

### White House Conference on Aging

Tuesday May 5 15

Room 2A LOB

300, Capital Avenue, Hartford, CT

Testimony of Velandy Manohar, MD, Certified ABPN- Adult Psychiatry, Psychosomatic Medicine, and Added Qualifications in Addiction Psychiatry

I am Velandy Manohar, MD. I am attaching my Resume to the Testimony. I was unable to prepare this before the meeting because I was informed of this meeting on Monday afternoon. I offer information I have archived on various aspects of Alzheimer's. I was very glad I attended most of the session because I gained much useful information presented in a very clear and stimulating manner. I am offering this very useful description of Alzheimer's and a well-documented dissertation on all the key clinical aspects of Alzheimer's Disease. Please feel free to share as you see fit please

### Medical News Today [MNT]

#### Fast facts about Alzheimer's

- More than 5 million people in the US are living with Alzheimer's, and this number is expected to **rise to as many as 16 million by 2050**
- **Alzheimer's is the sixth leading cause of death in the US**
- More than two thirds of Americans with Alzheimer's are women. [Not sure to me if that is an artifact related to greater longevity of women over men in the key age groups above 65 especially after 85. **Age and family history are the top two risk factors for Alzheimer's Disease. Sadly both are unavoidable risk factors.** VM]

#### How common is Alzheimer's disease?

In the US, the most recent census has enabled researchers to give **estimates** of how many people have Alzheimer's disease. In 2010, some 4.7 million people of 65 years of age and older were living with Alzheimer's disease in the US.<sup>1</sup> The **2013 statistical report** from the Alzheimer's Association gives a proportion of the population affected - **just over a tenth of people in the over-65 age group have the disease in the US. In the over-85s, the proportion goes up to about a third.**<sup>2</sup>

As our **dementia** page outlines, there is a handful of different types, **but Alzheimer's disease is the problem behind most cases of memory loss and cognitive decline.**<sup>2</sup> **The Alzheimer's Association says it accounts for between 60% and 80% of all cases of dementia. Vascular dementia, which is caused by stroke not Alzheimer's, is the second most common type of dementia.**

#### What causes Alzheimer's disease?

Like all types of dementia, Alzheimer's is caused by brain cell death.<sup>3</sup> It is a neurodegenerative disease, which means there is progressive brain cell death that happens over a course of time.

**The total brain size shrinks with Alzheimer's - the tissue has progressively fewer nerve cells and connections.**<sup>3,4</sup>

While they cannot be seen or tested in the living brain affected by Alzheimer's disease, postmortem/autopsy will always show tiny inclusions in the nerve tissue, called plaques and tangles:<sup>3,4</sup>

- **Plaques are found between the dying cells in the brain - from the build-up of a protein called beta-amyloid (you may hear the term "amyloid plaques").**
- **The tangles are within the brain neurons - from a disintegration of another protein, called tau.**

For a detailed visualization of what goes on in the Alzheimer's disease process, progressing from the normal brain to increasing dementia changes, the Alzheimer's Association has produced a journey of 16 slides. See the illustrations: **Inside the brain: an interactive tour.** [This is interesting and informative. There are 16 slides. It is available in 14 Languages from Arabic to Viet Nameese on the MNT Website. VM]

The abnormal protein clumps, inclusions, in the brain tissue are always present with the disease, **but there could be another underlying process that is actually causing the Alzheimer's - scientists are not yet sure.**<sup>3</sup>

This sort of change in brain nerves is also witnessed in other disorders,<sup>3</sup> and researchers want to find out more than just that there are protein abnormalities - they also want to know how these develop so that a cure or prevention might be discovered.

#### Risk factors

Some things are more commonly associated with Alzheimer's disease - not seen so often in people without the disorder. These factors may therefore have some direct connection. **Some are preventable or modifiable factors (for example, [reducing the risk of diabetes](#) or [heart disease](#) may in turn cut the risk of dementia).**

If researchers gain more understanding of the risk factors, or scientifically prove any "cause" relationships for Alzheimer's, this could help to find ways to prevent it or develop treatments.

