



1

---

---

---

---

---

---

---

---

**(407) Advanced Therapies for the Management of UI / LUTS**  
**Dr Beth Shelly PT, DPT, PWCS, BCB PMD**

- Doctor of Physical Therapy
- Board certified in pelvic / women's health
- Board certified in PFM biofeedback
- [beth@bethshelly.com](mailto:beth@bethshelly.com)
- [www.education.bethshelly.com](http://www.education.bethshelly.com)




2

---

---

---

---

---


---

---

---

**DISCLOSURE OF FINANCIAL RELATIONSHIPS**

- I do not have any relevant relationships to disclose.



3

---

---

---

---

---

---

---

---

**Learner objective**

- List advanced assessment techniques for lower urinary tract symptoms (LUTS)
- Discuss thought processes in prescribing interventions.
- Adult men and women
- Assuming a good medical work up and addressing of medical conditions has already been completed



4

---

---

---

---

---

---

---

---

**Several Reference Documents - CPG**

- American Urological Association (AUA) / Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction (SUFU)
- International Consultation on Continence (ICI) / International Continence Society (ICS)
- European Association of Urologists (EAU)
- Pelvic Academy of the American Physical Therapy Association (APTA)
- National Institute for Health and Care Excellence (NICE)



5

---

---

---

---

---

---

---

---

**Several Reference Documents**

- Cameron AP, et al. The **AUA/SUFU** guideline on the diagnosis and treatment of idiopathic overactive bladder. J Urol. Published online April 23, 2024.
- Cardozo L, Rovner E, Wagg A, Wein A, Abrams P, eds. *Incontinence*. 7 ed. **ICI/ICS**. International Continence Society; 2023.
- Harding CK, et al. **EAU** Guidelines. Edn. presented at the EAU Annual Congress, Madrid 2025. ISBN 978-94-92671-29-5.
- McAuley J, et al. Clinical Practice Guidelines: Rehabilitation Interventions for Urgency Urinary Incontinence, Urinary Urgency, and/or Urinary Frequency in Adult Women. Journal of Women's & Pelvic Health Physical Therapy 47(4):p 217-236, October/December 2023. **APTA**
- **NICE** Guideline: Urinary incontinence and pelvic organ prolapse in women: management. Last reviewed: 26 March 2025.



6

---

---

---

---

---


---

---

---

### AUA CPG on Urgency (AUA / SUFU 2024)

Treatment category	Description	Examples
<b>Incontinence Management Strategies</b>	Products to better cope with or tolerate urinary incontinence. These do not treat or prevent incontinence, rather they reduce adverse sequelae of incontinence, such as urine dermatitis.	Diapering, pads, liners, absorbent underwear, barrier creams, external urine collection system, condom catheters
<b>Behavioral Therapies</b>	Actions that patients with OAB can perform at home to directly address and improve their OAB symptoms. Can be supported by education or training but are driven by the patient.	Timed voiding, urgency suppression, fluid management, bladder irritant (caffeine, alcohol) avoidance
<b>Optimization of Comorbidities</b>	Medical conditions known to affect the severity of OAB that can be treated or managed.	BPH, constipation, diuretic use, obesity, diabetes mellitus, genitourinary syndrome of menopause, pelvic organ prolapse, tobacco abuse
<b>Non-invasive Therapies</b>	Treatments provided by a nurse or allied health professional that may involve practice or treatments at home.	Pelvic floor muscle training, biofeedback, transcutaneous tibial nerve stimulation, electromagnetic therapy



7

---

---

---




---


---

---

---

---

	<b>Pelvic floor muscle training (PFMT)</b>	Electromyography (EMG) Ultrasound
	<b>Dysfunctional Nervous System</b>	Meditation / breathing Electrical stimulation
	<b>Behavioral Training</b>	Measured bladder diary Bladder training / fluid intake



8

---

---

---

---

---


---

---

---

## Pelvic floor muscle training (PFMT)

Electromyography (EMG)  
Trans perineal ultrasound (TPUS)



9

---

---

---

---

---

---

---

---

### PFMT Case #1 ML

- ML is referred to therapy for mixed urinary incontinence (MUI) and reports leakage on jumping rope with her kids and on arriving home with urgency 4 times per week
- On external perineal observation
  - No perineal movement is seen externally with PFM contraction
- On internal vaginal palpation
  - No PFM movement is felt internally with contraction
  - Firm tissue with 2/10 pain on palpation



10

---

---

---

---

---

---

---

---

### What is the most likely PFM diagnosis?



- Decreased tone / PFM weakness
- PFM incoordination
- Increased PFM tone / spasm
- Need more information



