

Module F

MEDICAL ASEPSIS, HAND HYGIENE, AND PATIENT CARE PRACTICES IN HOME CARE AND HOSPICE

OBJECTIVES

- Describe the principles and practice of asepsis
- Understand hand hygiene
- Understand the role of the environment in disease transmission

DEFINING ASEPSIS

	Medical Asepsis	Surgical Asepsis
Definition	Clean Technique	Sterile Technique
Emphasis	Freedom from most pathogenic organisms	Freedom from all pathogenic organisms
Purpose	Reduce transmission of pathogenic organisms from one patient-to -another	Prevent introduction of any organism into an open wound or sterile body cavity

MEDICAL ASEPSIS

**Measures aimed at controlling the number of microorganisms and/or preventing or reducing the transmission of microbes from one person-to-another:
Clean Technique**

- Know what is dirty
- Know what is clean
- Know what is sterile
- Keep the first three conditions separate
- Remedy contamination immediately

PRINCIPLES OF MEDICAL ASEPSIS

When the body is penetrated, natural barriers such as skin and mucous membranes are bypassed, making the patient susceptible to microbes that might enter.

- Perform hand hygiene and put on gloves
- When invading sterile areas of the body, maintain the sterility of the body system
- When placing an item into a sterile area of the body, make sure the item is sterile

PRINCIPLES OF MEDICAL ASEPSIS

Even though skin is an effective barrier against microbial invasion, a patient can become colonized with other microbes if precautions are not taken.

- Perform hand hygiene between patient contacts
- When handling items that only touch patient's intact skin, or do not ordinarily touch the patient, make sure item is clean and disinfected (between patients).

PRINCIPLES OF MEDICAL ASEPSIS

All body fluids from any patient should be considered contaminated

- Body fluids can be the source of infection for the patient and you
- Utilize appropriate personal protective equipment (PPE)
- When performing patient care, work from cleanest to dirtiest patient area.

PRINCIPLES OF MEDICAL ASEPSIS

The healthcare team and the environment can be a source of contamination for the patient

- Health care providers (HCP) should be free from disease
- Single use items can be a source of contamination
- Patients environment should be as clean as possible

SURGICAL ASEPSIS

Practices designed to render and maintain objects and areas maximally free from microorganisms: Sterile Technique

