Depression and Dementia

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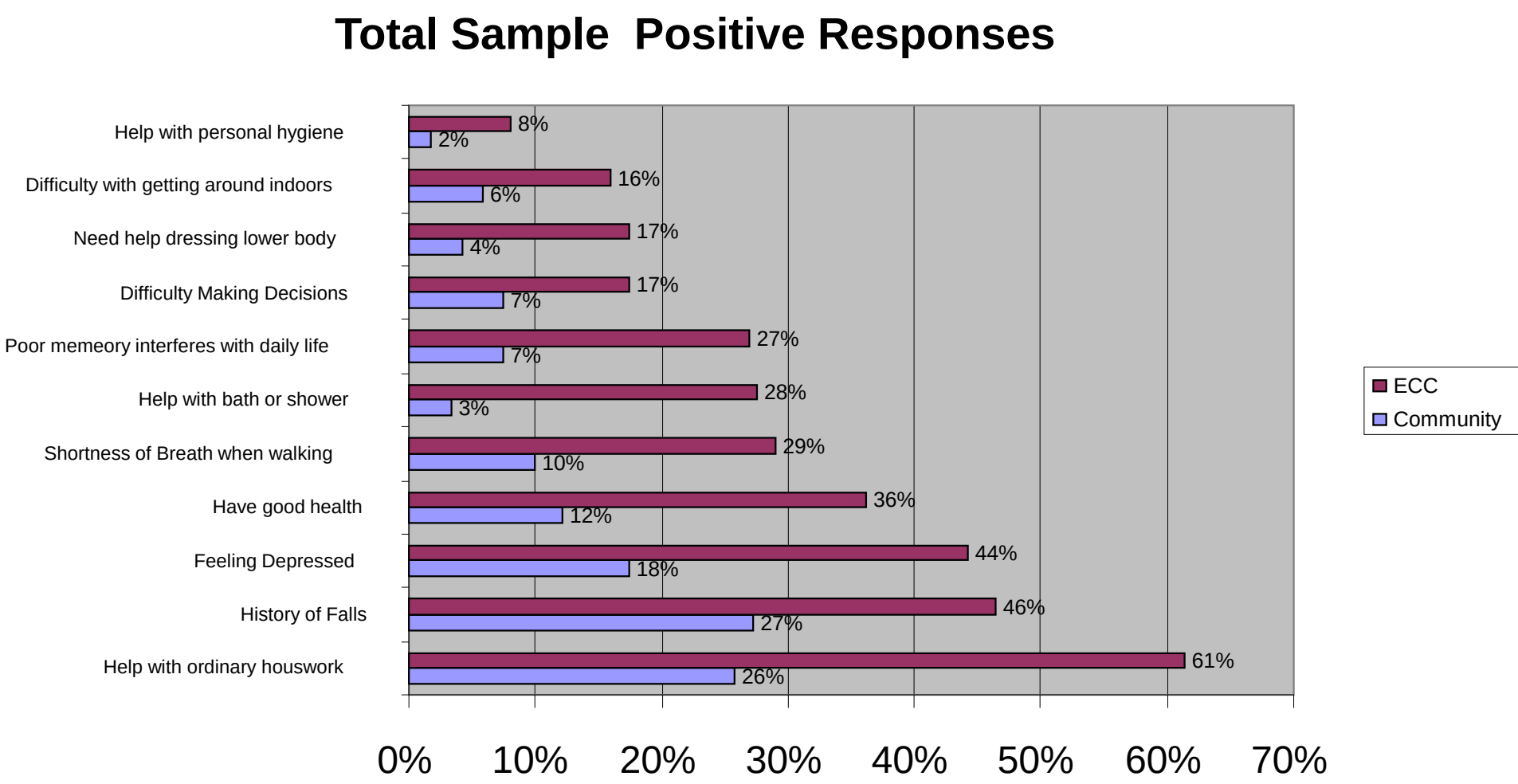
	Delirium	Dementia	Depression	Psychosis
Onset	Acute	Insidious	Variable	Slow
Duration	Short	Lengthy	Variable recurrent	Variable recurrent
Course	Fluctuating	Progressive	Variable	Variable
Consciousness	Clouded	Clear (until later)	Mostly unimpaired	Unimpaired
Attention	Poor	Preserved (early)	Poor	Poor
Cognition	Impaired	Impaired	Variable	Normal

	Delirium	Dementia	Depression	Psychosis
Hallucinations	Common visual	Infrequent	Rare	Common
Delusions	Unstructured	Uncommon	Paranoid (occasionally)	Maintained
Orientation	Poor	Poor	Usually good	Good
Short term memory	Reduced	Reduced	Normal	Normal
Speech	Incoherent	Dysphasia	Normal	Normal
Psychomotor behavior	Lethargic/agitated	Normal	Variable	Variable
Physical illness	Present	Absent	Absent	Usually absent

BRIGHT Screen – WDHB

Depression Reported in Older People



Boyd et al. Acad. Emerg. Medicine: 2008; Kerse, et al. Age Ageing, 2008

Is it Depression? DSM IV Criteria

Depressed mood and or loss of interest or pleasure (pervasive for 2 weeks)

&

4 of the following (3 with both depressed mood and loss of interest or pleasure)

Physical

1. Sleep disorder
2. Appetite/weight change
3. Fatigue
4. Psychomotor retardation/agitation

Psychological

1. Low self-esteem/guilt
2. Poor concentration/indecisiveness
3. Thoughts of death/suicidal ideation
4. Depressed mood
5. Loss of interest/pleasure

RISK FACTORS

- History of depression
- Substance abuse
- Residence in ARC
- Changes in physical health status
- frequent somatic (physical) complaints
- Psychosis e.g. delusional/paranoid thoughts, hallucinations
- Recent losses or crises e.g. death of spouse, friend, pet, retirement, anniversary dates, move to another
- Diseases: e.g. respiratory, cardiac, stroke, cancer
- Chronic pain

Systemic and Metabolic Issues

- Infection
- Anaemia
- Hyponatraemia
- Hypercalcaemia
- Hyperthyroidism
- Hypoglycaemia
- Congestive heart failure
- Kidney failure
- Hypothyroidism
- COPD

Medications

- steroids
- narcotics, sedatives/hypnotics
- benzodiazepines
- antihypertensives
- beta-blockers
- Antipsychotics
- immunosuppressives
- cytotoxic agents

Depression Assessment

- Obtain/review medical history and physical/neurological examination
- Assess for cognitive dysfunction
- Assess level of functional disability

Cornell Scale for Depression in Dementia

Patient's name: _____

Date: _____

Location: _____

A.	**Mood-related signs**	
1.	Anxiety (anxious expression, ruminations, worrying)	a 0 1 2
2.	Sadness (sad expression, sad voice, tearfulness)	a 0 1 2
3.	Lack of reactivity to pleasant events	a 0 1 2
4.	Irritability (easily annoyed, short tempered)	a 0 1 2
B.	**Behavioral disturbances**	
5.	Agitation (restlessness, handwringing, hairpulling)	a 0 1 2
6.	Retardation (slow movements, slow speech, slow reactions)	a 0 1 2
7.	Multiple physical complaints (score 0 if gastrointestinal symptoms only)	a 0 1 2
8.	Loss of interest, less involved in usual activities (score only if change occurred acutely—in less than 1 month)	a 0 1 2
C.	**Physical signs**	
9.	Appetite loss (eating less than usual)	a 0 1 2
10.	Weight loss (score 2 if greater than 5 lb in one month)	a 0 1 2
11.	Lack of energy (fatigues easily, unable to sustain activities) (score only if change occurred acutely—in less than one month)	a 0 1 2
D.	**Cyclic functions**	
12.	Diurnal variation on mood (symptoms worse in the morning)	a 0 1 2
13.	Difficulty falling asleep (later than usual for this person)	a 0 1 2
14.	Multiple awakenings during sleep	a 0 1 2
15.	Early morning awakening (earlier than usual for this person)	a 0 1 2
E.	**Ideational disturbances**	
16.	Suicide (feels life is not worth living, has suicidal wishes, or makes suicidal attempt)	a 0 1 2
17.	Poor self-esteem (self-blame, self-deprecation, feelings of failure)	a 0 1 2
18.	Pessimism (anticipation of the worst)	a 0 1 2
19.	Mood-congruent delusions (delusions of poverty, illness, or loss)	a 0 1 2
Total score:*		

Other Depression Scales:

BASDEC Cards

Geriatric Depression Screen

(both sensitivity of 71%)

Many others!

