



Evidence-Based Clinical Vignettes from the Care Management Institute: Alzheimer's Disease and Dementia

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Introduction

Alzheimer's disease (AD), the most common form of dementia, is steadily becoming more common as the general population ages: Longer life spans—a result of medical advances—have translated into an increased prevalence of AD. In the United States, AD affects 3% to 5% of people aged 65 years or older and 15% to 40% of those aged 85 years or older.^{1,2} The Alzheimer's Association estimates that more than four million Americans have the disease and that unless a cure is found, 14 million people will have it by 2050.^{3,4} Many people who are concerned about their loss of memory or function worry about the possibility of having AD or other types of dementia, and they seek advice and care from their physicians and the health care system.

Nationally, Kaiser Permanente (KP) serves more than 800,000 members aged 65 years or older and nearly 55,000 members who are aged 85 years or older. This statistic suggests that dementia affects an estimated 40,000 KP members, about 25,000 of whom are at least 85 years of age. In many patients with dementia, the disease has not been diagnosed. Although most cases of dementia are not curable, meticulous postdiagnostic medical management creates the possibility of treating cognitive, behavioral, and depressive symptoms. Such medical management can be coordinated with appropriate support services and thus improve caregiver and patient outcomes.⁵⁻⁸ Recognition of AD should therefore be given high priority so that patients and their caregivers can improve their quality of life.

Diagnosis and long-term management of AD and other forms of dementia are achieved most effectively by interdisciplinary health care teams in collaboration with community agencies and service providers. Indeed, success in the overall effort to provide high-quality care requires several key elements (Table 1).

As part of a series highlighting key aspects of guidelines and care programs from the Care Management Institute (CMI), this article presents an overview of

the recently completed *Dementia Guidelines*⁹ and *Dementia Care Program*,¹⁰ resources which may be obtained by calling the CMI product line at 510-271-6426 or by visiting CMIproducts@kp.org. (These resources will also soon be available on the Permanente Knowledge Connection at <http://pkc.kp.org>.) The guidelines focus on three major areas of dementia: diagnosis, initial treatment, and postdiagnostic management, including education and support for patients and their caregivers.

Case Example

A 68-year-old retired high school teacher lived with his wife in an active retirement community. Since retiring three years previously, he had been doing volunteer work and had enrolled in

Table 1. Key factors in high-quality care for patients with Alzheimer's disease and other types of dementia
Awareness of the prevalence of dementia and its relation to age
Vigilance for observing signs of cognitive impairment
Knowledge and skills required for maximizing diagnostic precision
Communication skills suitable for conveying the diagnosis and for listening to concerns of patients and their caregivers
Discussion of advance care plans and who will make decisions when the patient is unable
Planning for legal, financial, and health care issues
Goal setting and decision making by patients, caregivers, and clinicians
Linkage and collaboration with appropriate KP and community resources
Treatment with a trial of memory-enhancing medications for appropriate candidates
Attention to comorbid conditions
Management of common manifestations of AD (eg, behavioral problems, depression, incontinence)
Measurement of quality of dementia care

The Alzheimer's Association estimates that more than four million Americans have the disease ...

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The type of mental status alteration as well as the medical history and clinical presentation suggest the differential diagnosis and guide evaluation.

the local university's extension program. During the past six to eight months, he and his wife noticed that he was forgetting names and losing things. On several occasions, he had angry outbursts and accused his wife of hiding his wallet and car keys and of having an affair with a neighbor. He had lost interest in his hobby (building model planes) and seemed depressed. A week before being seen in the clinic, he became lost while driving home from the grocery store. This episode alarmed his wife, and she made an appointment for both of them with his primary care physician. He was healthy and usually drank two glasses of wine daily, and he took no medication. The patient and his wife were concerned that his forgetfulness and getting lost may not be "normal" aging. His vital signs, results of fundoscopic examination, and results of cardiac examination were normal. He had no carotid bruits or focal neurologic signs, and his gait was normal. He could draw a clock face with great difficulty, and when asked to set the time at "10 after 11," he placed the hands of the clock in the wrong position. He scored 24 out of 30 on the Folstein Mini Mental Status Evaluation (MMSE) because he could not recall two of three objects; could not complete one component of a three-part directed task; and could not recall the current date, month, or year.