11

---

---

---

---

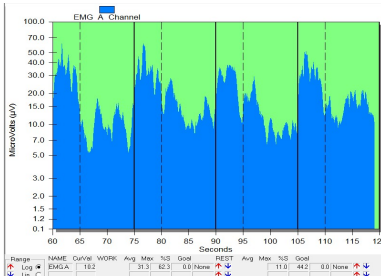
---

---

---

---

### EMG Assessment



- Underactive PFM / weakness
- PFM Incoordination
- Overactive PFM / spasm



12

---

---

---

---

---


---

---

---

**What PFM treatment would you suggest for this patient?**

- PFM strength training
- PFM relaxation training followed by coordination training
- The PFM is normal and does not require treatment
- Bearing down for defecation



13

---

---

---

---

---


---

---

---

**PFMT Case #1 ML**

- Incorrect assessment of PFM weakness
  - PFM strength training
  - May not improve symptoms or may increase symptoms
- Correct assessment of increased PFM tone / overactive PFM
  - Firstly learn relaxation
  - Second improve coordination
  - Last retest contractile function and treat as indicated
  - Better clinical outcome



14

---

---

---

---

---


---

---

---

**PFMT for Urgency, Frequency, urgency urinary incontinence (UUI)**

- PFMT has been recommended as a first line treatment for UUI (ICI 2023)
- What type of training is best (Das 2025)
- **Strength training**
  - Closure of urethra to successfully hold while ambulating to toilet
  - Stability of pelvic organs to improve neural stability
  - Strong PFM contraction inhibits detrusor contraction
- **Quick flick and coordination training**
  - Afferent input via pudendal and pelvic nerves as a neuromodulation
  - Contracting the PFM at the time of urgency
- **Relaxation training**
  - Overactive PFM with increased tone has been associated with urgency and frequency especially in conditions like Interstitial cystitis (IC)



15

---

---

---

---

---


---

---

---

### Accurate PFM Assessment (Frawley 2021)

- Symptoms
- Clinical assessment / signs
  - External visualization at rest and with contraction and bearing down
  - External and internal palpation for pain and tone
  - Contractile testing - strength, endurance, coordination.....
- Investigations
  - EMG - muscle activation pattern
  - Imaging ultrasound - tissue morphology and distance of movement
  - Manometry - pressure changes



16

---

---

---

---

---

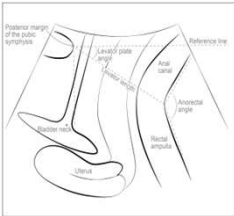
---

---


---

### Trans Perineal Ultrasound (TPUS) - female

- Bladder neck position
- Levator plate angle
- Levator hiatus
- Anorectal angle



Frawley 2021



17

---

---

---

---

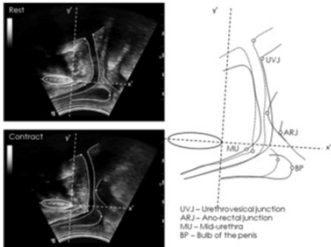
---

---


---

---

### Trans Perineal Ultrasound (TPUS) - male



Frawley 2021



18

---

---

---

---


---

---

---

---

**Re-thinking PFMT in Men**




Urologic Oncology: Seminars and Original Investigations 000 (2019) 1–18

**UROLOGIC ONCOLOGY**

Clinical-Prostate cancer  
 Reconsideration of pelvic floor muscle training to prevent and treat incontinence after radical prostatectomy

Paul W. Hodges, M.D., Ph.D.<sup>1,2,\*</sup>, Ryan E. Stafford, Ph.D.<sup>3</sup>, Leanne Hall, Ph.D.<sup>4</sup>, Patricia Neumann, Ph.D.<sup>5</sup>, Shan Morrison, BAppSc(Phy)<sup>6</sup>, Helena Frawley, Ph.D.<sup>4</sup>, Stuart Doorbar-Baptist, M.Sc.<sup>5</sup>, Irmina Nahon, Ph.D.<sup>7</sup>, Jason Crow, M.Phys.St.<sup>8</sup>, Judith Thompson, Ph.D.<sup>3</sup>, Anne P. Cameron, M.D.<sup>1</sup>

<sup>1</sup>School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, Australia  
<sup>2</sup>University of South Australia, Adelaide, Australia




---

---

---

---

---

---

---

---


---

---

19

**PFMT Case #2 RR**

- Mr RR had a radical proctectomy 6 months ago.
- He received basic pre and post-operative PFMT
- He returns to therapy with persistent MUI – 4-5 medium pads per 24 hrs
- Patient notes he has been doing PFMT 10 second hold 30 times BID




