *CONTD...*

Before any non-invasive observations

- Taking a pulse
- Blood pressure
- Oxygen saturation
- Temperature
- Chest auscultation
- Abdominal palpation
- Applying ECG electrodes, CTG

Before any non-invasive treatment

- Applying an oxygen mask or nasal cannula
- Fitting slings/braces
- Application of incontinence aids (including condom drainage)

# EXAMPLES OF MOMENT 1 ACTIVITIES (BEFORE TOUCHING PATIENT) *CONTD...*

Before preparation and administration of oral medications

- Oral medications
- Nebulised medications

Before oral care and feeding

- Feeding a patient
- Brushing teeth or dentures

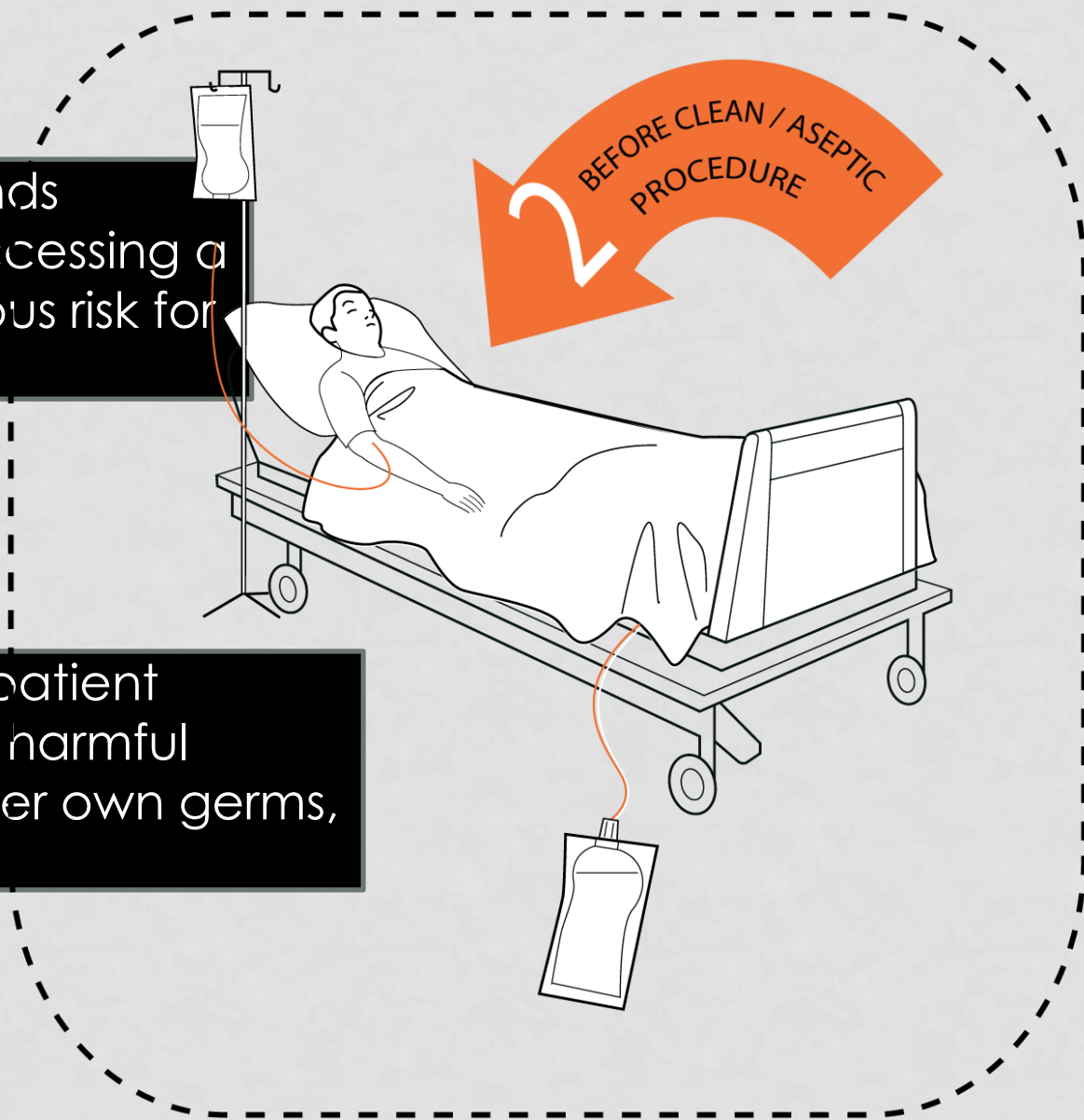


**MOMENT 2:**  
***BEFORE CLEAN / ASEPTIC***  
***PROCEDURE***



**WHEN?** Clean your hands immediately before accessing a critical site with infectious risk for the patient

**WHY?** To protect the patient against infection with harmful germs, including his/her own germs, entering his/her body



# EXAMPLES OF MOMENT 2 ACTIVITIES (BEFORE ASEPTIC/CLEAN PROCEDURES)

Before 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

Before preparation and administration of any medications given via an invasive medical device, or before preparation of a sterile field

