

# WELCOME TO EXPERT BRIEFINGS

## *Parkinson's Disease and the Bladder*

The program will begin at the top of the hour  
Meeting attendees will be muted and off video

**Today's topic is:**  
***Parkinson's Disease & the Bladder***

**James Beck, PhD**  
Chief Scientific Officer, Parkinson's Foundation

# Our Mission

**The Parkinson's Foundation** makes life better for people with Parkinson's disease by improving care and advancing research toward a cure. In everything we do, we build on the energy, experience and passion of our global Parkinson's community.

**We have everything you need to live better with Parkinson's.**



# Our Goals

To help our global community live better with Parkinson's, we pursue **three goals**:



# Poll: Getting to Know You

What best describes your connection to Parkinson's disease?

- Person with PD
- Spouse/Partner
- Parent has/had PD
- Other family
- Healthcare Professional
- Physician/Clinician
- Scientist/Researcher
- Nurse/Nurse Practitioner
- Other

# For Your Convenience

## Recording

Expert Briefings are recorded and archived on  
[www.Parkinson.org/ExpertBriefings](http://www.Parkinson.org/ExpertBriefings)

# Meet Your Experts



**Abhimanyu Mahajan, MD, MHS**

- Movement Disorders Neurologist and Assistant Professor of Neurology
- University of Cincinnati



**Ankita Gupta, MD, MPH, FACOG**

- Associate Fellowship Director, Female Pelvic and Reconstructive Surgery
- University of Louisville



**THANK YOU**





# Expert Briefing

## Parkinson's Disease and the Bladder



Abhimanyu Mahajan, MD, MHS  
Assistant Professor of Neurology  
Movement disorders division  
University of Cincinnati

Ankita Gupta, MD, MPH  
Associate Fellowship director of  
Urogynecology  
University of Louisville Health

# Disclosures/ Conflicts of interest

Parkinson's Foundation

Sunflower Parkinson's disease Foundation

Dystonia Medical Research Foundation

# An Essay on the Shaking Palsy by James Parkinson - 1817

## UK Parkinson's Disease Society Brain Bank clinical diagnostic criteria

### Step 1 Diagnosis of Parkinsonian syndrome

- Bradykinesia (slowness of initiation of voluntary movement with progressive reduction in speed and amplitude of repetitive actions)
- And at least one of the following:
  - muscular rigidity
  - 4-6 Hz rest tremor
  - postural instability not caused by primary visual, vestibular, cerebellar, or proprioceptive dysfunction.

### Step 2 Exclusion criteria for Parkinson's disease

- History of repeated strokes with stepwise progression of parkinsonian features
- History of repeated head injury
- History of definite encephalitis
- Oculogyric crises
- Neuroleptic treatment at onset of symptoms
- More than one affected relative
- Sustained remission
- Strictly unilateral features after 3 years
- Supranuclear gaze palsy
- Cerebellar signs
- Early severe autonomic involvement
- Early severe dementia with disturbances of memory, language, and praxis
- Babinski sign
- Presence of cerebral tumour or communicating hydrocephalus on CT scan
- Negative response to large doses of levodopa (if malabsorption excluded)
- MPTP exposure

### Step 3 Supportive prospective positive criteria for Parkinson's disease

(Three or more required for diagnosis of definite Parkinson's disease)

- Unilateral onset
- Rest tremor present
- Progressive disorder
- Persistent asymmetry affecting side of onset most
- Excellent response (70-100%) to levodopa
- Severe levodopa-induced chorea
- Levodopa response for 5 years or more
- Clinical course of 10 years or more

*"I have seen such patients everywhere, in Rome, Amsterdam, Spain. They reflect always the same picture. They can be identified from afar. You do not need a medical history."*

