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Medical Diagnosis/Disease: Urinary Tract Infection

NCLEX IV (8): Physiological Integrity/Physiological Adaptation

Anatomy and Physiology

Normal Structures

The urinary system involves the kidneys, ureters, bladder and the urethra. The kidney is responsible for filtering waste materials, regulating blood pressure, acid/base balance and regulating volume and chemical composition of blood. The functional unit of the kidneys are nephrons. The kidney is composed of the cortex, medulla, pyramids, papillae, and apices of pyramids. The glomerulus lies within each nephron and is the location where urine formation starts. A normal glomerular filtration rate (GFR) is 15-125 mL/min. The ureters drain the urine from the renal pelvis (where about 5 mL of urine is held) into the bladder. The bladder holds urine produced by the kidneys until excreted from the body via the urethra. The bladder is elastic and can stretch and contract. A normal urinary output for the day is 1500 mL. On average, when urinary capacity in the bladder reaches about 250 mL, the urge to urinate is initiated. At about 400-600 mL, the bladder becomes uncomfortable and maximum capacity of the bladder can reach up to 1000 mL of urine. Females have a urethra that is 1-2 inches long. The male urethra is approximately 8-10 inches long. Because of this, females are much more susceptible to infections of the urinary tract. The urinary system has a homeostatic component called the RAAS (renin-angiotensin-aldosterone-system). This is a mechanism that controls blood pressure and keeps electrolytes in balance. Above the urethra, the urinary tract is a sterile environment.

Pathophysiology of Disease

A urinary tract infection (UTI) is most commonly caused by the pathogen Escherichia Coli (E.coli). A UTI can be classified as upper or lower, depending on where it lies within the urinary tract. UTI's can also be classified as complicated or uncomplicated. A complicated UTI is a UTI that occurs in an individual with an underlying disease or functional or structural problem. An uncomplicated UTI is a UTI that occurs in an otherwise normal urinary tract without problems or diseases. A UTI can occur when one of the body's many defense mechanisms against infection, fail. These can include, normal voiding, complete bladder emptying, urinary continence, proper perineal hygiene and ureteral peristaltic activity. If one is not properly or effectively hygienic, does not completely empty their bladder, or the anatomy and physiology of the urinary system are faulty, the individual is more susceptible to a UTI.

NCLEX IV (7): Reduction of Risk

Anticipated Diagnostics

Labs

- Urinalysis
- CBC - WBC
- Culture and sensitivity

Additional Diagnostics

- Dipstick
- H&P
- History of catheterization
- U/S
- CT
- Urogram

NCLEX II (3): Health Promotion and Maintenance

Contributing Risk Factors

- Catheterization
- Incontinence
- Improper hygiene
- Sexual activity
- Imbalanced urine

Signs and Symptoms

- Lower: (LUTS)
- Dysuria
 - Hesitancy
 - Post void dribbling

Possible Therapeutic Procedures

Non-surgical

- Encourage intake of cranberry juice
- Assist in a

NCLEX IV (7): Reduction of Risk

Prevention of Complications

(What are some potential complications associated with this disease process)

- CAUTI

- pH
- Urinary retention
 - Pregnancy
 - Diabetes
 - Obstruction or stones
 - Constipation
 - Holding your urine for long periods at a time

- burning upon urination
 - incontinence
 - hematuria and / or cloudy appearance
- upper:
- can have LUTS as well
 - ABD & back pain
 - Fever
- *most common manifestation in elderly is confusion

- routine toilet schedule
- Apply heat therapy
 - Proper perineal hygiene
- Surgical

- Sepsis
- Bladder infection
- Pyelonephritis
- Urosepsis

NCLEX IV (6): Pharmacological and Parenteral Therapies

- Anticipated Medication Management
- Antibiotics (empiric therapy)
 - Antifungals
 - Urinary analgesic - Pyridium

NCLEX IV (5): Basic Care and Comfort

- Non-Pharmacologic Care Measures
- Encourage proper diet and hydration
 - IV fluids

NCLEX III (4): Psychosocial/Holistic Care Needs

- What stressors might a patient with this diagnosis be experiencing?
- Pain
 - Frustration
 - Irritation with urinary frequency
 - Embarrassment (urinary dribbling)
 - Body image

Client/Family Education

- List 3 potential teaching topics/areas
- compliance to antibiotic regimen, even if symptoms improve.
 - prevention: proper hygiene (wiping front to back, washing hands), proper catheter care (if applicable)
 - common s/s of UTI to monitor for in the future (change in mental status, burning with urination, hematuria or cloudy appearance, etc.)

NCLEX I (1): Safe and Effective Care Environment

- Multidisciplinary Team Involvement
(Which other disciplines do you expect to share in the care of this patient)
- Urologist
 - Lab