



Dementia and TBI Supported Living

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Remember this....Prevention

- Physical Health – 1 hour per day of exercise; walking
- Cognitive Health – 1 hour per day of exercise; reading
- Psychological Health – focus on coping, doing things that make you feel good and help others
- Social Health – increased socialization is a key ingredient now to better health; we are social animals.

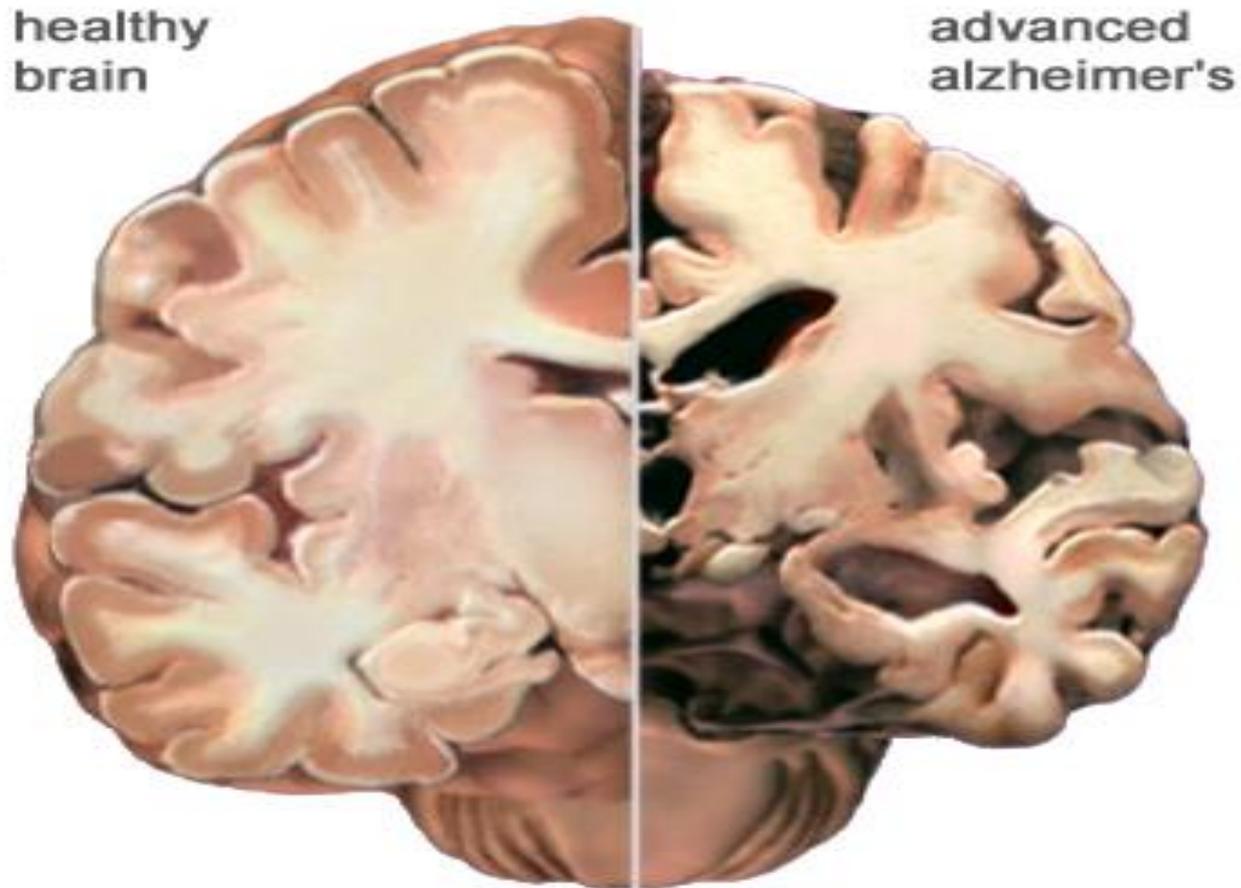
| What you will learn today

- Dementia definition
- Types of dementia syndromes – they are not all the same.
- Progressive dementia vs. Reversible dementia
- Statistics about dementia syndromes

Dementia - Definition

- Dementia is a general term for loss of memory and other mental abilities severe enough to interfere with daily life. It is caused by physical changes in the brain (Alzheimer's Association, 2016)
- Any cognitive function (frontal, language, attention, perception, etc.) can be impaired, but memory seems to be a common problem across all dementia disorders.

Degenerative Conditions – Parkinson’s Disease, Alzheimer’s, Other dementias



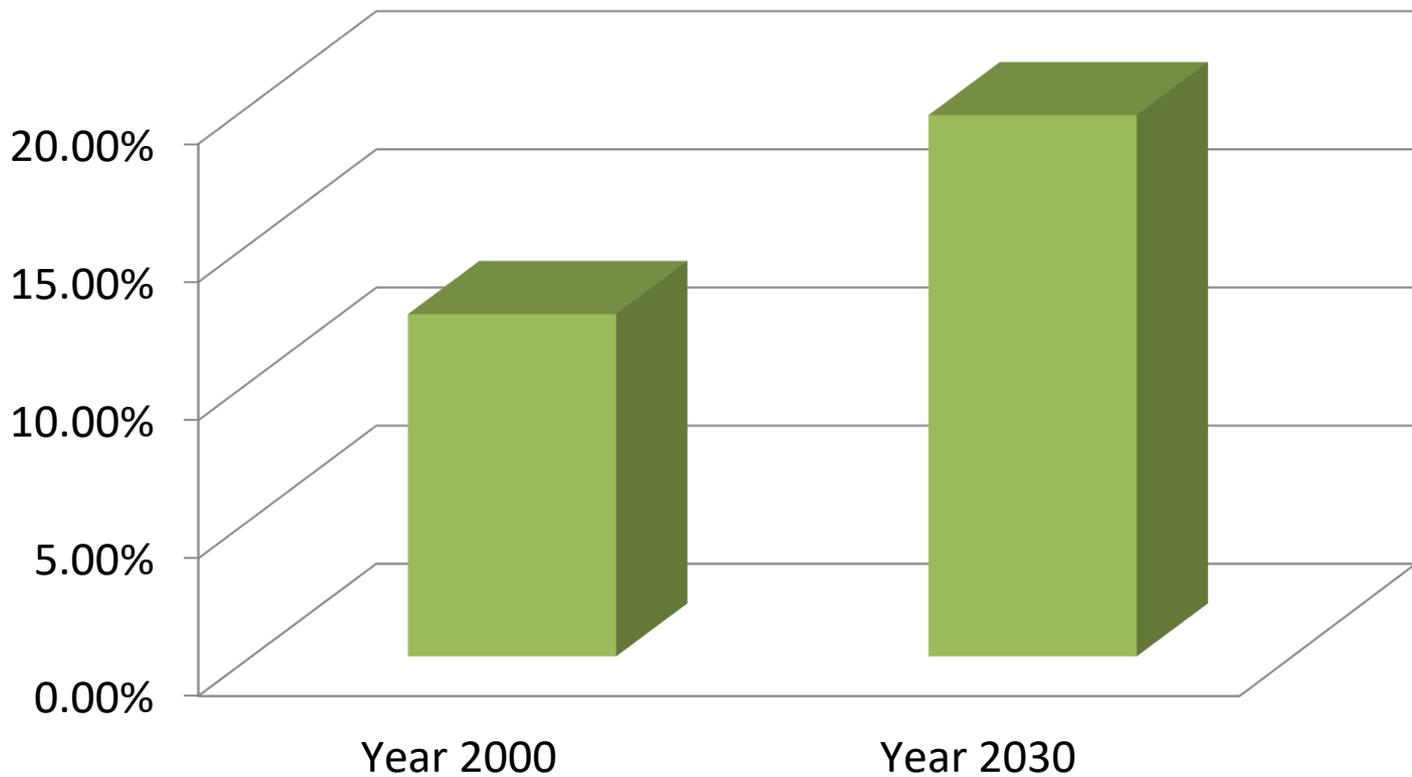
From the Alzheimer’s Association. www.alz.org