---

---

---

---

---

---

---

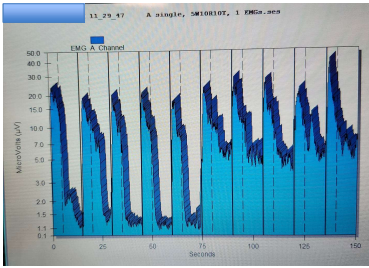

---

---

---

20

**PFMT Case #2 RR**


---

---

---

---

---

---

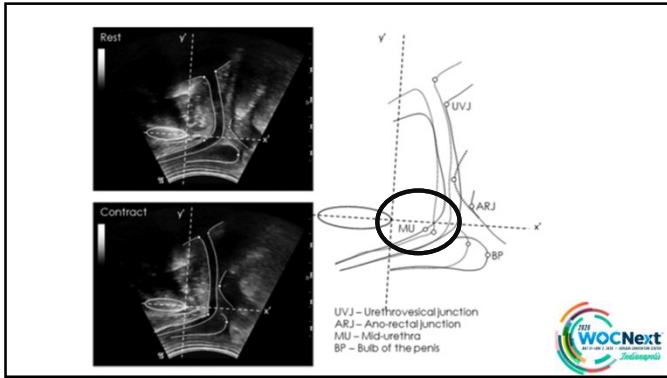
---

---

---

---

21



22

---

---

---

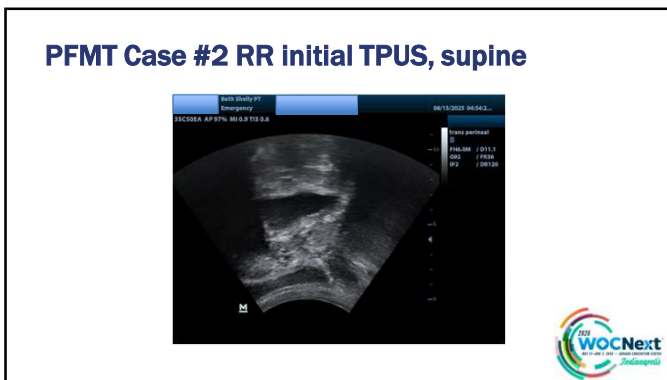
---

---

---

---

---



23

---

---

---

---

---

---

---

---

**PFMT Case #2 RR**

- With feedback the patient learned the correct anterior contract
- He realized he was working too hard and bearing down
- New PFMT using the correct technique, standing, 3 times per day
  - Strength and endurance – max hold, 5 second hold, 10 second rest, 15 times
  - Resting tone – submax (50%) hold 30 seconds work, 30 seconds rest, 5 times
  - Coordination training - awareness and avoidance of unnecessary increased intra abdominal pressure (IAP), body mechanics, inward abdominal bracing

24

---

---

---

---

---

---

---

---

### PFMT Case #2 RR final TPUS, standing



25

---

---

---

---

---

---

---

---

### PFMT in Men (Hodges 2019)



ANTERIOR PFM CONTRACTION IS ESSENTIAL FOR URINARY CONTINENCE



AVOID EXCESSIVE IAP DURING CONTRACTION



QUALITY IS MORE IMPORTANT THAN QUALITY



TEACH COORDINATION OF THE PFM DURING: BREATHING, LIFTING, TRANSFERS...



26

---

---

---

---

---

---

---

---

### Accurate PFM Assessment (Frawley 2021)

- Symptoms
- Clinical assessment / signs
  - External visualization at rest and with contraction and bearing down
  - External and internal palpation for pain and tone
  - Contractile testing - strength, endurance, coordination....
- Investigations
  - EMG - muscle activation pattern
  - Imaging ultrasound - tissue morphology and distance of movement
  - Manometry - pressure changes



27

---

---

---




---


---

---

---

---

	Pelvic floor muscle training (PFMT)	EMG Ultrasound
	Dysfunctional Nervous System	Meditation / breathing Electrical stimulation
	Behavioral Training	Measured bladder diary Bladder training / fluid intake



28

---

---

---

---

---


---

---

---

## Dysfunctional Nervous System

Meditation / breathing  
Electrical Stimulation



29

---

---

---

---

---


---

---

---

### Storage Symptoms (D'Ancona 2019)

- **Increased urinary frequency:** Complaint that voiding occurs more frequently than deemed normal by the individual (or caregivers). Time of day and number of voids are not specified.
- **Bladder filling (sensory) symptoms:** Abnormal sensations experienced during bladder filling.
  - **Increased bladder filling sensation:** Complaint that the sensation of bladder filling occurs earlier or is more intense or persistent to that previously experienced.
  - **Urgency:** Complaint of a sudden, compelling desire to pass urine which is difficult to defer.



