Distinguishing Differences among Dementia, Depression and Delirium

	DELIRIUM	DEPRESSION	DEMENTIA
How long has this been going on?	Days to weeks	Weeks to Months	Years
How abruptly did it start?	Abrupt, precise onset and identifiable date	Gradual onset that cannot be dated	Gradual onset that cannot be dated
Are the symptoms progressing? How fast?	Variable from moment to moment and hour to hour		Progressing gradually over years
Are the symptoms improving? If so, how fast?	Recovering in days to weeks	Recovers in months to a year but can be refractory	Generally irreversible
Are there any Psychomotor changes?	Prominent psychomotor changes (hypoactive or hyperactive)	Generally no psychomotor changes	Psychomotor changes occur at the later stage (unless depression concurrently develops)
Is there any physiological decline?	Prominent physiological decline	Less prominent physiological decline	Less prominent physiological decline
Is there any change in consciousness?	Clouded, altered, and changing level of consciousness	Consciousness generally is not altered	Consciousness not clouded until terminal
Is there any change in attention span?	Strikingly short attention span	Attention span not characteristically reduced	Attention span not characteristically reduced until late stage
Is there any disorientation?	Disorientation at the early stage	Generally no disorientation develops -- often gives “don’t know” answer to orientation questions	Disorientation develops later in the illness and often gives near-miss answers to orientation questions
Is there any change in sleep-wake cycle?	Disturbed sleep-wake cycle with hour-to-hour variation	Disturbed sleep-wake cycle with a complaint of insomnia or hypersomnia	Disturbed sleep-wake cycle with day-and-night reversal
Are there any changes in memory?	Day-to-day fluctuation in memory	Equal memory loss for recent and remote events. Has overt concern for memory loss	Memory loss greater for recent events than remote events

Benign senescent forgetfulness

= Age-Related Memory Impairment
= ‘Senior Moment’

- Age-related memory loss.
- Occurs usually *after 80 years old.*
- Natural part of aging secondary to:
  - Loss of nerve cells in hippocampus (up to 60% loss), and Superior temporal gyrus (up to 55% loss).
  - Accumulation of wastes (lipofuscin and amyloid).
  - Accumulation of free radicals.
  - Decreased neurotransmitter (up to 20%).
- **Does NOT usually progress to dementia because the brain has enough plasticity and redundancy to compensate.**

How to Manage Depression in Older Adults

I. **Non-Pharmacologic**: For mild to moderate depression or in combination with pharmacotherapy

A. Cognitive-behavioral therapy
B. Interpersonal therapy
C. Problem-solving therapy

II. **Pharmacologic**: For mild, moderate, and severe depression

Duration of therapy: at least 6-12 months following remission for patients with the first depressive episodes. But most older patients require maintenance antidepressant therapy

Name	Sedation or Excitation	Anticholinergic Effects	Potential for GI Upset	Orthostasis	Therapeutic dose (mg/d)	Half-life
Nortriptyline	X	X	X	X	25-50	Long
Fluoxetine	X	X	X		10-30	Long
Sertraline	X	X	X		25-150	Long
Paroxetine	X	X			10-40	Long
Trazodone	X	X		X	100-200	Moderate
Venlafaxine	X		XX		37.5-150	Moderate
Bupropion	X	X	X		150-300	Moderate

Name	Sedation or Excitation	Anticholinergic Effects	Potential for GI Upset	Orthostasis	Therapeutic Dose (mg/d)	Half-Life
Nortriptyline	x	x	x	x	25 – 50	Long
Fluoxetine	x	x	x		10-30	Long
Sertraline	x	x	x		25-150	Long
Paroxetine	x	x			10-40	Long
Trazodone	x	x		x	100-200	Moderate
Venlafaxine	x		x		37.5-150	Moderate
	x	x	x		150-300	Moderate

Diagnostic Criteria for Delirium

- **Disturbance of consciousness with change in cognition that is not better accounted for by a dementia**
- **Develops over hours to days**
- **Fluctuates during the course of the day**
- **Impaired ability to focus, sustain, or shift attention**
- **Cognition impaired (memory, orientation, language) or perceptual disturbance (misinterpretation, illusions, hallucinations)**
- **Associated with sleep-wake cycle disturbance, diturbed psychomotor behavior (restlessness, hyperactivity, or decreased psychomotor activity; may be stuporous), emotional disturbance including fear, EEG abnormalities (generalized slowing or fast activity)**
- **Evidence that disturbance is caused by a general medical condition, substance intoxication or withdrawal, or multiple etiologies**

Mnemonic DELIRIUM (S)

D Drugs
E Eyes, ears, and other sensory deficits
L Low O^2 states (e.g. heart attack, stroke, and pulmonary embolism)
I Infection
R Retention (of urine or stool)
I Ictal state
U Underhydration/undernutrition
M Metabolic causes (DM, Post-operative state, Sodium abnormalities)

(S) Subdural hematoma

Adopted from Saint Louis University Geriatric Evaluation Mnemonics Screening Tools (SLU GEMS)