Prevalence of dementia

Dementia over the years

Percentage of Dementia over 30 years



Chapman, et al, 2006; CDC, 2016

Dementia Syndromes

... Those aged 65 or greater in the United States will account for 19.6% of the population in 2030.

... the prevalence of dementia has been estimated to be 6-10% of individuals aged 65 and older; prevalence increases with age with 30% or more of those 85 or older.

... Dementia increases the healthcare costs by \$4,134 per older adult with 75% of the increase cost attributed to hospitalization and skilled nursing

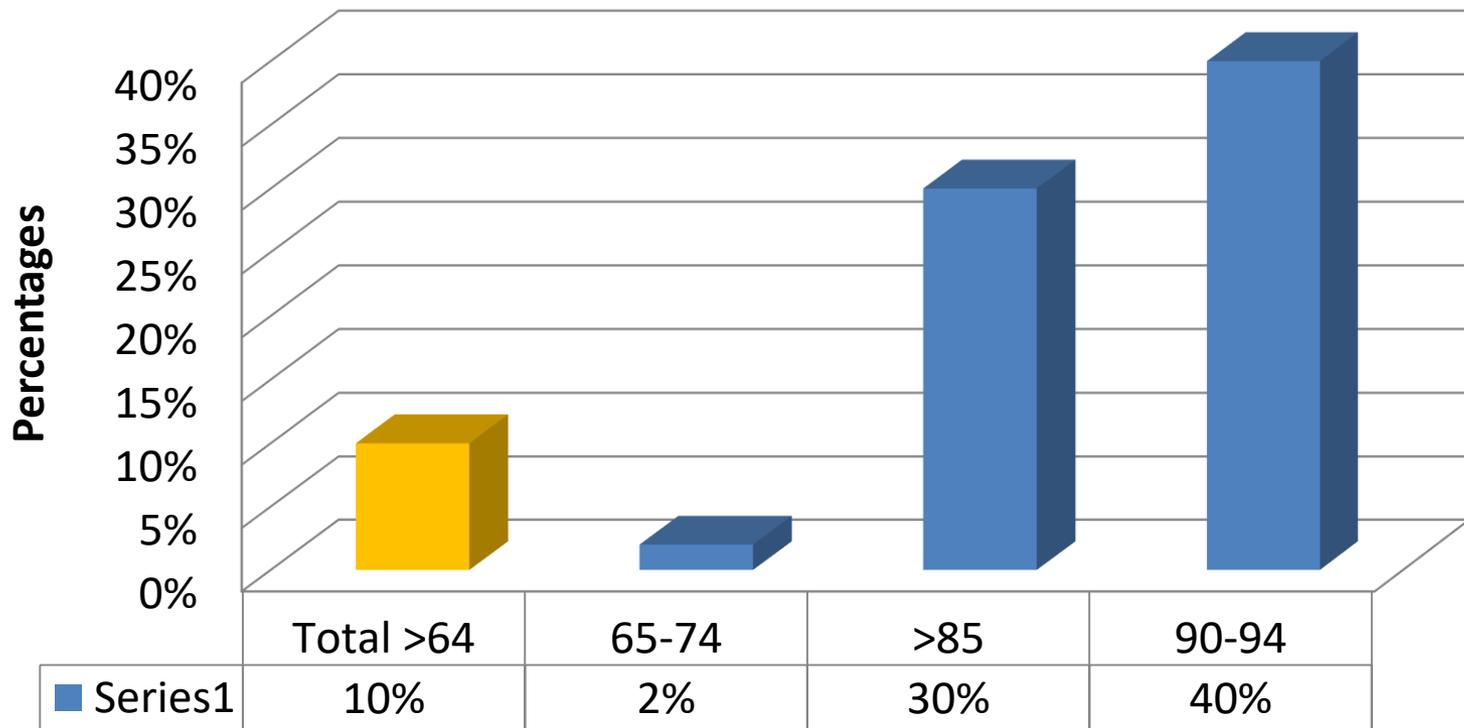
...Reversible – Vitamin Deficiency, Thyroid dysfunction, iNPH. This accounts for 9% of the dementias

...Degenerative – Alzheimer's Disease; approximately 75% of individuals with dementia have AD. Other types include Frontotemporal dementia, Parkinson's, Vascular, Mild Cognitive Impairment, Depression.