-Charcot



## “When you see one person with PD, you see one person with PD”

### Motor and Non-Motor Parkinson Disease Symptoms

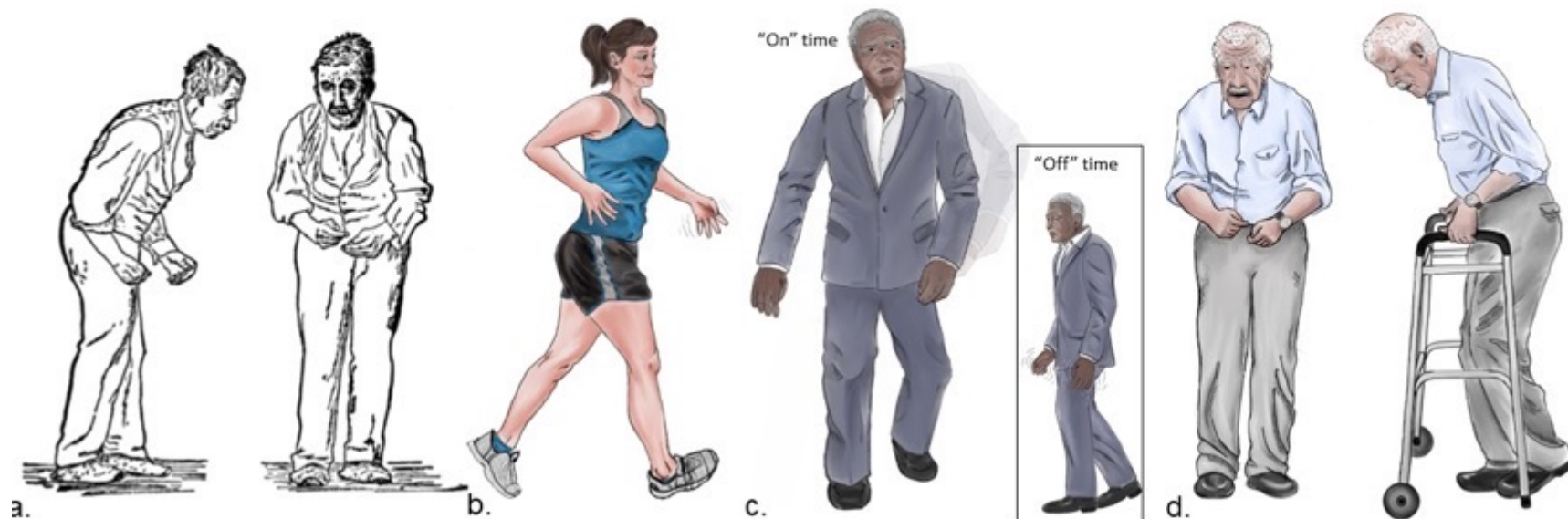
Fewer

← ————— →

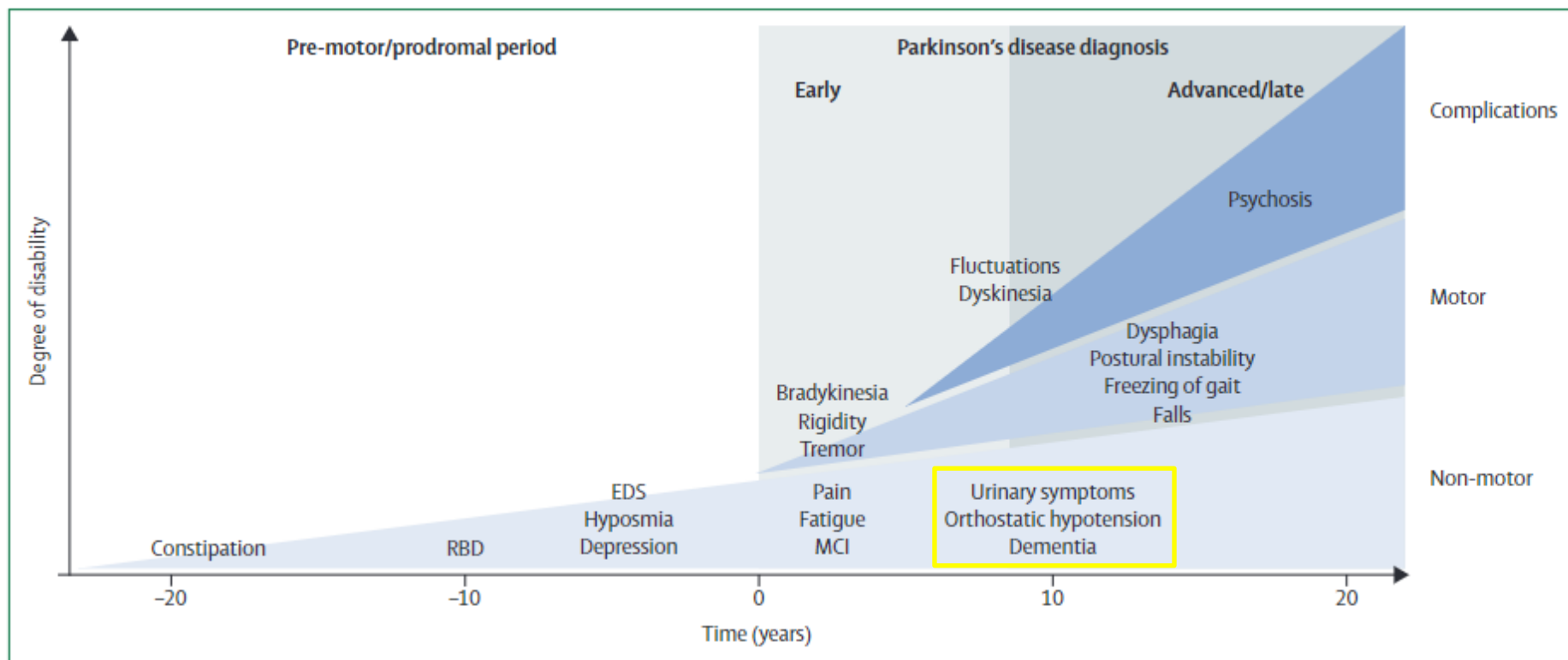
More

Tremor, rigidity, bradykinesia, dystonia and/or gait issues

Autonomic, psychiatric, and/or cognitive symptoms







# What is pelvic floor dysfunction?

“..a broad constellation of symptoms and anatomic changes related to abnormal function of the pelvic floor musculature.”

A wide variety of conditions are attributed to PFD due to hypertonicity, hypotonicity, loss of pelvic support, or mixed concerns.

- Urologic
  - Difficult urination: hesitancy, delay in the urinary stream.
  - Cystocele: bulging or herniation of the bladder into the vagina (anterior).
  - Urethrocele(urethral prolapse): bulging of the urethra into the vagina (anterior)
  - Urinary incontinence: involuntary leakage of urine.
- Gynecologic
  - Dyspareunia: pain with or following sexual intercourse.
  - Uterine prolapse: herniation of the uterus via the vagina beyond the introitus.
  - Vaginal prolapse: herniation of the vaginal apex beyond the introitus.
  - Enterocele: bulging or herniation of the intestines into the vagina (apical/posterior).
  - Rectocele: bulging or herniation of the rectum into the vagina (posterior).
- Colorectal
  - Constipation: paradoxical contraction or inadequate relaxation of the pelvic floor muscles during attempted defecation (dyssynergic defecation).[3]
  - Fecal incontinence: involuntary leakage of stool (not related to sphincter disruption).
  - Rectal prolapse: intussusception of the rectum beyond the anal verge (Procidentia) or proximal to the anus (Occult).
- General
  - Pelvic pain: chronic pain lasting more than three to six months, unrelated to other defined conditions.
  - Levator spasm: another term for chronic pelvic pain related to the levator ani musculature.
  - Proctalgia fugax: fleeting spastic pain related to the levator ani musculature.
  - Perineal descent- bulging of the perineum below the boney pelvic outlet.

Reference: Grimes WR et al. StatPearls Publishing; 2020

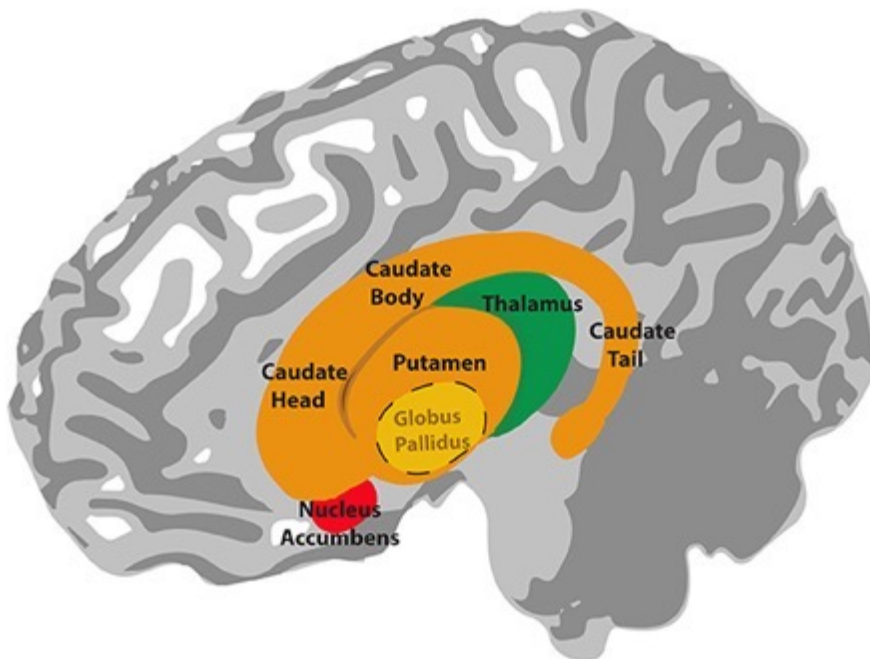
# Pathophysiology of urinary troubles

Frontal cortex, basal ganglia, thalamus, and anterior cingulate gyrus may play a role.

Severity of bladder dysfunction may be associated with caudate degeneration.

Micturition includes input from both the lumbosacral spinal cord based on bladder distention

Reduction in dopamine leads to reduction in voluntary control leading to uninhibited bladder contractions



# Overactive bladder (OAB)

Urgency is the central, necessary symptom of OAB: “sudden, compelling desire to pass urine which may be difficult to defer.”

OAB is a clinical diagnosis of “urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection or other obvious pathology.”

**24-HOUR OAB BLADDER DIARY**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Time of Day Diary Started: \_\_\_\_\_ ? AM ? PM

Time you went to bed \_\_\_\_\_ Time you got up for the day \_\_\_\_\_

Time of Urination and/or Incontinence episode	Why did you urinate at this time? (see question # (a) for responses)	Amount of Urination (measure with a cup in cc's, ml's or ounces)	Incontinence (place an X in the box if you were incontinent)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Please select the number next to your answer and use it for your response to the above questions.