How to Manage Delirium

A. General Supportive Measures:

Strategy	Measure
Environmental modification	Communicate and reorient to new surroundings
	Objects providing orientation (e.g. calendar, clock)
	Quiet, well-lit surroundings
	Family at bedside for reassurance
	Sitters
Stimulating activities during daytime	Cognitive activities (e.g. current event discussion, word games)
	Supervised ambulation, active range-of-motion exercises
Correction of sensory deficits	Eye glasses from home
	Adequate lighting in the room
	Magnifying lenses
	Cerumen removal
	Hearing aids from home
	Portable amplification device
Measures to promote normal sleep	Nighttime noise and interruption reduction
	Back massage
	Bedtime snack with warm milk Relaxation tapes
Prevention of dehydration	Oral or parenteral supplementation if BUN/creatinine ratio >18
Physical restraints	ONLY AS LAST RESORT. Use restraints to maintain patient safety e.g. prevention from pulling out tubes or catheters. (Remember: RESTRAINTS DO NOT PREVENT FALLS!)

B. Medications:

a. Acute agitation and aggression → Use <u>haloperidol (Haldol)</u> 0.5-2 mg orally or IV or IM (twice as potent as oral). Re-evaluate every 30 minutes. Observe for development of EPS.

b. Delirium due to alcohol or benzodiazepine withdrawal → <u>Use lorazepam (Ativan)</u> in doses of 0.5-2 mg every 4-6 hours. Because lorazepam itself may cause delirium, gradual withdrawal and discontinuation are desirable.

c. Delirium is due to alcohol → Use <u>thiamine</u> 100 mg per day (oral, IM, or IV).

Facts on Dementia

- **12% of adults over age 65** and **half of all adults over age 85** are affected by dementia of the Alzheimer's type.

- Because dementia causes progressive worsening cognitive functions, physical decline and behavior changes, economic, physical, and emotional burden on a family caring for a demented patient is high.

- Having dementia is often the reason for admission to a long-term care facility because family can no longer take care of their loved one with dementia at home.

- In outpatient setting, **nearly 75% of patients with dementia are not recognized by general practitioners (GP) and primary care physicians (PCP).**

- Even greater percentage of patients with mild dementia are not recognized by GP or PCP.

- **Only 12% of primary care physicians use cognitive screening tests in their practice.**

Different Types of Dementia

Alzheimer's disease (most common) if the patient has:

- DSM IV Criteria for dementia (Acquired loss of intellectual functions in *at least 3 of the following*: Memory, Language, Visuo-spatial function, Cognition, Emotion)
- Gradual onset and continuing decline
- Not due to another physical, neuro, or psych condition
- Not due to medication
- Cognitive impairment NOT due to delirium

Vascular dementia

- Abrupt onset
- Stepwise deterioration
- Prominent aphasia
- Motor signs like weakness (in stroke patients)

Lewy body dementia

- Visual hallucination and delusion
- Fluctuating course of mental status
- Extrapyramidal motor symptoms like Parkinson's
- Exaggerated response to antipsychotics such as Haldol

Clinical Features of Syndrome Dementia

- Multiple cognitive deficits, including *memory impairment PLUS at least one of the following;*
    - **Aphasia** (cannot carry out meaningful conversation even though there is no motor or sensory impairment)
    - **Apraxia** (cannot carry out purposeful movement even though there is no motor or sensory impairment)
        - **Constructional apraxia** (cannot copy simple drawings)
        - **Motor apraxia** (cannot use an object even though its nature is recognized)
        - **Sensory apraxia** (cannot use an object because its nature and purpose are not recognized)
    - **Agnosia** (= Cannot recognize sensory stimuli)
        - **Visual agnosia** (cannot recognize objects by sight)
        - **Tactile agnosia** (cannot recognize objects by touch or feel)
        - **Ideational agnosia** (cannot make up the idea of an object from its components).
    - **Disturbed executive functioning** such as planning, organizing, sequencing and abstracting
- Cognitive deficits severe enough to *impair occupational and social functioning*
- Cognitive changes *declining from previous function*
- Cognitive deficits *not occurring exclusively during delirium.* (Delirium is a medical emergency)

Mneumonic DEMENTIA P

DEMENTIA P (Potential reversible causes of apparent dementia)

D Drugs

E Eyes or ears (impaired communication)

M Metabolic

E Emotion (i.e., depression)

N Normal pressure hydrocephalus

T Tumor

I Infection (e.g., neurosyphillis)

A Anemia (i.e., B12 deficiency)

P Pain

Non-Pharmacological Approaches to Behavioral Problems in Demented Patients

I. Behavioral modification to create safe and positive home, social, and work environments (See **No Fail Approach to Dementia**)

II. Graded assistance with ADL's

III. Practice ADL's and give positive praise if the patient succeeds

IV. Prevent problem behaviors (See **No Fail Approach to Dementia**)

“No Fail Approach” to Dementia

Background:

The patient with dementia often has anosognosia, in which he/she does not recognize his/her own deficits. As a result, when the patient cannot perform tasks, he/she becomes embarrassed, frustrated, irritated, and/or agitated if he/she is reminded of his/her deficits. In order to decrease distress, it is crucial to create an environment of avoiding such embarrassing situations by using the following *“No-Fail Approach to Dementia”.*

“No Fail Approach”

1. Provide low demand environment – remove challenges
2. Simplify tasks into easy steps
3. Calendars and clocks help orient to time
4. Color code or graphically code environment
5. Provide predictable routine (e.g. meals, bedtime)
6. Explain activities simply before performing
7. Distract and redirect patient in problem situations
8. Create a safe environment
9. Don’t correct unless absolutely necessary
10. Always help the patient save face.

