KETTERING Physician Network
KETTERING HEALTH NETWORK

# Innovative Treatment Options for Refractory Urge Urinary & Fecal Incontinence

**Jorge Arzola, MD**
**KPN Urology**

# Agenda:

- OAB/FI
  - Definitions
  - Prevalence
  - QOL
  - Guidelines
- OAB Evaluation
- Sacral Neuromodulation
- Questions?

# Definition of Overactive Bladder (OAB)

- **OAB** is a symptom complex characterized by:

    1. Daytime **frequency-** >8x/day
    2. **Nocturia** - 1x/night
    3. **Urgency** - sudden compelling desire to urinate
    4. +/- **Urge urinary Incontinence** (UUI)

-In the absence of pathologic or metabolic conditions that might explain these symptoms (DM, UTI, neurologic conditions)

# Definition of Fecal Incontinence (FI)

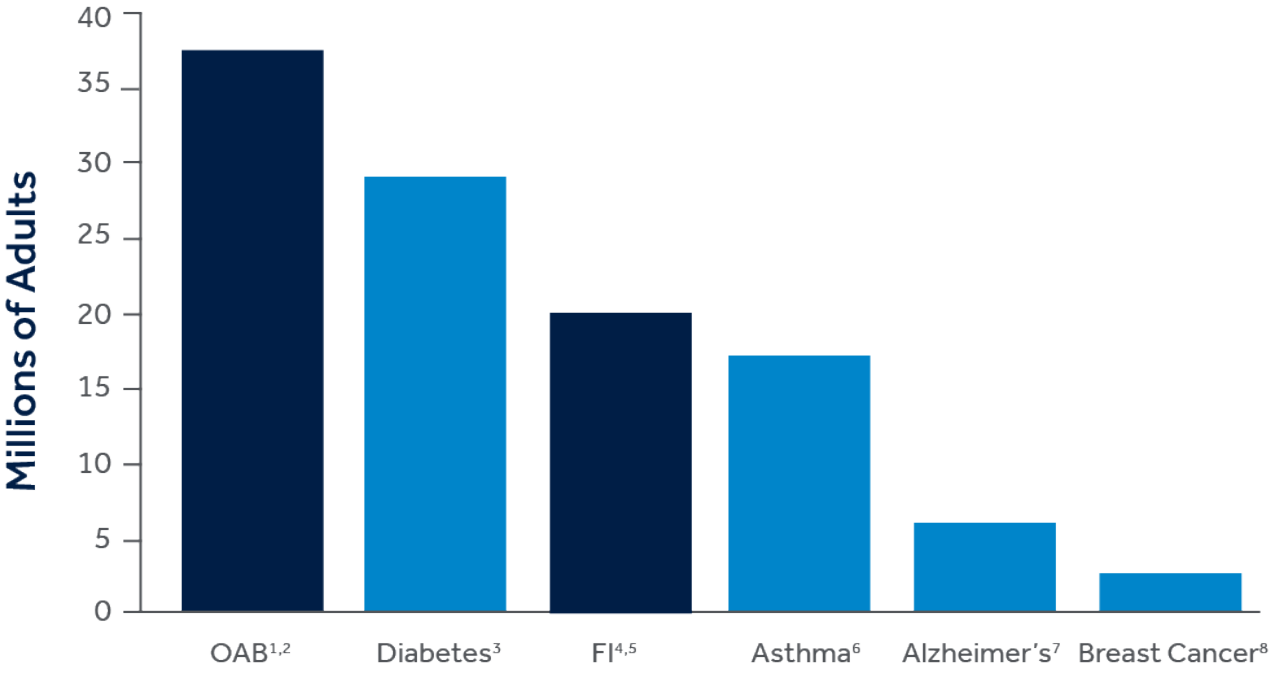
- **“**The accidental passing of bowel movements ranging from an **occasional leakage of stool while passing gas** to a **complete loss of bowel control**”

- Fecal Urge incontinence is the most common type

- Usually due to nerve damage or muscle injury of the pelvic floor muscles which are too weak to hold back a bowel movement

# PREVALENCE

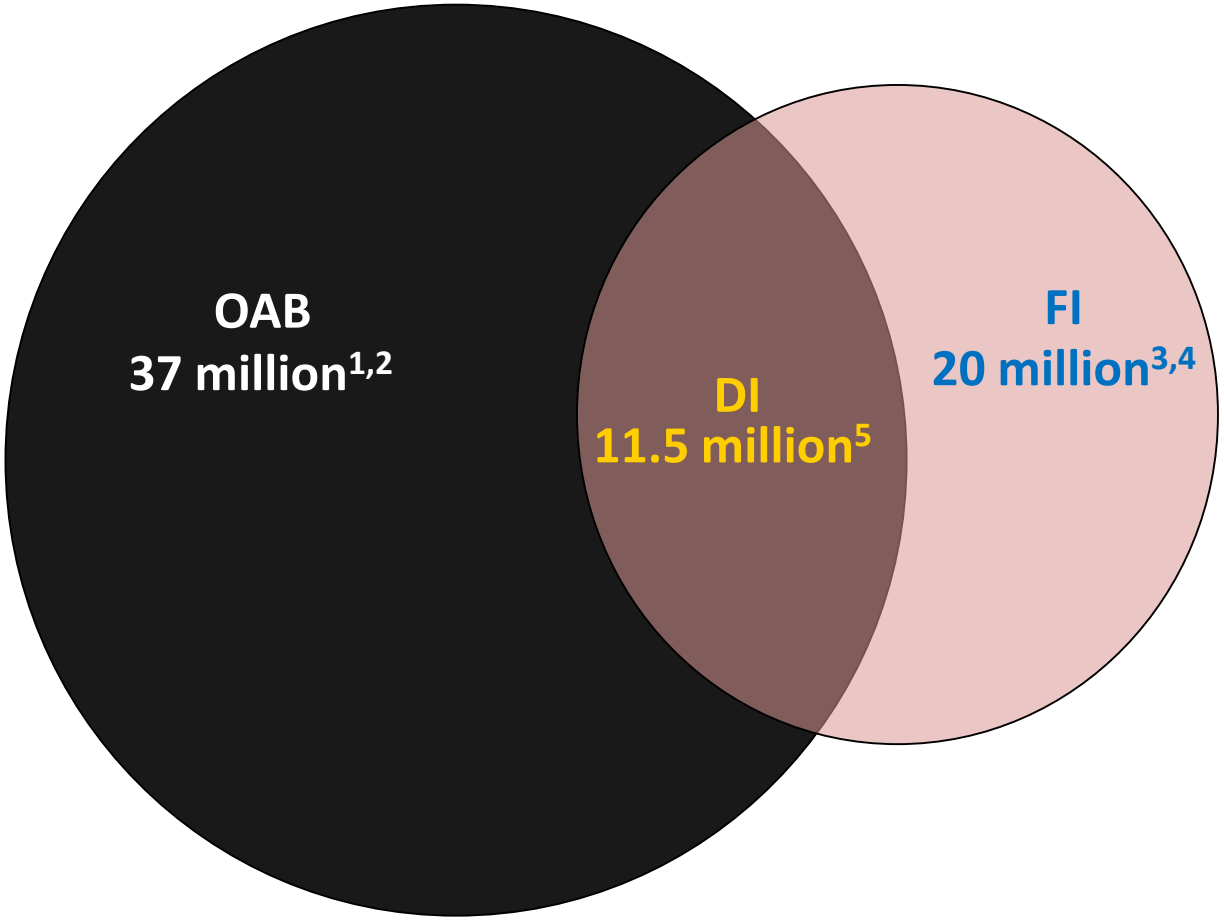
## Prevalence of OAB and FI vs. Other Health Conditions in the U.S.




