

The Need to Urinate

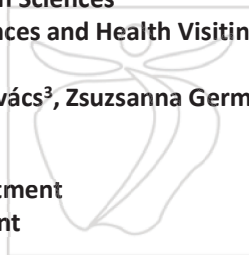
University of Pécs Faculty of Health Sciences
Institute of Nursing Sciences, Basic Health Sciences and Health Visiting

Dr. András Oláh¹, Noémi Fullér², Gyula Szebeni-Kovács³, Zsuzsanna Germán³,
Szilvia Szunomár³

¹ associate professor, vice dean, head of the department

² assistant professor, deputy head of the department

³ subject teacher



The Need to Urinate

- Physiological need
- Age-group characteristics
- The state of muscle tone (muscles in the abdominal wall and subpelvic muscles)
- Certain diseases (DM, preliminary phases of chronic renal diseases)
- Anaesthetics, pain killers
- Diuretics
- Psychic factors
- Fluid intake-quantitative-qualitative
- Following diagnostic examinations



2

The differences in urine volume

daily urine evacuation (diuresis)

- the average amount varies between 500-2400ml
- a healthy individual can hold 400-500ml of urine without problem
- factors influencing its amount

frequency of urination (polyuria)

- the daily urine volume exceeds 2500ml



3

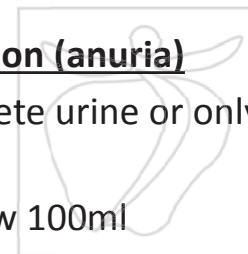
The differences in urine volume

the reduction of the amount of urine (oliguria)

- the volume of daily urine ranges between 100-400ml

the interruption of urine secretion (anuria)

- the kidneys either do not secrete urine or only in small amounts
- the daily urine volume is below 100ml



4

The differences in urine volume

ischuria paradoxa:

- urine dribbles
- the internal bladder pressure increases

nycturia:

- frequency of urination at night



5

Urination problems

Symptoms of urination disorders:

1. Storage problems (i.e. nycturia, incontinence)
2. urination problems (i.e. dysuria, polakysuria)

Urine retention

- lack of voluntary urination
- acute and chronic forms

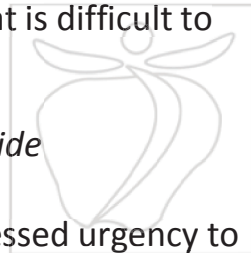


6

Urine continence disorders

International Continence Society (IAC) - 2009

- Polakysuria- urination 8 times daily with normal fluid intake
- Nycturia – nightly urination
- Urgent stimulation to urinate that is difficult to hold
- Incontinence – *see on the next slide*
- Overactive bladder (OAB) - expressed urgency to urinate with or without dripping



7

Urinary incontinence

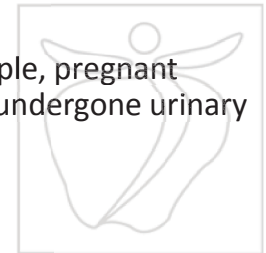
The lack of the ability to hold urine

- **involuntarily loss of urine - at an unexpected place and time - causes social and hygienic problems**
- 300.000-500.000 females in Hungary
- symptom

risk groups: elderly people, obese people, pregnant women, diabetics, patients who have undergone urinary or genital surgery

Enuresis:

- Incontinence in childhood



8

Urine incontinence

- Stress (load) incontinence (60-70% of incontinence in women)
- Urge, overactive bladder
- Mixed
- Reflexincontinence
- Overflow incontinence
- Continuous incontinence
- Enuresis nycturia



9

Urine incontinence Risk factors

- gender
- age
- mental condition
- mobility
- body mass
- smoking
- alcohol consumption
- constipation
- quality of exercise
- physical work
- neurological disturbances
- diet
- pregnancy
- delivery of a baby
- menopause
- medicaments
- radical pelvic surgeries
- urinary infections
- radiation
- transurethric interventions
- associated diseases



10

Urine incontinence Diagnosis

- Taking case history
- Compulsory basic examinations
 - Physical examination
 - Questionnaire (i.e. ICIQ-SF)
 - Urination diary
- Accomplishment of stress test
- Urine test
- Determination of the quantity of the residue



11

Urine incontinence Treatment

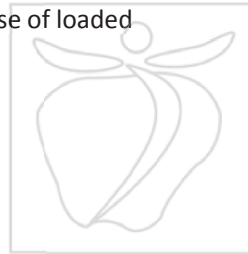
- Conservative-without medicaments
- With medicaments
- Invasive, surgery



