



# Neurogenic Bladder and Autonomic Dysreflexia

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# Nervous System and Urinary System

Micturition and maintenance of continence are controlled by the autonomic nervous system (sympathetic and parasympathetic)

Stroke, brain trauma/tumor, MS or dementia caused damage to the cortex

Caused neurogenic bladder, a urinary system disorder

# Continence

- Continence is the result of a person's functional ability to locate a toilet at an appropriate time and place without soiling clothing or spilling urine onto the floor
- Incontinence is the involuntary loss of urine
- Urinary retention is the inability to completely empty the bladder

# Incontinence

Caused by multiple etiologies

Types

Urge Incontinence

- Involuntary loss of urine, often on the way to a toilet
- Strong urge to void that comes more frequently than 3 hours after the last void
- Can be caused by medications, such as diuretics
  - Multiparity in female or enlarged prostate in male
- Management
  - Ensure reliable access to toilet
  - Anticholinergic medications and beta-3 agonist
  - Monitor for the adverse effect of the drug

# Stress incontinence

Occurs when there is an increase in intraabdominal pressure

Multiparity female and male with TURP are in increased risk

Pelvic floor exercise to prevent incontinence

# Functional Incontinence

- Involuntary or unintentional urine leakage
- Caused by physical or cognitive disability that prevents patient from getting safely to a toilet
- Post surgical patients are in increased risk
- Cognitive deficits is another risk factor
- Management
  - Schedule voiding to avoid unintentional loss of urine

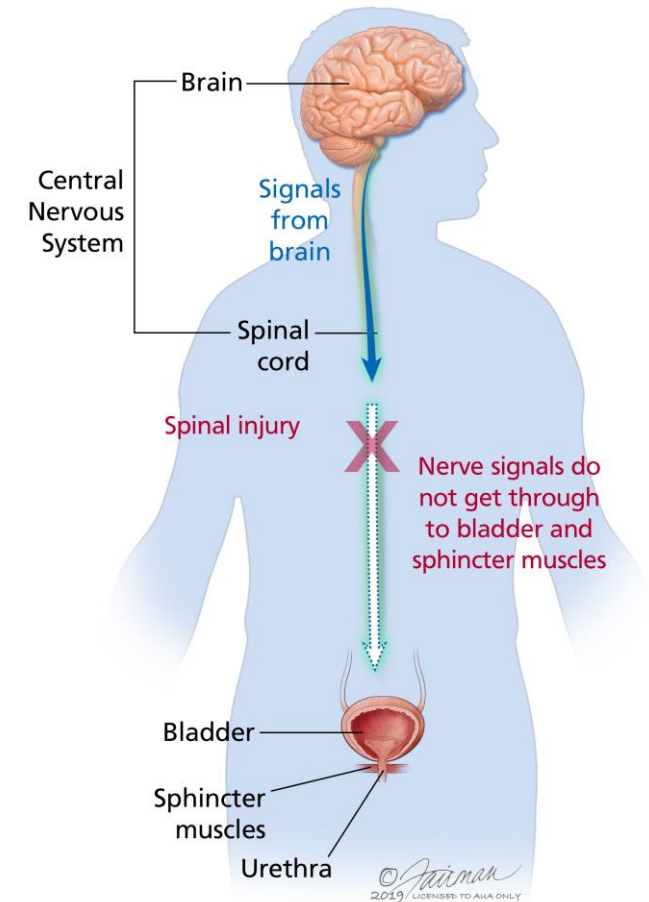


# Mixed Incontinence

- Caused by two or more of the previously described forms of incontinence
- Through assessment and explore the contributing factors
- Management
  - Toileting program using prompted voiding along with habit training to minimize incontinence