- (a) Why did you urinate? (b) Incontinence grade
- (0) out of convenience (no urge or desire) (0) Grade 0: no urine loss
- (1) because I have a mild urge (but can delay urination for over an hour if I have to) (1) Grade 1: some drops
- (2) because I have a moderate urge (but can delay urination for more than 10 but less than 60 minutes if I have to) (2) Grade 2: moderate loss (wet underpants)
- (3) because I have a severe urge (but can delay urination for less than 10 minutes) (3) Grade 3: extensive loss (wet outer clothes)
- (4) because I have desperate urge (must stop what I am doing and go immediately)

**OFFICE USE**

Total 24 hrs output \_\_\_\_\_ # of voids \_\_\_\_\_ MVV = \_\_\_\_\_

Day volume \_\_\_\_\_ # voids \_\_\_\_\_ Night volume \_\_\_\_\_ # voids \_\_\_\_\_ NPI \_\_\_\_\_



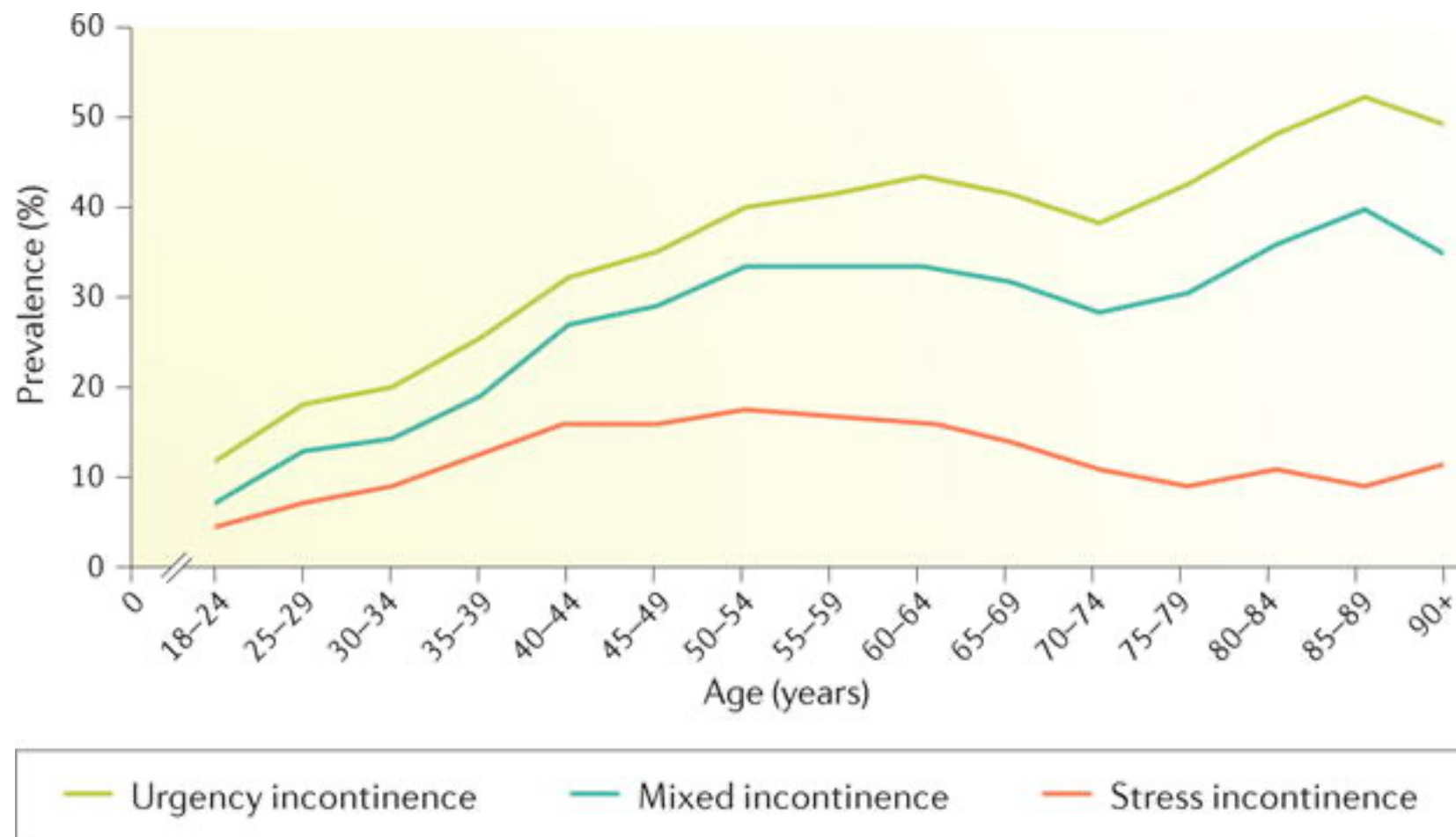
# Urinary troubles in PD

Urinary dysfunction is common in PD with high prevalence of urinary urgency and frequency

Inability to delay urination substantially increases the morbidity in PD with difficulty in ambulation.

OAB is associated with worse quality of life, dysautonomia, cognitive impairment and falls

# Overlap with age for PD risk



# Prevalence: how widespread is it?

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More commonly associated with increasing age and worsening cognitive function in PD.

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How widespread? Unclear! “between 24-96% in PD”

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Almost 50% of all women in the U.S. > 80 years report at least one symptom.

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While LUTS is more bothersome in women, men are more likely to seek treatment with increasing age and severity of symptoms. Treatment-seeking in women

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Treatment-seeking in women driven only by increasing bother, regardless of age or symptom severity

# Pelvic floor health in women with PD

Urogynecology, geriatric medicine and neurology

We surveyed women with PD and age-matched controls about pelvic floor health using validated questionnaires, motor symptoms of PD and cognition

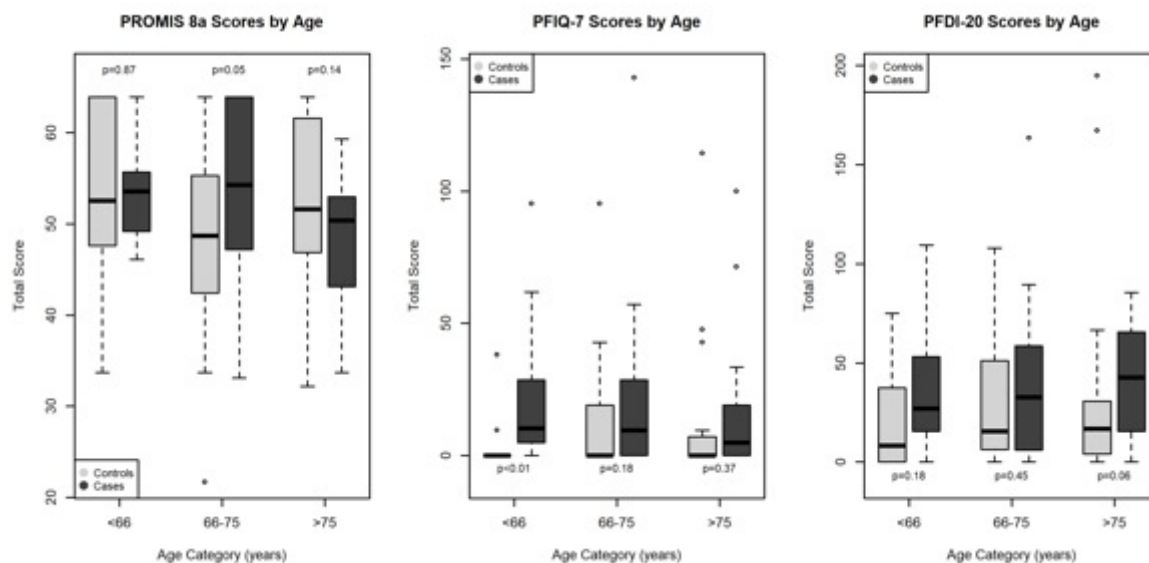
Idea was to find out if and how much PD contributed to issues with incontinence

