

PRINCIPLES AND PRACTICES OF ASEPSIS

Statewide Program for Infection Control and Epidemiology
(SPICE)

UNC School of Medicine

OBJECTIVES

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

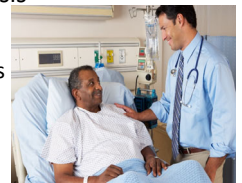
(Free from disease producing microorganisms)

MEDICAL ASEPSIS

Medical asepsis, also known as “clean technique” is aimed at controlling the number of microorganisms and is used for all clinical patient care activities.

Necessary components of medical asepsis include:

- Knowing what is dirty versus clean versus sterile
- How to keep the first three conditions separate
- How to remedy contamination immediately



PRINCIPALS OF MEDICAL ASEPSIS



SURGICAL ASEPSIS



SURGICAL ASEPSIS

Surgical asepsis, also known as “sterile technique” is aimed at removing all microorganisms and is used for all surgical/sterile procedures.

Necessary components of surgical asepsis include:

- Knowing what is and what is not sterile
- How to keep the first two conditions separate
- How to 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
 - Keep door closed
 - Keep traffic to a minimum
 - Separate clean and dirty activities (avoid cleaning/dusting)



KNOWLEDGE CHECK

Which of the following is True?

1. Surgical asepsis should be used for all patient care activities
2. ✓ “Clean technique” is used for any healthcare related activity
3. Clean and dirty equipment can be stored together as long as they are not touching
4. The goal for medical asepsis is freedom from all pathogenic organisms

ROLE OF HAND HYGIENE

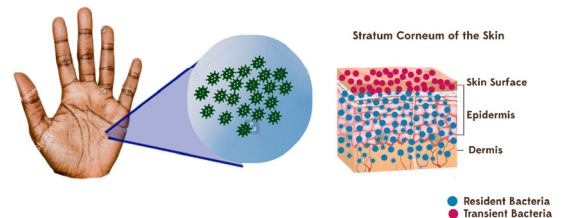


WHAT IS HAND HYGIENE?

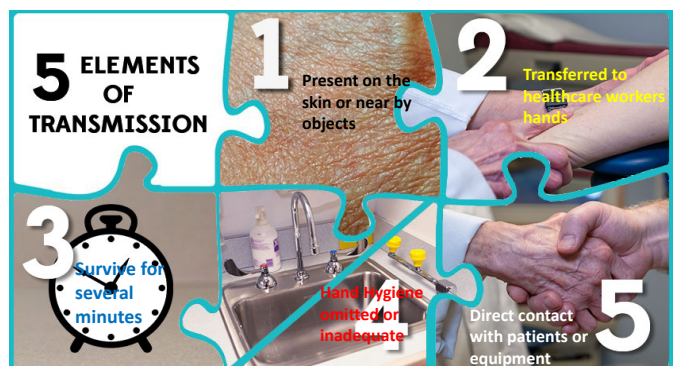
- Handwashing with soap and water
- Antiseptic handwash
- Alcohol-based hand rub
- Surgical antisepsis



THE ROLE OF HAND HYGIENE



THE ROLE OF HAND HYGIENE

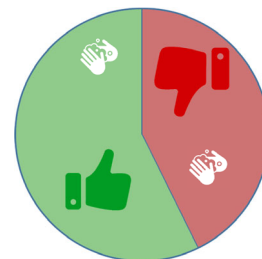


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THE ROLE OF HAND HYGIENE

34 STUDIES: 1981-2000

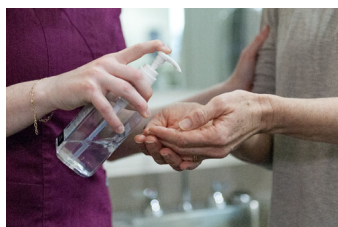
- Mean baseline rates: 5%-81%
- Overall average: **< 40% Compliance**



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REASONS FOR NONCOMPLIANCE

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





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POTENTIAL ADVANTAGES ALCOHOL-BASED HANDRUBS

- Requires less time than hand washing
- Acts quickly to kill microorganisms on hands
- More effective than hand washing with soap and water
- More accessible than sinks
- Less irritating to skin than soap and water and can even improve condition of skin

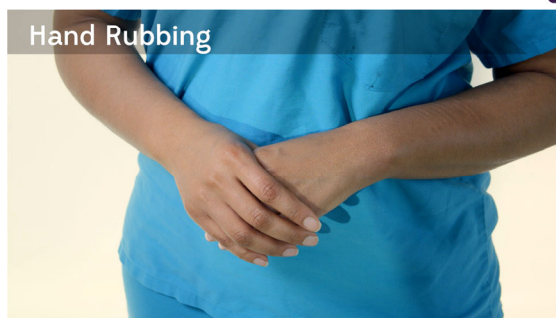
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WHEN TO PERFORM HAND HYGIENE

