ANCAN
Advocacy • Navigation • Support

@drrachelrubin

Multiple Sclerosis and Lower Urinary Tract Dysfunction

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Outline

- Incidence
- Neuro-urology physiology
- Evaluation
- Treatment

Quality of life matters!

- Always think in terms of the biopsychosocial approach
- Multi-disciplinary care is paramount in treating quality of life
- Good quality of life medicine care cannot be done well in 15 minute doctor visits – an often takes multiple types of providers!

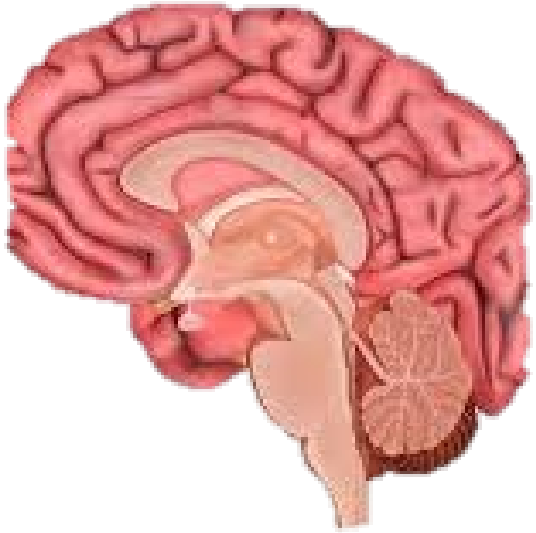
Table 2. How Has Your Illness Affected Your Relationships (e.g., With Partner, Children, Grandchildren)?

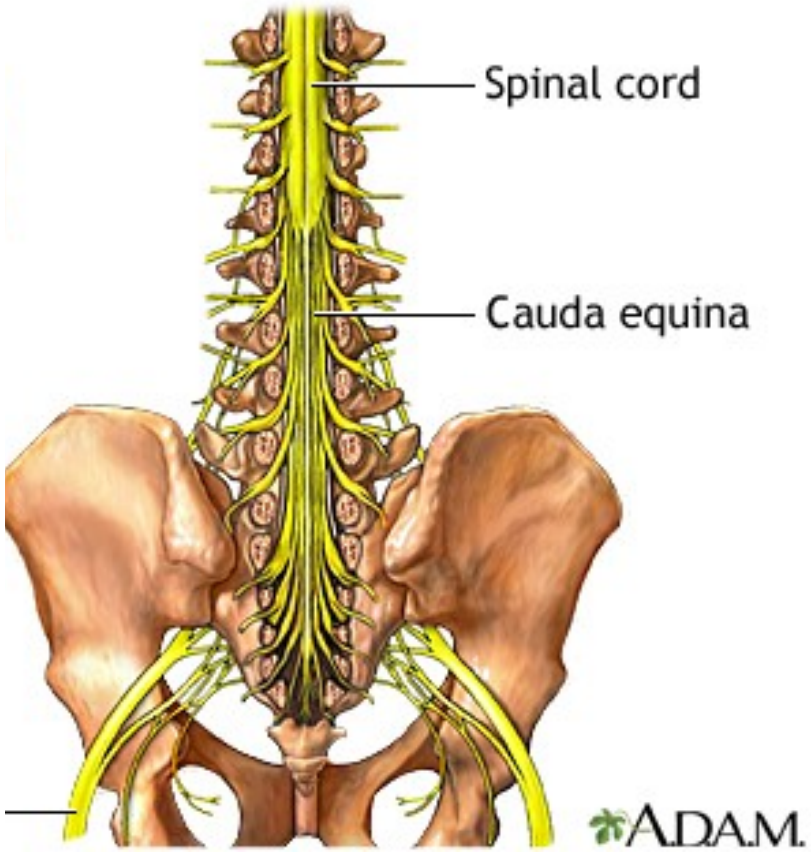
Identified themes	*Patient response examples*[a]
Difficulties finding new relationships	• It is hard to find someone when you are sick. • I don't have a partner now, but I would like one and I'm not sure how to find or get into a relationship because of my illness.
Altered body image	• I lost a lot of weight and my breasts got very small. • I don't like my stomach when I have all this fluid.
Weakness/fatigue	• I often feel too tired for sexual intercourse and I am worried about my heart and sex. • I feel too weak to be physically intimate and I feel bad for my partner. We talk about it and she tells me not to worry, but I do.
Fear/embarrassment	• I'm embarrassed at how many pills I take. I felt ashamed and I was worried if he found out how sick I am he would leave. • I was not open with previous partners about my illness because of fears around rejections. I'm more open now in my current relationship.
Changes in physical intimacy/closeness	• We stopped having sexual intercourse, but we were still physically intimate. After my last surgery we stopped all forms of physical intimacy. I still want to be intimate, because I feel I need a companion. • Yes [the illness] has affected relationships, I feel like I'm back to being a "boy" It's taken away my "manhood." • We now sleep in different rooms because of my illness. I spend less time with my partner and I am in the hospital a lot. • I'm too sick to be physically intimate, but we find other ways (e.g., cuddling). I do feel less adequate.
Illness limits activities with loved ones	• I worry with my grandchildren, when they run towards me. I now pause because I'm afraid they may run into my lines, tubes, bags, etc. • Since my illness [my functionality] has declined, I am no longer able to drive my grandchildren to school.

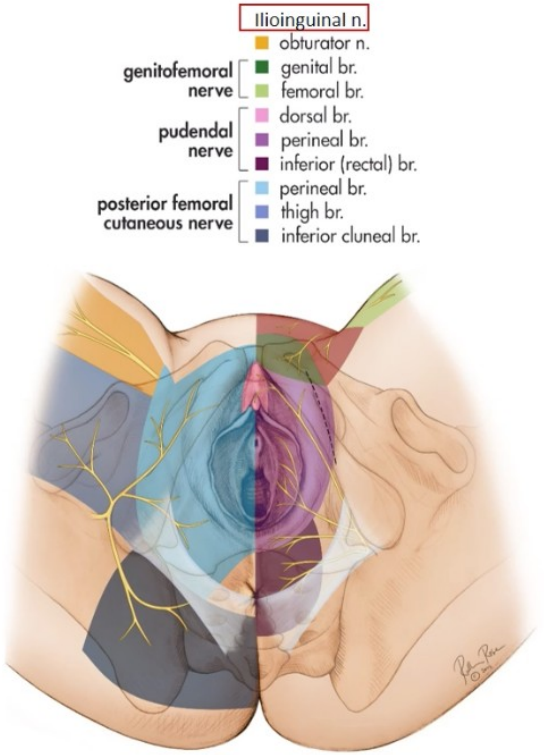
[a]Patient responses are based on data documented on the intimacy screening form and, thus, may not be verbatim.

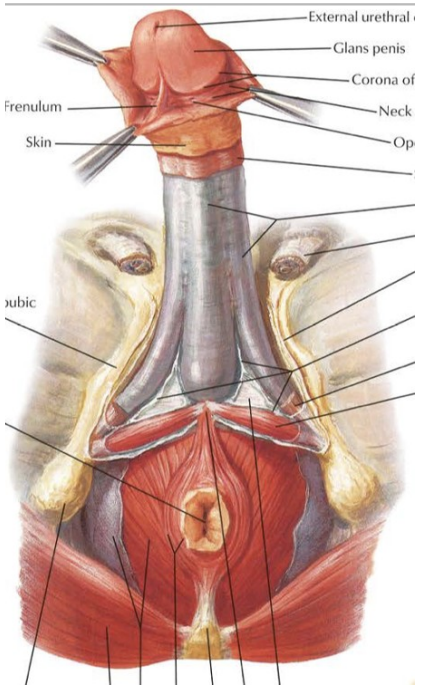
Kelemen, Anne, John Cagle, and Hunter Groninger. "Screening for intimacy concerns in a palliative care population: findings from a pilot study." *Journal of palliative medicine* 19.10 (2016): 1102-1105.

