



<b>Title</b>	<b>The role of primary care doctors in early diagnosis and treatment for persons with dementia</b>
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## The Role of Primary Care Doctors in Early Diagnosis and Treatment for Persons with Dementia



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Hong Kong is ageing fast. By 2041, 30% of the population will age over 65 years.<sup>1</sup> Associated with this is a rising number of persons with dementia. The estimated local prevalence of dementia in the community is about 10% for the age segment 75-79 years; 19% for 80-84 years; and 32% for 85 years and above. There is a preponderance of the female gender over the male.<sup>2,3</sup> These figures converge upon those of other advanced socioeconomic communities.<sup>4</sup> The prevalence is projected to increase from 100,000 in 2009 to over 330,000 by 2039.<sup>5</sup>

However, only 11% of people with dementia in the community have received a diagnosis.<sup>3</sup> Barriers to timely diagnosis include low recognition of early symptoms and the need to seek medical attention; different views, fear and denial among family members; complexity in diagnosis with a lack of uniformed diagnostic and treatment protocols for different categories of dementing illness; and limited access to diagnostic services with very long waiting time.<sup>6-9</sup> Closing the diagnosis and treatment gap will be particularly challenging with the projected rapid increase in prevalence and limited specialist manpower; this puts great pressure on diagnostic services.<sup>10</sup>

A diagnostic consultation for suspected dementia is important for establishing a clinical diagnosis and excluding non-dementing illnesses. Timely diagnosis allows commencement of effective symptomatic treatment (drug<sup>11,12</sup> and non-drug<sup>13</sup>); correcting risks

and optimizing comorbidities; initiating psychoeducation for patient and caregiver; and advance care planning before the patient becomes mentally incapacitated. From a health economic perspective, it is cost saving from benefits such as delayed institutionalization and enhanced quality of life.<sup>11</sup>

### Core Clinical Features of Alzheimer's Disease and Other Dementias

In older-onset dementia, Alzheimer's disease (AD) constitutes about 60% and vascular dementia (VaD) about 20% of all dementias, according to a local study.<sup>3</sup> There can be mixed forms of dementia. Non-ADs mainly refer to frontotemporal dementia (FTD) with behavioral disturbances and speech impairment as the early presentations; cerebral Lewy body disease (CLBD) with complex visual hallucination and rapid eye movement (REM) sleep behavioural disorder, corticobasal degeneration (CBD) with apraxia, and progressive supranuclear palsy (PSP) with gaze palsy, unsteady gait, and early swallowing dysfunction.<sup>14</sup>

While dementia predominantly affects the older age, younger-onset dementia is increasingly recognized.<sup>15</sup> It affects an individual between 30 and 64 years old. About 50% of cases are caused by AD and VaD; FTD and other dementias have to be considered according to symptomatology and clinical examination.<sup>16</sup>

## Pathology and Diagnostic Workup

The neuropathologies of AD are excessive extracellular accumulation of the protein beta-amyloid (A $\beta$ ) resulting in plaques, and excessive intraneuronal accumulation of the protein tau resulting in neurofibrillary tangles. In FTD, CBD, and PSP, tauopathy is the main pathology. In CLBD, aggregation of synuclein is mainly responsible.<sup>17</sup> With the rising ageing population, reversible dementias become lesser in prevalence compared with degenerative dementias.<sup>18</sup> However, depression or pseudodementia, vitamin B<sub>12</sub> deficiency, subdural haematoma, chronic alcoholism, normal pressure hydrocephalus, focal space occupying lesions, medication side effects, electrolyte imbalance, endocrine disorders and acute delirium should be watched out for in the clinical assessment.

