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# Leaky Pipes:

## AN ANALYSIS OF THE CLINICAL PATHWAY FOR BETTER OUTCOMES FOR INCREASED CONTINENCE ACROSS THE LIFESPAN

**SPEAKERS:**  
Rachael Percoco, Preferred Therapy Solutions  
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## Housekeeping Reminders

- All attendees are on mute
- **Handouts** are available on the NARA website: Resources>Quick Links Page
- **Questions for Speakers:** submit them using the Q&A button on the attendee control panel
- **Technical Questions:** submit them using the Chat button on the attendee control panel
- **Recording:** will be available on the NARA website: Resources>Quick Links Page
- **Day 3 Announcement**

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## Objectives, Day 2

- Describe pelvic floor muscle assessment techniques
- Identify coverage guidelines for care planning
- Distinguish treatment options by type of incontinence
- Explore evidence for, and describe pelvic muscle treatment strategies
- Identify postural exercises as treatment options
- Understand NMES as treatment option for incontinence

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## Assessment of PFM Contraction

(Pelvic Floor Trained clinician)

**Biofeedback:**

- Using either a vaginal probe or anal probe or SEMG with electrodes placed near the pelvic floor muscles.


**Digital palpation:**

- The primary method, where a gloved finger is inserted into the vagina or rectum to directly feel the pelvic floor muscles.
- The PERFECT scheme for scoring P=power, E=endurance, R=Repetitions, F=fast contractions, ECT=every contraction timed

**Muscle contraction assessment:**

- Asking the patient to squeeze their pelvic floor muscles as if stopping urination, allowing the clinician to gauge the strength and quality of the contraction.

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## Assessment of PFM Contraction

(Pelvic Floor Trained clinician)

### Digital palpation:

- **Muscle relaxation assessment:**
  - Instructing the patient to fully relax their pelvic floor muscles after a contraction, checking for complete release.
- **Pain assessment:**
  - Palpating for tender spots or trigger points within the pelvic floor muscles.
- **Prolapse evaluation:**
  - Assessing for any descent of pelvic organs like the bladder or uterus by feeling for bulges during straining maneuvers.

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## Assessment of PFM Contraction

(General clinician)

**Biofeedback** – SEMG around pelvic floor muscles or transverse abdominus

### Coccyx Motion Palpation (CMP)

- Position hand over sacrum and middle finger over the coccyx
- Ask the patient to perform a PFM contraction
- Assess if there was movement in the coccyx indicating proper contraction


Mayer, *Journal Of Women's Health*, 2020

*This allows ALL clinicians to at least screen for PFM dysfunction as it lends to not on continence but to spinal stability and lumbopelvic function. It also gives patients an option if they are opposed to internal assessment.*

*Can use the PERFECT scheme to better assess and guide treatment plan.*

*\*Non-invasive would always be the approach with pediatric pelvic floor assessment*

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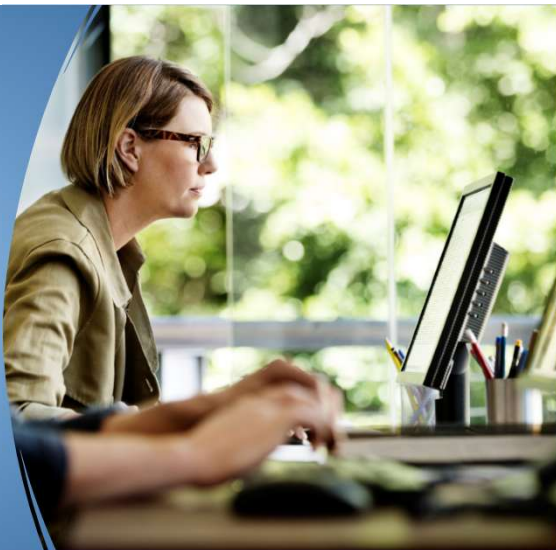


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# Successful Outcomes

The Write Words to Achieve the Right Results



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## Coverage Requirements: Reasonable and Necessary