# Neurogenic Bladder

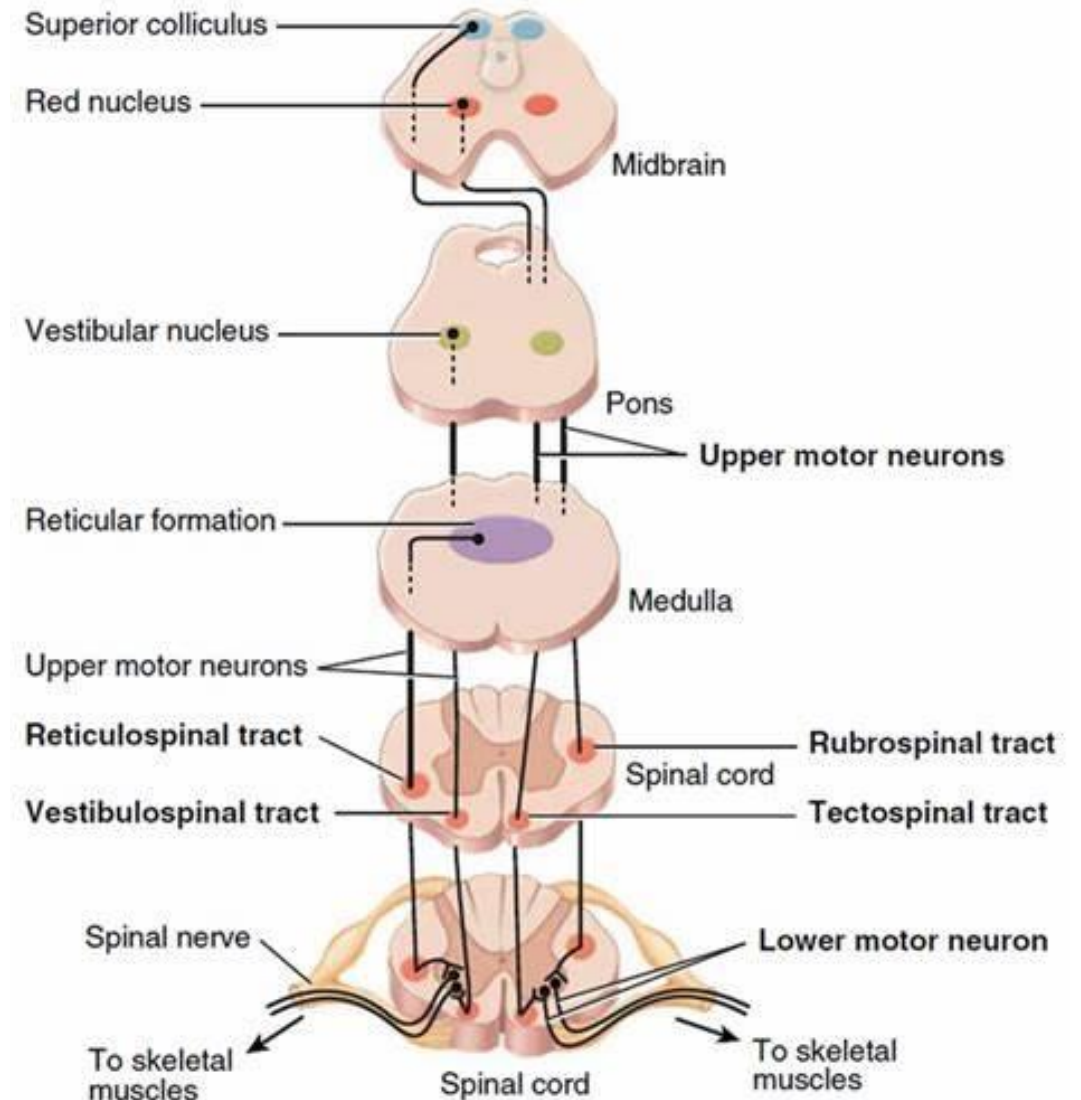
- Relationship between the nervous system and bladder has been lost
  - Brain injury, spinal cord injury or disruption in nervous system
- Coordination between nerves, muscle and bladder is lost
- Bladder may not fill or empty correctly
- Two types
  - Spastic or hyper reflexive
  - Underactive or flaccid/hypotonic