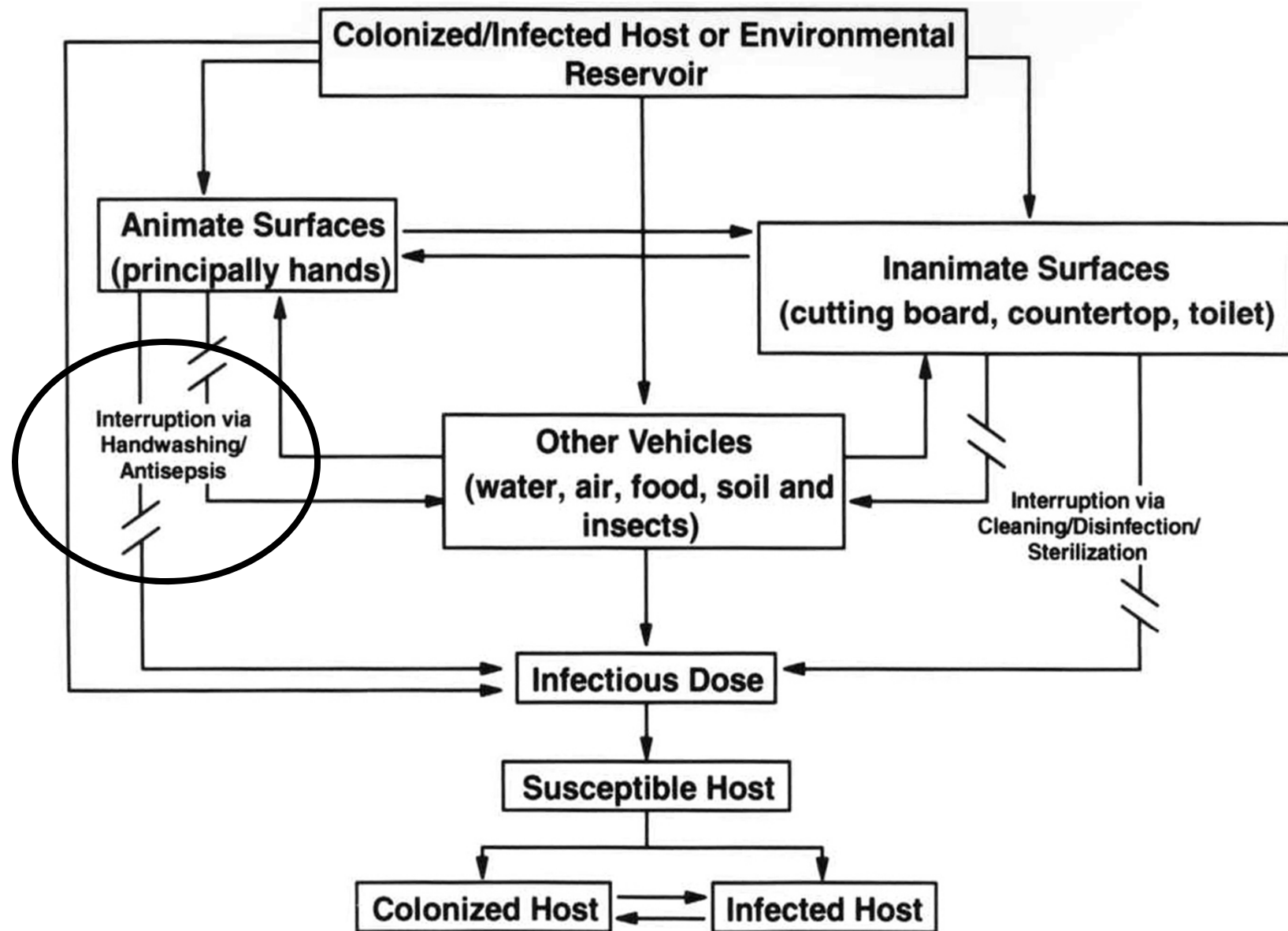
- Know what is sterile
- Know what is not sterile
- Keep sterile and not sterile items apart
- Remedy contamination immediately


PRINCIPLES OF SURGICAL ASEPSIS

- The patient should not be the source of contamination
- Healthcare personnel should not be the source of contamination
- Recognize potential environmental contamination

REMEDY CONTAMINATION

- Every case is considered dirty and the same infection control precautions are taken for all patients
- When contamination occurs, address it immediately
- Breaks in technique are pointed out and action is taken to eliminate them.





HAND HYGIENE

The substance of asepsis

iStockphoto

WHAT IS HAND HYGIENE

- Handwashing
- Antiseptic Handwash
- Alcohol-based Hand Rub
- Surgical Antisepsis



WHY IS HAND HYGIENE SO IMPORTANT?

- Hands are the most common mode of pathogen transmission
- Reduces the spread of antimicrobial resistance
- Prevents healthcare-associated infections

HAND-BORNE MICROORGANISMS

Healthcare providers contaminate their hands with 100-1000 colony-forming units (CFU) of bacteria during “clean” activities (lifting patients, taking vital signs).

TRANSMISSION OF PATHOGENS ON HANDS

FIVE ELEMENTS

- Germs are present on patients and surfaces near patients
- By direct and indirect contact, patient germs contaminate healthcare provider hands
- Germs survive and multiply on healthcare provider hands
- Defective hand hygiene results in hands remaining contaminated
- Healthcare providers touch/contaminate another patient or surface that will have contact with the patient.

