

# Approach to Dementia

Year 3 Clerkship Guide, Family Medicine Department  
Schulich School of Medicine and Dentistry

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## Objectives

1. Define dementia and describe the criteria for diagnosis.
2. Identify the types of dementia.
3. Describe appropriate treatments for dementia and prognosis.
4. Be able to take an appropriate history and physical exam (including the mini-mental state exam) for a patient with suspected dementia.
5. Be able to formulate an appropriate differential diagnosis for a patient with suspected dementia.
6. Be able to describe the key components of the geriatric interview.
7. Be able to determine what investigations (radiological and laboratory) should be ordered.
8. Be able to describe appropriate management of dementia, including issues of power of attorney.
9. Understand how to manage depression and/or behavioural difficulties in dementia.

## Overview of Dementia

**Dementia** refers to a (1) *persistent and progressive decline in memory* with (2) *at least one other cognitive deficit (agnosia, apraxia, aphasia or disturbance in executive function)*, which is (3) *severe enough to interfere with social or occupational function*.

To confirm the diagnosis of dementia, further examination is required. Further evaluation includes a thorough physical exam and cognitive assessment.

The presentation of dementia must be distinguished from reversible causes of confusion, such as delirium and/or depression. Up to 40% of dementia patients experience co-morbid depression. In the presence of untreated depression or delirium, dementia cannot be diagnosed.

Early diagnosis and treatment may slow progression and/or allow caregivers to be better prepared. ADLs (Activities of Daily Living) and IADLs (Instrumental Activities of Daily Living) must be assessed in high risk and confused patients.

Corroboration of the patient's status and function from a caregiver is essential as is an understanding of their baseline level of functioning.

## Types of Dementia

### Early Dementia

- Most common symptom: diminished short term memory
- Aphasia begins shortly after, along with difficulty with ADLs
- A change in the level of functioning is the key to the diagnosis although patients can normally compensate well
- Other symptoms of early dementia: personality changes, emotional lability, agitation and poor judgment
- Acute decline can occur with a change in surroundings or disrupted routine.

- Intermediate Dementia**
- Patients cannot learn new information and normal environmental and social cues do not register
  - Increased disorientation to time and place, patients may become lost even in their own surroundings
  - Increased risk of falls and accidents due to confusion and poor judgment
  - Behavioural disorders may develop, which can persist into severe dementia
  - Significant paranoia occurs in 25% of patients (One poignant delusion is a belief that strangers have entered the home, resulting from loss of self-recognition in mirrors)
  - Wandering can be a significant problem
  - Physical aggression, inappropriate sexual behaviour and non-specific agitation may be present
  - Ability to perform ADLs is further impaired

- Severe Dementia**
- Patient cannot perform ADLs and is therefore totally dependent on caregivers for toileting and mobilization
  - Short and long-term memory are completely lost, patients may not be able to recognize family members
  - Difficulty with swallowing leads to risk of malnutrition and aspiration
  - Malnutrition and poor mobility put patients at a high risk for pressure sores
  - The incidence of seizures increases
  - Many of these problems can be delayed with excellent nursing care - total functional dependence usually requires that the patient be placed in a nursing home or that similar support be implemented in the home.
  - The usual cause of death is infection from respiratory, skin and urinary tract sources.

## **Risk Factors for Dementia**

Researchers have identified several risk factors that affect the likelihood that one or more kinds of dementia will develop:

- Age* Age is the most important risk factor for dementia. The risk of AD, vascular dementia, and several other dementias increases significantly with advancing age. Dementia affects 5% of people older than 65 and 45% of people older than 85. However, it is important to know that normal aging is not associated with progressive cognitive difficulties. Some instances of short-term memory loss or word-finding difficulty is to be expected but not to the point of interfering with daily life.
- Family History* Researchers have discovered a number of genes that increase the risk of Alzheimer's. First-degree relatives have 2-4x risk. About 5-10% of cases are inherited in an autosomal dominant fashion; these patients tend to have early onset Alzheimer's.
- Down Syndrome* Studies have found that in most persons with Down syndrome, characteristic plaques and neurofibrillary tangles develop by the time they reach middle age. Symptoms of dementia develop in many, but not all, of these persons.

<i>APOE<sub>4</sub> gene</i>	The apolipoprotein E gene on chromosome 19 has 3 alleles (2,3,4). The APOE <sub>4</sub> genotype represents an increased risk, but cannot be used for diagnostic purposes nor to accurately quantify risk.
<i>Mild cognitive impairment</i>	MCI should be considered in patients with memory impairment but no other cognitive deficits. MCI patients tend to have insight into their difficulties. Early diagnosis of MCI is important because those with this condition do have a significantly increased risk of dementia compared with the rest of the population. MCI patients should be followed every 6-9 months and possibly referred for neuropsychological testing.
<i>Smoking</i>	Several recent studies have found that smoking significantly increases the risk of mental decline and dementia.
<i>Atherosclerosis</i>	Atherosclerosis is a significant risk factor for vascular dementia because it interferes with delivery of blood to the brain and can lead to stroke. Studies have also found a possible link between atherosclerosis and AD. Other CVS conditions such as atrial fibrillation and hypertension are also risk factors for developing dementia.
<i>Cholesterol</i>	High levels of low-density lipoprotein appear to significantly increase a person's risk of vascular dementia. Some research has also linked high cholesterol to an increased risk of AD.
<i>Plasma Homocysteine</i>	Research has shown that a higher-than-average blood level of homocysteine is a strong risk factor for the development of AD and vascular dementia.
<i>Diabetes</i>	Diabetes is a risk factor for both AD and vascular dementia.