Geriatric Depression Scale: Short Form

Choose the best answer for how you have felt over the past week:

Are you basically satisfied with your life?	YES / **NO**
Have you dropped many of your activities and interests?	**YES** / NO
Do you feel that your life is empty?	**YES** / NO
Do you often get bored?	**YES** / NO
Are you in good spirits most of the time?	YES / **NO**
Are you afraid that something bad is going to happen to you?	**YES** / NO
Do you feel happy most of the time?	YES / **NO**
Do you often feel helpless?	**YES** / NO
Do you prefer to stay at home, rather than going out and things?	**YES** / NO
Do you feel you have more problems with memory than most?	**YES** / NO
Do you think it is wonderful to be alive now?	YES / **NO**
Do you feel pretty worthless the way you are now?	**YES** / NO
Do you feel full of energy?	YES / **NO**
Do you feel that your situation is hopeless?	**YES** / NO
Do you think that most people are better off than you are?	**YES** / NO

Answers in **bold** indicate depression. Score 1 point for each bolded answer.
A score > 5 points is suggestive of depression and warrants follow-up comprehensive assessment. A score > 10 points is almost always indicative of depression. doing new

Intervention

- Monitor and promote
  - Nutrition
  - Elimination
  - sleep/rest patterns
  - Physical comfort (especially pain control)
- Enhance physical function
  - structure regular exercise/activity
  - refer to physical, occupational, recreational therapies
  - develop a daily activity schedule.

Depression Intervention

- support groups
- ascertain need for spiritual support and contact appropriate clergy
- relaxation therapies,
- music therapy.
- Enhance social support e.g. identify/mobilise a support person e.g. family, confidant, friends
- Maximise autonomy/personal control/self efficacy
- Identify and reinforce strengths and capabilities.

Anxiety can be a symptom of depression

People experience anxiety in different ways, but the following three elements are considered to be common symptoms:

1. A conscious feeling of fear and danger without the ability to identify immediate objective threats that could account for these feelings;

2. A pattern of physiological arousal and bodily distress that may include miscellaneous physical changes and complaints, such as heart palpitations, faintness, feeling of suffocation, breathlessness, diarrhoea, nausea or vomiting;

3. A disruption or disorganisation of effective problem-solving and mental control, including difficulty in thinking clearly and coping effectively with environmental demands.

Neurotransmitters

Serotonin - happiness

Noradrenalin – excitement and ‘get up and go’

Dopamine – reward, pleasure

Medications

Selective serotonin reuptake inhibitors (SSRIs). fluoxetine, paroxetine, citalopram, sertiline, fluoxetine

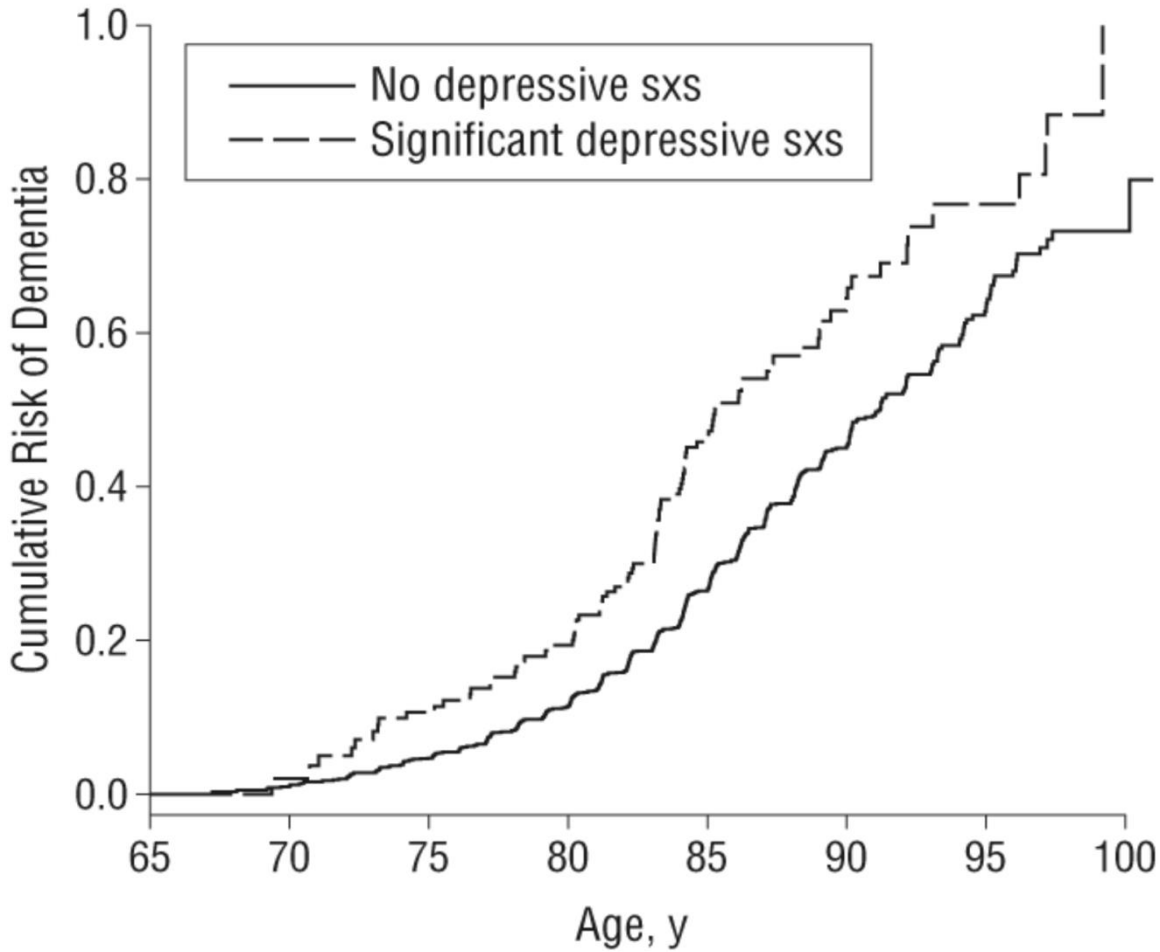
Serotonin and norepinephrine reuptake inhibitors (SNRIs). Venlafaxine

Tricyclic antidepressants. Imipramine, nortriptyline amitriptyline, doxepin

- Norepinephrine and dopamine reuptake inhibitors (NDRIs). Bupropion
- Atypical antidepressants. Trazodone, mirtazapine
- Monoamine oxidase inhibitors (MAOIs)

Depression and Dementia

Kaplan-Meier cumulative risk curves for dementia by baseline depressive symptoms (sxs) status based on the 11-item version of the Center for Epidemiologic Studies Depression Scale score.