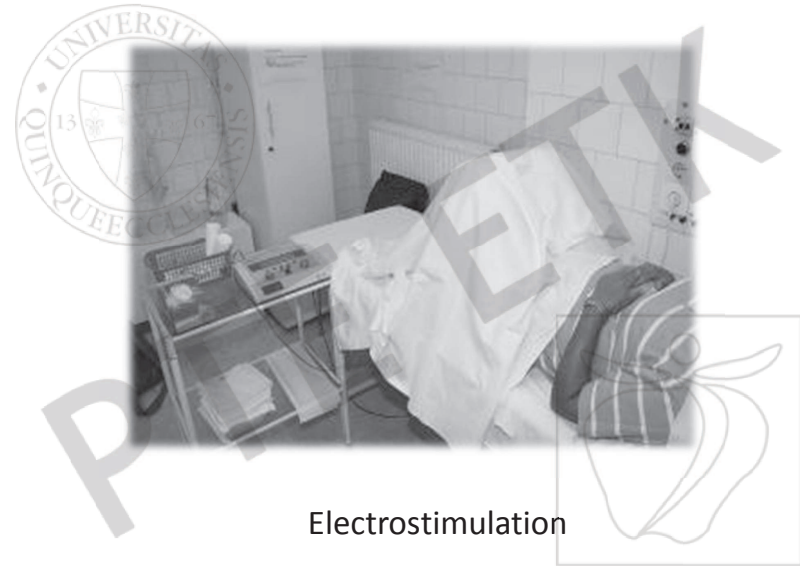
12

Urine incontinence Conservative treatment

- Assessment of life style habits
- Supplementary treatments:
 - Reduction of fluid intake
 - Credé-method (in case of neurogen bladder function)
 - Urination by the clock
 - Double or triple urination
 - Crossing the legs, leaning forward (in case of loaded incontinence)
- Behavioral therapy
- Rehabilitation of the subpelvic muscles
- Electrostimulation



13



Electrostimulation

14

Urine incontinence Conservative treatment

Rehabilitation of the subpelvic muscles:

- For stress incontinence of women
- Recommended during pregnancy and after delivery
- Kegel exercises
- Cervical weight training
- Biofeedback



15

Urine incontinence Conservative treatment

Management of urinary bladder function:

- Toilett training
- Miction training
- Limitation of fluid intake

Nursing tasks

- Patient compliance
- ID (incontinence dermatitis)
- Importance of skin care
- Decubitus
- Application of the appropriate tools



16

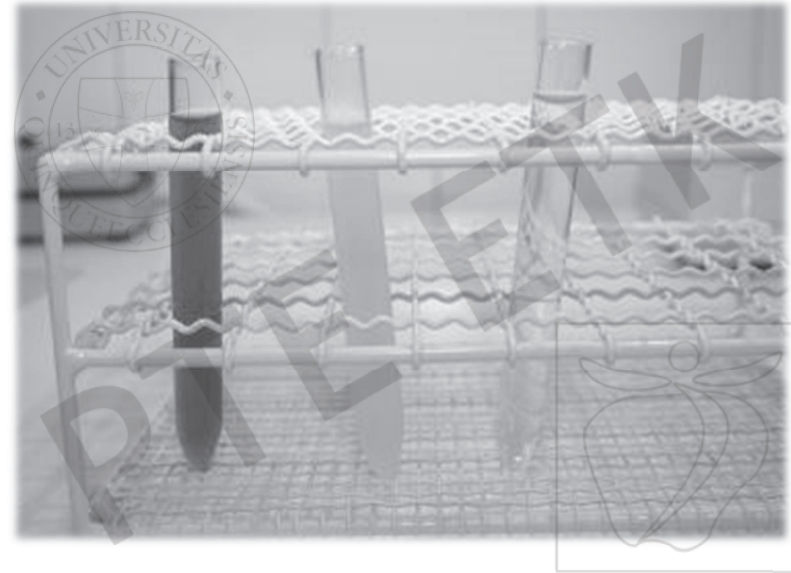
Testing the characteristics of urine

Macroscopic tests

- Physical, chemical characteristics
- The smell of urine:
 - Ammonia smell
 - Concentrated urine
 - Smell like acetone:DM
- The colour of urine:
 - physiologically
 - abnormally