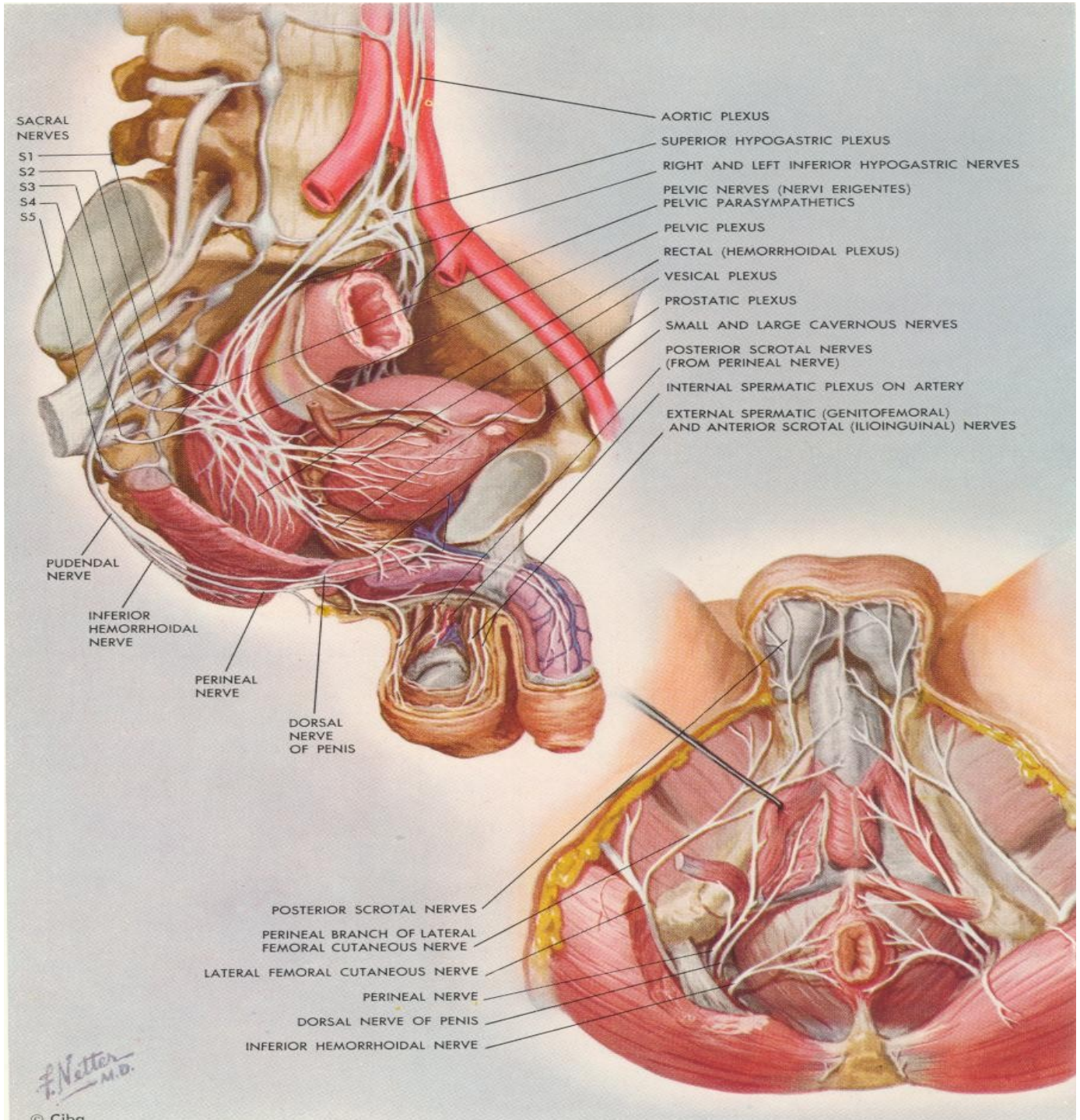
Anatomy




Spinal cord
Cauda equina
A.D.A.M.


Ilioinguinal n.
obturator n.
genitofemoral nerve
genital br.
femoral br.
pudendal nerve
dorsal br.
perineal br.
inferior (rectal) br.
posterior femoral cutaneous nerve
perineal br.
thigh br.
inferior cluneal br.


External urethral
Glans penis
Corona of
Frenulum
Neck
Skin



Netter (1989). *Atlas of human anatomy*

Table 3 Genitourinary syndrome of menopause (GSM): symptoms and signs

Symptoms	Signs
Genital dryness	Decreased moisture
Decreased lubrication with sexual activity	Decreased elasticity
Discomfort or pain with sexual activity	Labia minora resorption
Post-coital bleeding	Pallor/erythema
Decreased arousal, orgasm, desire	Loss of vaginal rugae
Irritation/burning/itching of vulvar or vagina	Tissue fragility/fissures/petechiae
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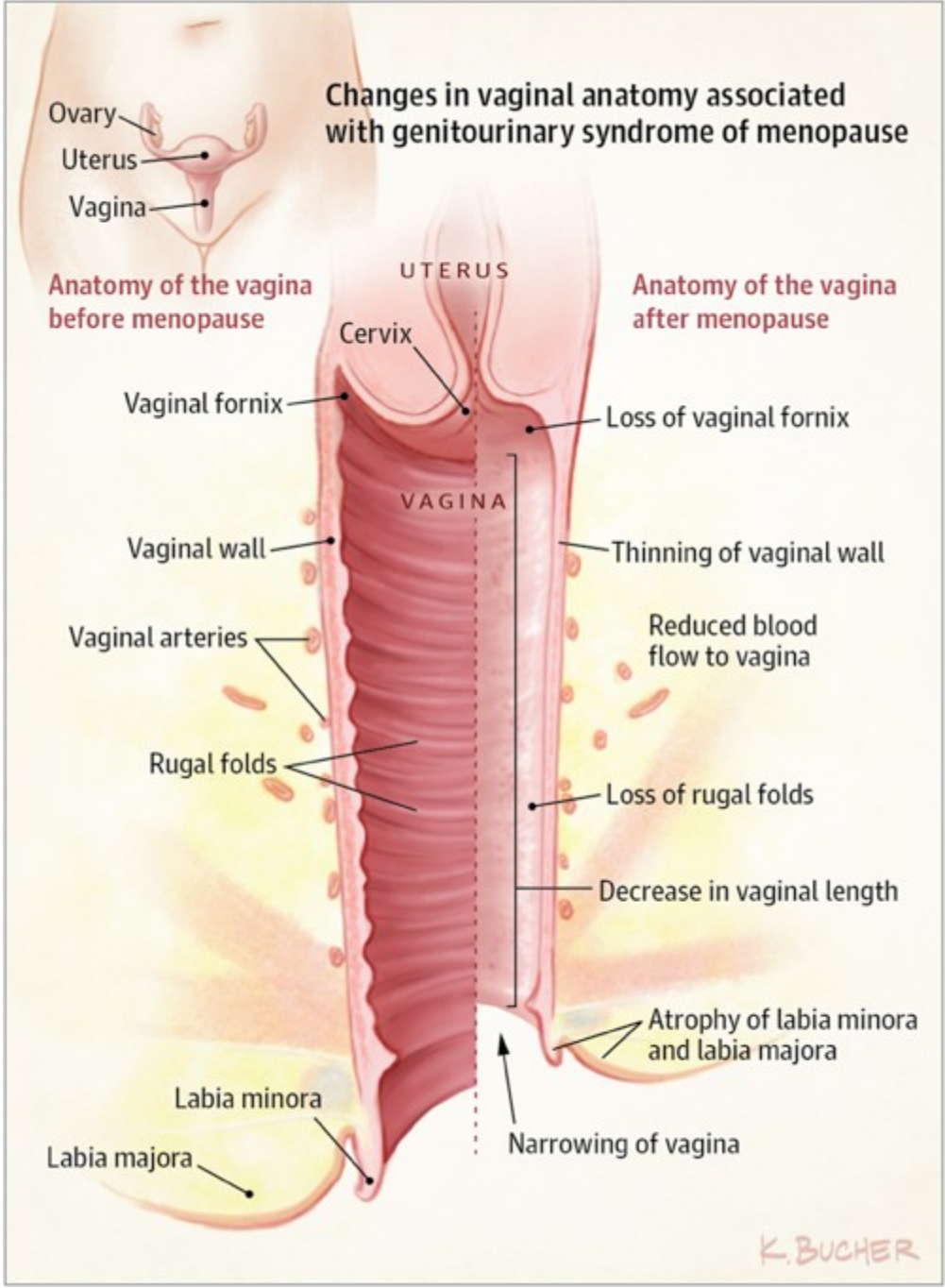
Urinary frequency/urgency	Loss of hymenal remnants
	Prominence of urethral meatus
	Introital retraction
	Recurrent urinary tract infections