### **Prevention**

Since many of the risk factors for dementia have been elucidated, it is plausible that many cases can be prevented. Reducing stroke risk factors should decrease the incidence of vascular dementia. Furthermore, epidemiological studies indicate that both levels of formal education and head injuries are risk factors for Alzheimer's. Addressing these issues will hopefully lead to a decrease in the incidence of this disease. Although there are some preliminary clues that NSAIDs may also be beneficial in preventing dementia, there is not enough evidence to recommend them to patients. Because there is no known cause for Alzheimer Disease, there is no conclusive evidence that it can be prevented. There is, however, a growing amount of evidence that lifestyle choices that keep the mind and body fit may help reduce the risk. These choices include physical exercise, a healthy diet including fresh fruits, vegetables and fish, and keeping one's brain active through brainteasers.

## **Evaluating a Dementia Patient: History and Physical**

All patients with suspected dementia require a thorough **drug review**, including over-the-counter drugs, ophthalmic preparations, herbal products and alcohol. Drugs should always be considered as a possible reason for cognitive impairment or behavioural issues related to dementia.

All psychoactive drugs (especially sedative-hypnotics, antidepressants (especially tricyclics), anticholinergics and opioids) should be eliminated or substituted with less psychoactive drugs. Patient response should be followed with a repeat mental status exam in 6 weeks.

A full mood assessment should be completed, including a symptom review (SIGECAPS) and use of a standardized instrument such as the Geriatric Depression Scale. Suspected depression should be treated with a therapeutic trial of SSRI or similar (minimally anticholinergic) medication.

Obtain a thorough history, including corroboration from caregivers concerning ADLs/IADLs.

A complete physical exam should be performed and focus on identifying acute disorders and exacerbations of chronic disorders that may be contributing to cognitive decline. Ears and eyes must be checked for sensory deficits. On neurological examination, focal neurological findings may indicate cerebrovascular disease, extrapyramidal signs may indicate parkinsonism or other neurodegenerative diseases, and neuropathies and myopathies may suggest a treatable systemic disorder.

The **MMSE** should be performed in every clinic visit where cognitive impairment is suspected. It is a key tool used to screen for cognitive impairment and to follow the patient's decline. A score of **<24** suggests that an impairment exists, but cannot confirm the diagnosis. Both age and education of the patient must be taken into account, as these will affect the score.

Dementia can be diagnosed if the patient has experienced a gradual onset of cognitive deficits in memory and at least one other domain resulting in progressive functional decline, with reversible causes ruled out.

### ***Physical Exam Components***

Hearing and Vision Screens	Difficulty responding to environment can lead to confusion and/or abnormal behavior.
Orthostatic Blood Pressure	Side effect of common medications and a risk factor for falls.
Neurologic Exam	Focal findings may indicate vascular etiology.
Activities of Daily Living	Determine level of independence and need for assistance.
Geriatric Depression Scale	Basic screening measure for depression, it is ideal for evaluating the clinical severity of depression, and therefore for monitoring treatment (see pg 16 for a copy).
Clock Drawing Test	Useful screening measure for dementia. Assesses executive function & visual-spatial skills, which can sometimes precede memory disturbance and may indicate dementia when MMSE scores are normal.
Mini-Mental Status Exam	Useful initial assessment as well as for ongoing follow-up of patients with dementia, but it is not a diagnostic test. It is not a test of personality, mood, behavior or function and does not by itself determine competence. It is not always sensitive in picking up early dementia and does vary with age and educational background (see page 18 for a copy).
Montreal Cognitive Assessment	Short screen used in patients who score normal on the MMSE. It is more sensitive than the MMSE and better at picking up MCI. Patients who score high (>26) on the MoCA should be reassured that their memory is "normal" and be followed annually. Those who score low should be further evaluated with imaging and a more thorough clinical work up (see page 17 for a copy).

## **Differential Diagnosis of Dementia**

The most important thing to rule out is '*reversible dementia*' as many acute (or acute on chronic) medical disorders can cause acute cognitive decline in the elderly. Rapid onset of cognitive decline is not consistent with dementia and should trigger a prompt evaluation for delirium and correctable medical disorders.

Once reversible causes have been excluded the following should be considered:

- Normal age related memory loss
- MCI (Mild Cognitive Impairment)

### ***Delirium***

Acute onset over days to weeks, fluctuating course, disorganized thinking, altered level of consciousness, inattention, easily distractible. Often secondary to other serious but treatable conditions.

Consider: acute illness, medications (polypharmacy is a risk factor), dehydration, substance abuse etc.

Up to 30% of hospitalized elderly experience delirium. May be misdiagnosed or undiagnosed up to 50% of the time.

5 major risk factors for delirium: malnutrition, use of a bladder catheter, hospitalization, polypharmacy, underlying dementia

### ***Depressive pseudodementia***

Onsets over weeks to months. Presents as appetite and sleep changes, psychomotor retardation, agitation, anhedonia.

Difficult to distinguish from depression, especially since some geriatric patients do not present with typical depressive symptoms.

Maintain high index of suspicion for depressive pseudodementia.

Previous history of depression is a risk factor.

Consider a trial of anti-depressants for questionable cases.

### ***Dementia***

Cognitive deficits in memory and other domains, leading to functional impairments.

Progressive deterioration over months to years, and reliance on caregivers gradually increases.

Poor patient insight into functional difficulties can lead to delayed diagnosis.