### CMS Publication 100-02, Medicare Benefit Policy Manual, Chapter 15, Section 220 through 230

- **Skill:**
  - Require the professional skills of therapist to perform or supervise, cannot be safely and effectively administered through other means
- **Reasonable and Necessary:**
  - Considered accepted standards of medical practice to be a specific and effective treatment for the patient's condition, includes amount, frequency and duration of service

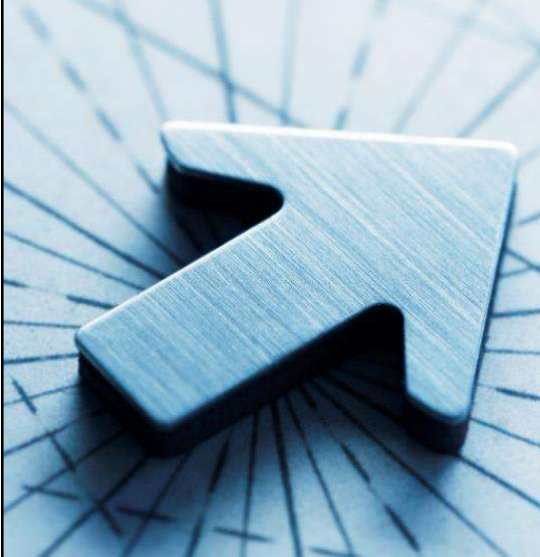
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## Acceptable Practice for Therapy Services



- Evidenced based literature
- Professional associations

**Medicare Coverage Guidelines:**

- CMS Publication 100-04, Medicare Claims Processing Manual, Chapters 5 and 7
- CMS Publication 100-03, Medicare National Coverage Dtermination (NCD) Manual
  - E.g., Non-Implantable Pelvic Floor Electrical Stimulation

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## Acceptable Practice for Therapy Services



**Medicare Administrative Contractors (MAC):**

- Local Coverage Guidelines (LCDs)
- Articles
  - Biofeedback
  - Unattended electrical stimulation
  - \*Non-coverage statements:
    - Pelvic floor congestion
    - Pelvic floor dysfunction (not including incontinence)

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## Evaluation | Care Plan Essentials

- Relevant | Thorough history
- Complexities
- Supportive Diagnosis
- Precise and applicable Prior Level of Function
- Objective Findings
- Patient centric, Reported Outcomes



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## Patient Reported Outcomes

Pelvic Health	Value
ICIQ-UI Score - SF	<input type="text"/>
Incontinence Impact Questionnaire (IIQ)	<input type="text"/>
International Prostate Symptom Score (I-PSS)	<input type="text"/>
Modified Oxford Grading System	<input type="text"/>
Pelvic Floor Distress Inventory (PFDI-20)	<input type="text"/>
Pelvic Floor Impact Questionnaire (PFIQ-7)	<input type="text"/>
Pelvic Organ Prolapse/Urinary Incontinence (PISQ)	<input type="text"/>
Pelvic Pain and Urinary Frequency (PUF)	<input type="text"/>
Prostatis Symptoms Questionnaire (PSQ)	<input type="text"/>
Vulvar Pain Functional Questionnaire (V-Q)	<input type="text"/>

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**How do you treat incontinence?**

QMs and Incontinence

www.preftherapy.com | #itsallaboutthepatient


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**Treatment Options**

- \*Lifestyle changes**  
Losing weight, reducing caffeine and alcohol, and making other lifestyle changes can help.
- \*Pelvic floor exercises**  
A doctor or physical therapist can create a program of exercises to strengthen the pelvic floor muscles.
- \*Bladder training**  
This technique teaches how to wait longer between needing to urinate and actually urinating.
- \*Neuromuscular Electrical Estim**  
Estim focuses on reducing motor neuron and muscle disuse atrophy. This improves the muscles' ability to contract and therefore the patient's ability to participate in exercise.
- \*Biofeedback**  
Sensors help make you aware of signals from your body to help regain control of the muscles in your bladder and urethra.

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## Other Treatment Options

### Medications

A doctor can prescribe medications such as anticholinergics, mirabegron, or alpha blockers.

### Topical estrogen

A low-dose vaginal cream, ring, or patch can help tone and rejuvenate the tissues in the urethra and vaginal areas.


### Botox injections

A healthcare professional can inject Botox into the bladder to relax it and reduce the chances of urine leaks.