- IV medication
- NGT feeds
- PEG feeds
- Dressing trolley set up

# EXAMPLES OF MOMENT 2 ACTIVITIES (BEFORE ASEPTIC/CLEAN PROCEDURES)

Before administration of medications where there is direct contact with mucous membranes

- Before brushing the patient's teeth
- Before eye drop instillation to patient
- Before suppository insertion
- Before administration of vaginal pessary

# EXAMPLES OF MOMENT 2 ACTIVITIES (BEFORE ASEPTIC/CLEAN PROCEDURES)

Before insertion of, or disruption to, the circuit of an invasive medical device

Procedures involving the following:

- Endotracheal tube (ETT)
- Tracheostomy
- Nasopharyngeal airways
- Suctioning of airways
- Urinary catheter
- Colostomy/ileostomy
- Vascular access systems
- Invasive monitoring devices
- Wound drains
- PEG tubes
- Nasogastric tube (NGT)
- Secretion aspiration

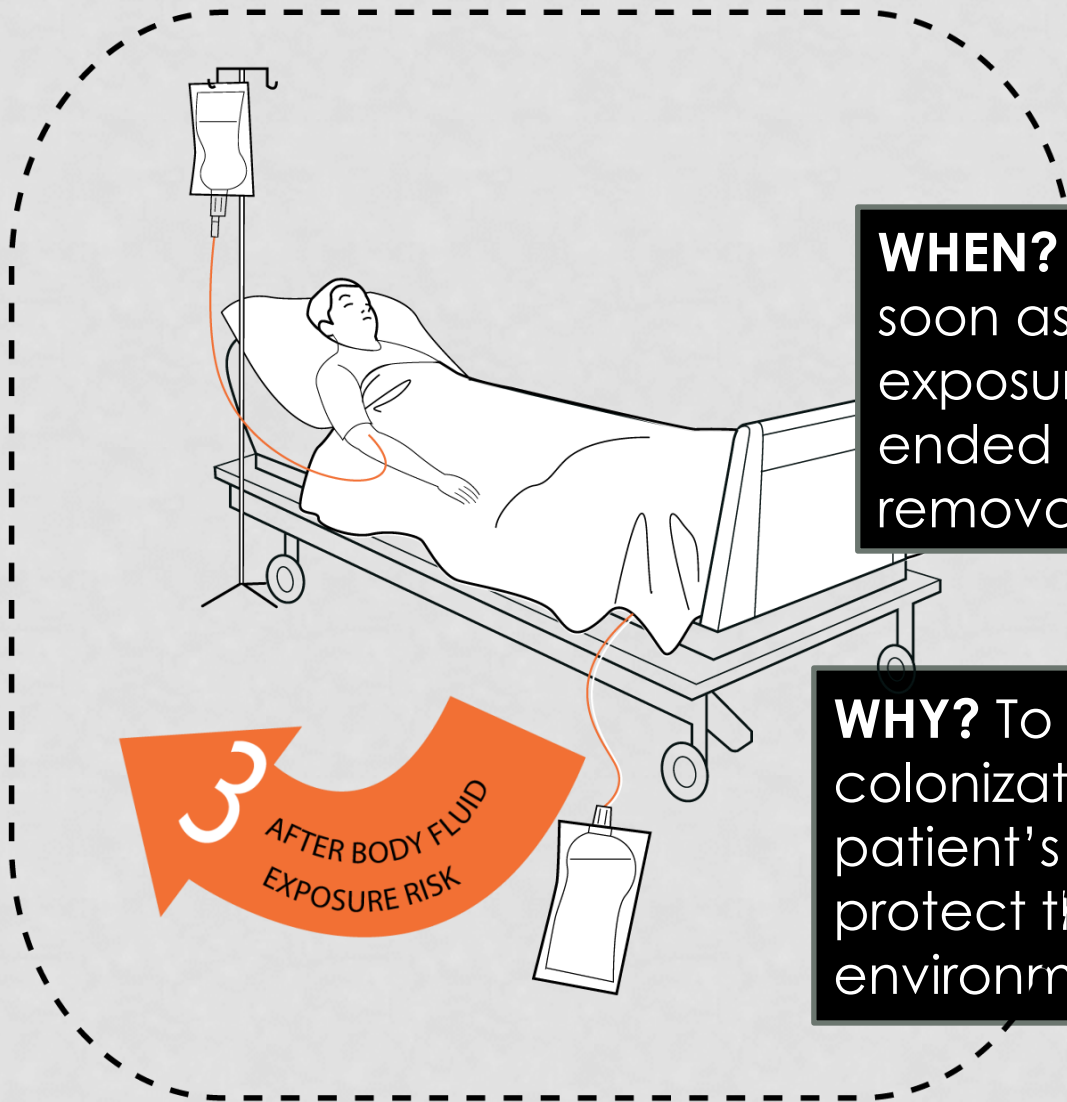
## EXAMPLES OF MOMENT 2 ACTIVITIES (BEFORE ASEPTIC/CLEAN PROCEDURES)