 	
1. Before touching a patient	• 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

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HOW TO HAND RUB

- The use of an alcohol based hand rub is preferential to hand washing when hands are not visible soiled:



Video Clip: To start video click on image



HOW TO HAND WASH

- Hand washing with soap and water should be used when hands are visible soiled or contaminated with blood and/or body fluids and after providing care for patients with diarrhea:



HAND HYGIENE PROGRAM

ADDITIONAL ELEMENTS

CDC GUIDELINE FOR HAND HYGIENE IN HEALTHCARE SETTING

- Involve staff in evaluation and selection of hand hygiene products
- Provide employees with hand lotions/creams compatible with soap and/or ABHRs
- Do not wear artificial nails when providing direct clinical care
- Provide hand hygiene education to staff
- Monitor staff adherence to recommended HH practices



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.



KNOWLEDGE CHECK

True or False:

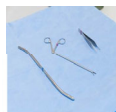
Hand washing with soap and water is always the preferred method of hand hygiene



ROLE OF THE ENVIRONMENT

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



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ROLE OF THE ENVIRONMENT

Clinical



- High potential for direct contamination
- Spray or splatter
- Frequent contact with healthcare personnel's hands

Housekeeping



- No direct contact with patients or devices
- Little risk of transmitting infections

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ROLE OF THE ENVIRONMENT

SELECT, MIX, AND USE DISINFECTANTS CORRECTLY

Right product



Right preparation and dilution



Right application method

Right contact time



Wear appropriate PPE
(gloves, gown, mask, eye protection)



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SUPPLY AND EQUIPMENT MANAGEMENT

- Sterile/clean equipment and supplies should be carried in nursing bag/plastic container
- Perform hand hygiene
- Carry only supplies needed
- Be careful not to reach into bag with contaminated gloves



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HOME CARE (NURSING) BAGS

- Non-critical item
- Do not place on floor or other contaminated surface
- Place on visibly clean, dry surface
- If home infested place on doorknob or leave in car
- If contaminated with blood/body fluids, decontaminate with EPA-registered disinfectant



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HOME CARE (NURSING) BAGS CONT'D

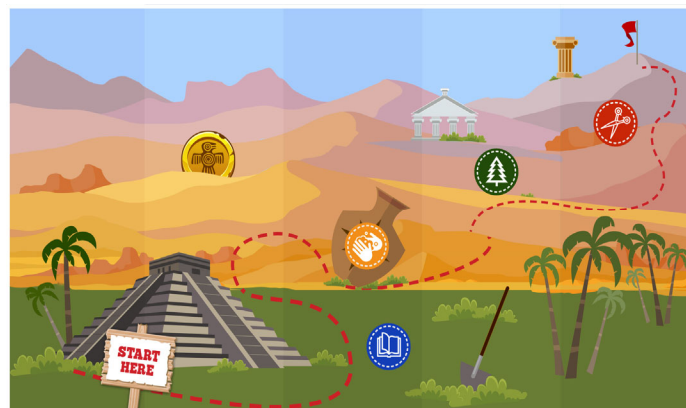
- Unused supplies may be saved and used for another patient UNLESS:
 - Item removed from the bag and patient on contact precautions
 - Item was visibly soiled
 - Item was opened or the integrity of the package compromised
 - Manufacturer's expiration date has been exceeded

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HOME CARE PERSONAL VEHICLE



- Separation of clean and dirty in vehicle
- Patient care and personal items stored separately
- Clean supplies should be stored in a clean area of the car, not on floor
- Store contaminated items and equipment needing cleaning in trunk (i.e., sharps containers)
- Store in a manner to avoid spilling



ASEPSIS IN PROCEDURES

• Wound Care:

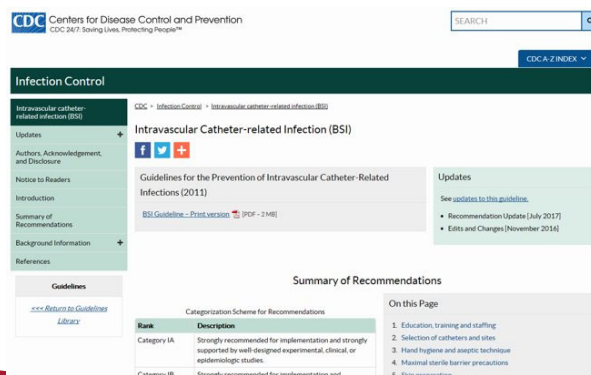
- Use clean technique
 - Sterile if MD ordered or fresh surgical wound
- Clean gloves to remove "old" dressing*
- Remove gloves, perform hand hygiene*
- Don new clean gloves
- Use only sterile irrigation solutions
- Soiled dressing should be contained in plastic bag and discarded in patient's trash



