Renal and urological care

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Purposes

- to ensure adequate urine output, and, if necessary, to obtain a non-contaminated urine specimen for routine or diagnostic studies
- to manage incontinence when other measures have failed
- to relieve discomfort due to bladder distension or to provide gradual decompression of a distended bladder
- to prevent urinary tract infection
- to maintain the patency of a urinary catheter and tubing

Main points

- Definitions of key terms
- Urinary catheterization
- External urinary catheter
- Bladder irrigation
- Suprapubic catheter
- Collecting urine specimen
- Characteristics of normal and abnormal urine

Definitions of key terms

- **Polyuria -** refers to the production of abnormally large amounts of urine by the kidneys
- **Oliguria, anuria -** are used to describe decreased urinary output
- **Nocturia -**is voiding two or more times at night
- **Urgency -**is the sudden strong desire to void the urinary bladder
- **Dysuria -** means voiding that is either painful or difficult

Definitions of key terms

- **Enuresis -** is involuntary urination by children beyond the age when voluntary bladder control is normally acquired
- **Urinary retention -** is incomplete emptying of the bladder
- **Neurogenic bladder -** dysfunction of the urinary bladder due to a disease of the central nervous system or peripheral nerves
- **Urinary incontinence -** is a symptom, it is not a disease
  - ✓ Acute incontinence
  - ✓ Chronic incontinence

Medical problems causing

Acute incontinence

- faecal impaction – stool can block the outflow of urine
- infection – dysuria, urgency and irritation from a bladder infection may cause urge incontinence
- atrophic vaginitis / urethritis – inflammation which results from lack of estrogen can cause urge and stress UI
- large amount of urine production (uncontrolled diabetes mellitus, hypercalcemia)
- restricted mobility – decreased or limited mobility can cause incontinence

Chronic urinary incontinence – four kinds

- **Stress UI** – is the involuntary leakage of small amounts of urine in response to increased intraabdominal stomach pressure. Incontinence occurs during physical exertions (sneeze, cough, laugh...)
- **Urge UI** – is the leakage of larger amounts of urine that occurs when a person is not able to reach the toilet after the urge to void is perceived. This type of incontinence is part of the diagnosis of overactive bladder.
- **Overflow UI** – overflow leakage of urine occurs when there is a mechanical of functional obstruction of the urinary bladder outlet.
- **Functional UI** – may occur after a major illness or in nursing homes

Urinary catheterization

- introduction of a catheter through the urethra into the urinary bladder
- this is usually performed only when it is absolutely necessary (introduction mikroorganisms, trauma)

strict sterile technique is used for catheterization

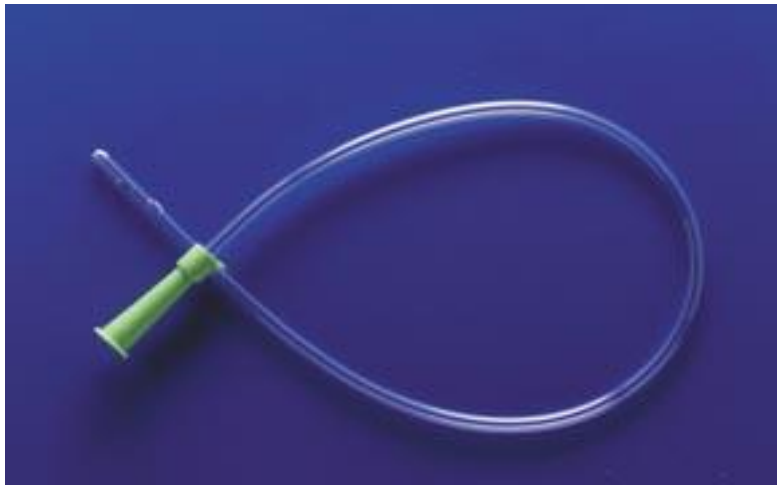
Purposes

- to relieve discomfort due to bladder distension or to provide gradual decompression of a distended bladder
- to assess the amount of residual urine if the bladder empties incompletely
- to obtain a urine specimen
- to empty the bladder completely prior to surgery

- to facilitate accurate measurement of urinary output for critically ill patient whose output needs to be monitored hourly
- to provide for intermittent or continuous bladder drainage and irrigation
- to prevent urine from contacting an incision after perineal surgery
- to manage incontinence when other measures have failed