What is the patient's diagnosis? How would you distinguish between dementia, depression, and delirium? What are your next steps? What do you tell your patient and his wife at this point? Where can you get help in evaluating and managing this patient?

What is Dementia?

Dementia is an acquired syndrome in which global intellectual abilities progressively deteriorate

to the point of interfering with the affected person's customary occupational, functional, and social performance.⁹ Changes characteristic of dementia may be generally categorized as cognitive, functional, or behavioral.

Dementia can result from a primary degenerative process (eg, AD) or from secondary causes, including toxic-metabolic, neoplastic, infectious, or traumatic processes; a depressive disorder; or increased intracranial pressure. The type of mental status alteration as well as the medical history and clinical presentation suggest the differential diagnosis and guide evaluation. Harrison's *Principles of Internal Medicine, 15th edition*,¹¹ lists almost 20 types of dementia—most of them relatively rare. Primary care providers are most likely to encounter Alzheimer's disease; vascular dementia; dementia with presence of Lewy bodies or mixed vascular dementia and AD.¹² Probable diagnosis is made clinically, whereas definitive diagnosis is made from brain biopsy at autopsy; however, exact clinical and pathologic correlation is not always possible. Table 2¹⁰ displays some signs and symptoms typically associated with the early stages of various forms of dementia.

Screening and Case Identification

Regular cognitive screening of all older patients is neither necessary nor practical. However, cognitive screening should be considered for patients who display possible signs of cognitive impairment, such as difficulty following instructions, regularly confusing appointment times, and neglecting personal hygiene. Office staff can help identify these patients. Because dementia steadily becomes more common with increasing age, a reasonable ap-

Table 2. Common signs and symptoms of dementia

	Memory impairment	One or more: Aphasia, Apraxia, Agnosia, disturbance in executive functioning	Functional impairment	Gradual onset; continuous decline	Rapid, fluctuating course	Focal neurological signs	Extra-pyramidal signs	Personality changes	Hallucinations	Deficits in verbal fluency
Alzheimer's disease	●	●	●	●						
Vascular dementia	●	●	●			●				
Dementia with Lewy bodies	●	●	●		●		●		●	
Subcortical dementia	●	●	●			●				
Fronto-temporal dementia	●	●	●					●		●

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proach is to periodically use a short, sensitive, validated screening tool such as the clock-drawing test (CDT)¹³ or Mini-Cog (combination of the CDT and three-item recall)¹⁴ for patients aged 80 years or older. No evidence suggests how often this screening should be done, so clinical judgment must be used to determine required frequency in individual cases. Diagnostic evaluation is advisable for patients who fail a screening test and for patients who have a history of memory problems or who currently have memory problems (self-acknowledged or reported by an observer). Patients with dementia may behave in a socially appropriate manner at medical appointments yet have clinically significant cognitive loss. Attributing memory loss to “normal aging” is always inappropriate.

Purpose and Components of the Diagnostic Evaluation

Evaluation of cognitive impairment may reveal dementia, no dementia, or a potentially reversible condition masquerading as dementia. Most cases of cognitive impairment are irreversible.^{15,16} For patients and their caregivers, a diagnosis of dementia may explain a series of distressing events. Diagnosis also permits an opportunity to jointly develop a plan of care and action.

Medical History

The diagnostic process often requires several visits for obtaining medical history and for administering a clinical examination as well as laboratory, cognitive, and functional tests; in addition, neuroimaging might be useful to rule out reversible causes of cognitive and functional impairment. No single blood test or measure will quickly yield a definitive diagnosis. Diagnosing dementia can be complicated; therefore, in addition to the *Dementia Guidelines* and *Dementia Care Program*, CMI has produced a quick-reference tool (to be published in Spring 2002) to assist clinicians with diagnosis and management of dementia. Evaluation by a geriatrician, geropsychiatrist, or neurologist is indicated when the diagnosis is unclear, unusual, or complex.