30

---

---

---

---

---

---

---

---

### Urinary Urgency

- A bothersome sensation (Das 2025)
- Described in many different ways by different patients
  - Fullness, discomfort, urgent, painful
- Possibly representing different phenotypes
  - Hypersensitive (persistent) VS Urgency (quick and intense)
  - Gradually increasing sensation as the bladder fills VS Quick onset



31

---

---

---

---

---

---

---

---

### Urinary Urgency (Das 2025)

- Efferent / motor urgency - urgency with detrusor overactivity (DO)
  - 44% of women with urgency
  - 69% of men with urgency
- Structural urgency
  - Decreased detrusor compliance
  - Bladder outlet obstruction
- Afferent / sensory urgency - urgency without DO



32

---

---

---

---

---

---

---

---

### Nervous System Dysfunction – bi-directional (Das 2025, Reynolds 2016)

- Central modulation
  - Difference in brain activation on brain imaging scans
  - Bladder sensation is affected by factors other than bladder volume
  - Explore how choices to toilet are made



33

---

---

---

---

---

---

---

---

**Nervous System Dysfunction – bi-directional**

- Nervous system sensitization (central and peripheral)
  - Nervous system changes result in lower threshold for sensations
  - Associated with psychological distress (depression, anxiety, trauma experiences)
  - Psychological hypervigilance and overall anxiety state



34

---

---

---

---

---

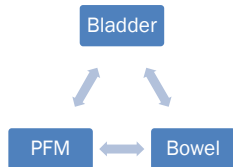
---

---

---

**Nervous System Dysfunction – bi-directional**

- Viscero-visceral/somatic cross talk (noisy neighbors)
  - Constipation contributes to early bladder sensations
  - Pain in other areas of the pelvis increase bladder sensations



35

---

---

---

---

---

---

---

---

**Identification of Dysfunctional Nervous System (Nijs 2021, Reynolds 2016)**

- Diagnosis
  - Anxiety, depression, post traumatic stress disorder (PTSD)
  - Medication such as gabapentin
  - Chronic pain states – fibromyalgia, chronic spine pain
- Clinical presentation
  - Pain with light touch, exaggerated pain response – nociplastic pain
  - Central sensitization index questionnaire (Schuttert 2023)



36

---

---

---

---

---

---

---

---

### Dysfunctional Nervous System Case #3 KL

- KL is an 88-year-old female who arrives with her daughter for treatment of urinary urgency which is causing her great distress and limiting her participation in social activities.
- She has mild dementia and moderately severe anxiety
- The patient is unable to accurately complete the bladder diary and is frequently agitated during her clinic visits.
- You suspect her anxiety is affecting her bladder dysfunction.



37

---

---

---

---

---

---

---

---

### How would you address KL's anxiety related to bladder sensation?

- No treatment of anxiety is needed as she is already on medications
- Ask her daughter to visit the patient more to calm her down
- Teach the patient the physiology behind meditation
- Speak calmly during the sessions and encourage relaxation breathing



38

---

---

---

---

---

---

---

---

### Meditation / Breathing



39

---

---

---

---

---

---

---

---

### Address the Patient's Mental State

- Acknowledge it might have an impact on the patient's symptoms
- Consider consulting with primary MD or other mental health professionals
- Encourage the patient to seek out community or internet resources on meditation / mindfulness
- Provide referral to community or internet resources on meditation / mindfulness
- Avoid communication that could provoke anxiety / worry
- Avoid treatments that could increase pain or discomfort if possible
- More closely monitor the patient's progress



40

---

---

---

---

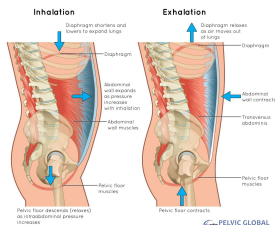
---

---

---

---

### Diaphragm Breathing = Overall Relaxation



- Ribs relatively quiet
- Medium breath
- Inhale Belly out  
– Perineum down
- Exhale belly in

Let's Try



41

---

---

---

---

---

---

---

---

### Meditation / Mindfulness

- Many options
- Due diligence needed to ensure accuracy and quality
- Apps, Websites, Books, Blogs, Local businesses
- Yoga, Tai Chi
- Gentle persistence
- Multimodal treatment



42

---

---

---

---

---

---


---

---

### Non - Invasive Therapies (AUA/SUFU 2024)

13. Clinicians may offer select non-invasive therapies to all patients with overactive bladder OAB. (Clinical Principle)

PMFT (e.g., urge suppression, muscle strengthening)	→
Magnetic stimulation	
Transcutaneous electrical stimulation	
TTNS	
Transvaginal electrical stimulation	
Yoga	
Hypnosis	
PFMT: pelvic floor muscle therapy; TTNS: transcutaneous tibial nerve stimulation	
<i>*not listed in order of efficacy or recommendation</i>	




---

---

---

---

---

---

---

---

43


### Electrical Modalities – Treat the Nerves

TENS at the sacrum or suprapubic region

Vaginal or rectal electrical stimulation

TTNS / PTNS

TENS = transcutaneous electrical stimulation  
 TTNS = transcutaneous tibial nerve stimulation  
 PTNS = Percutaneous tibial nerve stimulation




---

---

---

---

---

---

---

---

44


### How much do you use electrical stimulation (ES) in your practice?

TENS at the sacrum or suprapubic region

Vaginal or rectal electrical stimulation

TTNS / PTNS

Beth's practice  
 Vaginal - infrequent  
 Sacral or lower abdomen - Moderate  
 TTNS - Moderately frequently