### ***Mild Cognitive Impairment***

Mild cognitive impairment is diagnosed when an individual exhibits memory deficits beyond that expected given their age and level of education, but which do not significantly impact their function (ADLs and IADLs). Cognitive abilities outside of memory remain intact. Amnesic MCI is a risk factor for development of AD.

### ***Mnemonic for reversible dementia***

<b>Drugs</b>	Especially anticholinergics, narcotics and antiparkinsonian drugs
<b>Emotional illness</b>	Depressive pseudodementia
<b>Metabolic disorders</b>	Hepatic/renal failure, hypothyroid, hypercalcemia, hypoglycemia
<b>Eye/Ear/Environment</b>	Sensory impairment may resemble dementia, this is easy to check in the physical
<b>Nutrition</b>	Vitamin B12 or severe B1 deficiency
<b>Tumours/trauma</b>	Structural lesions in the brain, shock, post-operative state
<b>Infection</b>	HIV, meningitis, sepsis, pneumonia, UTIs
<b>Alcoholism</b>	

## Types of Dementia

Alzheimer's disease is the most common type of dementia. Lewy body and frontotemporal dementia are less common types. Vascular dementia often co-exists with other forms of dementia.

### Type of Dementia      Typical History and Presentation

Alzheimer Disease	Gradual onset and insidious progression over time. Requires memory deficits and a deficit in at least one other area of cognition that together significantly decrease the quality of life. Accounts for 60-80% of cases of dementia.
Vascular Dementia	Abrupt onset and stepwise decline. Associated with same risk factors as stroke. Accounts for 10-20% of cases of dementia.
Frontotemporal Dementia	Behaviour problems and decreased interpersonal skills.
Dementia with Lewy Bodies	Fluctuating cognition with pronounced variations in attention and alertness, recurrent visual hallucinations, and spontaneous motion features of Parkinsonism. First presentation can be quite abrupt and look like delirium. The second most common degenerative brain disease causing dementia (6-13%).

## Investigations

There is currently insufficient evidence for routine dementia screening in the elderly. However, all concerns of cognitive decline, such as decreasing functional capacity with respect to ADLs and IADLs or complaints of decline in memory, require prompt and thorough assessment.

Although the MMSE is the most commonly used tool in the family physicians' office for assessment of cognition, the normative expected values do vary with education, age and ethnicity of the patient and it is essential to keep this in mind when considering the patient's score. As well, the sensitivity and specificity of the MMSE is only 83% and can lead to false negatives in early dementia, as well as false positives.

Few investigations are necessary for dementia. However, it is essential to exclude reversible causes. Laboratory tests for patients with typical cognitive complaints should **only** include: **CBC, TSH, fasting glucose, calcium, albumin, serum B12 and electrolytes**. Other tests may be appropriate in the presence of deficits on physical exam or if the specific history is indicative.

A cranial CT scan is appropriate if: *the onset is abrupt, the patient is less than 60, there are neurological signs or symptoms, there is a history of cancer or a bleeding disorder, or if there are atypical cognitive symptoms.*

Note that the utility of CT or MRI to rule out vascular disease, tumor, subtotal hematoma or normal-pressure hydrocephalus remains controversial. MRI gives a good image of the brain and may show hippocampal atrophy in the case of dementia, but is not practical as a first-line test.

*According to the Canadian Consensus Conference on Dementia, a cranial CT scan is recommended if 1 or more of the following criteria are present:*

- age less than 60 years
- rapid (e.g., over 1 to 2 months) unexplained decline in cognition or function
- "short" duration of dementia (less than 2 years)
- recent and significant head trauma
- unexplained neurological symptoms (e.g., new onset of severe headache or seizures)
- history of cancer (especially in sites and types that metastasize to the brain)
- use of anticoagulants or history of a bleeding disorder
- history of urinary incontinence and gait disorder early in the course of dementia
- any new localizing sign (e.g., hemiparesis or a Babinski reflex)
- unusual or atypical cognitive symptoms or presentation (e.g., progressive aphasia)
- gait disturbance

## Referral

The decision to refer the patient with recently diagnosed dementia to a subspecialist is influenced by both practical and medical considerations.

If the diagnosis is uncertain, it is not a bad decision to refer to a consultant or obtain further testing.

Many family physicians choose to follow their patients with dementia even when clinical features are atypical or suggestive of less common etiologies for the dementia.

A neurologist or psychiatrist can sometimes assist in the diagnosis and care of patients with less common dementias.

*Symptoms that may be helpful in identifying the less common causes of dementia include:*

- Significant personality changes
- Extrapyrarnidal signs
- Rapid progression
- Gaze palsy
- Parasympathetic abnormalities
- Cerebellar signs
- Early urinary incontinence
- Gait abnormalities
- Other reasons for referral to a neurologist or psychiatrist include:
  - Early progressive dementia
  - Dementia in a young patient
  - Presence of unresponsive psychiatric co-morbidities or severe behaviour disturbances

Neuropsychological testing is indicated when patients with abnormal findings on the mental status examination show normal functioning and when the index of suspicion is clinically high but screening tests are normal. Neuropsychologic tests evaluate a wide variety of intellectual domains, including the level of arousal, attention and orientation, recent and remote memory, language, praxis, visuospatial function, calculation and judgment. They may also be useful in determining competency for legal purposes, in distinguishing dementia from depression and in helping the patient make important decisions regarding jobs and finances.

A referral to the Alzheimer's Society of Canada and/or other community support groups is recommended for all patients.

## **Prognosis and Management of Dementia**

The average life expectancy from the time of definitive diagnosis of dementia is 7-10 years, although patients may live for 20 years or longer. Poor prognosis is associated with being younger than 60 at the time of diagnosis, having problems sleeping, and having extra pyramidal signs, such as rigidity or psychiatric symptoms.

