Hello! Welcome to Module 8 Section B review presentation on urinary function. I am pleased to introduce to you our guest faculty Jennifer Cera. Jen has extensive experience as a nurse practitioner working with patients in a thriving urology clinic to improve urinary function and decrease incontinence. Thank you so much for sharing your knowledge with us today Jen. Thank you, Heidi! Today, I will be discussing urinary incontinence in the older adult. Urinary incontinence (UI) is an extremely common condition that you will most definitely encounter as a nurse. Educating yourself about the normal age-related changes and the different types of incontinence will help you assess your client’s needs to provide the best care possible to improve their quality of life.
So, what do we need to focus on in this module? We need to know:
What are the normal age-related changes?
How is continence defined?
What are the different types of incontinence?
And finally, what are some common gender-specific abnormalities that predispose them to urinary incontinence?
Promoting urinary wellness in older adults is essential to their quality of life. As nurses it is imperative that we educate our patients that incontinence is not a normal part of aging, but that certain risk factors that cause incontinence become more prevalent as we age. Nursing assessments should include a patient’s understanding of incontinence. Many times, patients think “they are the only one” and feel shameful, when in reality, incontinence is very common. Reassuring your patient and providing them with knowledge of treatment options can be liberating for them! Recognizing risk factors and age-related changes for urinary incontinence assist us in performing thorough nursing assessments to provide the best care for optimal outcomes. Nursing interventions can range from simple to complex, but should always include education for the patient on normal urinary function and how treatment and promotion of urinary wellness can be achieved. A positive outcome includes not only continence itself, but a greater sense of independence and improved quality of life.
Kidneys
So, what are the age-related changes? First of all, there is a decline in renal function. This is important because the kidney is responsible for filtering and removing wastes from the bloodstream. Homeostasis is achieved when necessary substances are retained such as glucose, water and sodium, and waste products are excreted. Normal excretory function can be measured by blood tests such as the glomerular filtration rate or GFR. Creatinine clearance is a lab value used to estimate the GFR. A decrease in creatinine clearance indicates a decreased GFR and overall decrease in kidney function.
Production of antidiuretic hormone (ADH) is stimulated by conditions that may affect plasma volume. Regulation of the dilution and concentration of urine are influenced by the total amount of fluid in the body, the resorption of water through the Loop of Henle and distal tubule, as well as osmoreceptors in the hypothalamus. As we age, changes in the renal tubules affect the level of ADH, and therefore are less efficient in the conservation of water and the suppression of ADH secretion.

Detrusor muscle
In regards to the detrusor muscle, with age the bladder wall hypertrophies, making it less elastic, inhibiting its’ ability to expand. Therefore, bladder capacity often becomes small with an average capacity of 200-300ml, compared to 450-500ml of a normal adult. The detrusor muscle can also lose its ability to contract effectively to
empty the bladder completely, leading to retention.

Pelvic floor
The pelvic floor is a general term for multiple muscles and supportive structures that maintain continence. The pelvic floor is skeletal muscle and responds to exercise like any other muscle group; therefore, it can atrophy without exercise. It also refers to the internal and external urethral sphincters. The internal sphincter is smooth muscle and is not under voluntary control. Therefore, this cannot be trained with active exercise. In men, the internal sphincter may be damaged during prostatectomy, causing them to rely solely on the strength of the external sphincter and pelvic floor muscles. However, the external sphincter is striated muscle and is under voluntary control. With aging, there is a loss of tone and collagen support of the pelvic floor musculature, therefore leading to a decrease in urethral closure pressures. In women, estrogen is important in maintaining the mucosal lining of the urethra. The bladder and urethra are estrogen dependent, and when loss of estrogen occurs, such as with menopause, the production of mucus within the urethra prevents the urethra from maintaining a tight seal to prevent leakage, especially in the presence of intra-abdominal pressure. Estrogen deficiency can also lead to increased sensitivity, which increases the prevalence of overactive bladder and urge urinary incontinence.