Straight catheter - inserted to drain the bladder and then immediately removed

Easy Cath Straight Catheter

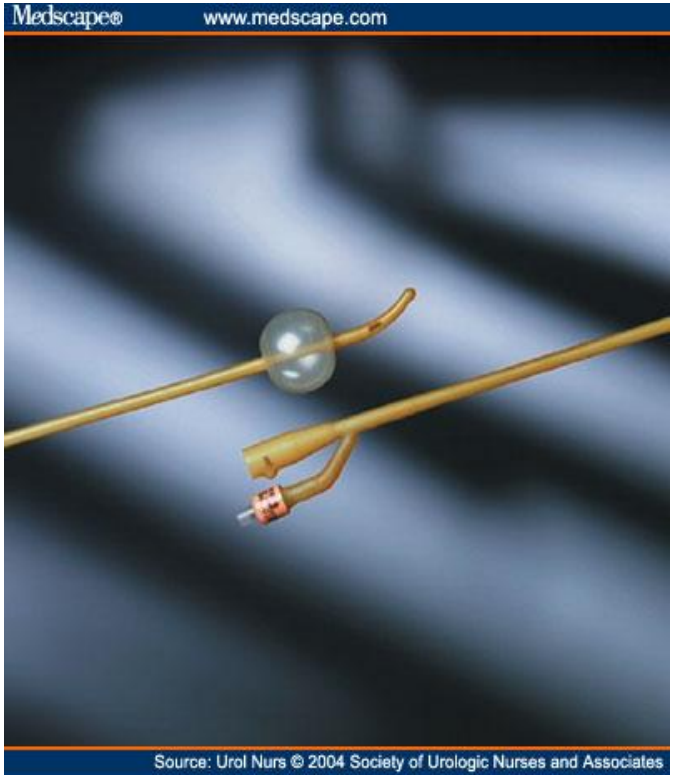


Rusch Siliconized Tiemann Catheter

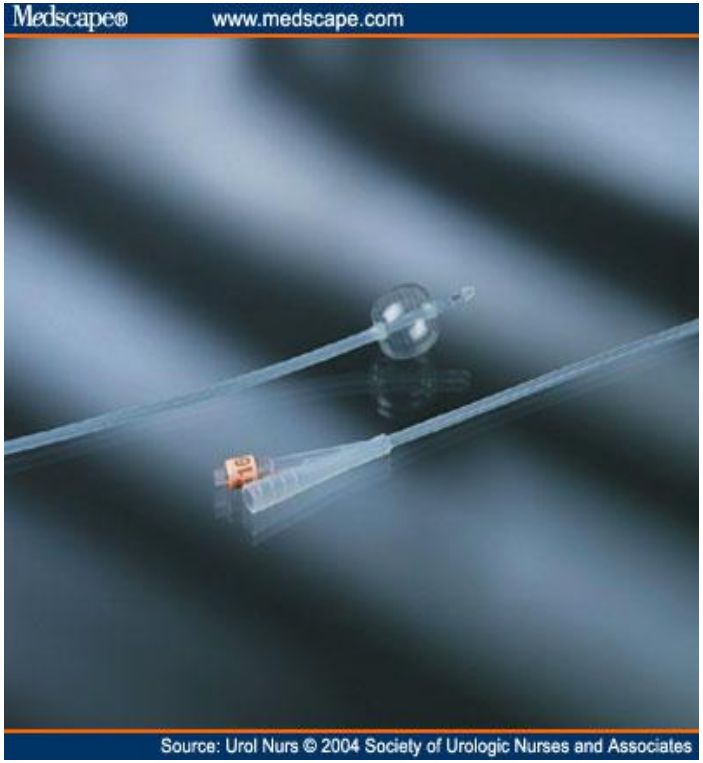
Rusch Sterile Nelaton Catheter

Retention (or Foley) catheter remain in the bladder to drain urine, is a double – lumen catheter (larger lumen, smaller lumen, balloon)

