

Urinary Incontinence

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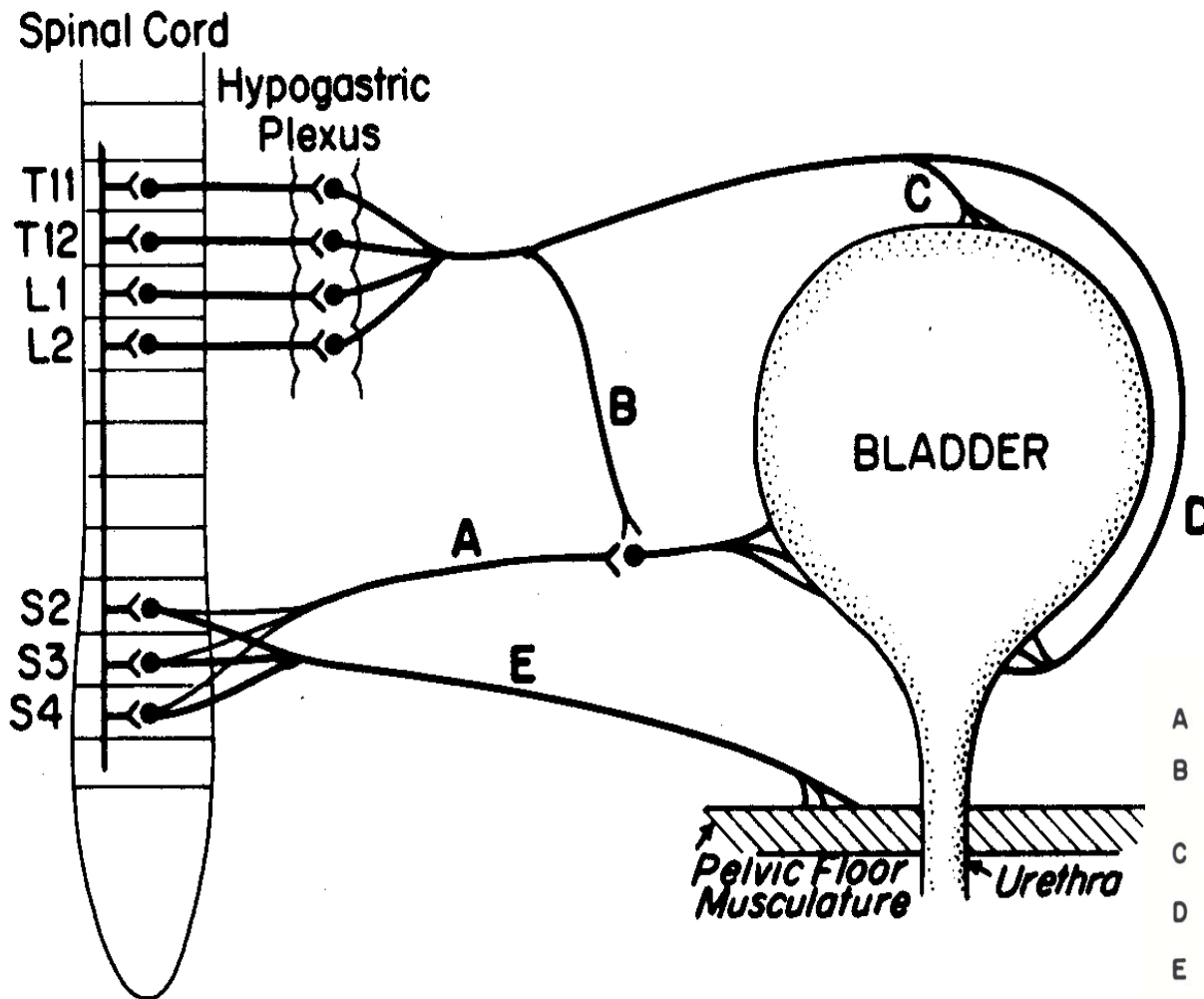
Prevalence of Urinary Incontinence (UI)

- Involuntary loss of urine
- Multifactorial syndrome involving neurourinary pathology, age-related factors, and comorbid conditions
- Three times more common in women than men until age 80 when ~50% have episodes of incontinence and ~20% have daily incontinence
- 50 - 75% of incontinent persons never describe their symptoms to physicians