- More than **37 million** adults in the United States – 1 in 6 suffer from OAB.[1,2]
- More than **20 million** adults in the United States – 1 in 12 suffer from FI.[4,5]
- OAB and FI rank high among other diseases in prevalence.[1-8]


1. Stewart WF, et al. Prevalence and burden of overactive bladder in the United States. *World Jrnl of Urol*. 2003;20:327-336.
2. United Nations, Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision, CD-ROM Edition.
3. National Institute of Diabetes and Digestive and Kidney Diseases. National Diabetes Statistics Report, 2014. www.cdc.gov/diabeteS/pubs/statsreport14/national-diabetes-report-web.pdf Accessed April 21, 2016.
4. Whitehead WE, Borrud L, Goode PS, et al. Fecal Incontinence in US adults: epidemiology and risk factors. *Gastroenterology*. 2009;137(2):512-517.
5. United States Quick Facts. United States Census Bureau Web site. Available at: https://www.census.gov/quickfacts/table/PST045215/00 Accessed July 19, 2016.
6. Centers for Disease Control and Prevention. 2014 NHIS Data. http://www.cdc.gov/asthma/nhis/2014/table3-1.htm. Accessed April 21, 2016.
7. Alzheimer's Association. 2016 Alzheimer's Disease Facts and Figures. http://www.alz.org/facts/overview.asp. Accessed April 21, 2016.
8. Breastcancer.org. U.S. Breast Cancer Statistics. http://www.breastcancer.org/symptoms/understand_bc/statistics. Accessed April 21, 2016.

# PREVALENCE
## DUAL INCONTINENCE (U.S.)





1. Stewart WF, Van Rooyen JB, Cundiff GW, et al. Prevalence and burden of overactive bladder in the United States. *World J Urol*. 2003 May;20(6):327-36.
2. United Nations, Department of Economic and Social Affairs, Population Division (2011). World Population Prospects: The 2010 Revision, CD-ROM Edition
3. Whitehead WE, Borrud L, Goode PS, et al. Fecal incontinence in US adults: epidemiology and risk factors. *Gastroenterology*. 2009 Aug;137(2):512-517.
4. United States Quick Facts. United States Census Bureau Web site. Available at: https://www.census.gov/quickfacts/table/PST045215/00. Accessed December 2, 2016.
5. Coyne KS, et al. The prevalence of chronic constipation and fecal incontinence among men and women with symptoms of overactive bladder. BJU Int. 2011 Jan;107(2):254-61.

# OAB and Quality of Life

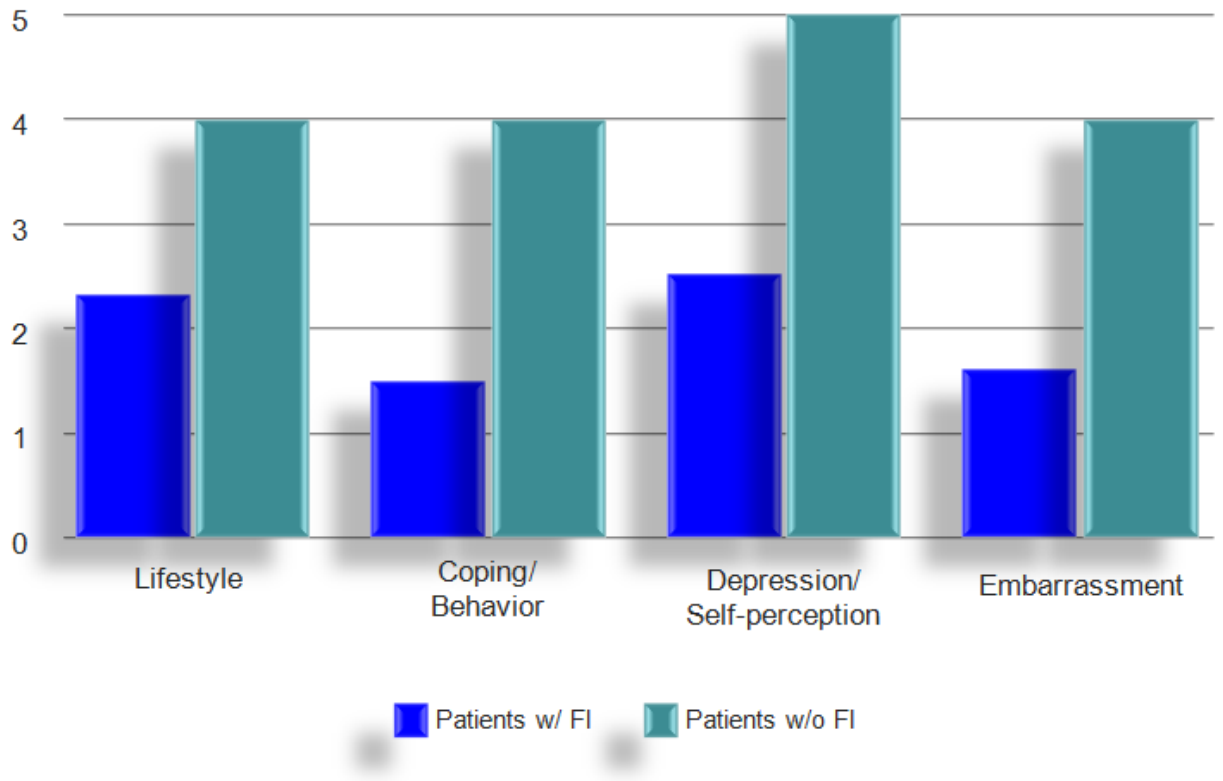
- National Association for Continence (NAFC) survey participants reported that their OAB caused them to:
  - alter their behavior in social situations.
  - refrain from both normal and intense physical activity.
  - refrain from physical intimacy.
  - cancel social plans.
- Primary reasons patients seek OAB treatment:
  - Frustration from living with symptoms (78%)
  - Embarrassment (42%)
  - Physical discomfort (38%)