Supportive findings: pH > 5, increased parabasal cells on maturation index, and decreased superficial cells on wet mount or maturation index

Portman et al, T*he journal of sexual medicine* 11.12 (2014): 2865-2872.



Jin J. *JAMA.* 2017;317(13):1388

Incidence of Bladder dysfunction

Underlying Disease	Bladder dysfunction	
Spinal Cord Injury	70-80%	Trauma
Multiple Sclerosis	50-80%	Autoimmune
Myelodysplasia	50-75%	Congenital
Parkinsons	15-30%	Neurotransmitter
Diabetes	10-30%	Acquired/Metabolic
Cerebrovascular	10-15%	Vascular

Adapted, Wein 2009 Campbell's Urology

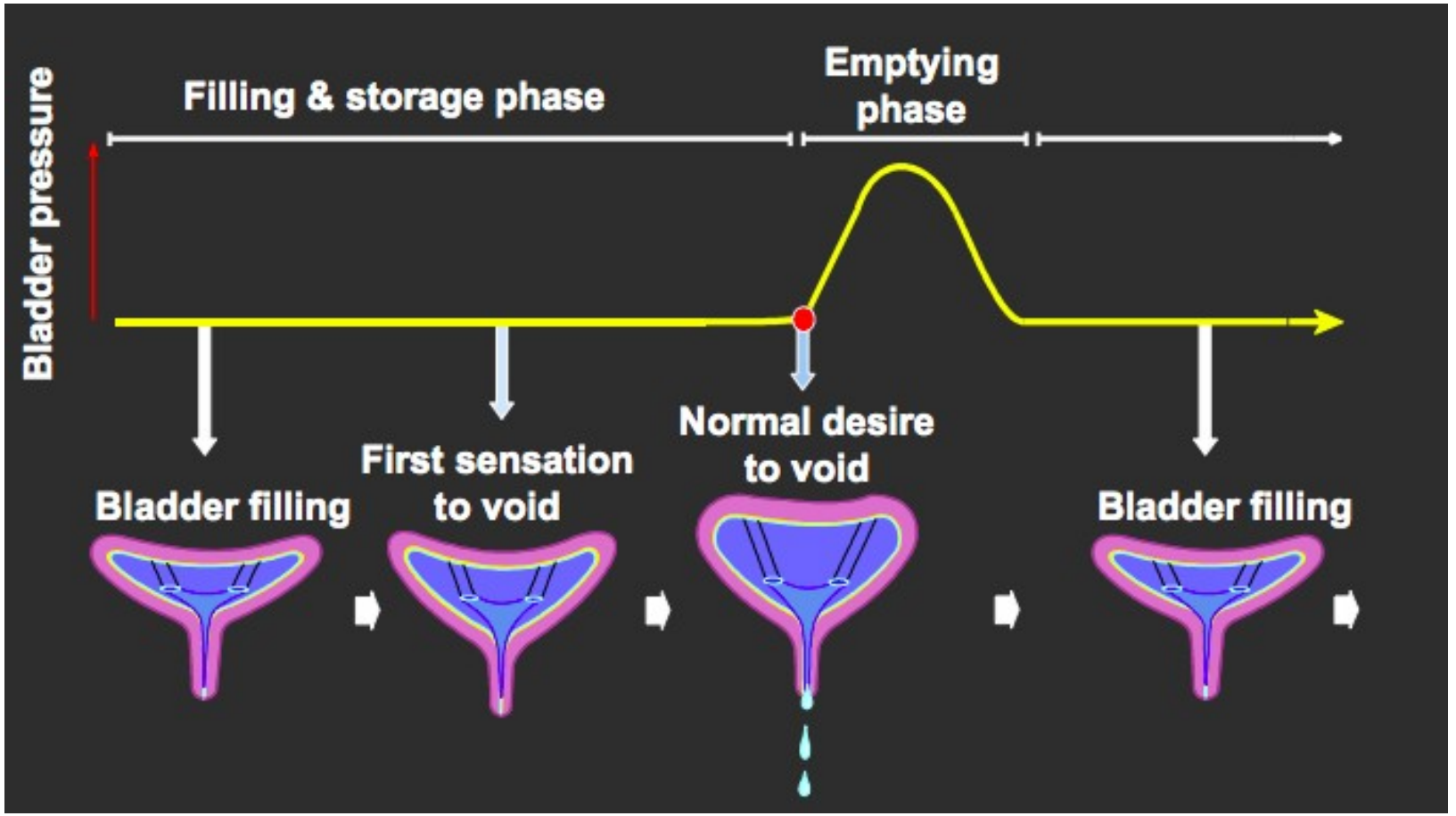
Bladder dysfunction

- MS lesions block or delay normal neurologic signals that control bladder and urinary sphincter function

- Common symptoms
  - Frequency and/or urgency of urination
  - Hesitancy in starting urination
  - Frequent night time urination
  - Incontinence (inability to hold urine)
  - Inability to empty the bladder completely