A focused medical history includes detailed description of the patient’s chief complaint, past or current medical problems, medications, and family as well as social history. Time of onset and course of symptoms are helpful clues to diagnosis.¹⁷ Recently prescribed and highly anticholin-

Table 3. Laboratory tests for the evaluation of dementia

<p>Recommended tests;</p> <ul style="list-style-type: none"> • Complete blood count (CBC) • Sodium level • Potassium level • Creatinine level • Calcium level • Glucose level • Thyroid function tests (TSH first; if abnormal result, use T4 test) • Vitamin B₁₂ level
<p>Optional tests as indicated by medical history or results of physical examination:</p> <ul style="list-style-type: none"> • Syphilis test • Methylmalonic acid level • Liver function tests • HIV test • Chest x-ray film • Urinalysis • Toxicology screen • Electroencephalogram • Lumbar puncture (Only if any of the following are present: cancer; suspicion of CNS infection; reactive serum antitreponemal syphilis serology; some cases of hydrocephalus; dementia in a person younger than 65 years; rapidly progressive or unusual dementia; immunosuppression; suspicion of CNS vasculitis, particularly in patients with connective tissue disease).

ergic medications should be considered as potentially contributory or causative factors. The medical history should be obtained from both the patient and a reliable third-party informant.

Clinical Examination and Laboratory Tests

Elements of the physical examination include evaluation of the patient’s appearance and behavior (ie, hygiene, affect, alertness, and ability to focus); determination of hypertension, carotid bruits, or irregular heartbeat; and identification of focal neurologic signs (eg, impaired gait or balance; rigidity; decreased muscle strength; bradykinesia; cogwheeling; resting tremor). Laboratory tests for dementia are listed in Table 3.⁹

Cognitive Testing

Diagnostic evaluation for dementia should also include formal cognitive assessment. *No single mental status test is clearly superior*, and any widely studied

... Attributing memory loss to “normal aging” is always inappropriate.



Table 4. Common activities of daily living (ADL) and instrumental activities of daily living (IADL)

ADL	IADL
Bathing	Cooking
Dressing	Balancing checkbook
Eating	Paying bills
	Taking medications
	Driving
	Grocery shopping

Table 5. Potentially reversible causes of dementia

Alcohol
Drugs: <ul style="list-style-type: none"> • Anticholinergic (eg, scopolamine, orphenadrine) • Antidepressant (eg, amitriptyline, imipramine, trazodone) • Antiarrhythmic (eg, quinidine, disopyramide) • Antihypertensive (eg, beta agonists, calcium channel blockers) • Analgesic (eg, codeine, oxycodone) • Derivatives of digitalis • Sedative/hypnotic (eg, benzodiazepine derivatives) • Nonprescription (eg, diphenhydramine)
Herbal/alternative forms of therapy
Psychiatric disorders: <ul style="list-style-type: none"> • Depression • Delirium
Hypothyroidism
Vitamin B ₁₂ deficiency
Infection
Space-occupying lesions (eg, subdural hematoma, meningioma)

test may be used.¹⁷ The CMI Dementia Guidelines recommend the Folstein MMSE¹⁸ because of its widespread use and ease of administration. However, the MMSE has limited usefulness with patients whose primary language is not English. In addition, people with little education may score poorly on the test even if they do not have dementia, and people who are highly educated may score well even when they do have dementia.^{18,19}

Differential Diagnosis

In approximately 15% of patients with dementia, the condition results from potentially reversible causes¹⁵⁻¹⁷ (Table 5). In a smaller proportion of cases, the condition is fully reversible. Depression is one of the more frequent causes of partially or completely reversible dementia.^{15,16} Some patients may have both depression and dementia. In addition, delirium can produce dementialike symptoms. Table 6 lists some features that may help differentiate dementia from depression

and delirium.^{20,21} Key points for detecting, diagnosing, and treating dementia are summarized in Table 7.

Functional Testing

If a family member or caregiver is present, functional status should be assessed using a tool such as the Functional Activities Questionnaire (FAQ),¹⁷ which assesses the patient's ability to perform basic activities of daily living (ADL) and instrumental activities of daily living (IADL) (Table 4).