Management of dementia involves both non-pharmacological and pharmacological measures. Frequent reassessments with the patient are necessary to track progression of the dementia, and identify issues, such as incontinence, behavioural problems, wandering, immobility and pain and speech and swallowing difficulties, that will require additional management. As well, it is important to assess for caregiver burnout, as the burden on caregivers is huge. The incidence of caregiver morbidity is high, therefore, a prudent family physician will address this matter proactively.

*Treatment of all correctable factors that impair cognition may significantly improve daily functioning and quality of life and may delay severe disability and institutionalization.*

### **Frequent Reassessments**

Follow up with the patient every six months during the course of the illness, and more frequently when complex or potentially dangerous symptoms emerge or when new drug therapies are being introduced. Management of polypharmacy, ensuring adequate nutrition, and reducing environmental stress is key. These regular visits also allow reassessment of the caregiver to identify burnout, the opportunity to provide referrals to support groups and the ability to initiate other appropriate interventions.

### **Pharmacological Interventions**

Cholinesterase inhibitors (Donepezil [Aricept], Galantamine [Reminyl], Rivastigmine [Exelon]) benefit cognitive function and can slow the progression of disease in persons with mild to moderate Alzheimer's disease. A slowing of decline is approximately equivalent to a delay in disease progression of up to seven months in a person with mild dementia, or a delay of two to five months in a person with moderate dementia. However, cholinesterase inhibitors do not cure dementia nor stop the progression in the long-term. Studies have shown little or no effect of cholinesterase inhibitors on functional decline after six months of treatment and a small difference from placebo after 12 months of treatment. As well, evidence on the beneficial effects of drug therapy on IADLs is mixed, with the benefit being small, at best. There is some controversy regarding the benefit of cholinesterase inhibitors in patient with other types of dementia, however cholinesterase inhibitors appear to be beneficial for patients suffering from vascular dementia and Lewy body dementia.

Evidence that other drugs have important benefits in Alzheimer's disease is weak. High-quality studies comparing ginkgo biloba with placebo found a small (i.e., approximately 3 percent) difference in cognitive scales. Randomized controlled trials of estrogen found no evidence of cognitive improvement. Vitamin E remains under investigation, but is not currently recommended.

Further pharmacological intervention may be necessary to help control behavioural outbursts or aggression, and/or co-morbid mood disorders.

The dosing schedule for medications should be made as simple as possible with once (or at most twice) daily doses. Dosset pill containers simplify medication-taking routines. A family member needs to monitor adherence to the dosage schedule.



## Pharmacological therapies for mild to moderate Alzheimer's disease

Drug Name	Dose	Side Effects	Specific Cautions
Donepezil (Aricept) Cholinesterase inhibitor	Initial: 5 mg OD Can increase to 10 mg after 4-6 weeks	Mild n+ v and diarrhea. Initial increase of agitation in some patients, subsides in a few weeks	Possible interactions with cimetidine (Tagamet), theophylline, warfarin (Coumadin), digoxin (Lanoxin), and NSAIDS.
Rivastigmine (Exelon) Cholinesterase inhibitor	Initial: 1.5 mg BID Can increase by max of 1.5 mg BID every 4 weeks to max of 6 mg BID	Mild n + v and diarrhea, abdominal pain, fatigue, malaise, anxiety, weight loss and agitation. Reduce SE by taking with food	Interacting drugs include aminoglycosides and procainamide (Procanbid). Use NSAIDS with caution. Avoid in patients with renal impairment.
Galantamine (Reminyl) Cholinesterase inhibitor	Initial: 4 mg BID for 4 weeks. Then increase to 8 mg BID for > 4 weeks. Consider increase to 12 mg BID on individual basis	Mild, including n + v and diarrhea. Reduce SE by taking with food	Contraindicated for use in patients with hepatic impairment. Use NSAIDS with caution. Drug interactions with some anti-depressants and anti-cholinergics.
Memantine (Namenda) NMDA blocker	5 mg OD Increase to 5 mg BID, then 5 mg + 10 mg BID, then 10 mg BID at min 1 week intervals	Extreme tiredness, dizziness, confusion, headache, constipation, vomiting	Drug interactions with amantadine and dextromethorphan.

**Non-Pharmacological Therapies**

Familiar routine and surroundings should be maintained for as long as possible. A move from a lifetime home to a retirement apartment may be catastrophic for patients who are unable to remember and familiarize themselves with new surroundings. If hospitalization or institutionalization is required, certain measures can reduce the risk of a catastrophic reaction. The patient's room should have a window, a large calendar (marked off day by day), and a large clock, preferably a digital one. Familiar photographs and personal items (even furniture, if possible) should be brought, and arrangements should be made for delivery of the patient's local newspaper. Visits from family and friends should generally be encouraged. Proper glasses, hearing aids and dentures, if needed, are essential. Quad canes and walkers should be encouraged, and wheelchairs avoided if at all possible. Other tools to compensate for the patient's declining cognition and memory include environmental modification, task simplification, and appropriate activities. These interventions often rely on an active caregiver.

*Other pearls:*

- Collaborative care with an interdisciplinary team has been shown to be more effective than augmented usual care.
- A caregiver-supervised exercise program has been shown to reduce the incidence of depression in patients with Alzheimer's disease and is important in reducing the risk of vascular disease (30-40% of dementia is mixed AD and vascular dementia)
- Brain exercise is important – cards, crossword puzzles etc. but not TV
- Education of the patient and their family (e.g. by the Alzheimer Society) is very important. AD often marginalizes patients. Informed patients and caregivers are better self-advocates.
- Non-drug treatment, such as reality orientation, can improve cognition.