Latex Indwelling Catheter with Inflated Balloon

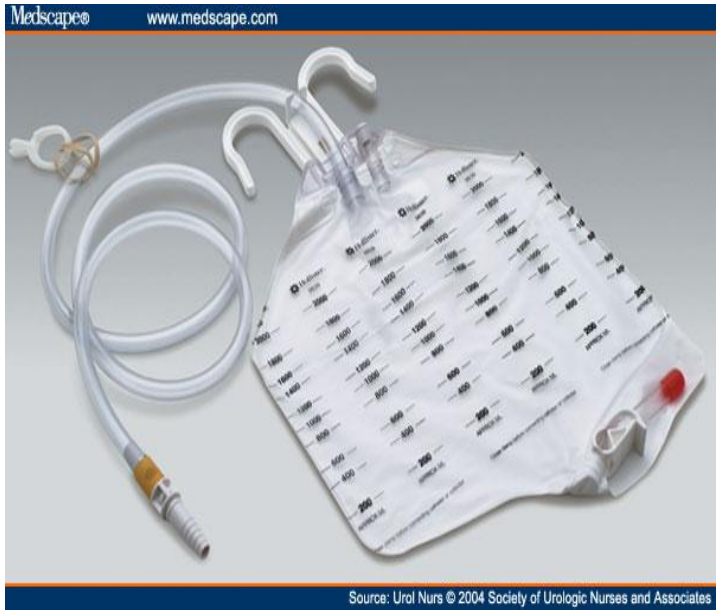


Silicone Indwelling Catheter with Inflated Balloon



Retention (or Foley) catheter is connected to **a closed gravity drainage system** (catheter, drainage tubing and a collecting bag for the urine)

Bedside Drainage Bag

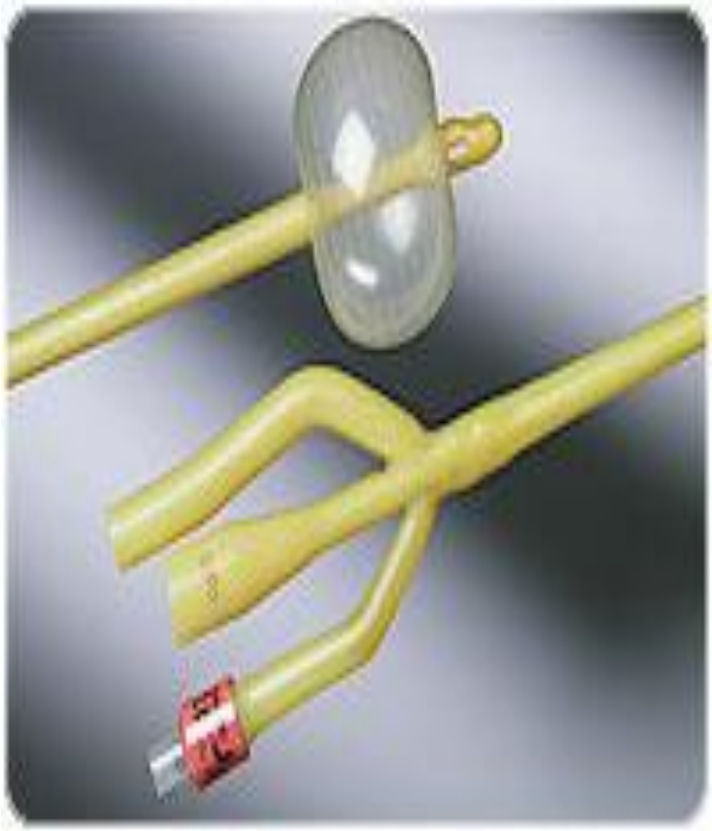


- larger, usually is attached on the bed

Leg bag

- smaller, usually worn during the day, easily emptied into the toilet

Three – way Foley catheter - has a third lumen through which sterile irrigating fluid can flow into the bladder, is used when clients require bladder irrigation



Catheters are commonly made of rubber or plastics although they may be made from latex, silicone, or polyvinyl chloride.

Determine appropriate catheter length by the patient's gender

- for adult female patients **- 22 cm**
- for adult male patients – **40 cm**

Determine appropriate catheter size by the size of the urethral canal

- for children – **8 F, 10 F (charriére)**
- for adults – **14 F, 16 F (men 18)**

Implementation

- http://www.youtube.com/watch?v=ISBAya_5cIM&feature=related

Self catheterization

Indication

- Chronic urinary retention
- Detrusor hyperactivity and functional obstruction
- Urge incontinence

Goal:

- completely empty the bladder
- prevent further bladder or kidney damage
- prevent urinary tract infection

The person must be physically able to reach the urethra, and to move the equipment as necessary

