

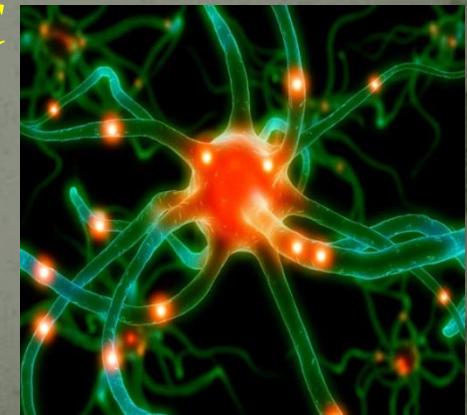


See The Forest Through the Trees: What happens to the Aging Brain

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Objectives

- Distinguish between age related and cognitive changes
- Describe the importance of delirium screening, recognition and management as it applies in the perioperative setting
- Identify current research regarding prevention and treatment of cognitive decline

Ageism

- www.nia.nih.gov/sites/default/files/AgingIQ_web.pdf
- What are your thoughts about older people?
- Have you had positive experiences?
- What are your grandparents/parents like?

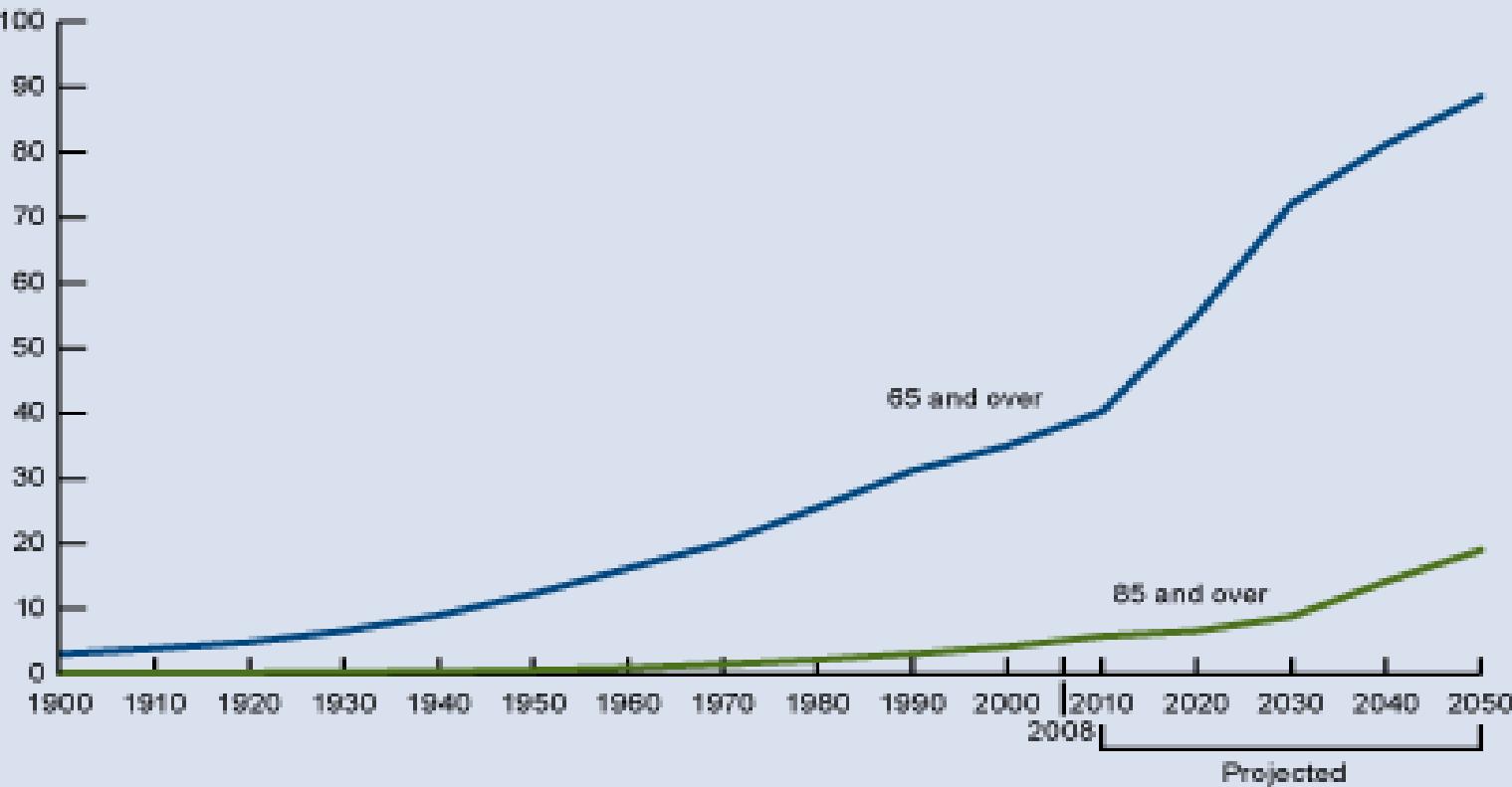
What does an older person See?