Risk factors associated with Alzheimer's disease include:<sup>5,6</sup>

#### Unavoidable risk factors

- **Age** - the disorder is more likely in older people, and a **greater proportion of over-85-year-olds have it than of over-65s.**<sup>2</sup>
- **Family history** (inheritance of genes) - having Alzheimer's in the family is associated with higher risk. **This is the second biggest risk factor after age.**<sup>7</sup>
- Having a certain gene ([the apolipoprotein E or APOE gene](#)) puts a person, depending on their specific genetics, at **three to eight times more risk than a person without the gene.**<sup>6</sup> Numerous other genes have been found to be associated with Alzheimer's disease, even recently (see developments below).<sup>7</sup>
- [Being female \(more women than men are affected\).](#)

#### Potentially avoidable or modifiable factors

- Factors that increase blood vessel (vascular) risk - including diabetes, high [cholesterol](#) and [high blood pressure](#). (These also increase the risk of stroke, which itself can lead to another type of [dementia](#).)
- Low educational and occupational attainment.
- Prior head injury. (While a [traumatic brain injury](#) does not necessarily lead to Alzheimer's, some research links have been drawn, with increasing risk tied to the severity of trauma history.)<sup>8</sup>
- **Sleep disorders (the breathing problem sleep apnea, for example).**
- [Estrogen hormone replacement therapy.](#)
- Anticholinergic Drug Use[VM]
- Benzodiazepine Drug Use[VM]

#### Early-onset Alzheimer's disease

[Genetics are behind early-onset familial Alzheimer's disease, which presents typically between the ages of 30 and 60 years and affects people who have a family history of it.](#)

**Due to one of three inherited genes, it is also known as young-onset, and it is uncommon - accounting for under 5% of all Alzheimer's cases.**<sup>6,9</sup>

The Alzheimer's Association says in its [early-onset information](#) that it can sometimes be "a long and frustrating process" to get this diagnosis confirmed since doctors do not expect to find Alzheimer's in younger people. **For the younger age groups, doctors will look for other dementia causes first.** Healthcare professionals, the nonprofit says, may also "incorrectly attribute" symptoms to [stress](#) and so on, or may not agree on the diagnosis.<sup>10</sup>

#### Recent developments in understanding causes and risk factors from MNT news

[Eleven new Alzheimer's risk genes](#) have been identified. The findings, published in *Nature Genetics* in **October 2013**, mean the **total number of genes found to be associated with Alzheimer's disease was 21.** Large research collaborations resulted in the breakthrough to help understand genetic factors behind the dementia. Just over 70,000 individuals were analyzed, **comparing the genes of 25,580 people who had Alzheimer's against 48,466 healthy controls, enabling the scientists to pinpoint genes that may put people at higher risk.**

[Alzheimer's onset could be triggered by sleep disturbances](#) - Chronic sleep problems can inflame a number of health problems, from widespread pain to speeding up [Cancer](#). Though sleep disturbances have been observed in people with Alzheimer's disease, whether this is a cause or effect has been unknown. Now, **researchers say individuals with chronic sleep disruptions could face earlier onset of Alzheimer's.** Their pre-clinical study was published in the journal *Neurobiology of Aging*.

[DNA methylation in brain 'linked to Alzheimer's disease'](#) - DNA methylation - the biochemical alteration of the building blocks of DNA - can indicate whether DNA is biologically active within a region of the human genome. Now, researchers at Brigham and Women's Hospital in Boston, MA, and Rush University Medical Center in Chicago, IL, **have demonstrated how DNA methylation in the brain is implicated in Alzheimer's disease.**

[Increased Alzheimer's risk linked to long-term benzodiazepine use](#) - Long-term users of benzodiazepines, drugs used to treat [anxiety](#) and [insomnia](#), may be at increased risk of developing Alzheimer's disease, according to a new study published in the *BMJ*.

[Brain network vulnerable to Alzheimer's and schizophrenia identified](#) - New research has emerged that reveals a specific brain network - that is the last to develop and the first to show signs of neurodegeneration - is more vulnerable to unhealthy aging as well as to disorders that emerge in young people, shedding light on conditions such as Alzheimer's disease and [schizophrenia](#).

