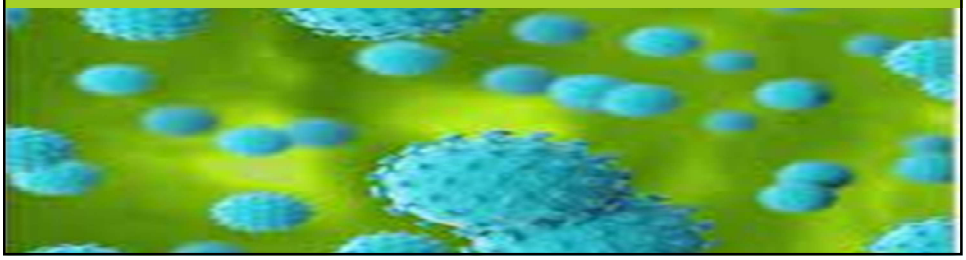
ASEPSIS AND NON-ASEPSIS

Unit 3 Part 1 Chapter 18 and 19



1

ASEPTIC TECHNIQUE

- Can be used in all clinical settings
- Pathogens may lead to infections to a patient through several ways: environment, personnel or equipment
- Most scenarios which will require aseptic technique are surgery and insertion of IV, catheters and drains
- GOAL: to protect from infection and prevent pathogens and microorganisms from spreading

2

MEDICAL ASEPSIS

- Performing a removal or destruction of infected material
- Not necessarily a reduction to zero

3

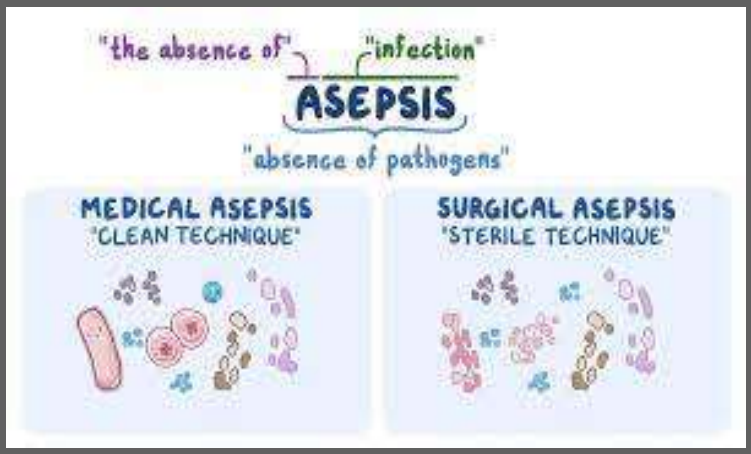
SURGICAL ASEPSIS

- Used to prevent contamination of microbes and endospores before, during and after surgery using **sterile** technique
- *Complete removal of microorganisms and their spores*

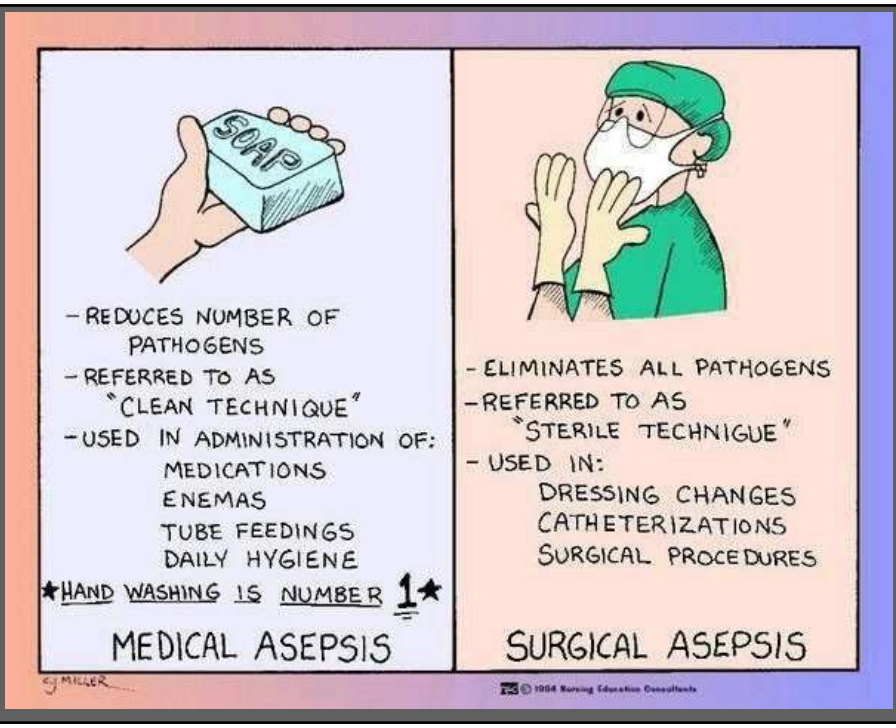
Hand washing is the *first priority* for proper sterile technique