HAND HYGIENE COMPLIANCE IS LOW

Author	Year	Sector	Compliance
Preston	1981	General Wards ICU	16% 30%
Albert	1981	ICU ICU	41% 28%
Larson	1983	Hospital-wide	45%
Donowitz	1987	Neonatal ICU	30
Graham	1990	ICU	32
Dubbert	1990	ICU	81
Pettinger	1991	Surgical ICU	51
Larson	1992	Neonatal Unit	29
Doebbeling	1992	ICU	40
Zimakoff	1993	ICU	40
Meengs	1994	Emergency Room	32
Pittet	1999	Hospital-wide	48

<40%

REASONS FOR NONCOMPLIANCE

- Inaccessible hand hygiene supplies
- Skin irritation
- Too busy
- Glove use
- Didn't think about it
- Lacked knowledge

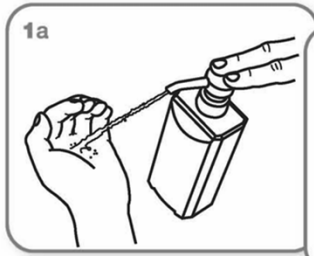
WHEN TO PERFORM HAND HYGIENE

The 5 Moments	Consensus recommendations <i>CDC Guidelines on Hand Hygiene in healthcare, 2002</i>
1. Before touching a patient	<ul style="list-style-type: none"> • Before and after touching the patient
2. Before clean / aseptic procedure	<ul style="list-style-type: none"> • Before donning sterile gloves for central venous catheter insertion; also for insertion of other invasive devices that do not require a surgical procedure using sterile gloves • If moving from a contaminated body site to another body site during care of the same patient
3. After body fluid exposure risk	<ul style="list-style-type: none"> • After contact with body fluids or excretions, mucous membrane, non-intact skin or wound dressing • If moving from a contaminated body site to another body site during care of the same patient • After removing gloves
4. After touching a patient	<ul style="list-style-type: none"> • Before and after touching the patient • After removing gloves
5. After touching patient surroundings	<ul style="list-style-type: none"> • After contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient • After removing gloves

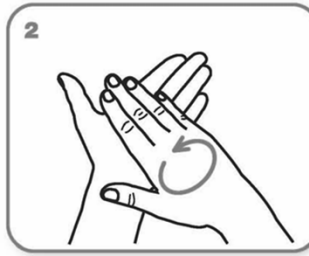
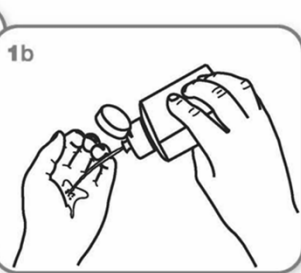
RUB HANDS FOR HAND HYGIENE! WASH HANDS ONLY WHEN VISIBLY SOILED!



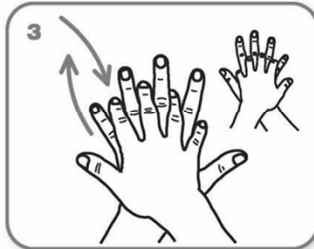
Duration of the entire procedure: 20-30 sec.



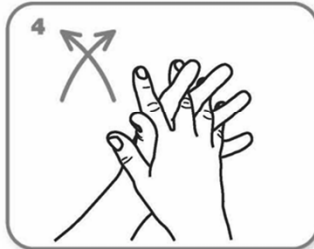
Apply a palmful of the product in a cupped hand and cover all surfaces.



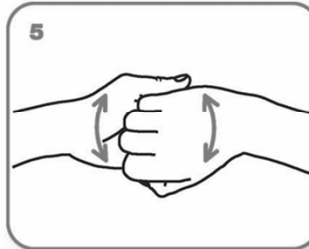
Rub hands palm to palm



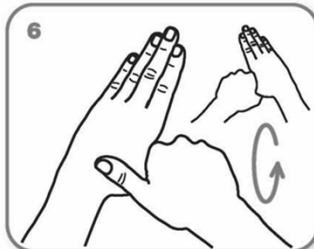
right palm over left dorsum with interlaced fingers and vice versa



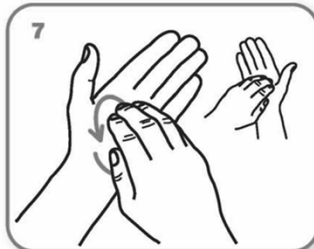
palm to palm with fingers interlaced



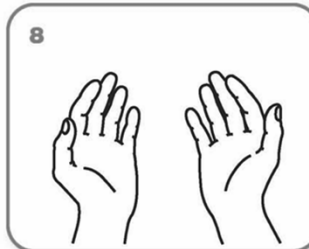
backs of fingers to opposing palms with fingers interlocked



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.