# Results

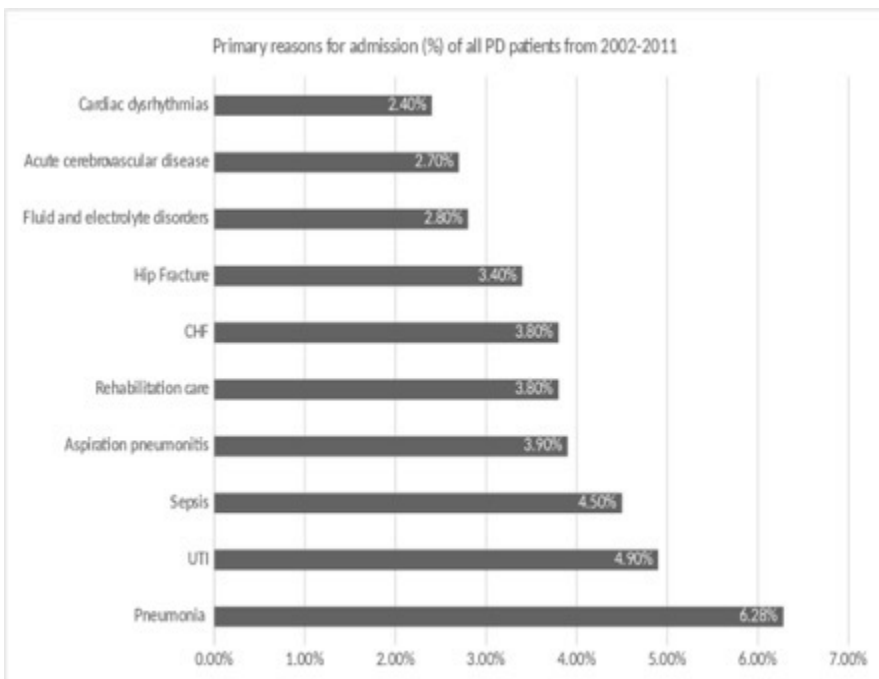
Women with PD have worse pelvic health than controls

No difference in symptom reporting and health care utilization between the groups.

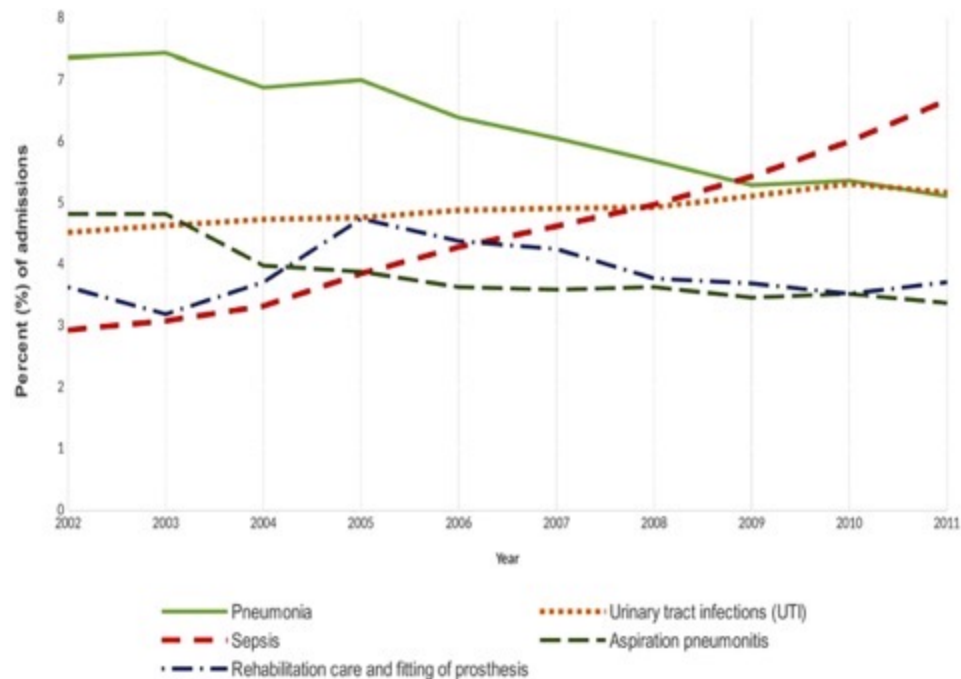
Pelvic floor disorders are undertreated in women with PD



# UTI in PD



CHF = congestive heart failure, UTI = urinary tract infection



A frequent cause of “sudden” worsening.

A total of 3,015,645 admissions of PD patients were documented over 10 years

# Is there more than one kind?

## Types of Urinary Incontinence in Women

**Chronic urinary retention**—involuntary loss of urine when the bladder does not empty completely; associated with high residual urine volumes\*

**Coital urinary incontinence**—involuntary loss of urine with sexual intercourse

**Continuous urinary incontinence**—continuous involuntary loss of urine

**Extraurethral urinary incontinence**—urine leakage through channels other than the urethral meatus (eg, vesicovaginal, urethrovaginal, or ureterovaginal genitourinary fistulas; ectopic ureter)

**Functional urinary incontinence**—involuntary loss of urine that is due to cognitive, functional, or mobility impairments in the presence of an intact lower urinary tract system\*

**Insensible urinary incontinence**—involuntary loss of urine that occurs without awareness

**Mixed urinary incontinence**—involuntary loss of urine associated with urgency and with physical exertion, sneezing, or coughing

**Nocturnal enuresis**—involuntary loss of urine that occurs during sleep

**Occult stress incontinence**—stress urinary incontinence (see below) that is observed only after the reduction of coexistent pelvic organ prolapse

**Overactive bladder**—urinary urgency, typically accompanied by frequency and nocturia, with and without urge urinary incontinence in the absence of urinary tract infection or other obvious pathology

**Postmicturition leakage**—involuntary passage of urine after the completion of micturition

**Postural urinary incontinence**—involuntary loss of urine associated with change of body position

**Stress urinary incontinence**—involuntary loss of urine with effort or physical exertion (eg, sporting activities) or when sneezing or coughing

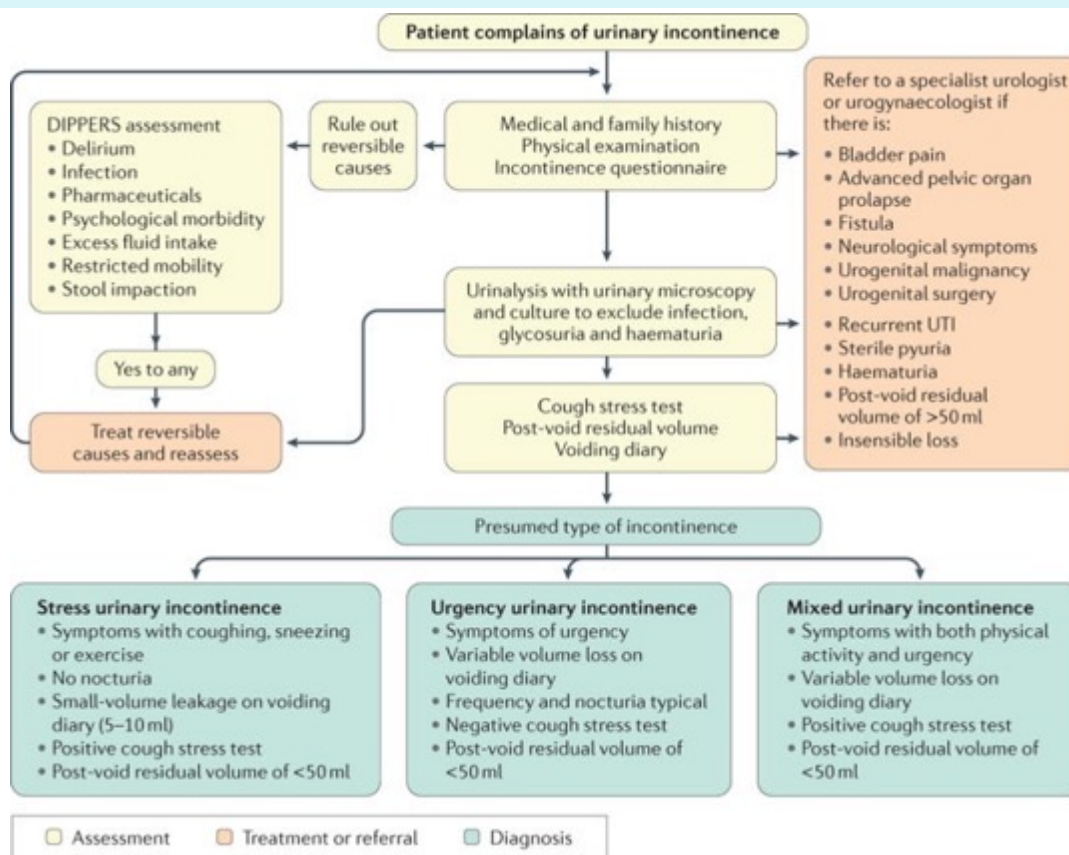
**Urgency urinary incontinence**—involuntary loss of urine associated with urgency or a sudden, compelling desire to void that is difficult to defer