---

---

---

---

---

---

---

---

45

### Electrical Modalities

- The quality of research in the effect of electrical stimulation on bladder dysfunction is poor and inconsistent.
- It is difficult to draw accurate conclusions and make reliable recommendations
- Do not routinely use electrical stimulation in the treatment of women with OAB. (NICE 2019)
- Moderate certainty evidence for ES: ES is more likely to improve OAB symptoms compared to sham control, no treatment, PFMT, and drug treatment, from a Cochrane review. (EUA 2025)



46

---

---

---

---

---

---

---

---

### Vaginal or Rectal Electrical Stimulation (ES) (ICI 2023)

- No evidence from which to draw conclusions about the effect of adding ES to PFMT for UUI. (Level of evidence: 2)
- Some patient's request vaginal ES
- As a last resort
- Currently I use very little in my clinic



47

---

---

---

---

---

---

---

---

### TENS at the sacrum or suprapubic region



48

---

---

---

---

---

---

---

---

### TENS at the sacrum or suprapubic region

- In my practice - when the patient has constant discomfort / urgency in the lower belly
- Try in the clinic to see if it distracts the sensation adequately
- Start with 100 Hz continuous and vary as needed
- Used as much as needed while other treatments are being provided
- Often only helps in acute phase of treatment
- Can be used again later for flare



49

---

---

---

---

---

---

---

---

### PTNS vs TTNS

- PTNS and TTNS have similar effects (Yang 2021)
- TENS units cost under \$50 and are easily accessible
- Patients complete the treatment at home
- Very few adverse events



50

---

---

---

---

---

---

---

---

### Transcutaneous Tibial Nerve Stimulation (TTNS)

- Evidence quality: 2
- Grade of recommendation: B
- Health care providers should use low-frequency TTNS for symptoms of urgency UUI, and/or urinary frequency in the absence of contraindications for ES. (APTA 2023)
- Taken together, current evidence from these guidelines and clinical trials suggests that TTNS is likely to benefit a patient with the symptoms of urinary urgency, frequency, UUI and SUI. TTNS has similar cure rates and reduction of symptoms as drug therapy. (Swenck 2025)



51

---

---

---

---

---

---

---

---



52

---

---

---

---

---


---

---

---

**Transcutaneous Tibial Nerve Stimulation (TTNS)**

- Technique (Swenck 2025)
  - Unilateral application
  - 3 to 5 times weekly or more
  - Pulse frequency 10 Hz
  - Pulse width 200  $\mu$ sec
  - 30 minutes application time
  - Motor level stimulation best (Vaca-Benavides 2025)
- Patients should have measurable improvement in 1 month
- Active treatment continues for 3 months
- Wean down to maintenance 1 time per month



53

---

---

---

---

---


---

---

---

**PTNS = Percutaneous tibial nerve stimulation**

- 34-gauge needle is inserted at the tibial nerve 4-5 inches cephalad to the medial malleolus
- Ground is placed on the medial foot
- Continuous square wave form with a duration of 200  $\mu$ s and a frequency of 200 Hz.
- The intensity of the current is determined by the highest level tolerated by the patient.
- The stimulation sessions last for 30 min. once per week for 12 weeks
- Bhide 2020



54

---

---

---




---


---

---

---

---

	<b>Pelvic floor muscle training (PFMT)</b>	EMG Ultrasound
	<b>Dysfunctional Nervous System</b>	Meditation / breathing Electrical stimulation
	<b>Behavioral Training</b>	Measured bladder diary Bladder training / fluid intake



55

---

---

---

---

---

---

---

---

### EVALUATION/DIAGNOSIS (AUA/SUFU 2024)


In the initial office evaluation of patients presenting with symptoms suggestive of OAB, clinicians should:

- obtain a medical history with comprehensive assessment of **bladder symptoms**,
- conduct a **physical examination**, and
- perform a **urinalysis** to exclude microhematuria and infection.

Clinicians may obtain a **post-void residual**

Clinicians may obtain a **symptom questionnaire and/or a voiding diary**

Clinicians should not routinely perform urodynamics, cystoscopy, or urinary tract imaging on the initial visit unless diagnostic uncertainty exists.