4

MEDICAL VS SURGICAL



5



6

STERILIZATION

Absolute killing of ALL life forms

MOIST HEAT
DRY HEAT
GAS
CHEMICAL

- Methods used to control microorganisms:

1. Moist heat – autoclave steam under pressure
2. Dry heat - longer process than moist heat, used for heat- stable, non-aqueous materials
3. Gas - ethylene oxide destroys microorganisms (effective, but toxic to humans)
4. Chemicals – used for objects that are high heat sensitive

*Remember the growth requirements for a microorganism are the right nutrition, oxygen, pH, temperature, and moisture

7

DISINFECTION

- As many microorganisms as possible are removed from surfaces by chemical or physical means
  - Boiling not always effective
    - Many microorganisms' spores can resist boiling heat

8

DISINFECTION

- Categorized by high-level, immediate-level and low-level depending on their disinfecting ability
- Physical methods: boiling in water and UV irradiation

-boiling used when no other method is available, but many spores can resist heat

-UV is not a good hospital disinfectant because there is no assurance that UV has come into contact with microbes because they are always moving

9

STERILE PROCEDURES

- These radiology procedures require sterile technique
  - Angiography
  - Arthrograms
  - Hysterosalpingograms
  - X-ray in the O.R.
  - Myelograms

10

STERILE FIELD

- Microorganism-free area that can receive sterile supplies
- Established using a sterile drape
- Confirm sterility of packaging
  - Package must be clean, dry and unopened
  - Check expiration date

*Do not reach across a sterile field

*A 1-inch border around the sterile field is *not* considered sterile

11

STERILE TRAYS

- Different types of trays have different supplies
  - Myelogram (spinal tap) tray
  - Arthrogram tray
- May be packed commercially or by hospital
- Common tray supplies:

Needles	Syringes
Connector tubing	Sterile gauze
Metal bowls	Sterile towels/drapes
Collection tubes	Clamps
Scalpel	

12

STERILE TRAYS

- Make sure tray is sterile before using it for a procedure
- Trays should be wrapped in autoclave indicator tape
  - Stripes appear when package is sterilized
- Check expiration date

13

OPENING A STERILE TRAY

- Place tray in center of table
- Only touch corners of flaps (unsterile)
- Grasp between thumb and index finger
- Top flap should face so it will open away from you
- Reach around tray and pull top flap open (away from you)
- Lay flap flat on far surface
- Use right hand to pull right flap out and lay it flat on surface
- Use left hand to pull left flap open and lay it flat on surface
- Pull bottom flap towards you
- If any part of inner surface touches an unsterile object (e.g. sleeve) the entire tray is considered unsterile
  - Discard