Before any assessment, treatment and patient care where contact is made with non-intact skin or mucous membranes.

- Wound dressings
- Burns dressings
- Surgical procedures
- Rectal examination
- Invasive obstetric and gynaecological examinations and procedures
- Digital assessment of newborn palate



**MOMENT 3:**  
***AFTER BODY FLUID EXPOSURE RISK***



**WHEN?** Clean your hands as soon as the task involving an exposure risk to body fluids has ended (and after glove removal)

**WHY?** To protect you from colonization or infection with patient's harmful germs and to protect the health-care environment from germ spread



# EXAMPLES OF MOMENT 3 ACTIVITIES (AFTER BODY FLUID EXPOSURE RISK)

After any Moment 2

See Moment 2

After any potential body fluid exposure

- Contact with a used urinary bottle / bedpan
- Contact with sputum either directly or indirectly via a cup or tissue
- Contact with used specimen jars / pathology samples
- Cleaning dentures
- Cleaning spills of urine, faeces or vomit from patient surroundings
- After touching the outside of a drain

# EXAMPLES OF MOMENT 3 ACTIVITIES (AFTER BODY FLUID EXPOSURE RISK) *CONTD....*

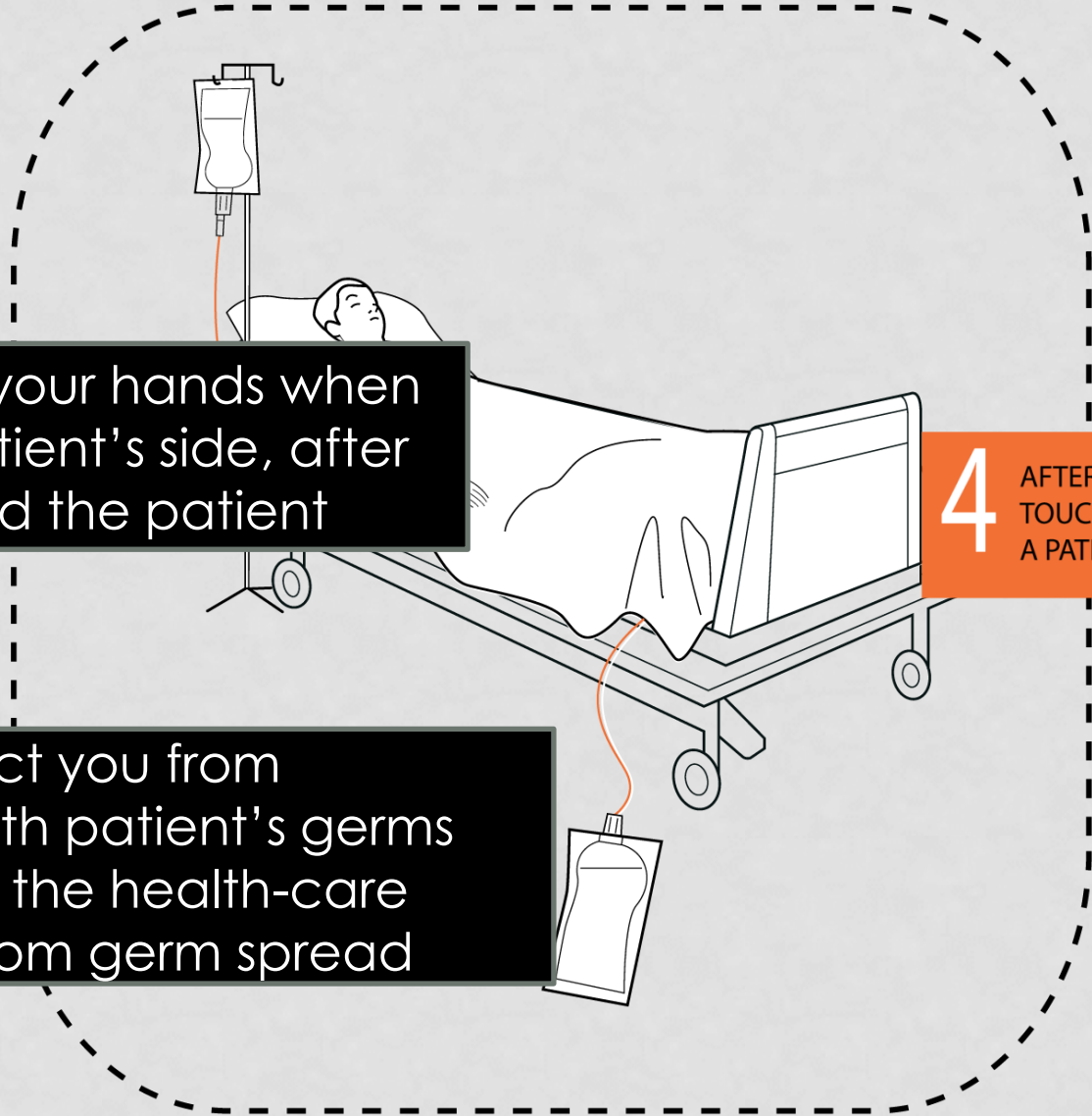