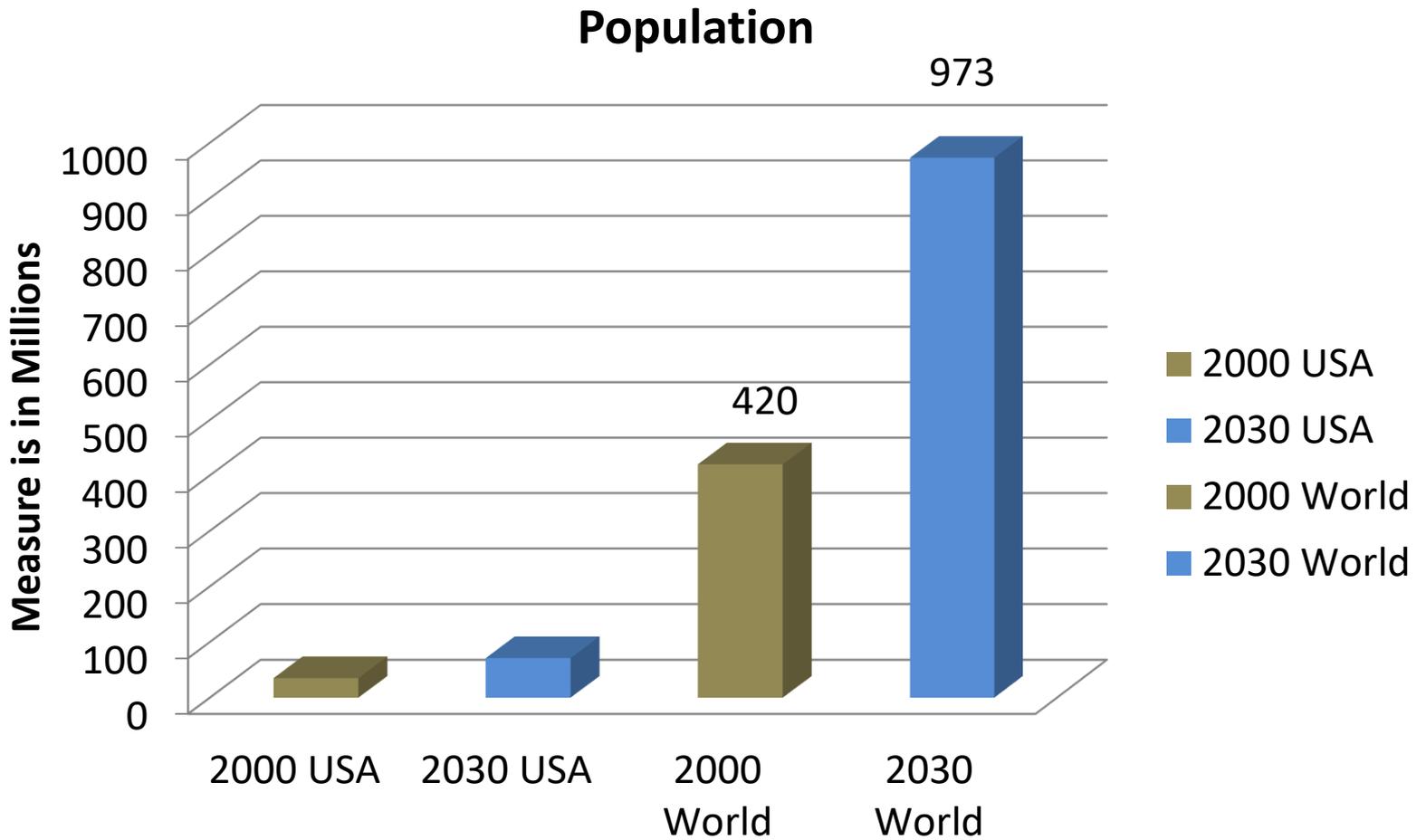
Chapman, et al. (2006)

Prevalence

Prevalence of Dementia in USA

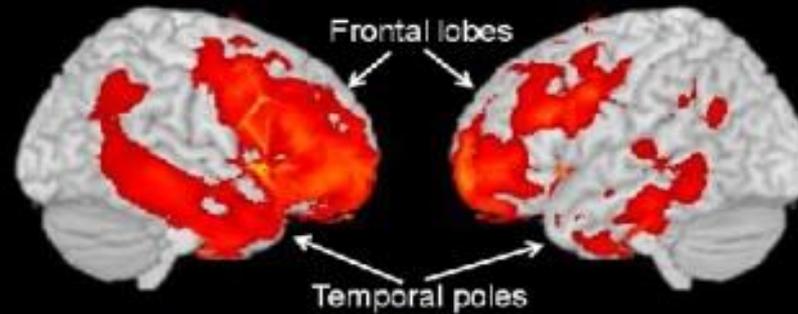


Around the World

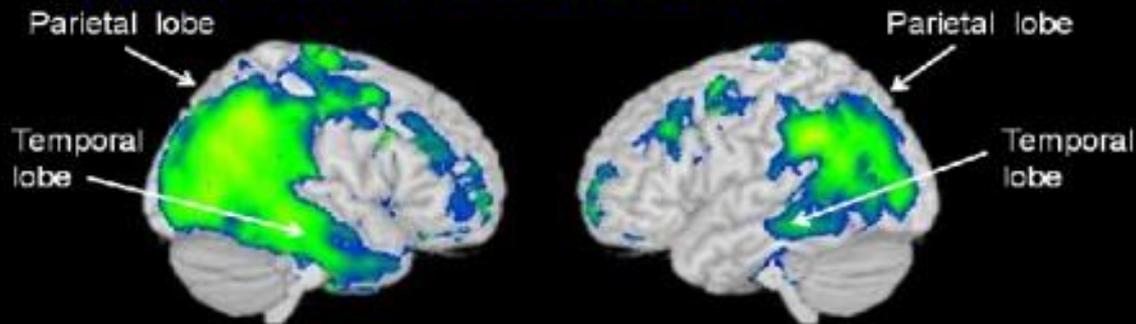


Types of Dementia – there are many...

Frontotemporal Dementia



Alzheimer's Disease



| Dementia – Types and Causes

- Alzheimer's disease
- Vascular dementia
- Dementia with Lewy bodies (DLB)
- Mixed dementia
- Parkinson's disease
- Frontotemporal dementia
- Creutzfeldt-Jakob disease
- Huntington's disease
- Wernicke-Korsakoff Syndrome
- Normal pressure hydrocephalus
- Pseudo dementia (Chronic, untreated Depression)
- Vitamin B Deficiency
- Thyroid Deficiency

Alzheimer's Disease

Most common type of dementia; accounts for an estimated 60 to 80 percent of cases.

Symptoms: Difficulty remembering recent conversations, names or events is often an early clinical symptom; apathy and depression are also often early symptoms. Later symptoms include impaired communication, poor judgment, disorientation, confusion, behavior changes and difficulty speaking, swallowing and walking. Revised criteria and guidelines for diagnosing Alzheimer's were published in 2011 recommending that Alzheimer's be considered a slowly progressive brain disease that begins well before symptoms emerge.

Brain changes: Hallmark abnormalities are deposits of the protein fragment beta-amyloid (plaques) and twisted strands of the protein tau (tangles) as well as evidence of nerve cell damage and death in the brain.