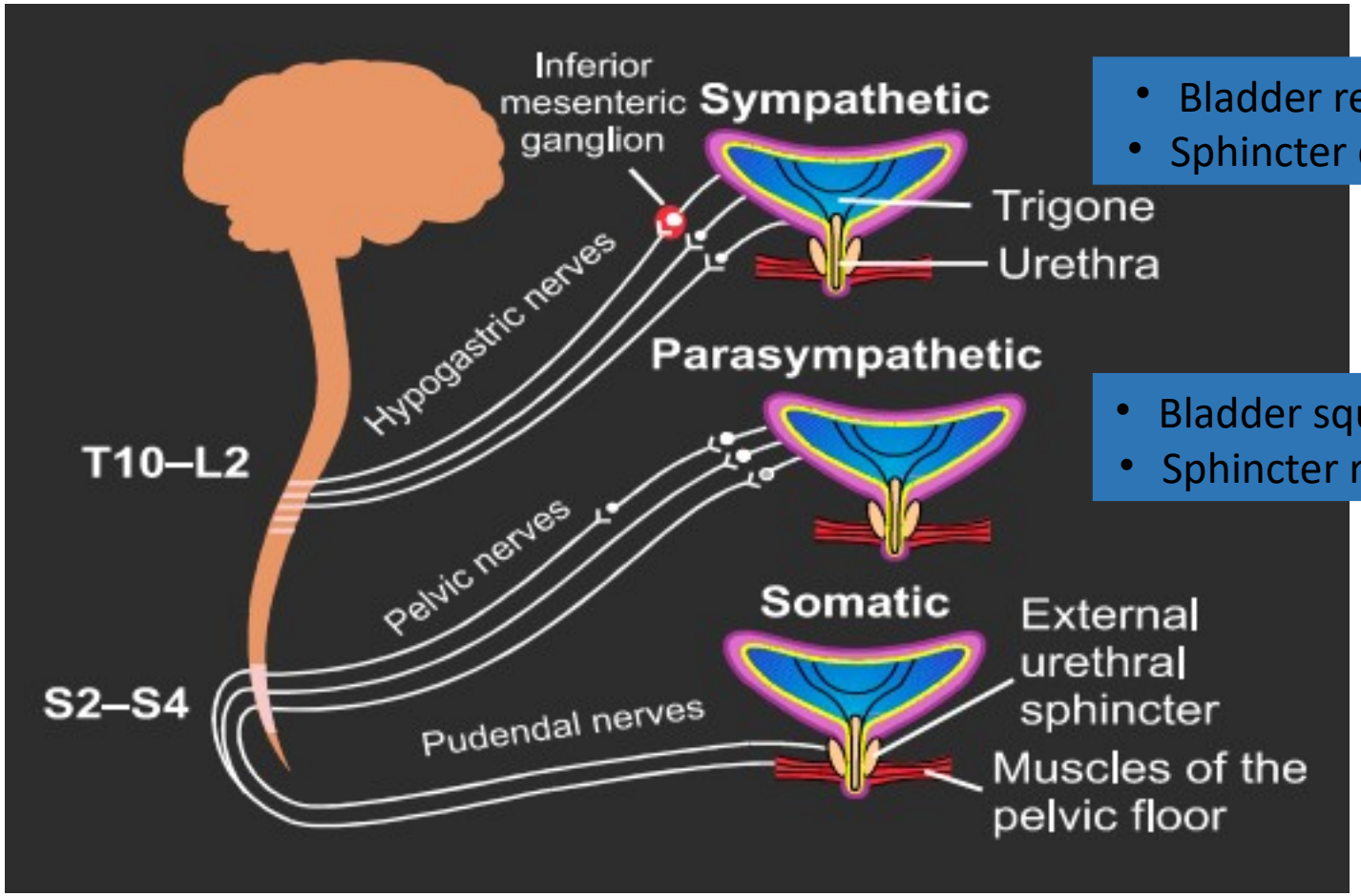
Neuro-Physiology Review

Normal Voiding Cycle



Abrams P, Wein AJ. The Overactive Bladder — A Widespread and Treatable Condition. Stockholm, Sweden: Erik-Sparre Medical AB; 1998

Bladder Innervation

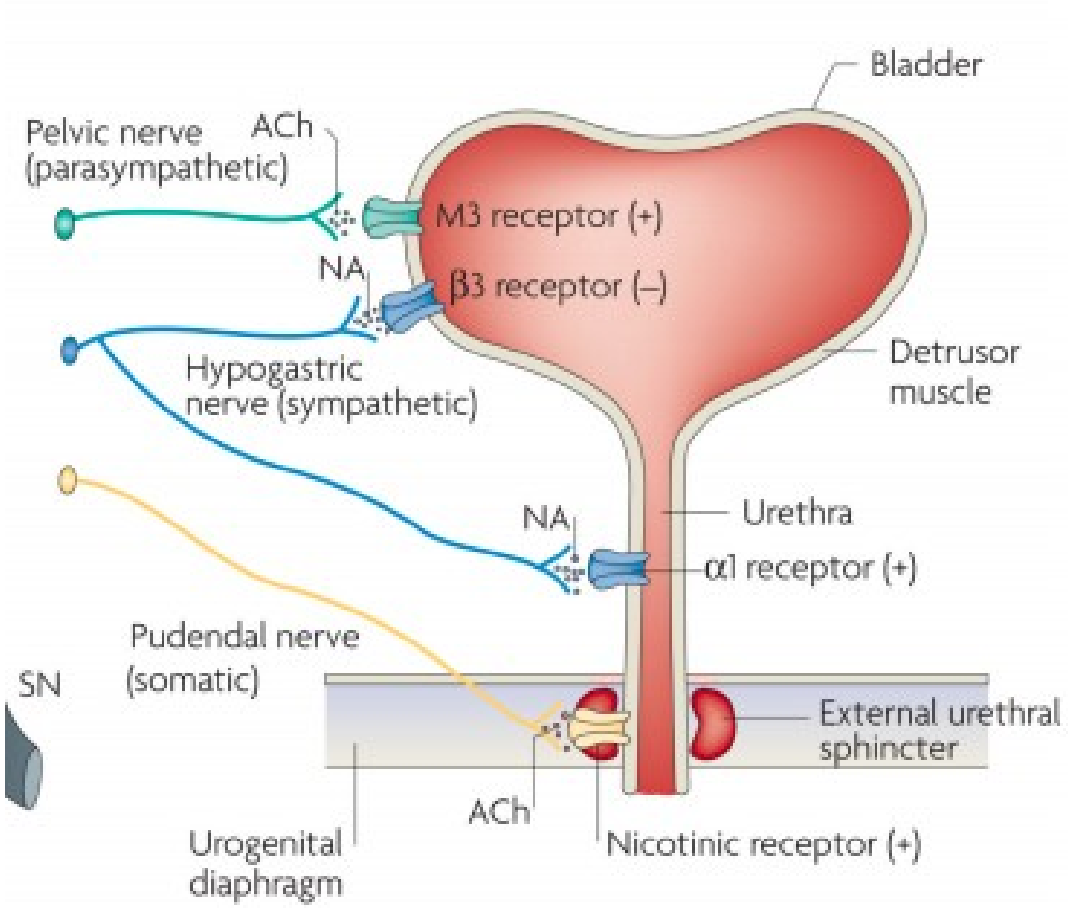


- Bladder relaxes
- Sphincter closes

- Bladder squeezes
- Sphincter relaxes

Abrams P, et al. Br J Urol. 1998;81(6):801-810; Wein AJ, et al. Urology. 1998;51(2A suppl):43-47.

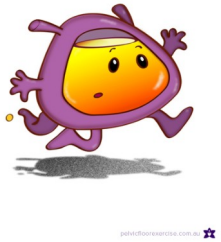
Neurotransmitters



Fowler CJ, Griffiths D, de Groat WC. The neural control of micturition. Nat Rev Neurosci. Nature Publishing Group; 2008 Jun.;9(6):453–66.

Filling and Storage Problems

- Bladder Problem
  - Bladder over activity
    - Urinary frequency, urinary urgency, urinary incontinence
  - Impaired compliance
    - Bladder does not stretch as it fills
- Outlet problem
  - Stress urinary incontinence
    - Leaking with cough, laugh, sneeze exercise
    - Lack of urethral support
    - Common in women after childbirth