HOW TO HAND RUB

To effectively reduce the growth of germs on hands, **hand rubbing** must be performed by following all of the illustrated steps. **This takes only 20–30 seconds!**

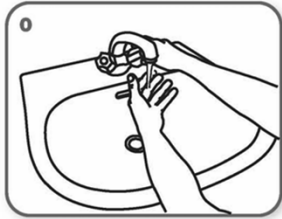
http://www.who.int/gpsc/tools/HAND_RUBBING.pdf

credit: WHO

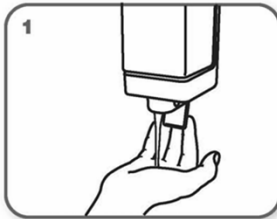
WASH HANDS ONLY WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB!



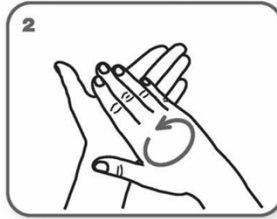
Duration of the entire procedure: 40-60 sec.



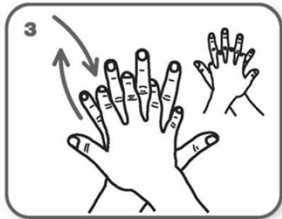
Wet hands with water



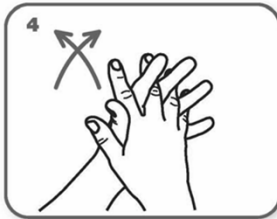
apply enough soap to cover all hand surfaces.



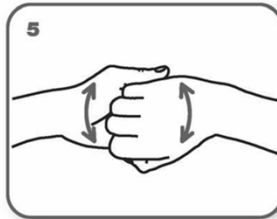
Rub hands palm to palm



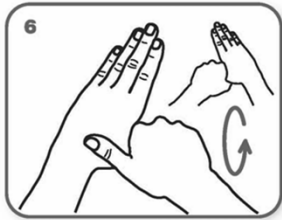
right palm over left dorsum with interlaced fingers and vice versa



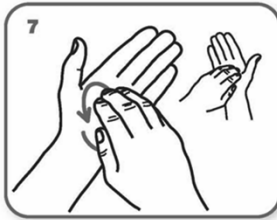
palm to palm with fingers interlaced



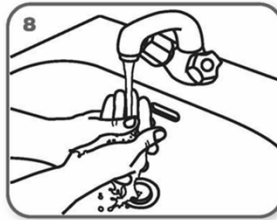
backs of fingers to opposing palms with fingers interlocked



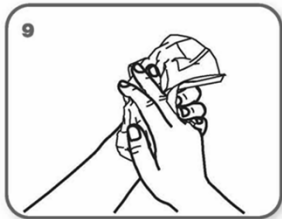
rotational rubbing of left thumb clasped in right palm and vice versa



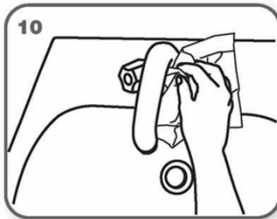
rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.



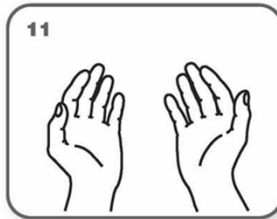
Rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



...and your hands are safe.