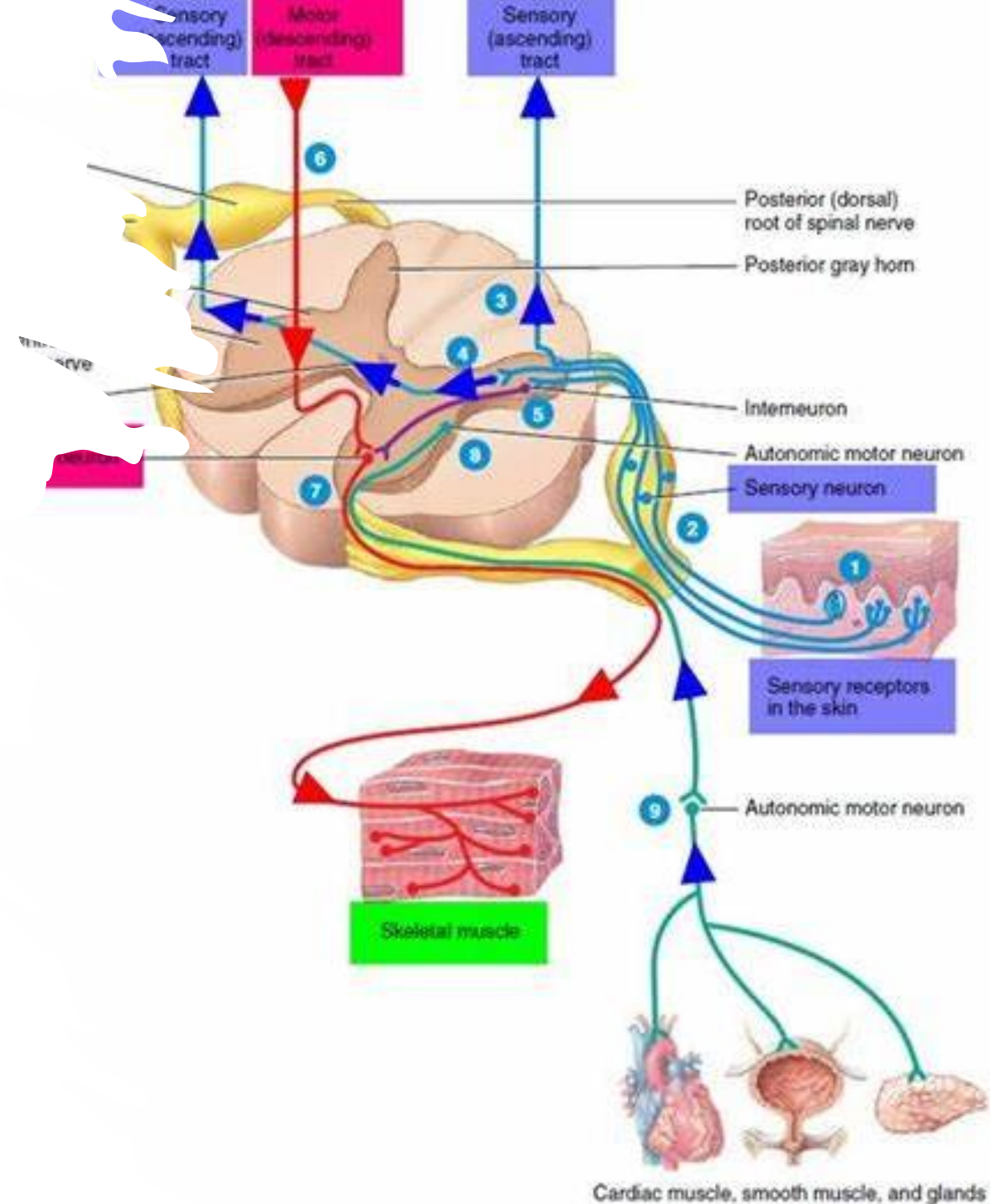
# Types

- Overactive bladder
  - Detrusor muscle is overactive and squeeze more often than normal
  - Causes frequent urination
  - If sphincter muscles are weak, incontinence occurs
  - More common and caused by spinal cord lesion above the voiding reflex arc (Upper Motor Neuron Lesion at about T11)