### Posterior tibial nerve stimulation

A minimally invasive procedure that involves sending a mild electric current through a thin needle inserted into the ankle.

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## Other Treatment Options

### Surgery

Surgery can be used to improve or cure incontinence if it's caused by a change in the bladder's position or an enlarged prostate.

### Medical devices


Devices such as a catheter, urethral insert, or vaginal pessary ring can help manage urinary incontinence.

### Magnesium

Some studies suggest that magnesium can improve overactive bladder symptoms by reducing muscle spasms and allowing the bladder to empty completely.

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**Current Guidelines  
for Exercise: PFMT**

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# PFMT

*Pelvic Floor Muscle Training (PFMT), also known as Kegel/Up or PFM Strengthening Exercises, are advocated by physicians and therapists focusing on pelvic and lower urinary tract dysfunction and have been shown by multiple researchers to decrease number of episodes of stress UI*

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**Current Guidelines  
for Exercise: PFMT**


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Cochrane Review of 31 studies concluded that PFMT had strong correlation to improvement or 'cure' of stress UI and should be considered first line treatment; the report stated that no consistency of exercise treatment protocol was found

- Improvement rate for Stress UI: PFM Strengthening group (56%) vs. Control group (6%)
- Improvement rate for all types of UI: PFM Strengthening group (36%) vs. Control group (6%)

*Dumoulin C, Cochrane Database Syst Rev, 2018*

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## Evidence Supporting Exercise for UI

- Increased strength of PFM and decreased incontinence with lumbar stabilization exercises  
*Oskouei, Urology, 2016*
- Increased continence with Yoga  
*Huang, Female Pelvic Med Reconstr Surg, 2014*
- Increased PFM activity with dorsi and plantar flexed ankle positions in standing in women with incontinence  
*Chen, Urology, 2005*
- Decrease in Stress UI with resisted hip rotation exercises equal to results with PFM treatment  
*Jordre, Journal of Women's Health, 2014*

**PFM treatment was found to be most effective when the chosen protocol followed evidence-based exercise principles of intensity, specificity and recovery**

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## The Body is Demand-Based

- Muscles will shorten to the length of the most common position held
  - Loss of muscle units or sarcomeres
- Muscles will weaken that are not used or stressed
- Bones that are inadequately loaded will weaken
- Neural, arthrogenic, and muscular changes occur quickly with disuse
  - Can lose up to 30% of strength with 2 weeks of bedrest
  - Tendency is to lose 3-8% of muscle strength per decade of life ***due to disuse***

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## Exercise Principles

- **Overload/Progression:** demand must continually exceed normal work of the muscle
- **Specificity:** strength training based on functional requirements of activity
  - Slow vs. Fast twitch muscle activation
  - Voluntary vs. Involuntary
- **Length/Tension:** positioning for optimum performance
- **Reversibility:** gains lost if exercise level is not maintained
- **Periodization:** must change or progress exercise or activity to continue to make gains

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GUIDELINES AND RECOMMENDATIONS

# Postural Exercise For Continence

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## Exercise Recommendations

1. Relaxation (Down) of the Pelvic Floor
2. Lumbar ROM in Multiple Positions and Multiple Planes
3. Abdominal Strengthening
4. Spinal Extension
5. Gluteal Exercises
6. Hamstring Stretch
7. Hip Flexor Stretch
8. Hip Rotation
9. Diaphragmatic Breathing
10. PFMT (Kegels/UP, Reverse Kegels/Down, Fast Twitch/Quick Flicks)

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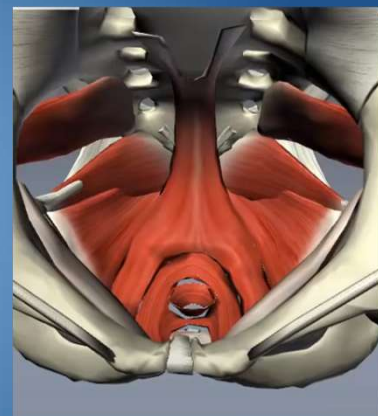
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## Lumbar ROM and Pelvic Movement