56

---

---

---

---

---

---


---

---

**Bladder Diary**

**3 day**

DAY	Day 1				Day 2				Day 3			
	toilet	leak	reason	fluid	toilet	leak	reason	fluid	toilet	leak	reason	fluid
6 am												
7 am												
8 am												
9 am												
10 am												
11 am												
12 am												
1 pm												
2 pm												
3 pm												
4 pm												
5 pm												
6 pm												
7 pm												
8 pm												
9 pm												
10 pm												
11 pm												
12 pm												
1 am												
2 am												
3 am												
4 am												
5 am												
Total												
*not used												



57

---

---

---

---

---

---

---

---



### Urgency urinary incontinence (UII)

time	Urinate in toilet	Urge 0-4	leak	Fluid intake
5 AM				
6 AM	X	3	X strong urge	8 oz water
7 AM				
8 AM				12 oz coffee
9 AM				
10 AM	X	4		
11 AM	X	3		
12 noon	X	4	X strong urge	16 oz soda
1 PM				
2 PM				




---

---

---

---

---

---

---

---

---

---

61

### Look for relationship of caffeine and symptoms in bladder diary

time	Urinate in toilet	Urge 0-4	leak	Fluid intake
5 AM				
6 AM	X	3	X strong urge	8 oz water
7 AM				
8 AM				12 oz coffee
9 AM				
10 AM	X	4		
11 AM	X	3		
12 noon	X	4	X strong urge	16 oz soda
1 PM				




---

---

---

---

---

---

---

---

---

---

62

### Type of Fluid Intake / Irritants

- Caffeine - conflicting evidence, about 50% have sensitivity
- Alcohol - some evidence this is an irritant
- Nicotine - smoking is associated with increased UI symptoms and cessation can decrease the symptoms
- Carbonated beverages
- Artificial sweeteners
- High acid sensitivity

Irritant challenge test  
3 days




---

---

---

---

---

---

---

---

---


---

63

**Relationship of desire to void to size of void**

- Often there is not a relationship with small voids occurring on high desire and large voids occurring on low desire

Bladder sensation	Volume of void in ml or %
2	220
1	275 BM
3	275 SUI
4	100
3	150



64

---

---

---

---

---

---

---


---

---

---

**Day Analysis (Tossit 2008)**

V24	Total 24 hour urine volume
F24	Total 24 hour frequency
Vave	Average volume per void V24 / F24
Vmax	Maximum single volume per void



65

---

---

---

---

---

---

---

---


---

---

Age	20	30	40	50	60	70	80	Mean Range	Median (5 <sup>th</sup> -95 <sup>th</sup> %)
V24	1250	1500	1750	1900	1850	1750	1500	1250-1900	1,576 (734 - 3,150)
Vavg	200	225	250	250	245	230	215	200-250	237 (119 - 406)
Vmax	400	485	525	530	515	485	385	400-530	480 (250 - 775)
F24	6.5	6.8	7	7	7.3	7.7	7.9	6.5-8	7.0 (4.4 - 10.4)

V24	1000	1500	2000	2500	3000	Range
→	4c = 32 oz	6c = 48 oz	8c = 64 oz	10.5c = 84 oz	12.5c = 100 oz	
Vavg	180	225	275	300	350	180-350
Vmax	400	480	580	650	725	400-725
F24	6	6.8	7.5	8	8.5	6-8.5



66

---

---

---

---

---

---

---


---

---

---

### Measure Bladder Diary Analysis

	Calculate	Interpret
V24		
F24		
Vave		
Vmax		



67

---

---

---

---

---

---


---

---

### Patient #1 - 83 yo male

Name: 83 yo male - patient #1  
 Circle wake time and bed time  
 Mark BM occurrence.

Specific time	Volume of void in ml or %	Desire to void 0 to 4	Leak volume 1 to 3	Felt leak with activity	Felt leak with strong urge	Wetness discovered	Drink type/ amount	Desire to void 0 = none 1 = mild 2 = mod 3 = severe 4 = urgent
5 AM								
6 AM	240	0						
7 AM								
8 AM	120	4	1		Urge		6 oz water 8 oz milk 4 oz oj	Leak volume 1 = damp 2 = wet 3 = soaked
9 AM								
10 AM								
11 AM	150	4	1		Sitting		8 oz water	
12 PM	60	2	1	Walking			8 oz water	
1 PM								



68

---

---

---

---

---


---

---

---

### Measure Bladder Diary Analysis pt #1

	Calculate	Interpret
V24	1760 output 1860 intake (62 oz) No irritants	within median range 62 oz, good
F24	14 #4 - 5 times / 24 hr	High for age - norm = 7.7 High for V24 - norm = 7
Vave	1760/14 = 125.7	Low for V24 - norm = 250 Low for age - norm = 280
Vmax	240	Low of V24 norm = 500



69

---

---

---

---

---

---

---

---

### Patient #1 - 83 yo male

- Fluid volume – WNL, no change
- Fluid type – no irritants, no change
- Fluid timing – WNL, no change
- V max = low
- F24 = high ----- small bladder capacity –increase time between voids
- Vave = low
- Low volume with high urge and MUI - ? Neurogenic detrusor overactivity, TTNS
- Nocturia estimate 4 = high, increased fall risk
- WNL = within normal limits



70

---

---

---

---

---

---

---

---

### 28 yo female with frequency, urgency, pelvic pain – patient #2

Name: \_\_\_\_\_ 28 yo female with frequency, urgency, pelvic pain - patient #2

Circle void time and void time Call if you have questions

Mark BIL occurrence.

