Cerebral Palsy
Neurogenic Bladder, Outcomes of Lifetime Care

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Disclosure Information
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- I have no financial relationships to disclose
- I will discuss the following off label use and/or investigational use in my presentation:
  - Clostridium Botulinum Toxin A injections for urinary incontinence in adults with cerebral palsy.
Cerebral Palsy-Neurogenic Bladder


Cerebral Palsy-Neurogenic Bladder

- Many factors involved with bladder control in people with cerebral palsy.
- Factors include: age, cognition, communication, mobility, UE function, expectations, training, hypertonicity and compatible living environment.
- Continence more complicated than static CNS pathology & measured bladder function.
Cerebral Palsy-Neurogenic Bladder

- 214 people with CP seen in sequence through an outpatient Rehabilitation Medicine clinic.
- 96 females, 118 males. GMFCS levels I – V.
- 52 with hemiplegia, 42 diplegia, 117 quadriplegia, 3 dyskinesia (athetosis component).
- Median age for total population 9.6 years (ages 5-66).
- Special education levels through graduate school.

Cerebral Palsy-Neurogenic Bladder

- 16.4% (35 individuals) with symptomatic neurogenic bladder (SNB) on urodynamic testing.
- 91% obtained total continence or major improvement (drops in urinary pads only) with conservative care.
- Prevalence of males to females with SNB equal.
- SNB documented across the lifespan, educational spectrum and functional levels.
- More common in those with bilateral involvement.
Cerebral Palsy-Neurogenic Bladder

- 80% with spastic hyper-reflexic type on urodynamic testing (International Continence Society Criteria 2010).
- Tendency for urinary retention and hypo-reflexia in the adult over 30 years old (GMFCS Level V).
- Upper urinary tract pathology infrequent.
- Small spastic bladder in child may overstretch into larger hypo-reflexive bladder of adult.

May be the most common missed diagnosis (associated condition) in the care of people with CP.

One of the most easily treated problems in people with CP.

A problem of Lifetime Care- more apparent in the adult but with often undiagnosed roots in childhood.
Cerebral Palsy-Neurogenic Bladder

- Individual Selection Criteria
- Basic and consistent yes/no communication system in place.
- Personal desire to be dry, more continent and out of pads if possible.
- Functional Toileting Environment (FTE), is present or can be created.

Functional Toileting Environment (FTE)

- An environment allowing toileting to occur in a continent & functional manner, including necessary communications, staffing, equipment and motivation.
- Can involve full medical and surgical team review including Occupational, Physical & Speech therapy, social services, psychology and nursing support.
**Functional Toileting Environment (FTE)**

- Private environment
- Public environment
- Friend’s home
- Family home
- Outdoors
- Indoors
- Upstairs
- Downstairs

**FTE- Therapeutic Interventions**

- Augmentive communication device-Dynavox/IPAD
- Floor Reaction AFO / L-Crutches
- Grab bars/space to perform transfers
- ITB/Botox/Phenol: eg hip adductors
- Adaptive commode/time to sit alone in privacy
- Staffing assist and education that “can be done”.
Cerebral Palsy-Neurogenic Bladder

- Treatment Options outside of FTE
- Anticholinergics
- Management of pelvic floor hypertonicity including hip adductors.
- Fluid schedules
- Catheterization options (ICC, Indwelling)
- Surgical options

Cerebral Palsy-Neurogenic Bladder

- Diagnostic Testing
- Computerized Functional Urodynamic Study
- Voiding Cysto Urethrogram (VCUG)
- Renal Bladder Ultrasound (RBUS)
- Urine analysis &/or cultures
- Metabolic profile (electrolytes, BUN & creatinine)
- Vitamin B 12
Cerebral Palsy-Neurogenic Bladder

- Reasons for Failed Treatment
- Cognitive deficiency
- Behavioral deficiency
- Mental Health diagnoses
- Sexual abuse
- Psycho-Social issues (eg parents separated, living in different homes with ongoing discord).

Cerebral Palsy-Neurogenic Bladder

- Adult who now becomes incontinent
- Primary Condition (incontinence not in CP definition)
- Secondary conditions (over stretched bladder now with retention & leaking; cervical spinal stenosis).
- Associated conditions (seizures, late onset dystonia).
- Comorbidities (stress incontinence; interstitial fibrosis; tumors; Alzheimer’s/CNS degeneration).
Cerebral Palsy-Neurogenic Bladder

- Continence of urine; a part of basic human dignity.
- Should not be denied anyone within context of patient-centered professional medical/surgical care.
- Further study & research in the urinary continence of people with CP is hoped & called for at this time.
- Encouragement is given to facilitate Lifetime Care medical & surgical practices for this problem of young & old.