### Pelvic Clock:

- Imagine a clock sitting on your pubic bone with 12:00 pointing towards your head, 6:00 at your feet.
- The patient moves between 12:00 (PPT) and 6:00 (APT) either AROM, AAROM or PROM
- Once this is achieved, the patient then can move through the entire clock (similar to doing the hula hoop)

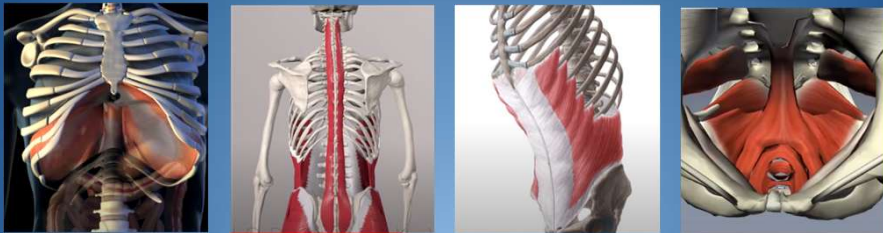


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## Assessment of Body Position

The group of muscles known as the 'core' highly impact pelvic floor function and are the deep inner most muscles that you can now move to from the outside in...

- Diaphragm
- Transversus Abdominis
- Multifidi
- Pelvic floor muscles

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## Diaphragmatic Breathing

- Multiple planes and body positions while breathing is recommended
- Can add resistance to breathing with devices such as: Pflex®, Expanda-Lung®, Breather® or Spirometer
- Can hold one nostril closed
- Can add resistance to chest and ribcage expansion manually, with weights or with elastic bands



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## Multifidus Exercise



Multifidus plays a crucial role in stabilization of the spine:  
extension, rotation, lateral flexion

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## Transverse Abdominus Exercise

### Transverse Abdominal/Pelvic Floor Activation with Breathing

**Sitting:** Sit with good upright posture with feet flat on the floor. Breathe in through your nose and allow your belly to expand. Breathe out through pursed lips as you tighten your lower abdominals (transverse abdominis) and pelvic floor muscles. This contraction should be about 50% of your maximum effort and you should feel your pelvic floor lift slightly. Make sure you are not squeezing your gluteal muscles. Repeat, relaxing on each inhalation and tightening on each exhalation.

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**Relaxation (Down training) of the Pelvic Floor**

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- **Goal:** decrease over activity of the pelvic floor, increase length of pelvic muscles allowing to load prior to tightening for maximum force output
- Can combine positions with meditation, diaphragmatic breathing, 'mindfulness' exercises. Exercises should be modified to protect joints.
- Recommended: garland (deep squat), chair (1/2 squat), reclined bound angle and bound angle (butterfly) yoga poses place body in position to lengthen PFM



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**PFMT – Ups/Downs, Kegels/Reverse Kegels**

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- **If in fixed PPT:** reverse Kegels, pulling the pelvic floor muscles open in multiple planes; forward/back, side to side, and around clock
- Patients most successful when given instruction with anatomical pictures or models
- Pelvic awareness training prior to PFMT is recommended
- If can perform APT, PFMT is recommended
  - Circular muscles so pulling “up and in”
- Adding external or internal feedback can assist patient to perform tightening correctly

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## | Dosing PFMT

### Progression & Periodization

- Gradually increase holding time to 10 seconds
- Gradually increase velocity
- Advance to eccentric contractions
- Advance positions from supine to sitting to standing to squatting
- Exercising with empty vs. moderately full bladder

*Bo, Evidence Based Physical Therapy for the Pelvic Floor, 2017*

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## | Dosing PFMT


### Fast twitch firing

- Used to decrease urgency
- Can be useful in lengthen time between voids; “Rest Stop Exercises”
- Power exercise: activates fast twitch fibers (4-20%)
- 20-30% of 1 RM (RPE: easy) as fast as possible 12-20 repetitions

*Jozwik, BJOG, 2005*

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## Current Evidence for NMES to Treat UI