14

OPENING A STERILE TRAY

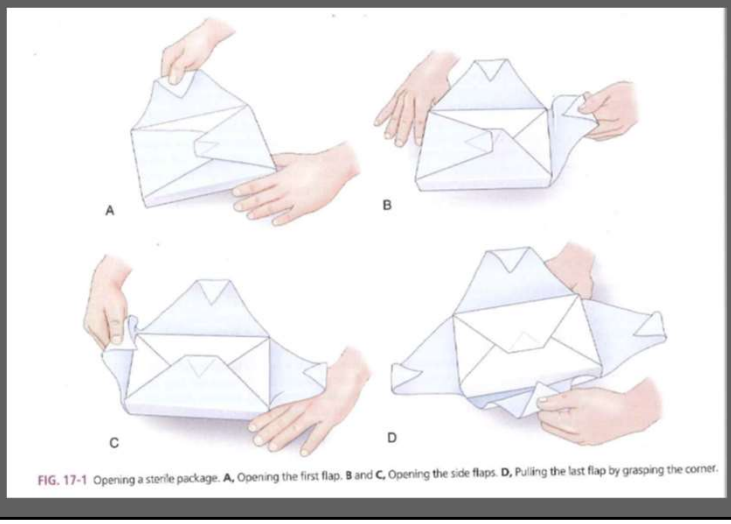


FIG. 17-1 Opening a sterile package. **A,** Opening the first flap. **B** and **C,** Opening the side flaps. **D,** Pulling the last flap by grasping the corner.

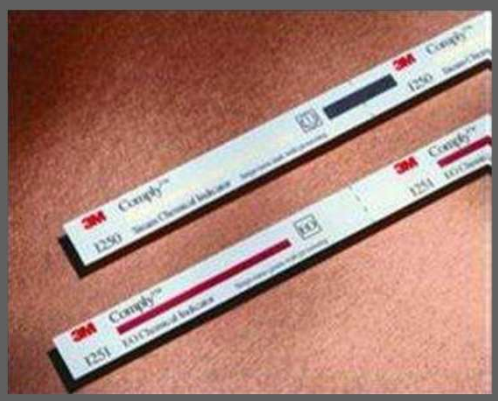
15

OPENING STERILE PACKAGE

- Hold package in one hand
- Top flap should face so it will open away from you
- Grasping corner of flap, pull it away from contents and away from sterile field
- Use free hand to hold flap against wrist of hand holding package
- Drop contents onto sterile field using a slight angle at a 6-inch distance
- If flap touches sterile field, all items in the pack and in the sterile field must be discarded

16

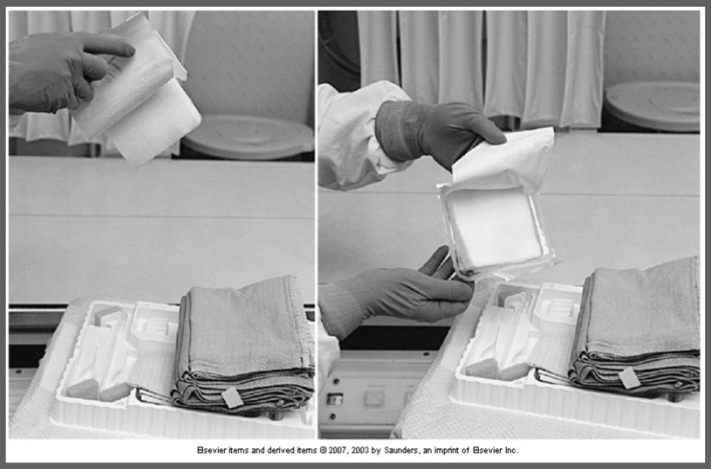
OPENING A STERILE TRAY continued



- Commercial packages have specific instructions
  - Partially sealed corners may need to be opened from a certain corner, which will be labeled
  - Partially sealed edges may need to be pulled open by grasping each edge with a hand and gently pulling apart
  - May have *chemical indicator* strips for sterility

17

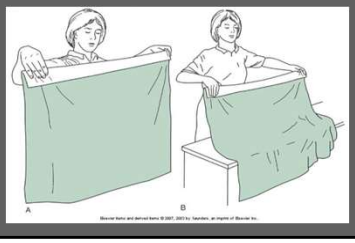
OPENING STERILE GAUZE



18

CREATING A STERILE FIELD

- Grasp sterile drape with one hand by the corner
- Use corner to fold back the top
- Lift drape out of the cover and open freely without touching anything
- Grasp the opposite corner with the other hand
- Lay on clean, dry surface with bottom away from person



19

POURING STERILE SOLUTIONS

- Sterile solutions may be poured into metal bowl on sterile field
- Although solution in bottle is sterile, outside of bottle is not sterile
- Confirm the name, strength and expiration date of solution before pouring
  - Show label to another person
- Remove or open lid to bottle
  - Place removed lid onto unsterile surface with topside down
    - Keep inside of lid sterile
- Hold bottle so label faces up
  - Solution won't stain label
- Hold bottle at an angle approximately 6 inches over the bowl

20

FIG. 17-4 Pouring a sterile solution into a sterile bowl on a sterile field.