Depression effects up to 50% of people with dementia

Thielscher, et al., Arch Gen Psychiatry. 2011;68(9):970-977. doi:10.1001/archgenpsychiatry.2011.86

Treatment of Depression for those with Dementia

- SSRI's appear to decrease symptoms initially, but after 13-39 weeks there is no difference with controls
- SSRI's are associated with increased falls even at low doses (increases 3-fold with higher doses)
- Citalopram has been specifically associated with QTc interval prolongation

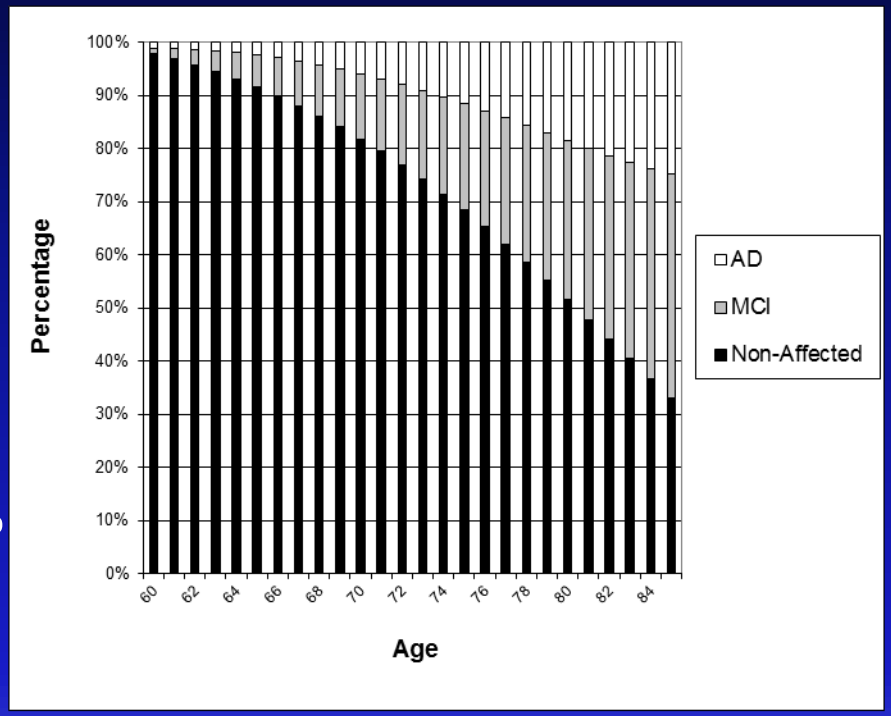
Swartz, Curr Opin Psychiatry 2012, 25:542–550

Mild Cognitive Impairment (MCI)

- Memory impaired but are otherwise functioning well and do not meet clinical criteria for dementia

- Symptoms include
  - Memory complaint, preferably with corroboration
  - Intact activities of daily living
  - Progression MCI → dementia ~ 10-15% per year in clinic-based studies (Mariani et al, 2007)

- There are currently no recommended treatments for MCI
  - Medication review
  - Exercise and social engagement



Petersen RC. *Neurology*. 2001;56:1133-1142.
Petersen RC et al. *Arch Neurol.* 1999;56:303-308.

Differentiation From Normal Aging

- Normal aging, particularly in “old old”, is itself associated with: (Salmon & Bondi, 2009)
  - mild brain atrophy and white matter changes
  - change in cognitive function: processing speed, executive function, learning efficiency, effortful retrieval, word-finding difficulties are common in normal aging, but cues successfully enable retrieval
- Norms for performance in cognitive testing often not established for “old old”.
- Limited education may also be another factor in older age groups

IOM Report 2015
Promoting Brain Health

Good Evidence For:

Be physically active

Reduce and manage cardiovascular disease risk

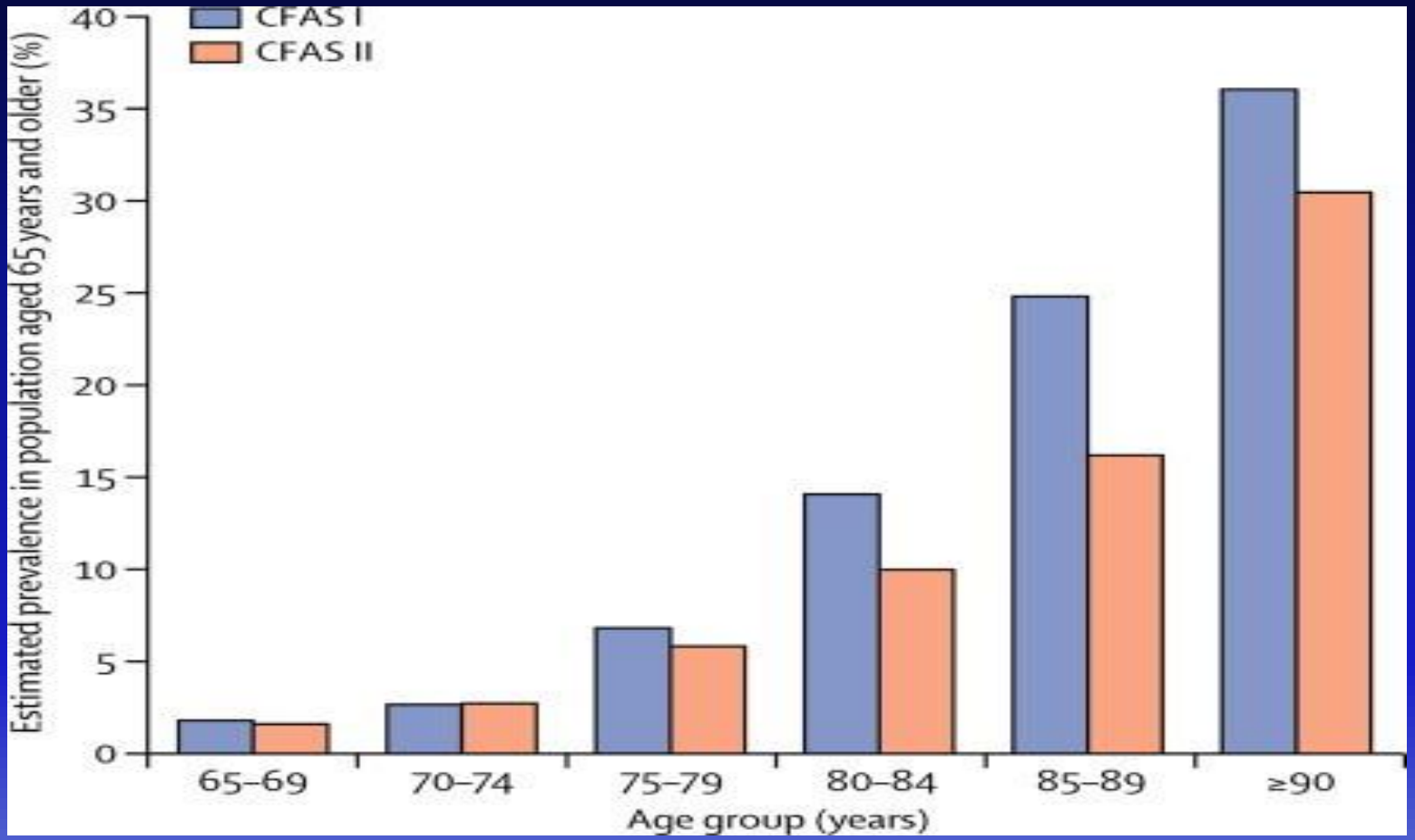
high blood pressure, diabetes, and smoking.