- <http://www.pdnphotooftheday.com/2010/07/5725>
- Why is it so difficult to stop driving?
 - Loss of Independence
 - Driving for 65+ years
 - Do not see driving issues

Aging Statistics

**Population age 65 and over and age 85 and over, selected years
1900–2008 and projected 2010–2050**

Millions



NOTE: Data for 2010–2050 are projections of the population.

Reference population: These data refer to the resident population.

SOURCE: U.S. Census Bureau, Decennial Census, Population Estimates and Projections.

Age related Changes

- Vision & Hearing:
 - Presbyopia – reduced depth perception on surfaces and stairs
 - Cataracts – Difficulty with glare
 - Hearing – Vestibular system maintains balance
- Cardiovascular
 - Loss of elasticity effects arteries – change position slowly
- Musculoskeletal:
 - Loss of supporting cartilage – joints unstable = fall risk
 - If joint pain present – mobility decreased = muscle atrophy
- Neurologic:
 - Slower reaction times – Need time to respond verbally & physically
 - Functional impairments, muscle weakness & gait disturbance

DEMENTIA
Is Both a Chemical as well
as Structural Change in
The Brain

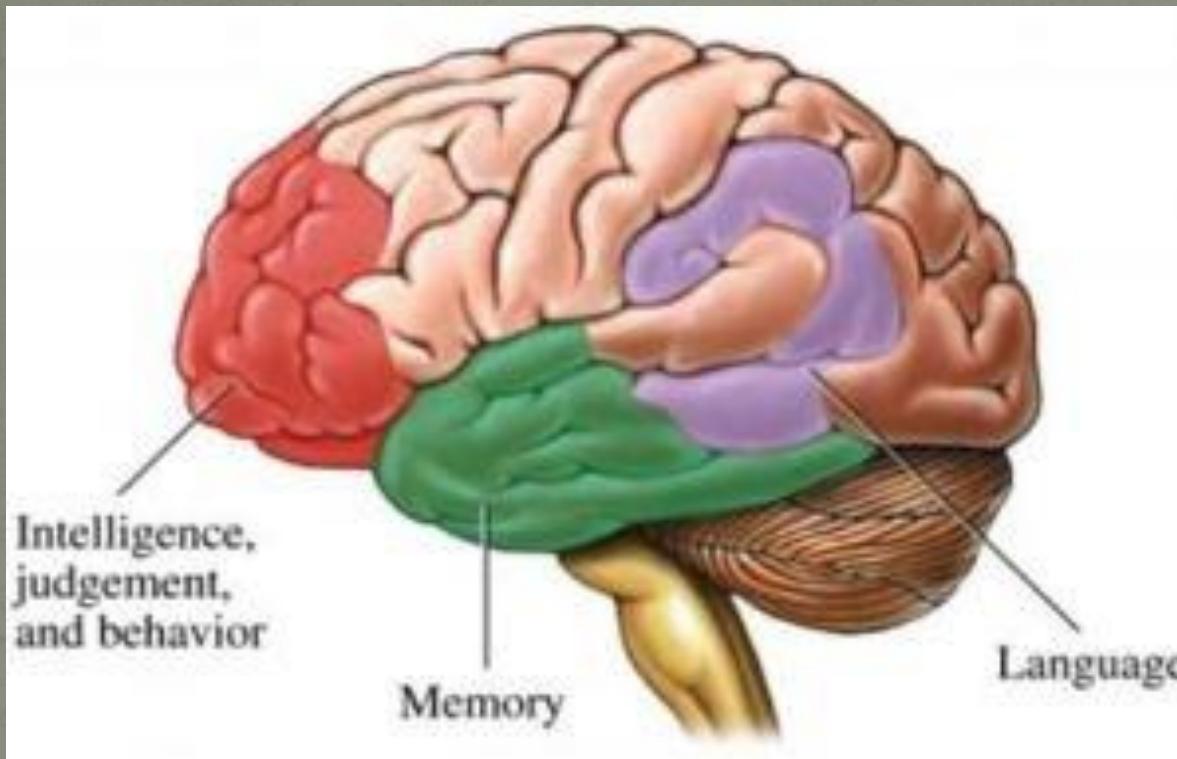
Definitions

- Dementia – encompasses a broad range of different brain diseases
- Mild Cognitive impairment – Have some memory or thinking difficulties – does not interfere with activities of daily living
- Types of Dementia
 - Alzheimer's - most common form of Dementia
 - Vascular – caused by disease or injury to blood vessels
 - Lewy-Body
 - Frontotemporal -severe personality changes

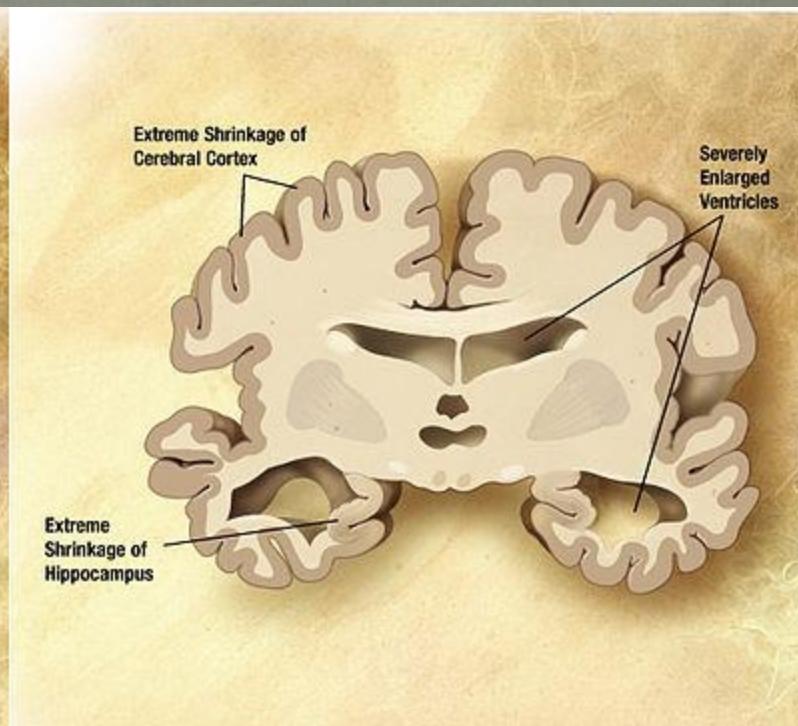
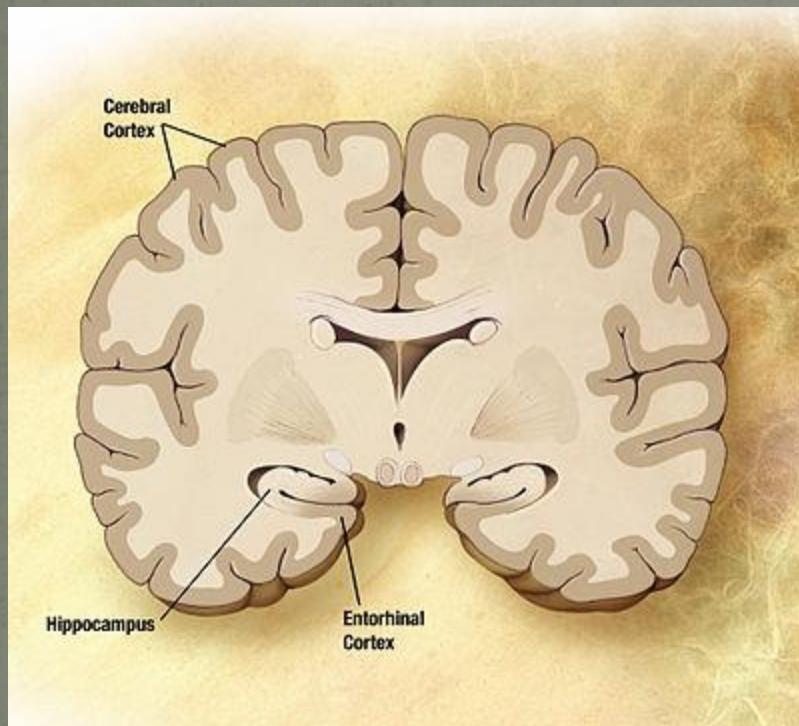
DEMENTIA