- Pour gently so solution doesn't splash
  - Splashing liquids allow microorganisms to move from unsterile tabletop through the wet drape
- Only pour as much solution as will be needed

21

SURGICAL SCRUBBING

- Three purposes for surgical scrubbing
  1. Removes debris & transient microorganisms
  2. Reduces resident microbial count
  3. Inhibits rapid rebound growth of microorganisms
- 2 Methods:
  1. Numbered Stroke Method
  2. Timed Scrub

  Each should last 3-5 minutes
- Required for participation in many interventional procedures

22

OR ZONES:

Zone 1 – unrestricted, may enter in street clothes

Zone 2 – semi restricted, only person in scrubs and hair and shoes covered may enter

Zone 3 – restricted, like zone 2 + mask

23

SELF-GOWNING

24

GOWNING ANOTHER PERSON

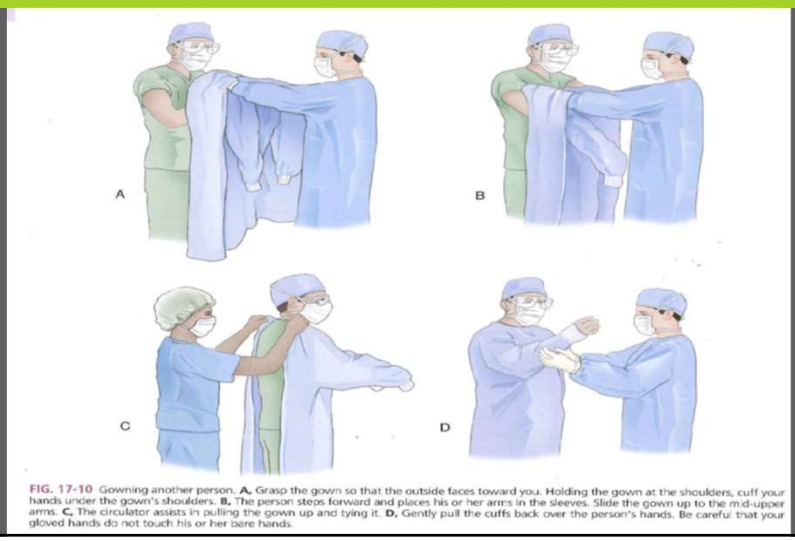
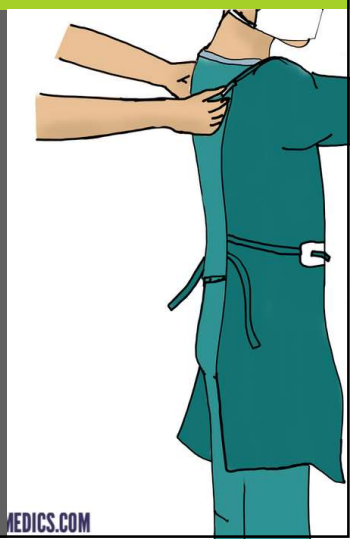


FIG. 17-10 Gowning another person. **A,** Grasp the gown so that the outside faces toward you. Holding the gown at the shoulders, cuff your hands under the gown's shoulders. **B,** The person steps forward and places his or her arms in the sleeves. Slide the gown up to the mid-upper arms. **C,** The circulator assists in pulling the gown up and tying it. **D,** Gently pull the cuffs back over the person's hands. Be careful that your gloved hands do not touch his or her bare hands.