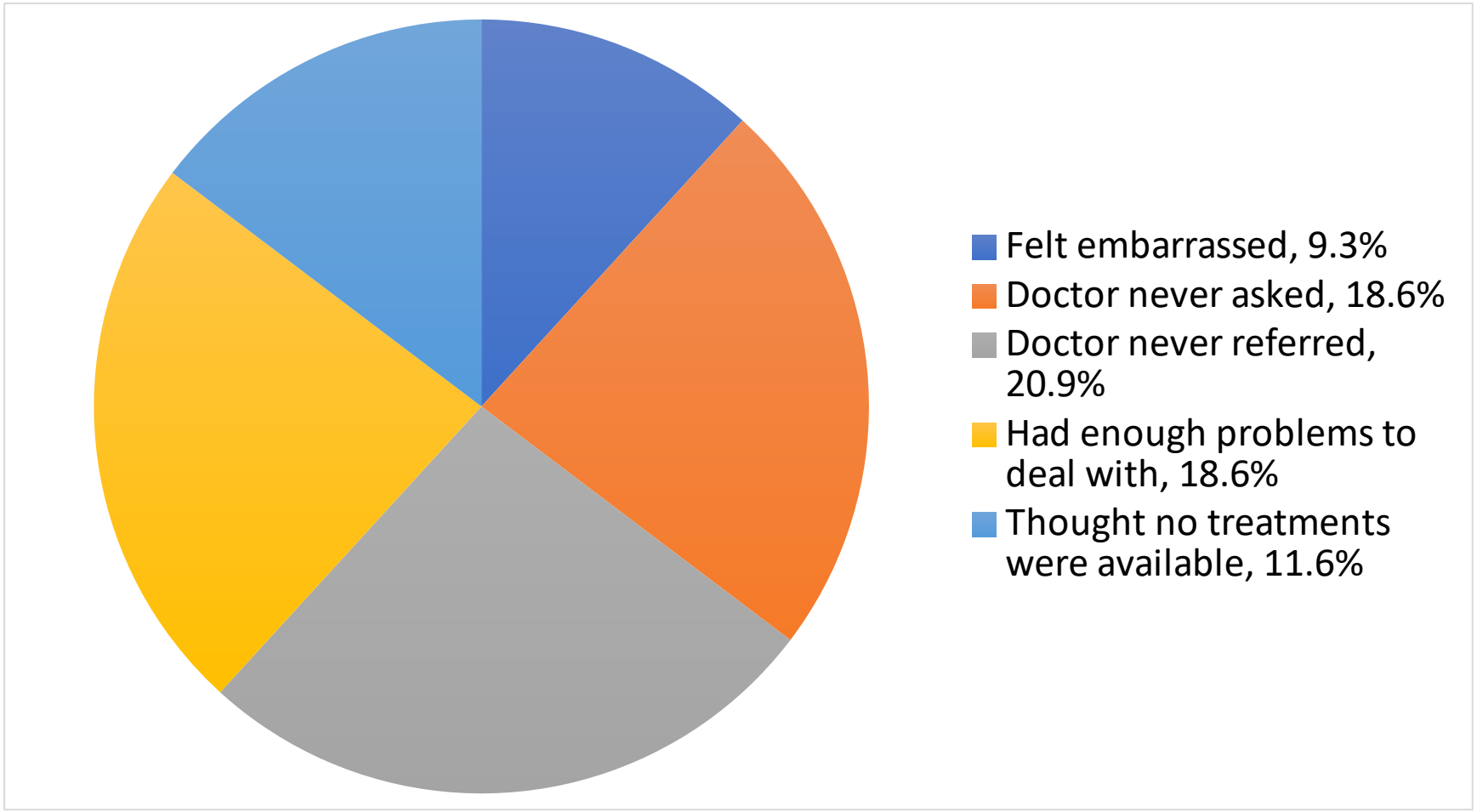
Bladder Emptying Problems

- Bladder Problem
  - Bladder does not squeeze
- Outlet Problem
  - Bladder squeezes but something is blocking the flow of urine
    - Internal sphincter doesn’t relax
    - External sphincter doesn’t relax
    - Obstructing prostate (men)
    - Narrowing of urethra due to scar
    - Pelvic organ prolapse (women)

Goals of Treatment

- Safety
  - Preserve renal function, prevent infections and skin breakdown
- Symptoms
  - Treat bother, improve quality of life for both patients and caregivers

Barriers: Identification and Follow up



Brucker BM, Nitti VW, Kalra S, Herbert J, Sadiq A, Utomo P, et al. Barriers experienced by patients with multiple sclerosis in seeking care for lower urinary tract symptoms. Neurourol Urodyn. 2016 Aug 22.

Standard Urology Evaluation

- Detailed history and physical exam
- Urinalysis/Culture
- Post void residual
  - How much urine is left behind after you urinate

Renal Ultrasound

- Look at health of renal tissue
- Ensure no hydronephrosis (swelling of kidneys)
- Look for kidney stones
- Make sure bladder empties well

Urodynamics

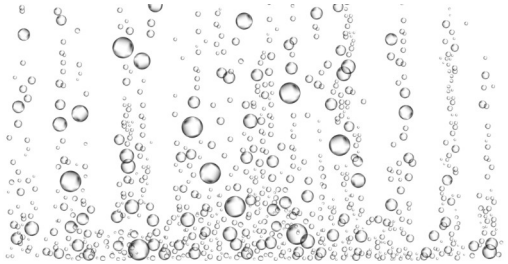
- Evaluated bladder filling pressure
- Looks for abnormal contractions of bladder
- Evaluates tone in external sphincter
- Evaluates strength of urine stream and bladder ability to squeeze
- When used with x-ray can look for reflux of urine into kidneys

Treatment

Conservative management

- Behavioral modification
  - Patient education
  - Bladder training
  - Timed voiding
  - Fluid and dietary management
  - Weight loss
  - Pelvic floor education
  - Biofeedback training
- Consideration
  - Living facility, mobility, dexterity
  - Bowel habits, weight

Common Bladder Irritants



Incontinence products

External catheters

Overactive bladder: Medications

Anticholinergics

Ex) oxybutinin, tolterodine, trospium, solifenacin,darifenicin, fesoteradine

SE: dry eyes, dry mouth, constipation, confusion

B3 Agonist

Ex) Mirabegron and Vibegron

SE: headache, BP effect (mirabegron)

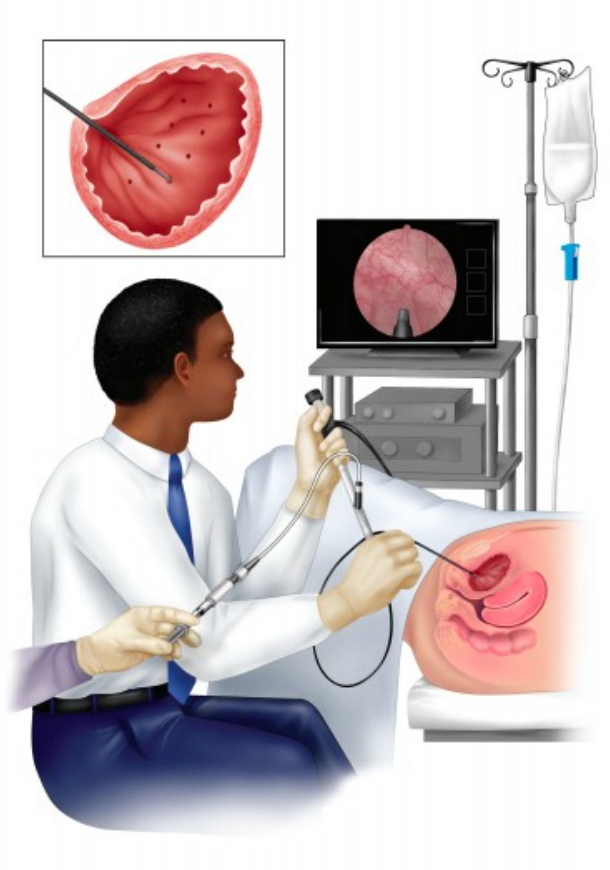
Overactive Bladder:
Third Line Therapies

- Bladder Botox
- Peripheral Tibial Nerve Stimulation*
- Sacral Neurobmodulation*

