

Module 2: Etiology

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Identifying the underlying cause of urinary incontinence in older adults requires understanding of disorders of the lower urinary tract function as well as problems outside the urinary tract that may result in urinary incontinence. In addition, age-related changes in urinary tract function that may be found in continent older adults may predispose the older patient to develop incontinence.

For example, an older patient with reduced bladder capacity may be able to maintain continence by restricting their fluid intake and toileting frequently. That same patient with a flare of knee pain from osteoarthritis may develop urinary incontinence because they can no longer get to the bathroom fast enough. In this case treating their pain resolves their incontinence.

That same patient may develop urinary incontinence because they are started on a diuretic which now overwhelms their ability to get to a toilet.

Or older patients may have urinary incontinence because of a an increased likelihood of uninhibited detrusor contractions causing urge incontinence, the most common cause of UI in the elderly.”

And like many problems facing older patients’ more than one factor may be contributing to urinary incontinence.

Like all medical problems the etiology needs to be determined so a treatment plan can be initiated.

A common and convenient clinical approach to identifying the etiology of urinary incontinence is to consider acute, or transient, causes and chronic or persistent causes of urinary incontinence.

Acute Causes of Urinary Incontinence

Acute causes are problems that can precipitate UI and where their reversal can restore continence.

For the acute causes of UI we prefer to use the DIAPPERS mnemonic.

The “D” stands for delirium. Patients with delirium can present with urinary incontinence and may be unaware of bladder filling or the need to void. It’s important to remember that delirium carries a high mortality rate and may be related to infection, drugs, or metabolic disturbances. The underlying cause needs to be identified and treated. The UI will resolve with resolution of delirium.

The “I” is to remind us that symptomatic UTI’s can result in excessive sensory stimulation from the bladder mucosa resulting in urgency, frequency and incontinence.

“A” stands for atrophic vaginitis and urethritis. Many of the symptoms that mimic a UTI, which is frequency and urgency, can be due to atrophic vaginitis and urethritis. The urethral tissues are estrogen dependent, so with estrogen deficiency the urethra can become atrophic and inflamed with increased sensory stimulation. Signs of atrophic vaginitis include pale, thin mucosa, punctate hemorrhages and erosions, easy friability and a scant watery discharge.

“P” Many pharmacologic agents can cause urinary incontinence. These include agents that increase urine production such as diuretics which overwhelm the older person’s ability to toilet in a timely manner, agents that result in urinary retention such as opioids, anticholinergic agents, or calcium antagonists. All

can result in urinary retention by impairing detrusor contractility. Alpha agonists can also induce retention by stimulating alpha receptors at the urethral sphincter and bladder neck. Cold and sinus combination medications can possess both anticholinergic and alpha agonist properties. Medications that may result in sedation can also affect the ability to toilet normally. Alcohol and coffee may be overlooked as a “diuretic” effect causing urinary frequency.

The second “P” stands for psychologic factors in patients with severe depression who may not be motivated to toilet.

The E reminds us of the Endocrine (or metabolic causes) causes that can result in increased urine production such as the osmotic diuresis due to hyperglycemia in diabetes mellitus or hypercalcemia in diabetes insipidus.

”R” stands for restricted mobility. This may be encountered in a patient who was continent and now is restricted in their mobility such as a hospitalized patient that is “tethered” or with enforced bedrest and not able to get out of bed by themselves or not assisted quickly enough to toilet in a timely fashion. This can also occur in patients with mobility problems such as osteoarthritis

”S” stands for stool impaction and may result in urinary incontinence by causing urinary retention by bladder outlet obstruction or reflex bladder contraction by rectal distention.

Established or Persistent Causes of Urinary Incontinence

The established causes of urinary incontinence can be divided into four subtypes: urge, stress, over flow and functional incontinence. There can also be mixed causes such as both urge and stress.

Urge incontinence presents with the sudden urge to void, without sufficient warning to reach the bathroom on time. Some patients report urge incontinence with changes in position, like sitting to standing, the sound of or seeing water running or while washing their hands. Symptoms often occur day and night. Urge incontinence is the most common cause of urinary incontinence in men and women over 65 years of age. Urge incontinence occurs when the detrusor contracts suddenly and prematurely. This occurs because of uninhibited detrusor contractions. During bladder filling, the gate keeper within the pontine micturition center which normally inhibits motor impulses from initiating detrusor contraction during bladder filling fails to inhibit these motor impulses resulting in an uninhibited and uncontrolled detrusor contraction. This results in the involuntary loss of urine. The volume of urine loss is usually small to moderate depending on the volume of urine within the bladder once the contraction begins. These uninhibited detrusor contractions have also be referred to as detrusor or bladder overactivity, spastic bladder or neurogenic detrusor overactivity-the later term is used when a central nervous system abnormality if recognized such as Parkinson’s disease or prior stroke.

Whereas the most common cause of urge incontinence is from uninhibited detrusor contractions, urgency and urge incontinence can also occur from excessive sensory stimulation from local urinary conditions such as in cystitis, urethritis or mucosal lesions from tumors or stones. Bladder outlet obstruction can present with urinary urgency and incontinence. Urgency, with or without urge incontinence, can persist even after relief of the obstruction.

Another subtype of chronic urinary incontinence is overflow from an over distended detrusor. This situation is similar to water over the dam. Generally patients have frequent, small volume loss of urine

and may have a sensation they have not emptied their bladder. The bladder may be palpable during abdominal examination

There are two potential causes of overflow incontinence; outlet obstruction or an underactive or denervated detrusor.

A common cause of obstruction in men is related to prostatic enlargement. Obstruction can also occur due to a urethral stricture caused by prior infection or instrumentation. In women with a large cystocele, the urethra may become kinked and obstruct flow.

Impaired detrusor contractility or an acontractile bladder can also result in an over distended bladder. Impaired neurologic innervations can occur from an autonomic neuropathy such as from diabetes mellitus or may be due to spinal cord disease or injury or the detrusor may become denervated idiopathically. Drugs which impair detrusor contractility such as anticholinergics, calcium antagonists, or Botox, which has been used to treat urge incontinence can paralyze the detrusor leading to overflow.

Stress incontinence is the involuntary loss of urine during an episode of increased intra-abdominal pressure such as with coughing or laughing. This occurs because the normal anatomic relationship of the sphincter and intra-abdominal cavity is altered so that increased intra-abdominal pressure is no longer equally distributed to the detrusor and urethral sphincter. The most common cause of stress incontinence is due to hypermobility of the urethra so the sphincter is pulled open during sudden descent of the anterior vaginal wall. This can also occur in women with weakness or laxity of the pelvic musculature. For example, during coughing, the vaginal wall drops, pulls open the mid-urethra and incontinence occurs. Sphincteric incontinence occurs in men that may have undergone prostate surgery. They no longer have an effective urethral sphincter, and these patients tend to have easy leakage of urine with minimal effort.

Mixed incontinence, stress and urge, is also very common. As will be discussed later, this requires testing to distinguish the severity of each component. Treatment of mixed incontinence is always challenging and will focus preferentially on the dominant component. For example, stress should be treated before urge in a case of stress predominant mixed incontinence.

Functional urinary incontinence refers to patients with chronic urinary incontinence related to their inability to toilet because of problems outside the urinary tract such as those with dementia or impaired physical function and/or environmental barriers.