# Disclosures/ Conflicts of interest

None



# Management of urinary incontinence



## Diagnostic work-up of women with urinary incontinence

The initial management of urinary incontinence includes a detailed history and physical examination to identify potential reversible causes of symptoms, followed by urinalysis with microscopy, voiding diary, assessment of post-void residual volume and cough stress test to assist with diagnosis and initial management. In cases of advanced pelvic organ prolapse, prior pelvic surgery, haematuria or urinary retention, patients may be referred to a urologist or urogynaecologist. UTI, urinary tract infection.

Thorough history, physical examination, symptom severity, and goals for treatment.

Everyone with symptoms of urinary incontinence should have screening for UTI and post-void residual urine volume to rule out retention and overflow incontinence before initiating any treatment.

A simple cough stress test is useful in the initial evaluation, especially in women with stress incontinence symptoms.

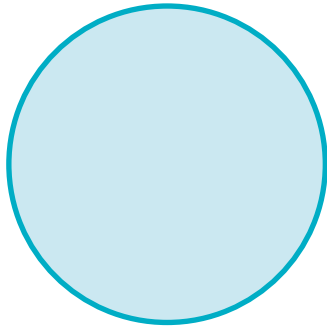
# Urodynamic Testing: Measuring various aspects of urine storage and evacuation

***Cystometry***

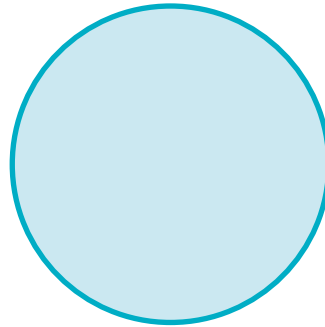
***Uroflowmetry and pressure-flow studies***

***Measures of urethral function, including urethral pressure profiles and Valsalva leak point pressures***

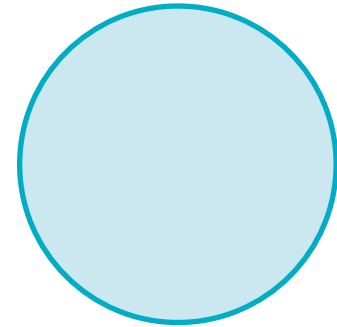
# Treatment options



Treatment options vary by incontinence type and effectiveness. After assessment, physicians should assess each woman's goals and expectations for treatment to help her select the best treatment option.



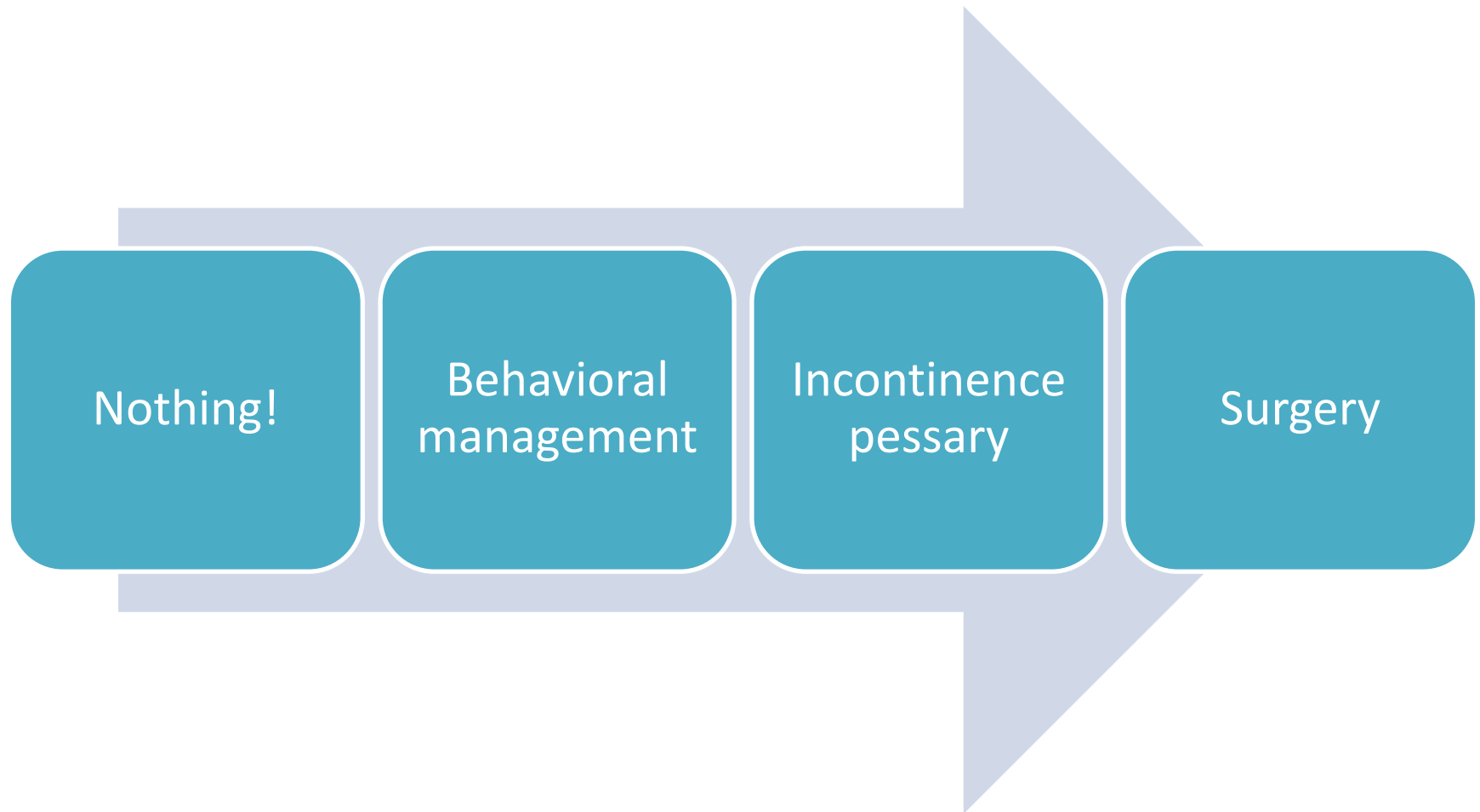
Conservative options include pelvic floor muscle exercises (with or without physical therapy), behavioral and lifestyle modifications, continence-support pessaries, and pharmacotherapy (including botulinum toxin).