Specific time	Volume of void in ml or oz	Desire to void 1 to 4	Leak volume 1 to 3	Felt leak with activity	Felt leak with strong urge	Wetness discovered	Drink type/ amount	Drains to void 0 to none 1 = mild 2 = mod 3 = severe 4 = urgent
7 AM								
8 AM	500	4	Pain all	over vagina			20 oz coffee	
9 AM							32 oz water	
9 AM	450	3						
10 AM			Pain					1
11 AM	750	4	Pain				32 oz water	
12 PM	400	3						
1 PM								
2 PM	400	4	Pain				10 oz coffee	
3 PM							32 oz water	

Leak volume:  
1 = drip  
2 = wet  
3 = evident

WOCNext logo

71

---

---

---

---

---

---

---

---

### Measure Bladder Diary Analysis pt #2

	Calculate	Interpret
V24	4575 ml 138 oz = 4140 ml 30 oz of caffeine	High - ave 1250 to 1900 High - ave is 60 to 80 oz
F24	9 All voids 3 or 4 urge	High for age - 6.5 Average for V24 - 8.5
Vave	4574 / 9 = 508.3 ml	High for age - 200 High for V24 - 350
Vmax	800 ml	High for ave - 400 Average for V24 - 725



72

---

---

---

---

---

---

---

---

### 28 yo female with frequency, urgency, pelvic pain – patient #2

- Fluid volume – too high, decrease to 80 to 100 oz
- Fluid type – too many irritants, decrease coffee or change to decaf
- Fluid timing – WNL, no change
- V max = average for fluid intake, decrease fluid intake
- F24 = average for fluid intake, decrease fluid intake
- Vave = high for age and V24, reassess after fluid change
- High urge and pain with most voids - ? IC, TTNS, reassess after fluid change
- Nocturia estimate 0 = WNL, no change



73

---

---

---

---

---

---

---

---



Table 6: Behavioral interventions for OAB/UUI\*

Bladder training/timed voiding
Fluid management (e.g., fluid restriction at night, avoiding polydipsia)
Caffeine reduction
Physical activity/exercise
Dietary modification (e.g., low fat, high fruit/vegetable, whole grain)
Mindfulness
Bladder training/timed voiding

OAB: overactive bladder; UUI: urgency urinary incontinence  
\*not listed in order of efficacy or recommendation



74

---

---

---

---

---

---

---

---

### Fluid Intake



Total volume of fluid intake



Timing for fluid intake



Type of fluid intake



75

---

---

---

---

---

---


---

---

Bladder Training check list

Be the Bladder Boss

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1. Fluid intake volume							
2. Fluid timing - stop fluids 2 hours before bed							
3. Fluid type - minimize caffeine, soda, milk, alcohol							
4. Mindful eating, Loose weight							
5. Do not get constipated							
6. Stop or cut down on smoking							
7. Urinate in the toilet every 30-60 min							
8. Urge suppression Step: sit, relax, distract							
9. Avoid "just in case" escape before bed and exercise							
10. Notice triggers and work to desensitize them							
11. Do your pelvic floor exercises							
12. Electrical stimulation							
13. Meditation, relaxation, breathing							
14. Small pad and good skin care							



76

---

---

---

---

---

---

---


---

---

---

### Comprehensive Bladder Management Be The Bladder Boss

- Fluid intake volume
- Fluid type – identify and avoid irritants
- Fluid timing – decrease fluids 2 hrs before bed if nocturia
- Mindful eating, loose weight
- Treat and avoid constipated
- Stop / cut down smoking



77

---

---

---

---

---

---

---


---

---

---

### Comprehensive Bladder Management Be The Bladder Boss

- Bladder training schedule
- Urge suppression, avoid “JIC”
- Notice triggers and work to desensitize
- PFMT as indicated by assessment
- TTNS / ES
- Meditation, relaxation, breathing
- Appropriate containment – as small as is needed
- Good skin care



78

---

---

---

---

---

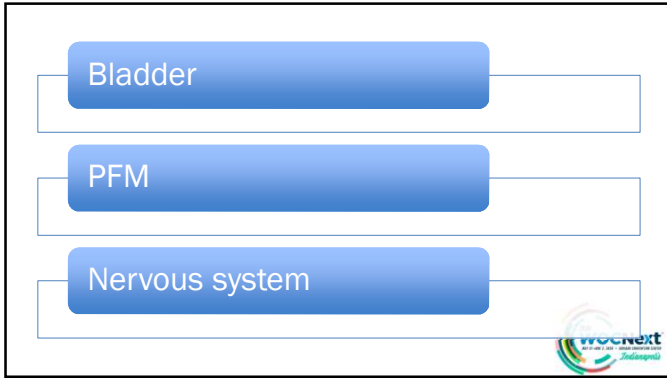
---

---

---

---

---



79

---

---

---

---

---


---

---

---

**Take Home Message**

- Accurate assessment – Measured bladder diary, PFM Investigation
- Assess and treat findings separately
- Take time to ask many questions and ask the patient to be very specific
- Ask yourself (and your patients) why am I providing the treatment?
- Provide treatment for the Dysfunctional nervous system as needed