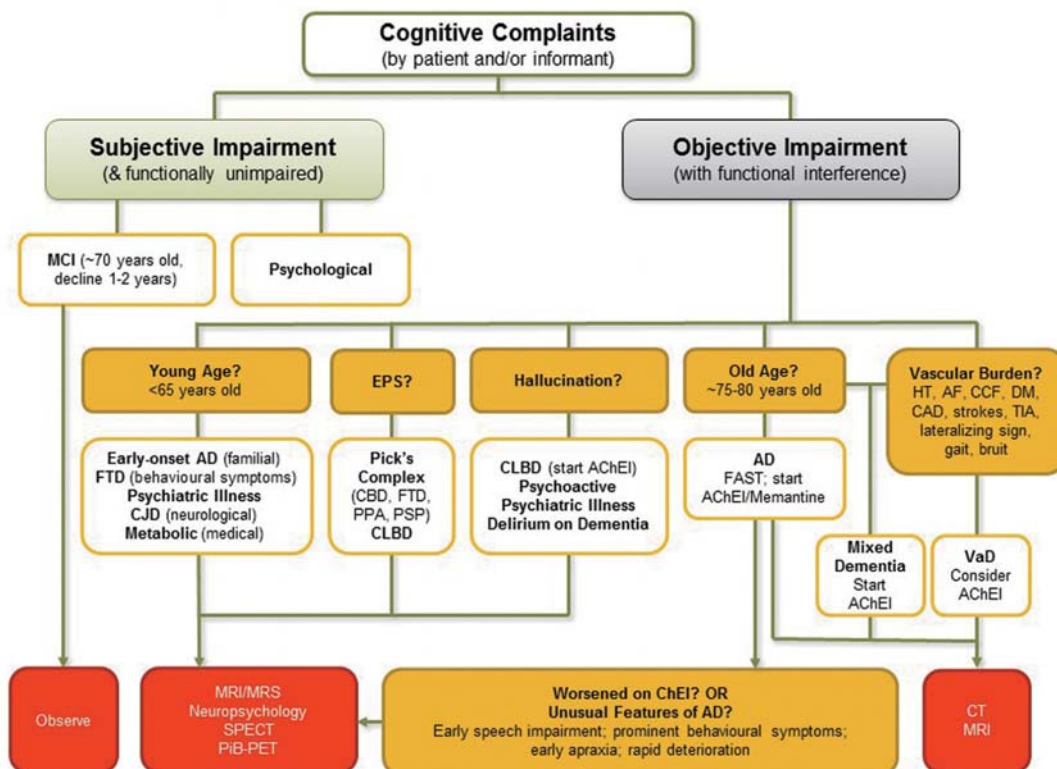
The 1984 NINCDS-ADRDA criteria for all-cause dementia and AD have recently been updated.<sup>19</sup> A diagnostic pathway outlined in Figure 1 can be a practical guide.

The DSM-5 renamed dementia as major cognitive disorder. The new categorization places emphasis on evaluating various cognitive domains in the syndromal diagnosis of a condition. These domains as elaborated in the manual with associated symptoms include complex attention, executive function, learning and memory, language, perceptual-motor, and social cognition.<sup>20</sup>

### Clinical Examination

In the clinical examination, commonly used and locally validated tools are the Mini-Mental State Examination,<sup>21</sup> clock drawing test,<sup>22</sup> Geriatric Depression Scale,<sup>23</sup> and the Clinical Dementia Rating scale.<sup>24</sup> The Cantonese Chinese Montreal Cognitive Assessment has recently been validated locally for the detection of AD and amnesic MCI.<sup>25</sup> In addition to general examination, look for lateralizing signs during neurological testing, which is not expected in AD. Unilateral corticospinal signs may indicate previous cerebrovascular event or a space-occupying lesion. The presence of extrapyramidal

Figure 1. Diagnostic pathway for cognitive impairment



MCI=mild cognitive impairment; EPS=extrapyramidal symptoms; HT=hypertension; AF=atrial fibrillation; CCF=chronic cardiac failure; DM=diabetes mellitus; CAD=coronary artery disease; TIA=transient ischaemic attack; CJD=Creutzfeldt-Jakob disease; PPA=primary progressive aphasia; AChEI=acetylcholinesterase inhibitor; FAST=Functional Assessment Staging Test for Alzheimer's Disease; MRS=magnetic resonance spectroscopy; SPECT=single-photon emission computerized tomography; PiB-PET=Pittsburgh compound B positron emission tomography

signs may indicate non-AD such as CBD or CLBD; prominent palmomental reflex may indicate FTD or VaD. All positive signs should be interpreted in the context of the clinical history and symptoms. Cardiovascular examination should focus on the presence of atrial fibrillation, cardiomegaly and murmurs and carotid bruits, which give clinical impression on the vascular burden on the patient. The patient is then requested to walk and the gait assessed. Unsteady gait and shuffling may reveal underlying frontal involvement and atypical parkinsonism. A family history of cognitive disorders can be present in FTD especially in the younger-onset group.