Surgical treatment options include anti-incontinence procedures, such as urethral bulking agents, retropubic colposuspension, autologous fascial slings, sacral neuromodulation and synthetic midurethral slings.



# Stress Urinary Incontinence Treatment



# Stress Urinary Incontinence: Behavioral Management

Pelvic floor  
exercises

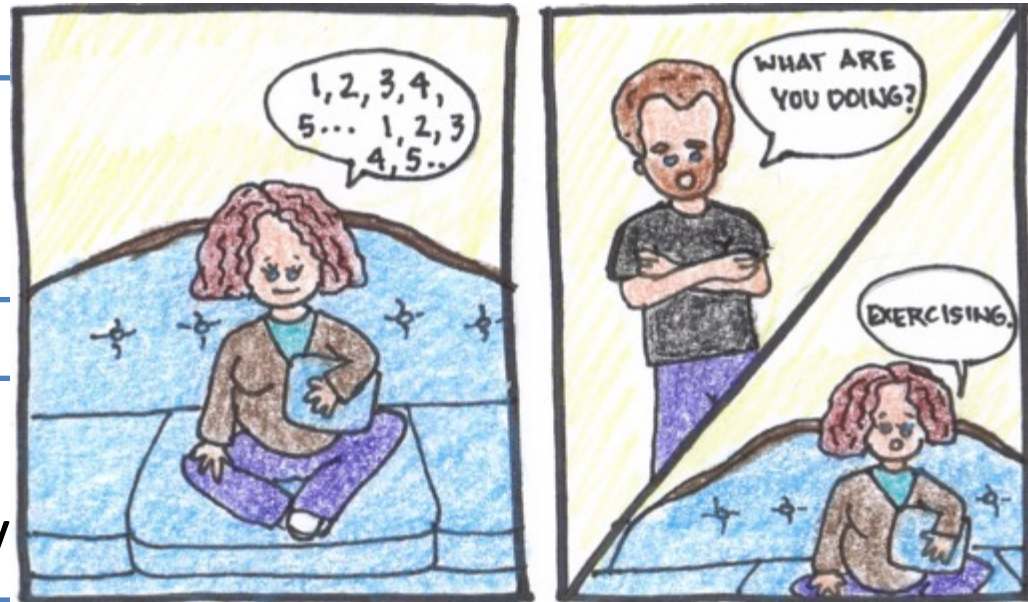
- Kegels

Teaching

- In office
- Physical therapy

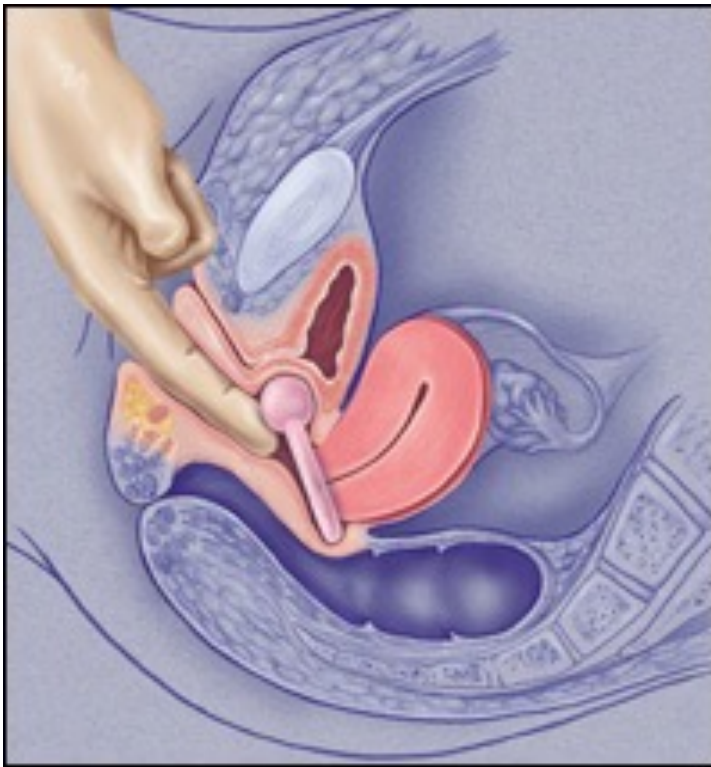
Motivated  
patient

- Goal: strengthen pelvic floor, train for contraction of pelvic floor during times of stress



# Incontinence Pessary

Compression of urethra against posterior symphysis and  
elevates bladder neck



(K, N, P, Q)