#### Signs and symptoms

The information in this section connects closely to some of that about tests and diagnosis below because symptoms noticed by patients, or people close to them, are exactly the same signs that healthcare professionals look for during testing.

Symptoms can be diagnosed at any stage of Alzheimer's dementia and the **progression through the stages of the disease is monitored after an initial diagnosis, too, when the developing symptoms dictate how care is managed.**

Of course, the very nature of the symptoms can be confusing for both a patient and the people around them, with different levels of severity. For this reason, and because symptoms could signal any of a number of diagnoses, it is always worthwhile seeing a doctor.

For doctors to make an initial diagnosis of Alzheimer's disease, they must first be satisfied that there is [dementia](#) - **guidelines spell out what dementia consists of. It involves cognitive or behavioral symptoms that show a decline from previous levels of "functioning and performing" and interfere with ability "to function at work or at usual activities."**<sup>11</sup>

The cognitive decline is in at least **TWO** of the five symptom areas listed below (from [guidelines](#) jointly produced by the National Institute on Aging and the Alzheimer's Association):<sup>11</sup>

What is Alzheimer's disease? Causes, symptoms and treatment

Last updated: Monday 23 February 2015

**1. Worsened ability to take in and remember new information, for example:**

- "Repetitive questions or conversations
- Misplacing personal belongings
- Forgetting events or appointments
- Getting lost on a familiar route."

**2. Impairments to reasoning, complex tasking, exercising judgment:**

- "Poor understanding of safety risks
- Inability to manage finances
- Poor decision-making ability
- Inability to plan complex or sequential activities."

**3. Impaired visuospatial abilities (but not, for example, due to eye sight problems):**

- "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."

**4. Impaired speaking, reading and writing:**

- "Difficulty thinking of common words while speaking, hesitations
- Speech, spelling, and writing errors."

**5. Changes in personality and behavior, for example:**

- Out-of-character mood changes, including agitation; less interest, motivation or initiative; apathy; social withdrawal
- Loss of empathy
- Compulsive, obsessive or socially unacceptable behavior.

**Once the number and severity of these example symptoms confirm dementia, the best certainty that they are because of Alzheimer's disease is given by:**

- **A gradual onset "over months to years" rather than hours or days** (the case with some other problems)
- **A marked worsening of the individual person's normal level of cognition in particular areas.**<sup>11</sup>

**The most common presentation marking Alzheimer's dementia is where symptoms of memory loss are the most prominent, especially in the area of learning and recalling new information. But the initial presentation can also be one of mainly language problems, in which case the greatest symptom is struggling to find the right words.<sup>11</sup>**

**If visuospatial deficits are most prominent, meanwhile, these would include inability to recognize objects and faces, to comprehend separate parts of a scene at once (simultanagnosia), and a type of difficulty with reading text (alexia). Finally, the most prominent deficits in "executive dysfunction" would be to do with reasoning, judgment and problem-solving.<sup>11</sup>**

#### Stages of Alzheimer's disease

**The progression of Alzheimer's can be broken down into three basic stages.<sup>12</sup>**

- Preclinical (no signs or symptoms yet)
- Mild cognitive impairment
- Dementia.

**The Alzheimer's Association has broken this down further, describing seven stages along a continuum of cognitive decline based on symptom severity - from a state of no impairment, through mild and moderate decline, and eventually reaching "very severe decline."**

The association has published the [seven stages](#) online.<sup>13</sup> It is not usually until stage four that a diagnosis is clear - here it is called mild or early-stage Alzheimer's disease, and "a careful medical interview should be able to detect clear-cut symptoms in several areas."

**Alzheimer's disease typically progresses slowly in three general stages — mild (early-stage), moderate (middle-stage), and severe (late-stage).** Since Alzheimer's affects people in different ways, each person will experience symptoms - or progress through Alzheimer's stages - differently.

#### **Overview of disease progression**

The symptoms of Alzheimer's disease worsen over time, although the rate at which the disease progresses varies. On average, a person with Alzheimer's lives four to eight years after diagnosis, but can live as long as 20 years, depending on other factors.