Management Examples

1. If the patient is unable to use utensils, use finger foods
2. Ask questions for which patient knows the answer

Examining and Interviewing the Demented Patient

Dementia is a condition of declining mental abilities. A diagnosis of dementia means that the patient may have difficulty reasoning over time. The patient may have problems remembering things and even people they love. Your patient may not be able to communicate his or her thoughts, feelings, needs, or physical problems. In fact, he or she may not even fully understand physical problems, such as pain.

Sadly, persistent pain is common among older persons, because they are more likely to suffer from problems such as arthritis and other chronic medical conditions. Many people think that pain is to be expected with aging and that nothing can be done. Older persons commonly have multiple medical problems which, when combined with dementia, can make diagnosis difficult.

If your patient has dementia, determining if he or she is experiencing pain may be up to you. Often, older persons deny that they have "pain." Instead, asking your patient whether he/she experiences "discomfort, aching, or hurting" may result in a more truthful answer. Even if dementia makes it impossible for your patient to respond, your careful observation and careful questioning of caregiver(s) can reveal important clues to let you know that he or she is experiencing pain.

What Are The Clues?

✿ **Facial Expressions.**
Does your patient frown, look frightened, grimace, wrinkle his or her brow, keep eyes closed tightly, blink rapidly, or exhibit any distorted expression?

✿ **Verbalizations/Vocalizations.**
Does he or she moan, groan, sigh, grunt/chant/call out, breathe noisily, ask for help, or become verbally abusive?

✿ **Body Movements.**
Is your patient's body posture rigid and/or tense? Does he or she fidget, pace or rock back and forth, have restricted movement, gait or mobility changes?

✿ **Behavioral Changes.**
Does he or she refuse food or have an appetite change? Is there any change in sleep/rest periods? Has he or she suddenly stopped common routines or begun wandering?

✿ **Mental Status Changes.**
Does he or she cry, become more confused, irritable or distressed?

When Does The Pain Occur?

✿ **During movement?**
Does your patient grimace or groan during personal care (such as bathing), walking, or transferring (from bed to chair, for example)?

✿ **When there is no movement involved?**
Does your patient appear agitated or have other behavioral changes, such as trouble sleeping, loss of appetite, or reclusiveness?

The Pain Assessment

If your patient has mild-to-moderate dementia and is able to communicate adequately, question him or her directly and use pain evaluation tools and scales. Ask the patient to give pain a number from 1 to 10, or use pictures of faces or a "pain thermometer" to help measure the pain.

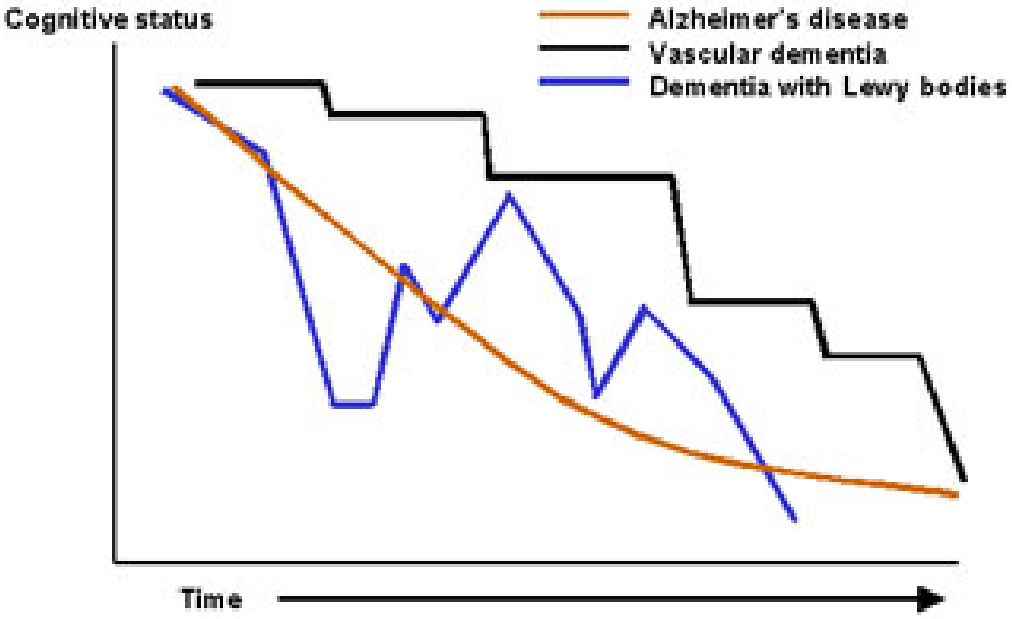
If your patient is not able to communicate adequately, you must observe your patient's signs of pain with as much detail as possible. Ask the caregiver what he/she has noticed and request examples. Focus on when the pain occurs. Have the patient or caregiver describe how it seems to be experienced (for example, burning, aching, stabbing and whether the pain occurs with or without movement). Ask the patient or caregiver what – if anything – relieves the pain. You should then be able to make a diagnosis and offer a plan to help relieve the pain.