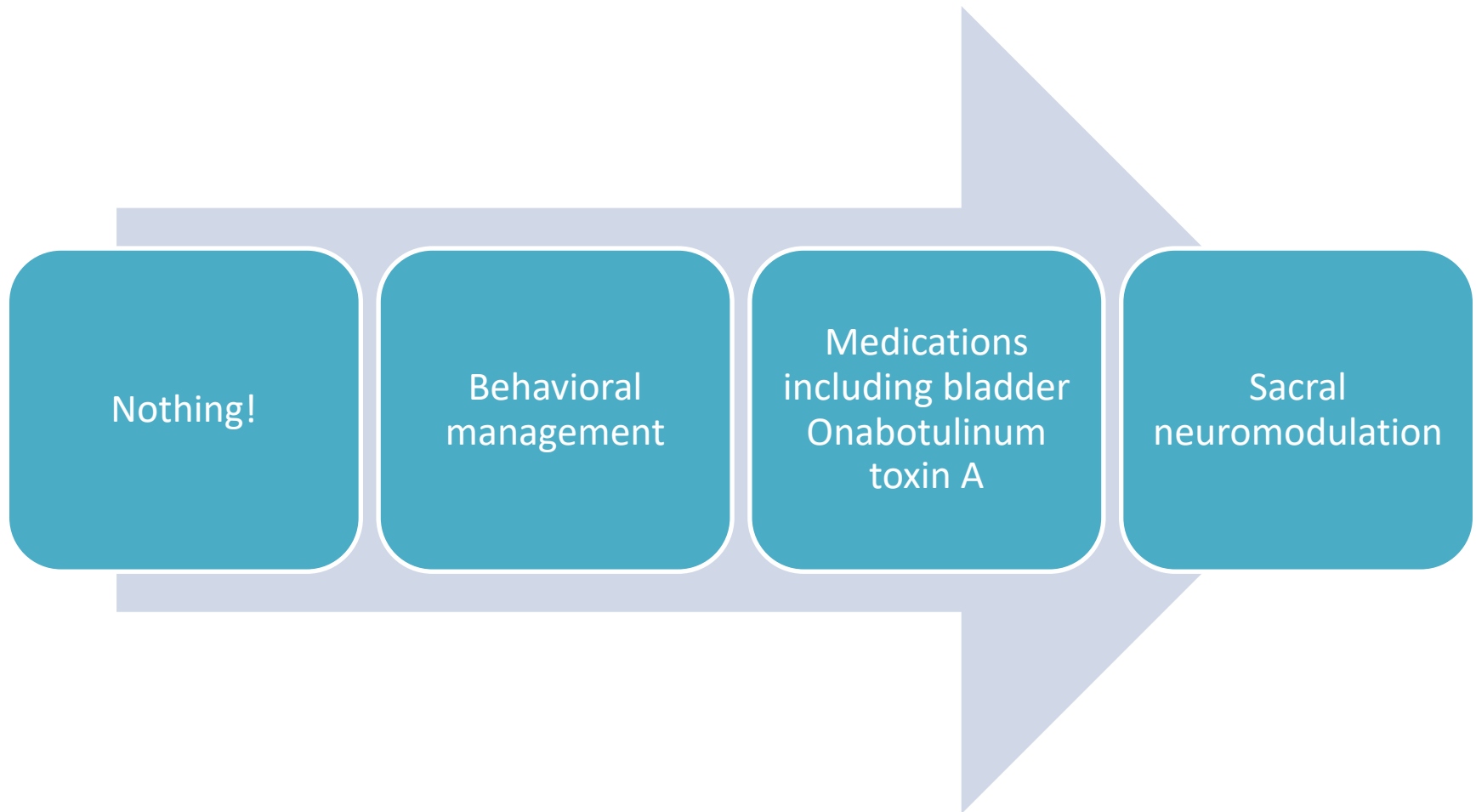
***Mid-urethral sling***

***Urethral bulking***

***Urethropexy***



# Urge Incontinence Treatment



# Urge Incontinence Behavioral Management

## Pelvic floor exercises

- Goal: suppress detrusor contraction
- When urgency occurs, deep breathing with Kegel to suppress the detrusor contraction



## Bladder retraining drills

- Scheduled voiding with progressively increasing intervals
- Patient learns to suppress sensory stimuli
- Reestablish normal voiding patterns
- Avoid decreasing bladder capacity

# Urge incontinence medications

Anticholinergics: inhibit muscarinic receptors / detrusor contractions

- -Oxybutinin, tolterodine, solifenacin etc

Beta-3 agonist: relaxation of detrusor

- -Mirabegron, Virabegron

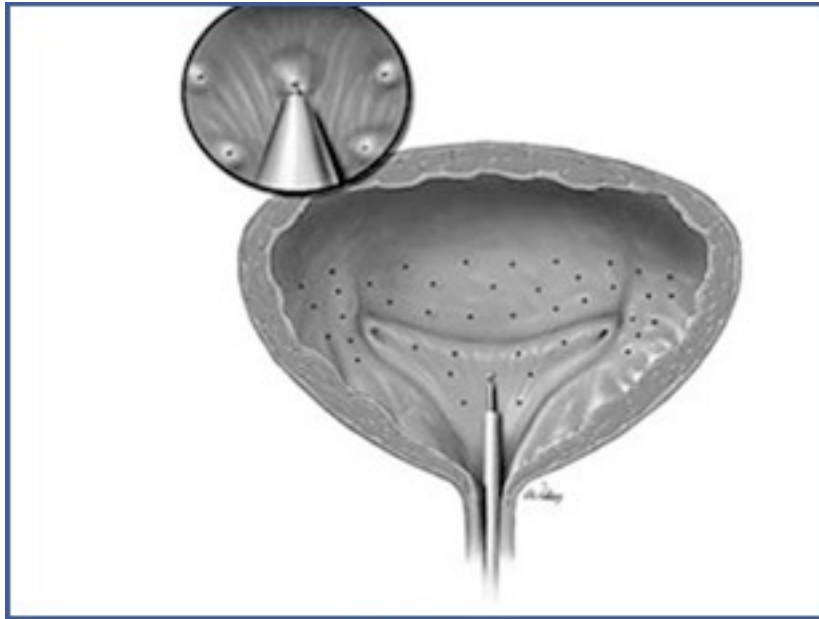
Botulinum toxin: inhibits release of acetylcholine, injected directly into bladder

Alpha agonists (pseudoephedrine)

TCA

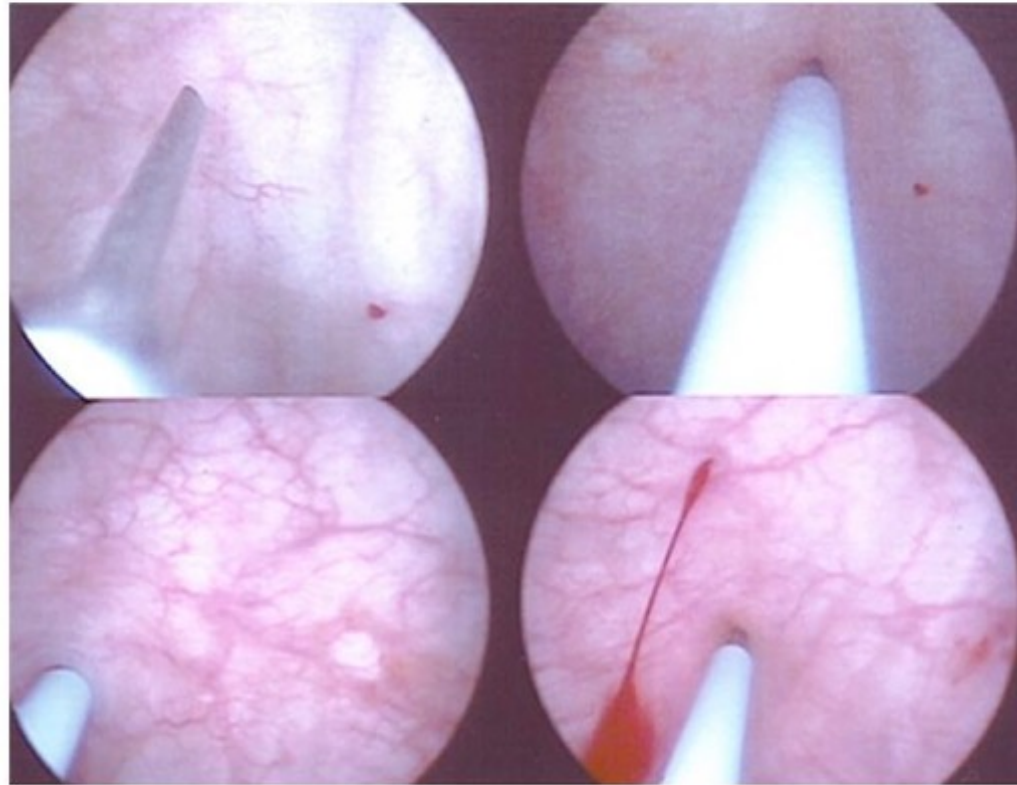
Centrally acting agents (duloxetine)

# Urge Incontinence Botox



Risks:  
urinary retention  
infection

## BOTULINUM TOXIN (Botox) FOR OVERACTIVE BLADDER



# Urge incontinence: Sacral Neuromodulation

Insertion of an insulated wire into the S3 foramen and connecting the wire to an electrical stimulation device

