بسم الله الرحمن الرحيم

السلام عليكم ورحمة الله وبركاته

Urinary System for Elderly

Urinary System

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Outlines

Anatomy of the urinary system

Function of the urinary system

Age related changes that affect urinary system

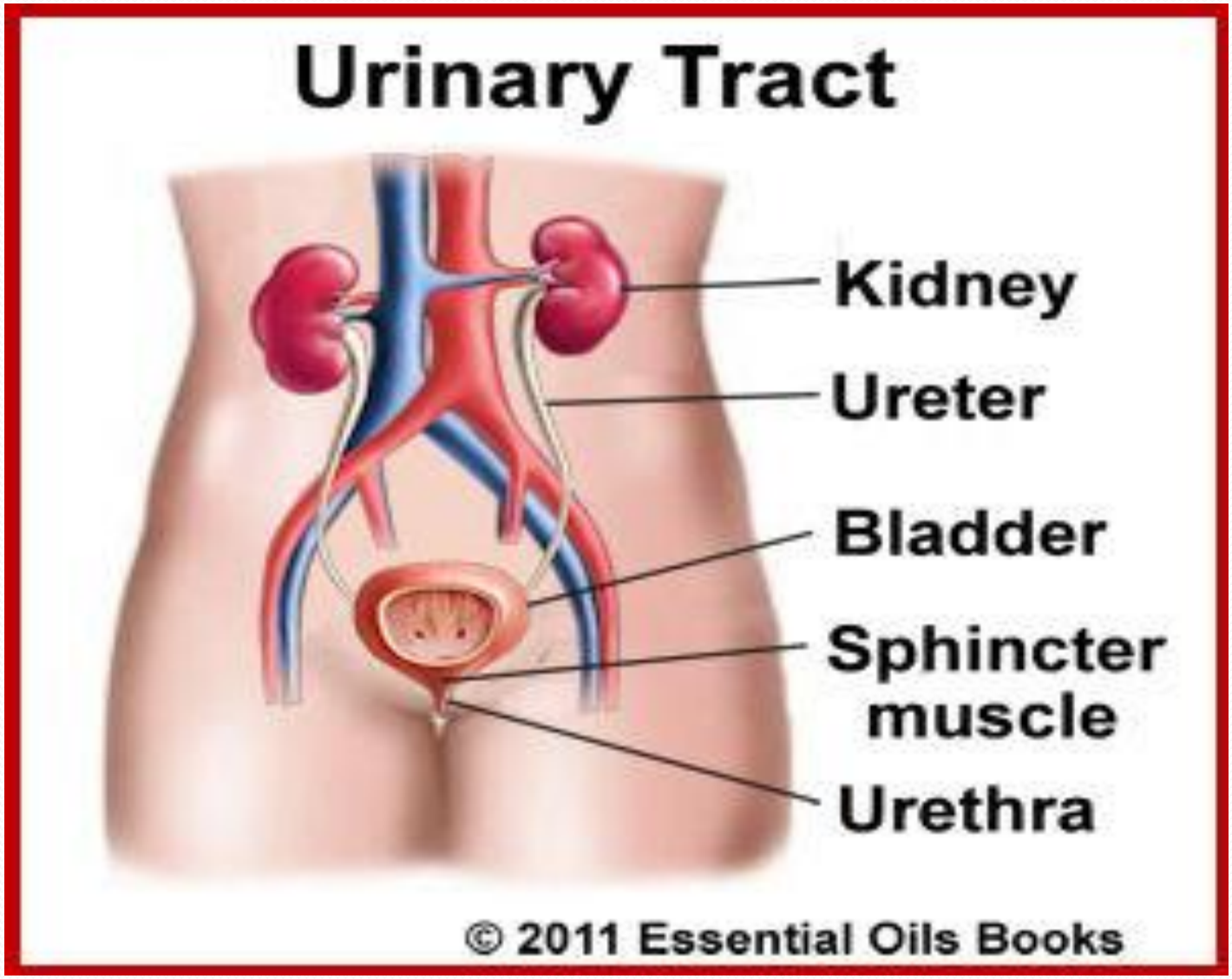
Urinary tract infection (UTI)

Urinary incontinence (UI)

Introduction

The urinary system, also known as the renal system or urinary tract, consists of the kidneys, ureters, bladder, and the urethra. The purpose of the urinary system is to eliminate waste from the body, regulate blood volume and blood pressure, control levels of electrolytes and metabolites.