Brain



Healthy versus Alzheimer's Brain



What is the prevalence of Alzheimer's Disease?

www.alz.org/alzheimers_disease_facts_and_figures.asp

- **Impact on Caregivers**

- In 2013, 15.5 million family and friends provided 17.7 billion hours of unpaid care to those with Alzheimer's and other dementias – care valued at \$220.2 billion, which is nearly eight times the total revenue of McDonald's in 2012.

What Happens in the Alzheimer's Brain

Here are Short video clips:

- www.nihseniorhealth.gov/videolist.html#alzheimersdisease
- *Inside the Brain: Unraveling the Mystery of Alzheimer's*
- *Diagnosing Alzheimer's disease*
- www.videocaregiving.org

No two dementia patients are the same

- Here in lies the challenge
- What is Dementia?- Failure in Communication
 - Synapses in the brain damaged or reduced
 - Messages not getting through
 - Stop--- Observe --- Listen
- Anticipate ---- Tolerate---- Do Not Agitate
- If approach does not work one way...Try another
- WE are the ones with the functioning brains
- We Need to change our approach

Why is a medical work-up Important?

- Complete medical work-up
 - Metabolic disorders:
 - Thyroid disease
 - Vitamin B₁₂ Deficiency
 - Hyponatremia (Low Sodium)
 - Hypercalcemia (High Calcium)
 - Liver dysfunction
 - Renal Dysfunction
 - Medications
 - Alcohol or substance abuse or withdrawal

Age related changes vs. Dementia

Signs of Dementia

- Poor judgment & decision making
- Inability to manage finances
- Losing track of month or season
- Misplacing things & not able to find
- Unable to drive to familiar places
- Difficulty with conversation

Age Related Changes

- Occasional bad decision
- Missed a monthly bill
- Forget date, remember later
- Losing things from time to time
- Occasionally make wrong turn
- Occasionally forgetting a word

DELIRIUM: A MEDICAL EMERGENCY

DELIRIUM

- Delirium is not a disease
- Oldest phenomenon known to medicine
- Delirium is a **SUDDEN** change in the way a person thinks and acts. Deviation from their **cognitive baseline**.
- **It is characterized by:**
 - Fluctuating confusion
 - Inattention – reduced ability to focus
 - Disorganized thinking
 - Altered level of consciousness – Be Alert to somnolence

Difference between Dementia and Delirium

Delirium

- Sudden onset of mental confusion - **Reversible**
- Lasts hours to months
- Fluctuates from rational to disorganized, distorted thinking & illogical speech
- Related to multiple factors. Key is to identify cause and treat.

Dementia

- Progressive loss of function - **Irreversible**
- Years(8-20)
- Gradual loss of cognition & ability to problem solve
- Usually diagnosed about 3 years after onset of symptoms

Facts about Delirium

- Delirium is one of the most common complications of hospitalization
- 25% of older adults are hospitalized because of Delirium
- Up to 50% develop delirium while hospitalized
- There are no diagnostics (blood or x-ray) to identify delirium
- Delirium is missed 40-60% of the time

Diagnosis

- Clinical diagnosis (need to be looking for it!)
 - Often unrecognized or confused with dementia
 - Prevalent vs. incident delirium
- Several diagnostic criteria and screening tests
 - No blood or diagnostics - good assessments
- Confusional Assessment Method (CAM) is most widely studies and used tool for screening

Who is at risk?