17



Haematuria, Pyuria, Normal urine

18

Testing the characteristics of urine

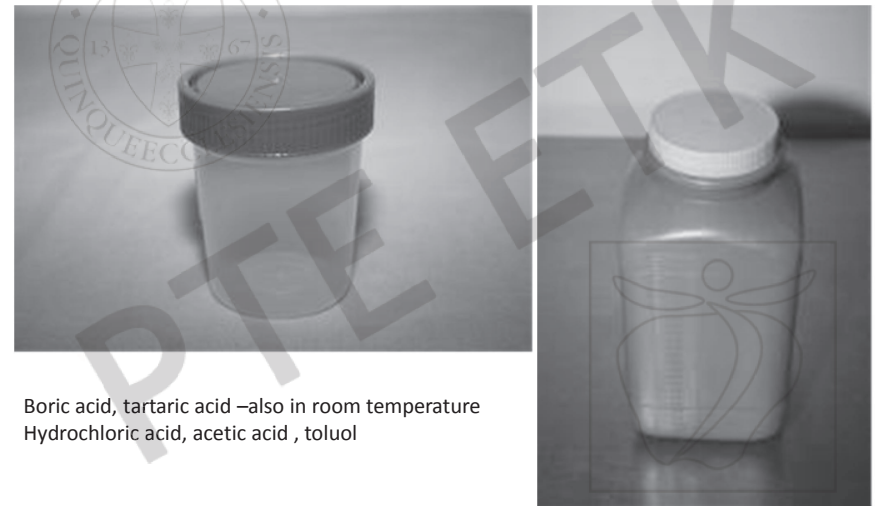
Quantity tests

- hourly diuresis
- urine collection (4, 8, 12, 16, 24 hour interval)
- the period starts with the patient's urination (it does not count) labelling the exact time
- provision of means
- should not be contaminated
- documentation



19

Urine collection - means



Boric acid, tartaric acid –also in room temperature
Hydrochloric acid, acetic acid , toluol

20



closing the urine collection cup

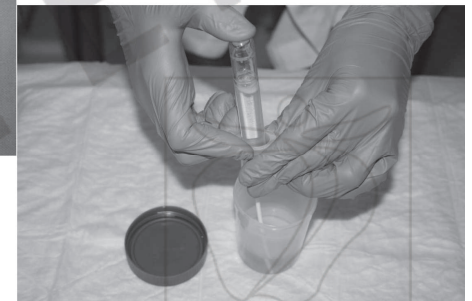
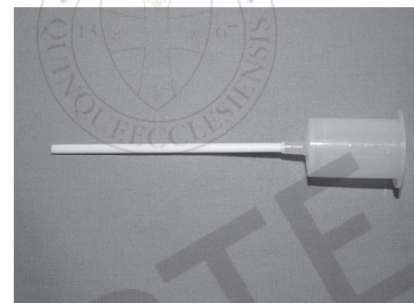
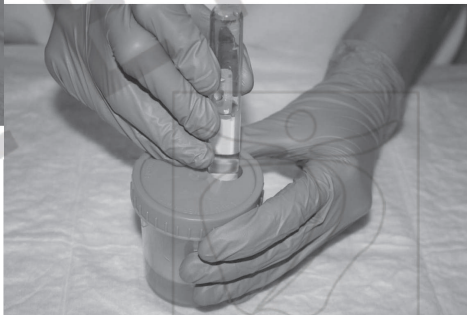


Sampling tube with vacuum

-72 hours, in room temperature



**Natrium-propionát
Etil-parabent
chlorhexidin**



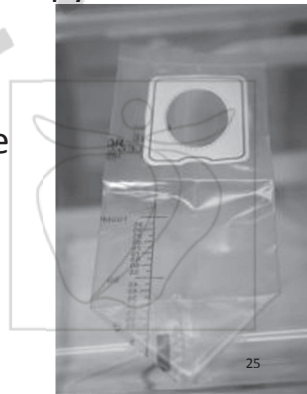
Aspiration vacuum adapter

Urine test

Urine sampling forms

- The most suitable sample: first morning urine
- Urine during the day
- Before starting an antibiotic therapy

- Random urine sampling
- First morning urine and sample
- Midstream urinary flow
- Sampling time
- Paediatric sampling



25

Urine test

Urine sampling forms

Random urine sampling:

- easiest
- Sampling can be done at anytime
- Do not touch inside the urine collection cup

First morning urine and sample:

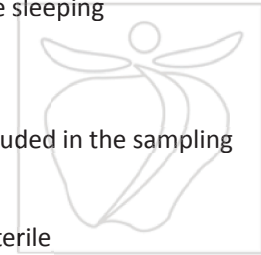
- Enough concentrated
- Patient should empty his/her bladder before sleeping

Sampling time:

- Can be 8 or 24 hrs
- Patient empty his/her bladder – it is not included in the sampling

Paediatric sampling

- Disposable adhesive urine collection bag - sterile
- Clean the area of the urethra, after rinse with clean water



26

Urine test

Urine sampling forms

Midstream urinary flow:

1. Clean the area of the urethra – disinfectant gauze pads
 2. Rinse with water
 3. First stream into the toilet
 4. Midstream into the sterile cup
 5. Rest of the urine into the toilet
- Do not touch inside the urine collection cup
 - The top of the cup should be placed with upside down to prevent the contamination inside



27

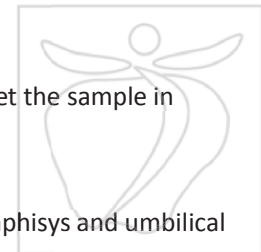
Urine test

Urine sampling forms

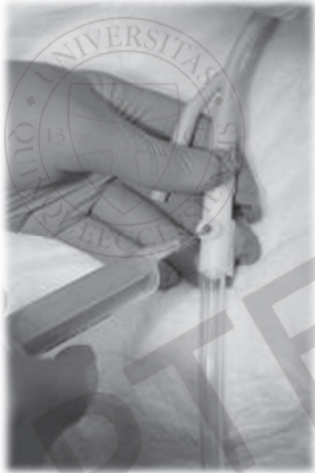
invasive ways:

- intermittent catheterization
- sampling from permanent catheter
 - Do not use sample from balloon catheter for bacteriological testing
 - Pinning down the catheter for 30 min???
 - sampling port

- Sampling from suprapubic puncture
 - For anaerob culturing or impossible to get the sample in another way
 - Full bladder is needed
 - With syringe and needle
 - 1/3 distance from the area between symphysis and umbilical



28



sampling from a urinary catheter

Urine test Urine sampling forms

Storage:

- In room temperature: for max. two hours
- +4 C for 24 hours

Uriculture

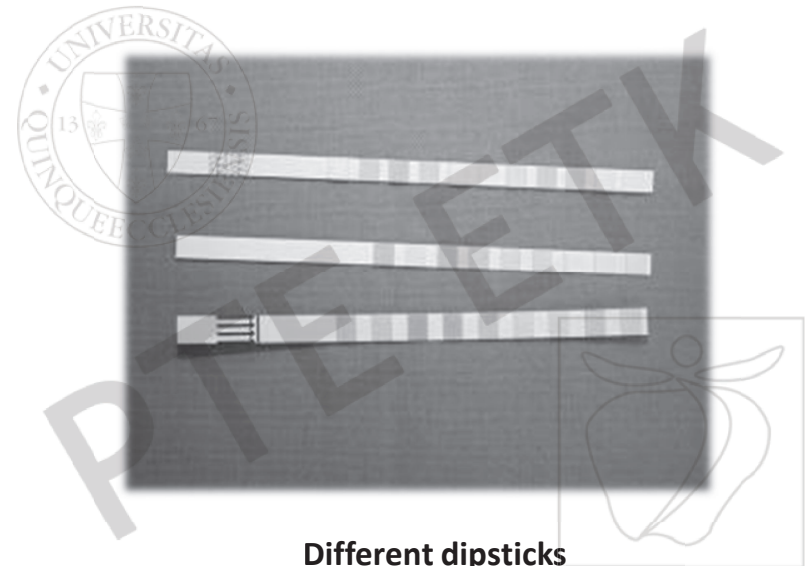
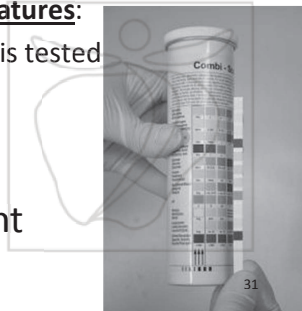
- to determine urinary bacterial infectious beside bed



Urine dipstick chemical analysis

suitable to determine 9,10,11 features

- dipstick designed to determine of the **9 features**: urobilinogen, bilirubin, ketones, blood, protein, nitrite, glucose, pH, ascorbic acid
- dipstick designed to determine of the **10 features**: leukocytes, specific gravity, ascorbic acid is not tested
- dipstick designed to determine of the **11 features**: leukocytes, specific gravity, ascorbic acid is tested
- fresh urine
- visual or instrumental assessment