Risk Factors Associated with UI

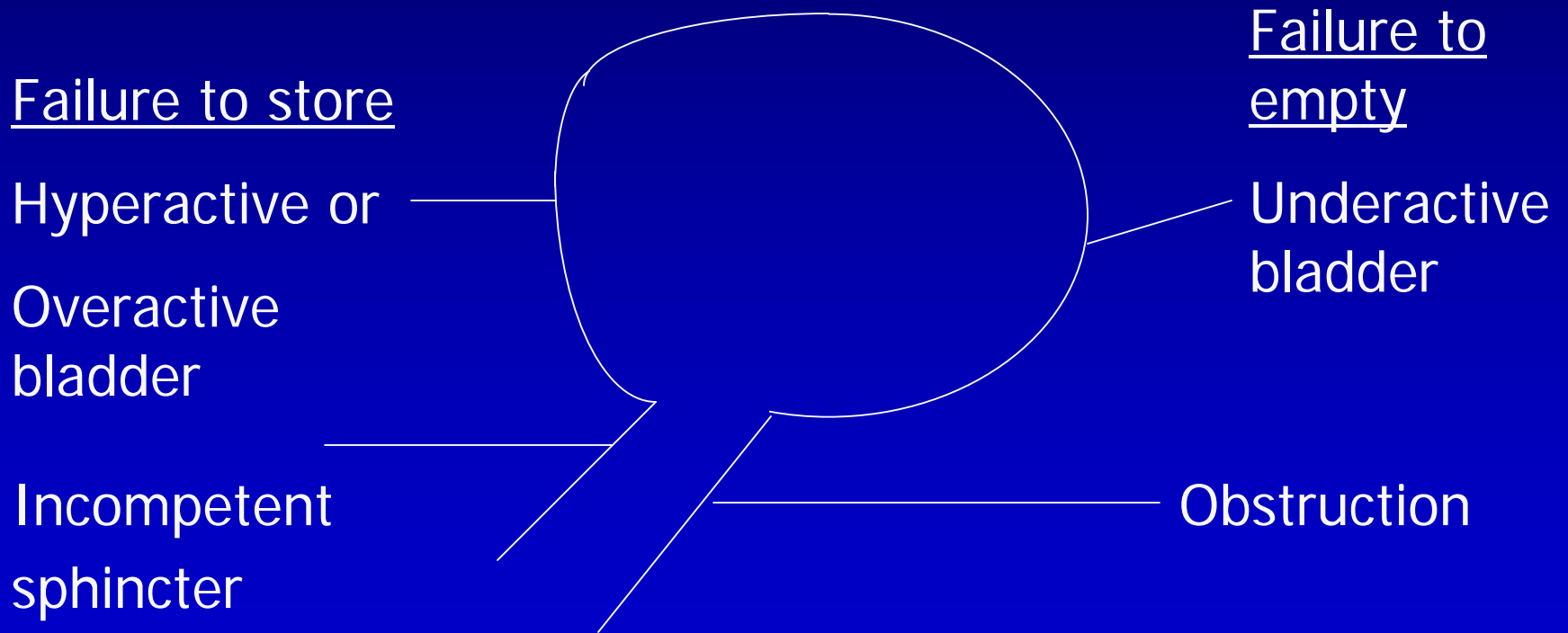
- Forceps delivery/vaginal delivery > C-section
- Hysterectomy, prostatectomy
- Obesity
- Diabetes, stroke, COPD, cough, CHF, depression, constipation, neurologic disorders, BPH, radiation
- Estrogen depletion
- Impaired functional and mobility status
- Medications (sedatives, alpha blockers)
- Environmental barriers

Peripheral Nerves in Micturition



TYPE OF NERVE	FUNCTION
A PARASYMPATHETIC CHOLINERGIC... (Nervi Erigentes)	Bladder contraction
B SYMPATHETIC.....	Bladder relaxation (by inhibition of parasympathetic tone)
C SYMPATHETIC.....	Bladder relaxation (β adrenergic)
D SYMPATHETIC.....	Bladder neck and urethral contraction (α adrenergic)
E SOMATIC (Pudendal nerve).....	Contraction of pelvic floor musculature

Lower Urinary Tract Dysfunction



Screening

- Ask all women who have had children and all persons aged 65 and older the following:
- “Do you ever leak urine?”
- “Do you ever use pads or something else to catch urine?”