25

STERILE GOWNING

- Unsterile assistant fastens the back and waistband of gown
- Only sleeves and front of gown down to the waist are considered sterile
- Gowned persons should pass each other back to back



26

GOWNING ANOTHER PERSON

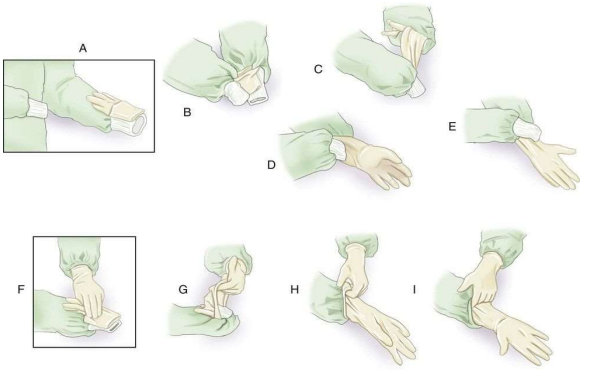
- Nonsterile person pulls gown up and fastens the back and waistband
- Gently pull cuff over person's hands
  - Do not allow gloved hands to touch bare hands

27

DONNING STERILE GLOVES

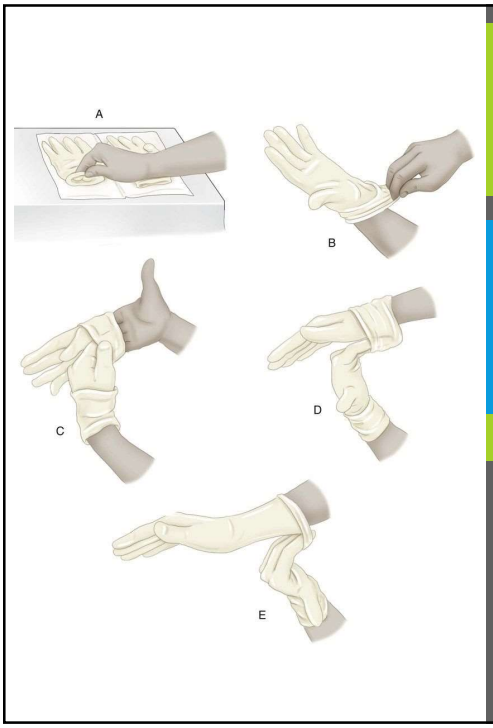
- Gloves have two surfaces: Inside and outside
- Before glove is touched, entire glove is sterile
- Once touched, inside is considered unsterile
- All jewelry should be removed when gloving
- Open package so it is facing the person who is going to wear them

28



CLOSED TECHNIQUE (SELF)

29



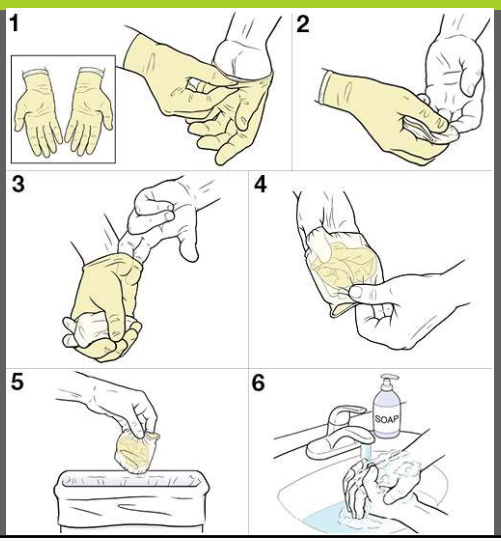
OPEN TECHNIQUE (SELF)

30

GLOVING ANOTHER PERSON

31

REMOVAL OF STERILE GLOVES



32

WHAT IS STERILE DURING A STERILE PROCEDURE?

- During sterile procedures the following are considered sterile:
  - Patient
  - Table and other furniture covered with sterile drapes
  - Personnel wearing sterile attire