### ***Management of Common Issues in Patients with Dementia***

As the patient's cognitive abilities begin to fail them, a variety of problems tend to develop. Incontinence, paranoia (delusions) and aggressive behaviour are common reasons for seeking nursing home care in the elderly population. Unfortunately, 90% of dementia patients will exhibit such behaviours at some point. As a result, 50% of all caregivers develop significant psychiatric symptoms as well. Furthermore, approximately 40% of patients with dementia also suffer from depression. Depression can be associated with functional and cognitive deficits and as such, it is important to treat suspected depression.

The following problems can all be addressed to some extent by management of the patient's environment: *agitation, wandering, immobility and pain, speech and swallowing difficulties, and incontinence.*

#### ***Behavioural problems***

At some point in the course of dementia, 90% of patients will have behavioural problems such as agitation, aggression, delusions, or emotional outbursts. These changes can be most difficult for the caregiver. Agitation may be due to identifiable causes (such as pain) or associated with environmental triggers that can be avoided. Once other causes have been ruled out, and non-pharmacological interventions (environmental modifications, music, or activities) have failed, medications should be considered.

Studies indicate that newer antipsychotics, especially **risperidone** and **olanzapine**, have a role in the treatment of aggression and/or psychotic symptoms, but second-generation antipsychotics have been shown to increase risk of mortality so benefits must be weighed against the risk of increased mortality. Newer antipsychotics are more easily tolerated and have fewer side effects than the first generation neuroleptics. Neuroleptics should not be used in the treatment of patients with Lewy bodies. SSRIs at low doses (**citalopram**) or **trazodone** (especially for sleep disturbance) may also be considered. A recent Cochrane review has concluded that there is not enough evidence to recommend the use of carbamazepine for controlling agitation and other neuropsychiatric symptoms.

After behavioral disturbances have been controlled for four to six months, the dosage of psychotropic agent should be reduced periodically to determine whether continued pharmacotherapy is required. Specific target symptoms dictate the choice and the expected success of the psychopharmacologic agent. Some behaviors, such as wandering and pacing, as well as repetitive questions and repetitive behaviours, are not amenable to drug therapy. Hallucinations, delusions, and insomnia are usually responsive to medication, while episodic outbursts and aggressive behaviours have a variable response.

The following recommendations for caregivers may help soothe patients and avoid agitation:

- Keep environmental distractions and noise at a minimum if possible. (Even normal noises, such as people talking outside a room, may seem threatening and trigger agitation or aggression.)
- Speak clearly. Most experts recommend speaking slowly to an Alzheimer's patient and to use clear, short sentences that can be easily remembered.
- Use a combination of facial expression, voice tones, and words for communicating emotions. (One interesting study suggested that Alzheimer's patients may have difficulty in recognizing the meaning of facial expressions, particularly those signaling sadness, surprise, and disgust.)
- Encourage independence, but limit choices (such as clothing selection) to reduce 'cognitive exertion'.
- Both music (of the patient's preference) and showing movies or videos of family members and events from the patient's past have been shown to reduce problem behaviours.

Encourage the patient to partake in repetitive, procedural tasks that they enjoy and can accomplish, such as weeding the garden.

- Use the PIECES framework to assess and manage behavioral problems. It is a framework of key dimensions (**P**hysical factors, **I**ntellectual factors, **E**motional factors, **C**apability, **E**nvironmental factors and **S**ocial factors) to consider in any patient with a behavioural problem.

Pharmacological treatment may also be needed to control agitation:

- If the patient is not taking a cholinesterase inhibitor, start one. The evidence is not strong but they are safer than alternatives and may benefit cognition and function even if they do not help with agitation
- Consider an atypical antipsychotic, e.g. risperidone or olanzapine. However, because they increase mortality (Odds Ratio = 1.7), they should only be used if benefits outweigh risk.
- If the patient has signs of depression, use an antidepressant with minimal anti-cholinergic side effects e.g. trazadone or citalopram.
- Typical antipsychotics (e.g. haloperidol) have less evidence of benefit and more side effects than atypical antipsychotics.
- Benzodiazepines may make agitation worse and lead to increased confusion and falls.
- Attempts at drug withdrawal should be made regularly.
- Physical restraints are associated with injury, not protection, of patients who are confused and should be avoided.

### **Falls**

Approximately 30% of those over 65 years have a fall each year. Most of those falls occur during the day, with only a minority at night. Several studies have shown that medications are a major predisposing risk factor for falls. This includes most psychoactive agents (benzodiazepines, phenothiazines, and antidepressants), particularly the long-acting agents.

As with many geriatric conditions, causes of falls are often multifactorial and reversible with intervention. Assess for risk of falls by asking about premonitory symptoms such as dizziness, lightheadedness, and vertigo. These symptoms can indicate hypotension, vestibular problems, hypoglycemia, or drug side effects. Other causes of falls include incontinence, which causes falls by creating slippery surfaces. Chest pain associated with arrhythmias or ischemia can cause hypotension. Questions regarding eyesight, hearing, sensation, memory problems, and depression are also relevant. As well, ask about problems with gait, balance, or walking secondary to joint or foot conditions. Review of all over-the-counter and prescription drugs is essential.