80

---

---

---

---

---


---

---

---

**Several Reference Documents**

- Cameron AP, et al. The **AUA/SUFU** guideline on the diagnosis and treatment of idiopathic overactive bladder. J Urol. Published online April 23, 2024.
- Cardozo L, Rovner E, Wagg A, Wein A, Abrams P, eds. *Incontinence*. 7 ed. **ICHCS**. International Continence Society; 2023.
- Harding CK, et al. **EAU** Guidelines. Edn. presented at the EAU Annual Congress, Madrid 2025. ISBN 978-94-92671-29-5.
- McAuley J, et al. Clinical Practice Guidelines: Rehabilitation Interventions for Urgency Urinary Incontinence, Urinary Urgency, and/or Urinary Frequency in Adult Women. Journal of Women's & Pelvic Health Physical Therapy 47(4):p 217-236, October/December 2023. **APTA**
- **NICE** Guideline: Urinary incontinence and pelvic organ prolapse in women: management. Last reviewed: 26 March 2025.



81

---

---

---

---

---

---

---

---

**REFERENCES**

- Bhide AA, Tailor V, Fernando R, Khullar V, Digesu GA. Posterior tibial nerve stimulation for overactive bladder-techniques and efficacy. *Int Urogynecol J.* 2020 May;31(5):865-870.
- Cameron AP, Heidelbaugh JJ, Jimbo M. Diagnosis and office-based treatment of urinary incontinence in adults. Part one: diagnosis and testing. *Ther Adv Urol.* 2013 Aug;5(4):181-7.
- D'Ancona C, et al. The International Continence Society (ICS) report on the terminology for adult male lower urinary tract and pelvic floor symptoms and dysfunction. *NeuroUrol Urodyn.* 2019 Feb;38(2):433-477.
- Das R. A Short History of Urgency: Implications for Biopsychosocial Assessment and Conservative Treatment of Overactive Bladder. *Journal of Women's & Pelvic Health Physical Therapy.* 2025.
- Frawley H, Shelly B, Morin M, et al. An International Continence Society report on the terminology of PFM assessment. *NeuroUrol and Urodynam* 2021; April 12, pp 1-44.
- Hodges PW, et al. Reconsideration of pelvic floor muscle training to prevent and treat incontinence after radical prostatectomy. *Urol Oncol.* 2020 May;38(5):354-371.
- Njis, J, et al. Nociceptive Pain Criteria or Recognition of Central Sensitization? Pain Phenotyping in the Past, Present and Future. *J. Clin. Med.* 2021.



82

---

---

---

---

---

---

---

---

---

---

**REFERENCES**

- Reynolds WS, Dmochowski R, Wein A, Bruehl S. Does central sensitization help explain idiopathic overactive bladder? *Nat Rev Urol.* 2016 Aug;13(8):461-91.
- Schuttert I, et al. Validity of the Central Sensitization Inventory to Address Human Assumed Central Sensitization: Newly Proposed Clinically Relevant Values and Associations. *J Clin Med.* 2023 Jul 23;12(14):4849.
- Starkman JS, Dmochowski RR. Urgency assessment in the evaluation of overactive bladder (OAB). *NeuroUrol and Urodynam* 2008;27:13-21.
- Swenck MW, et al. Physical Therapist Practice Patterns Utilizing Transcutaneous Tibial Nerve Stimulation for the Treatment of Overactive Bladder. *J of Women's & Pelvic Health PT* 49(4),p 204-214, October/December 2025.
- Tissot W, et al. Bladder diary measurements in asymptomatic males: frequency, volume per void, and 24 hour volume. *NeuroUrol and Urodynam* 2008 27:198-204.
- Vaca-Benavides DA, Ju W, Gonzalez C, et al. The importance of electrical parameters on transcutaneous tibial nerve stimulation for overactive bladder syndrome: a systematic review and meta-analysis. *Age and Aging* 2025;54:afaf203.
- Yang DY, Zhao LN, Qiu MX. Treatment for overactive bladder: a meta-analysis of transcutaneous tibial nerve stimulation versus percutaneous tibial nerve stimulation. *Medicine (Baltimore).* 2021



83

---

---

---

---

---

---

---

---

---

---

**Questions**



[www.bethshelly.com](http://www.bethshelly.com)  
[beth@bethshelly.com](mailto:beth@bethshelly.com)



84

---

---

---

---

---

---

---

---

---

---