33

BASIC PRINCIPLES OF STERILE TECHNIQUE

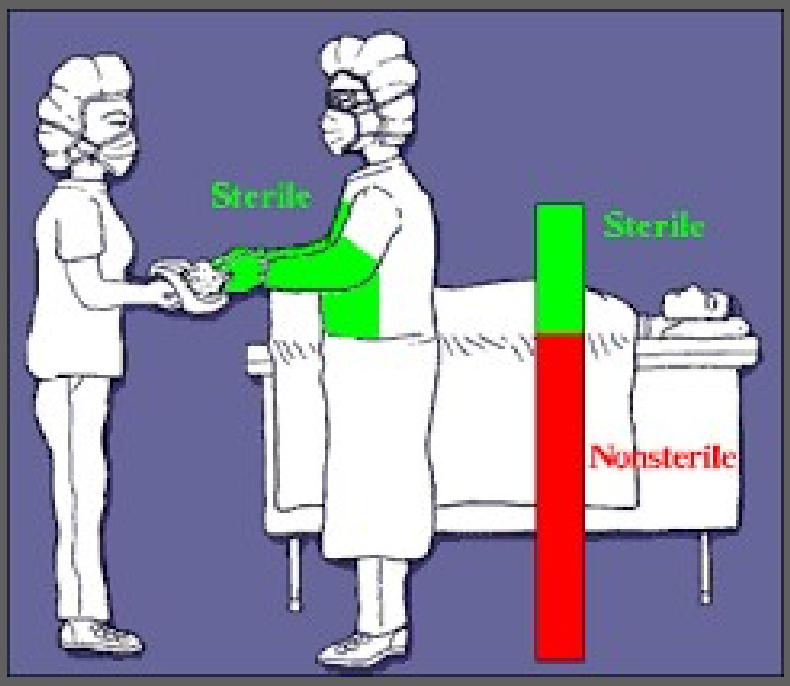
- Only sterile items used in sterile fields
- If in doubt about sterility of an object, consider it unsterile
  - Remove, cover or replace object
- *Sterile field must be continually monitored*
- Create sterile fields as close to the time of use as possible
- Sterile persons should avoid unsterile areas

34

BASIC PRINCIPLES OF STERILE TECHNIQUE CONTINUED

- Anything below the level of the table or the level of the waist, including the undersurface of the drape, is considered unsterile
  - Any item falling below this level is contaminated
- Gowns are considered sterile on the sleeves and the front from the waist up
  - Back of gown and area below waist are unsterile
- Persons in sterile gowns must pass each other back to back
- Sterile person may touch only what is sterile
- Unsterile person cannot reach above or over sterile field

35



36

DRESSING CHANGES

- Must be ordered by a physician
- Wear gown if wound is purulent
- Treat all wounds as if they are infected
  - Always wear gloves!
- Wash hands before beginning
- Ensure privacy for the patient
- Remove adhesive tape from dressing
  - Use limited amount of solvent (baby oil)
- Remove dressing with forceps or gloved hands
- Wrap dressing and place in plastic bag

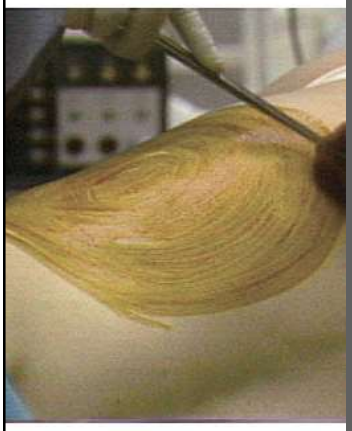
37

DRESSING CHANGES

- Reapply dressing with sterile technique
  - Wash hands
  - Use sterile towel for field
  - Place dressings on sterile field
- Cut tape into lengths that will be used
  - Tape is not sterile
  - Place near, but not on, sterile field
- Put on gloves and apply dressing
- Secure dressing with adhesive tape
- Wash hands again
- Discard waste appropriately

38

SKIN PREPARATION



- Skin preparation of the patient must take place before any invasive procedure
- Hair removal not always recommended
  - Causes injury to dermal layer of skin
  - If done, should be performed as close as possible to start of procedure
- Usually done with razor, clippers or depilatory agent
- After hair removal, skin is disinfected
- Cleaning person should wear sterile gloves
- Antiseptic soap applied from the center out, using firm circular motion
  - Do not go back over any areas
- Repeat procedure with another sponge
- Cleaning should take about 5 minutes
- Sterile drapes placed after skin prep

39

SKIN PREPARATION

40

URINARY CATHETERS

- Insertion of a tube into the bladder using aseptic technique
- Two types: Foley and Straight
- Foley – has a balloon which is filled with sterile water to hold the catheter in place
  - Indwelling catheter – remains in place