Vascular Dementia

Previously known as multi-infarct or post-stroke dementia, vascular dementia is less common as a sole cause of dementia than Alzheimer's, accounting for about 10 percent of dementia cases.

Symptoms: Impaired judgment or ability to make decisions, plan or organize is more likely to be the initial symptom, as opposed to the memory loss often associated with the initial symptoms of Alzheimer's. Occurs from blood vessel blockage or damage leading to infarcts (strokes) or bleeding in the brain. The location, number and size of the brain injury determines how the individual's thinking and physical functioning are affected.

Brain changes: Brain imaging can often detect blood vessel problems implicated in vascular dementia. In the past, evidence for vascular dementia was used to exclude a diagnosis of Alzheimer's disease (and vice versa). That practice is no longer considered consistent with pathologic evidence, which shows that the brain changes of several types of dementia can be present simultaneously. When any two or more types of dementia are present at the same time, the individual is considered to have "mixed dementia" (see entry below).

Lewy Body Dementia

Symptoms: People with dementia with Lewy bodies often have memory loss and thinking problems common in Alzheimer's, but are more likely than people with Alzheimer's to have initial or early symptoms such as sleep disturbances, well-formed visual hallucinations, and slowness, gait imbalance or other parkinsonian movement features.

Brain changes: Lewy bodies are abnormal aggregations (or clumps) of the protein alpha-synuclein. When they develop in a part of the brain called the cortex, dementia can result. Alpha-synuclein also aggregates in the brains of people with Parkinson's disease, but the aggregates may appear in a pattern that is different from dementia with Lewy bodies.

The brain changes of dementia with Lewy bodies alone can cause dementia, or they can be present at the same time as the brain changes of Alzheimer's disease and/or vascular dementia, with each abnormality contributing to the development of dementia. When this happens, the individual is said to have "mixed dementia."

Mixed Dementia

In mixed dementia abnormalities linked to more than one cause of dementia occur simultaneously in the brain.

Recent studies suggest that mixed dementia is more common than previously thought.

Brain changes: Characterized by the hallmark abnormalities of more than one cause of dementia —most commonly, Alzheimer's and vascular dementia, but also other types, such as dementia with Lewy bodies.

Parkinson's Disease

As Parkinson's disease progresses, it often results in a progressive dementia similar to dementia with Lewy bodies or Alzheimer's.

Symptoms: Problems with movement are common symptoms of the disease. If dementia develops, symptoms are often similar to dementia with Lewy bodies.

Brain changes: Alpha-synuclein clumps are likely to begin in an area deep in the brain called the substantia nigra. These clumps are thought to cause degeneration of the nerve cells that produce dopamine.

Frontotemporal Dementia

Includes dementias such as behavioral variant FTD (bvFTD), primary progressive aphasia, Pick's disease, corticobasal degeneration and progressive supranuclear palsy.

Symptoms: Typical symptoms include changes in personality and behavior and difficulty with language. Nerve cells in the front and side regions of the brain are especially affected.

Brain changes: No distinguishing microscopic abnormality is linked to all cases. People with FTD generally develop symptoms at a younger age (at about age 60) and survive for fewer years than those with Alzheimer's.

Creutzfeldt-Jakob Disease

CJD is the most common human form of a group of rare, fatal brain disorders affecting people and certain other mammals. Variant CJD (“mad cow disease”) occurs in cattle, and has been transmitted to people under certain circumstances.

Approximately 300 cases per year; 1 in 1,000,000 persons will be afflicted.

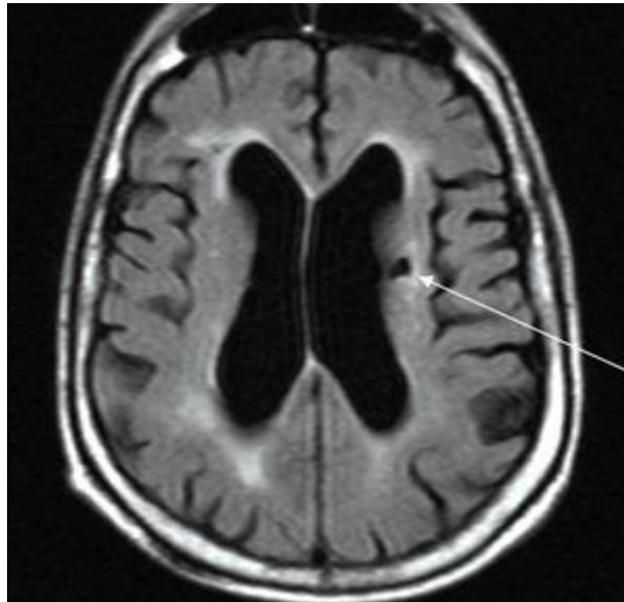
Symptoms: Rapidly fatal disorder that impairs memory and coordination and causes behavior changes.

Brain changes: Results from misfolded prion protein that causes a "domino effect" in which prion protein throughout the brain misfolds and thus malfunctions.

Normal Pressure Hydrocephalus

Symptoms: Symptoms include difficulty walking, memory loss and inability to control urination.

Brain changes: Caused by the buildup of fluid in the brain. Can sometimes be corrected with surgical installation of a shunt in the brain to drain excess fluid.



| Huntington's Chorea/Disease

Huntington's disease is a progressive brain disorder caused by a single defective gene on chromosome 4.

Symptoms: Include abnormal involuntary movements, a severe decline in thinking and reasoning skills, and irritability, depression and other mood changes.

Brain changes: The gene defect causes abnormalities in a brain protein that, over time, lead to worsening symptoms.

Wernicke-Korsakoff Syndrome

Korsakoff syndrome is a chronic memory disorder caused by severe deficiency of Thiamine (vitamin B-1). The most common cause is alcohol misuse.

Symptoms: Memory problems may be strikingly severe while other thinking and social skills seem relatively unaffected.

Brain changes: Thiamine helps brain cells produce energy from sugar. When thiamine levels fall too low, brain cells cannot generate enough energy to function properly.

Treatable Dementias

Pseudo dementia

Depression causing significant impairment of cognitive functions; this is most prevalent in the elderly; 20-30% of those who suffer with Major Depression will have cognitive impairment sufficient to impact attention, memory, and executive functions and reduce work productivity and performance (McIntyre et al, 2013).

Recent review indicated that depression has significant impact on functional outcomes related to neurological rehabilitation outcomes. Those who improve with depression while improving from rehabilitation efforts, show overall positive outcomes. Those who show minimal or no improvement with depression show continued functional improvement causing disruption in daily activities in neurological rehabilitation (Lewis & Horn, 2016).