### Locally validated assessment tools.<sup>21-25</sup>

- Mini-Mental State Examination (MMSE)
- Clock drawing test (CDT)
- Geriatric Depression Scale (GDS)
- Clinical Dementia Rating (CDR)
- Montreal Cognitive Assessment (MoCA)

### Laboratory Investigation

A dementia laboratory screen include complete blood picture, renal and liver functions, calcium, thyroid-stimulating hormone, vitamin B<sub>12</sub>, folate, venereal disease research laboratory test, and chest x-ray. In older-onset dementia, mainly AD, biomarkers are complimentary only and neuroimaging such as CT brain may not be necessary;<sup>26</sup> plain CT brain done will show generalized atrophy. CT brain is required if lateralizing sign is detected. In younger-onset dementias, more advanced neuroimaging is indicated, such as MRI for focal cortical atrophy and quantifying the hippocampus volume and brainstem atrophy; and functional imaging such as SPECT or PET, which will reveal specific hypoperfusion patterns in different dementias especially non-ADs. PiB-PET for amyloid load is considered to give additional clinical confirmation for younger-onset Alzheimer's.<sup>15</sup>

### Laboratory Screening

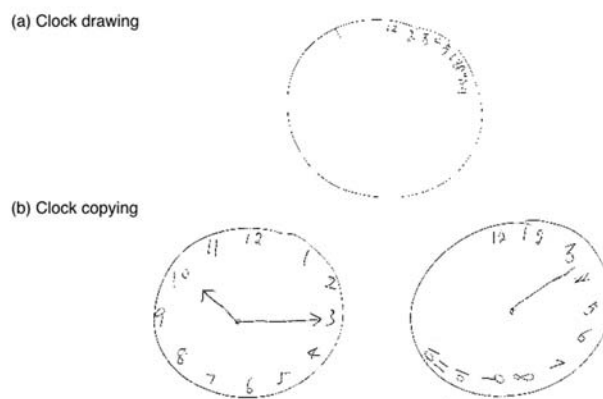
- Complete blood picture (CBP)
- Renal and liver functions, calcium (L/RFT, Ca)
- Thyroid-stimulating hormone (TSH)
- Vitamin B<sub>12</sub>, folate
- Venereal disease research laboratory (VDRL) test
- Chest x-ray
- Neuroimaging (e.g. CT brain)

## Clinical Diagnosis of Dementia: Case Illustrations

### Older-onset Alzheimer's

An 85-year-old lady presented with cognitive decline noted by family members for 2 years and further decline in the past 9 months. History revealed confusion in the morning, no hallucinations, normal mood, difficulty signing, and hypertension. She was receiving methyldopa and amlodipine. Clinical examination showed no lateralizing signs, palmomental reflex present, MMSE score of 17/30 (with 2 years of education), and positive CDT (Figure 2). Low level of vitamin B<sub>12</sub> (168 pmol/L) was noted on screening tests. She was given a diagnosis of early AD. Treatment with donepezil 5 mg nocte and vitamin B<sub>12</sub> 150 µg bd was started.

Figure 2. Positive CDT in Patients with AD



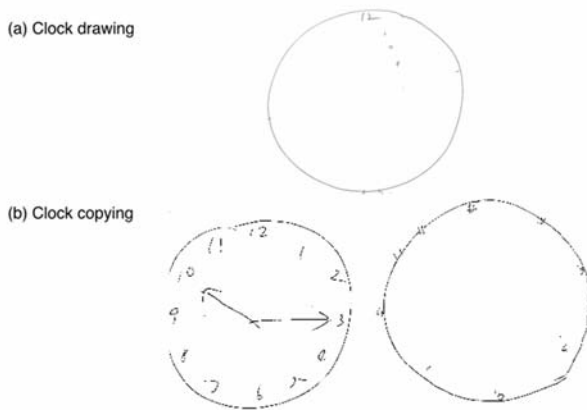
In early AD, copying is better than drawing (executive function).

### Cerebral Lewy Body Disease

An 80-year-old man presented with memory impairment noted for 2 years. He was observed to forget switching off stoves, losing his way in the street, and urinating in inappropriate places. He reported visual hallucinations and seeing a child in the apartment (phantom boarder) and the experience was not frightening. He had REM sleep behaviour disorder for 3 years and had hit his wife (now passed away) in sleep. History revealed dementing and parkinsonism features within the past 1 to 2 years, hypertension, and benign prostatic hyperplasia. Clinical examination showed masked face, stooped posture, bradykinesia, and shuffling gait. He scored 21/30 on MMSE (with 2 years of education) with positive CDT (Figure 3). He was given a diagnosis of CLBD. Treatment with AChEI and low-dose carbidopa-levodopa was prescribed.

### Figure 3. Positive CDT in Patients with CLBD

Profound visuospatial impairment thus similarly poor performance in both drawing and copying.



In CLBD, drawing and copying are both significantly impaired, with visuospatial dysfunction more profound than that observed in AD.