- Over 30% of women with stress urinary incontinence cannot voluntarily contract the pelvic floor muscles with adequate force to control urine leakage.  
*Barroso, BJU Int, 2004*
- 2013 Systematic review of 33 RCTs concluded that tibial nerve, intravaginal and sacral electrical stimulation have shown effectiveness in treating urge and refractory urinary incontinence  
*Schreiner, Int.braz j urol, 2013*
- NMES as an adjunct to the exercise Plan of Care can address the impairment and deficit affecting PFM contraction
- NMES can assist to achieve higher force of contraction for those who have decreased muscle strength and decrease myotonia in those who cannot fully relax muscle.  
*Chisari, Neuroeng Rehabil, 2013*

*“Evaluation of efficacy remains inconclusive because of the variations in stimulation parameters. More comparative trials are needed.”*

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## NMES for Posture Evidence

- Using a combination of core muscle strengthening and NMES over posterior back muscles yielded an additive effect on the recovery of trunk balance in patient with acute of subacute stroke who have poor sitting balance.  
*KoEJ, Ann Rehab Med, 2016*
- Electrical stimulation decreased thoracic curve independent of exercise.  
*Celenay, Journal of Back and Musculoskeletal Rehab, 2015.*
- Electrical stimulation promotes neurophysiological changes. It appears that stimulus adaptation (accommodation) of specific circuits can strengthen the brain’s ability to distinguish between and respond to such stimuli over time.  
*Bittencourt, Neuroscience Letters, 2010*
- Trunk and gluteal stimulation acutely corrects anterior/posterior IP distribution, improving regional tissue health for sacral sitters. This correction requires constant application of NMES. The potential for positive changes in tissue health would be maximized by regular NMES use incorporating weight shifting.  
*WU, PM R, 2013*

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## NMES for Intervention Options

**Neurological Re-ed:**

- Estim focuses on reducing motor neuron and muscle disuse atrophy. This improves the muscles ability to contract and therefore the patient’s ability to participate in exercise.
- Patterned Estim is an example of this type of NMES


**Muscle Re-ed:**

- Estim focuses on muscle hypertrophy
- MFAC (Russian stim) or LVPC strength protocols are examples of this type of NMES

**Functional Re-ed:**

- Estim focuses on improving movement patterns or a muscle contraction during a functional activity
- Patterned Estim, LVPC or MFAC can all be used for functional NMES

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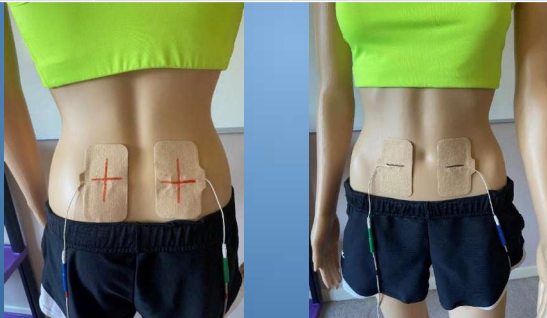


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## Technology Assist-NMES Lumbar

NMES type	Waveform	Intensity	Duration	Frequency	Fatigue?
Patterned e-stim	Triphasic	To muscle twitch	15-20 minutes	3-5x/week	No
MFAC/Russian	Biphasic	To muscle contraction	To fatigue 10 sec/50 sec	2-3x/week	Yes
Variable Muscle Stim	Quadriphasic	To muscle contraction	5-20 minutes 10 sec/30-50 sec	2-3x/week	Yes



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## | Biofeedback

The technique of gaining greater awareness of the physiological functions of one's own body

- Mirror
- BP Cuff
- EMG: internal or external
- RUSI

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## | Bladder Retraining

### Bladder Diary

- Bladder Irritants
- Water intake
- Urinary Frequency
- UI Frequency
- UI Cause

Record of Bowel and Bladder Function								
Date: _____								
Time of day	Amount voided S,M,L	Type & amount of fluid intake	Type & amount of food	Amount of Urinary Leakage S,M,L	Amount of Fecal Leakage S,P,C	Activity with leakage	Was urge present 1,2,3	RM ✓

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## Stress Incontinence Treatments

- PFM and Core Strengthening
- Improve Endurance
- Activity Modification
- Treat to Function
- Bladder Training



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## Urge Incontinence Treatments

- PFM down-training
- Stretching of synergistic muscles
- Manual techniques
- Bladder Retraining
- Collaboration with health care team



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**QA | Announcements for Day 3**

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