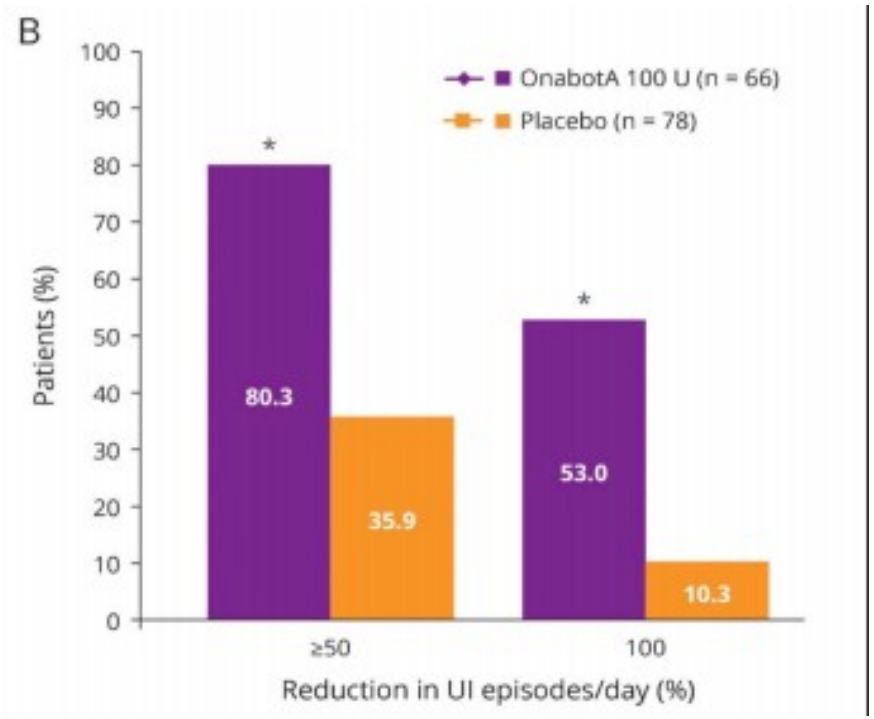
* Not FDA approved for neurologic urinary dysfunction

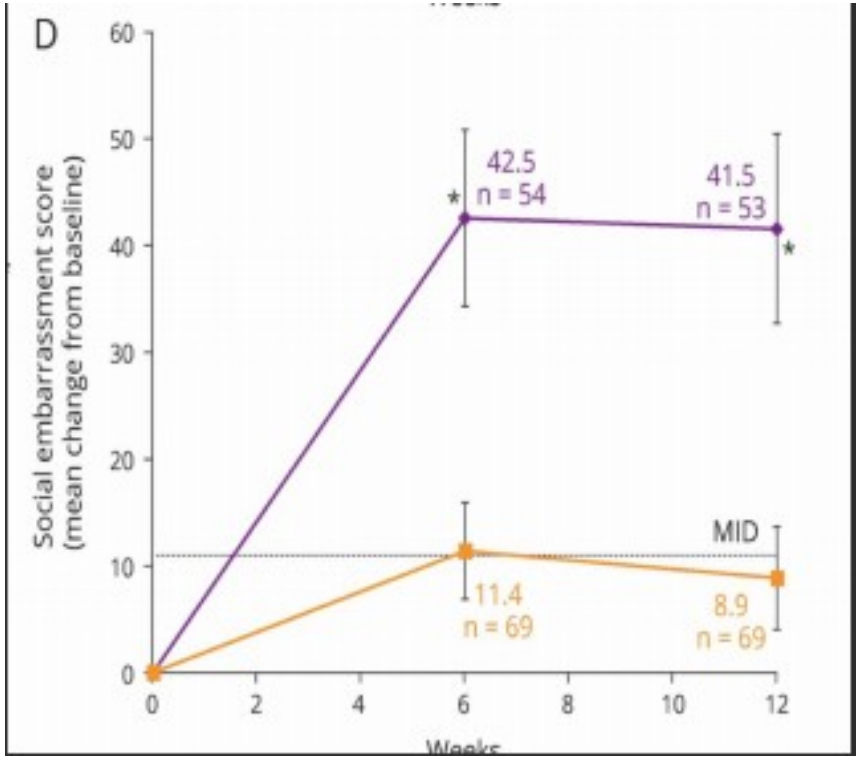
Bladder Botox

- Toxin produced by bacteria that temporarily paralyzes bladder muscle
- Relaxes bladder so that it can hold more
- Can be done in the office
- Lasts 3 to 12 months and
- SE: urinary tract infection, urinary retention



Bladder Botox:
"I don't want to catheterize"





Rate of catheterization after Botox 100U 15.2% (vs. 2% for placebo)

Low-dose onabotulinumtoxinA improves urinary symptoms in noncatheterizing patients with MS Tullman, , Chartier-Kastler, Kohan, Keppenne, Brucker, Egerdie, Mandle, Nicandro, Jenkins, Denys, Neurology 2018;91:e657-e665

Peripheral Tibial Nerve Stimulation

- Similar to acupuncture; weekly x 12 weeks
- Minimally invasive/low risk
- Time intensive for patients
- Not FDA approved for neurogenic bladder
- More data needed in MS

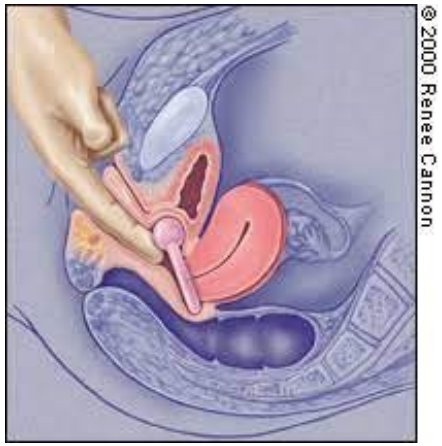
Sacral Neurmodulation

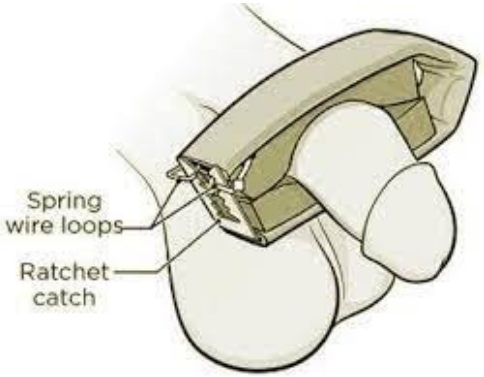
- Bladder pacemaker in sacral nerves
- Now MRI compatible
- FDA approved for:
  - non neurogenic overactive bladder
  - incomplete bladder emptying
  - fecal incontinence
- More data needed in MS
- Small series show good response in MS patients with overactive bladder and retention due to abnormal sphincter function (but not in patients with underactive bladder muscle)

Minardi, D & Muzzonigro G. Sacral Neuromodulation in patients with multiple sclerosis. World J Urol (2012) 30: 123-128

Stress Incontinence

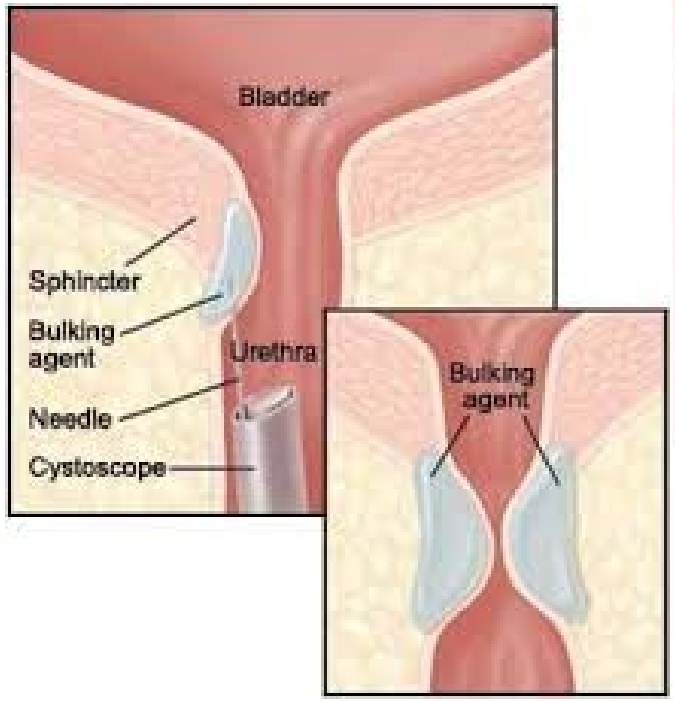
- Conservative management
  - Behavioral Changes
  - Pelvic Floor exercises
  - Weight Loss
  - Incontinence Inserts/Cunningham clamp