Source: Survey for the National Association for Continence (NAFC), sponsored by Medtronic, Inc. and conducted by Kelton Research, April 2009. The online survey was conducted using an email invitation. Respondents were 611 nationally representative American women ages 40-65 with overactive bladder.

# FI Impacts Quality of Life

## Fecal Incontinence Quality of Life Scale (FIQOL) Scores

**Note: Higher scores translate to higher quality of life**




Medtronic data on file. InterStim Therapy for Bowel Control Prospective Clinical Study. PMA#P080025.

# Patient Education Needed

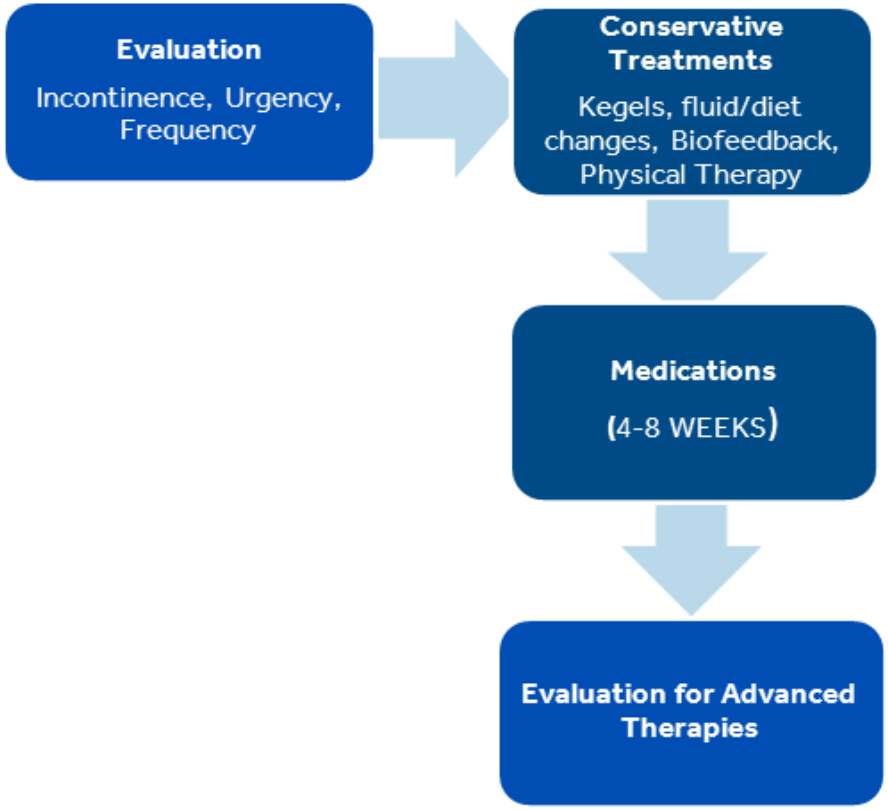
Studies suggest that only **15%– 45%** of FI patients seek treatment[1,2].

Consider the following statistics that support the claim that **fecal incontinence is a hidden condition**:

- For **84%** of patients with FI, the **physician was unaware** of the patient's disorder[1]
- **54%** of patients with FI had **not discussed the problem with a professiona**l[2]
- **65%** of patients with severe or major FI which had an impact on the quality of life **wanted help** with their symptoms[3]


1. Damon H, Guye O, Seigneurin A, et al. Prevalence of anal incontinence in adults and impact on quality-of-life. *Gastroenterol Clin Biol*. 2006;30(1):37-43
2. Edwards NI, Jones D. The Prevalence of Faecal Incontinence in Older People Living at Home. *Age Ageing*. 2001;30(6):503-7
3. Perry S, Shaw C, McGrother C, et al. Prevalence of faecal incontinence in adults aged 40 years or more living in the community. *Gut*. 2002;50(4):480-484.

# CURRENT TREATMENT PATH FOR OAB PATIENTS
## AUA GUIDELINES




Patients are considered refractory after failing behavioral therapy of sufficient length and at least **ONE** anti-muscarinic for 4-8 weeks.