An important part of the pain assessment is a history of all prescription and over-the-counter medicines your patient now takes and has taken in the past. Ask that all medications and dosages the patient has taken be written down and given to you. You should also perform a physical examination that will focus on the site(s) of pain – often the muscle/bone and nervous systems. Evaluate the patient's physical function (walking, range of motion of joints, etc). Laboratory tests and/or x-rays may be performed, as well.

Pharmacological Treatment of Agitation in Demented Patients

Symptoms	Drug	Dosing
Oral medication for non-acute agitation	Risperdal (resperidone)	0.25 – 1.5 mg/day
	Zyprexa or Zydis (olanzapine	2.5 -- 10 mg /day
	Seroquel (Quetiapine)	25 – 400 mg /day
IV or IM medication for acute agitation	Haldol (haloperidol)	0.5 – 2 mg /day
Agitation due to depression	SSRI (e.g. zoloft, celexa)	Zoloft: Celexa:
Agitation due to anxiety and irritability	Desyrel (Trazadone)	50-100 mg /day
	Busper (Buspirone)	30 – 60 mg /day

Progression of Dementia



Stages of Alzheimer's Disease

A. Preclinical stage (=Mild Cognitive Impairment)
- Mild memory, language, executive function and recall deficits
- NO ADL or IADL impairment
- NO cognition impairment
- MMSE score: 26-30

B. Early stage (develops in 1-3 years from onset of symptoms)
- Irritability and mood change
- Mild deficit in IADL (e.g. difficulty managing finances)
- No ADL impairment
- MMSE score: 22-28 (problems stating dates and names, problems with recent recall, mild difficulty copying figures)

C. Moderate stage (develops in 2-8 years from onset of symptoms)
- Delusions, agitation and aggression
- Restlessness, anxiety, depression
- Getting lost in familiar areas
- Moderate to severe deficit in IADL (e.g. Inability to cook, shop, and/or manage finances)
- Mild deficits in ADL (e.g. difficulty with dressing and grooming)
- Difficulty with language, comprehension
- **MMSE score: 10-21** (Disorientation to date and place, impaired calculation skills, impaired new learning)

D. Late stage (develops in 6-12 years from onset of symptoms)
- Motor and verbal agitation
- Nearly unintelligible verbal output
- Unable to copy or write
- Unable to recall remote memory
- Severe loss of ADL (e.g. incontinence, unable to dress or groom)
- MMSE score: 0-9 (Unable to copy or write, unable to recall remote memory)

Benefits of Early Diagnosis of Alzheimer's Disease

- Can prevent injury and accident by implementing safety measures (driving limitation, alarm on the door, safety device on the stove and oven)
- Can alleviate unnecessary family stress and misunderstanding such as blame and denial
- Can educate caregivers early about handling patients
- Can start advance planning while the patient is still competent (e.g. will, proxy, Power of Attorney, advance directives)
- Can give stabilizing treatments to delay progression of Alzheimer's disease (e.g. cholinesterase inhibitors, NMDA receptor antagonist)
- It is a patient's and family's right to know about the diagnosis

Early Warning Signs of Alzheimer’s Disease

- Memory loss getting worse
- Losing things
- Asking repetitive questions
- Suspiciousness
- Driving difficulties
- Financial difficulties (taxes, checkbook)
- Inappropriate behaviors (uninhibited sexuality, catastrophic reactions, shoplifting)
- Passivity
- Poor hygiene and inappropriate dress code
- Irritability, stubbornness, and anxiety
- Having trouble expressing thoughts
- Acting older or more eccentric than last year
- “No shows” for clinic appointments, arriving wrong day or at wrong time
- Noncompliant with medications and advice
- Excessive procrastination over clinical decisions
- Failure to thrive physically, socially, and emotionally

Pharmacologic treatment of Alzheimer's Disease

Class	Drug	Dosing
Cholinergic antagonist (for mild to moderate AD)	Aricept (donepezil)	Start at 5 mg per day, ↑ to 10 mg per day after 4 wks.
	Reminyl (galantamin)	Start at 4 mg 2x per day, ↑ to 8 mg 2x per day, after 4 wks. Max dose: 12 mg 2x per day
	Exelon (rivastigmine)	Start at 1.5 mg 2x per day, gradually titrate up to 6 mg 2x per day as tolerated. If the drug is stopped, retitrate.
NMDA antagonist (for moderate to severe AD	Namenda (memantine)	Start at 5 mg per day, increase by 5 mg at weekly intervals to max of 10 mg 2x per day, reduce dose if kidney function impaired.