Evaluation

- Duration, frequency, severity, timing
- Associated symptoms, precipitants
- Bowel and sexual function, parity, status of other medical conditions, medications, functional status
- GU history (e.g. previous anti-incontinence surgery)

Evaluation

- Bladder record
 - timing and volume (drops, small, medium and soaking) of continent and incontinent episodes
 - associated activities (coffee drinking, exercise)
 - hours of sleep

Potentially Reversible Causes of Incontinence*

- Delirium
- Infection, urinary (symptomatic)
- Atrophic urethritis/vaginitis
- Pharmaceuticals
- Psychological disorders
- Endocrine disorders/excessive urine production
- Restricted mobility
- Stool impaction

*Resnick NM. Med Grand Rounds 1984; 3:281-290.

Medications that May Affect Continence

Types of Medication

- Sedative/hypnotics
- Alcohol
- Anticholinergics
 - antipsychotics
 - antidepressants
 - antihistamines
- Narcotic analgesics

Potential Effects on Continence

Sedation, delirium, immobility

Polyuria, frequency, urgency

Urinary retention,
overflow incontinence,
fecal impaction, delirium

Urinary retention, sedation,
fecal impaction

Medications that May Affect Continence

Types of Medication

- α - Adrenergic antagonists
- α - Adrenergic agonists
- Calcium channel blockers

- Potent diuretics

- ACE inhibitors

Potential Effects on Continence

Urethral relaxation → stress UI

Urinary retention

Nocturnal incontinence

Polyuria, frequency, urgency

Drug-induced cough

Types of Persistent Incontinence

- Urge
 - more common in older women
- Stress
 - more common in younger women
- Mixed
 - most common overall in women
- Overflow
 - most common in men

Urge Incontinence

“I can’t get to the bathroom on time.”

- An abrupt desire to void (urgency) that cannot be suppressed
- Usually thought due to age-related changes causing uninhibited detrusor contractions
- Other causes - bacterial cystitis, bladder tumor, bladder stones, atrophic vaginitis/urethritis, stroke, Parkinson’s disease, dementia, and in younger women-interstitial cystitis
- Especially in frail elderly, may have detrusor hyperactivity with impaired contractility (DHIC)

Stress Incontinence

“I leak urine when I cough, laugh, sneeze or when running.”

- Increases in intra-abdominal pressure overwhelm urethral sphincter
- Hypermobility of bladder neck and urethra (85% cases) - aging, hormonal changes, multiple childbirths, hysterectomy, pelvic surgery
- Intrinsic sphincter deficiency (15% cases) - previous pelvic/anti-incontinence surgery, pelvic radiation, trauma, neurogenic disorders

Overflow Incontinence

“I dribble urine most of the time.”

- Overdistension of the bladder caused by :
 - Bladder outlet obstruction –
 - Stricture, pelvic prolapse, cystocele, BPH, fecal impaction
 - Impaired detrusor contractility -
 - Diabetes, MS, lumbar spinal stenosis, spinal cord injury, medications

Functional Incontinence

- Does not involve lower urinary tract
- Result of physical (e.g. arthritis, stroke) and/or cognitive impairment

Physical Examination

- Mental status
- Mobility
- Evidence of volume overload
- Neurologic - evaluation of lumbosacral nerves, focal findings, peripheral neuropathy
- Pelvic exam - atrophic vaginitis, urethral hypermobility, cystocele, uterine prolapse, rectocele, masses
- Rectal - sphincter tone (active/resting) to assess integrity of sacral plexus (S_2 - S_4), perineal sensation, fecal impaction, masses

Stress Test

- Best done when bladder is relatively full, in standing position with relaxed perineum
- Patient asked to vigorously cough once while a pad is held underneath perineum or on the floor
- In women, positive test sensitive but not specific for impaired sphincter function

Post-void Residual Volume (PVR)

- Perform within 5 minutes of voiding
- Catheterization or bladder ultrasound
 - PVR < 50cc - adequate bladder emptying
 - PVR < 100cc - adequate bladder emptying > 65 years
 - PVR > 200cc - refer