# TREATMENT GUIDELINES FECAL INCONTINENCE

## AMERICAN COLLEGE OF GASTROENTEROLOGY (ACG)

Strong Recommendation:
SNM for the Treatment of Fecal Incontinence

**Conservative Treatment Options:**
Medications
Dietary Modifications
Pelvic Floor Exercises
Biofeedback

Patients who do not respond

**Strong Recommendation:**
Moderate quality of evidence
*Most individuals should receive the treatment*
SNM

**Weak Recommendation:**
Moderate quality of evidence
Injectable Bulking Agents

**Weak Recommendation:**
Low quality of evidence
Sphincteroplasty

**Strong Recommendation:**
Low quality of evidence
*Last resort procedure*
Colostomy

# OAB Evaluation

1. **Minimum evaluation:** careful history, focused physical exam and urinalysis

2. **Advanced evaluation**: urine culture, cytology, cystoscopy, post void residual, +/-urodynamics

3. **Pelvic Exam-** evaluate for stress urinary incontinence (SUI), urethral mobility, pelvic organ prolapse.

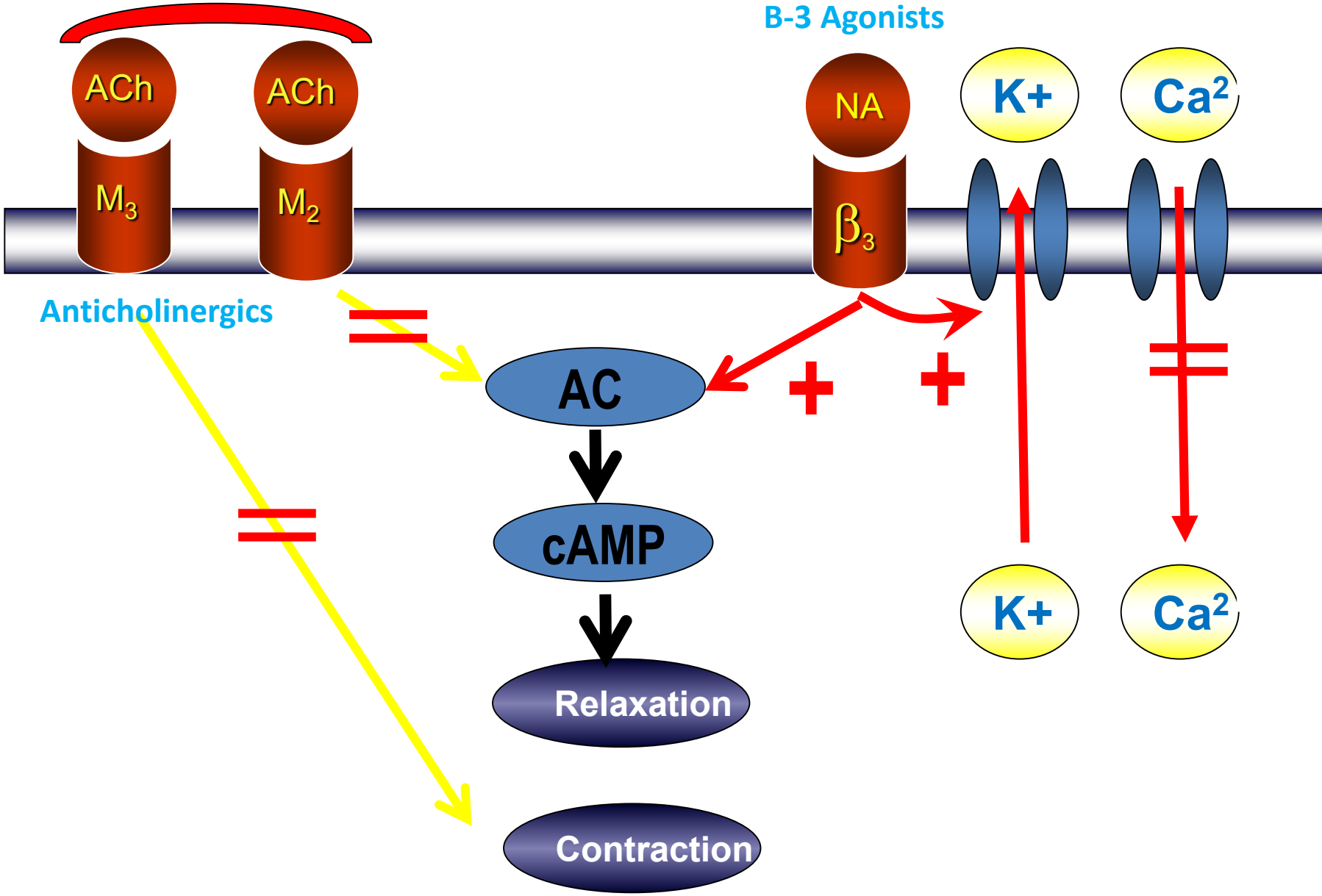
# OAB Conservative treatments

- Designated as first line treatments by AUA and Intl Continence Society (ICS) because it is **as effective as medical therapy at reducing OAB sx's** but require adherence and compliance
- 1. *Education*
- 2. *Dietary and lifestyle modification*-decreasing caffeinated/carbonated beverages, limiting fluids
- 3. *Bladder training*- scheduled voiding, emptying bladder at night
- 4. *Pelvic floor muscle therapy*- physical therapy to strengthen pelvic floor muscles
- 5. *Bladder diaries- track drinking and urinating behaviors*

# Medical therapy for OAB:

- **<u>Anticholinergics/Antimuscarinics</u>**
- (Ditropan, Detrol, Vesicare, Toviaz, Sanctura, etc)
  - Block ***acetylcholine*** binding to detrussor ***muscarinic receptors*** thus *suppressing contractions*.
  - No one drug is superior, marginal efficacy, dry mouth, constipation, contraindicated in narrow angle glaucoma

- **<u>β-3 Agonists</u>** (Mirabegron):
  - Impact ***β3 adrenergic receptors*** to *relax detrusor* muscle during filling
  - As a result, Mirabegron *increases bladder capacity*
  - Approved in 2012, no long term data or drop out rates
  - Still has many insurance hurdles