**Alternatively "No-touch" technique can be used*



INTRAVASCULAR CATHETER-RELATED INFECTION



PHLEBOTOMY



- All venous access done using safety-engineered device(s)
- Aseptic technique must be followed
- No recapping of needles
- Dispose of needles immediately in sharps container at point of use



TRANSPORT BLOOD/BLOOD PRODUCTS

Product

Temperature

- Blood and pack red cells
 - 1-10° C
- Platelets
 - 1-10° C (if stored cold), or 20-24° C (at room temperature)
- Liquid Plasma
 - 1-10° C

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



SPECIMEN COLLECTION AND TRANSPORT

- Specimens should not be hand carried to employee's vehicle
- Place in a plastic zip lock lab specimen bag with a biohazard label
- Place in a secondary specimen bag for transportation (*rigid container preferred*)
- Secondary bag may be transported in the clean section of vehicle



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CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

Infection Control

Catheter-Associated Urinary Tract Infections

Updates

Abbreviations

Executive Summary

Summary of Recommendations

Implementation and Audit

Recommendations for Further Research

Background

Scope and Purpose

Methods

Evidence Review

References

Get Email Updates

To receive email updates

CDC > Infection Control > Catheter-Associated Urinary Tract Infections

Catheter-Associated Urinary Tract Infections (CAUTI)

Guideline for Prevention of Catheter-Associated Urinary Tract Infections (2009)

CAUTI Guideline - Print Version (PDF - 655 KB)

On This Page

- Appropriate urinary catheter use
- Proper techniques for urinary catheter insertion
- Proper techniques for urinary catheter maintenance
- Quality improvement programs
- Administrative infrastructure
- Surveillance

Summary of Recommendations

Rank	Description
Category IA	A strong recommendation supported by high to moderate quality evidence suggesting net clinical benefits or harms. (Please refer to Methods for process used to grade quality of evidence)
Category IB	A strong recommendation supported by low quality evidence suggesting net clinical benefits or harms or an accepted practice (e.g.,

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INTERMITTENT URINARY CATHETERS

- Clean technique for patients doing self I/O catheterization
- Reusable catheter by a single patient
 - Wash in soap and water
 - Boil for 15 minutes OR
 - Microwave high for 15 minutes
 - Thoroughly drain catheter, allow to cool
 - Store in clean, closable container or new plastic bag

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MAINTENANCE OF LEG BAGS

- Follow manufacturer's instructions if available
- One method:
 - Empty bag and rinse with tap water
 - Clean with soapy water and rinse
 - Instill either 1:3 white vinegar solution OR bleach solution > 1 tsp bleach to 1 pint water
 - Soak 30 minutes in solution
 - Empty bag, rinse and air dry by hanging
 - Perform hand hygiene and use appropriate PPE



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TRACHEOSTOMY CARE



Clean Technique	Sterile technique
<ul style="list-style-type: none"> In most situations Change suction catheters at least daily; flush with saline after each use 	<ul style="list-style-type: none"> Tracheostomy less than one month old Physician orders Use new sterile suction catheter each time

- Suction canisters used for only 1 patient, emptied daily and washed with soap and water
- Suction tubing rinsed with tap water after each use
- Tubing disinfected weekly with a 1:10 bleach/water solution or a 1:3 vinegar solution

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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

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CLEANING EQUIPMENT AND SUPPLIES

- Use clean technique to handle formula, equipment and supplies
- Equipment used for formula preparation should be cleaned using:
 - Dishwasher OR
 - Hot, soapy water
- Bags and tubing should not be used for more than 24 hour
- After 24 hours:
 - Discard tubing OR
 - Clean with soap and water, rinse, dry and air dry

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KNOWLEDGE CHECK

True or False:

Enteral feeding bags can be refilled as long as they are half empty

True



False

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KNOWLEDGE CHECK

True or False:

Asepsis includes all the following:

1. Hand Hygiene
2. Separation of clean and dirty supplies
3. Clean technique
4. Surgical technique



True

False

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QUESTIONS?



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