Basic Laboratory Evaluation for UI

- Calcium, glucose
- BUN/Cr - especially if PVR > 200cc
- Urinalysis and culture

Urodynamic Testing

- Not routinely recommended
- Mainly used when surgery is being considered

Management of UI

Overview

- Behavioral therapies
- Pharmacological therapies
- Surgery
- Pessaries
- Periurethral bulking agents
- Garments and pads
- Catheters

Behavioral Interventions

- Reduce amount and timing of fluid intake (e.g. stop at 7pm)
- Avoid bladder stimulants such as caffeine, ETOH
- Use diuretics judiciously and not before bedtime
- Elevate legs before bedtime in patients with edema
- Make toilet easier to get to - suggest bedside commode
- Lose weight if obese

Patient Dependent Behavioral Interventions for Incontinence

<u>Procedure</u>	<u>Definition</u>	<u>Effect</u>
Bladder retraining	Progressive lengthening of the voiding interval	20% "dry" rate 75% with 50% reduction
Pelvic muscle (Kegel)* exercises	Repetitive contraction of pelvic floor muscles	56-95%
Biofeedback	Rectal or vaginal pressure recording to train patients to contract pelvic floor and relax bladder	54-87%

*3 sets of 8-12 contractions lasting 6-8 seconds,
3-4 x per week x 15 weeks minimum

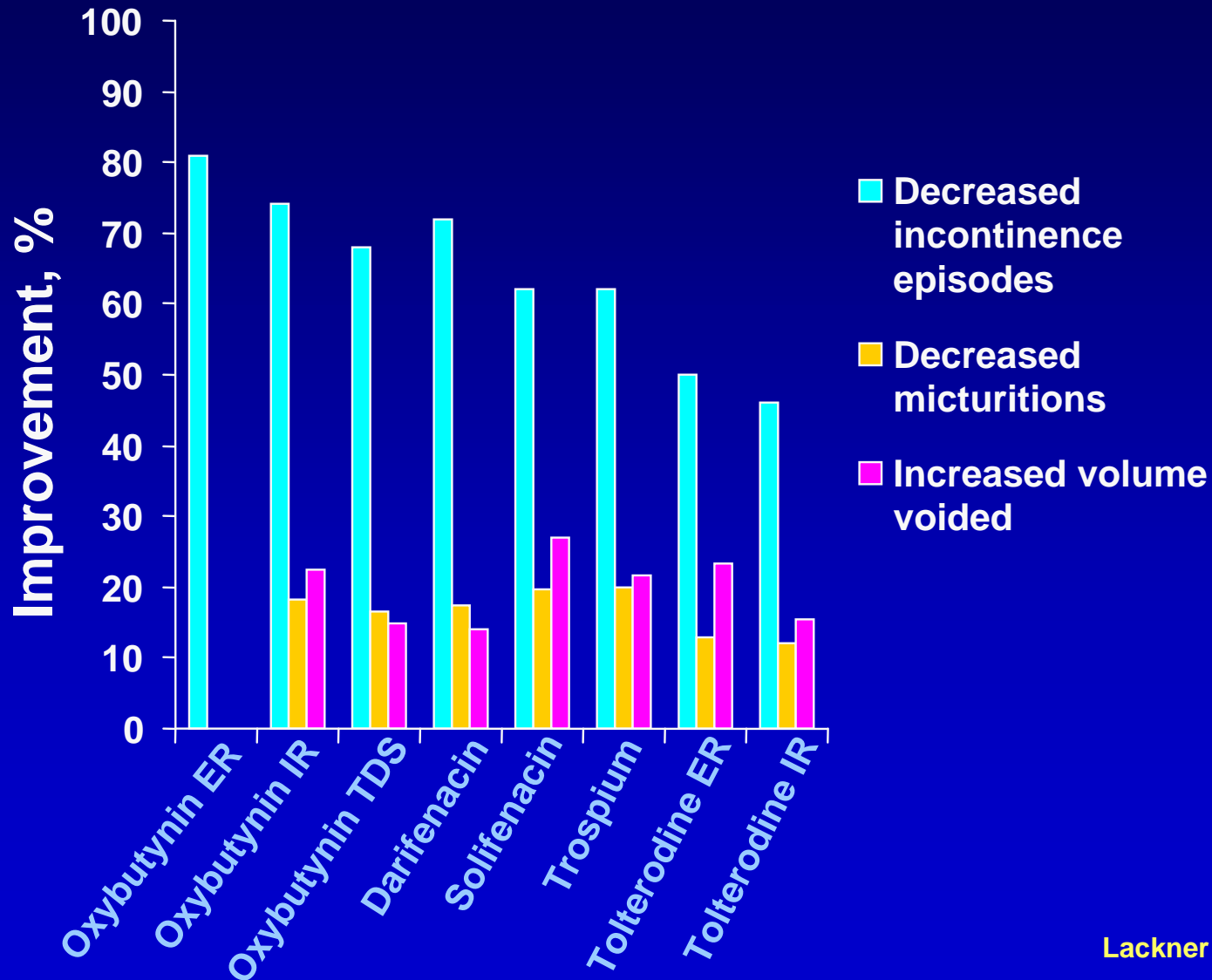
Caregiver Dependent Behavioral Interventions for Incontinence