- Used for:
  - Empty bladder
  - Relieve retention of urine or bypass obstruction
  - Irrigate the bladder or introduce drugs
  - Permit accurate measuring of urine output relieve incontinence
  - Relieve incontinence

41

URINARY CATHETERS CONTINUED

- Sizes range from 8 to 20 in even numbers based on the French system
  - System equals the outer diameter of the catheter
  - Choose a larger size when possible
- Urine collection bag should be kept below the level of the bladder
- There are long term and short term catheters
- Patient may be monitored for fluid intake and output
  - May need to contact RN and even document information

42

OTHER CATHETERS

(ALTERNATIVE METHODS OF URINARY DRAINAGE)

- Suprapubic catheter- closed drainage system inserted approximately 1" above the symphysis pubis into the distended bladder

  **Reason: long term, urethral injury, obstruction

- Condom catheter- specially designed condom with a catheter at the end attached to a collecting bag

43

OTHER PROCEDURES WITH STERILE TECHNIQUE REQUIRED

- Tracheostomies
- Chest tubes
- Intravenous and Intraarterial Lines – central venous and arterial lines
- Pacemakers
- Surgical and Portable radiography (if under sterile field or in OR)

44

NON-ASEPTIC TECHNIQUES

45

- Students need to develop exceptional patient care skills to become competent in non-aseptic technique
- As well as understanding and sensitivity to patient needs to provide excellent care

- Non-aspetic techniques used for:
  - NG tubes
  - Male urinals
  - Bedpans
  - Enemas
  - Colostomies

46

URINALS

- Made of plastic or metal
- Shaped so a patient is able to use it lying:
  - Supine
  - On his right or left side
  - Fowler's position
- Always provide privacy!
- When patient is done, put gloves on, dispose of urine and then dispose urinal
- Offer patient hand rub or wet wash cloth
- May need to document amount of urine output

47

IF ASSISTANCE IS NEEDED….

- Wear gloves
- Raise cover to permit adequate visibility
- Spread patient's legs and place urinal between them
- Place penis adequately into the urinal so that it does not slip out
- Hold urinal in place by handle until patient is done voiding
- Dispose everything appropriately

48

BED PANS

- Offered to patients who are not ambulatory
- Used for urine and fecal collection
- Our bedpans at RH are sent to be sterilized between uses
- Two Types:
  - Standard bedpan
    - Made of metal or plastic
    - Approximately 2 inches high
  - Fracture bedpan
    - Shallower (1/2" high)
    - Contoured for patient comfort

49

BED PANS

- To reduce infectious spread ------ Handwashing
  - Before and after
- HINT: if bedpan is cold, run warm water over in and then dry it prior to giving it to a patient
- Must maintain patient privacy (respect and secured)
- ALWAYS place a sheet over the patient

50

HOW TO ASSIST WITH A BEDPAN…

- If patient is able to move
  - place one hand under lower back, asking the patient to raise his or her hips
  - Place bedpan under the hips and position in properly
- If patient is able to sit up
  - Elevate to 60 degrees
- Don't leave the patient alone for long, let patient know how to get you if you are needed for assistance
- When the patient is finished:
  - Put on gloves
  - Have patient lie back and place one hand under lumbar and ask patient to raise hips
  - Remove bedpan and properly dispose contents and pan
  - Remove gloves and wash hands

51

IF 2 TECHS ARE NEEDED TO ASSIST WITH A BEDPAN…

- Both put on non-sterile gloves
- Stand at opposite sides of the table
- Assist patient into lateral position
- Place pan against the patient's hips and turn patient back to supine position while holding the pan in proper position
- Ensure hips are in proper alignment on the pan
- Provide pillows under the patient's shoulders and head
- Remain nearby for assistance
- Use the reverse process to remove the pan

52

THE PATIENT MAY NEED FURTHER ASSISTANCE

- Cleaning the perineum
  - Wear gloves
  - Fold tissue paper into several thicknesses
  - Wipe patient's perineum clean and dry
    - For females- wipe her from front to back

53

ENEMAS

- Cleansing enema
  - To promote defecation
  - Breaks up fecal mass, stretches rectal wall, and initiates defecation reflex