After any potential body fluid exposure

Contact with any of the following:

- Blood,
- Saliva,
- Mucous,
- Semen,
- Tears,
- Wax,
- Breast milk,
- Colostrum
- Urine,
- Faeces,
- Vomitus,
- Pleural fluid,
- Cerebrospinal fluid,
- Ascites fluid,
- Organic body samples eg. Biopsy samples, Cell samples, Lochia, Meconium, Pus, Bone Marrow, Bile.



**MOMENT 4:**  
***AFTER TOUCHING A PATIENT***



**WHEN?** Clean your hands when leaving the patient's side, after having touched the patient

**WHY?** To protect you from colonization with patient's germs and to protect the health-care environment from germ spread

**4** AFTER TOUCHING A PATIENT

# EXAMPLES OF MOMENT 4 ACTIVITIES (AFTER TOUCHING A PATIENT)

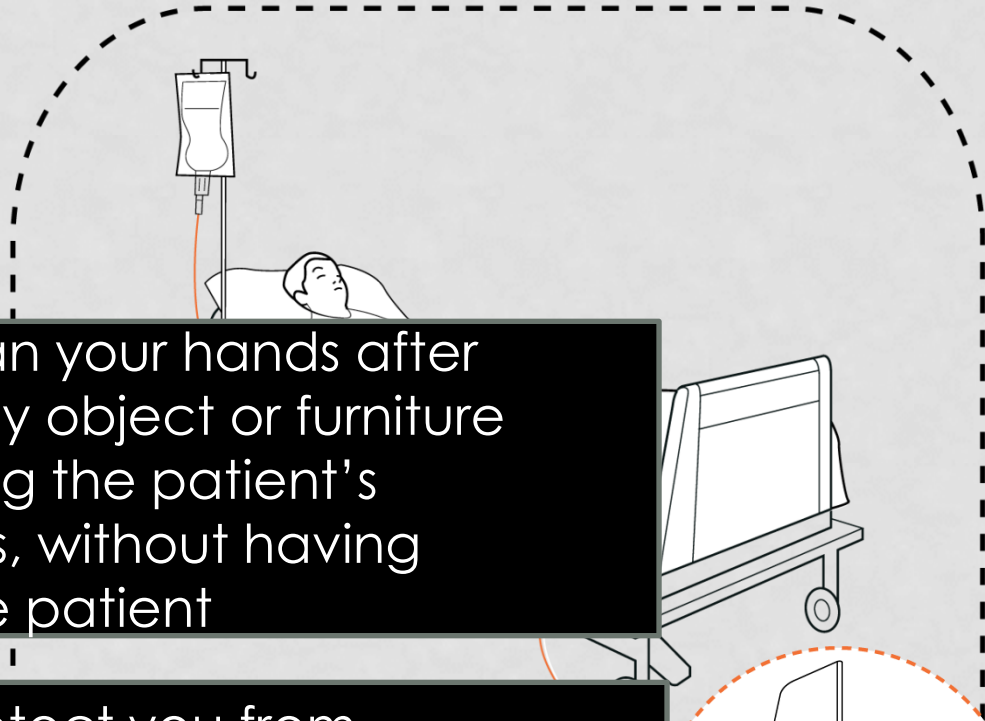
- ✓ After shaking hands, stroking a child's forehead
- ✓ After you have assisted the patient in personal care activities:
  - ❖ to move, to bath, to eat, to dress, etc
- ✓ After delivering care and other non-invasive treatment: changing bed linen as the patient is in, applying oxygen mask, giving a massage
- ✓ After performing a physical non-invasive examination:
  - ❖ taking pulse, blood pressure, chest auscultation, recording ECG