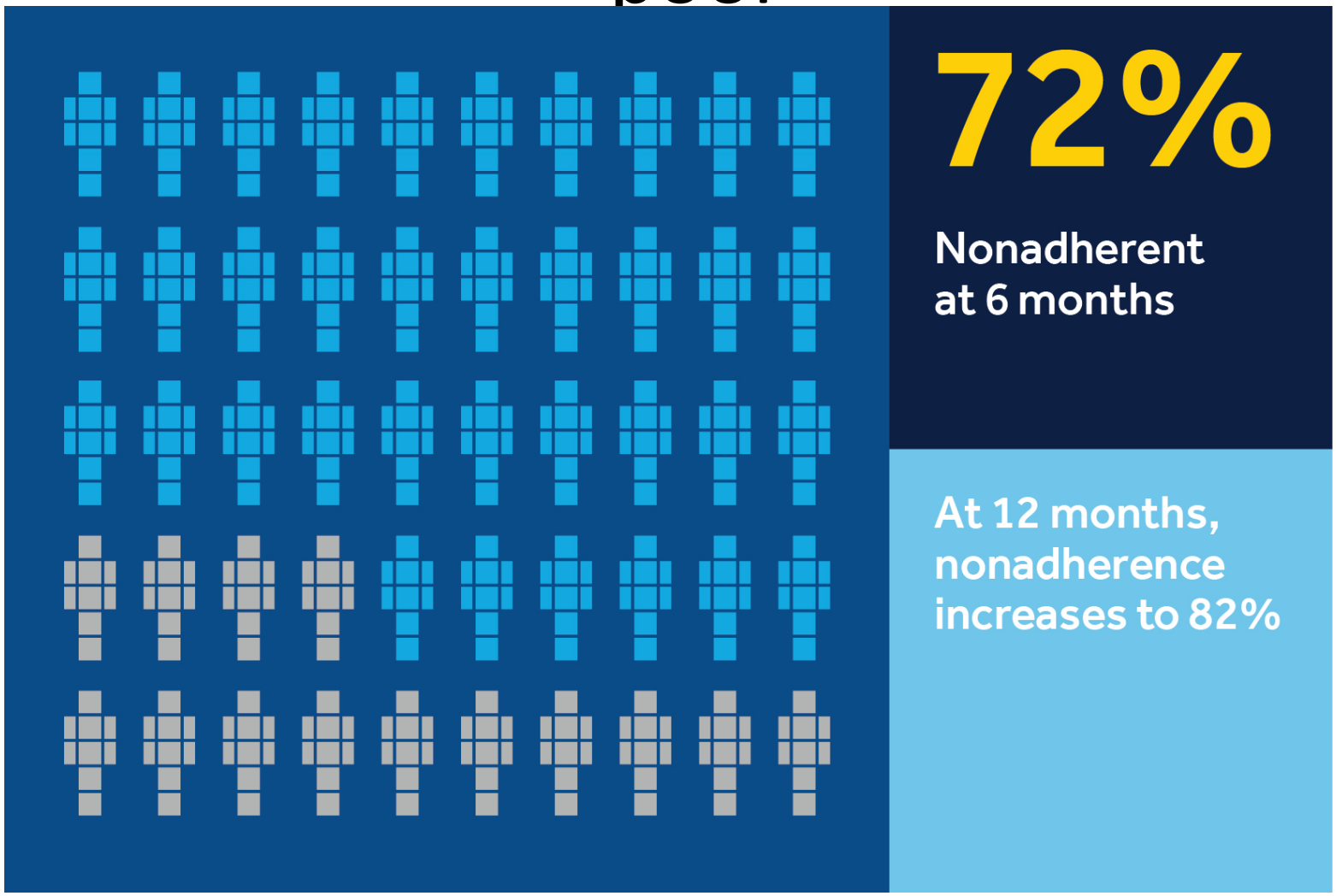

Andersson K-E. beta3-receptor agonists for overactive bladder--new frontier or more of the same? Curr Urol Rep. 2013;14(5):435–41.

# OAB Rx Adverse events

- **Antimuscarinics**:
  - Dry mouth
  - Constipation
  - Cognitive (confusion)

- **β-3 Agonists**
  - Can increase blood pressure
  - Periodic BP check recommended
  - Contraindicated in pts with severe uncontrolled HTN (>180/110 mm Hg)

# Adherence to oral OAB medications is poor




"One of the main limitations of anti muscarinic therapy is that the majority of the patients discontinue after a few weeks or months'~ AUA Guidelines

# OAB Advanced Therapy Options

- OnabotulinumtoxinA  Injections (Botox)
  - Neurotoxin **blocks Ach *release*** from presynaptic membrane resulting in temporary calming of muscle contractions
  - Pt must be willing to check frequent PVR's and self catheterize
  - Can take up to 6m to clear from body
- Peripheral Tibial Nerve Stimulation (PTNS)
  - **Indirect** electrical stimulation of sacral nerve plexus via tibial nerve
  - 30 min stimulation/weekly x 12 weeks
- Sacral Neuromodulation (SNM/Interstim)
  - **Direct** stimulation of sacral nerve plexus responsible for bladder contractions.
- Surgery (Augmentation cystoplasty/urinary diversion)
  - Very invasive, rare- procedure of last resort

# Sacral Neuromodulation (SNM)

- Delivers mild electrical pulses to the afferent fibers that accompany the sacral spinal nerves via an implanted neurostimulator and lead
- These nerves control the pelvic floor muscles, lower urinary tract, anal sphincters, and colon.[1-3]
- Differs from oral meds/Botox for OAB which target the muscular component of bladder control.[2,3]


1. Kenefick NJ, Emmanuel A, Nicholls RJ. Effect of sacral nerve stimulation on autonomic nerve function. *British Journal of Surgery*. 2003:90:1256-1260.
2. Griebling TL. In: Kreder K, Dmochowski R, eds. The Overactive Bladder: Evaluation and Management. London, England: Informa UK Ltd; 2007:293-302.
3. Leng WW, Chancellor MB. How sacral nerve stimulation works. *Urol Clin N Am*. 2005;32:11-18.

* While the precise mechanism of action of Sacral Neuromodulation has not been fully established, efficacy has been proven in clinical studies.