- Management of conditions and medications that might have a negative effect on cognitive function

Some Evidence or Mixed:

- Being socially and intellectually active
- Getting adequate sleep
- Avoid delirium
- medications, nutritional supplements, and cognitive training are mixed

Falling rates of dementia in England: 1989-1994 versus 2008-2011



Matthews et al. Lancet 2013; 382(9902): 1405–1412

Cognitive Impairment
Main Causes

Degenerative

- Alzheimer's
- Fronto-temporal lobe/Pick's
- Lewy Body Dementia
- Parkinson's Dementia
- ALS/MND
- MS
- Huntington's

Vascular

- Multi-Infarct Dementia
- Pellagra
- Vasculitis
- Lupus

Infectious

- HIV
- CJD
- Syphilis
- Herpes Simplex
- Fungal
- Bacterial

Structural

- Normal Pressure Hydrocephalus
- Neoplasm
- Alcohol / Drugs
- Trauma
- Subdural Hematoma

Metabolic

- Electrolyte Imbalance
- Medications
- Wilson's
- Whipple's
- Thyroiditis
- B12/Folate
- Hepatic

History - Onset and Duration

Gradual & chronic

- Alzheimer's Disease (AD)

Rapidly progressive

- Vascular Disease
- Hashimoto's hypothyroid
  - Myxedemetous psychosis
- **Creutzfeldt–Jakob disease (**CJD)
- Vasculitis
- Cancer
- ↓ Thiamine
- Cerebral infection

Acute

- Delirium
- Vascular Dementia
- Transient Global Amnesia
  - Acute onset of anterograde amnesia
  - No alteration in consciousness
  - No cognitive impairment other than amnesia
  - No loss of personal identity
  - No focal neurology or epileptic features
  - No recent history of head trauma or seizures
  - Attack must resolve within 24 hr

Step-wise

- Vascular Dementia

History

- Past Medical History
  - Head Injury
    - Normal Pressure Hydrocephalus
    - Sub-dural hematoma
    - Sub-arachnoid haemorrhage
  - Epilepsy
    - **Creutzfeldt–Jakob disease (**CJD)
    - Vascular
    - Cancer
- Past employment history
  - Exposure to
    - Lead
    - CO
    - Mercury
- Education level
- Sleep Apnoea Sx
- Syphilis
  - Test or not to test??

History

- Behaviour > Cognitive
  - Executive Function
    - Lewy Body, Parkinson's Disease Dementia (PDD)
    - Vascular
    - Fronto-Temporal Lobe dementia (FTD)
  - Personality Changes
    - FTD
    - Vascular
- Cognitive > Behaviour
  - Short Term memory loss
    - Alzheimer's Disease (AD)

History

- Family History of Dementia
  - Early Onset Alzheimer's
  - Some types of Fronto-Temporal Lobe dementia
- Medications
  - Benzodiazepines
  - Anticholinergics
  - Many others
- Lifestyle Questions
  - Smoking
    - Buerger's Disease
    - blockages in the blood vessels of extremities
    - Inflamed blood vessels and Blood clots
  - IV Drug Use, Gay male
    - HIV related dementia
  - ETOH – how much, how often?

“Reversible” Dementia

- Rates unclear, given that studies use different interpretations of word “reversible”
  - Srikanth & Nagaraja (2005) 18% cases potentially treatable,15% improved with treatment
  - Freter et al (1998) 23% cases potentially treatable, 3% improved with treatment

- Commonest causes of treatable dementia were in descending order (Clarfield 1988) :
- Depression
- Medications
- Normal Pressure Hydrocephalus
- Thyroid disorders
- Subdural Hematoma
- Neoplasms
- ETOH
- Calcium disorders
- Hepatic disorders
- B12

Cognitive Impairment Degenerative Sub-types

Cortical

Frontal Temporal Lobe

Alzheimer's Disease

Early Onset

Late Onset

Lewy Body Dementia

CJD

Sub-Cortical – basal ganglia, Motor

Cortico-basilar

Semantic aphasia

Progressive Nonfluent Aphasia

Progressive Supranuclear Palsy

Parkinson's Dementia

Huntington's

Alzheimer's Disease

- First Diagnosed in 1906

- Alois Alzhiemer's
- Considered relatively rare when first described

Alzheimer's Disease Diagnosis

NIA-**Alzheimer's Assoc. workgroups on diagnostic guidelines for AD**

Alzheimers Dement. 2011 May; 7(3): 263–269.

- A minimum of two of the following:
  - Impaired ability to acquire and remember new information
    - repetitive questions or conversations, misplacing personal belongings, forgetting events or appointments, getting lost on a familiar route.
  - Impaired reasoning and handling of complex tasks, poor judgment
    - poor understanding of safety risks, inability to manage finances, poor decision-making ability, inability to plan complex or sequential activities.

AND...

