Treatment of Developmental Disabilities:
Ideas for Today and Tomorrow

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Background

- Increased life expectancy
- Medical, education, public health, and technology advances
- If live past 30’s, will survive to old age
Background

- Patients and caregivers of patients with developmental disabilities require treatment for a variety of medical and psychological issues.
- Monitoring the appropriateness of therapy issues is facilitated by networks of health care providers supporting the patient and the caregivers.
Outline

- Special Needs Clinic Lessons Learned
- As DD patients age
  - Understanding of the changes in their body
  - Implications on their therapy and care needs
- Drugs Interactions
  - Monitoring
  - Resources
Case Break

- 30 yo moderate MR, Bipolar depression, Hypothyroidism

- Medications:
  - Lithium
  - Levothyroid
As we age

- Understand normal aging changes
- How changes impact treatments
- Additional health risks associated with developmental disabilities
  - Functional decline @ 50 yo
  - Mortality with severe impairments respiratory infections
As we age – Renal Function

- Declines with age at a consistent rate in two-thirds of all persons.
- Assessment is directly related to lean muscle mass.
- Drug Therapy
  - Excreted through the kidneys
  - Low therapeutic index
  - Lithium, Metformin, Diuretics
As We Age – Liver Function

- Decline is more variable
- No readily available or generalizable method of assessment
- Many drugs are metabolized by the liver
  - Increase the duration of the therapeutic effect
  - Accumulation of the drug, or drug metabolites
- Anticoagulants, anticonvulsants and benzodiazepines
Case Break

- 42 yo male with mental status alteration
- PMH: severe MR and Lennox-GastAUT syndrome
- Medication: Depakote
- Normal liver function tests
- Elevated ammonia level
As We Age – CNS Function

- Significant, but idiosyncratic changes
  - Slowing movement
  - Reaction time
  - Interrupted sleep patterns
  - Increased sensitivity to the pharmacological effects
As We Age – CNS Function

- Parkinson’s disease
- Seizure disorders
- Alzheimer’s disease
- Drugs with sedative effects
  - Increased risk for falls that result in fractures
  - Additive effects
  - Benzodiazepines, opioids, and non-steroidal anti-inflammatory medications (NSAIDs)
Case Break

- Medications:
  - Zyrtec
  - Haldol
  - Benztropine
  - Tylenol PM
  - Ranitidine
  - Senokot
  - Detrol
As We Age – CNS Function

- Anticholinergic - Additive effects
  - Wide variety of reactions:
    - Dry mouth
    - Relaxation of bladder smooth muscle
    - Reduced outflow of aqueous humor
    - Reduced ability to recall information
    - Decreased intestinal motility and secretion of gastric acid and enzymes
    - Decreased sweating
    - Sedation
    - Confusion
As We Age – CNS Function

- Examples of drugs with anticholinergic effects
  - Antihistamines
  - Tricyclic antidepressants
  - Antispasmodics
  - Antipsychotics
  - Muscle relaxants
As We Age – CNS Function

- Clinically significant depression often unrecognized.
- Not often cognizant of depression
- Lack of energy complaints
- Development and progression of chronic disease are associated with untreated depression.
As We Age – CV Function

- Decrease in the number of receptors able to be affected by a drug.
  - Beta receptors in the heart which mediate heart rate
- Posture changes from sitting to standing
  - Blood moves away from the brain and toward the lower extremities
  - Dizziness, changes in vision, and falls can result
As We Age – CV Function

- Drugs and conditions that reduce the intravascular fluid volume
  - Exacerbate the risk of mild dehydration
  - Diuretics lower intravascular volume
  - Vasodilators
- High blood pressure
- Heart disease
Case

- PMH: MR, Schizophrenia, COPD, CHF, DVT, Bladder dysfunction, Chronic tremor
- Medications:
  - Clonazepam
  - Benzotropine
  - Resperidol
  - Sinemet
  - Lorazepam
  - Tegretol
  - Vanceril
  - Combivent
  - Albuterol
  - Lanoxin
  - Hytrin
  - Aldactone
  - K-Dur
  - Zestril
  - Lasix
  - Coumadin
As We Age - Gastrointestinal

- Decreased sensations of taste and smell
- Difficulty swallowing
  - Esophagus thickening
  - Decreased production of saliva
- Decreased acidity and quantity of gastric juices
  - Indigestion
  - Ulcers
As We Age - Gastrointestinal

- Constipation
  - Drug induced
  - Gastroparesis
- Hemorrhoids
- Diverticulosis
Case Break

- PMH: OA, CP, Spinal stenosis, hearing impairment, peptic ulcer disease
- Medications:
  - Prazosin
  - Prilosec
  - Reglan
  - Lomotil
  - Pepto-bismol
  - Darvocet
  - Vicodin
  - Tylenol
  - Celebrex
As We Age - Musculoskeletal