Depressed patients should receive psychotherapy or treatment with a selective serotonin reuptake inhibitor (SSRI) or heterocyclic antidepressant agent. Older, highly anticholinergic tertiary tricyclic antidepressant agents (eg, amitriptyline, imipramine, doxepin) should not be administered to older adults. Referral to specialty mental health or behavioral health services should be provided to patients who do not respond to treatment or whose clinicians cannot provide a diagnosis that distinguishes between depression and dementia.

Neuroimaging

Routine computed tomography (CT) scanning is not indicated for all patients with dementia. Noncontrast CT scanning is recommended for patients with suspected dementia who are younger than 65 years or who meet one of the following criteria:⁹

- atypical presentation leading to unclear diagnosis;
- rapid, unexplained cognitive deterioration;
- unexplained focal neurologic signs or symptoms;
- urinary incontinence or gait ataxia early in the illness;
- clinical suspicion of undiagnosed cerebrovascular disease.

Contrast CT, positron emission tomography (PET), and single-photon emission computed tomography (SPECT) scanning are not recommended. For most patients with dementia treated in a primary care setting, magnetic resonance imaging (MRI) currently offers no advantage over CT scanning.

Referral to Specialists

Primary care practitioners should consider consultation with a specialist (geriatrician, neurologist, geropsychiatrist) if any of the following situations occur: the patient has cognitive loss and is younger than 60 years; the patient has complex presentation; basic clinical evaluation of the patient does not yield a clear diagnosis; assistance is required for case management; or the patient or the patient's family strongly desires specialty care.

The CMI Dementia Guidelines recommend the Folstein MMSE because of its widespread use and ease of administration.



Other Components of Medical Care

Primary care clinicians are often called upon to manage problems associated with dementia and other clinical conditions not directly related to the dementing process. The most common dementia-related problems are behavioral changes (depression, apathy not caused by depression, wandering, insomnia, paranoia, and combativeness) and changes in function (incontinence, impaired gait and balance, falls, feeding issues). Treatable medical causes (eg, pain, constipation, infection) and environmental triggers must be assessed and managed before drug treatment is initiated. In general, nonpharmacologic

measures such as redirection, distraction, and structured activity should be tried before any medication is prescribed. The CMI *Dementia Care Program* manual lists strategies for nonpharmacologic management and indications for various medications.

Comment Evaluation of Case Example

The patient described is probably experiencing cognitive loss and depression. Results of laboratory studies were normal. The patient was advised to discontinue use of alcohol, and a trial of 10 mg fluoxetine daily was initiated for depression. At follow-up, the

Table 6. Common clinical distinctions between delirium, dementia, and depression

Delirium	Depression	Dementia
Abrupt, precise onset with identifiable date	Abrupt onset, often with previous history	Gradual onset that cannot be dated
Acute illness, generally lasting days to weeks but on occasion more than one month	Variable duration; often recurrent pattern that is time-limited	Long duration; progresses over years
Usually reversible, often completely	Can be managed or reversed	Generally reversible, often chronically progressive
Usually no psychiatric history but may have had episode of delirium before	Often previous psychiatric history (including undiagnosed depressive episodes)	Usually no psychiatric history
Disorientation early	Complains of poor concentration and forgetfulness	Sometimes unaware of memory loss; disorientation later in illness
Clouded, altered, changing level of consciousness	"I don't know" answers	Near-miss answers
Variability from moment to moment, hour to hour, throughout the day	Fluctuating cognitive loss	Generally stable from day to day (although cognitive loss is progressive)
Both short- and long-term memory loss	Equal memory loss for recent and remote events	Memory loss greatest for recent events
Memory loss and abnormal thought processes predominate; not depressed	Depressed mood (if present) occurs first	Memory loss occurs first
Prominent physiologic changes	Less prominent physiologic changes, accompanied by increase or decrease in appetite	Less prominent physiologic changes
Strikingly short attention span	Attention span may be reduced; may not focus on questions	Attention span not usually reduced
Disturbed sleep-wake cycle with hour-to-hour variation	Disturbance in sleep (insomnia or hypersomnia) common, sleep-wake cycle variation not typical	Disturbed sleep-wake cycle with day-night reversal, not hour-to-hour variation
Marked psychomotor changes (hyperactive or hypoactive)	Psychomotor retardation or activation	Psychomotor changes characteristically occurring late in the illness (unless depression develops)

Treatable medical causes ... and environmental triggers must be assessed and managed before drug treatment is initiated.