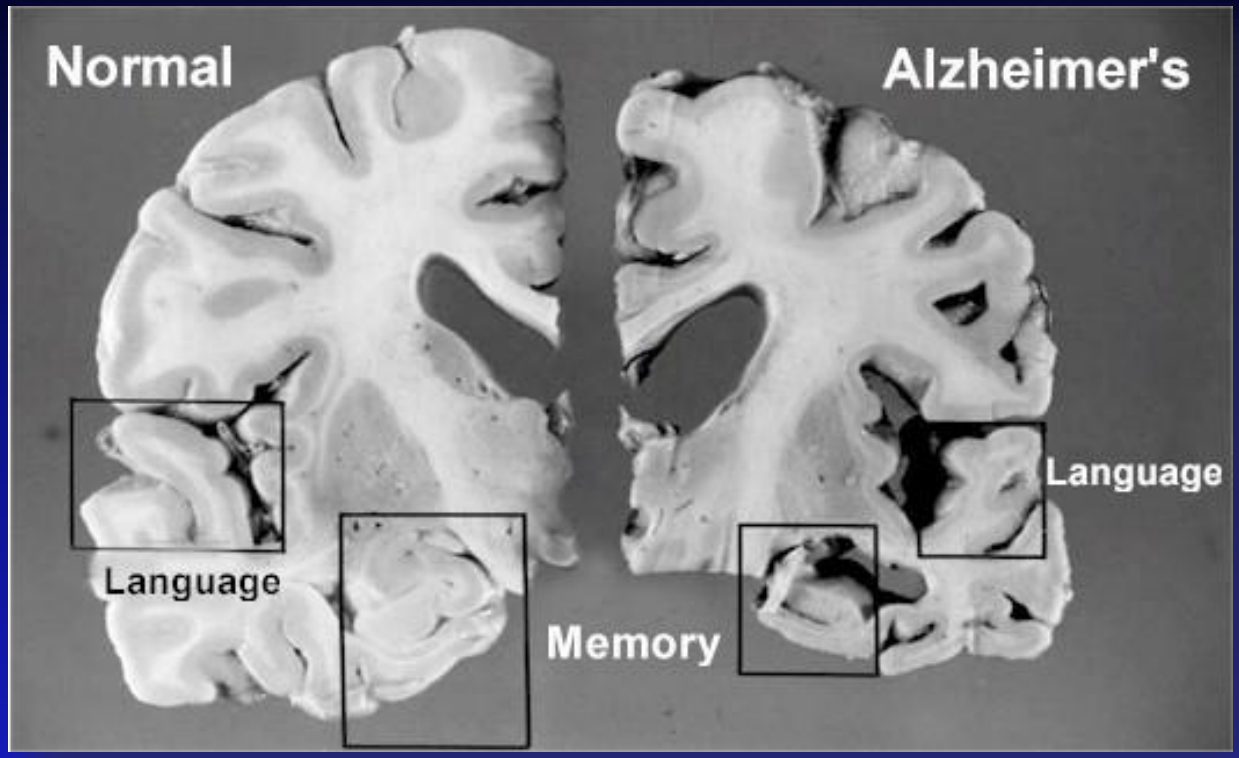
Alzheimer's Disease Diagnosis

NIA-**Alzheimer's Assoc. workgroups on diagnostic guidelines for AD**

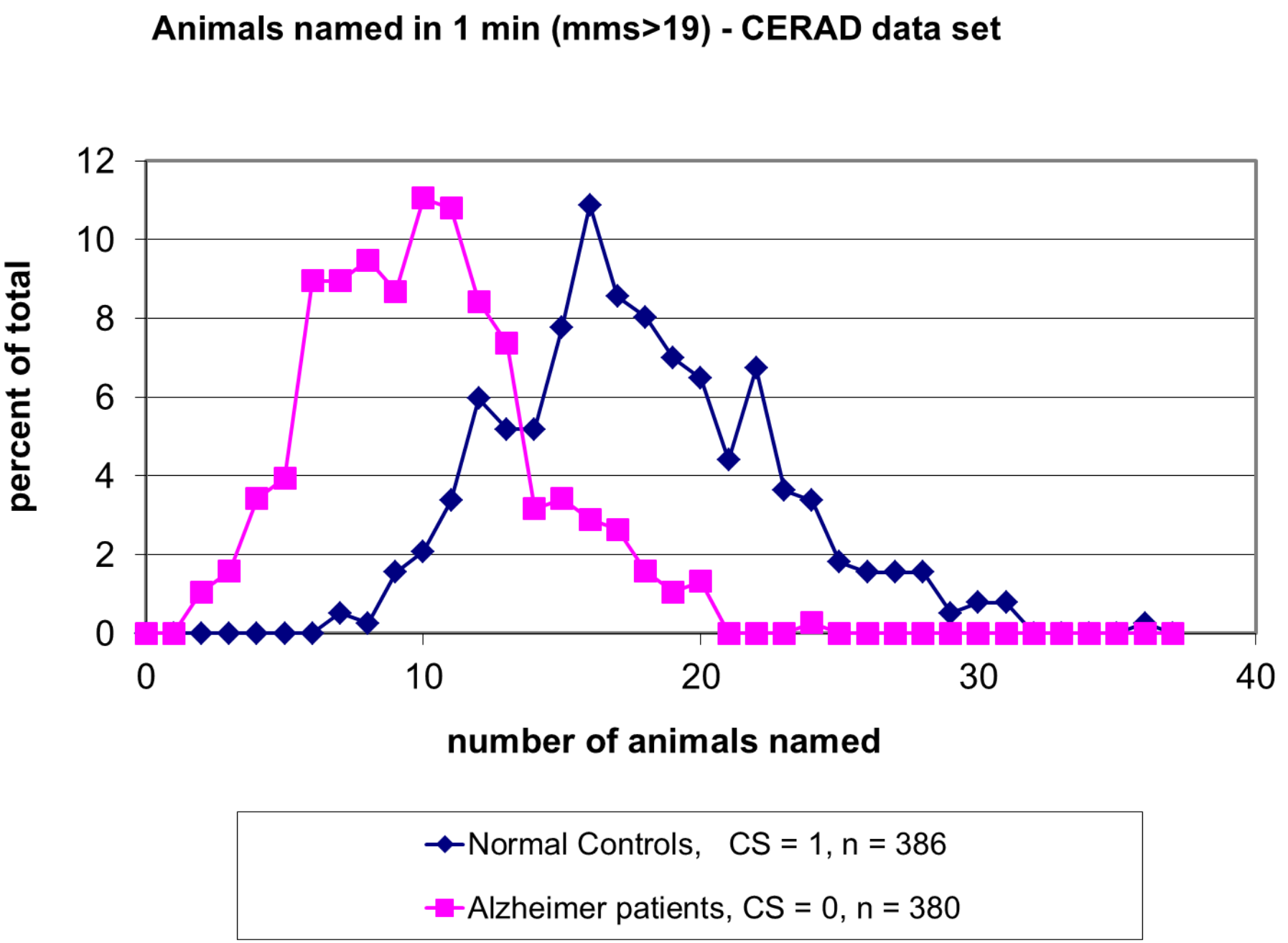
Alzheimers Dement. 2011 May; 7(3): 263–269.

- A minimum of two of the following (continued):
  - Impaired visuospatial abilities
    - inability to recognize faces or common objects or to find objects in direct view, inability to operate simple implements, or orient clothing to the body.
  - Impaired language functions (speaking, reading, writing)
    - difficulty thinking of common words while speaking, hesitations; speech, spelling, and writing errors.
    - Changes in personality, behavior, or uncharacteristic mood fluctuations
    - agitation, impaired motivation, initiative, apathy, loss of drive, social withdrawal, decreased interest in previous activities, loss of empathy, compulsive or obsessive, socially unacceptable behaviours.

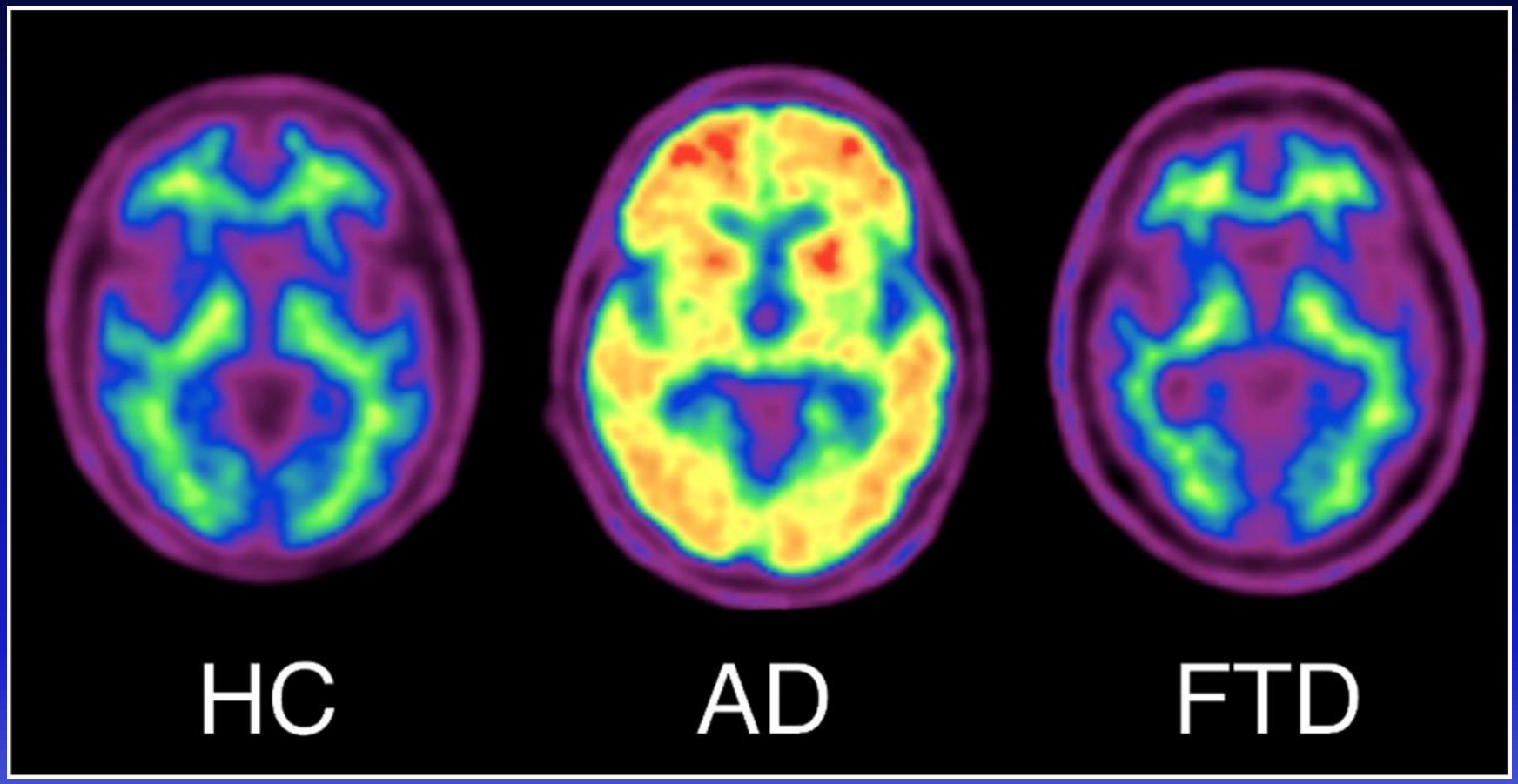
Imaging for Alzheimer's Disease



- Extreme hippocampal and medial temporal lobe atrophy
- Severe global atrophy


Animals named in 1 min (mms>19) - CERAD data set
percent of total
12
10
8
6
4
2
0
0
10
20
30
40
number of animals named
Normal Controls, CS = 1, n = 386
Alzheimer patients, CS = 0, n = 380

PET Scan beta amyloid deposits



Rowe, et al., J Nucl Med **November 1, 2011** vol. 52 no. 11 **1733-1740**

Vascular Dementia

- Previously thought to be about 20% of all dementias
- Now thought that there is very little ‘pure vascular dementia’
- Does the ischaemic changes from cardiovascular disease promote plaques and tangles?
- The Nun Study: lacunar strokes increase dementia risk 20 fold with fewer plaques and neurofibrillary tangles before showing signs of dementia.