# Provided by the InterStim® System


-Only system currently available

- Indications:
  - Urge incontinence
  - Urgency-frequency
  - Non-obstructive urinary retention
  - Chronic fecal incontinence

# Benefits of the InterStim® System for Bladder Control and Bowel Control

- FDA approved since late 1990's
- Proven clinical safety and efficacy
- Received by more than 250,000 patients worldwide
- Test for potential success prior to long-term therapy
- Does not preclude use of alternative treatments

# Test for Potential Success

## Basic Evaluation

- **Temporary (non-tined) lead** is placed during a simple awake procedure and connected to an external stimulator
- Patient tests therapy effects for **3-7 days**
- If successful, patient may proceed directly to long-term (tined) lead and device implant through an outpatient procedure
- If test is inconclusive or unsuccessful, the advanced evaluation via the staged test is recommended
- **GOAL IS ATLEAST 50% IMPROVEMENT IN SX's**

# Test for Potential Success

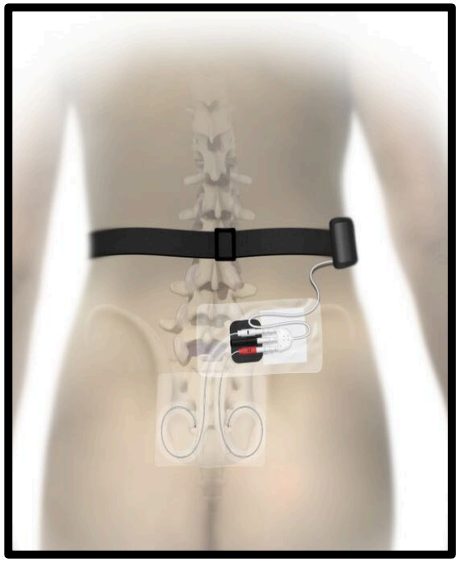
## Advanced Evaluation

- Utilizes a **tined lead** that anchors in place
- Placed in the Operating Room during an outpatient procedure under sedation and utilizing fluoroscopy
- Patient assesses therapy effects for **7-14 days**
- If test successful, tined lead remains in place and device implanted as an outpatient procedure
- **GOAL IS ATLEAST 50% IMPROVEMENT IN SX's**

# INTERSTIM™ THERAPY PROCEDURE
## EVALUATION METHODS

Inconclusive

**Basic Evaluation (PNE)**



**Advanced Evaluation (Stage 1)**

**Neurostimulator Implant (lead and INS)**

Successful

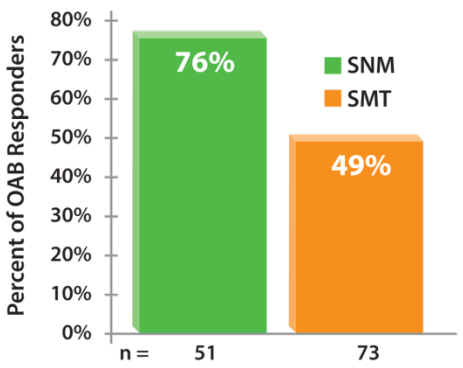
Successful

# Implant

- With successful test results the device is implanted

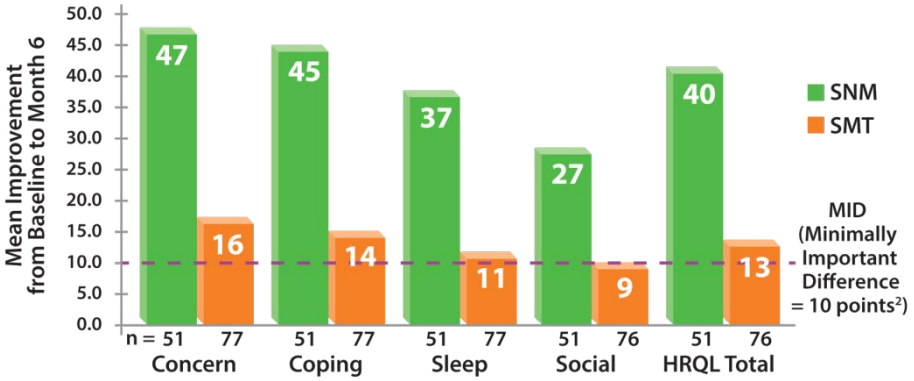
# SNM for Bladder Control Outperforms Medications (SMT) at 6 Months*[1]

## Superior Efficacy




Numbers reflect as treated results, defined as subjects with diary data at baseline and 6 months (p=0.002). Intent to treat results, which include all randomized subjects, are 61% for Sacral Neuromodulation (SNM) and 42% for standard medical therapy (SMT) (p=0.02).

## 3 Times Greater Improvements in Total Quality of Life




Device-related adverse events occurred in 31% of SNM patients, and medication-related adverse events occurred in 27% of SMT patients.

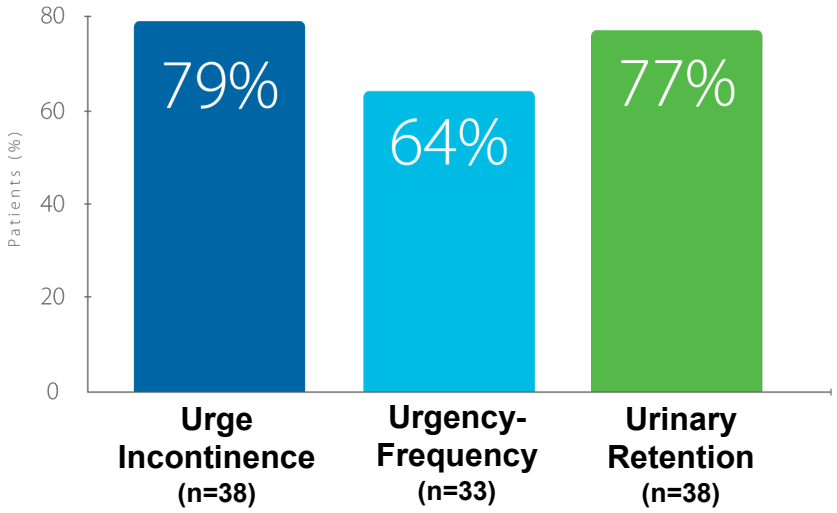
Criteria for success are: >/= 50% improvement in leaks/voids or return to normal voids


1. Siegel S, Noblett K, Mangel J, Griebling TL, Sutherland SE, et al. Results of a prospective, randomized, multicenter study evaluating sacral neuromodulation with InterStim® Therapy compared to standard medical therapy at 6-months in subjects with mild symptoms of overactive bladder. *Neurourol Urodyn*. Article published online: January 10, 2014. DOI: 10.1002/nau.22544.
2. Coyne KS, Matza LS, Thompson CL, Kopp ZS, Khullar V. Determining the importance of change in the overactive bladder questionnaire. *JUrol*. 2006;176(2):627-632.