Anatomyof urinary system:-



Function of the urinary system:

The urinary treat system consists of two kidney, two ureters, which carry urine from the kidney to the urinary bladder, a single midline urinary bladder, and single urethra, which carries urine from the bladder to the outside of the body.

Age related changes that affect urinary system:

Renal blood flow gradually decrease particularly in cortex.

Function of nephron being to decline and continue throughout life.

Bladder ability to expand limiting.

Bladder atrophy and thick of wall.

Normal change affecting the urinary system:

*Gradual loss of nephrons (30% to 50%) lead to decrease glomerular filtration.

*Thickened nephrons membrane which leads to problems in excreting medication eliminated by kidney

*Decrease in blood flow leads to:

*More time needed for filtration.

*Urine may be more diluted.(related to glomerular filtration rate.

Normal change affecting the urinary system:

- Decrease removal of body wastes.
- Decrease in bladder capacity leads to frequent urination.
- Decrease in muscle tone of bladder leads to increase residual urine.
- Weakness of pelvic floor muscles, laxity of internal sphincter of bladder leads to increased incidence of urinary incontinence especially for multiparous women.
- Delayed in micturation reflex.

Urinary tract infection (UTI)

- **Definition:** is an infection involving the kidneys, ureters, bladder, or urethra. These are the structures that urine passes through before being eliminated from the body.

- **Causes:**
- E. coli is the cause of 80–85% of urinary tract infections, with Staphylococcus saprophyticus being the cause in 5–10%.
- Sex
- Urinary catheters
- Diabetes
- Being uncircumcised

- **Symptoms of UTI**
- Symptoms of UTI depend upon what part of the urinary tract is infected.
- Lower UTIs are infections of the urethra and bladder. Their symptoms include:
- burning with urination
- increased frequency of urination with scant amounts of urine being passed

Symptoms of UTI

- bloody urine
- cloudy urine
- urine that looks like cola or tea
- strong odor to urine
- pelvic pain (women)
- rectal pain (men)

- **Diagnosis of UTI**
- History and physical exam may suggest you have a lower or upper UTI.
- Definitive diagnosis requires a “clean catch” urine specimen.
- Complete blood count (CBC) and blood cultures.

- **People with recurrent UTIs may need to be checked for obstructions. Some tests for this include**:
- ultrasound
- intravenous pyelogram (IVP) – this injected dye allows doctors to see your entire urinary tract
- cystoscopy, which uses a small camera to examine the bladder

Treatment of UTI:

- Antibiotics are used to treat UTIs. Lower UTIs can be treated with oral ntibiotics. Upper UTIs require intravenous antibiotics.
- Sometimes, bacteria develop resistance to antibiotics. Urine cultures can help your doctor select an effective antibiotic treatment.

Prevention of UTI :

- wiping from front to back after urinating or having a bowel movement
- drinking six to eight glasses of water daily
- drinking water after having sex
- not holding urine for long periods of time
- cleaning your vaginal and rectal areas daily
- taking showers instead of baths
- wearing comfortable underwear, tight fabric traps moisture
- Wearing underpants with a cotton crotch.

Urinary incontinence (UI)

- **Urinary incontinence** (**UI**), involuntary urination, is any leakage of urine or fecal matter.

Causes of UI:

- Enlarged prostate is the most common cause of incontinence in men after the age of 40; sometimes prostate cancer may also be associated with urinary incontinence. Moreover drugs or radiation used to treat prostate cancer can also cause incontinence.
- Disorders like multiple sclerosis, spina bifida, Parkinson's disease, strokes and spinal cord injury can all interfere with nerve function of the bladder.

Diagnosis of UI:

- A careful history taking is essential. Other tests include:
- Stress test – the patient relaxes, then coughs vigorously as the doctor watches for loss of urine.
- Urinalysis – urine is tested for evidence of infection, urinary stones, or other contributing causes.

- **Blood tests – blood is taken, sent to a laboratory, and examined for substances related to causes of incontinence.**
- **Ultrasound – sound waves are used to visualize the kidneys, ureters, bladder, and urethra.**
- **Cystoscopy – a thin tube with a tiny camera is inserted in the urethra and used to see the inside of the urethra and bladder.**

Types of UI:

- **Stress incontinence**, also known as effort incontinence, is due essentially to insufficient strength of the pelvic floor muscles to prevent the passage of urine, especially during activities that increase intra-abdominal pressure, such as coughing, sneezing, or bearing down.
- **Urge incontinence** is involuntary loss of urine occurring for no apparent reason while suddenly feeling the need or urge to urinate.