TREATMENT:

Cardiovascular Health

Exercise

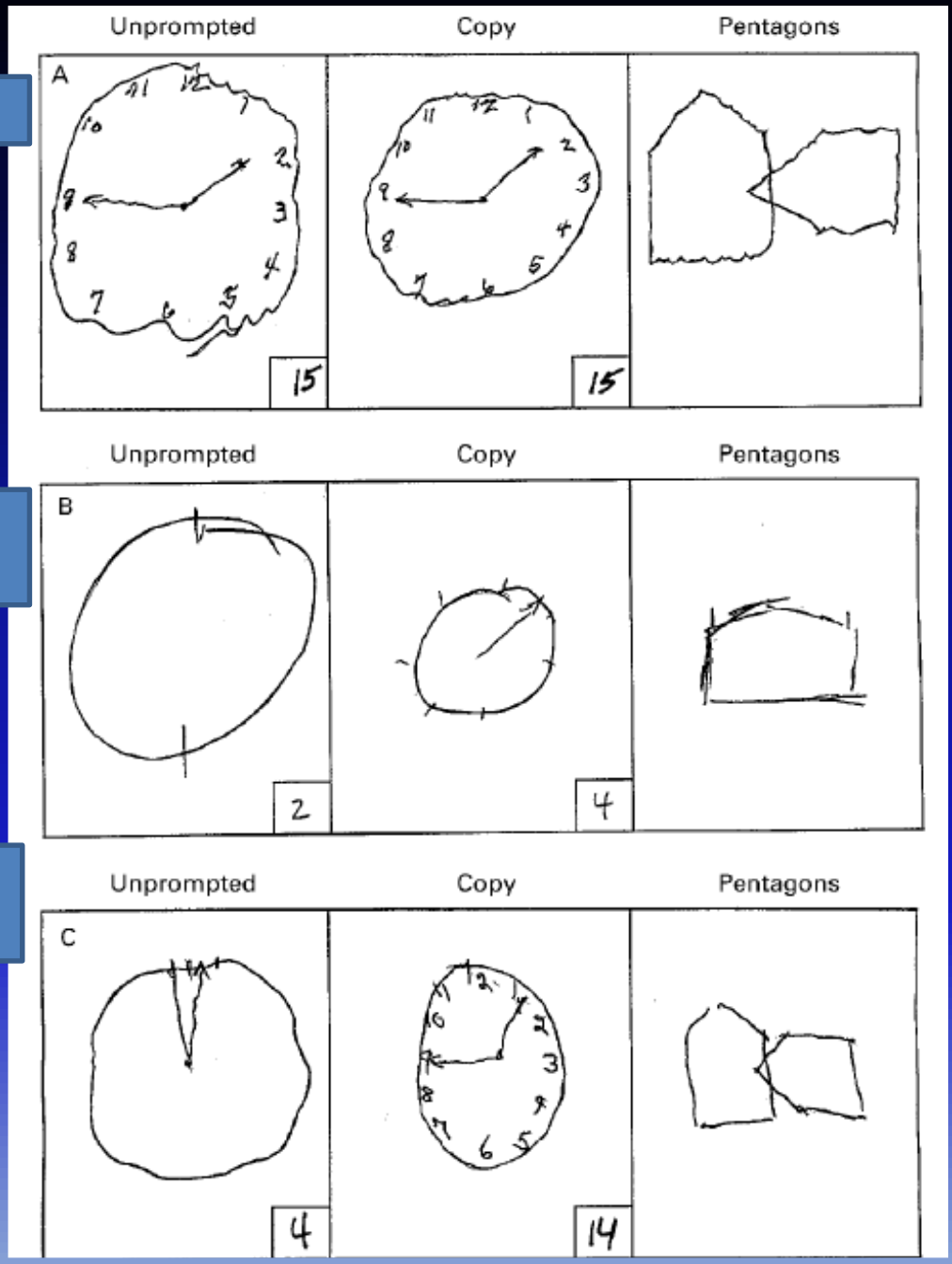
Active Mind

CLOX:
an executive clock drawing task

No Dementia

Alzheimer's Disease

Vascular Dementia



Royall, Cordes, Polka

J Neurol Neurosurg Psychiatry

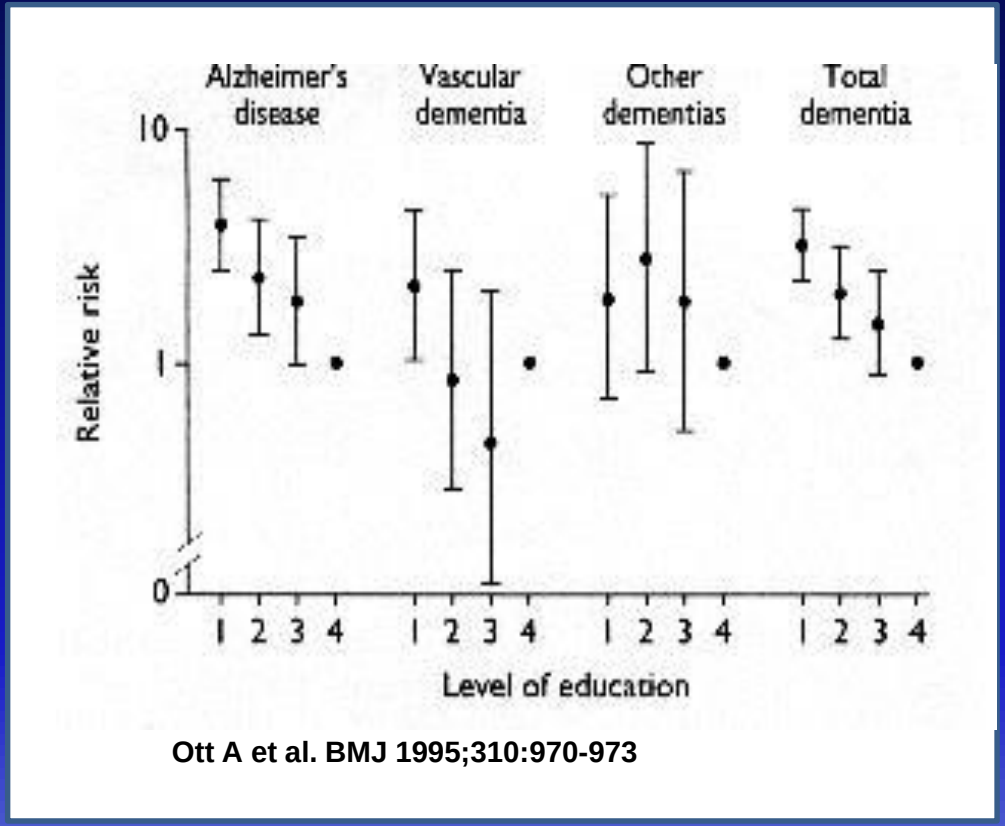
1998;64:588-594

Vascular Dementia Characteristics

Characteristic	Vascular Dementia	Alzheimer's Disease
Onset	Sudden or gradual	Gradual
Progression	Slow, stepwise fluctuation	Constant insidious decline
Neurological findings	Evidence of focal deficits	Subtle or absent
Memory	Mildly affected	Early and severe deficit
Executive function	Early and severe	Late
Dementia type	Subcortical	Cortical
Neuroimaging	Infarcts or white matter lesions	Normal; hippocampal atrophy
Gait	Often disturbed early	Usually normal
Cardiovascular history	Transient ischemic accidents, strokes, vascular risk factors	Less common