*anticholinergic/antimuscarinic

# InterStim Delivers Clinical Efficacy

## 12-month clinical success for Urinary Control[1]




**79%** of **urge incontinence** patients achieved clinical success

- 45% remained completely dry
- An additional 34% experienced ≥50% reduction in leaking

**64%** of **urgency-frequency** patients achieved clinical success

- 31% returned to normal voids (4 to 7 voids/day)
- An additional 33% experienced ≥50% reduction in number of voids

**77%** of **urinary retention** patients achieved clinical success

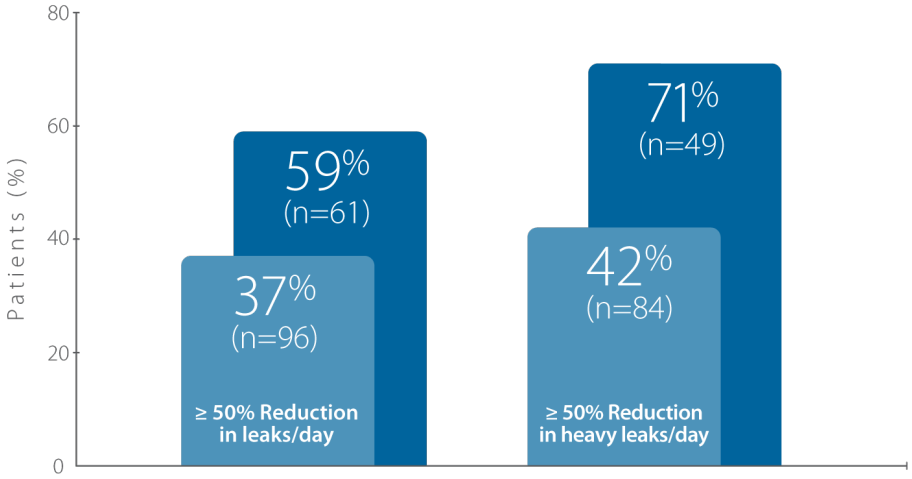
- 61% eliminated use of catheters
- An additional 16% experienced ≥50% reduction in catheterized urine volume

1. Medtronic-sponsored research : InterStim Therapy - Clinical Summary, 2011.

# InterStim Therapy for Urinary Control

# Lasting Efficacy - Proven in a 5-year Clinical Trial

## Urge Incontinence[1]




**Evaluable Patients –** the subset of subjects for whom both baseline and 5-year data were available

**Intent-to-Treat Patients –** all implanted subjects, including those who dropped out and were imputed as no change from baseline

- **59%** of **urge incontinent** patients achieved ≥ 50% reduction in leaks/day*
- **71%** of those **urge incontinent** patients who reported **heavy leaks** at baseline achieved ≥ 50% reduction in leaks per day†

* 59% in evaluable patient population (n=61) and 37% in intent-to-treat population (n=96)

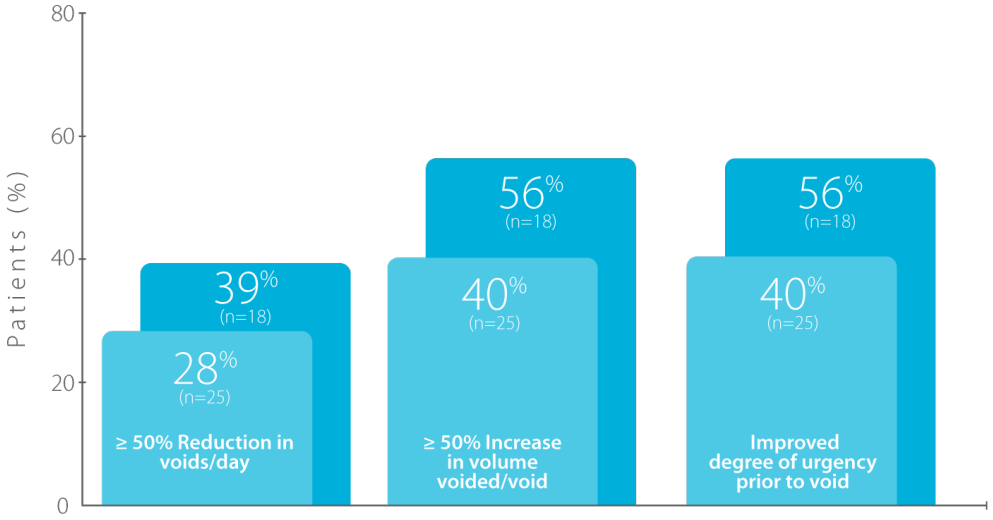
† 71% in evaluable patient population (n=49) and 42% in intent-to-treat population (n=84)

1. Medtronic-sponsored research : InterStim Therapy - Clinical Summary, 2011.

# InterStim Therapy for Urinary Control

## Lasting Efficacy - Proven in a 5-year Clinical Trial

### Urgency-Frequency[1]




**Evaluable Patients –** the subset of subjects for whom both baseline and 5-year data were available

**Intent-to-Treat Patients –** all implanted subjects, including those who dropped out and were imputed as no change from baseline