CME CREDIT *EDUCATIONAL OBJECTIVE:* Readers will distinguish the various types of dementia other than Alzheimer disease

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Don't forget non-Alzheimer dementias

ABSTRACT

Dementia is commonly encountered in the elderly, with prevalence increasing with age. Although Alzheimer disease is the most recognized form of dementia, other types have distinct clinical features and are often overlooked. Proper identification aids patients, caregivers, and physicians in planning and management.

KEY POINTS

Vascular dementia presents as a sudden, stepwise progression of cognitive deficits.

Lewy body dementia often involves prominent visual hallucinations.

Progressive supranuclear palsy starts with gait and balance problems caused by downward-gaze palsy.

Many neurodegenerative conditions involve parkinsonism, but unlike Parkinson disease, they do not tend to respond well to levodopa, and dementia develops early.

Corticobasal degeneration involves markedly asymmetric parkinsonism.

Frontotemporal dementia involves dramatic behavior changes, including inappropriate impulsivity and complete apathy.

Patients with rapidly progressive dementia should be evaluated for a treatable condition such as antibody-mediated encephalitis.

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Dementia is not always due to Alzheimer disease. An accurate diagnosis is important, as the various causative conditions can differ in their course and treatment.

Dementia refers to cognitive impairment severe enough to interfere with the ability to independently perform activities of daily living. It can occur at any age but is most common after age 60. Some studies estimate that 13.9% of people age 71 and older have some form of dementia.[1] The prevalence increases with age, ranging from 5% at age 70 to 79 to 37% at age 90 and older.[1]

Alzheimer disease accounts for about 60% to 80% of cases,[2] or an estimated 4.7 million people age 65 and older in the United States, a number anticipated to climb to 13.8 million by 2050.[3]

Other types of dementia are less often considered and are challenging to recognize, although many have distinct characteristics. This article summarizes the features and management of the more common non-Alzheimer dementias:

- Vascular dementia
- Dementia with Lewy bodies
- Progressive supranuclear palsy
- Corticobasal degeneration
- Multiple system atrophy
- Parkinson disease dementia
- Frontotemporal dementia
- Primary progressive aphasia
- Normal-pressure hydrocephalus
- Rapidly progressive dementia (ie, Creutzfeld-Jakob disease, autoimmune disease).

VASCULAR DEMENTIA

After Alzheimer disease, vascular dementia is the most common dementia, accounting for about 20% to 30% of cases. Clinical criteria have not been widely accepted, although several have been published, including those in the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) and the National

TABLE 1

Characteristics of neurodegenerative dementias

Disease	Age (y) at diagnosis	Progression	Earlier cognitive symptoms
Alzheimer dementia	Late (> 65) Early (< 65)	Gradual	Early impairment of memory and attention
Vascular dementia	≥ 60	Sudden, stepwise	Executive dysfunction, deficits depend on location of stroke or lesion
Dementia with Lewy bodies	70s [6]	Gradual with fluctuation in cognition	Early Impairment of visual spatial skills and attention Delayed recall is relatively preserved in the beginning
Progressive supranuclear palsy	60s [8]	Gradual	Frontal behavioral disturbance, deficit in verbal fluency or abstract thoughts
Corticobasal degeneration	Around 60	Gradual	Deficit in frontal-parietal cognitive domains, including attention, concentration, executive function, verbal fluency
Multiple system atrophy	≥ 60	Gradual	Late dementia, with deficits in learning, recognition, memory, and verbal fluency
Parkinson disease dementia	70s[6]	Gradual	Impairment in attention, memory, executive and visuospatial functions
Frontotemporal dementia	Mostly < 65	Gradual	Difficulty with language and executive function or behavioral change
Primary progressive aphasia	Around 60	Gradual	Expressive language impairment
Normal-pressure hydrocephalus	50s–60s	Gradual	Impairment of attention, working memory, verbal fluency and executive function; recognition memory is preserved

REM = rapid eye movement

Common cognitive enhancers have demonstrated benefit for vascular dementia

Institute of Neurological and Communicative Diseases and Stroke-*Association Internationale pour la Recherche et l'Enseignement en Neurosciences*.

Risk factors for vascular dementia include cerebrovascular disease (hypertension, diabetes, hyperlipidemia) and coexisting conditions related to atherosclerosis (coronary artery disease, peripheral artery disease).