Different dipsticks

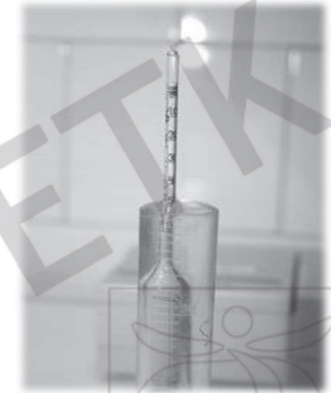
Urine test

Specific gravity

- Monitoring osmolality, the concentration of the solutes in urine
- Measuring cylinder and urometer (perhaps measuring stick)
- Healthy kidneys: 1001-1030 g/ml
 - hypostenuria
 - asthenuria/ isosthenuria



33



Determination of the gravity

34

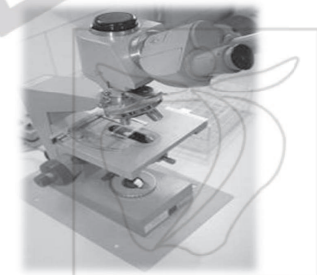
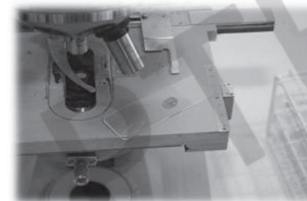
Urine test

Microscopic test

- First morning sample (sterile) - midstream urinary flow
- 10-15ml
- microscopic urinalysis, after spin
- examination of sediment
- (in)organic substances



35

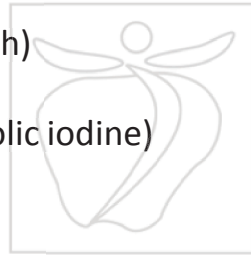


Mikroskopic test: spin, urine sample after spin

36

Urine test

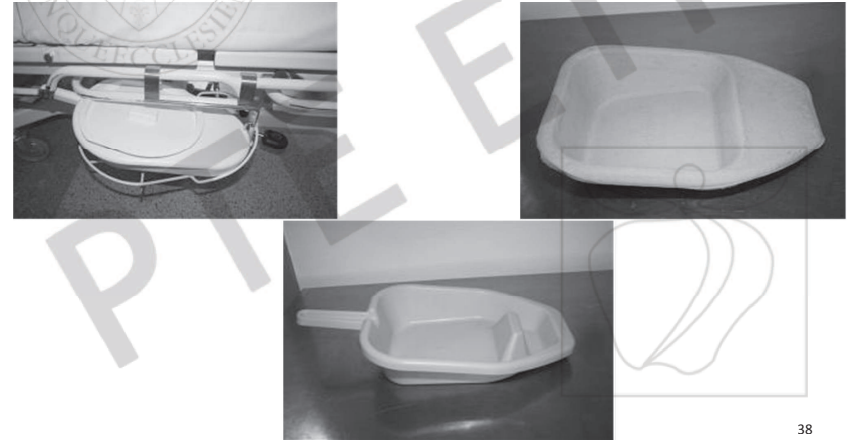
- protein – 20% sulfo salicylic acid
- sugar –Nylander probe (nylander reagent)
- ketone bodies, acetone –Rothera probe (powder)
- pus –Donné probe (caustic potash)
- bilirubin- Rosin probe (1% alcoholic iodine)
- ubg- Erlich reagent