# Types

- Underactive bladder
  - Bladder loses an ability to empty urine when it is full
  - Detrusor muscle loses an ability to squeeze
  - Bladder continually to fill and distended
    - Causes overflow incontinence
  - Caused by lower motor neuron lesion, commonly resulting from trauma (S2-S4)
  - Increasing number is found among patient with diabetes



# Types: Neurogenic Bladder

- Uninhibited: caused by central nervous system damage
  - Too many contractions and complete voiding without residual volume
  - Caused by lesions in the brain or subcortical areas
- Reflex: caused by central nervous system damage
  - Pt loose awareness of voiding pattern
  - Caused by upper spinal cord injury: both motor and sensory
- Autonomous: Bladder overflow. Pt unaware of fullness, dribbling and involuntary emptying
  - Caused by lower neural damage to the sacral reflex arc

# Type: Neurogenic Bladder

## Motor paralytic bladder

- Motor function and tone diminished
- Pt aware of bladder fullness and emptiness

## Sensory paralytic bladder

- Initiate the voiding but cannot sense the voiding needs
- Caused by childbirth in DM, peripheral vascular disease and pelvic trauma

# Causes

## Congenital

- Spinal bifida (myelomeningocele)
- Sacral agenesis: parts of the lower spine are missing
- Cerebral palsy

## Medical condition

- Stroke
- Parkinson's disease
- Multiple sclerosis
- Spinal cord injuries

# Diagnosis

Urodynamic  
studies: tests of  
bladder function

Cystoscopy

Ultrasounds

X-ray

CT scan

MRI

# Treatment

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Depends on cause (UMN or LMN)

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Lifestyle changes

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Intermittent catheterization

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Continuous catheterization

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Drugs: oxybutynin, tolterodine, mirabegron, solifenancin succinate and more

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Botox: into the bladder or urinary sphincters

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Bladder augmentation: a surgical procedure

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Ileal conduit

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# Promotion of Successful Living

Patient learn to self-manage if they understand their symptoms and underlying causes