*After Moment 1 and 2*



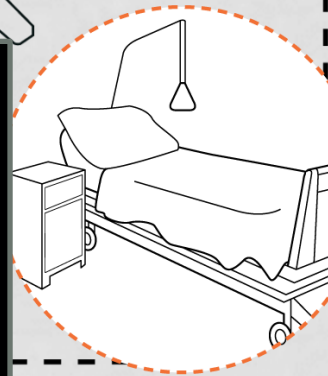
**MOMENT 5:**  
***AFTER TOUCHING PATIENT'S***  
***ENVIRONMENT***





**WHEN?** Clean your hands after touching any object or furniture when leaving the patient's surroundings, without having touched the patient

**WHY?** To protect you from colonization with patient's germs that may be present on surfaces / objects in patient's surroundings and to protect the health-care environment against germ spread



**5** AFTER TOUCHING PATIENT SURROUNDINGS

# EXAMPLES OF MOMENT 5 ACTIVITIES (AFTER TOUCHING PATIENT'S ENVIRONMENT)

After touching the patient's immediate surroundings when the patient has not been touched

Patient's surroundings include:

- Bed,
- Bedrails,
- Linen,
- Table,
- Bedside chart,
- Bedside locker,
- Call bell/TV remote control,
- Light switches,
- Personal belongings (including books, Mobility aids),
- Chair,
- Foot stool,
- Monkey bar



# OTHER ASPECTS OF HAND HYGIENE

- The following are factors associated with increased likelihood of colonization of hands with harmful germs:
  - Wearing of rings or other jewellery
  - Varnished nails
  - Long nails
  - Artificial nails
  - Any damage to the skin

## RECOMMENDED:

- Wear sleeves above the elbows or roll up the sleeves to the elbow
- Keep natural nails tips short
- Do not wear artificial fingernails or extenders

## RECOMMENDED: *CONTD...*

- Inspect hands for non-intact skin
  - Cover open wounds with an impermeable dressing while at work
  - Gloves may be worn whenever there is direct patient contact

## RECOMMENDED: *CONTD..*

- Rub hands until the alcohol-based product has completely evaporated
- Dry hands carefully after washing with soap and water
- Regularly apply protective hand cream.



# GLOVES AND HAND HYGIENE

- Wearing of gloves does not replace hand hygiene.
- Perform hand hygiene immediately before putting on gloves.
- Make sure hands are dry before putting on gloves

- Do not wear the same pair of gloves for the care of more than one patient
- Do not wash gloves between uses with different patients.
- Change gloves during patient care if moving from a contaminated body site to a clean body site.
- Perform hand hygiene after removal of gloves.

# IN CONCLUSION, REMEMBER:

- The Indications of Hand Hygiene – the 5 Moments of Hand Hygiene (2 'Before's, 3 'After's)
- When to hand rub with ABHR and when to hand wash with soap and water
- Duration of hand hygiene with ABHR and handwashing with soap and water
- Know and practice the 6 Steps of Hand Hygiene

# REFERENCES AND FURTHER READING

- WHO Guidelines On Hand Hygiene In Health Care, WHO 2009
- Hand Hygiene Technical Reference Manual: To Be Used By Health-care Workers, Trainers And Observers Of Hand Hygiene Practices, WHO 2009
- Visit the **SAVE LIVES: Clean Your Hands** website at:  
[www.who.int/gpsc/5may/en/](http://www.who.int/gpsc/5may/en/)