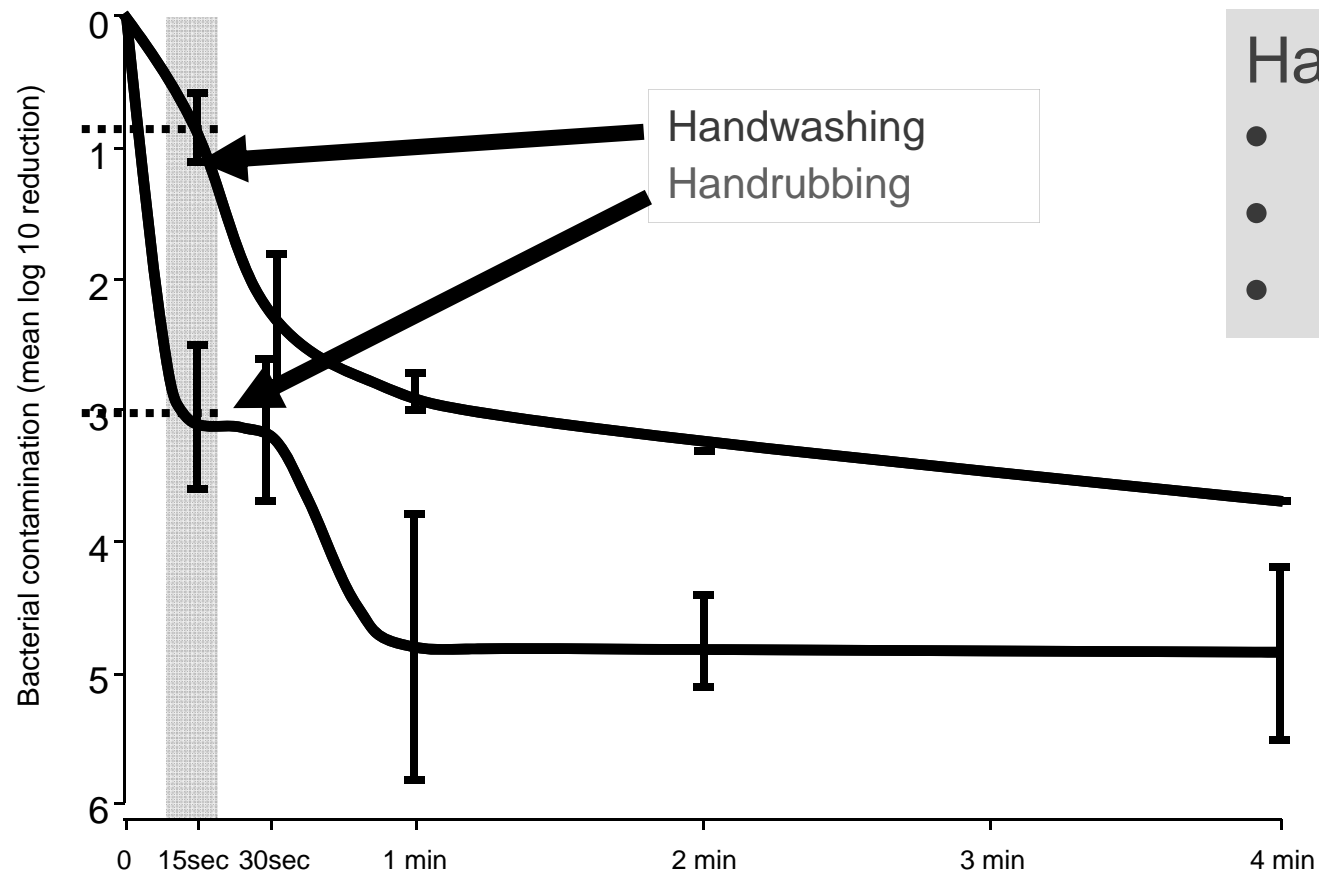
HOW TO HAND WASH

To effectively reduce the growth of germs on hands, **handwashing must last at least 15 seconds** and should be performed by following all of the illustrated steps.

http://www.who.int/gpsc/tools/HAND_WASHING.pdf

credit: WHO

HAND RUBBING VS HANDWASHING



Hand rubbing is:

- more effective
- faster
- better tolerated

SUMMARY OF HAND HYGIENE

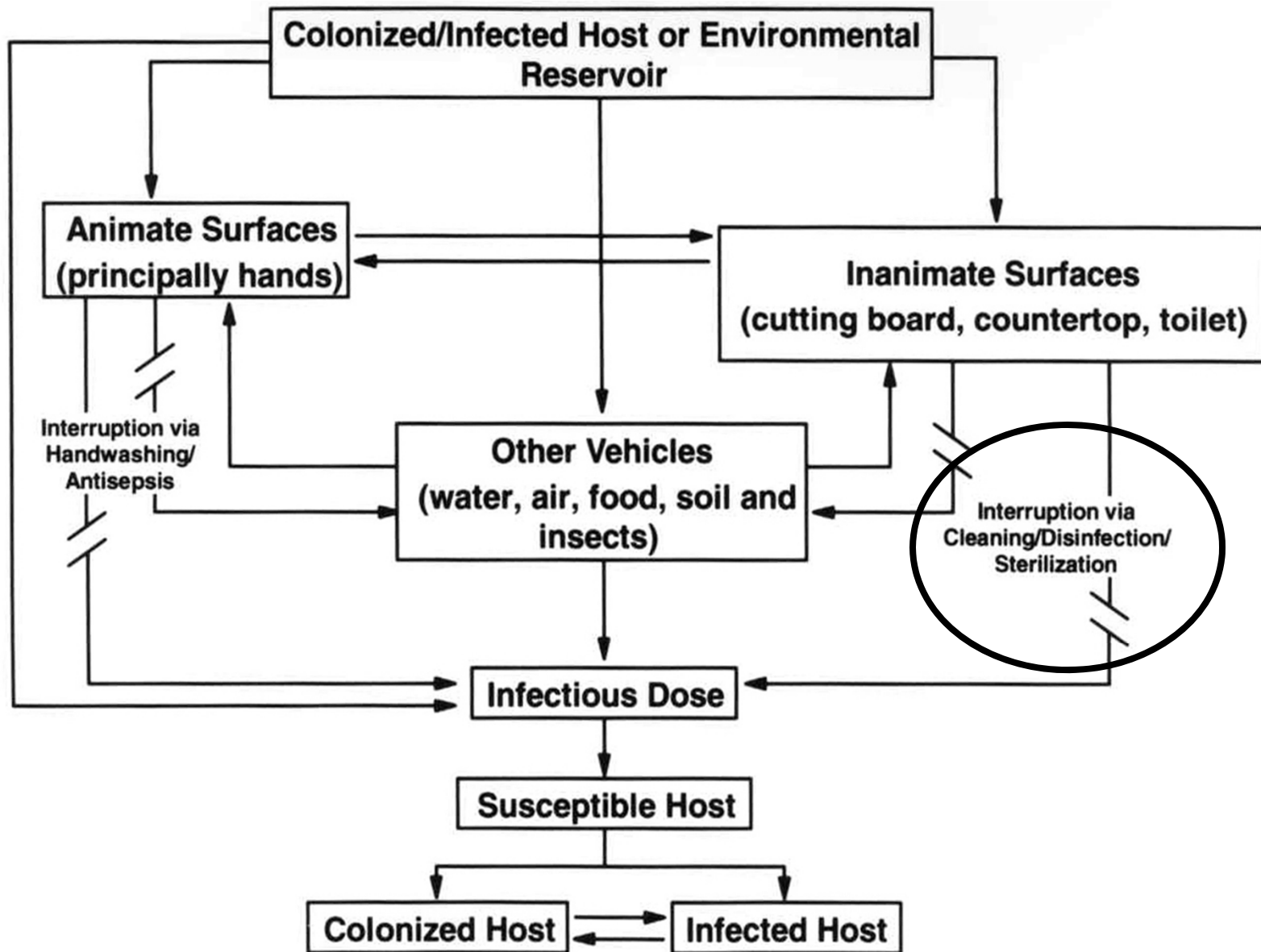
Hand hygiene must be performed exactly where **you** are delivering healthcare to patients (at the point-of-care).

During healthcare delivery, there are 5 moments (indications) when it is essential that **you** perform hand hygiene.

To clean your hands, **you** should prefer **hand rubbing** with an alcohol-based formulation, if available. Why? Because it makes hand hygiene possible right at the point-of-care, it is faster, more effective, and better tolerated.

You should wash your hands with soap and water when visibly soiled.

You must perform hand hygiene using the appropriate technique and time duration.