Continence care is led by the rehabilitation nurse

The Rehabilitation Nurse

Assess each patient to identify individual needs

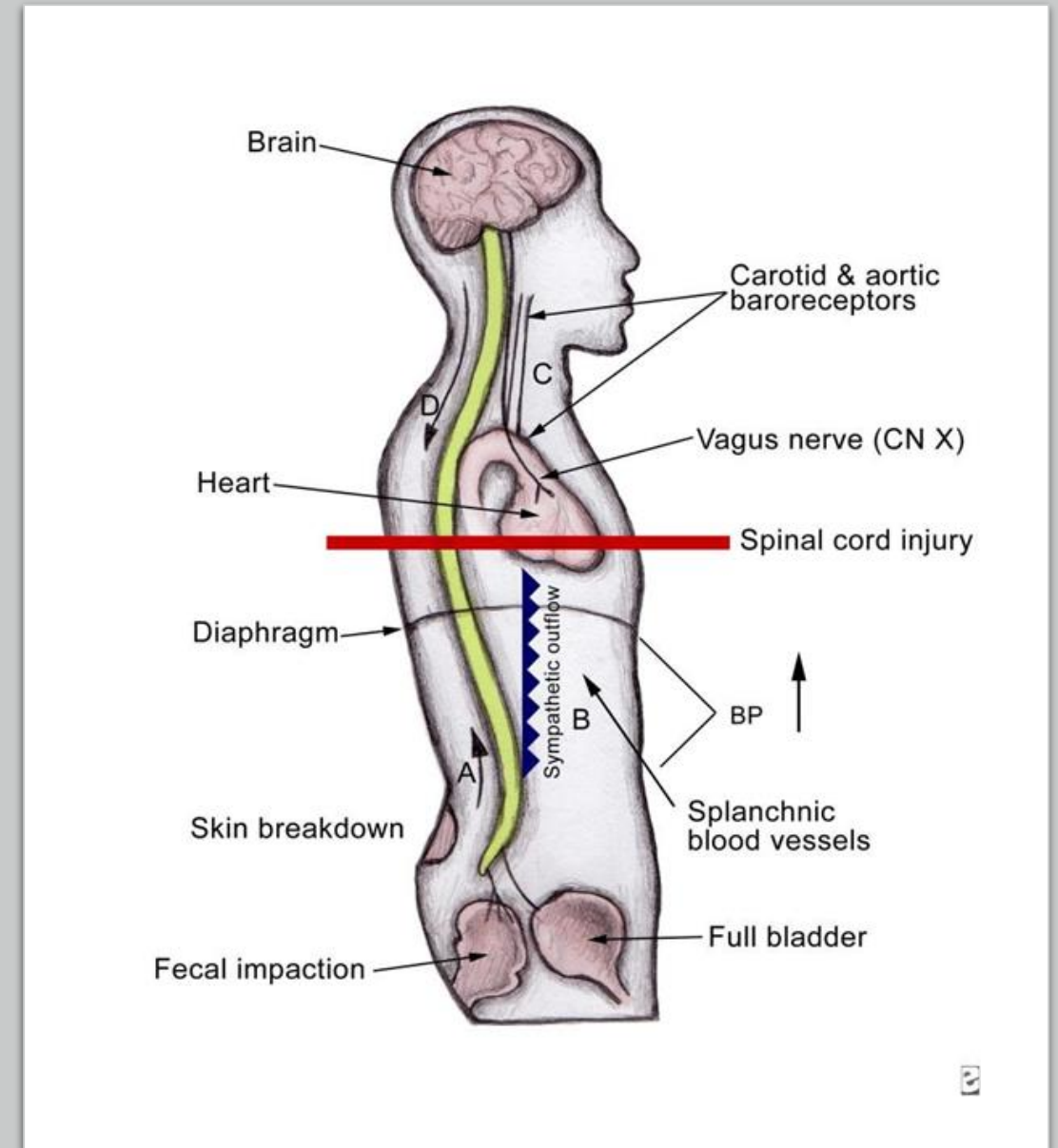
Teach patient all available opportunities and specific interventions to achieve continence

Instructs and educates patients while guiding the interprofessional team to achieve quality of life



# Autonomic Dysreflexia

- T-6 and ↑
- After spinal shock resolves
  - Temporary reduction or loss of reflexes
- Sympathetic NS
- ● ↑ LOI – Sympathetic
  - blocked
- ● ↓ LOI – Sympathetic outflow