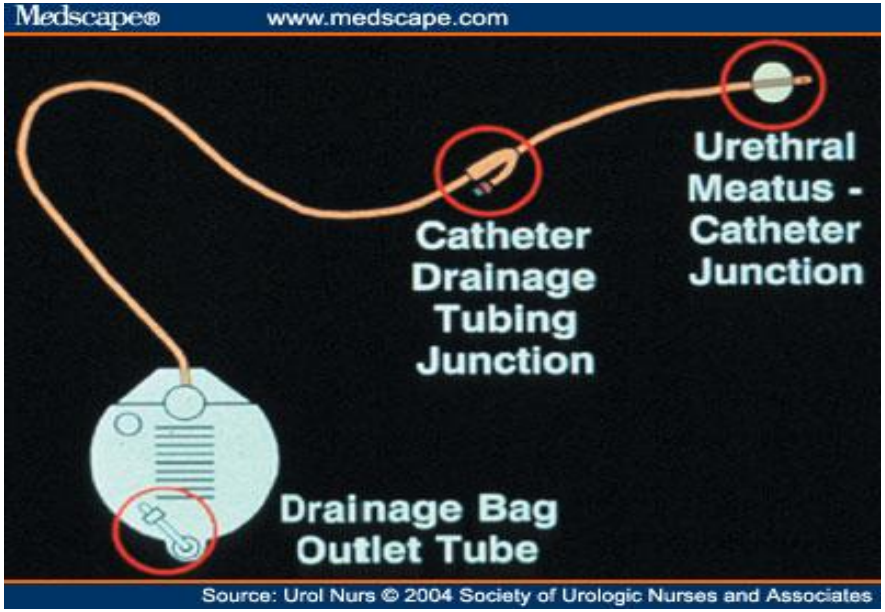
Complications

- structural damage to the urinary tract
- bleeding
- false passage
- patients discomfort
- catheter leakage
- obstruction of a catheter
- infection from urinary stasis and catheterization

Signs and symptoms that may indicate infection

- foul smelling urine, change in colour of urine, painful, burning feeling in the area of the bladder or urethra during urination, uncomfortable pressure above the pubic bone (women),

Entry Points for
Introduction of Microorganisms



Care of catheter and drainage bag – reduce the risk of infection

- cleaning the urethral area and the catheter itself
- disconnecting drainage bag from catheter only with clean hands
- disconnecting drainage bag as seldom as possible
- use of a thin catheter where possible to reduce risk of harming the urethra during insertion
- drinking sufficient liquid to produce at lest two litres of urine daily

Removing retention catheter

Short time introduced (a few days) – the patient usually has little difficulty regaining normal urinary elimination patterns

Prolonged period introduced – the bladder muscle does not stretch and contract regularly; a few days before removal, the catheter may be clamped for specified periods of time (2 to 4 hours)

External urinary catheter

- for relief of male urinary incontinence
- lower risk of bacteriuria and UTI
- must be applied and changed according the manufactures´ directions to prevent abrasion, dermatitis, ischemia, necrosis, edema and maceration of the penis
- latex or silicone

Bladder irrigation

- Usually to wash out the bladder and sometimes to apply a medication to the bladder lining
- **Catheter irrigation** – to maintain or restore the patency of a catheter (remove pus or blood clots blocking the catheter)
- **Closed irrigation** – is used three-way lumen catheter; irrigation solution flows into the bladder through the irrigation port of the catheter and out through the urinary drainage lumen

Continuous closed bladder irrigation

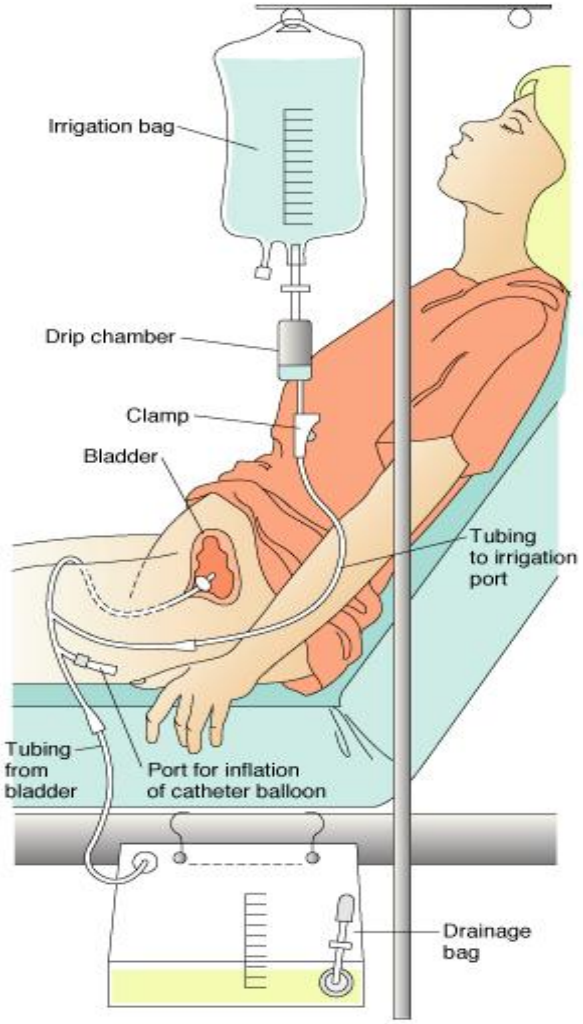


Figure 43-12 A continuous bladder irrigation (CBI) setup.