DEFINITIONS

Spaulding Classification of Surfaces:

1. **Critical** – Objects which enter normally sterile tissue or the vascular system and require sterilization
2. **Semi-Critical** – Objects that contact mucous membranes or non-intact skin and require high-level disinfection
3. **Non-Critical** – Objects that contact intact skin but not mucous membranes, and require low or intermediate-level disinfection

DISINFECTION LEVELS

High – inactivates vegetative bacteria, mycobacteria, fungi, and viruses but not necessarily high numbers of bacterial spores

Intermediate – destroys vegetative bacteria, most fungi, and most viruses; inactivates *Mycobacterium tuberculosis*

Low - destroys most vegetative bacteria, some fungi, and some viruses. Does not inactivate *Mycobacterium tuberculosis*

CATEGORIES OF ENVIRONMENTAL SURFACES

Clinical Contact Surfaces

- Nursing bag, counter tops, BP cuffs, thermometers
- Frequent contact with healthcare providers' hands
- More likely contaminated

Housekeeping Surfaces

- Floors, walls, windows, side rails, over-bed table
- No direct contact with patients or devices
- Risk of disease transmission

STERILE/CLEAN SUPPLIES

- Sterile/clean supplies and equipment should be carried in nursing bag/plastic container
- Bag and supplies are to be maintained as clean as possible
- Perform hand hygiene before removing any patient care supplies or equipment
- Carry only supplies needed for that patient, and remove only those articles that are needed for care.
- Be careful not to reach into the nursing bag with potentially contaminated gloves

NURSING BAGS



CONTAMINATION OF NURSING BAGS

- 127 home health nurses provided bags and equipment for culture.
- 351 cultures of bags and equipment obtained over a 20 month period.

Slides used with permission: Madigan, EA and Kenneley, IL, Case Western Reserve, 2006.

Kenneley IB, Madigan B: Infection Prevention and Control in Home Health Care: The Nurse's Bag. *AJIC* 2009; 37: 687-688

STUDY FINDINGS

66.7% of the outside, 48.4% of the inside and 22.3% of patient care equipment from nurses' bags contaminated with:

- Gram-negative bacteria (*E. coli* and *P. aeruginosa*)
- MRSA
- VRE

33% contaminates on the outside of bag were contaminated with normal flora (*Staphylococcus*, *Diphtheroids*, *Bacillus species*)

RECOMMENDATIONS

- Use less porous surface materials for nurses bags
- Use of solutions containing bleach worked best to decrease bacterial contamination
- Outside of bags should be cleaned routinely (daily or weekly)
 - Non-porus bags can be wiped with EPA-registered disinfectant
 - Porous bags should be laundered

NURSING BAG MANAGEMENT RECOMMENDATIONS

- Should not be placed in a location where it may become contaminated such as on the floor.
- Always place on a visibly clean dry surface away from children and pets. May use newspaper for surface cover.
- If the home is heavily infested with insects or rodents, leave the bag in car or hang on a doorknob.
- If contaminated with blood or body fluids, decontaminate using an EPA-registered disinfectant detergent.

NURSING BAG

Unused supplies may be saved and used for another patient unless:

- item removed from the bag and the patient required Contact Precautions
- item was visibly soiled
- item was opened or the integrity of the package had been compromised
- manufacturer expiration date had been exceeded

HOME CARE PERSONNEL VEHICLE

- Separation of clean and dirty in vehicle
- Patient care and personal items stored separately
- Clean supplies should not be stored on floor (carpeting is heavily soiled)
- Store contaminated items and equipment needing cleaning (i.e., sharps containers) in trunk. Avoid spilling.

RECOMMENDATIONS FOR ASEPSIS IN PROCEDURES

WOUND CARE

- Wound care is performed using clean technique
- Clean gloves used to remove old dressings
- Gloves removed, hand hygiene performed
- New gloves donned for application of new dressing
- “No-touch technique” can be used changing surface dressings
- Use only sterile irrigation solutions
 - Solutions are one-time use and remaining amount must be discarded
- Soiled dressing should be contained within plastic bag and discarded in patient’s trash
 - If disposal is not possible in home, transport soiled dressings for final disposal.

