

Urinary Tract Infections

Pathophysiology

- Normal defense mechanisms that usually keep urinary tract sterile are unsuccessful, allowing infection to enter the tract.
- Uncomplicated - normal urinary tract – only involves bladder
- Complicated – recurring infection, obstruction, catheter, diabetes, abnormal tract or neurologic disease

Risk Factors

- Obstruction – intrinsic or extrinsic
- Urinary retention
- Renal impairment
- Catheterization
- Cystoscopy
- Fistula exposing urinary stream
- Shorter female urethra
- Poor hygiene
- Multiple sex partners
- Delay of urination
- Use of spermicide/sprays
- Obesity
- Aging
- HIV
- Diabetes
- Constipation

Manifestations - Lower UTI Sx

- Hesitancy/ diminished stream
- Interruption of urinary stream
- Retention or incomplete emptying
- Painful urination (dysuria)
- Frequency - <200mL/void or >8 voids in 24hrs
- Nocturia
- Incontinence

Diagnosis

- Dipstick urinalysis
 - WBCs
 - Nitrites
 - Leuk oocyte esterase
- Urine Culture
 - Obtained via clean catch

Clean Catch

- **Women** – front to back with clean gauze after stream starts
- **Men** – wipe glans penis and collect after stream starts

Pharmacology

- Phenazopyridine
 - urinary analgesic
 - can turn urine orange or red
- Antibiotics
 - Trimethorpin/ sulfamethoxazole – E. coli resistant (Bactrim)
 - Fosfomycin
 - Nitrofurantoin – avoid sunlight and notify HCP if fever, chills, cough, chest pain, dyspnea, rash or numbness or tingling of finger or toes occurs

Calculating Fluid Needs

- Divide weight in lbs by 2 = # of oz. of fluids needed.
- Multiply oz. needed by 0.8 to determine non-food acquired fluids
- Multiply oz. x30 to convert ounces to mL

Example:
 150lbs = 75oz
 75oz x .8 = 60oz
 60oz x 30 = 1800mL

Nursing Management

Assessment

- Fever, chills, dysuria, cloudy urine, polyuria, hematuria

Nursing Dx

- Impaired urinary elimination
- Readiness for enhanced health management

Evaluation or Goals

- Normal elimination patterns
- Relief of dysuria
- Adequate understanding of treatment and medications

Implementation

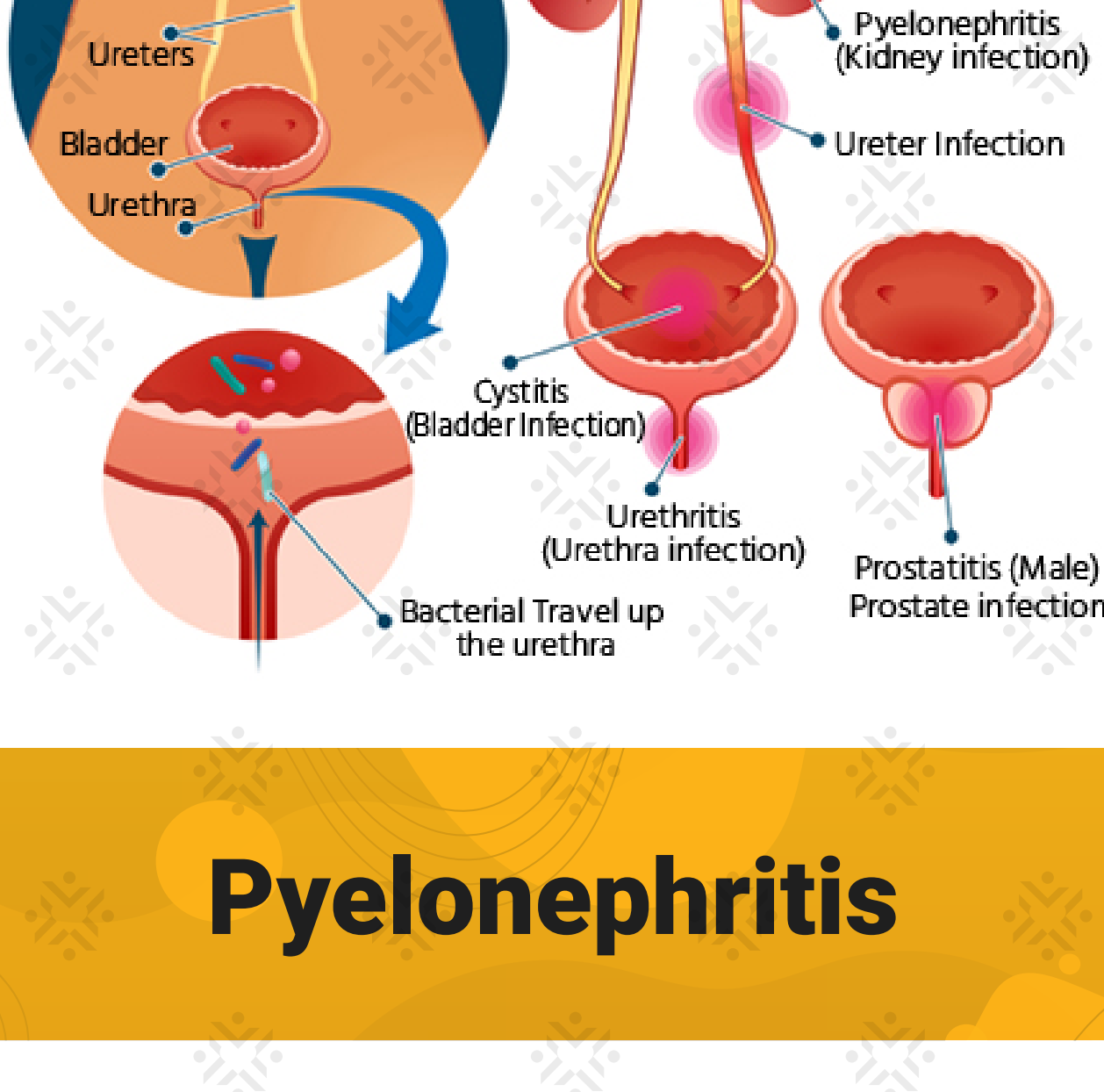
- Identify those at risk
 - Immunocompromised
 - Older age
 - Debilitated persons
- Ensure pt empties their bladder regularly
- Evacuate bowel regularly
- Wipe front to back
- Administer to have pt drink adequate fluids
- Apply heat to suprapubic area or lower back
- Emphasize the importance of finishing full course of antibiotics