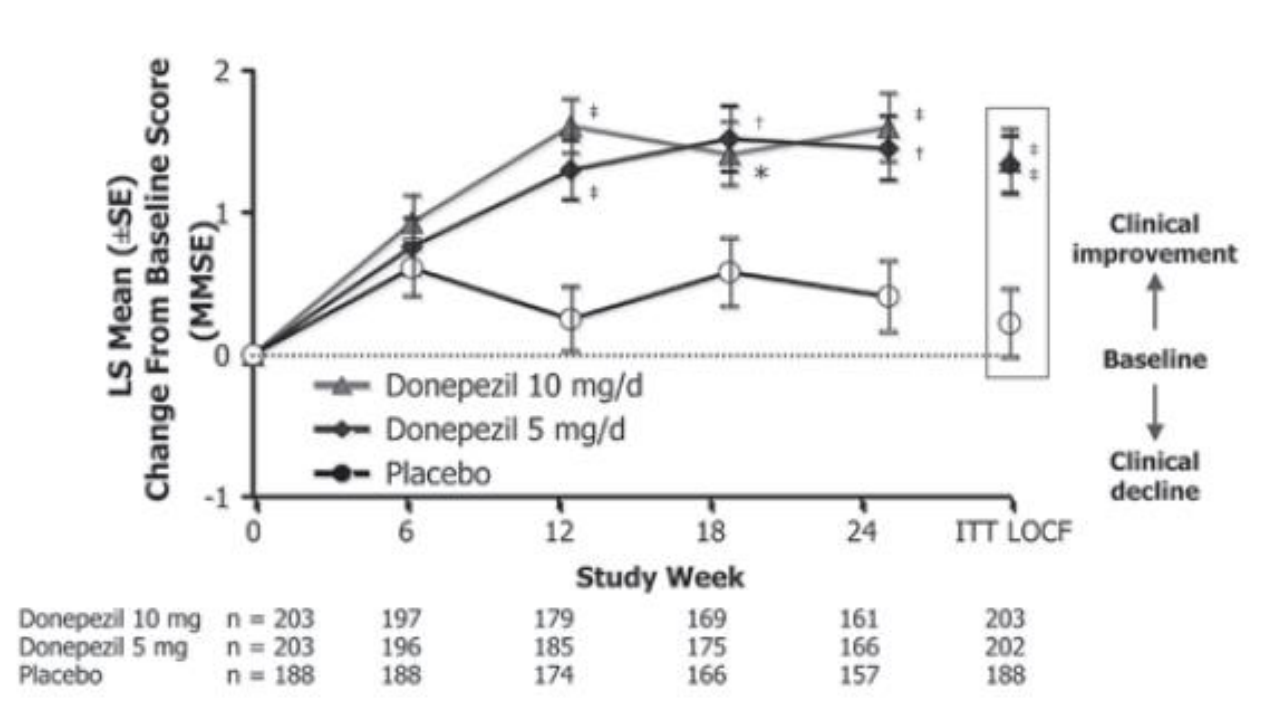
AD Risk Factors

- Familial Relationship in 5% of cases – APOE gene
- Age
- Women have higher rate of dementia (live longer?)
- Low education (decreased reserve?)



Ott A et al. BMJ 1995;310:970-973

Vascular Dementia Treatment



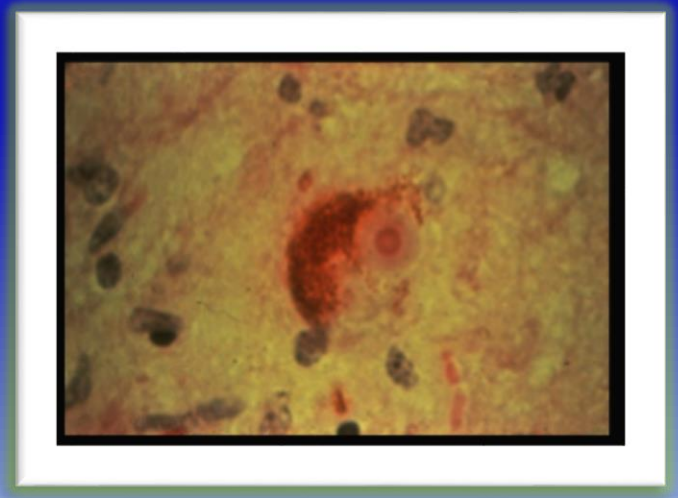
- Cardiovascular Health
  - Hypertension Tx
  - Lipid Therapy
  - Anticoagulation

Cholinesterase Inhibitors

Roman, JAGS 51:S296–S304, 2003

Dementia with Lewy bodies (LB)

- DLB typically under-diagnosed in clinical samples (~ 5%), yet pathology studies suggest more common (~ 15%)
- Up to 40% of people with AD also have Lewy Bodies
- **Symptoms**
  - **can range from traditional Parkinsonian effects**
    - **loss of spontaneous movement (bradykinesia)**
    - **rigidity (muscles feel stiff and resist movement)**
    - **tremor and shuffling gait**
  - **to effects similar to those of AD**
  - ***acute confusion & Hallucinations***



Lewy Body and Parkinson's Disease Dementia

LBD

- Cognitive Impairment
- Parkinson's Dx occurs around the same time or after dementia dx
- Fluctuating Cognition
- Visual Hallucinations
- Varying alertness and attention
- Delusions
- Unexplained syncope
- Rapid eye movement sleep disorder
- Neuroleptic sensitivity
- Depression

PDD

- Cognitive Impairment
- Parkinson's Dx for at least 1 year

Physical Exam

- Often have orthostatic hypotension
- Some Parkinsonian signs but usually not enough to meet the criteria for a diagnosis of Parkinson disease
- Mild gait impairment is relatively frequent
- Resting tremor occurs less frequently than in Parkinson disease
- Memory retrieval worse than memory storage

Lewy Body Dementia Treatment

- cholinesterase inhibitor first choice
  - rivastigmine may decrease psychiatric symptoms particularly apathy, anxiety, hallucinations, and delusions
  - Donepizil and Galantamine have shown improvement in neuropsychological testing
  - Memantine improved cognition
- **Typical anti-psychotics are contraindicated due to hypersensitivity**
- Levodopa/carbidopa can help motor symptoms but make the neuropsychologic sx worse
- SSRI for depression
- clonazepam treatment of choice for rapid eye movement sleep behavior disorder

