Bladder, Bowel, & Brain
What is the connection?
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Objectives
- Outline the prevalence of urinary and fecal incontinence among stroke patients
- Review anatomy / physiology of voiding
- Describe the types of urinary incontinence
- Outline assessment and treatments to urinary incontinence management
- Review the anatomy/physiology of defecation
- Outline the types of fecal incontinence
- Outline assessment and management strategies to fecal incontinence

Urinary Incontinence
- Approximately 50% of stroke patients have incontinence during their acute admission.
- Decreases to 20% by 6 months post-stroke.
- 1 in 4 women experience UI
- 1 in 10 men experience UI
Brain & Spine  Affects on Bladder

- Facilitatory: pons & hypothalamus; parasympathetic pelvic nerves; somatic pudendal nerve
- Inhibitory: cerebral cortex (frontal lobe) & midbrain; sympathetic hypogastric nerves
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Sacral Micturation Centre

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Physiology of Voiding
- Storage of Urine

- Receptors in detrusor muscles sent message via spine reflex arc through pons / basal ganglia to frontal lobes.
- Message returns to the detrusor muscle to relax
- Internal and external sphincters contract

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Physiology of Voiding
Emptying Phase

- Message from pons / cerebral cortex to proceed with micturation.
- Bladder neck and external sphincters relax
- Detrusor muscle contracts causing a rise in intravesical pressure and triggers voiding
Risk Factors Associated with UI

- Age: decreased bladder capacity
  - residual urine
  - sensory awareness decreased
- Detrusor instability
- Diabetes: diabetic neuropathy
  - polyuria
  - Increased risk of UTI
- Severity and location of Stroke
- Prior Urological dysfunction and other disabling diseases
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Types of Incontinence

- Urge Incontinence
- Retention with or without overflow incontinence
- Functional Incontinence
- Stress Incontinence
- Mixed Incontinence

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Urge Incontinence

- Loss of urine with a strong unstoppable urge to urinate
- Usually associated with frequent urination during the day and night
- Referred to as overactive bladder
- Occurs in post stroke 37% (Gelber)

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Urge Incontinence

Pathophysiology:
- Detrusor instability
- Detrusor hyperreflexia
- Brain, spine, peripheral nerve damage

Contributing Factors:
- Neurological disorders
- Caffeine
- Constipation
- Atrophic Changes
- UTI
- Medications—eg diuretics
- Bladder Disorders
Overflow with Urinary Retention

- Periodic or continuous dribbling of urine
- Usually associated with symptoms of slow stream and difficulty urinating
- Can occur post stroke – 21% (Gelber).

Overflow Incontinence due to Retention

Pathophysiology:
- Outlet Obstruction
- Under active detrusor muscle
- Injury to brain (pons / frontal lobe), spine or peripheral nerves.

Contributing Factors
- BPH
- Urethral Stenures
- Peripheral Neuropathy – diabetes
- Neurologic disease – UMN, LMN, Peripheral nerves
- Anticholinergic / antispasmodic meds

Stress Incontinence

- Loss of urine with a sudden increase in intra-abdominal pressure (i.e. Cough, sneeze, exercise)
- Most common in women
- Can occur in men after prostate surgery
- Should be aware if patient had this condition prior to stroke for treatment planning.
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**Stress Incontinence**

Pathophysiology
- Sphincter incompetence
- Urethral Instability

Contributing Factors
- Pelvic prolapse after childbirth
- Caffeine
- Decreased estrogen - postmenopausal
- Sphincter weakness or damage - prostatectomy

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**Functional Incontinence**

Pathophysiology
- Urine Leakage associated with an inability to toilet appropriately because of cognitive or physical impairments, psychological factors, or environmental barriers

Contributing Factors
- Physical
- Cognitive
- Environmental
- Psychological
- Language barrier
- Physical restraints
- Hospital Environment
- Fatigue

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Nursing History for UI

Characteristics of incontinence
- Onset and duration
- Frequency and time of day
- Precipitating factors (i.e. sneezing/coughing)
- Associated urgency
- Type of urinary flow
- Leakage – Use of protective pads/briefs

History

- Toileting Patterns – frequency during the day and night
- Awareness of a full bladder
- Ability to delay voiding
- Sensation of incomplete bladder emptying
- Obstructive symptoms
- UTI symptoms

Genitourinary History
- Childbirths, surgery, prolapsed organs
- Recurrent UTI
- Previous incontinence Hx & tx