<u>Procedure</u>	<u>Definition</u>	<u>Effect</u>
Scheduled Toileting	Fixed toilet schedule	29-85%
Habit Training	Toileting based on individual pattern	86%
Prompted voiding	Regular opportunities to toilet (useful in NH setting)	↓ 0.5-1.5 incontinent episodes

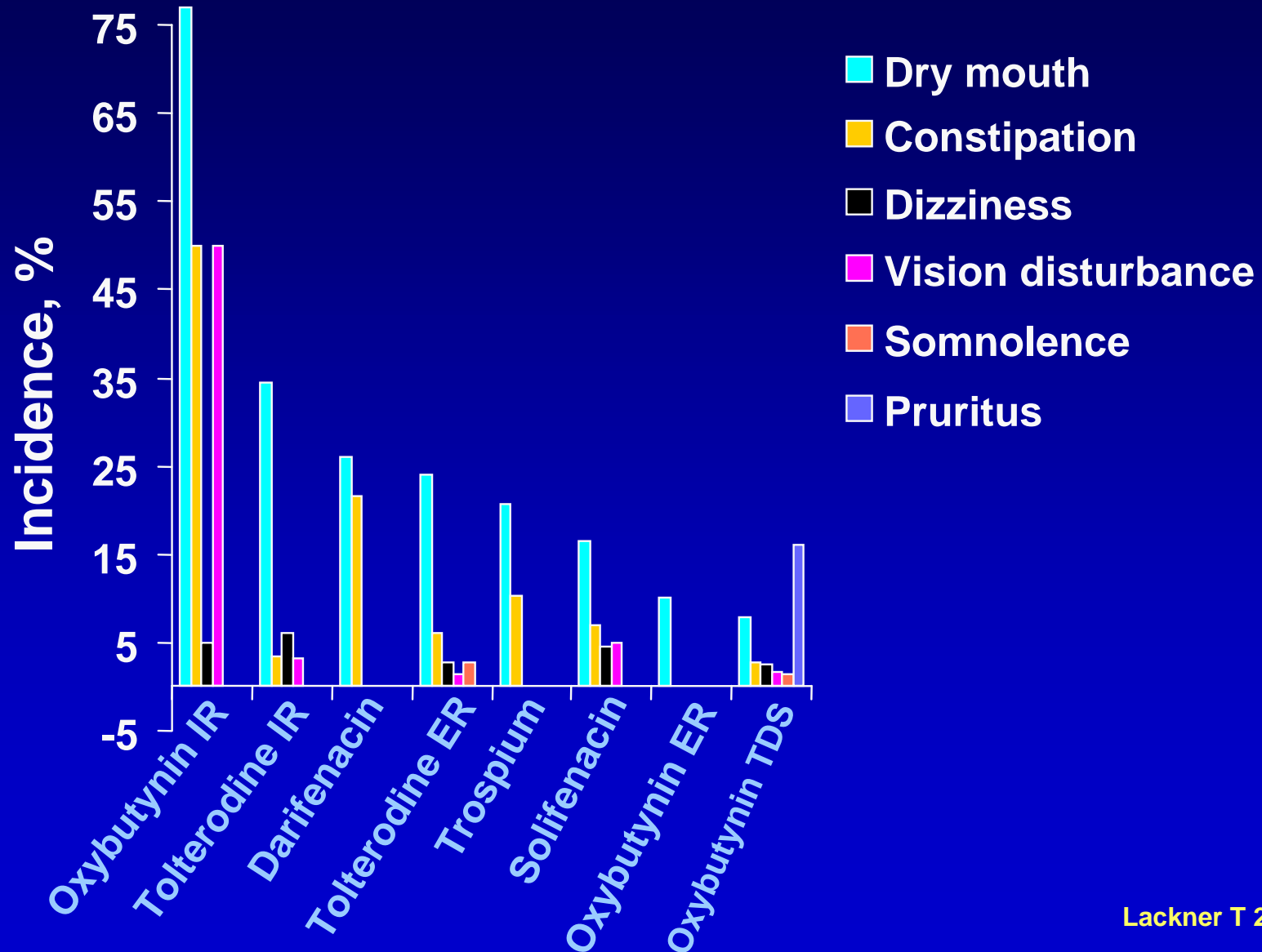
Anticholinergic Therapy for Urge UI Overactive Bladder Syndrome (OAB)