The Hachinski Ischemic Score is a good bedside tool to help differentiate Alzheimer dementia from vascular dementia.[5]

Sudden onset and stepwise decline

Vascular dementia often presents as a sudden and stepwise progression of cognitive deficits that stabilize and that are caused by vascular insults (TABLE 1).[6–10] Some patients have contin-

Visual hallucinations	Parkinsonism	REM sleep behavior disorder	Autonomic insufficiency	Dominant presenting symptoms
Rare	Late stages	Rare	Rare	Memory loss, cognitive impairment
Rare	Depends upon location of stroke	None	None	Sudden onset of cognitive deficits and impairment
Typical	Within first year	Common	Occasional	Parkinsonism or cognitive impairment
Rare	Symmetric,[9] (1/3 initially asymmetric)	Infrequent[7,8]	Common	Motor symptoms, balance problems, falls
Rare	Asymmetric[9]	Rare[10]	Rare	Motor symptoms
Rare	Symmetric	Common	Common	Autonomic failure, motor symptoms
Occasional at late stage	Asymmetric at onset	Common[7]	Common	Motor symptoms
Rare	Sometimes	Occasional	Infrequent	Behavioral changes
Rare	In late stages	None	None	Expressive language impairment
Rare	May present as parkinsonism	None	None	Gait impairment with urinary frequency and/or cognitive impairment

REM = rapid eye movement

In Lewy body dementia, cognitive impairment is progressive and fluctuating

uous decline after a vascular event, indicating that Alzheimer dementia may also be present. Dementia is then defined as a mixed type.

Behavioral problems such as physical aggression, hallucinations, paranoia, and mood fluctuations are common.[11]

Deficits depend on vascular areas affected

Cognitive deficits are heterogeneous and are often related to the location of the vascular insult. Involvement of subcortical areas may result in executive dysfunction, slowed processing speed, and behavioral changes.[12]

Executive dysfunction may be identified using the Trail Making Test (Part B) or the Executive Interview (EXIT25). Office-based tools such as the Folstein Mini-Mental State Examination, the Montreal Cognitive As-

TABLE 2

Diagnosis of dementia with Lewy bodies

Core features
Fluctuating cognition
Visual hallucinations
Parkinsonism

Suggestive features
Rapid-eye-movement sleep behavior disorder (physically acting out dreams)
Severe neuroleptic sensitivity
Low dopamine-transport activity in basal ganglia demonstrated by single-photon emission computed tomography or positron emission tomography

Diagnosis is probable if either two core features or one core feature and one suggestive feature are present

sessment, or the St. Louis University Mental Status Examination may also uncover these deficits.

Focal neurologic deficits may be found on clinical examination.

Structural neuroimaging may identify small strokes in areas of the brain affecting cognitive function or occlusion of a larger vessel associated with more profound neurologic deficits. Neuroimaging findings may not correlate with any significant decline noted by the patient, suggesting "silent" strokes.

Avoid anticholinergic medications and dopamine agonists for dementia with Lewy bodies

Treat symptoms and manage risk factors

Although the US Food and Drug Administration (FDA) has not approved any pharmacotherapy for vascular dementia, commonly prescribed cognitive enhancers have demonstrated some benefit.[13]

Behavioral problems such as aggression can be disturbing to the patient and the caregiver. Nonpharmacologic methods (eg, redirection, rescheduling care activities to avoid conflict, avoiding issues that lead to agitation) should be tried first to address these problems.

Drug therapy may be used off-label for neuropsychiatric symptoms such as hallucinations, delusions, and combativeness, but clinical trials of these agents for this purpose have shown mixed results,[14] and their use is often associated with significant risk.[15] Antipsychotic drugs are associated with a risk of death and pneumonia when prescribed for dementia. Many also carry a risk of QT prolongation, which is particularly concerning for patients with coronary artery disease or rhythm disturbances.

The key to reducing further decline is to optimize management of vascular risk factors to reduce stroke risk.

DEMENTIA WITH LEWY BODIES

Dementia with Lewy bodies, the next most common neurodegenerative dementia in the elderly, is characterized by progressive loss of cognitive function, prominent visual hallucinations, and parkinsonism (TABLE 1).[6] Disease progression usually occurs over years but can be more rapid than in Alzheimer disease.

Alpha-synucleinopathy results in dysfunction of synaptic vesicles in presynaptic terminals. Lewy bodies may be diffusely spread in cortical and subcortical areas (appearing as spherical masses).

Visual hallucinations are typical

The McKeith criteria[16] are the gold standard for diagnosing probable Lewy body dementia, based on clinical and imaging features (TABLE 2).

Visual hallucinations are usually well formed and detailed. They may initially be pleasant (eg, seeing children and little people) but may evolve to be accompanied by persecutory delusions.

Parkinsonism develops with or after dementia with Lewy bodies

Dementia with Lewy bodies and Parkinson disease dementia share many clinical and pathologic features; Parkinson dementia also is associated with cortical Lewy bodies.

Parkinsonian features include bradykinesia, masked facies, and rigidity. Resting tremor is less common.

The third report of the Dementia With Lewy Bodies Consortium recommends that the condition be diagnosed if dementia occurs before or concurrently with parkinsonism, and dementia with Parkinson disease should be diagnosed if dementia occurs in the context of well-established Parkinson disease.[16] The development of dementia within 12 months of extrapyramidal signs suggests dementia with Lewy bodies.

Cognitive deficits fluctuate

Cognitive impairment in Lewy body dementia is characterized by progressive dementia with

fluctuations in cognitive performance. Family members or caregivers may report that the patient can carry on a conversation one day and the next day be confused and inattentive. Compared with those with Alzheimer dementia, patients with Lewy body dementia have better delayed recall but more problems with executive functioning (planning) and visuospatial skills (following an unfamiliar route, copying a figure).