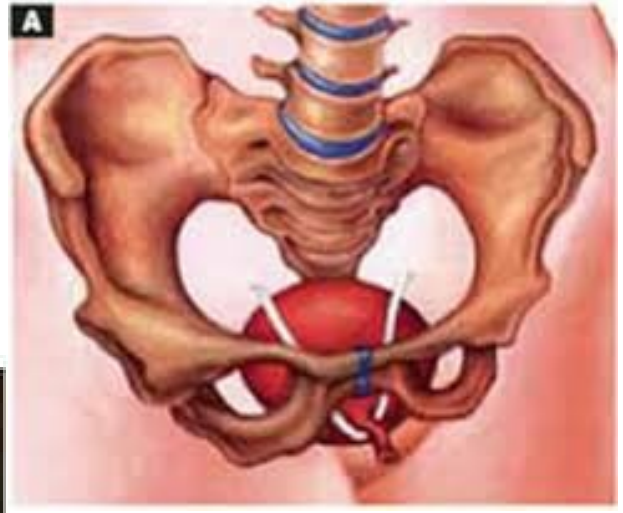


Stress incontinence: Surgery

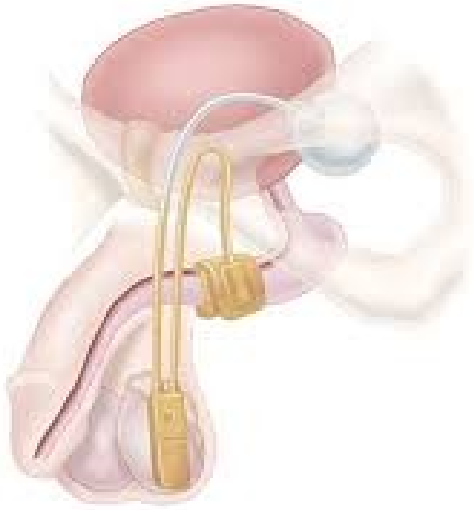
Urethral Bulking



Sling



Artificial Urinary Sphincter



Emptying problems

- Treat obstruction if present
  - Enlarged prostate
  - Urethral stricture
  - Pelvic organ prolapse
  - Pelvic floor dysfunction

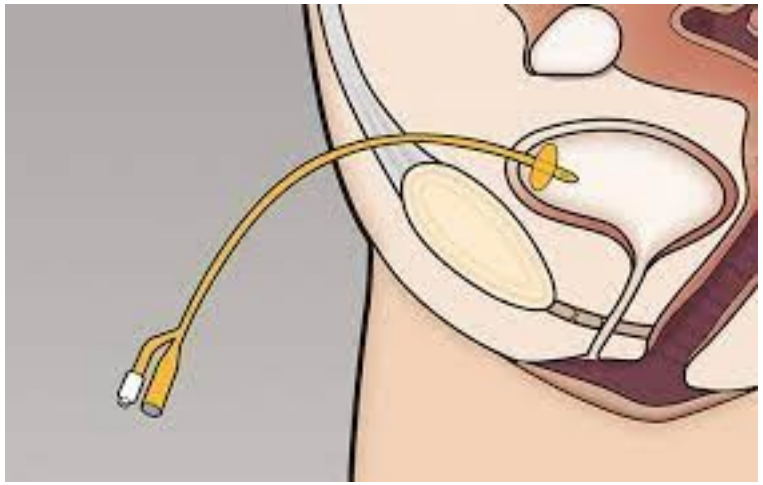
Emptying problems

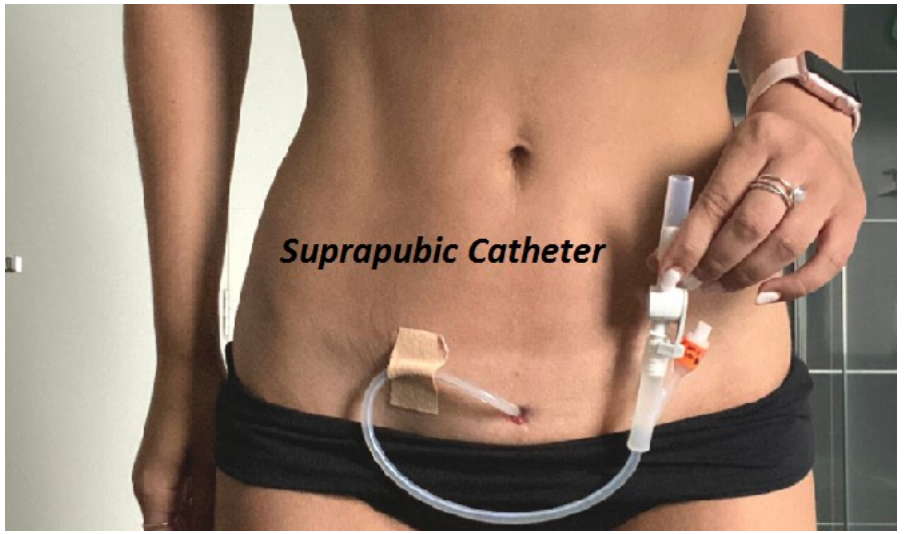
- Conservative management
  - Intermittent Catheterization
  - Suprapubic catheter
  - Indwelling catheter (avoid if possible)

Intermittent Catheterization

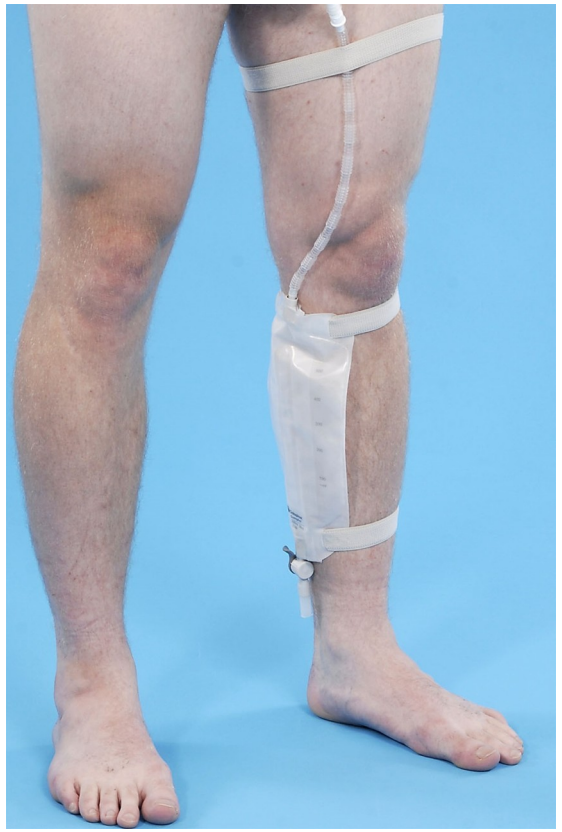
- Goals
  - Drain bladder regularly
  - Stay dry
  - Avoid overfilling of bladder