- **Overflow incontinence**: Sometimes people find that they cannot stop their bladders from constantly dribbling or continuing to dribble for some time after they have passed urine.
- **Mixed incontinence** is not uncommon in the elderly female population and can sometimes be complicated by urinary retention, which makes it a treatment challenge requiring staged multimodal treatment.

Types of UI cont.:

- **Structural incontinence**: Rarely, structural problems can cause incontinence, usually diagnosed in childhood (for example, an ectopic ureter). Fistulas caused by obstetric and gynecologic trauma or injury are commonly known as obstetric fistulas and can lead to incontinence.
- **Functional incontinence** occurs when a person recognizes the need to urinate but cannot make it to the bathroom. the need to urinate but may be in a situation where there is no toilet nearby or access to a toilet is restricted.

- **Nocturnal enuresis** is episodic UI while asleep. It is normal in young children.
- **Transient incontinence** is a temporary version of incontinence. It can be triggered by medications, adrenal insufficiency, mental impairment, restricted mobility, and stool impaction (severe constipation), which can push against the urinary tract and obstruct outflow.

Types of UI cont.:

- **Giggle incontinence** is an involuntary response to laughter. It usually affects children.
- **Double incontinence**. There is also a related condition for defecation known as fecal incontinence. Due to involvement of the same muscle group in bladder and bowel continence, patients with urinary incontinence are more likely to have fecal incontinence in addition. This is sometimes termed "double incontinence".

Types of UI cont.:

- **Post-void dribbling** is the phenomenon where urine remaining in the urethra after voiding the bladder slowly leaks out after urination.
- **Coital incontinence (CI)** is urinary leakage that occurs during either penetration or orgasm and can occur with a sexual partner

Management of UI:

- **Exercises**
- **Exercising the muscles of the pelvis such as with Kegel exercises are a first line treatment for women with stress incontinence. Efforts to increase the time between urination, known as bladder training, is recommended in those with urge incontinence. Both these may be used in those with mixed incontinence.**

- **Exercises cont.:**

Time voiding while urinating and bladder training are techniques that use biofeedback. In time voiding, the patient fills in a chart of voiding and leaking. From the patterns that appear in the chart, the patient can plan to empty his or her bladder before he or she would otherwise leak. Biofeedback and muscle conditioning, known as bladder training, can alter the bladder's schedule for storing and emptying urine. These techniques are effective for urge and overflow incontinence

Nursing Priorities

- Maintain homeostasis and hemodynamic stability.
- Promote comfort.
- Prevent complications.
- Provide information about surgical procedure, prognosis, treatment, and rehabilitation needs.

Discharge Goals

- Urinary flow restored or enhanced.
- Pain relieved/controlled.
- Complications prevented/minimized.
- Procedure/prognosis, therapeutic regimen, and rehabilitation needs understood.
- Plan in place to meet needs after discharge.

- **1. Impaired Urinary Elimination**
- **May be related to**
- Mechanical obstruction: blood clots, edema, trauma, surgical procedure
- Pressure and irritation of catheter/balloon
- Loss of bladder tone due to preoperative over distension or continued decompression.

▪ Nursing Interventions

- During bladder irrigation, assess urine output and drainage system.
- Assist patient to assume normal position when voiding. Instruct to stand, walk to the bathroom at frequent intervals after catheter
- is removed.
- Regularly check the dressing, incision and drainage for excessive bleeding. Watch out for signs of bleeding and infection.
- Record time, amount of voiding, and size of stream after catheter is removed. Note reports of bladder fullness, inability to void, urgency.
- Encourage patient to void when urge is noted but not more than every 2–4 hr per protocol.
- Measure residual volumes via suprapubic catheter, if present, or with Doppler ultrasound.
- Encourage fluid intake to 3000 mL as tolerated. Limit fluids in the evening, once catheter is removed.
- Instruct patient to perform perineal exercises: tightening buttocks, stopping and starting urine stream.
- Advise patient to be expected after catheter is removed and should resolve as recuperation progresses.
- Maintain continuous bladder irrigation (CBI), as indicated, in early postoperative period.

Nursing action related to some normal change affecting the urinary system:

Changes	Nursing action
Decreased size of renal mass, number of nephrons, renal blood flow, glomerular filtration rate, tubular function	Ensure age-adjusted drug doses are prescribed, observe for adverse responses to drug, and recognize that urine testing for glucose can be unreliable.
Decreased bladder capacity	Assist patient with need for frequent toileting, ensure safety for visiting to bathroom during night.
Weaker bladder muscles	Observe for signs of UTIs, assist patient to void in upright position

Thank you