Specialized imaging provides clues

Dementia with Lewy bodies is associated with diffuse brain atrophy, with no established characteristic pattern on structural neuroimaging with computed tomography (CT) or magnetic resonance imaging (MRI).[17] The contrast agent ioflupane iodine-123 injection (DaTscan) used with single-photon emission CT (SPECT) detects dopamine transporters, which are reduced in parkinsonian syndromes. The scan can also help differentiate between Alzheimer dementia and Lewy body dementia by detecting the loss of functional dopaminergic terminals in the striatum in Lewy body dementia. Alpha-synuclein imaging may become another useful diagnostic tool in the future.

Alzheimer medications may help in dementia with Lewy bodies

Medications with anticholinergic effects and dopamine agonists should be discontinued because of possible effects on cognitive function and parkinsonism. In one clinical trial,[18] rivastigmine (Exelon) was found to help cognitive functioning as well as reduce psychotic symptoms in dementia with Lewy bodies, although a recent Cochrane review could not support the evidence for use of all cholinesterase inhibitors in Lewy body dementia.[19] In another trial,[20] memantine (Namenda) was found to improve global clinical status and behavioral symptoms of Lewy body dementia.

Treating hallucinations of dementia with Lewy bodies

Patients with dementia with Lewy bodies are extremely sensitive to the extrapyramidal side effects of neuroleptic drugs. Some evidence indicates that the atypical antipsychotic drug quetiapine (Seroquel) helps with prominent and disturbing psychotic features and is less likely to worsen parkinsonism than other antipsychotics.[21] The best evidence is for clozapine (Clozaril) as a treatment for hallucinations in Parkinson dementia, but the possible side effect of agranulocytosis limits its clinical use. Other atypical antipsychotics such as risperidone (Risperdal) and olanzapine (Zyprexa) are not recommended.[22]

PROGRESSIVE SUPRANUCLEAR PALSY

Progressive supranuclear palsy is a sporadic atypical parkinsonian disorder with onset between age 50 and 70. Familial cases are infrequent.

Progressive supranuclear palsy presents as early postural instability, vertical supranuclear gaze palsy, and axial muscle rigidity in the first few years. Disease progression is gradual: one study of 50 patients found that the median time from onset to the first key motor impairment (unintelligible speech, no independent walking, inability to stand unassisted, wheelchair-bound, or recommendation for feeding tube placement) was 4 years.[23]

Histologically, progressive supranuclear palsy is characterized by accumulation of tau protein aggregates in the basal ganglia, brainstem, and cerebral cortex. The degenerative process involves dopaminergic, cholinergic, and gamma-aminobutyric acid (GABA)-ergic neurons.[24]

REM sleep behavior disorder precedes motor symptoms in Lewy body, Parkinson, or multiple system atrophy dementia

Gait and balance problems predominate early in progressive supranuclear palsy

The most commonly used diagnostic criteria are from the National Institute of Neurological Disorders and Stroke. The diagnosis of probable progressive supranuclear palsy requires vertical gaze palsy and falls or the tendency to fall within the first year of disease onset and exclusion of other causes.

The earliest symptom is usually gait and balance impairment.[25] Falls (usually backward) and postural instability occur during the first year in 58% of patients.[26] Instead of turning en bloc as in Parkinson disease, patients with progressive supranuclear palsy tend to pivot quickly. Patients may also have a coarse groaning voice and moaning. Insomnia has been reported, but rapid-eye-movement sleep

behavior disorders are infrequent (unlike in Parkinson disease, multiple system atrophy, and Lewy body dementia).[27]

Apathy and extreme mood swings

Cognitive impairment is seen in 50% of patients in the early stage of progressive supranuclear palsy. It mostly involves the frontal lobe, including frontal behavioral disturbances (eg, apathy in 91% of patients[26] or pseudobulbar affect and extreme emotional lability) and deficits in abstract thoughts or verbal fluency (to test this, patients are asked to say as many words as possible from a category in a given time). Ideomotor apraxia (inability to correctly imitate hand gestures and voluntarily pantomime tool use, such as pretending to brush hair) is rare, despite corticobasal degeneration.[28]

Vertical gaze palsy

The hallmark of progressive supranuclear palsy is vertical gaze palsy. Initially, this involves slowing of vertical saccades, followed by diminished vertical gaze and more characteristic downward gaze palsy. These findings may develop over 3 to 4 years. Vertical gaze palsy leads to spilling food and tripping while walking.

Marked motor asymmetry helps differentiate corticobasal degeneration from most other neurodegenerative diseases

The gaze abnormality combined with rare blinking and facial dystonia form the classic facial expression of astonishment called "leonine facies." The face is stiff and deeply furrowed, with a look of surprise.

Axial (especially neck) rigidity is more prominent than limb rigidity. Retrocollis (the head is drawn back) occurs in less than 25% of patients. Parkinsonian features such as bradykinesia affect nearly half of patients by the time of diagnosis.