37

Promoting urine capture and drainage with special devices

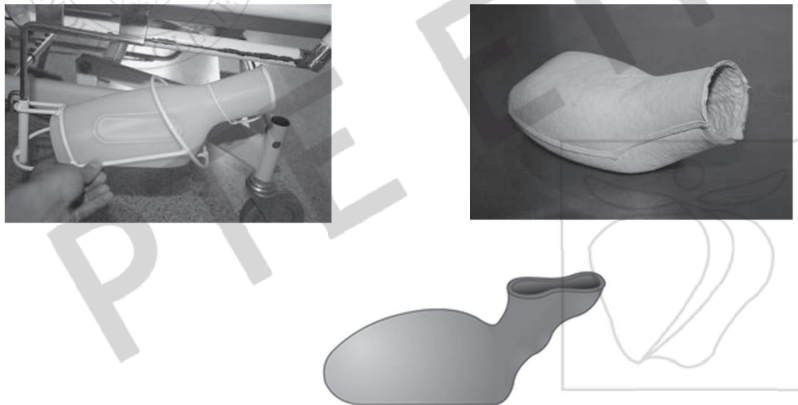
- Bedpans and Bedpan frame



38

Promoting urine capture and drainage with special devices

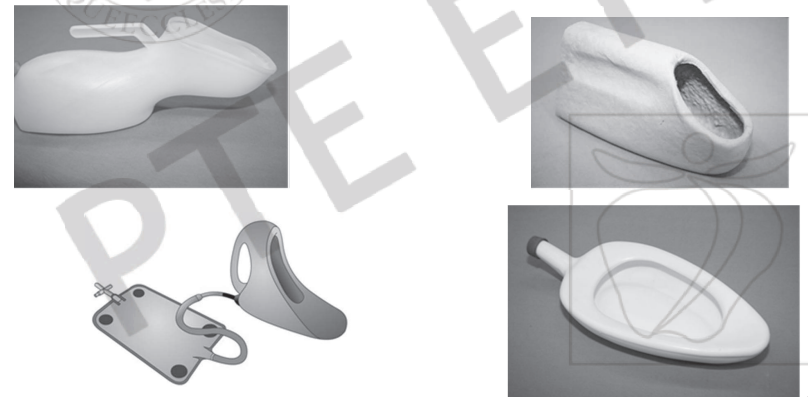
- Urinals (male, female)



39

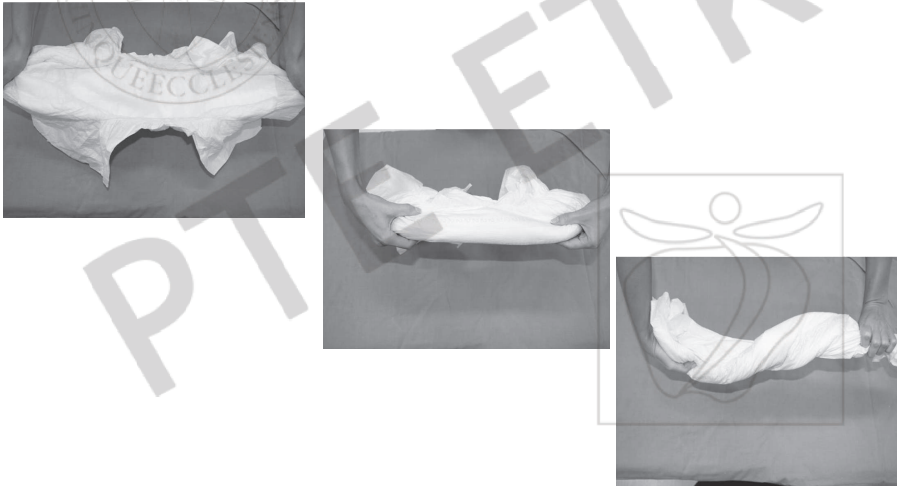
Promoting urine capture and drainage with special devices

- Urinals (male, female)