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Table 7. Key points for detecting, diagnosing, and treating dementia

<ul style="list-style-type: none"> • Screening for dementia is indicated in patients with signs or symptoms of cognitive impairment.
<ul style="list-style-type: none"> • Intermittent screening for dementia in patients aged 80 years or older should be considered.
<ul style="list-style-type: none"> • Evaluation of dementia includes assessment for delirium, depression, and other secondary causes of cognitive decline.
<ul style="list-style-type: none"> • Use of cholinesterase inhibitors may be considered for patients with mild forms of Alzheimer's disease but will only slow the progression of disease by about six months.
<ul style="list-style-type: none"> • Team-oriented treatment of patients with dementia includes care managers and community resources.
<ul style="list-style-type: none"> • Treatment for dementia should focus on patient and caregiver function; on quality of life; and on referral for assistance with health care, financial, and estate planning.
<ul style="list-style-type: none"> • Screening for dementia is indicated in patients with signs or symptoms of cognitive impairment.

patient's caregiver reported that the patient was adhering to the fluoxetine regimen without having clinically significant side effects. The patient's depression seemed to have improved, but a second MMSE gave a score of 25/30. A daily regimen of 10 mg donepezil (an acetylcholinesterase inhibitor) was initiated.

Discussing the diagnosis of dementia with the patient and with the patient's family and caregivers requires sensitivity and skill.

Six weeks later, another MMSE was administered and yielded a lower score (24/30), but the patient's wife reported that he was more engaged and less apathetic. The patient was tolerating medication and experienced no side effects. The clinician enrolled the patient in a program of coordinated senior care. The care coordinator and clinician worked together to help the patient and his wife understand his condition and what to expect over time. The clinician also suggested that the patient and his caregivers discuss advance directives, financial planning, and estate planning. Referral to community re-

sources such as the Alzheimer's Association was discussed as well as the increased risks of the patient driving because of this diagnosis. The Alzheimer's Association provided the patient's wife with a support group and information about other support services such as adult day care and respite services that she may need in the future. She enrolled her husband in the Association's "Safe Return" program and bought him an identification bracelet in case he were to wander and get lost. She also was referred to an attorney and to an accountant who helped her with legal and financial planning. Discussions for advance health care planning were initiated and included the couple's children.

Prevention and Treatment

Many people take—and some physicians recommend—medication and other preparations to “prevent” dementia. CMI's evidence-based review did not find convincing clinical trials to support this recommendation.

Estrogen's effect on cognition is unclear. The reduced risk of cognitive decline associated with long-term estrogen use seen in some epidemiologic studies²² may be a benefit to consider when discussing the advantages and disadvantages of estrogen therapy in peri- and postmenopausal women, but the evidence is currently insufficient to support recommending estrogen specifically for preventing cognitive decline. A possible preventive effect of ibuprofen was recently reported,²³ but nonsteroidal anti-inflammatory drugs carry a risk of clinically significant side effects and therefore should not be prescribed for prevention of AD in the absence of demonstrated benefit.⁹ Some literature²⁴⁻²⁶ suggests a relation between improved memory and use of ginkgo biloba by healthy adults; however, evidence is currently insufficient to support recommending use of ginkgo biloba to prevent AD or other forms of dementia. Evidence is also insufficient to support recommending use of vitamin E (alpha-tocopherol) or statins for this purpose.⁹

The brains of people with AD show deficient levels of acetylcholine. For some patients with mild to moderate AD, three currently available acetylcholinesterase inhibitors (donepezil, rivastigmine, and galantamine) have been well tolerated and are statistically more effective than placebo for improving performance on selected cognitive and functional tests.²⁷ The magnitude of benefit appears to be modest and is not constant, and many patients show no benefit. No head-to-head comparisons of these agents have been pub-



lished. These agents appear to slow progression of AD by about six months but do not stop this progression. If use of the medication is stopped, any effect is quickly lost. Gastrointestinal side effects are common. These agents are appropriate for use only in patients with mild to moderate AD; evidence is currently insufficient to support use of these agents by pa-

tients with mild cognitive impairment (MCI), severe AD, dementia with presence of Lewy bodies, or vascular dementia.