- VERY YOUNG
- VERY OLD
- VERY ILL
- PEOPLE WITH COGINTIVE IMPAIRMENT

<http://www.urmc.rochester.edu/highland/departments-centers/geriatrics.aspx>

DELIRIUM TYPES

- Hyperactive – Usually agitated, disoriented and may have hallucinations
- Hypo active - “The good Patient” – Quiet, confused, disoriented and apathetic behavior
- Mixed Delirium – Combo of hyperactive and hypoactive types – making it difficult to diagnose. Can be associated with daytime sleepiness and nighttime agitation.

Delirium Mnemonic

Source: Sandhaus, S., Harrell, F. & Valenti, D. (2006). Here's HELP to prevent delirium in the hospital. *Nursing* (2006), 36(7):60-62

D - Drugs- polypharmacy, ETOH, anticholinergics & opioids

E - Elimination, incontinence, constipation, retention & diarrhea

L - Liver & other organs (heart, GI, kidney, brain & bone marrow)

I - Infection - (UTI, URI, sepsis)

R - Respiratory - low O₂ sats (MI, CHF, COPD, PE & pneumonia)

I - Immobility & injury (pain, stress, fever & hypothermia)

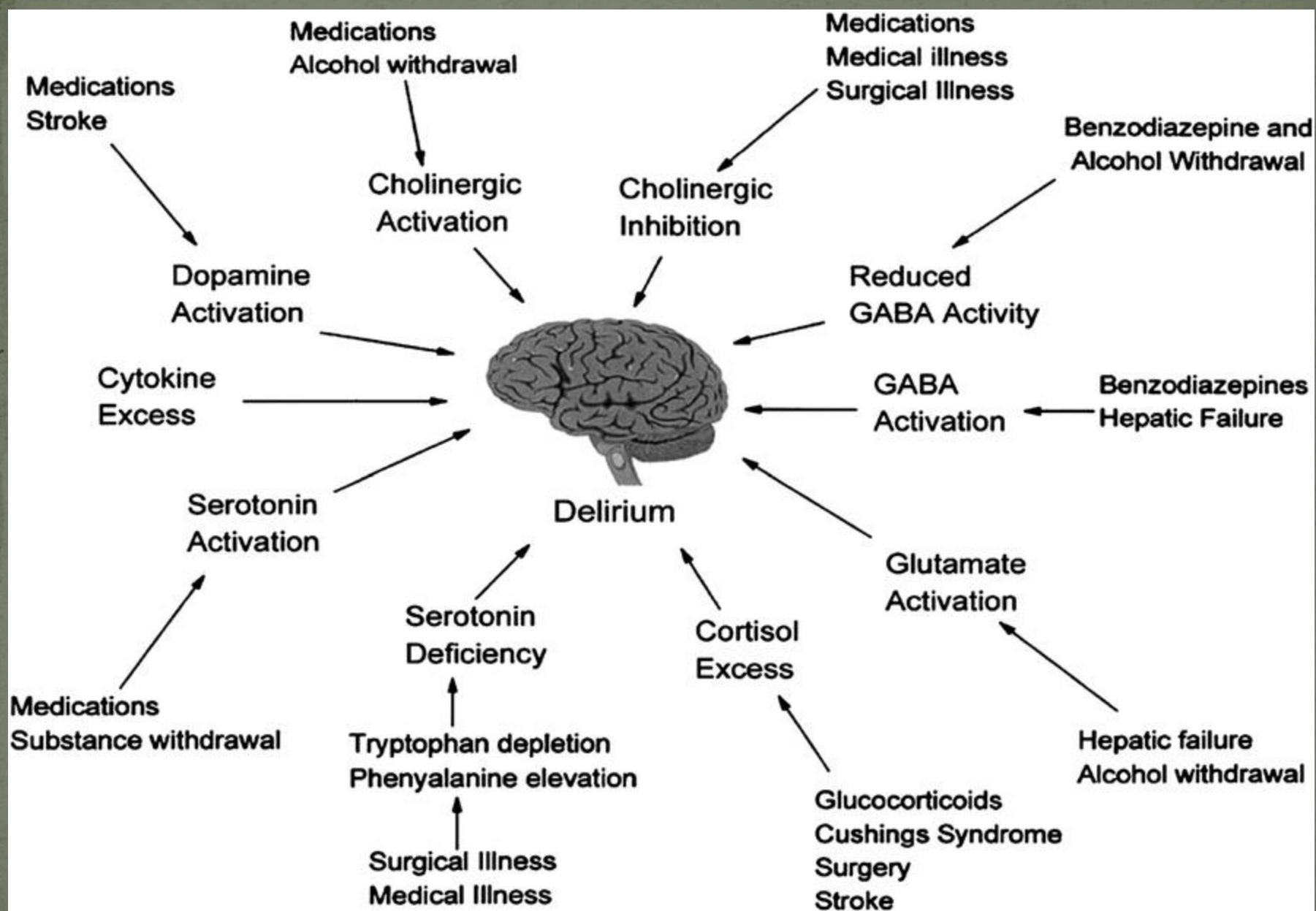
U - UNDER: hydration, nutrition, & *unfamiliar environment* & medication for pain