Relevant Medical Hx
- Diabetes, Depression, Acute Illnesses, Renal disease, CHF, Previous strokes, Parkinsons, and/or dementia, cancer (gyno/CNS)
**History**
- Medications – Diuretics, sedatives, hypnotics, anticholinergics, amitriptyline, opioids
- Prior caffeine and alcohol drinking patterns
- Client’s / caregivers perceptions
- Environmental factors

**Physical Examination**
- **Abdominal Examination**
  - Visual Inspection – asymmetry, scars, mass
  - Palpation / Percussion of bladder
  - Sensory Assessment – depends on type of stroke
  - Assess for suprapubic tenderness
**Physical Examination**

Genital / Rectal Examination

- Assess for bruising, bleeding, swelling, skin breakdown/condition, organ prolapse and discharge.
- Anal – sphincter tone and sensation, fecal impaction

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**Diagnostic Tests of UI**

- Urinalysis
- Urine culture
- Post void residuals (> 150 mls demonstrates inadequate voiding) – done with bladder scanner; 3 post void scans or in/out catheters (gold standard)
- Urinary diary – 3 days pre-implementation
- Urodynamics, cystocopy, cystometry

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**Treatment of UI**

- Promoting adequate fluid intake – primarily during the day time – limit after supper
- Limit or eliminate caffeine intake
- Treat any symptomatic UTI
- Assess medications contributing to UI – adjust timing of diuretics; review analgesics and sleeping medications
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Treatment of UI

- Avoid foley – In / out catheters preferred
- Early Mobilization / toileting – use of adaptive clothing
- Proper positioning
- Prevention of constipation
- Language impairments – communication system

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Treatment of UI

Urge Incontinence

- Scheduled / Timed Voiding - voiding at consistent times - keep clients dry by toileting at regular intervals but not best long-term solution for cognitively intact people
- Bladder retraining – a bladder pattern is determined for 3 days and the client learns to extend the times and inhibit urge to void

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Treatment of UI

Urge Incontinence

- Prompted Voiding (RNAO Guidelines)
  - Monitoring
  - Prompting
  - Praising
Urge Incontinence

- Medications: Anticholinergic medications e.g., Ditropan; Detrol – decrease the detrusor contractions, thus increasing bladder capacity
- Biofeedback
- Physical therapy – functional ability; pelvic floor muscles

Behavioural Strategies

- Bladder retraining – Mind / Body:
  Increase the time between voiding and the patient’s ability to suppress the bladder contractions by education on urge suppression techniques
  *Kegel exercises*

Urinary Retention after Stroke

- Deficient detrusor muscle contraction strength – primary cause of urinary retention in stroke patients.
- Smooth muscles of the bladder do not contract.
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**Treatment of UI**

**Urinary Retention with Overflow**
- PVR > 150mls
- Frequency of in/out caths based on volumes – keep volumes under 500mls
- Sterile technique only on immuno-compromised patients – otherwise teach patient clean technique
- Cholinergics: bethanecol chloride – stimulates contraction of detrusor muscle

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**Fecal Incontinence**
- Fecal incontinence affects 30% in first 7-10 days, 11% in 3 months, and 15% in 3 years.
- Continued fecal incontinence after 3 months signals a poor prognosis.
- Stroke patients prone to constipation for physiological and clinical reasons.
- Delayed colonic transit time
- Impaired mobility, dehydration, polypharmacy, dietary factors, impaired cognition

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**Fecal Incontinence after stroke**
- Fecal Incontinence:
  - Constipation and fecal overflow (more common)
  - Neurogenic impairment – spinal injury
**Normal Defecation**

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**History**
- Former bowel habits – frequency, habits, time of day, prior use of laxatives, enemas
- Past Hx – GI and colon disease (GERDS, constipation, diverticuli, diarrhea, celiac, hemorrhoids, rectal prolapse) – tx / Sx; Neurological Diseases; Diabetes
- Prior Medications

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**Physical Examination**
- Neurological exam
- Cognitive / Affect
- Physical ability
- Language ability
- Diet and Appetite – Hydration – 2 – 2.5 liters (unless restricted)
- Dysphagia

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Physical Examination
- Visual inspection of abdomen
- Auscultate for bowel sounds
- Palpate for masses
- Assess for sensation in perineal region
- Assess rectum voluntary control of sphincter and rectal tone
- Assess rectum for fecal load

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Tx of Fecal Incontinence
Constipation Guidelines (RNAO)
- Cleanse bowel
- Regular schedule
- Increase fluid intake
- Increase fiber intake
- Increase exercise
- Privacy
- Adaptive clothing/communication system

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Tx of Incontinence
- Position in upright sitting position
- Bowel protocol and suppositories to assist
- Some medications may make constipation worse
- Patients with Frontal strokes usually need regular routines due to lack of frontal cortical input