## Clinical Staging

The early stages of AD, especially in older-onset patients, affect executive function, memory, and visuospatial perception. Language is affected later on. FAST<sup>27</sup> is a useful guide to stage AD. It can be applied to facilitate diagnosis: if temporal manifestations inconsistent with AD were noted, other medical causes for the symptom (e.g., incontinence, delirium) or non-AD should be considered. Staging is also useful for prognostication and advising the patient and family members in advance care planning by predicting the next area and level of dysfunction in activities of daily living.

## Dementia Case Identification in Practice: A Personal Experience

*Dr. TONG Kai Sing*

I have taken part in a CME course organized by the Hong Kong Medical Association (HKMA) and Hong Kong Alzheimer's Disease Association (HKADA). After the course, I became more aware of AD in my elderly patients.

There was an occasion when one of my patient, a 72-year-old retired mathematics professor, who did

not show up, despite making the appointment himself in the morning. When a nurse called to remind him, he denied of having making any appointment, although he was heard coughing on the phone. In the past, I would have disregarded this as an everyday mistake. However, being aware of the possibility of AD, I contacted his wife, who confirmed that she has witnessed her husband making the appointment that morning. On my request, the retired professor came with his wife and his son 3 days later for a check-up. His wife told me that the retired professor was having behavioural problems, such as losing his temper more easily than before. He has been giving his grandson mathematics tutorials for years; however, for the past few months he was having some difficulties in teaching. There was also an episode when he could not find his door keys and became frustrated, while actually he was holding the keys in his left hand. He used to play golf twice a week, but now he claimed that he is too tired. The retired professor was later diagnosed of AD.

Another 78-year-old woman came to my clinic with her granddaughter, who had fever and cough. At the end of the consultation, she asked me, "By the way, Dr. Tong, I found my memory getting worse these few months. I found that I have many antihypertensive drugs left when I went to GOPD for regular follow-ups; my blood pressure was not as stable as before. I suspected that I have forgotten to take the drugs frequently." Five days later, I arranged her husband and her daughter to come with her for the problems of her memory. Her husband noted an episode when the patient has inadvertently taken his antihypertensive rather than her own, and forgetting to turn off the gas after cooking. She noticed difficulties in finding her way home from the market for 2 months. She was given a diagnosis of AD.

The CME course is offered in different districts. I find it very practical and useful. It has not only enhanced our knowledge in managing the patients with AD, such like the high morbidity and lack of support for majority of these patients in Hong Kong, but it has also highlighted the importance of early diagnosis and management for stabilizing the patients' condition at the early stage of the disease. I also became aware of multidisciplinary professional teams at HKADA who provide full support to doctors, trainings and events for patients and their family members, and educational for the public. As a doctor, I found their early assessment and detection programme most helpful.

## Conclusion

A clinical diagnosis is the necessary condition for patients and families to access appropriate treatment and services. Being denied of their right to a diagnosis, unfortunately, is often the situation faced by many concerned elders and/or their family, due to various reasons including insufficient diagnostic services. A recent local survey showed that training increases the confidence in diagnosing and managing dementia among nonspecialists.<sup>28</sup> With proper training and support, such as shared care with specialists, primary care doctors have an important role in diagnosing and managing dementia.<sup>29, 30</sup> Continuing medical education on the clinical features and diagnostic criteria goes a long way in ensuring timely diagnosis for those needing treatment and support services.

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## Q&A Self-assessment Questions

Answer these on page 21 or make an online submission at: [www.hkmacme.org](http://www.hkmacme.org)  
Please indicate whether the following statements are true or false.

- Among people aged 85 years or above, AD is more common than other dementias.
- Hallucinations is the most common presentation in early AD.
- In early AD, the neurological examination usually shows signs of previous stroke.
- CDT is positive when the patient performs better in copying than in drawing the clock.
- A positive CDT supports the diagnosis of AD.
- Prominent visual hallucinations in a patient with early dementia suggests schizophrenia.
- Complex visual hallucinations and REM behavioural disorder suggests CLBD.
- Subtle signs of parkinsonism is usually present in CLBD.
- Hallucinations in CLBD should be treated with atypical neuroleptics.
- CLBD should be treated with AChEI.

Answer to August 2014

The Use of Intraocular Lenses in Cataract Surgery

1.F 2.T 3.F 4.T 5.T 6.F 7.T 8.T 9.T 10.F

Erectile dysfunction – Management beyond PDE5 inhibitors

1.F 2.F 3.T 4.F 5.T 6.T 7.F 8.F 9.T 10.T