Communicating the Diagnosis

Discussing the diagnosis of dementia with the patient and with the patient's family and caregivers re-

Table 8. Care Management Institute Alzheimer's Disease and Dementia Group

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When developing a plan for care, clinicians must consider the patient's dementia in relation to the patient's ability to adhere to medication, diet, or exercise requirements.

quires sensitivity and skill. The news can be both a source of relief and an explanation of what has been occurring. The news can also be very frightening. Clinicians should ask patients and families about their preferences for discussing this information (eg, who should be present during discussions, what kind of information can be shared). The clinician should avoid the tendency to provide excessive information when the family has diminished capacity to absorb this information (a situation that occurs often). This time is for listening; answering questions; giving reassurance of ongoing support; and, if appropriate, inquiring about feelings, cultural beliefs, and spirituality. Follow-up appointments should be scheduled to address questions and concerns, to monitor symptoms and function, and to discuss ways to improve quality of life for patients and their caregivers.

Challenges After the Diagnosis

Comprehensive care for people with AD and other forms of dementia requires support and resources found in some health care systems and in most communities. Some KP regions and service areas have dementia care specialists (usually nurses and social workers) or geriatric nurse care managers who can help to manage these patients. Linking patients and caregivers to additional resources, including links to community agencies (eg, the Alzheimer's Association, Area Agencies on Aging), is important; caregiver support services; sources of caregiver education; and resources to assist with legal, financial, estate, and health care planning. Some states, including California, mandate reporting any diagnosis of dementia to the Department of Health, which then notifies the Department of Motor Vehicles, which evaluates the appropriateness of allowing the patient to continue driving. Even if reporting is not required, people with dementia who plan to continue driving should be tested for their ability to do so safely.

Managing a demented patient's other chronic conditions in the context of the patient's cognitive impairment can be challenging. When developing a plan for care, clinicians must consider the patient's dementia in relation to the patient's ability to adhere to medication, diet, or exercise requirements. Tight glycemic control in someone with AD should not be a goal.

Comprehensive Care Models

Comprehensive care for people with dementia requires interest, knowledge, skills, teamwork, and time.

The constraints of primary care practice make it difficult for a physician to do everything alone. KP is developing and testing various collaborative care models for our patients with dementia. A recently completed research study conducted at six KP sites^{5,a} focused on implementing a model of dementia care that increased links to community resources for members with dementia and their caregivers. A telephone line providing a single point of contact was established for persons with dementia and their caregivers to call KP for information about dementia care services and programs. The care manager provided information, assistance, and referral to the local chapters of the Alzheimer's Association, which then provided information about various educational and support programs. This service was highly valued by caregivers. Primary care physicians' satisfaction with services available for patients with dementia improved during the course of the study.⁵

Quality Measures

Most quality-of-care indicators for dementia are not easily captured unlike quality-of-care indicators for diseases that have clear diagnoses, are determined by well-defined tests, and are treated with medications that are routinely tracked in administrative databases. The CMI *Dementia Care Program* outlines measures that may be used at the local or regional level to assess quality of care for patients with this condition.

Conclusions

The aging of the general population, the associated increasing prevalence of dementia as patients age, and the complex needs of patients with dementia as well as their families' needs all underscore the need for primary care physicians to be proficient in diagnosis and treatment of dementia. Effective diagnosis and management of dementia is becoming increasingly important for KP clinicians. Early diagnosis provides an opportunity for clinicians, patients, and caregivers to collaborate in setting goals for care and making decisions regarding care. Effective management of the medical and nonmedical needs of patients and their caregivers will help patients and their families to achieve a better quality of life in the face of complex, changing needs. ❖

^a The sites included Colorado, Sacramento, San Diego, San Francisco, Northwest, and Hawaii.

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**... all underscore
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