### **Predisposing and Risk Factors for Falls**

- Sensory deficits: vision, hearing, proprioception, vibration, vestibular function
- Orthostatic hypotension
- Gait and balance changes
- Musculoskeletal changes
- Cognitive impairment
- Medications
- Environmental hazards

### **Medications Implicated in Falls**

- Narcotics
- Hypnotics
- Benzodiazepines (especially long acting)
- Phenothiazines
- Tricyclic antidepressants
- Diuretics
- Vasodilators
- Alcohol

Studies show that those with Alzheimer's disease are more likely to fall (41%) and sustain fractures (mostly at the hip). Dementia patients more likely to fall are those with a history of falls in the previous year and those with a good score on Activities of Daily Living but who need more intensive basic support.

There is no standard approach to preventing falls as interventions depend on the individual risk factors. Obvious problems should be corrected (e.g., discontinue medications associated with postural hypotension). In

general, management requires a combination of medical, rehab, environmental, and behavioral strategies.

### ***Wandering***

A potentially dangerous trait is the Alzheimer's patient's tendency to wander. At the point the patient develops this tendency, many caregivers feel it is time to seek out nursing homes or other protective institutions for their loved ones. For those who remain at home, the following precautions are recommended:

- Locks should be installed outside the door, which the caregiver can open, but the patient cannot.
- Alarms might be installed at exits.
- A daily exercise program should be implemented, which may help tire the patient out. As well, one study showed that walking 30 min, three times a day, improved communication.
- The caregiver should contact organizations, such as Alzheimer's Association or Medic Alert, for identification supplies and procedures that help locate patients who wander away from home and become lost.

### ***Immobility and Pain***

As the disease progresses, Alzheimer's victims become immobile, literally forgetting how to move. Once they become wheelchair-bound or bedridden, pressure ulcers can be a major problem. Sheets must be kept clean, dry, and free of food. The patient's skin should be washed frequently, gently blotted thoroughly dry, and moisturizers applied. The patient should be moved every two hours and the feet kept raised with pillows or pads. Physiotherapy is key in these instances; exercises should be administered to the legs and arms to keep them flexible. One expert reported that 62% of patients with mild to moderate dementia report pain, usually in joints. Unfortunately, few patients in late-stage dementia receive pain medication. Note that pain medications may exacerbate cognitive difficulties.

### ***Speech and Swallowing Difficulties***

Some evidence suggests that speech therapy combined with Alzheimer's disease medications may be helpful for maintaining verbal skills in patients with mild symptoms. Weight loss and the gradual inability to swallow are two major related problems in late-stage Alzheimer's and are associated with an increased risk of death. Weight gain, however, is linked to a lower risk of dying. The caregiver should offer the patient foods of different consistency and flavor in case the patient can handle one form better than another. Because choking is a danger, the caregiver should learn to administer the Heimlich maneuver, which may be taught by the local Red Cross. For speech and swallowing difficulties, a speech language pathologist may be helpful.

### ***Incontinence***

Functional incontinence occurs when either a person's physical or mental state makes it challenging for the individual to urinate in the toilet (i.e., the person lacks the physical ability to reach the toilet or lacks the adequate thought process to go to the toilet when having the urge to urinate). Causes include strokes, dementia and depression.

In contrast, urge incontinence is characterized by loss of small or large volumes of urine when the patient has insufficient warning, following the first urge to void, to allow him or her to reach the toilet. It is the most common type of incontinence.

Stress incontinence occurs in women who usually have had children and is characterized by loss of small volumes of urine following coughing, sneezing or other maneuvers that increase intra-abdominal pressure. It is due to prolapse of the internal urethral sphincter outside of the abdominal cavity.

Oxybutynin is an anticholinergic medication that is used to treat urge incontinence. For those with urge incontinence, it may allow enough time before voiding to allow recognition of the urge to urinate and movement to the toilet. However, remember that anticholinergic medications will exacerbate cognitive decline. For functional incontinence, the recommended course of action is to have the caregiver develop a schedule and proactively avoid incontinence by predicting toileting times.

### ***Depression***

Although depressive symptoms are present in approximately 40 percent of patients with Alzheimer's disease, they are often overlooked. These symptoms are treatable in most patients. Limited but acceptable clinical evidence supports the use of antidepressants in patients with depression superimposed on Alzheimer's disease. The most useful medications are those with minimal anticholinergic side effects. Depression is notoriously difficult to distinguish from dementia. If a depressive illness is suspected, it should be treated pharmacologically for 2-3 months and the patient should be reassessed *before* starting a cognitive enhancer. Note that in dementia, response to anti-depressants may be less predictable.

The first-line medications for depression are newer SSRI drugs such as **citalopram** or **mirtazapine**, which have minimal anti-cholinergic side effects. In general, tricyclics should be avoided because their anti-cholinergic side effects are likely to exacerbate the cognitive decline. However, if tricyclics are used, nortriptyline is preferred if sedation is required. Trazodone may be a more appropriate choice than tricyclics as it will also help to improve sleep and anxiety but it can cause hypotension and may lead to increased risk of falls at high doses.

**Assessing Ability to Drive**

It is difficult for a physician to accurately assess a patient's capability to drive in the office setting, unless the dementia is severe and the risk is obvious. The physician should ask about driving problems and examine for significant deficits in attention, judgment, and visuospatial abilities. If there are no major problems (nor a set of minor problems), the physician should encourage the patient to undergo a performance-based evaluation of driving competence and to return to the office for reassessment frequently. Patients and caregivers should be urged to plan early for eventual cessation of driving privileges. A simple checklist can be followed when considering driving competence in the elderly. Note that no in-office cognitive screening test has been demonstrated to accurately predict collisions among patients with dementia. Thus, any assessment of driving requires a multi-factorial evaluation approach.

