



# **SNS COLLEGE OF NURSING**

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**Affiliated to The Tamilnadu DR.MGR MEDICAL UNIVERSITY,Chennai**

**DEPARTMENT OF NURSING**

**COURSE – 1 ST YEAR B.SC(N)**

**Subject-Nursing Foundation**

**UNIT: X- MEETING NEEDS OF PATIENT**

**TOPIC 1:Urinary elimination**

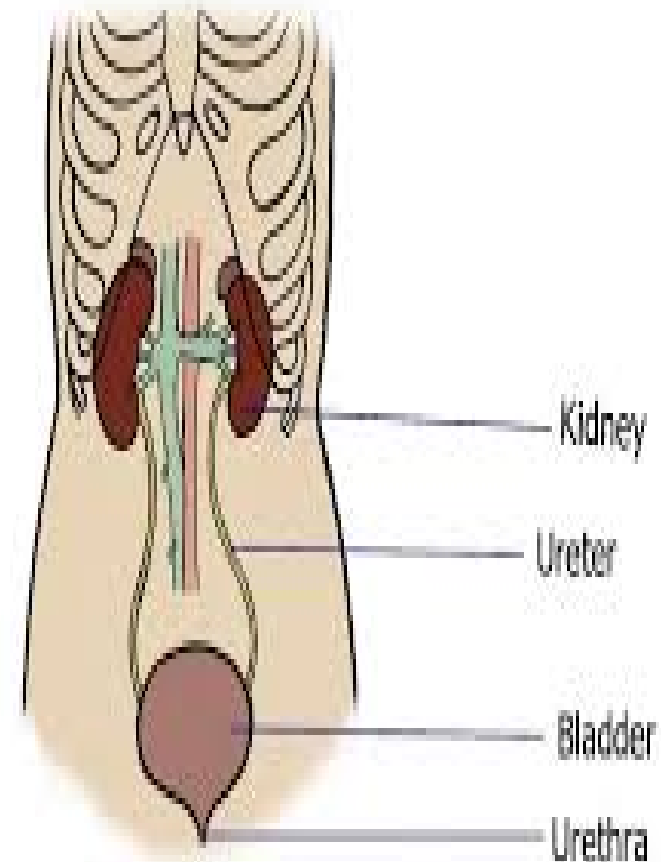


# URINARY SYSTEM



Removes waste products from the blood.

1. Kidney
2. Ureter
3. Bladder
4. Urethra
5. Meatus





# DEFINITION



- ❑ Elimination is the expulsion of waste products from the body through the skin ,lungs,kidneys and rectum
- ❑ Urinary elimination is the removal of waste products from the body through the urinary system(urine)



# Review of physiology of urine elimination



- When the urine is collected in the bladder, desire to void is experienced due to the stimulation of stretch receptors.
- This sensation occurs when the bladder is filled with 250-450 ml of in adults and 50 -200 ml in children.
- The stretch receptors transmit message to voiding center in the spinal cord(2nd to 4th sacral vertebrae)



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- If the time is appropriate the brain sends message through spinal cord causing stimulation so that the urine can be released from the bladder.
- If the time and place are appropriate the external sphincter relaxes and the urination process takes place.



# Composition of urine



- ❖ Urine consists of 96% of water and 4% of solids.
- ❖ The solids include organic and inorganic substances
- ❖ Organic: Urea, uric acid, creatinine, ureates, chlorides, phosphates, sulphates, and oxalates
- ❖ Inorganic: Sodium, potassium, calcium, chloride, phosphate, sulfate, oxalates,



# Characteristics of normal urine



**1. Volume**: An amount of 1000-2000 ml of urine excreted in 24 hour.

**2. Color**: the normal urine is pale yellow or amber in color. when the quantity of urine is increased, the color becomes pale yellow and when the quantity of urine decreased, the color becomes deep yellow



# Characteristics of normal urine



**3. Appearance**: the normal urine is clear with no deposit.

**4. Odour**: the normal urine has an aromatic odour

**5. Reaction**: reaction of normal urine is slightly acidic

**6. Specific gravity**: it varies from 1.016 - 1.025 with a normal fluid intake.





# Factors influencing urinary elimination



## ➤ Developmental factors:

- ✓ Infants: usually amount of voiding is 15 to 60 ml a day after birth, increasing to 250-500 ml a day. An infant may urinate as often as 20 times a day. it is colorless and odour less and has a specific gravity of 1.008. infants are born without urinary control.



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- ✓ Preschoolers: pre-schoolers is able to take responsibility for independent toileting.
- Enuresis: involuntary passage of urine
- Nocturnal enuresis or bed wetting: is the involuntary passing of urine during sleep.
- ✓ School age children: their elimination system reaches maturity



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- ✓ Older adults: the excretory function of kidneys diminishes with age. due to decreased kidney's filtering ability, decreased muscle tone and contractility of detrusor muscle, decreased reabsorptive and secretory capabilities.
- **Psychological Factors**: Anxiety and emotional stress may cause a sense of urgency and increased frequency of urination.



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- anxiety can prevent a person from being able to urinate completely . Privacy , normal positions, sufficient time can stimulate the micturition reflex.
- **Fluid intake**: If fluid intake increased, frequency of voiding increases. if fluid intake is decreased voiding decreases. certain fluids affects urine production and excretion eg: coffee, tea, cola



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- **Food intake**: Increase urine production and elimination if foods high in fluid content. eg:fruits,vegetables.
- Foods and fluids high is sodium retains water,decrease urine production and elimination. eg: potato chips, pickles
  - Change the color of the urine: eg beetroots cause urine to appear red.



