

## **Has the management of Alzheimer's disease changed over the past 100 years?**

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Alzheimer's disease, a chronic neurodegenerative disorder, is characterized by memory impairment, prominent psychiatric symptoms and behavioral disturbances, which cause difficulties in activities of daily living. Today there are approximately 25 million people worldwide who suffer from AD. This figure is rapidly increasing and affects both the developed and the developing worlds<sup>1</sup>. The cause of AD is largely unknown. Treatment is directed towards symptomatic improvement of memory and other cognitive functions, as well control of behavioral disturbances. In 1906, the psychiatrist and pathologist Alois Alzheimer first described his patient Auguste D, a woman who developed dementia in her 50s and died on April 8, 1906. On Nov 3, 1906, Dr Alzheimer presented her case. 100 years later, we present a summary of Alzheimer's original treatment plan with commentaries by clinicians on what current treatment options would be available were she to present now.

### **Alzheimer's treatment plan**

The following description is taken from Alzheimer's original notes<sup>3</sup>.

In February 1902 Auguste D was restless, confused and anxious. At a certain point, her negative attitude made it quite impossible to examine her. At night she would wander about and wake other patients and was therefore put in a private room. When going to sleep, she would huddle on the quilt and cover herself with pillows.

The treatment was developed by Alzheimer himself. Insomnia was initially approached with a dietary treatment. Patients with chronic illnesses were treated with extensive outdoor activity, exercise and massage. Ill or weak patients were given warm and lukewarm baths with the simultaneous cooling of the head with moist cloths. Alzheimer studied the therapeutic value of long baths, which lasted several hours or even days, and found them to help agitated patients. Weak electrical currents applied to the head, and hypnotic suggestions were also used. Afternoon rest, light, early dinner, the avoidance of reading in the evening, abstention from tea and coffee, evening bowel evacuations, regular bedtimes and extensive airing of the bedroom were found to produce an improvement. Alcohol was administered in small doses. Sedatives were used only in emergencies such as great fear or pain. Where other treatments failed to soothe extreme agitation, chloroform was used. Troubled patients, including Auguste D were given 2 to 3 grams of chloral hydrate, which induced a longer-lasting, restful sleep. If the chloral hydrate could not be tolerated, the patient would receive paraldehyde, which was subsequently replaced with amylene hydrate. At a later point, sulphonal, tetronal and somnol were used. At the time Veronal (barbital) was still being tested on animals and was not yet available for patients for several years.

### **Quality of Care**

Alzheimer emphasized active treatment and the creation of a tolerant and stimulating environment for his patients. He also continued to see his patients as their symptoms worsened. The long term care given by a qualified clinical team has essentially remained the same 100 years later. However, it seems that the high tech diagnostic services, along with the assessment given by specialists today, jeopardize this admirable practice. Today, the symptoms are noticed at an earlier point. After reading about dementia and antidementia treatments, Auguste D's family might persuade her to visit her family doctor. She would probably be diagnosed with mild cognitive impairment at a memory clinic. She might stop driving and start planning ahead in terms of financial and legal matters. The family would be given information about support and care organizations. Auguste D might be referred to physicians who specialize in early onset dementia. She would be offered day care, help at home, and other available services. Her agitation and wandering might be treated with behavioral therapy. In short, many types of treatment would be given to Auguste D before she was admitted to a hospital or an institution.

The presence of a calm, tolerant and positive carer is vital to the care given to the patient. Old age psychiatrists maintain that the person in charge of the hospital ward, residential facility or any other establishment must also have these attributes. Those who show such talent and skill to comfort and alleviate suffering should be recognized and rewarded. Similarly, research funds should be invested in the development of effective treatment and prevention strategies. Alzheimer would have agreed to this view, and would probably have joined both efforts.

