For the slides from this presentation, visit:

www.teepasnow.com/presentations

Slides will be available for 2 weeks
Brain Changes in Dementia

PET and Aging:

PET Scan of 20-Year-Old Brain

PET Scan of 80-Year-Old Brain

ADEAR, 2003

As we age, we do not lose function in our brains, unless…

Something Goes Wrong with Our Brains
Normal vs. Not Normal

Normal Aging:
- Slower to think
- Slower to do
- Hesitates more
- More likely to ‘look before leaping’
- Know the person but not the name
- Pause to find words
- Reminded of the past
- Harder

Not Normal Aging:
- Can’t think the same
- Can’t do like before
- Can’t get started
- Can’t seem to move on
- Doesn’t think it out at all
- Can’t place the person
- Words won’t come – even later
- Confused about past versus now
- Very different

Cognitive Changes with Aging:
- Normal changes: more forgetful and slower to learn
- MCI: Mild Cognitive Impairment: Immediate recall, word finding, or complex problem-solving problems
  - Half these folks will develop dementia in 5 years
- Dementia: Chronic thinking problems in > 2 areas
- Delirium: Rapid changes in thinking and alertness, seek medical help immediately
- Depression/anxiety: Chronic unless treated, poor quality of life, “I don’t know” or “I just can’t” responses, no pleasure, can look like agitation and confusion

Ten Early Warning Signs:
1. Memory loss for recent or new information, repeats self frequently
2. Difficulty doing familiar but difficult tasks: managing money, medications, driving
3. Problems with word finding, mis-naming, or misunderstanding
4. Getting confused about time or place, getting lost while driving, missing several appointments
5. Worsening judgment, not thinking thing through like before
6. Difficulty problem-solving or reasoning
7. Misplacing things or putting them in ‘odd’ places
8. Changes in mood or behavior
9. Changes in typical personality
10. Loss of initiation: withdraws from normal patterns of activities and interests
What Could It Be?
- Another medical condition symptom
- Medication side effect
- Hearing loss or vision loss
- Depression/anxiety
- Acute illness, delirium
- Pain or medication for pain
- Other things

Drugs That Can Affect Cognition in Elders:
- Anti-arrhythmic agents
- Antibiotics
- Antihistamines - decongestants
- Tricyclic antidepressants
- Anti-hypertensives
- Anti-cholinergic agents
- Anti-convulsants
- Anti-emetics
- Histamine receptor blockers
- Immunosuppressant agents
- Muscle relaxants
- Narcotic analgesics
- Sedative hypnotics
- Anti-Parkinsonian agents

Dementia Screening Options:
Old:
- MMSE
New:
- SLUMS: 7 minute screen
- Animal fluency: 1 minute # of animals
- Clock Drawing: 2 step
- Full Neuropsychological testing panel
What Should the Doctor Do?
- A thorough physical and medical history
- Blood work
- A neurological exam
- A good history from the person and the family
- A complete medication review
- A CAT scan or MRI or PET scan
- Neuropsychological testing: screening for cognitive changes
- Follow-up and counseling, or at least a referral

So, What is Dementia?
- It is not part of normal aging! It is a disease!
- It is more than just forgetfulness, which is part of normal aging
- It makes independent life impossible, eventually
- It changes everything over time
- It is not something the person can control
- It is not always the same for every person
- It is not a mental illness
- It is real
- It is hard at times

What is Dementia?
It is both
a chemical change in the brain
and
a structural change in the brain

So...
Sometimes they can and sometimes they can't
Four Truths About Dementia:

1. At least 2 parts of the brain are dying—one related to memory and another part
2. It is chronic—can’t be fixed
3. It is progressive—it gets worse
4. It is terminal—it will kill, eventually

The person’s brain is dying

Normal Brain  Alzheimers Brain

Used with permission from Alzheimer’s: The Broken Brain, 1999 University of Alabama
Executive Control Center: Emotions Behavior Judgment Reasoning

Wiring – connecting, bringing data in and sending data out

Storage units - data

Hippocampus Big Changes:
- Learn and remember
- Way-finding
- Passage of time

Changes in Language Skills
- Vocabulary
- Comprehension
- Speech Production

Understanding Language – Big Change
Hearing Sound – Not Changed

Sensory Strip
Motor Strip
White Matter
Connections: Big Changes

Automatic Speech
Rhythm – Music
Expletives: Preserved

Formal Speech and Language Center: Huge Changes

Executive Control Center Changes:

- Being logical, reasonable, rational
- Controlling impulses
- Making decisions
- Initiating-sequencing-terminating-transitioning
- Being self-aware
- Seeing other perspectives
Dementia does not equal Alzheimer does not equal Memory Problems
Alzheimers:
- New information lost
- Recent memory worse
- Problems finding words
- Misspeaks
- More impulsive or indecisive
- Gets lost
- Notice changes over 6 months – 1 year

Positron Emission Tomography (PET)
Alzheimers Disease Progression vs. Normal Brains

G. Small, UCLA School of Medicine.
Vascular Dementia:

CT Scan:
The white spots indicate dead cell areas caused by mini-strokes

Latest Thinking About Vascular Dementia?
- Lots of similarity with Alzheimer’s
- Manage blood flow issues carefully!
- Watch for and manage depression
Latest Thinking about Lewy Body Treatment:

- Use AChls
- Add Namenda early
- Be very careful about anti-psychotic meds
- Parkinson's meds may help movement but may make hallucinations and delusions worse
- Anti-depressants and anti-convulsants may be used to help anxiety, sleep, and depression but can increase confusion, movement, and drowsing

Pick's Disease:

PET Scan
Latest Thinking About FTD Treatments:

- Consider Namenda earlier
- Look at SSRI medications
- May use medications used to treat OCD
- May not use AChl Medications

Brain Atrophy:

- The brain actually shrinks
- Cells wither, then die
- Abilities are lost
- With Alzheimers, areas of loss are fairly predictable, as is the progression, but the experience is individual
- With other dementias.... Look for your clues.