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- **Body position**: Eg:some men find it difficulty to empty their bladder fully into urinal while lying flat in bed
- **Medications**: Eg:cholinergics,diuretics cause urinary elimination. Anticholinergics,opioid analgesics cause urinary retention .Some medicine cause change in color of urine.eg:  
Red—methyldopa. To brown or black-levodopa.



## CONTINUED...



- **Muscle tone and activity**: Regular exercise increases muscle tone and metabolic rate.
- **Pathological conditions**: Some diseases and pathologies can affect the formation and excretion urine. Eg: Diabetic mellitus, multiple sclerosis, Parkinson's disease –possible loss of bladder tone.



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- Benign prostatic hyperplasia-may cause urinary retention and incontinence.
- Cognitive impairments such as Alzheimer's disease-lose the ability to sense a full bladder or unable to recall the procedure for voiding
- Diabetes insipidus:increases urine production
- Neurogenic bladder:client does not perceive bladder fullness unable to control the urinary sphincter.





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- **Diagnostic procedures**: Eg; Urethra may swell following cystoscopy. Surgical procedures on part of urinary tract may result in post-operative bleeding
- A restriction in fluid intake lowers urine output.
  - Surgery of lower abdomen and pelvic structures impairs urination because of local trauma.



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## ➤ Sociocultural factors:

- Certain life-style behaviours can affect urinary elimination by delaying voiding due to ignoring urge to void because of:
- Insufficient time, unavailability of toilet facilities, lack of privacy, inability to assume a normal position
- Delay in voiding can stretch and weaken the detrusor muscle lead to incomplete emptying of the bladder.



# Alterations in urinary elimination



**1. Polyuria:** Production of abnormal large amounts of urine by the kidney. polyuria can follow excessive fluid intake, a condition known as polydipsia.

**2. oliguria:** Defined as low urine output usually less than 500 ml a day or 30 ml an hour.

**3. Diuresis;** It is the another term for production and excretion of large amounts of urine.



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**4. Anuria:** refers to a lack of urine production, with no effective urinary output.

**5. Nocturia :** voiding two or more times at night.

**6. Dysuria:** it means voiding that is either painful or difficult.

**7. Enuresis:** defined as involuntary urination in children.



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**8.Nocturnal enuresis:**involuntary urination during night.

**9.Urinary frequency** :is voiding at frequent intervals, that is more than 4 to 6 times per day

**10.Urgency** :is the sudden ,strong desire to void.



# Urinary incontinence



- UI is the involuntary passage of urine.
- It refers to the inability to control passage of urine.
- It is a symptom, not a disease.
- It may be temporary or permanent.
- Leakage may be continuous or intermittent.



# CAUSES OF URINARY INCONTINENCE



- UTI, Surgery
- trauma causing sphincter damage,
- leakage when coughing
- sneezing due to increased abdominal pressure
- STDs,
- Paralysis
- fecal impaction
- old age
- cognitive impairment
- unconsciousness



# Types of incontinence



- **Stress incontinence**: Involuntary loss of urine through an intact urethra as a result of sudden increase in intra abdominal pressure. It is seen mainly in women who have vaginal deliveries.
- **Urge incontinence**: Involuntary loss of urine associated with a strong urge to void that cannot be suppressed.





# Types of incontinence



- **Reflex incontinence**: Involuntary loss of urine due to hyper reflexia in the absence of normal sensation.
- **Overflow incontinence(functional incontinence)**  
It is the involuntary loss of urine associated with over distention of the bladder .



# Measures to reduce incontinence



- ✓ Establish regular voiding schedule for patient.
- ✓ Perineal exercises: these increases the tone of muscles concerned with the micturition, in particular the perineal and abdominal muscles  
Can help in gaining voiding control.
- ✓ Arrange toilet or bedpan easy reach of patient
- ✓ Medical, surgical correction of causative factors.



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- ✓ bladder training program ; Includes education of the client and support people.the goal are to gradually lengthen the Interval between urination,to stabilize the bladder and to diminish urgency
- ✓ Habit training;(timed voiding or scheduled toileting) attempts to keep client dry by having them void at regular intervals
- ✓ Skin care and Condom drainage



# Urinary retention



- The state in which one experiences incomplete emptying of the bladder.
- When the emptying of bladder is impaired, urine accumulates and the bladder becomes over distended.
- Over distention of the bladder causes poor contractility of detrusor muscle further impairing urination.



# CAUSES



- Obstruction of urine flow:( prostate gland enlargement,pregnancy,urethral edema,surgery or diagnostic examinations
- Alteration in motor or sensory innervation to the detrusor muscle and internal sphincter.eg:spinal cord injury,peripheral nerve trauma,degeneration of peripheral nerves
- Inability to relax external spinchter.



# Prevention and treatment of retention of urine



Methods used in inducing natural urination are:

- Assist the patient to his or her normal position for voiding.
- Provide privacy.
- Offer a bedpan or urinal that is warm. A bedpan that is cold to touch may cause contraction of the perineal muscles



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- Foster the muscles relaxation by providing necessary physical support to the patient and by relieving pain.
- Provide any assistance when the patient feels the need to void
- Running water within the hearing of the patient or flushing the toilet stimulate the micturition reflex.
- Provide enough time for micturition.



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- A hot enema, if permitted may relieve the retention of the urine.
- Give fluids freely unless contra-indicated.
- When all these interventions failed, catheterisation is done with the doctor's permission.
- Certain drugs which cause contraction of the bladder may be ordered by the doctor





# ASSESSMENT



1. Urine consist of \_\_\_\_\_% of water

a) 90% b) 80% c) 96%

2. Anuria means ?

a) Absence of urine production b) excessive urine production c) painful urine production

3) Anxiety may cause \_\_\_\_\_

a) Increased urine production b) obstruction in urine  
c) decreased urine flow



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