- Increased risk
  - Cerebral palsy
  - Metabolic disorders

- Arthritis
  - Age related
  - Passive activity level
As We Age - Musculoskeletal

- Osteoporosis
  - Drug/Disease induced
  - Lack of prevention
  - Difficulties with treatment
As We Age - Reproductive

- Males
  - Testicular
  - Prostate
- Females
  - Menses
  - Menopause
As We Age - Vision

- Common complaints
  - Colors at the lower spectrum
  - Farsightedness
  - Floaters, speck or tiny spots in vision
As We Age - Vision

- Disorders
  - Cataracts
  - Glaucoma
  - Macular degeneration
  - Retinopathy
  - Retinal detachment
As We Age - Hearing

- Prominent in aging process
- Hearing loss
  - High tones
  - Consonant sounds
- Tinnitus
Other Common Problems

- Hypothyroidism
- Obesity
- Weight loss
- Behavior
Fragile X Syndrome

- Mitral valve prolapse
- Musculoskeletal disorders
- Early menopause
- Epilepsy
- Visual Impairments
Down’s Syndrome

- Longevity 10 – 20 years less than other individuals with developmental disabilities
- Hypothyroidism
- Infections
- Dermatological
- Vision
- Hearing
- Cardiac
- Musculoskeletal
- Epilepsy
Lifestyles

- Tobacco and Substance abuse
- Violent behavior
- High risk sexual behavior
- Passive
  - Obesity – related diseases
  - Coronary artery disease, hypertension, and diabetes mellitus
Lifestyles

- Targeted for prevention
  - Longevity
  - Quality of life
  - Functional capacity
Implications on Treatment

Diagnosis
- Seizure - Alzheimers
- Thyroid – Depression - UTI
- Depression
Implications on Treatment

- Pharmacotherapy tailored to age-related vulnerabilities
- Response time lengthens with age
- Changes in environments increases stress
- Pharmacokinetic changes
- Provider/Caregiver adjustments
Implications on Treatment

- Add or Change one medication at a time
- Pharmacokinetic changes
  - Renal function
    - Monitor function
    - Check drug levels (Lithium)
    - Adjust dosage
    - Alternative therapy
Implications on Treatment

- Pharmacokinetic Changes
  - Liver function
    - Watch Cytochrome P450 drug interactions
    - Monitor ALT/AST, Ammonia
    - Check therapeutic drug levels
      - Dilantin
      - Depakote
Case Break

- PMH: Mild MR, Seizure disorder, Hypothyroidism
- Medications:
  - Keppra
  - Carnitor
  - Fluoxetine
  - Levothyroid
  - Depakote
  - Diamox
  - Carbamazepine
Implications on Treatment

- CNS function
  - Multiple drugs in variety of classes cross the blood-brain barrier
  - No easy measurements
  - Start low, go slow
  - Allow for the longer response time
Implications on Treatment

- CNS function
  - Watch for changes in behavior, dizziness, and falls
  - Keep alert and active
  - Sleep patterns
  - Avoid caffeine
Implications on Treatment

- CV function
  - Edema
  - Blood Pressure
  - Dizziness
  - Heart Rate
  - Skin turgor
  - Fluid intake and output
Implications on Treatment

- Cardiovascular
  - Limit salt intake
  - Decrease dietary fat
  - Increase fiber
  - Exercise
  - Limit caffeine and liquor
  - Stop smoking
Implications on Treatment

- Gastrointestinal
  - Cautious use of NSAIDs
  - Appropriately administer bisphosphonates
  - Watch for drug interactions
    - Binding drugs
    - Acidity requirements
    - Gastric motility
Implications on Treatment

- Compare dietary and therapeutic therapies
  - Fiber
  - Stimulant laxatives
  - Reglan, Bethanechol
  - Dicyclomine
  - Calcium and dairy products
  - Antacids
  - Citrus fruits, peppermint
Implications on Treatment

- If more than 3 GI meds needed, re-evaluate
- Dental care
- Smoking, alcohol, caffeine
- Drink adequate fluids
Implications on Treatment

- Musculoskeletal
  - Exercise/Physical therapy
  - Body weight
  - Mattress
  - Calcium – dietary or supplemental
Drug Interactions

- Increased with polypharmacy
- Prescription, OTC, and herbal
- Duplicate therapy
  - Pain
  - Gastrointestinal
- Treatment of adverse effects
Drug Interactions

- Additive effects
  - Anticholinergics
  - Sedatives
- Competitive metabolism or excretion
  - Antiepileptics
  - Antidepressants
  - Diuretics
Drug Interactions Resources

- PDR
- Drug Information Handbooks
- Natural Medicine Database
- Epocrates
- Lexi-comp
- Micromedex