**56%** of **urgency-frequency** patients achieved ≥50% increase in volume voided/void and improved degree of urgency*

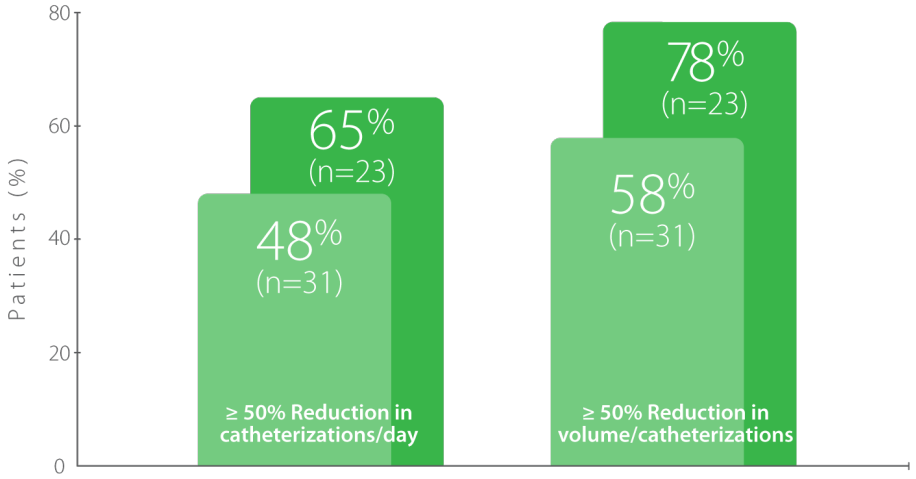
* 56% in evaluable patient population (n=18) and 40% in intent-to-treat population (n=25)

1. Medtronic-sponsored research : InterStim Therapy - Clinical Summary, 2011.

# InterStim Therapy for Urinary Control

# Lasting Efficacy - Proven in a 5-year Clinical Trial

## Urinary Retention[1]




**Evaluable Patients –** the subset of subjects for whom both baseline and 5-year data were available

**Intent-to-Treat Patients –** all implanted subjects, including those who dropped out and were imputed as no change from baseline

**78%** of **urinary retention** patients achieved ≥ 50% reduction in volume/catheterization*

* 78% in evaluable patient population (n=23) and 58% in intent-to-treat population (n=31)

1. Medtronic-sponsored research : InterStim Therapy - Clinical Summary, 2011.

# Long-term Bowel Control Proven at 5 Years

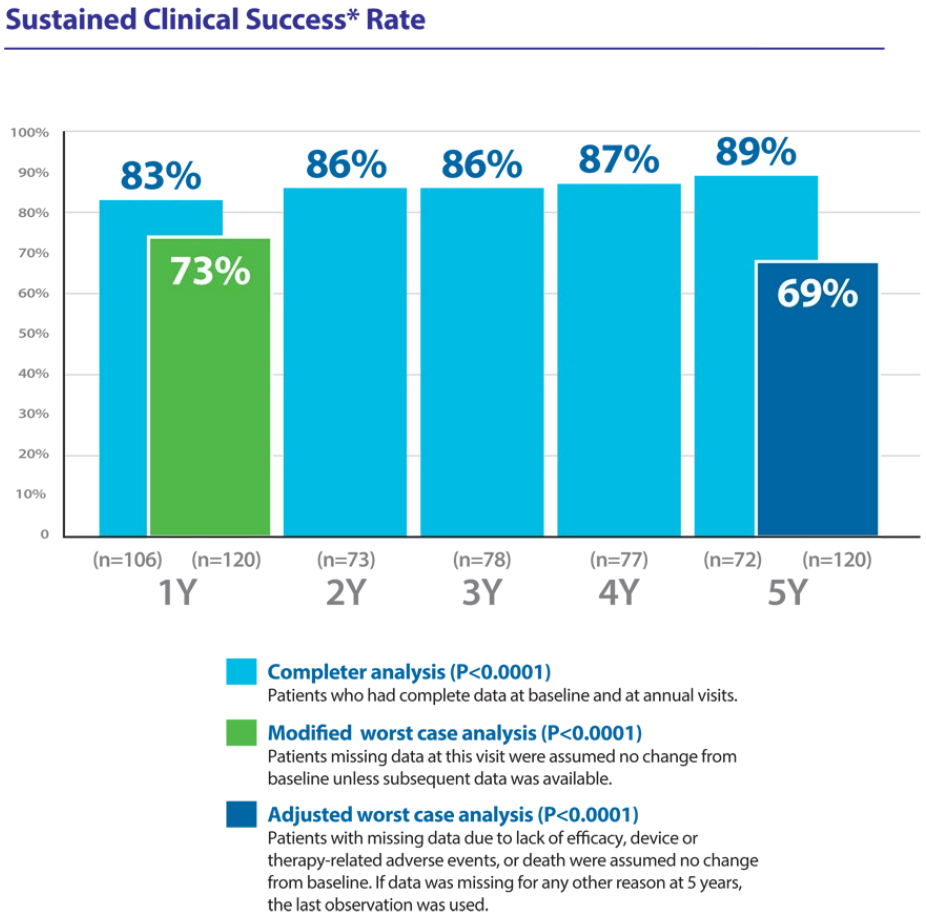
The InterStim for Bowel Control prospective clinical study demonstrates that Sacral Neuromodulation patients experienced significant improvement in their FI from baseline to 5 years ($P < 0.001$).

**89%** of patients achieved clinical success* at 5 years.

**36%** of patients achieved complete continence at 5 years.

Most adverse events were treated successfully with medication or device reprogramming. The most common adverse events were implant site pain, paraesthesia, change in sensation of stimulation, and implant site infection.

*** Clinical success defined as ≥50% reduction of episodes/week.**




Hull T, Giese C, Wexner SD, Mellgren A, Devroede G, et al. Long-term durability of sacral nerve stimulation therapy for chronic fecal incontinence. *Dis Colon Rectum*. 2013;56:234-245.

# Summary

- OAB and FI are very common conditions which significantly impact a patient's quality of life.
- Patients may be embarrassed to discuss symptoms and are often unaware of all the treatment options available.
- If conservative treatments have been unsuccessful, please refer patients to a specialist for advanced diagnostic and alternative treatment options.
- By partnering with a specialist, treatment options can be expanded to help find the best solution to manage your patients' with OAB and/or FI.

# Questions??