Memory Loss:

Losses:
- Immediate recall
- Attention to selected info
- Recent events
- Relationships

Preserved Abilities:
- Long ago memories
- Confabulation
- Emotional memories
- Motor memories
Understanding:

Losses:
- Can’t interpret words
- Misses some words
- Gets off target

Preserved Abilities:
- Can get facial expression
- Hears tone of voice
- Can get some non-verbals
- Learns how to cover

Sensory Changes:

Losses:
- Awareness of body and position
- Ability to locate and express pain
- Awareness of feeling in most of body

Preserved Abilities:
- 4 areas can be sensitive
- Any of these areas can be hypersensitive
- Need for sensation can become extreme

Self-Care Changes:

Losses:
- Initiation and termination
- Tool manipulation
- Sequencing

Preserved Abilities:
- Motions and actions
- The doing part
- Cued activity
**Language:**

**Losses:**
- Can’t find the right words/vague language
- Word salad
- Single phrases
- Sounds and vocalizing
- Can’t make needs known

**Preserved Abilities:**
- Singing
- Automatic speech
- Swearing/sex words/forbidden words

---

**Impulse and Emotional Control:**

**Losses:**
- Becomes labile and extreme
- Think it - say it
- Want it - do it
- See it - use it

**Preserved:**
- Desire to be respected
- Desire to be in control
- Regret after action

---

**Sensory Processing and Dementia:**

With dementia or brain change, it matters
Five Ways Humans Get Information:

What we:
- See
- Hear
- Feel
- Smell
- Taste

Two Major Categories of Sensory Information:

- Protective
- Discriminatory

Two Categories:

Protective:
- Fast
- Reflexive
- Try to keep you safe
- Autonomic – reflexive
- Big!
- Strong Emotions!!!
- Spinal and primitive
- Flight-Fight-Flight

Discriminatory:
- Slower
- Brain driven
- Exploring and figuring out
- Details and differences
- Focused
- Ignore big world to experience immediate
- Want more or want less
With Dementia:

**Protective:**
- Less able to pick up on 'danger' signals/cues
- More likely to over-react to 'normal' range
- To non-demented seems 'unpredictable'
- But, it's the new predictable set point
- May move toward 'dangerous' versus away from it

**Discriminatory:**
- Either hyper-focused or un-observant
- From multi-modal awareness to single characteristic attention
- Shortened task attention span
- Variable sensory attention
- Atypical focus on a characteristic: edges of the frame versus the picture

---

With Dementia All Senses Are Affected:

- Miss information
- Misunderstand information
- Over-react to information
- Under-react to information
- Get stuck on a sensation
- Can't stand a sensation
- Variable abilities
- Can't adjust or adapt to sensation

---

Vision Changes:

**Protective:**
- Peripheral awareness
- Visual field
- Depth perception
- Light-dark accommodation
- Tracking
- Blink

**Discriminatory:**
- Organized scanning
- Saccadic eye movements
- Color discrimination
- Figure ground perception
- Near-far accommodation
- Near acuity
- Night vision
- Object recognition
- Facial recognition
Hearing-Comprehension Changes:

Protective:
- Direction
- Emergency signals
- Alerting communication

Discriminatory:
- Localization
- Comprehension
- Sound recognition
- Voice recognition
- Foreground-background
- Tracking
- Following a conversation
- Interpreting meaning
- Multi-step information

Touch and Movement Changes:

- This one is both complicated and important!
- Sensation, Processing, Reactions and Responses happen fast! Almost automatic due to habits and procedural memories: looping once started
- Active versus passive: different

Touch:

Movement:
- Balance
- Coordination
- Speed
- Accuracy
- Strength
- Bilateral and unilateral
- Gross motor
- Fine motor
- Reflexes

Sensations:
- Pressure
- Temperature
- Moving touch
- Texture
- Shapes
**Touch:**

**Protective:**
- Extreme Temperature
- Sharp, cutting
- High velocity impact
- Sustained pressure
- Friction

**Discriminatory:**
- Variation in temperature
- Variable textures
- Massage
- Wet/dry
- Manipulation
- Grasp

---

**Movement:**

**Protective:**
- Balance against gravity
- Block incoming
- Avoid contact
- Catch balance
- Maintain upright

**Discriminatory:**
- Voluntary movements to meet goals
- Tool use
- Object manipulation
- Construction

---

**Olfactory-Smell Changes:**

**Protective (becomes limited):**
- Smoke
- Chemicals or gas
- Spoiled food
- Body odor
- Urine or feces

**Discriminatory:**
- Emotional memories
- Emotional reaction
- Pleasant-unpleasant
- Smell identification
- Stimulate hunger or thirst
- Stimulate nausea
- Localization and tracking
Gustatory-Taste Changes:
- Less able to pick up on sweet and salty, so they want more!
- Still keep bitter and sour, so they may not like things they used to
- Things may ‘taste’ wrong, so may order something then refuse to eat it

Truths About Dementia?
- It changes everything over time
- It is not something the person can control
- It is not always the same for every person
- It is not a mental illness
- It is real
- It is hard at times

Believe:
People with dementia are doing the best they can!
Dementia is not curable, but it can be treated:
- With knowledge
- With skill building
- With commitment
- With flexibility
- With practice
- With support
- With compassion