M - Metabolic- fluid and electrolyte disturbance, dehydration, diabetes, anemia & thyroid disease

S - Sensory loss (eyes, ears), subdural hematoma, sleep deprivation

A good mnemonic

- D Drugs
- E Eyes, ears and other sensory deficits
- L Low O₂
- I Infection
- R Retention (urine, stool)
- I Ictal state (seizure)
- U Under – hydration, nutrition, unfamiliar environment
- M Metabolic
- S Subdural hematoma



Flacker JM, Lipsitz LA. Neural mechanisms of delirium: current hypotheses and evolving concepts.
J Gerontol BiolSci Med Sci 1999;54A:B243;

Predisposing factors

- Age (over 65years old)
- Dementia
- Multiple medications
- Sensory impairment (visual/hearing)
- Dehydration
- Chronic physical illness
- Substance use (including alcohol)
- Depression
- Neurological impairment
- Functional disability

Delirium - Treatment

- **Early Identification** – Treat underlying cause(s)
 - Delirium can be the result of a MEDICAL CONDITION
- Partner with family
- Safety measures
- Minimize tethers
- Ambulate – maintain function
- Individualize care plan
- www.viha.ca/mhas/resources/delirium

What is different from a perioperative perspective?

- Advances in surgical and anesthetic techniques
- Perioperative assessments identify potential risk factors and complications
- Increased longevity results in multiple comorbidities and increase risk of functional decline and increase recovery times
- Everyone ages differently. Need to view each case individually not collectively
- Stable medical conditions generally result in smoother surgical process

Preoperative screening

- Complete H & P
- Want patient at best prior to surgery
- Fix the correctables
 - Blood work
 - EKG/Cardiac status
 - Respiratory/ Anesthesia
 - Cognition
 - ADL's/Disposition/Supports/ Transition of care
- Prior issues with anesthesia

How to think differently about cognitive impairment.

- **Challenging behaviors** : Reframe as UNMET NEEDS
- **Modify the environment**- Decrease noise and sensory stimulation
- **Communication Error**
 - Broken Brain -----
- **Put yourself in their shoes**
 - What do we need to do better?
- **Listen to the family**. Be Proactive
 - But you do not understand, that is not how my mother acts? KEY statement.
 - Have they been confused after anesthesia before?

Treatment

- No clear treatment with limited data
 - Address causes
 - Provide supportive care
 - Prevent complications
 - Treat behavioral symptoms
 - Pharmacologic treatment is reserved for patients whose symptoms threaten their own safety or safety of others

Causes of Post Operative Delirium

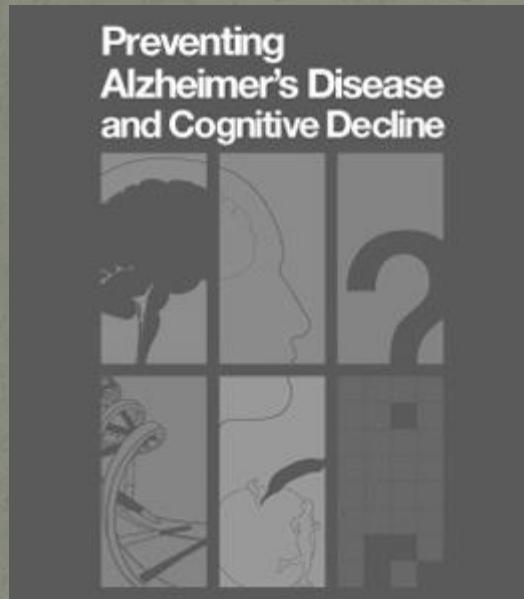
- Acid base disturbance
- Age older than 80
- Fluid and electrolyte Imbalance
- Dehydration
- History of dementia-like symptoms
- Hypoxia
- Infection(urine, wound, respiratory)
- Medications(benzodiazepines, anticholinergic, CNS depressants)
- Unrelieved Pain
- Blood Loss