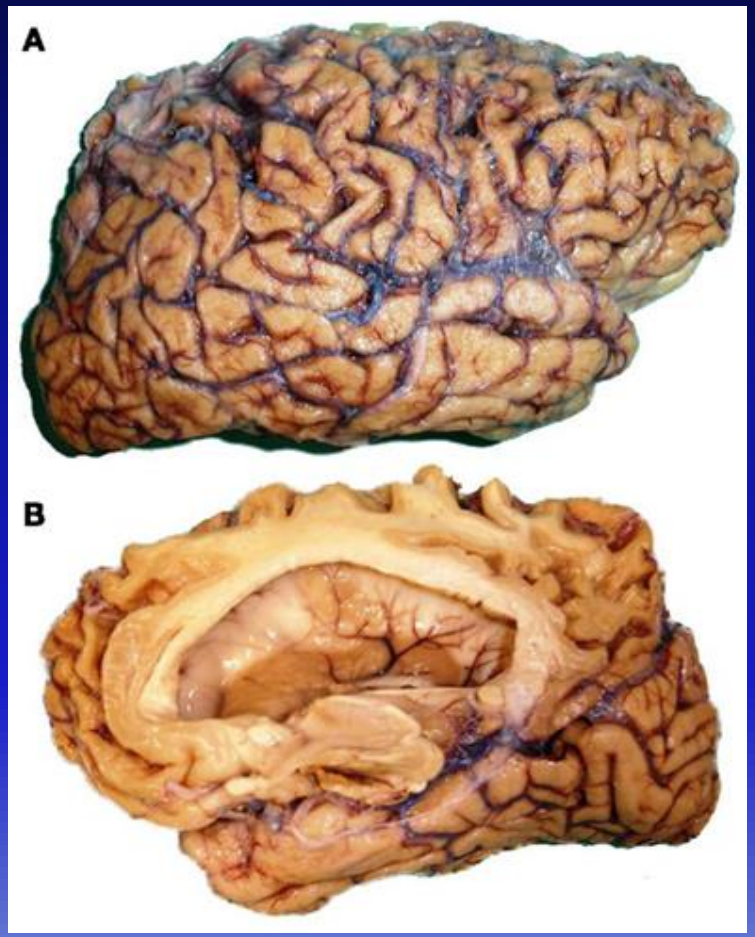
Fronto-temporal Lobe Dementia

Anne Adams

- Behavioural Changes
- May not have memory issues
- Executive Function Disorders

Frontotemporal Lobe Dementia

- First described by Pick in 1892
- Disinhibition
- Impulsivity
- Impersistence
- Inertia
- Loss of social awareness
- Neglect of personal hygiene
- Mental rigidity, stereotyped behavior
- Utilization behavior - i.e., a tendency to pick up and manipulate any object in the environment
- Echolalia, perseveration



Fronto-temporal Lobe Dementia

- ✓ Specific atrophy
- ✓ Apraxia – late
- ✓ Marked personality change – early in the disease
- ✓ Memory impairment – late in the disease
- ✓ Little response to ACHase Inhibitors
- ✓ Pick inclusion bodies on pathology

Alzheimer's Disease

- ✓ Diffuse atrophy
- ✓ Apraxia – early
- ✓ Subtle personality changes
- ✓ Memory Impairment – early in the disease
- ✓ Good response to ACHase inhibitors
- ✓ Neurofibrillary plaques and tangles

Frontal Lobe Battery

1. Similarities (conceptualization)

- "In what way are they alike?" A banana and an orange

2. Lexical fluency (mental flexibility)

- "Say as many words as you can beginning with the letter S, except proper nouns."

3. Motor series "Luria" test (programming)

- "fist–edge–palm."

4. Conflicting instructions (sensitivity to interference)

- "Tap twice when I tap once." then "Tap once when I tap twice."

5. Go–No Go (inhibitory control)

- "Tap once when I tap once." then "Do not tap when I tap twice."

6. Prehension behaviour (environmental autonomy)

- "Do not take my hands."

FTD Variations

- progressive non-fluent aphasia (PNFA)
  - Hesitant, effortful speech
  - Speech 'apraxia'
  - Stutter
  - Anomia – unable to name common items
  - Sound errors in speech e.g. 'gat' for 'cat'
  - Using the wrong tense or word order
- Semantic aphasia
- Progressive Supranuclear Palsy (PSP)
- Progressive lack of coordination,
- stiffness of the neck and trunk,
- difficulties with eye movement,
- slow movements
- cognitive dysfunction, and difficulty walking that can result in falls.
- Cortico-Basilar Dementia

PSP/CBD Foundation - *Physicians Guide to PSP*

http://www.psp.org/mission/education/for-healthcare-professionals.html#

Cortico-Basilar Dementia

- Degeneration of the fronto-parietal cortex and deeper brain regions, i.e. basal ganglia.

- Begins unilaterally, but eventually bilateral
- Symptoms parkinsonism such as poor coordination
- Akinesia, rigidity, disequilibrium and limb dystonia (alien limb)

- Cognitive and visual-spatial impairments, apraxia, hesitant and halting speech, myoclonus, and dysphagia

- CT or MRI asymmetric atrophy of the fronto-parietal lobe

Normal Pressure Hydrocephaly

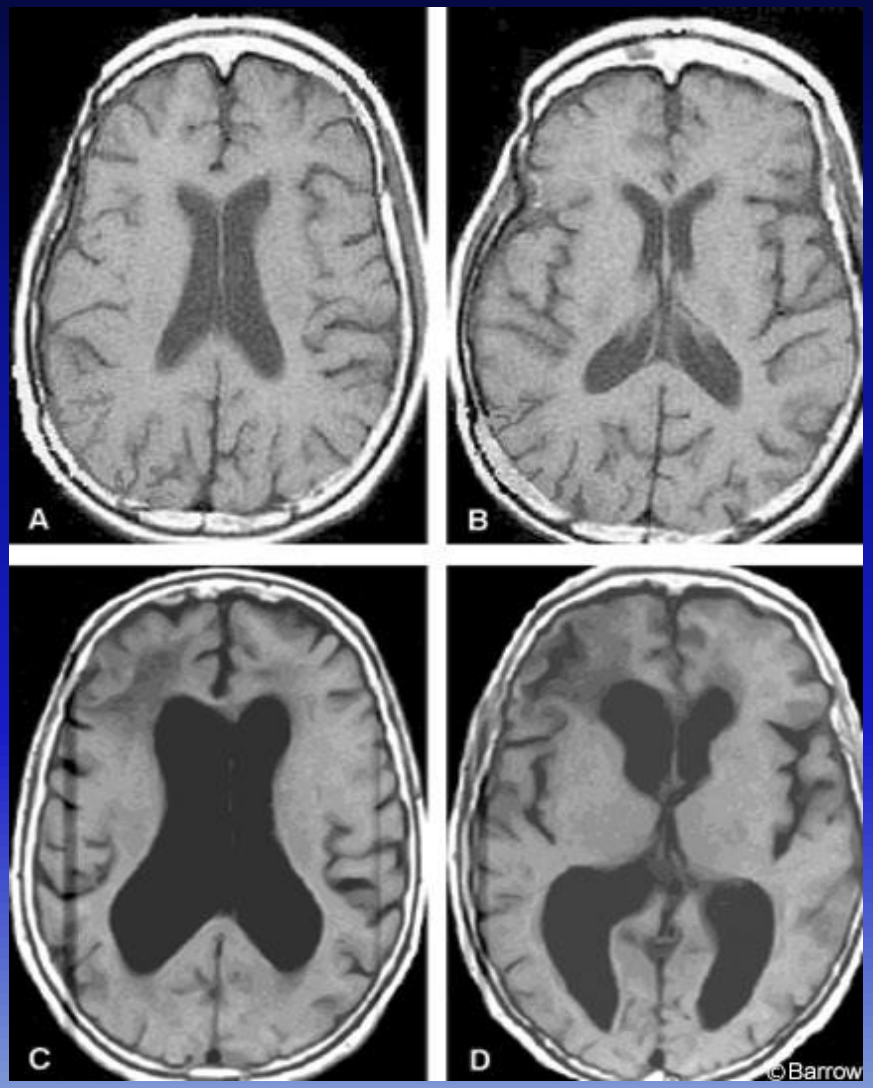
- Gait apraxia
- Incontinence
- Memory impairment

DX:

50 ml CSF lumbar drain

Or 3-5 day continuous drain

Early dx increases potential recovery



http://www.thebarrow.org/Education_And_Resources/Barrow_Quarterly/205294

http://www.hydroassoc.org/

Thank You.