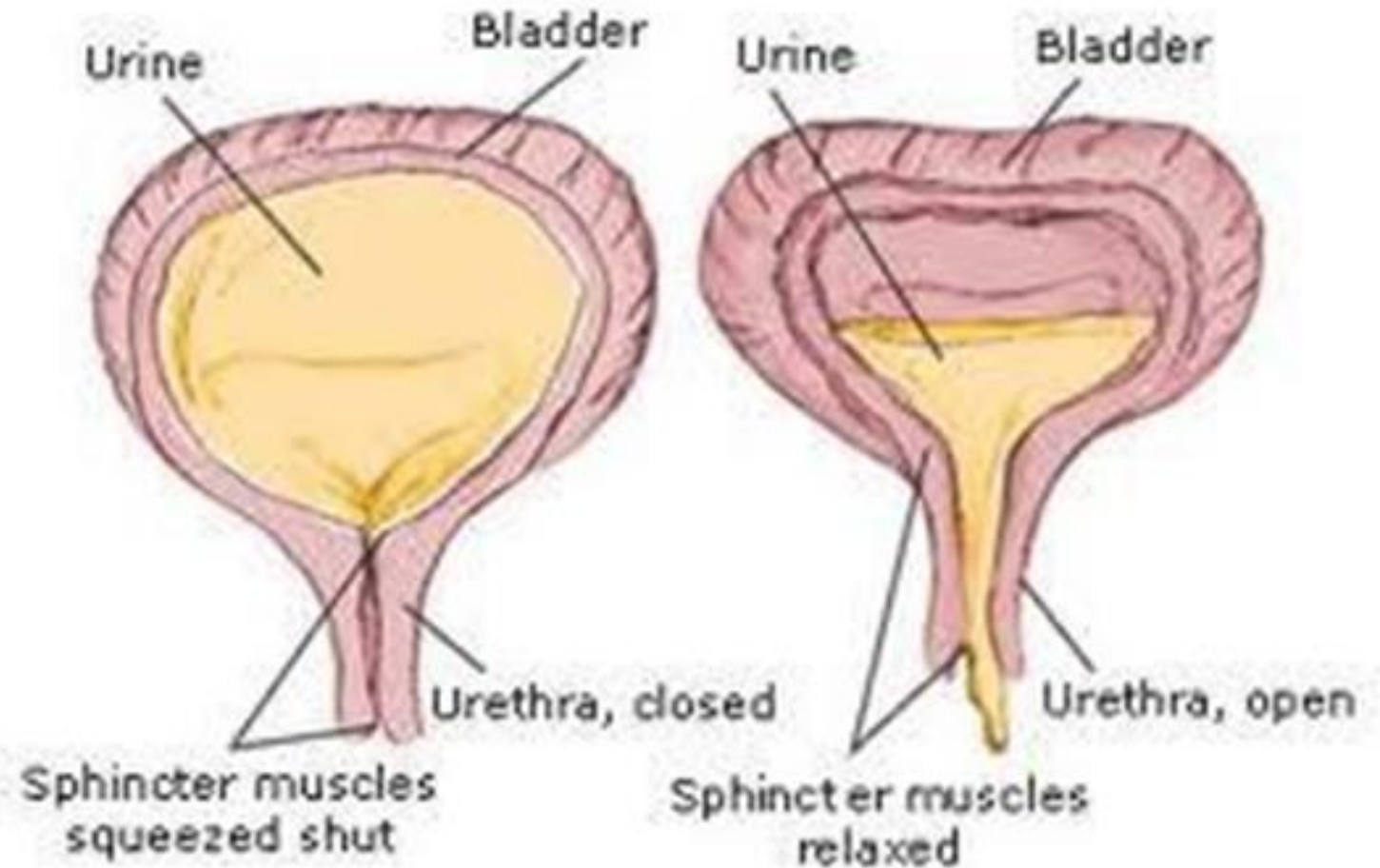
# Autonomic Dysreflexia

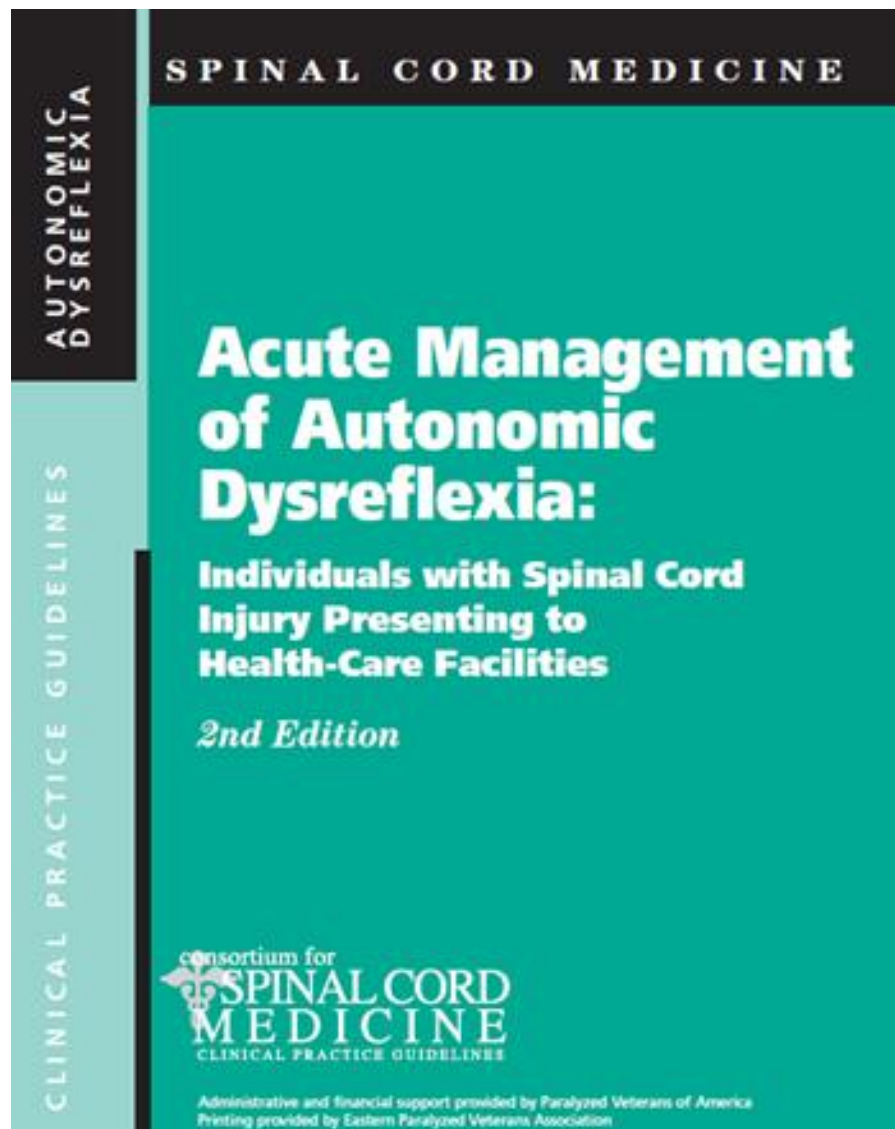
- Sign and Symptoms
  - B/P ↑ more than 20-40 mm Hg above baseline
  - Pounding H/A
  - Bradycardia
  - Profuse sweating & flushing above LOI
  - Goose flesh, cold, pallor below LOI
  - Blurred vision, nasocongestion
  - Apprehension & anxiety



# Autonomic Dysreflexia

- Causes
  - Bladder distention
  - Blocked catheter
  - Stones Bowel
  - Bowel distention
  - Impaction
  - Noxious Stimuli below LOI





# Autonomic Dysreflexia

- Treatment
  - Sit up
  - Loosen clothing or constrictive devices
    - Monitor B/P and Pulse (every 2-5 minutes)
- Urinary Interventions:
  - Catheterize (2% lidocaine, wait 2 minutes)
  - Irrigate (10-15cc NS body temp)
  - Replace catheter

# Autonomic Dysreflexia

- Treatment
- Bowel interventions
  - Medicate if B/P >150 mm Hg
    - (Nitroglycerine 2% 1" ;  
Hydralazine 10mg q4h)
  - Check/remove impaction if <150 mm Hg
    - (2% lidocaine, wait 2 minutes)
  - Check other causes of ↑ B/P
  - Monitor B/P and Pulse q15min x 2h post episode







# Autonomic Dysreflexia

## Autonomic Dysreflexia



VA 4633351

 Online Course

 Target audience: RN, LPN, NA, Physicians, ARNP, OT,PT, Rec Therapy or anyone who provides care to SCI patients

 Questions? Contact  
[nadiya.ali@va.gov](mailto:nadiya.ali@va.gov)

At the completion of this course, the participant will be able to: Recognize that Autonomic Dysreflexia (AD) is a medical emergency; Verbalize who is most at risk for Autonomic Dysreflexia; Recognize the signs and symptoms of Autonomic Dysreflexia; Recognize causes of Autonomic Dysreflexia; Verbalize successful intervention strategies to treat Autonomic Dysreflexia

POCs: Cynthia Hernandez, Latiffany Jackson, Purushottam Neupane

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1<sup>HOUR(S)</sup>  
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