Treatable Dementias

Thyroid Deficiency

Hypothyroidism can cause substantial changes in cognitive functions, mood, and behaviors. According to a new [review](#) of studies published in *The Journal of Clinical Endocrinology & Metabolism*, people younger than 75 with subclinical hypothyroidism are at “significant risk” of cognitive impairment and even dementia (Endocrine.Web, 2016). A review study in Italy examined the results of 13 studies on the effects of subclinical hypothyroidism—defined as elevated serum thyroid-stimulating hormone (TSH) levels and normal thyroxine (T4) levels—they found a 56 percent increased risk of impaired cognitive function and an 81 percent increased risk of dementia. The exact nature of “impaired cognitive function” varied slightly from one study to another depending on the measures of cognitive function.

Hyperthyroidism is a condition in which the thyroid gland is overactive and makes excessive amounts of thyroid hormone. The thyroid gland is an organ located in the front of your neck and releases hormones that control your metabolism (the way your body uses energy), breathing, heart rate, nervous system, weight, body temperature, and many other functions in the body. When the thyroid gland is overactive (*hyperthyroidism*) the body’s processes speed up and you may experience nervousness, anxiety, rapid heartbeat, hand tremor, excessive sweating, weight loss, and sleep problems, among other symptoms.

| Treatable Dementias

Vitamin B Deficiency

Low vitamin B12 levels may be to blame for some cases of poor memory and cognitive decline in the elderly, a new study suggests. The analysis of 121 people found that those with lower B12 levels scored worse on cognitive tests, and had smaller brain volumes as revealed by MRI scans. "Every single marker of low vitamin B12 was correlated with low brain volume," said study researcher Christine Tangney, a clinical nutritionist at Rush University in Chicago (Live Science, 2016).

B12 is found in meat, fish, eggs and dairy products. Deficiency in vitamin B12 is common in those who adhere to a vegan diet and in third-world countries. However, a growing body of evidence suggests that elderly people in developed countries are also at risk of B12 deficiency. The results published in the journal "Neurology", suggest that doctors should test vitamin B12 levels when treating anyone with signs of dementia.

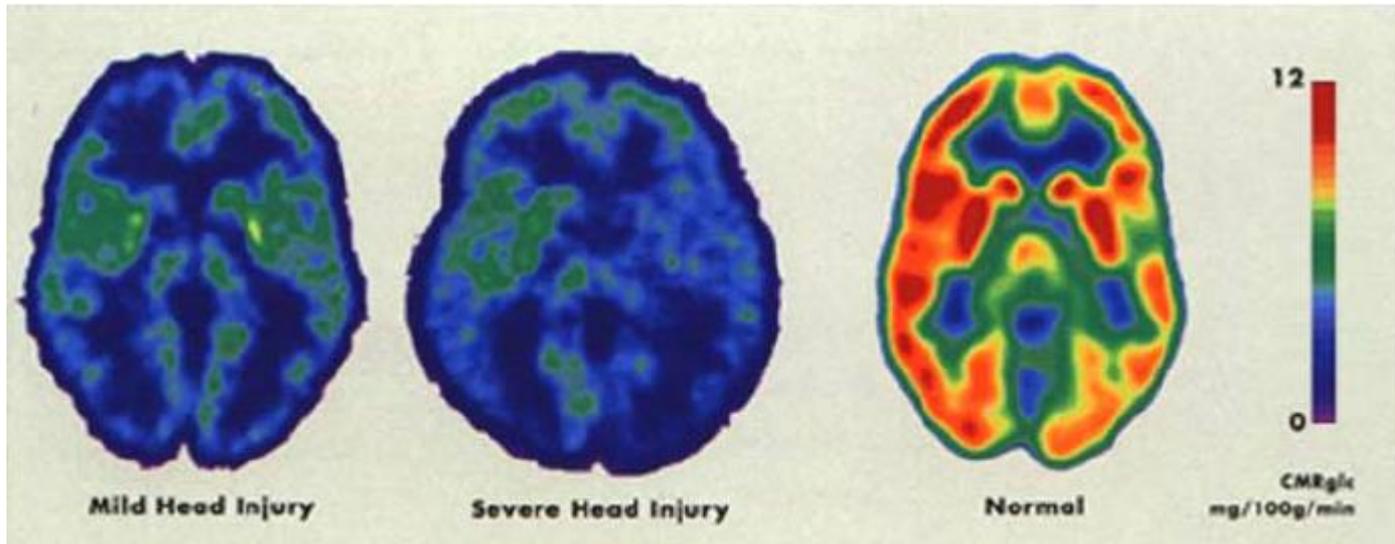
| Treatable Dementias

Vitamin B Deficiency

In a normal brain, vitamin B12 allows cells to form new connections, a process that allows memory formation. B12 is also a vital component of myelin — the coating that protects many brain cells. These roles of B12 could explain why low levels of the vitamin lead to dementia or memory loss according to the study.

In the study, Tangney and her colleagues measured B12 levels in a group of people who had participated in the Chicago Health and Aging Project, a long-term study of common chronic health problems in the elderly. Those with lower vitamin B12 levels scored worse on cognitive tests. They also had smaller total brain volume, and less white matter, which is mostly made up of the myelin that coats neurons.

What about TBI and Dementia?



| TBI and Dementia

Li et al, 2016 (Journal of Neurology)