- Oxybutynin (Ditropan®)
 - Immediate release
 - Extended release (Ditropan XL®)
 - Transdermal patch (OXYTROL®)
- Tolterodine (Detrol®)
 - Immediate release
 - Long acting (Detrol® LA)
- Trospium (Sanctura®)
- Darifenacin (Enablex®)
- Solifenacin (VESicare®)
- Fesoterodine (Toviaz®)

Anticholinergic Efficacy in Elders



Anticholinergic Side Effects in Elders



Botulinum toxins A and B

- Direct injection into the urethral and bladder skeletal and smooth muscle results in reversible chemical denervation
- Treatment for detrusor-sphincter dyssynergia; ? BPH, overactive bladder
- Effects w/in 5-7 days, lasts 3-6months

InterStim System

- Useful for patients with intractable symptoms of urge incontinence, urgency-frequency, or retention.
- Temporary, percutaneous sacral nerve test stimulation (S 3) and if 50% < symptoms for at least 3 days--permanent device w/implanted lead and neurostimulator, hand held programmer
- Covered by Medicare

Medications to Treat Stress Incontinence

<u>Medication</u>	<u>Improvement</u>
Pseudoephedrine (Sudafed)	20-60%
Duloxetine	50%
Estrogen (topical cream, Estring [®])	Up to 66% within 6-12 weeks
Imipramine*	?

*dual alpha agonist/anticholinergic activity

Stress Incontinence Procedural Interventions

<u>Procedure</u>	<u>Indication</u>	<u>Imp Rates</u>
Retropubic (e.g., Burch)	Urethral hypermobility	80-90%
Sling procedure	Intrinsic sphincter deficiency	80%
Periurethral bulking injections	Intrinsic sphincter deficiency	50-70%

Periurethral Bulking Agents - Stress Incontinence

- Injection of glutaraldehyde cross-linked bovine collagen or carbon-coated beads under cystoscopic guidance into an incompetent periurethral area
- UTI and transient urethral irritation are most common side effects
- Complications - urgency, UI, urinary retention
- 49% cure rate; 67% improved

Pessary Use for Stress Urinary Incontinence

- Elevates bladder neck
- Corrects the vesico-urethral angle
- Increases outflow resistance by compressing the urethra against postero-superior aspect of pubic symphysis

Medications to Treat Overflow Incontinence

- Obstruction
 - α blockers (doxazosin, terazosin, tamsulosin)
 - surgery
- Acontractile bladder
 - Intermittent catheterization

Criteria for Further Evaluation

- Incontinence associated with recurrent symptomatic infection
- History of previous anti-incontinence surgery or radical pelvic surgery
- Symptomatic pelvic prolapse, pelvic pain
- Abnormal PVR > 200cc*
- Hematuria in the absence of infection
- Failure to respond to an adequate therapeutic trial or uncertainty in diagnosis

*except in known BPH and those taking relevant meds

Conclusions

- Urinary incontinence is common, especially with increasing age
- Usually multifactorial causes
- Persistent types include failure to store (urge/stress) and/or failure to empty (overflow) and mixed
- Once type identified then choose appropriate intervention
- Improvement rates with intervention are high

Resources for Patients

- The Simon Foundation www.simonfoundation.org
- National Association for Continence www.nafc.org
- The AGS Foundation for Health in Aging
www.healthinaging.org