IT is all in the approach

- Establish a connection first
- Then work on request
- If Approach does not work: STOP.... Try something else
- Think it through
- Re-approach
- Remember put yourself in their shoes
- Who has the broken brain?
- Caregivers need to adjust their approach not the other way around.
- NURSES are Essential to All aspects of Care

Strategies For Dementia Prevention

www.consensus.nih.gov/2010/alzstatement.htm



Prevention Strategies - Dementia

- Mental Fitness
- Physical Fitness
 - www.nlm.nih.gov/medlineplus/exerciseforseniors.html
- Nutrition
 - www.nlm.nih.gov/medlineplus/healthyaging.html
- Stress Reduction
- Sleep
- Maintain Blood pressure
- Glucose levels within normal limits

Non Pharmacologic approaches - Dementia

- Proper diet w/ appropriate vitamins
- Exercise - Has functional benefits too
 - Aerobic exercise -Chemical and neuroactivated substances w/exercise promote cellular growth
- Socialization and interactive activities
 - Promotes executive functioning (problem solving, thought - provoking conversation)
 - Apologize -
 - “I’m so sorry, I was trying to help
 - “I’m sorry I made you feel _____
 - “I’m sorry, this is Hard

Brain Teasers

- AARP--- Brain Fitness
 - Focus better Think Faster Improve Memory
- <http://www.prevention.com/health/brain-games>
- <http://www.cbsnews.com/news/brain-training-courses-may-keep-seniors-sharper-for-10-more-years>

Research studies

- What about research on Alzheimer's disease?
 - www.nih. Proteins in Blood May Predict Onset of Alzheimer's
 - Lifetime of Learning Might Thwart Dementia, Study Suggests
 - Could a Simple Smell Test Help Spot Alzheimer's Early?
 - New on the MedlinePlus Dementia page:
<http://www.nlm.nih.gov/medlineplus/dementia.html>

Short Video Clip on Current Research Studies/ Clinical Trials

- www.nihseniorhealth.gov/videolist.html#alzheimersdisease

Consultant Journal August (2014); Initial results in one study – as many as 1 in 3 Alzheimer's cases can be attributed to modifiable risk factors:

- Diabetes
- Hypertension
- Obesity
- Smoking
- Depression
- Lack of physical activity
- Lack of education

MIND Teasers & things you can do

- AARP Brain Fitness Exercise of the Month: Target Tracker
- Helping People with Alzheimer's Disease Stay Physically Active
- New on the MedlinePlus Nutrition For Seniors page:
- How Eating Fish May Help Our Brains
- Exercise and a Healthy Lifestyle Reduce Dementia Risk
- <http://www.health.ny.gov/diseases/conditions/dementia/faqs.htm>

Resources

- http://www.nia.nih.gov/sites/default/files/caregivingtips_sundowning-final_13jun24_o.pdf
- <http://www.nia.nih.gov/health/publication/long-distance-caregiving-getting-started>
- <http://alfinnextlevel.wordpress.com/page/26/>
- <http://www.healthinaging.org/aging-and-health-a-to-z/topic:delirium/>
- <http://nihseniorhealth.gov/videolist.html#alzheimersdisease>
- www.TeepaSnow.com
- <http://www.viha.ca/mhas/resources/deliriumww.Alz.org>
- <http://www.health.ny.gov/diseases/conditions/dementia/faqs.htm>
- Durkin, S. (2014) The demon of dementia. *Advance for Nurses*. July 24, 2014, 1-11

Out on American Geriatrics Society

- http://www.americangeriatrics.org/press/listservs/wir_080814/id:5082
- **Draft of Clinical Practice Guidelines for Postoperative Delirium Now Posted for Public Comment**
- *August 8th, 2014*

THANK-YOU

- Questions???
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