**10 Item Driving Checklist** (developed by Dr. WB Dalziel, U of Ottawa, 2006)

Used to determine if senior drivers are safe, uncertain or unsafe.

1. Type of Dementia
  - a. FTD unsafe (disinhibition/judgment)
  - b. LBD unsafe (hallucinations/fluctuations)
  - c. AD, VAD, Mixed AD/VAD are safer (if no visuospatial problems)
2. Severity: functional losses stratify severity better than MMSE
  - a. "Very mild" likely safe – involves problems with only 1 (not more) IADL
  - b. "mild" likely unsafe – problems with greater than 1 IADL
  - c. Driving is contraindicated if a patient loses ability, due to cognitive reasons, to perform any one ADL.
3. Family Concerns: ask a caregiver if they have noticed any of the following, if so, the patient is unsafe to drive. \*it is important to stress that the caregiver be honest.
  - a. Any collisions, near misses and /or damage to the car
  - b. Getting lost, needing a "co-pilot"
  - c. Missing stop signs/lights, stopping for a green light
  - d. Right of way problems
4. Significant visuospatial problems: poorly done intersecting pentagons or incorrect number placement on the clock drawing is a sign that the patient is likely unsafe to drive
5. Reaction time: drop a 12" ruler between the thumb and index finger: should be caught by maximum of 9", give two tries – if unable to complete task, probably unsafe to drive.
6. Poor judgment/insight: ask situational questions such as: "what would you do if you were approaching a yellow light?" or "what would you do if you saw a fire in a neighbour's kitchen?" – poor judgment is a sign the patient is likely unsafe to drive.
7. Trails A and B: A test on the MOCA that asks the participant to connect numbers in sequence. These are tests of visuospatial, executive function, attention and speed of processing that are generally failed by failing to understand concept of test or by making errors, not by exceeding time limit.
  - a. More than 1 error or taking more than 3 minutes to complete the test likely means the patient is unsafe to drive
8. Medication use that may affect driving? (Especially high or changing doses)
  - a. Alcohol, benzodiazepines, antipsychotics, muscle relaxants, sedating antidepressants and antihistamines, anticonvulsants
9. Vision or hearing problems: (If yes, likely unsafe to drive)
10. Other medical or physical conditions? (if yes, may be unsafe to drive)

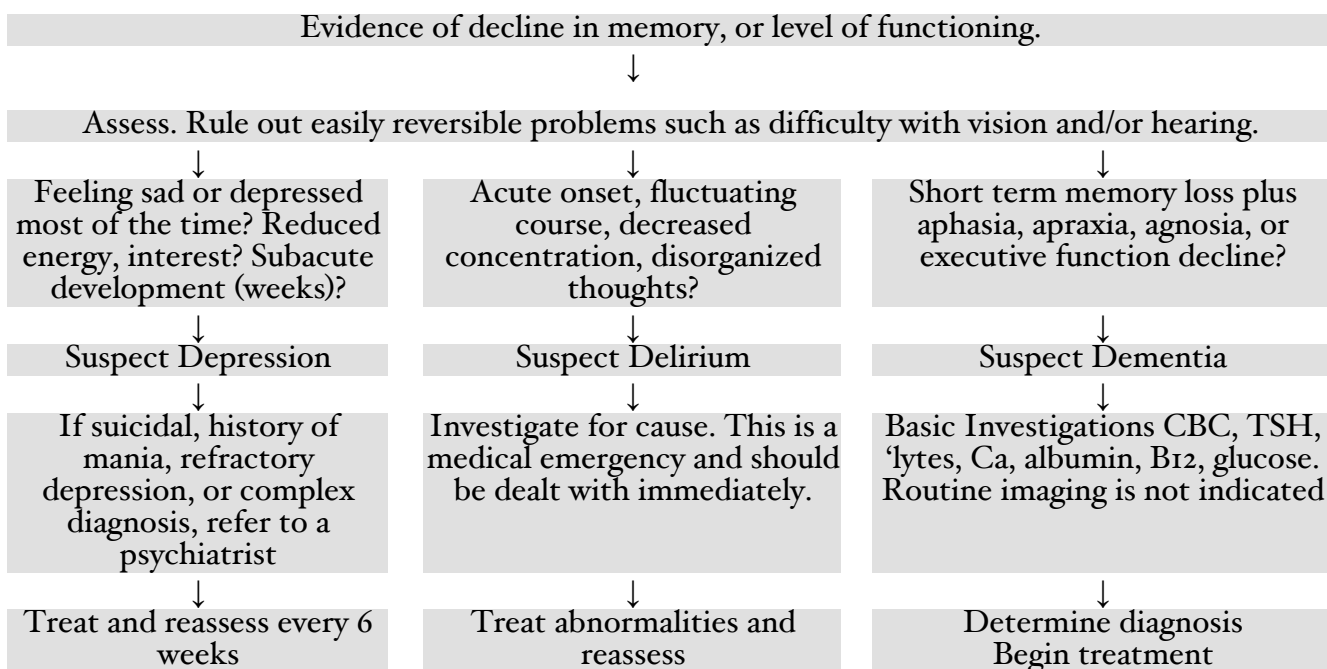
**Management of Caregiver Stress**

About 80% of Alzheimer's patients are cared for by family members, who often lack adequate support, finances, or training for this difficult job. Few diseases disrupt a patient and his or her family so completely or for so long a period of time as Alzheimer's. The physical and emotional health of the primary caregiver is critical to optimal care of the patient with Alzheimer's disease. Unfortunately, caregivers suffer from increased rates of depression and physical illness and are prescribed medications at a higher rate than persons not required to be in a care-giving role. Up to 50% of caregivers experience significant psychiatric symptoms.