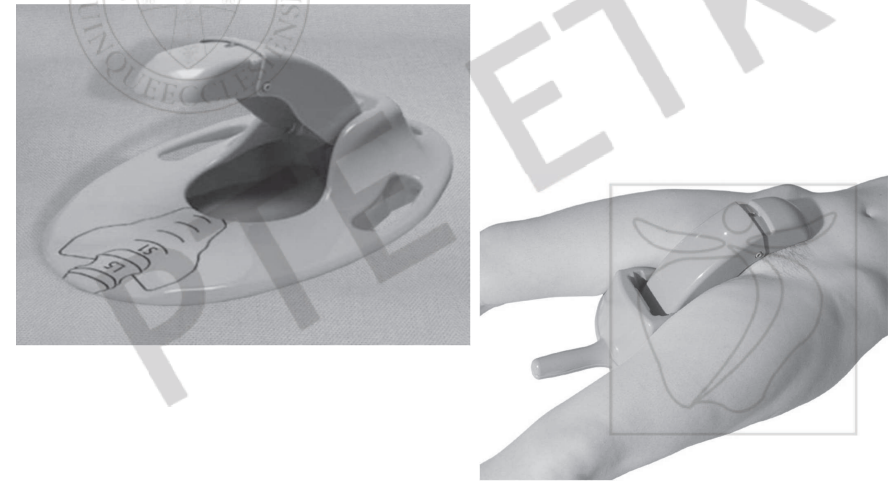


40

Activating pads and diapers

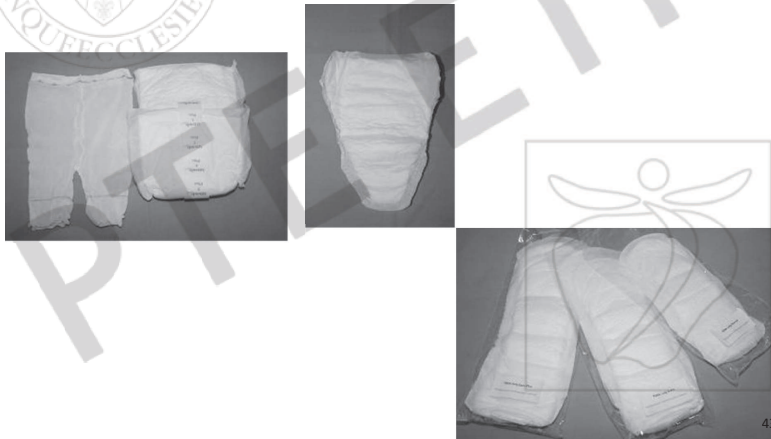


Ergonomical bedpan



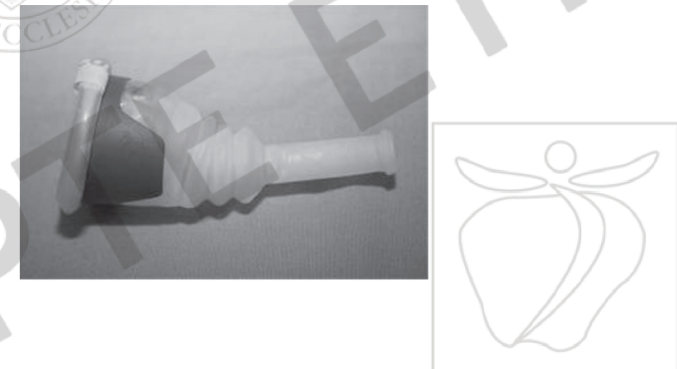
Promoting urine capture and drainage with special devices

- Incontinence pads and pants



Promoting urine capture and drainage with special devices

- condom catheter



Promoting urine capture and drainage with special devices

- urostoma



45

Promoting urine capture and drainage with special devices

Catheterization:

- Aseptic technique, disposable tools
- Dangers
- Permanent or intermittent self-catheterization?



46

Catheterization

Indications:

- Diagnostic
- Therapeutic
 - Short-term (0-2 weeks)
 - mid-term (2-6 weeks)
 - long term (> 6 weeks)

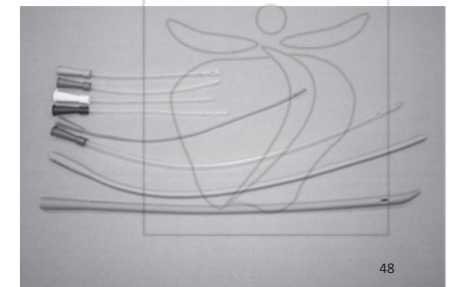


47

Types of catheterization

One time/intermittent

- In sterile or clean conditions
- Determines life style
- Importance of patient education



48

Types of catheterization

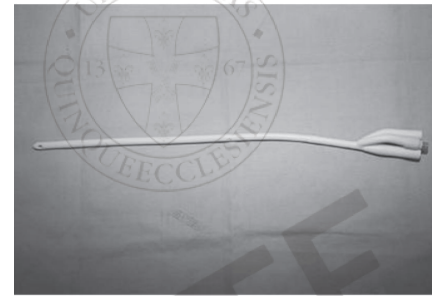
Permanent catheterization

- Fastening device (generally a balloon)
- Foley catheter
 - Two and three lumen catheters
- De Pezzer catheter
- Malecot catheter
- suprapubic catheterization



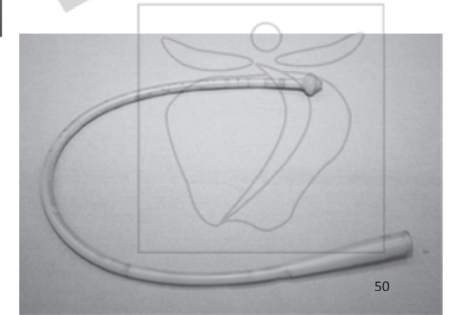
49

Types of catheters



Foley catheter:

3. lumen for irrigation, i.e. haematuria



DePezzer catheter:

Self-retaining catheter with bulbous end, used by suprapubic way as well

50

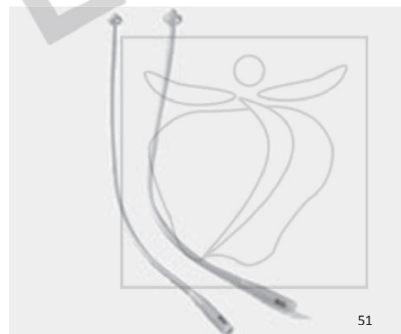
Suprapubic catheter:

Insertion through the abdominal wall



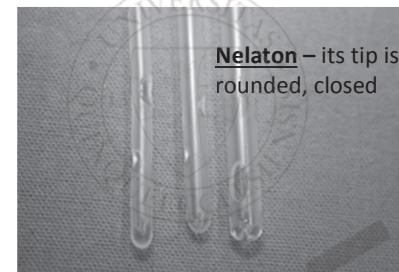
Malecot catheter:

4 wings at the end of the catheter for retaining, used by suprapubic way as well



51

Types of catheters according to their tip



Nelaton – its tip is rounded, closed

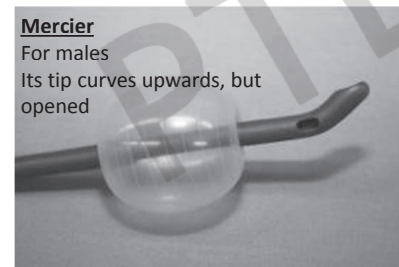
Tiemann – for males

In case of prostata hypertrophy, stenosis of the urethra
Its tip curves upwards



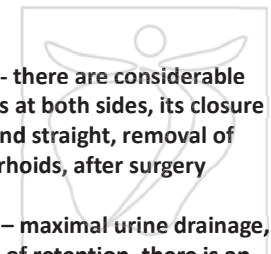
Mercier

For males
Its tip curves upwards, but opened



Whistle - there are considerable openings at both sides, its closure is closed and straight, removal of haemorrhoids, after surgery

Roberts – maximal urine drainage, for removal of retention, there is an opening above and under balloon₂



For short-term application (3 weeks)

Latex (for 1-7 days)

Latex covered by teflon (PTFE) for mid-term application (28 days)

Latex covered by silicone

Polyvinylchloride (PVC) for 1-7 days

Catheter covered by hydrophil (for intermittent catheterization)

53

For long-term application (even 12 weeks)

Latex covered by silicone elastomer

Latex covered by hydrogel

Latex covered by silver oxide

Latex covered by silver alloy

100% silicone

100% silicone covered by hydrogel

Titanic (silastic)

silicon

Lecithin-silver-nitrate-liquid silicone

Antimicrobial: catheters containing different antibiotics (Nitrofurazone)

polyvinylpyrrolidone

54



Silicon based catheter

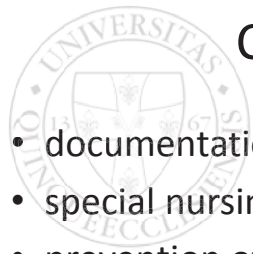
55

Catheterization

Indications for permanent catheterization:

- Obstacles of urine flow (prostate hypertrophy, urethral stricture)
- Preoperative urethra and surrounding organs
- Prevention of blockages with haemorrhages in urethra (surgery of the urethra, tumor of the urethra)
- Exact determination of urine secretion
- Prevention of skin damage of unconscious patient

56



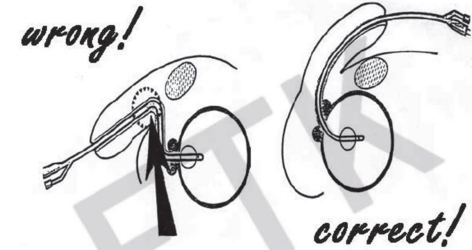
Catheterization

- documentation
- special nursing tasks
- prevention of infections



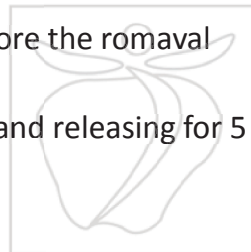
57

Catheter fixing



Catheterization catheter removal - weaning

- As soon as possible catheter should be removed
- The training of the bladder's muscles to regain the tone of the bladder and stimulate the muscles
- Start the weaning at least 10 hrs before the removal
- Pinning down the catheter for 3 hrs and releasing for 5 min.
- Repeat it 3 times



59

Catheterization Possible complications

- Discomfort
- Infection of the urinary tract
- Blockage of catheter
- Injury of the UT and urinary bladder
- Malignant degeneration of urinary bladder
- Bladder cramps, constrictions of UT, contractions
- UT infections related to catheterization



60

Other equipments

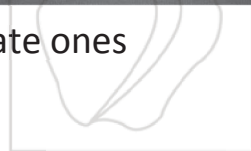
catheter valves:

- there is no need for urine collection bags
- for max. 3-4 hours
- change in 5-7 days



urine collection bags

- nonreturn valves with up-to-date ones
- sterile and disposable ones



61



62