### **Neuropsychiatric symptoms**

Auguste D is an example of both Alzheimer's disease and the commonly associated psychiatric complications. Among the symptoms she had were anxiety, restlessness, wandering, agitation, delusions, and night time behavioral disturbances. The severity of her psychological symptoms caused her distress, disrupted the care environment, and indeed required intervention. Alzheimer started with non-pharmacological interventions before treating his patients with the pharmacological agents that were available at the time. The management of Auguste D in the USA today would be very similar, with a few notable differences. After diagnosis, she would be treated with a cholinesterase inhibitor. As her cognitive symptoms worsened, memantine would be added to improve some of the neuropsychiatric features. Unfortunately, no specific antidementia drug therapies were available to Alzheimer.

At a later point, non-pharmacological management strategies would be used, although the lack of class 1 evidence to support their use is notable<sup>4</sup>. Only a few of Dr Alzheimer's approaches are still used. Exercise, however, continues to be widely prescribed. Today she might have received bright light therapy, music exposure, aromatherapy, pet therapy, or behavioral treatments. Considering the severity of her behavioral problems, Auguste D would probably be treated with an atypical antipsychotic<sup>5</sup>, not yet available at the time. These agents are associated with a small but reproducible increase in the risk of death and stroke<sup>6</sup>. Clinicians are understandably reluctant to use these agents except where there are no alternatives, as in patients with extreme behavioral changes; including Auguste D. Specific symptoms shown by Auguste D might be treated with Valproic acid, selective serotonin reuptake inhibitors, nonbenzodiazepine anxiolytic agents, and hypnotic drugs. However, the existing data supporting the use of these agents specifically in AD are underdeveloped.

There are many therapeutic alternatives used today that were not available to Dr Alzheimer. Antidementia agents and drugs for agitation have advanced far beyond what was available for him to use with Auguste D. However in the United States there are no agents approved specifically for behavioral changes in Alzheimer's disease. In this sense we still face the same treatment dilemmas faced by Alzheimer.

### **Multidisciplinary management**

In view of her symptoms, Auguste D would most probably be referred to an aged psychiatry service. Initial assessment would be undertaken at her home by members of a multidisciplinary aged psychiatry assessment and treatment team. A medical assessment would consist of history, examination, and investigations to exclude reversible causes of cognitive impairment (delirium in particular) or serious physical problems such as constipation, which might intensify current distress. This would be undertaken in close collaboration with her general practitioner. Her relatives would be referred to a patients' support group for education and support.

Auguste D might be admitted to a specialist psychiatric unit for elderly people for a short period. Her excessive motor behavior could be then effectively contained and her agitation treated. An occupational therapist would try doll therapy, aromatherapy, or a sensory apron, and the patient's night-time agitation could be managed by nursing staff with warm drinks, a soothing bath, and reassurance. In case of a long-term nursing care, she might be taken to a specialist psychogeriatric nursing home, which provides short-term care for demented patients whose behavior is too challenging for a typical nursing home. In such a facility she would be taken care of by a trained staff and she could take part in an organized activity program. Medical care would be provided by a general practitioner, with regular reviews of

her management by a visiting old-age psychiatrist. The patient would be better managed in a mainstream nursing home when her physical dependency increased and her challenging behaviors became less prominent.

The main differences from the care delivered in Frankfurt 100 years ago result from the current diagnostic accuracy, the evidence-based drug treatments developed over the past 20 years, and the availability of support for carers. Even so, disease management in 2006 would continue to depend on the efforts of a compassionate team of professionals working with her and her family to achieve the best possible outcome for this disease.

## Conclusion

The clinical picture of Auguste D as described was characterized by amnesia, agitation, restlessness, wandering, and delusions of both theft and sexual advances by Alzheimer. His treatment plan started with a detailed account of the behaviors which may be caused or exacerbated by environmental factors, with an emphasis on nonpharmacological approaches. Alzheimer then proceeded to the consideration of drug therapy with an emphasis on limited doses of alcohol. This practice is not acceptable these days. Alcohol is a useful sedative, though it does not tend to regularize sleep patterns. Moreover, the common sedatives chloroform and chloral hydrate are still available, albeit in an updated form.

The main advance over the past 100 years is the availability of various drugs for the treatment of the symptoms of Alzheimer's disease. Although the practice of care may have changed, the core principles have remained the same.

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