An alliance between the family physician and the family, particularly the primary caregiver, is the principal means of ensuring that the physician's instructions are followed. Frequent visits also serve to minimize patient and caregiver distress and time should also be made to speak with the caregiver alone. The family physician can help caregivers by educating them about simplifying tasks and providing meaningful activities for patients with Alzheimer's disease.

Comprehensive psychoeducational training for caregivers and the use of support groups and community resources for patients and caregivers may reduce caregiver stress, improve patient behavior, and defer patient institutionalization. Short-term caregiver educational programs can improve caregiver satisfaction. Long-term caregiver training programs, and other support systems (computer support networks, telephone support programs, adult day care and other respite programs) may also help delay time to nursing home placement for the AD patient.

**Summary: Approach to Cognitive Decline**



## Geriatric Depression Scale (Short Form)

Patient's Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions: Choose the best answer for how you felt over the past week.**

No.	Question	Answer	Score
1.	Are you basically satisfied with your life?	YES / NO	
2.	Have you dropped many of your activities and interests?	YES / NO	
3.	Do you feel that your life is empty?	YES / NO	
4.	Do you often get bored?	YES / NO	
5.	Are you in good spirits most of the time?	YES / NO	
6.	Are you afraid that something bad is going to happen to you?	YES / NO	
7.	Do you feel happy most of the time?	YES / NO	
8.	Do you often feel helpless?	YES / NO	
9.	Do you prefer to stay at home, rather than going out and doing new things?	YES / NO	
10.	Do you feel you have more problems with memory than most?	YES / NO	
11.	Do you think it is wonderful to be alive?	YES / NO	
12.	Do you feel pretty worthless the way you are now?	YES / NO	
13.	Do you feel full of energy?	YES / NO	
14.	Do you feel that your situation is hopeless?	YES / NO	
15.	Do you think that most people are better off than you are?	YES / NO	
<b>TOTAL</b>			

**Scoring:**

Assign one point for each of these answers:

- |        |        |        |         |         |
|--------|--------|--------|---------|---------|
| 1. No  | 4. YES | 7. No  | 10. YES | 13. No  |
| 2. YES | 5. NO  | 8. YES | 11. NO  | 14. YES |
| 3. YES | 6. YES | 9. YES | 12. YES | 15. YES |

A score of 0 to 5 is normal. A score above 5 suggests depression.

**Source:**

- Yesavage J.A., Brink T.L., Rose T.L. et al. Development and validation of a geriatric depression screening scale: a preliminary report. J. Psychiatr. Res. 1983; 17:37-49.



**MONTREAL COGNITIVE ASSESSMENT (MOCA)**

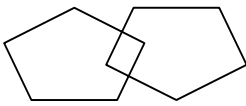
NAME :  
 Education :  
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 Date of birth :  
 DATE :

VISUOSPATIAL / EXECUTIVE						POINTS																		
	Copy cube 	Draw CLOCK (Ten past eleven) (3 points)			[ ] /5																			
<b>NAMING</b>						[ ] /3																		
<b>MEMORY</b>	Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes.	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">FACE</td> <td style="text-align: center;">VELVET</td> <td style="text-align: center;">CHURCH</td> <td style="text-align: center;">DAISY</td> <td style="text-align: center;">RED</td> </tr> <tr> <td style="text-align: center;">1st trial</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2nd trial</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		FACE	VELVET	CHURCH	DAISY	RED	1st trial						2nd trial						No points			[ ] /5
	FACE	VELVET	CHURCH	DAISY	RED																			
1st trial																								
2nd trial																								
<b>ATTENTION</b>	Read list of digits (1 digit/ sec). Subject has to repeat them in the forward order [ ] 2 1 8 5 4 Subject has to repeat them in the backward order [ ] 7 4 2					___/2																		
	Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors [ ] FBACMNAAJKLBAFAKDEAAAJAMOFAB					___/1																		
	Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65 4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt					___/3																		
<b>LANGUAGE</b>	Repeat : I only know that John is the one to help today. [ ] The cat always hid under the couch when dogs were in the room. [ ]					___/2																		
	Fluency / Name maximum number of words in one minute that begin with the letter F [ ] ____ (N ≥ 11 words)					___/1																		
<b>ABSTRACTION</b>	Similarity between e.g. banana - orange = fruit [ ] train - bicycle [ ] watch - ruler					___/2																		
<b>DELAYED RECALL</b>	Has to recall words WITH NO CUE	FACE [ ]	VELVET [ ]	CHURCH [ ]	DAISY [ ]	RED [ ]	Points for UNCUEDE recall only	___/5																
<b>Optional</b>	Category cue																							
	Multiple choice cue																							
<b>ORIENTATION</b>	[ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City					___/6																		
© Z.Nasreddine MD Version November 7, 2004					Normal ≥ 26 / 30		<b>TOTAL</b> ___/30																	
www.mocatest.org					Add 1 point if ≤ 12 yr edu																			

# Mini-Mental State Examination (MMSE)

Patient's Name: \_\_\_\_\_ Date: \_\_\_\_\_

***Instructions:*** Ask the questions in the order listed. Score one point for each correct response within each question or activity.

Maximum Score	Patient's Score	Questions
5		"What is the year? Season? Date? Day of the week? Month?"
5		"Where are we now: State? County? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible. Number of trials: _____
5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Stop after five answers. Alternative: "Spell WORLD backwards." (D-L-R-O-W)
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.)  
30		TOTAL

(Adapted from Rovner & Folstein, 1987)