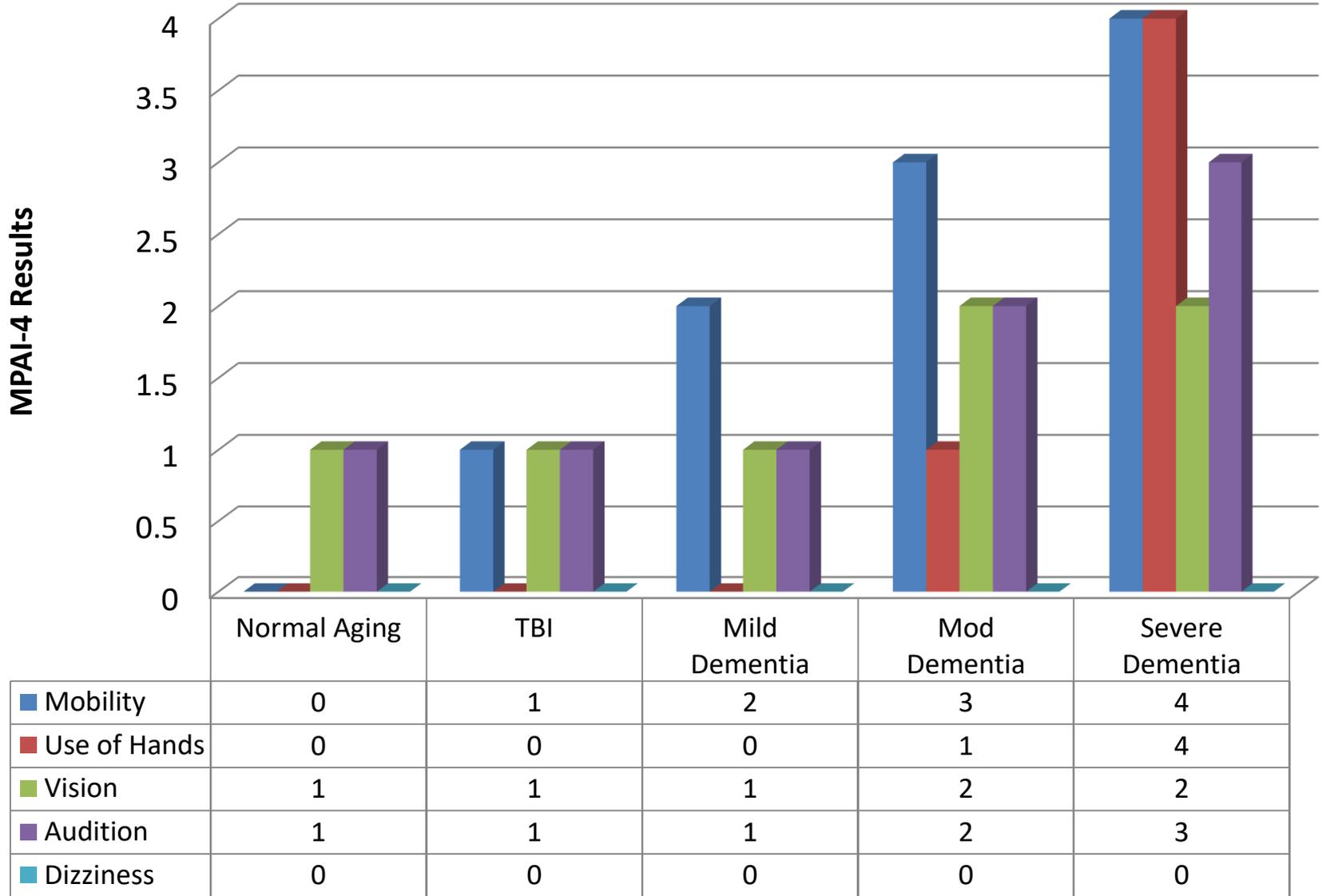
A recent study demonstrated that there is an increased risk of dementia following long-term survival with TBI. It is important to note that those at the highest risk are ones with a moderate, moderate-severe, and severe injuries resulting in moderate to severe cognitive impairments from the beginning of injury.

A history of TBI may accelerate the AAO of cognitive impairment by two or more years. These results were consistent with reports of TBI as a significant risk factor for cognitive decline in older adults, and TBI is associated with an earlier AAO found in patients with MCI or AD.

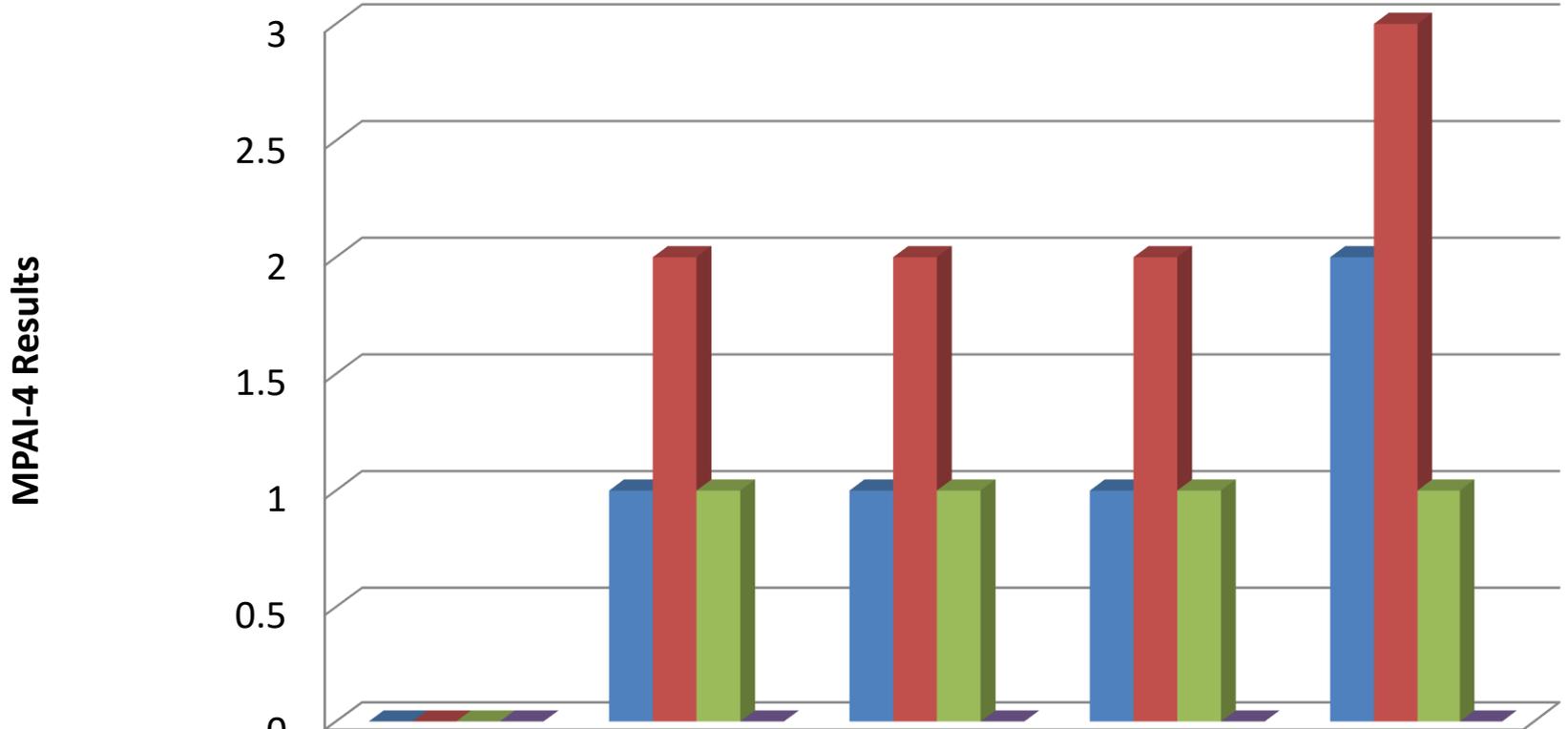


Projected MPAI-4 results.