Neurological changes
Neurological changes can include degenerative changes in the cerebral cortex that may alter both the sensation of bladder fullness and the ability to empty completely. With age, a patient’s sensation of bladder fullness occurs later, so the interval in between first sensation of needing to void versus the actual need to void is much shorter making UI more likely. This shorter interval is even more troublesome if there is a mobility or dexterity issue.
Before we can begin discussing what incontinence is, we must first define what continence is and what must occur physiologically to maintain continence. First, continence is the storage of increasing urine volumes with low bladder pressure. It is the normal sensation of capacities, as well as the normal storage and release of urine. Finally, it is urethral pressure that is greater or equal to bladder pressure in the absence of a bladder contraction (note that this definition indicates that there is no occurrence of leakage with stress activities (therefore no type of stress urinary incontinence) and no uninhibited bladder contractions (therefore no type of urge urinary incontinence). We will further define continence in the upcoming slides.
This slide shows the normal micturition cycle. First, the kidney diuresis and fills the bladder at a rate of 0.5 to 10ml/min. As the bladder fills, it expands the detrusor muscle and it is felt as a continuous stimulation. This stimulation is transferred to the brain via sensory pathways and is interpreted as a desire to void. This also maintains strength of bladder contraction allowing for complete bladder emptying. As the desire to void is interpreted, the autonomic (or involuntary) and somatic system control the detrusor and urethral pressure. When a “strong desire” is felt, then voluntary contraction of the urethral sphincter is done to prevent leakage. When a person is ready to void, the voiding process begins which consists of inhibition of the autonomic system in which the detrusor contracts and the urethral sphincter relaxes. It should also be noted here that the pelvic floor must relax during the micturition cycle as well.
So what is considered normal? First, voiding, or using the restroom 5-7 times per day is considered normal. This is important considering the fact that if a patient voids 8 or more times per day, this is considered overactive bladder and should be a red flag to you to make inquire more about your patients voiding habits and perform necessary nursing assessments. Look for patterns of voiding in intervals of every 2-4 hours, although it is preferable to void in intervals of every 3-4 hours to maintain adequate bladder capacity. Consuming 60-80 ounces of fluid daily is considered a normal intake. Voiding one time per night, or not at all, is considered normal. However, if your patient is voiding 2x or more at night, this is considered overactive bladder and prompt you to addressing further exploration of their symptoms. It is also important that a patient should not feel the need to strain or push to urinate. If a patient feels the need to do this, this may be indicative of either a prolapse in women or benign prostatic hypertrophy (BPH) in men. It can also indicate incomplete bladder emptying from other reasons that may be neurological in nature.
Here are a few facts in regards to the scope of urinary incontinence: In 1995, 6.3 million community-dwelling older adults and 1.2 million nursing home residents were living with UI according to Wagner and Hu, 1998. Women are affected more often than men (a ratio of 2:1), but it is important to note that urinary incontinence increases in both genders with age (Newman & Wein, 2009).
So now that we have discussed what continence is, how is incontinence defined? As of 2005, The International Continence Society has termed urinary incontinence as “any complaint of involuntary loss of urine that is a social or hygienic problem.”

Pathophysiological speaking, it is also defined as urethral pressure that is less than bladder pressure OR with an involuntary bladder contraction. If you will notice this last definition describes that of both stress and urge incontinence. If urethral pressure is less than bladder pressure, stress incontinence will occur, and if an involuntary bladder contraction occurs, this is urge incontinence.
Is incontinence a normal part of aging? Absolutely not! This is a misconception. The truth is that age itself is not a cause of incontinence, per se. However factors or comorbidities that may lead to incontinence become more prevalent in older men and women. The type of incontinence also changes as we age, and urgency incontinence and overactive bladder become more prevalent. In women, mixed urinary incontinence or the combination of both stress and urge incontinence is increased. Other predisposing risk factors that become more common as we age include diabetes, CVA, dementia and Parkinson’s disease, just to name a few examples.
When assessing a patient and their propensity of developing UI many risk factors should be considered. First of all, look at mobility. Assess their gait, and whether or not they use assistive devices to aid in walking. Comorbidities, as discussed earlier include diabetes, CVA, pelvic and back surgeries, dementia, Alzheimer’s, etc. Older adults also tend to have multiple medications (polypharmacy). Some medications, such as diuretics taken for hypertension, for example, can increase symptoms of urgency and frequency. Note the different types of medications patients are on, and be aware of the affect each medication has on the urinary tract. This will be reviewed in more detail in the management portion of this module. Dexterity is also a factor. Think of the effort it takes to unbutton pants and unzip a zipper. If a patient has to take extra time to perform these tasks, a leakage episode is more likely to occur especially if they have urinary urgency. Cognition is a factor as again, any delayed proprioception of bladder fullness can lead to incontinence. In women, estrogen deficiency leads both stress and urge incontinence. In men, benign prostatic hypertrophy causes symptoms of overactive bladder and urge incontinence because of the prostate impinging upon the urethra. With this obstruction, men find that they are not able to empty their bladders completely, and therefore have more urinary urgency and frequency, and are more susceptible to urge incontinence.
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