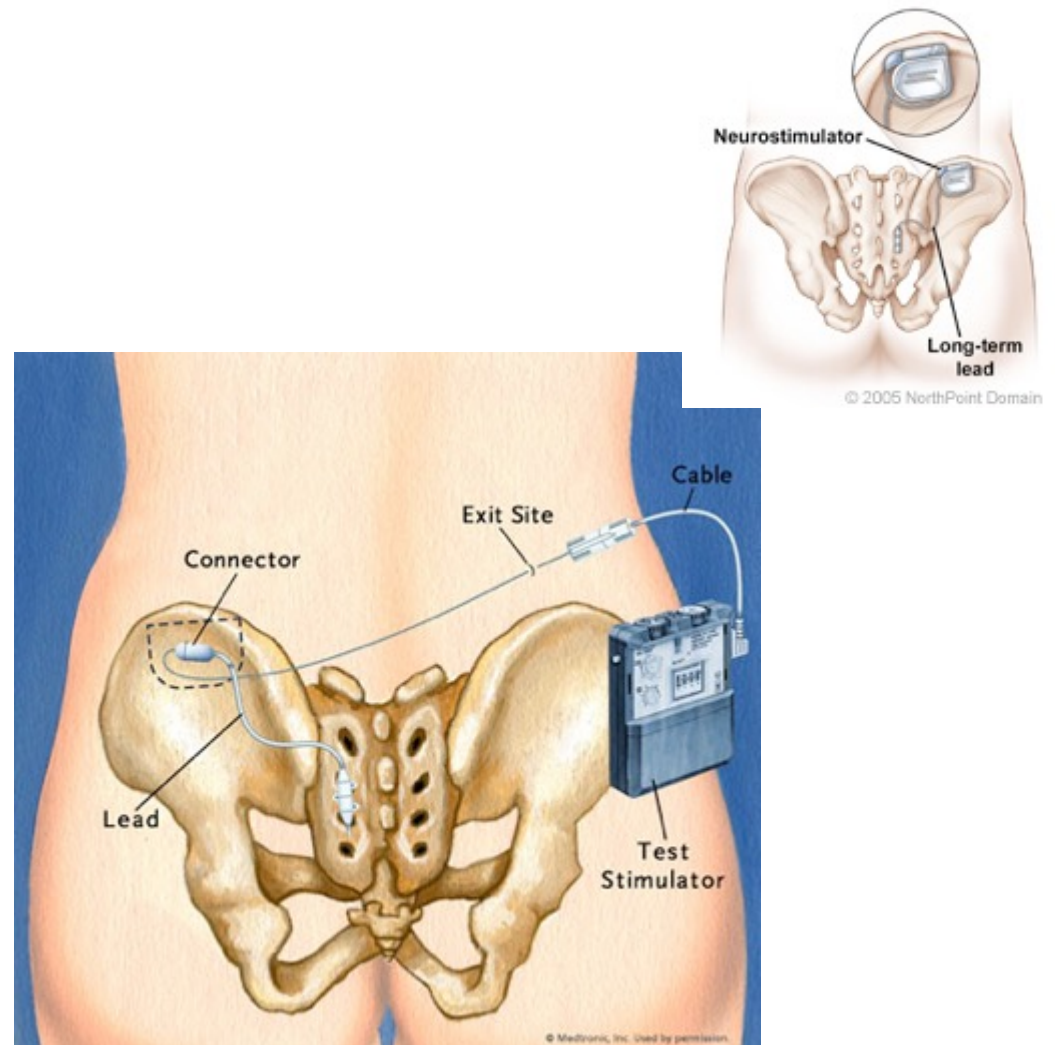
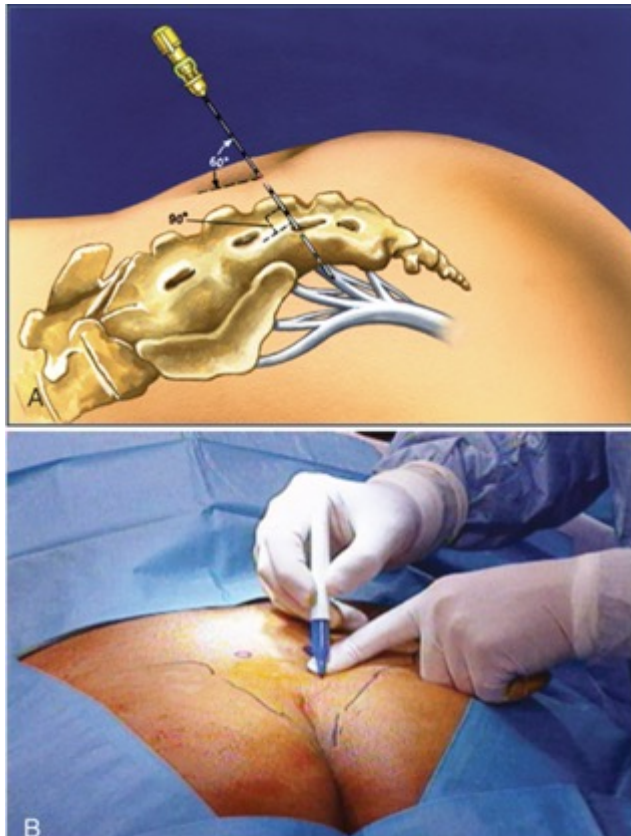
Rechargeable and non-rechargeable

Unclear why this is effective

Not a first line treatment

Expensive

# Sacral Neuromodulation



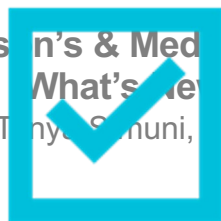
# Questions?



# 2023 Expert Briefings

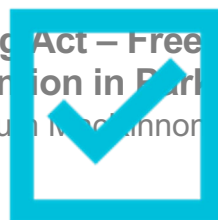
**Wednesday, March 8**

**Parkinson's & Medications –  
What's New?**  
Tanya Shuni, MD



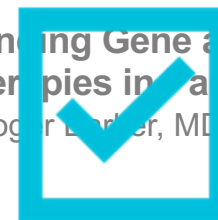
**Wednesday, April 12**

**A Balancing Act – Freezing and Fall  
Prevention in Parkinson's**  
Colin McInnnon, PhD



**Wednesday, May 10**

**Understanding Gene and Cell-  
Based Therapies in Parkinson's**  
Roger Barker, MD



**Wednesday, September 13**

**Parkinson's Disease &  
the Bladder**  
Abhimanyu Mahajan, MD, MHS



**Wednesday, October 11**

**Parkinson's & the Gut-Brain  
Connection**  
Carley Rusch, MS, RDN, LDN

**Wednesday, November 8**

**Do You See What I See?  
Hallucinations & Delusions in  
Parkinson's**  
Megan E. Gomez, PhD

Register at **[Parkinson.org/ExpertBriefings](https://Parkinson.org/ExpertBriefings)**



# Resources and Support



## **Aware in Care**

[Parkinson.org/AwareInCare](https://Parkinson.org/AwareInCare)



## **PD Library**

[Parkinson.org/PDLibrary](https://Parkinson.org/PDLibrary)



## **PD Health @ Home**

[Parkinson.org/PDHealth](https://Parkinson.org/PDHealth)

# Resources and Support Continued



**Podcast: Substantial Matters**  
[Parkinson.org/Podcast](https://parkinson.org/podcast)



**Professional Education**  
[Parkinson.org/ProfessionalEducation](https://parkinson.org/professionaleducation)



**PD Generation**  
[Parkinson.org/PDGeneration](https://parkinson.org/pdgeneration)

# **We're Here For You**

**Parkinson.org**

**1-800-4PD-INFO**

**Helpline@Parkinson.org**



# Before You Go...

**Your feedback is important to us!**  
**Please complete the evaluation after the close of this webinar.**

A photograph of a clipboard with a silver clip at the top, holding a white sheet of paper. The paper contains the title 'EXPERT BRIEFING EVALUATION' in blue, followed by 'Page 1 of 1'. Below this is a question: '1. What best describes your connection to Parkinson's disease (PD)?'. A list of options follows, each with a checkbox: 'Person with Parkinson's', 'Spouse / Partner', 'Parent has / had Parkinson's', 'Other family of person with Parkinson's', 'Friend of person with Parkinson's', 'Healthcare Professional', and 'Other' with a text input field.

**EXPERT BRIEFING EVALUATION**

Page 1 of 1

1. What best describes your connection to Parkinson's disease (PD)?

- ☐ Person with Parkinson's
- ☐ Spouse / Partner
- ☐ Parent has / had Parkinson's
- ☐ Other family of person with Parkinson's
- ☐ Friend of person with Parkinson's
- ☐ Healthcare Professional
- ☐ Other