Physical Skills

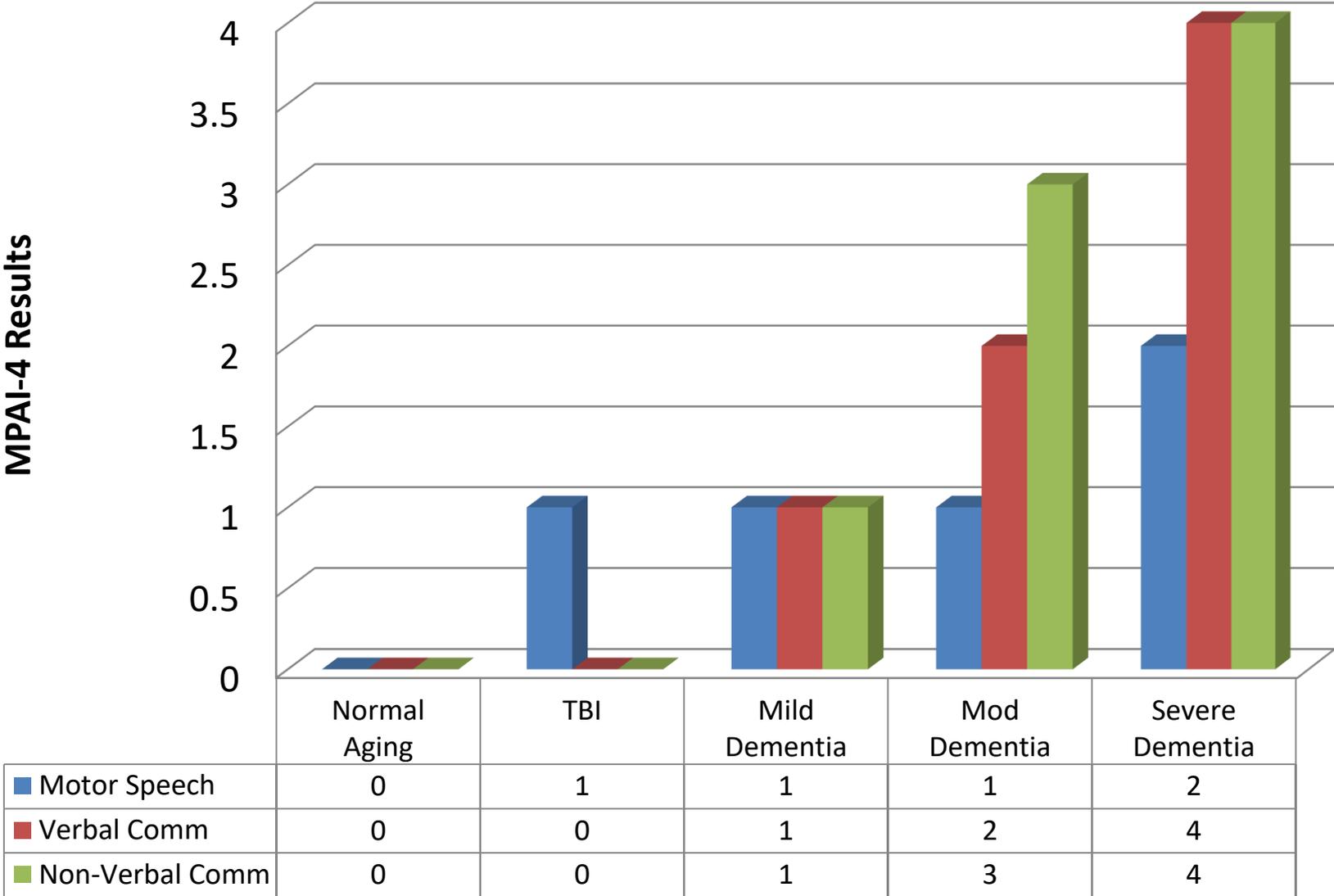


Physical Symptoms



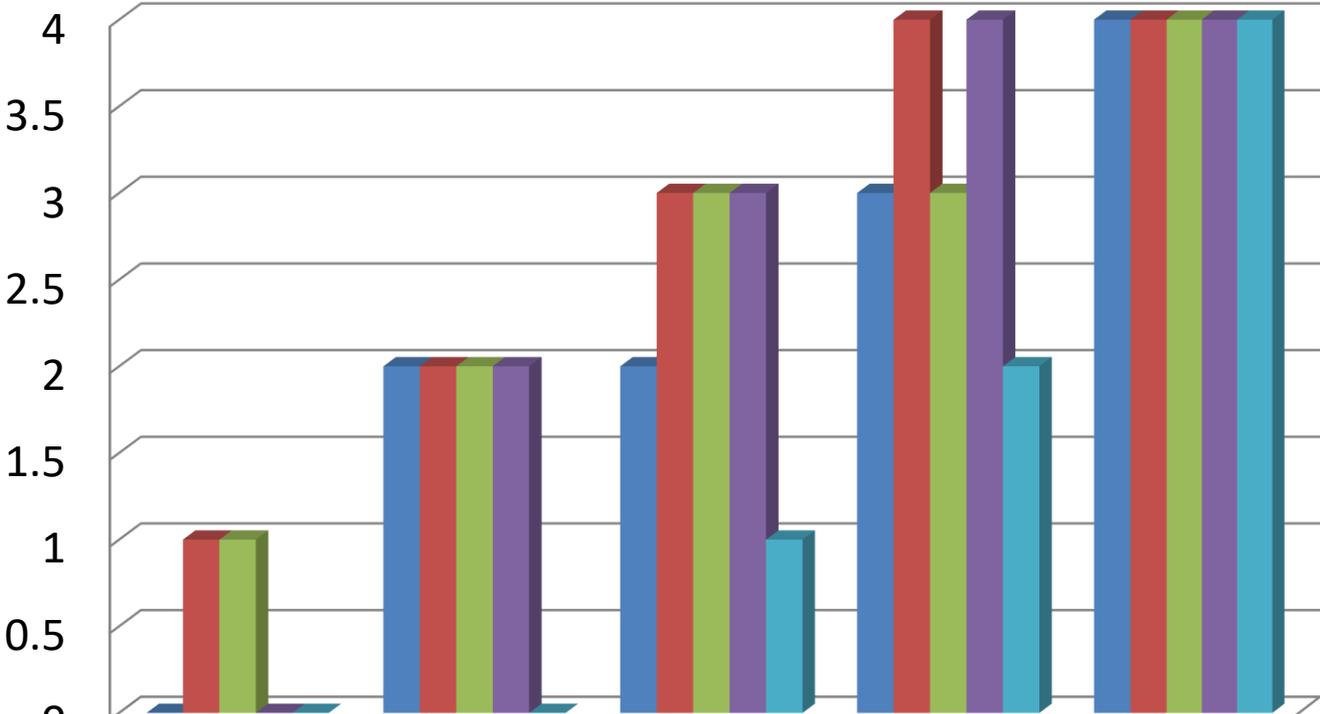
	Normal Aging	TBI	Mild Dementia	Mod Dementia	Severe Dementia
■ Pain/Headache	0	1	1	1	2
■ Fatigue	0	2	2	2	3
■ Sensitivity to Sx	0	1	1	1	1
■ Dizziness	0	0	0	0	0