INFUSION THERAPY

- Follow the 2011 Guidelines for Prevention of Intravascular Catheter-related Infections
 - See Summary of Recommendations

PHELBOTOMY

- All venous access done using safety-engineered device
- Sterile technique must be followed
- No recapping needles
- Disposed of needles immediately in sharps container at point of use

BLOOD AND BLOOD PRODUCTS TRANSPORT

Product	Temperature
Blood and Pack Red Blood Cells	1-10°C
Platelets	1-10°C (if stored cold), or 20-24°C (if stored at room temperature)
Liquid Plasma	1-10°C

- Temperature must be monitored using temperature sensitive tags or thermometers
- Protect product against direct exposure to ice packs or coolants

FDA Regulation (21 CFR 600)

SPECIMEN COLLECTION AND TRANSPORT

- Specimens should not be hand carried to the employee's vehicle
- Specimens should be placed in a plastic zip lock lab specimen bag bearing a biohazard label
- Specimens should be placed in a secondary specimen bag for transportation
- Secondary specimen bag may be transported in the clean section of the vehicle

URINARY CATHETER INSERTION AND MANAGEMENT

Follow the 2009 CDC Guideline for the Prevention of Catheter-Associated Urinary Tract Infections

- See Summary of Recommendations

INTERMITTENT URINARY CATHETERS

- Clean technique is considered adequate for patient doing self I/O catheterization.
- Reusable catheters by a single patient
 - wash in soap and water
 - boil for 15 minutes
 - jar of water and microwaving (high for 15 min)
 - thoroughly drain catheter and store in ziplock bag

MAINTENANCE OF LEG BAGS

- Empty bag and rinse with tap water
- Clean bag with soapy water and rinse
- Soak 30 minutes in vinegar solution
- Soak cap in alcohol
- Empty bag, drain and air dry by hanging

Alternative:

- Rinse bag with tap water
- Instill bleach solution (1 tsp to 1 pint water) through tubing
- Agitate briefly and let bag hang 30 minutes
- Empty, drain and let air dry by hanging

TRACHEOSTOMY CARE

- Use clean technique unless tracheostomy is less than one month old
- Suction catheters are changed at least daily.
- Flush the catheter with saline after use.
- Suction canisters and tubing should only be used for one patient and discarded when necessary.
- Suction tubing should be rinsed with tap water after each use. Disinfect tubing once a week with a 1:10 bleach water solution.

RESPIRATORY THERAPY

TRACHEAL SUCTION CATHETERS

Hydrogen Peroxide Method

- Clean with soap and water
- Rinse with tap water
- Flush with 3% hydrogen peroxide
- Place in container of 3% hydrogen peroxide; soak for 20 minutes
- Rinse and flush with sterile water before use
- Store in new clean plastic bag

Boiling Method

- Clean with soap and water
- Boil in water for 10 minutes
- Dried on clean towel or paper towels
- Allow to cool before use
- Store in a new clean plastic bag

ENTERAL FEEDING

- Unopened enteral therapy stored at room temperature
- For diluted or reconstituted formulas:
 - Follow label instructions for preparation storage and stability
 - Most are stable if covered and refrigerated for 24 hours
- Check expiration dates

ENTERAL FEEDING

- Feeding bag and tubing should be rinsed after each feeding; tap water may be used
- Do not top off an existing bag of formula with new formula
- During feeding, check bag and tubing for foreign matter, mold and leakage.

CLEANING ENTERAL FEEDING EQUIPMENT AND SUPPLIES

- Handle formula, equipment and supplies with clean technique.
- Equipment used for formula preparation should be cleaned using
 - A dishwasher or
 - Hot, soapy water
- Bags and tubing should not be used for more than 24 hours. After 24 hours:
 - Discard tubing or
 - Clean with soap and water, rinse, drain and air dry

REFERENCES

- CDC Guidelines for Hand Hygiene in Healthcare Settings – Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC Hand Hygiene Task Force. MMWR October 25, 2002, 51(RR-16).
- CDC Guidelines for Environmental Infection Control in Health-care Facilities, HICPAC, MMWR June 6, 2003, 52(RR-10).
- Rhinehart, Emily. Infection Control in Home Care and Hospice. Washington, D.C.: APIC, 2005