- Barium enemas
  - To demonstrate pathologic abnormality
  - To verify normal structures and function

54

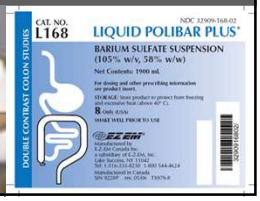
TYPES OF ENEMAS

- Different types of cleansing enemas may be used
  - Tap water (hypotonic)
  - Hypertonic
  - Saline
  - Soapsuds
  - Oil retention
- Performing doctor will have preference

55

BARIUM ENEMA

- Have patient assume Sims position
- Lubricate enema tip
- Instruct patient to exhale
- Insert towards umbilicus (anterior and superior) about 3 – 4 inches
- Once tip is inserted, inflate balloon with air
  - No more than 10 cc
- May use single contrast
  - Barium or Omnipaque only
- May use double contrast
  - Air and thick barium



56

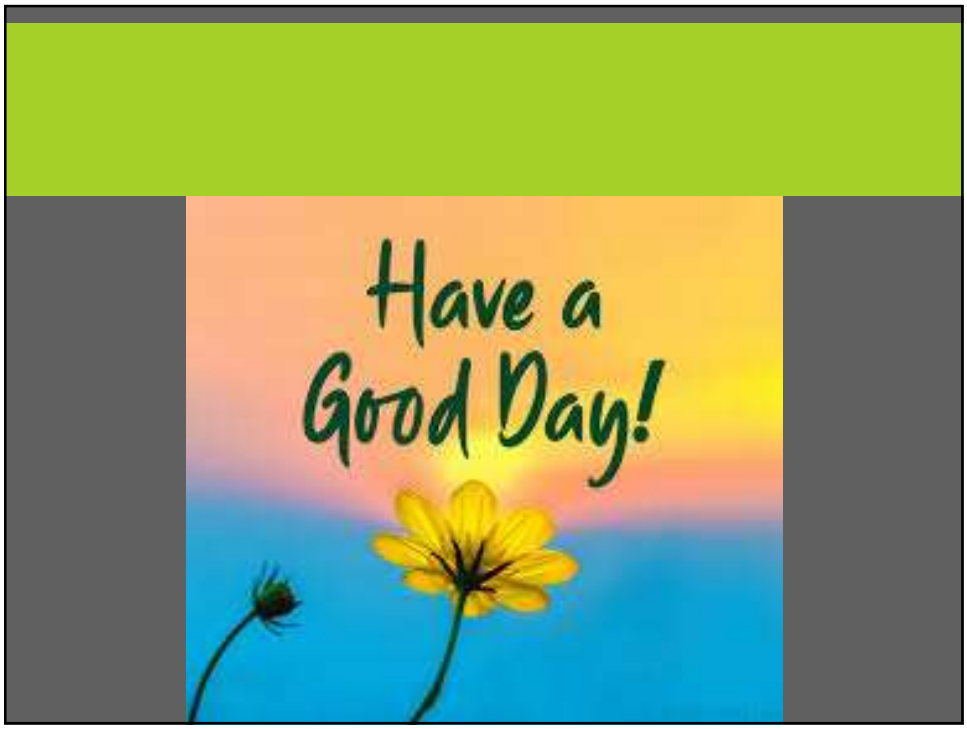
FLUORO – BARIUM ENEMA

- Type of contrast used will be determined by reason for exam
  - Single
    - Good for gross pathology, fistulas, appendicitis, obstruction
  - Double
    - Considered routine
    - Allows good visualization of bowel walls
    - Air allows distention of colon
- When procedure is finished, place bag on floor to drain barium from colon
- Deflate balloon
- Remove enema tip

57

	Clean	Aseptic	Sterile
Procedure space	On ward or at beside	Dedicated area	Dedicated room
Gloves	Clean or none	Sterile	Sterile surgical
Hand hygiene before the procedures	Routine	Aseptic, e.g. alcohol	Surgical scrub Iodophors, chlorheximide
Skin antisepsis	No	Alcohol	Long acting agent
Sterile field	No	No*	Yes
Sterile gown, mask, head covering	No	No	Yes

58



59