Communication Skills



Cognitive Skills

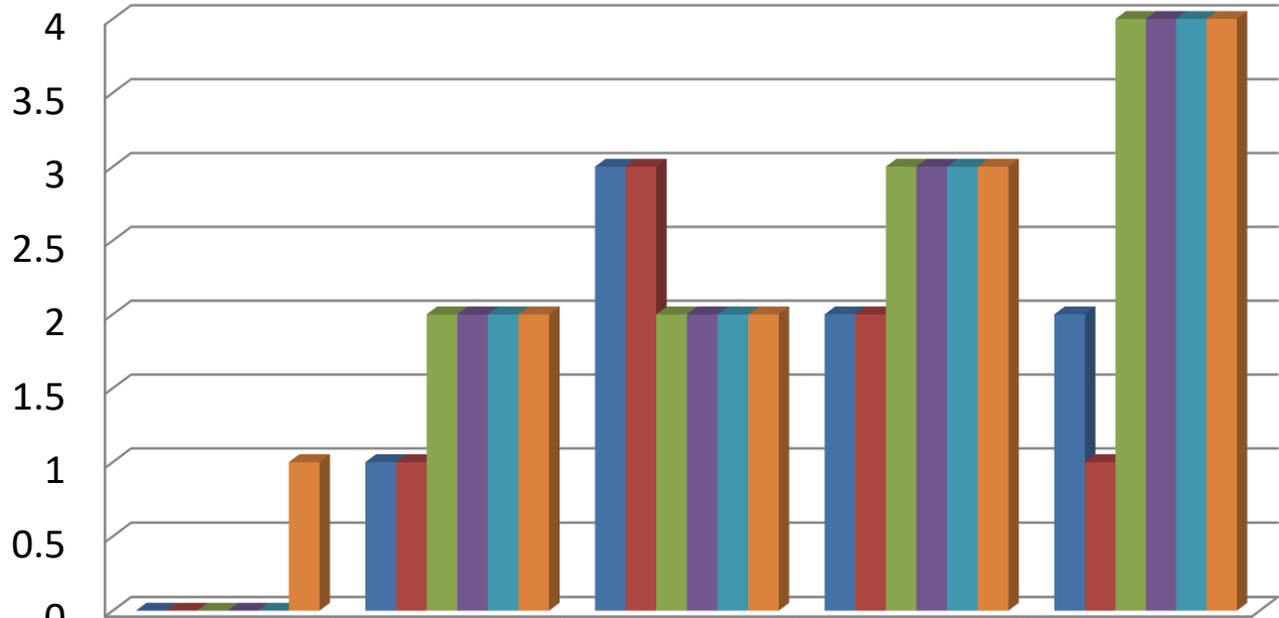
MPAI-4 Results



	Normal Aging	TBI	Mild Dementia	Mod Dementia	Severe Dementia
Attention	0	2	2	3	4
Memory	1	2	3	4	4
Fund of Information	1	2	3	3	4
Novem Problem Solving	0	2	3	4	4
Visual-Spatial	0	0	1	2	4

Neurobehavioral Skills

MPAI-4 Results



	Normal Aging	TBI	Mild Dementia	Mod Dementia	Severe Dementia
Anxiety	0	1	3	2	2
Depression	0	1	3	2	1
Irritability	0	2	2	3	4
Inappropriate Social	0	2	2	3	4
Impaired Self-Awareness	0	2	2	3	4
Family Relation	1	2	2	3	4



Applications to supported homes

Treatment and Management

Cognitive Skills: Preventing decline for as long as possible

Includes preferred activities, use of computer programs such as Lumosity (<http://www.lumosity.com>), reading, using a computer or tablet, playing games with family and friends, spending time with emails, researching topics, and reading current events or the daily newspaper.

Physical Skills: Preventing decline for as long as possible

Walking, or moving in a productive way that leads to increased heart rate. Practicing skills such as lifting, bending, going around barriers, painting, doing arts and crafts, photography or any activity of interest that requires movement. Exercise groups can reduce falls risk and injury.

Treatment and Management

Leisure Skills:

Art, hobbies, pursuing life long interests, reading, watching movies, meditating, taking a class, volunteering, going to concerts, driving (if possible). Any activity that engages the person on a cognitive-behavioral-social level leading to interaction and communication.

Community:

Volunteering, going in to the community each, taking part in a community activity, church or synagogue participation, join a group, etc.

Quality of Life:

The goal with dementia is based on quality of life and excellent medical supervision. The most common injury sustained in dementia is a broken hip and/or broken head due to FALLS. The Center for Medicare/Medicaid have indicated that falls prevention is key to long-term management and cost containment in an aging population.

Treatment and Management

Orientation and Forgetting:

Keep in mind that those who have dementia syndromes, regardless of the cause, will have difficulty keeping track of the day, date, and time. As such, rather than being critical of this problem, it is important to gracefully remind a person of where they are and the date and time. This allows a person to catch up temporarily.

When dealing with forgetfulness, there are some do and do nots...

Do not: criticize, or indicate that not remembering is negative; no need to focus on the fact that things are not remembered.

Do: allow the person to try and self-correct, and if not, then ask if they need assistance with recalling something; provide a context if possible.

Rule of Thumb: focus on solving the problem that is being handled or discussed rather than focusing the deficit that is interfering with the task or activity.

Remember this....Prevention

- Physical Health – 1 hour per day of exercise
- Cognitive Health – 1 hour per day of exercise
- Psychological Health – focus on coping, doing things that make you feel good and help others
- Social Health – increased socialization is a key ingredient now to better health; we are social animals.

| Questions



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