Patient Teaching

- Take antibiotics as prescribed
- Practice appropriate hygiene
- Empty the bladder before and after sex
- Avoid vaginal soaps, bubble baths and powders
- Urinate regularly – Q3-4hrs
- Avoid bladder irritants like caffeine, citrus, and spicy foods.

Cauti Prevention

- Avoid unnecessary catheterization
- Remove catheters ASAP
- Follow proper aseptic technique during catheterization



Pyelonephritis

Pathophysiology

- Inflammation of the renal parenchyma and collecting system
- Caused by bacterial infection fungi, protozoa or virus

Manifestations

- Sudden onset of chills/ fever
- Malaise
- Fatigue
- UTI symptoms
- CVA pain

Diagnostics

- Urinalysis showing and pyuria and bacteriuria
- Ultrasound to identify anatomic abnormalities/ stones
- History and physical exam
- Urine culture and sensitivity
- CT scan/ cystoscopy
- CBC with differential

Treatment

- Fluids
- Follow up and monitoring
- Broad spectrum Abx 1st then sensitivity guided Abx
- Fluoroquinolones
- Close observation and Vs to prevent urosepsis
- NSAIDs

Interstitial Cystitis / Painful Bladder

Pathophysiology

- Inflammatory disease of the bladder that is chronic and painful

Etiology

- Neurogenic hypersensitivity
- Alterations in mast cells
- Infection with unusual organism

Diagnostics

- History and physical exam
- Rule out of UTI and endometriosis
- Urine culture will be normal
- Cytoscopy can show small bladder capacity

Treatment

- Elimination of irritating foods
 - Caffeine
 - Alcohol
 - Citrus
 - Aged cheese
 - Nuts
 - Spicy
- Calcium glycerphosphate
 - Alkalinizes the urine
- Pentosan (Elmiron)
 - Relieves pain
- Stress management

Glomerulonephritis

Pathophysiology

- Inflammation of the renal parenchyma and collecting system
- Caused by bacterial infection fungi, protozoa or virus

Risk Factors

- Viral infections
- HTN
- Vasculitis
- Infective endocarditis
- Lupus
- Scleroderma
- Neuropathy
- Good pasture syndrome

Diagnostics

- Urinalysis showing and pyuria and bacteriuria
- Ultrasound to identify anatomic abnormalities/ stones
- History and physical exam
- Urine culture and sensitivity
- CT scan / cytoscopy
- CBC with differential

Manifestations

- Sudden onset of chills/ fever
- Malaise
- Fatigue
- UTI symptoms
- CVA pain

Treatment

- Fluids
- NSAIDs
- Follow up and monitoring
- Broad spectrum Abx 1st then sensitivity guided Abx
- Fluoroquinolones
- Close observation and vitals to prevent urosepsis

Nephrotic Syndrome

Pathophysiology

- Glomerulus is excessively permeable to plasma protein leading to low plasma albumin and tissue edema

Manifestations

- Peripheral edema
- HTN
- High lipids
- Low albumin
- Foamy urine
- Ascites

Treatment

- Control underlying cause
- Manage edema with salt restriction and moderate protein (1-2g/kg/day)
- Daily weights
- I/os
- measure abd. girth

Rx

- corticosteroids
- Cyclophosphamide
- ACE Inhibitors
- Lipid lowering agents
- NSAIDs
- Diuretics

Polycystic Kidney Disease

Pathophysiology

- an autosomal disease that causes cysts to form within the cortex and medulla

Manifestations

- Headache
- HTN
- Hematuria
- UTI or Calculi
- Chronic pain
- Bilateral enlarged kidneys

Treatment

- Prevent infection
- Nephrectomy
- Dialysis
- Transplant