Open irrigation

- is performed with double lumen retention catheter

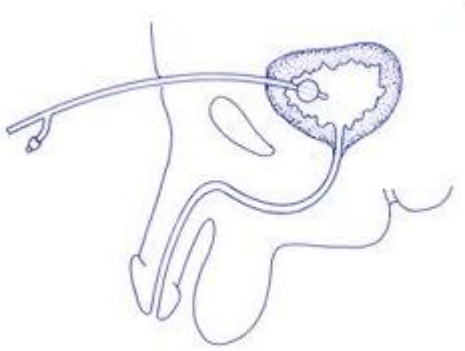
- the risk of injecting microorganisms into the urinary tract is greater by open irrigations, because the connection between the catheter and the drainage tubing is broken

Suprapubic catheterization

- Surgically created connection between the urinary bladder and the skin
- when placement of a urethral catheter is contraindicated or unsuccessful, percutaneous suprapubic urinary bladder catheterization is a commonly performed procedure to relieve urinary retention
- it is a painful procedure without proper anaesthesia (patient receive parenteral analgesia with or without anaesthesia)

Indication

- urethral injuries, urethral obstruction,
- bladder neck masses, prostate cancer
- benign prosthetic hypertrophy



Contraindication

- it is absolutely ***contraindicated*** in the absence of an easily palpable or ultrasonographically localized distended urinary bladder
- it is ***relatively contraindicated*** in the following situation – coagulopathy, prior lower abdominal or pelvic surgery with or without pelvic radiation

equipments

implementation

Education of patient - preventing an infection

- Clean the cystostomy site and skin around it daily
- Change your suprapubic catheter when needed
- Change your urine bag
- Keep the urine bag below the level of your bladder

Contact caregiver:

- You have a burning pain in cystostomy site
- You have blood in urine
- No urine is draining into the urine bag
- You have a fever
- Your catheter comes out
- Cystostomy site is red

Collecting urine specimen

Collecting Midstream Urine Specimen of a Woman

- instruct patient how to clean urinary meatus and obtain urine specimen, wash hands
- separate labia minora and clean perineum with cleaning swabs with disinfectant, starting in front of the urethral meatus and moving swab toward the rectum
- begin to urinate while continuing to hold labia apart, allow first urine to flow into toilet
- hold specimen container, release hand from labia, seal container tightly and finish voiding

Collecting Midstream Urine Specimen of a Man

- wash hands, clean end of penis with cleaning swabs with disinfectant
- begin to urinate allowing urine to flow into toilet
- pass specimen container into urine stream and collect the sample
- remove container, seal tightly and finish voiding
- the nurse should put on disposable gloves to receive the specimen container from patients.

Timed Urine Specimen

- obtain a specimen container with preservative (if indicated) from the laboratory
- provide a clean receptacle to collect urine (bedpan, commode or toilet collection device)
- post signs on the patient's chart, room and bathroom alerting the patient to save all urine during the specified time
- at the start of the collection period, have the patient void and discard this urine
- save all urine produced during the timed collection period in the container, refrigerating or placing the container on ice as indicated, avoid contaminating the urine with toilet paper or faeces.
- at the end of the collection period, instruct the patient to completely empty the bladder and save this voiding as part of the specimen, take the entire amount of urine collected to the laboratory with the completed requisition
- record the collection of the specimen, time started and completed

Collecting Sterile Specimen from an Indwelling Catheter

- explain procedure to the patient
- wash hands, put on disposable gloves
- position the patient so that catheter is accessible
- clean the aspiration port of the drainage tubing with swabs and disinfectant
- allow urine to collect in tubing by clamping or bending tubing
- insert needle into aspiration port, draw urine sample into syringe by gentle aspiration, remove needle.
- transfer urine from syringe into a sterile specimen container

Pediatric urine collectors

24 hours urine specimen collector

Ideal collection unit for urine

Urine collection system

Complications

- if there is a delay in sending the specimen for testing, some organisms present in the urine may die while others multiply, resulting in a false reading

Characteristics of normal and abnormal urine

Characteristic	Normal	Abnormal
amount in 24 hours (adult)	1 200 – 1 500 ml	under 1 200 ml a large amount over intake
colour, clarity	straw, amber, transparent	dark amber, cloudy, dark orange, red or dark brown, mucous plugs, viscid, thick
odour	faint aromatic	offensive
sterility	no microorganisms present	microorganisms present
pH	4.5-8	over 8 under 4.5
specific gravity	1 010-1 025	over 1 025 under 1 010
glucose	not present	present
ketone bodies (acetone)	not present	present
blood	not present	occult (microscopic) bright red

Thank you for your attention...

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