Suprapubic Catheter



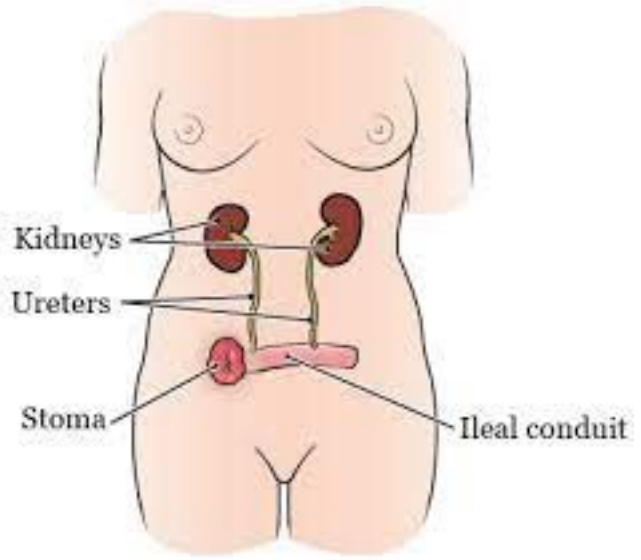


Catheter Drainage Bag



Emptying Problems

- Surgery
  - Botox of urinary sphincter
  - Surgical urinary diversion
  - ? Sacral neuromodulation



Urinary tract infection

- Symptomatic urinary tract infection
  - Fevers, chills, pain, burning with urination, ACUTE change in urologic symptoms, MS flare
  - Foul smell alone should not be treated as an infection

- Bacteria in the urine without symptoms is called **asymptomatic bacteriuria** and should not be treated

Table 3 Genitourinary syndrome of menopause (GSM): symptoms and signs

Symptoms	Signs
Genital dryness	Decreased moisture
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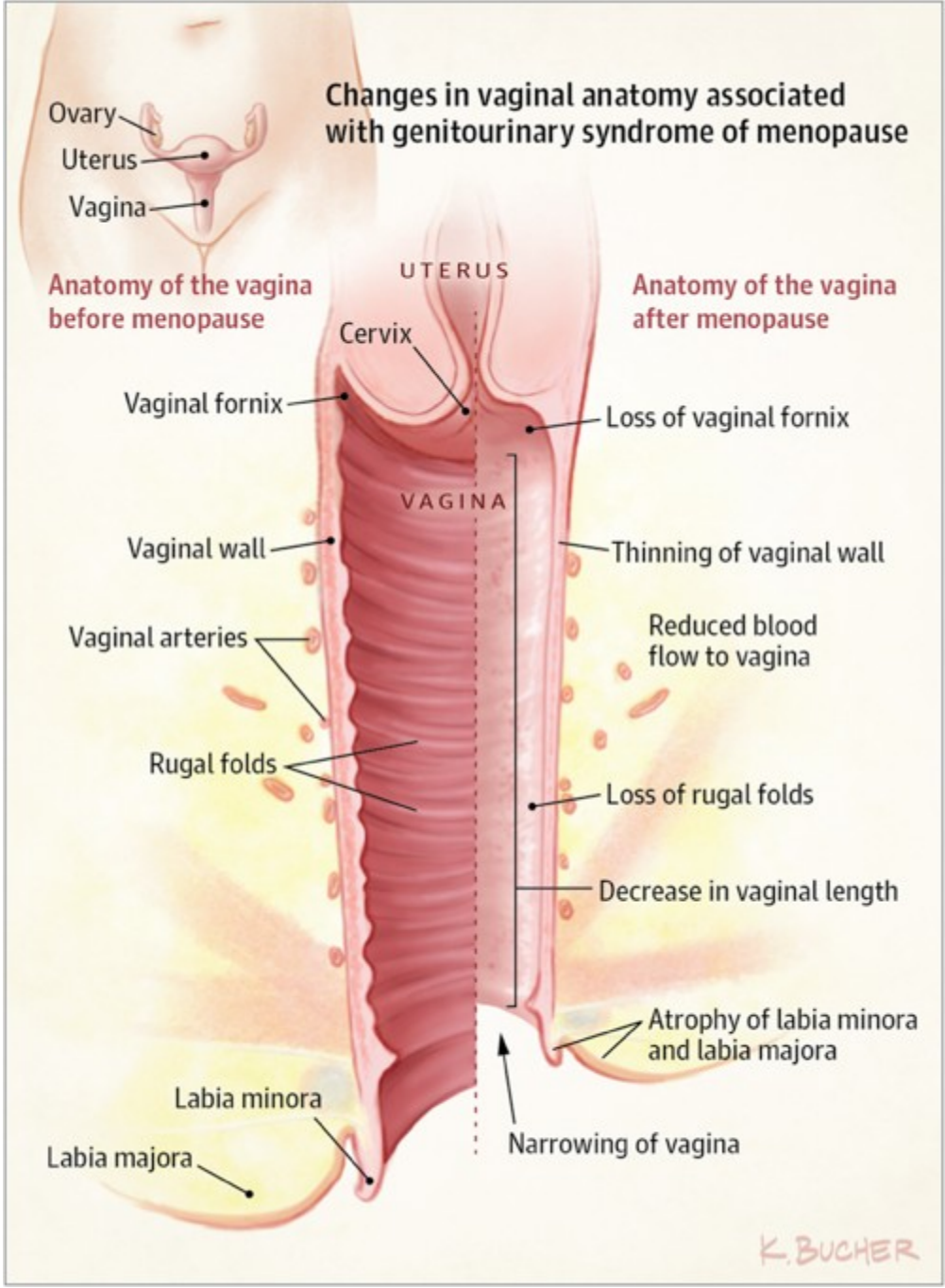

Jin J. *JAMA.* 2017;317(13):1388

Recurrent Uncomplicated Urinary Tract Infections in Women: AUA/CUA/SUFU Guideline (2019)

Published 2019

Unabridged version of this guideline [pdf]
Algorithm associated with this guideline [pdf]
Canadian French translated guideline courtesy of Canadian Urological Association (CUA). [pdf]

Panel Members

Jennifer Anger, MD, MPH; Una Lee, MD; A. Lenore Ackerman, MD, PhD; Roger Chou, MD; Bilal Chughtai, MD; J. Quentin Clemens, MD; Duane Hickling, MD, MSCI; Anil Kapoor, MD; Kimberly S. Kenton, MD, MS; Melissa R. Kaufman, MD, PhD; Mary Ann Rondanina, Ann Stapleton, MD; Lynn Stothers, MD; Toby C. Chai, MD

Estrogen

Guideline Statement 16

In peri- and post-menopausal women with rUTIs, clinicians should recommend vaginal estrogen therapy to reduce the risk of future UTIs if there is no contraindication to estrogen therapy. (Moderate Recommendation; Evidence Level: Grade B)

Discussion

Treatment	Product Name	Dose
Vaginal Cream		
17-beta- estradiol cream	Estrace, generic	1gm daily for 2 weeks then 1gm 2x per week
Conjugated estrogens cream	Premarin	1gm daily for 2 weeks then 1gm 2x per week
Vaginal Inserts		
Estradiol	Vagifem, Yuvafem,	10mcg inserts daily for 2 weeks and then 2x per week
17-beta-estradiol soft gel caps	Imvexxy	4 OR 10 mcg inserts daily for 2 weeks and then 2x per week
DHEA (prasterone)	Intrarosa	6.5mg capsules daily
Vaginal Ring		
17-beta-estradiol ring	Estring	1 ring inserted every 3 months
SERM		
Ospemifene	Osphena	60mg oral tablet daily

UTI prevention

- Hydration
- Cranberry supplements
- D-Mannose
- Methenamine
- Vaginal estrogen in postmenopausal women

Thank You

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