Changes in the brain related to Alzheimer's begin years before any signs of the disease. This time period, which can last for years, is referred to as preclinical Alzheimer's disease.

The stages below provide an overall idea of how abilities change once symptoms appear and should only be used as a general guide. They are separated into three different categories: mild Alzheimer's disease, moderate Alzheimer's disease and severe Alzheimer's disease. Be aware that it may be difficult to place a person with Alzheimer's in a specific stage as stages may overlap

#### **Mild Alzheimer's- Early Stage**

In the early stages of Alzheimer's, a person may function independently. He or she may still drive, work and be part of social activities. Despite this, the person may feel as if he or she is having memory lapses, such as forgetting familiar words or the location of everyday objects.

Friends, family or neighbors begin to notice difficulties. During a detailed medical interview, doctors may be able to detect problems in memory or concentration. Common difficulties include:

- Problems coming up with the right word or name

- Trouble remembering names when introduced to new people
- Having greater difficulty performing tasks in social or work settings
- Forgetting material that one has just read
- Losing or misplacing a valuable object
- Increasing trouble with planning or organizing.

Although the onset of Alzheimer's disease cannot yet be stopped or reversed, an early diagnosis can allow a person the opportunity to live well with the disease for as long as possible and plan for the future.

#### **Moderate Alzheimer's disease-Middle Stage**

Moderate Alzheimer's is typically the longest stage and can last for many years. As the disease progresses, the person with Alzheimer's will require a greater level of care.

You may notice the person with Alzheimer's confusing words, getting frustrated or angry, or acting in unexpected ways, such as refusing to bathe. Damage to nerve cells in the brain can make it difficult to express thoughts and perform routine tasks.

#### **At this point, symptoms will be noticeable to others and may include:**

- Forgetfulness of events or about one's own personal history
- Feeling moody or withdrawn, especially in socially or mentally challenging situations
- Being unable to recall their own address or telephone number or the high school or college from which they graduated
- Confusion about where they are or what day it is
- The need for help choosing proper clothing for the season or the occasion
- Trouble controlling bladder and bowels in some individuals
- Changes in sleep patterns, such as sleeping during the day and becoming restless at night
- An increased risk of wandering and becoming lost
- Personality and behavioral changes, including suspiciousness and delusions or compulsive, repetitive behavior like hand-wringing or tissue shredding

During the moderate stage of Alzheimer's, individuals may have greater difficulty performing tasks such as paying bills, but they may still remember significant details about their life.

#### **Severe Alzheimer's Disease- [Late Stage]**

In the final stage of this disease, individuals lose the ability to respond to their environment, to carry on a conversation and, eventually, to control movement. They may still say words or phrases, but communicating pain becomes difficult. As memory and cognitive skills continue to worsen, personality changes may take place and individuals need extensive help with daily activities.

#### **At this stage, individuals may:**

- Require full-time, around-the-clock assistance with daily personal care
- Lose awareness of recent experiences as well as of their surroundings
- Require high levels of assistance with daily activities and personal care
- Experience changes in physical abilities, including the ability to walk, sit and, eventually, swallow
- Have increasing difficulty communicating
- Become vulnerable to infections, especially pneumonia

**Care takers and Care Givers must be consistently encouraged to Get support at regular intervals**

Late-stage care decisions can be some of the hardest families face. [Connect with other caregivers](#) who have been through the process on our online message boards and get helpful resources in our [Caregiver Center](#).

**Key Message for all Care givers and Care takers – “Help is available”**

Your local Alzheimer's Association chapter can connect you with the resources you need to cope with the symptoms and challenges of Alzheimer's. [Find a chapter in your community](#)

Our free [24/7 Helpline](#) provides information, referral and care consultation by professionals in more than 200 languages.

Our Greenfield Library houses more than 5,000 books, journals and resources. [Access it online.](#)

I welcome your comments at my e-mail address: [velandy\\_manohar\\_md@comcast.net](mailto:velandy_manohar_md@comcast.net)

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