Instead of the classic symptoms of progressive supranuclear palsy, about one-third of patients present with progressive supranuclear palsy-parkinsonism, which involves asymmetric parkinsonism that initially responds to levodopa.[29]

MRI shows 'hummingbird sign'

Brain MRI shows atrophy of the brainstem, particularly the midbrain. Thinning of the superior part of the midbrain and dilation of the third ventricle ("hummingbird sign" on sagittal sections or "morning glory flower" on axial sections) support a diagnosis of progressive supranuclear palsy and differentiate it from Parkinson disease and other atypical parkinsonian disorders.[30,31]

Levodopa ineffective for supranuclear palsy

There is no treatment to slow progressive supranuclear palsy. Even in high doses, levodopa rarely alleviates parkinsonian features in a clinically meaningful way.[26] Successful experimental biologic therapies have been studied in animal models.[32] Davunetide is thought to help with neuronal integrity and cell survival through the stabilization of microtubules in preclinical studies, but it has not been used in clinical practice.[33]

CORTICOBASAL DEGENERATION

Corticobasal degeneration is a progressive, asymmetric movement disorder often manifesting initially with cognitive or behavioral impairment. It is associated with abnormality of the cytoskeleton protein tau. Onset is usually after age 60.

Asymmetric movement disorder with cognitive dysfunction

This diagnosis is clinical. Diagnostic criteria proposed in 2003 include the following core features[34]:

- Insidious onset and progressive course
- No identifiable cause
- Cortical dysfunction with at least one of the following: apraxia, alien limb phenomenon (one limb moves involuntarily with complex movements, eg, grabbing the other hand), cortical sensory loss, visual hemineglect, nonfluent aphasia
- Extrapyramidal dysfunction: focal rigidity unresponsive to levodopa, asymmetric dystonia.

An international consortium has developed more specific clinical research criteria for probable and possible corticobasal degeneration.[35] In a series of 147 patients, the following clinical features were found: parkinsonism (100%), higher cortical dysfunction (93%), dyspraxia (82%), gait disorder (80%), unilateral limb dystonia (71%), tremor (55%), and dementia (25%).[36]

Behavioral problems commonly include depression; apathy, irritability, and agitation are also reported.[37]

Cognitive testing may reveal deficits in frontal-parietal cognitive domains including attention and concentration, executive function, verbal fluency, and visuospatial skills.[38] Learning disabilities may be improved with verbal cueing (in contrast to Alzheimer disease). Patients may also have impaired graphesthesia (the ability to recognize writing on the skin only by the sensation of touch).[39,40]

Motor examination may reveal marked asymmetry. Hand, limb, speech, and gait apraxias are common. Gait is typically slow, with short steps and shuffling, and a wide-based or freezing gait. Arm swing may be absent on one side.

Asymmetric cortical atrophy

Early on, MRI may be normal. As the disease progresses, asymmetric cortical atrophy may be seen, especially in the posterior frontal and parietal lobes.

Levodopa ineffective in corticobasal degeneration

Corticobasal degeneration responds poorly to levodopa. Botulinum toxin has been used to help with dystonia and limb pain.

MULTIPLE SYSTEM ATROPHY

Multiple system atrophy is another atypical parkinsonian disorder, most often diagnosed in men over age 60. It is characterized by sporadic parkinsonism, cerebellar signs (involving balance and coordination), pyramidal tract dysfunction, and autonomic insufficiency in varying combinations. Two major subtypes are recognized, depending on whether the predominating presenting features are cerebellar signs or parkinsonism. In contrast to dementia with Lewy bodies, psychiatric symptoms are not a major feature, except possibly depression.[41]

Diagnosis requires a sporadic progressive disorder that has features of autonomic failure and poor response of parkinsonism or cerebellar ataxia to levodopa.[42]

Multiple system atrophy is usually not associated with dementia in the early stages, but patients develop deficits in learning, recognition, memory, and verbal fluency as the disease progresses.[43] Rapid-eye-movement sleep behavior disorder has been reported in more than half of patients.[44]

A neurologic examination provides clues

Parkinsonian features are usually symmetric, in contrast to idiopathic Parkinson disease. These signs may include akinesia with rigidity, postural instability, hypokinetic speech, and tremor.

Cerebellar signs include nystagmus and dysarthria (speech disturbance), and gait and limb ataxia.

Pyramidal features include extensor plantar responses and hyperreflexia.

Autonomic dysfunction includes orthostatic hypotension, bladder and rectal atony, loss of sweating, urinary or fecal incontinence, and erectile dysfunction.

Electromyography may demonstrate decreased anal sphincter tone.

MRI shows atrophy of putamen and pons

Brain MRI may show atrophy of the putamen (hypointensity of the putamen with a hyperintense rim). Pons atrophy may also be present, revealing a "hot cross bun" sign in axial images. These combined findings have specificity above 90% but limited sensitivity. These signs are useful to distinguish multiple system atrophy from Parkinson dementia, but their absence does not exclude the diagnosis of multiple system atrophy.[45,46]

Multiple system atrophy typically responds poorly to levodopa

Levodopa may improve movement and rigidity, but many respond poorly to treatment or lose response after a few years. Fludrocortisone (Florinef) or vasoconstrictors such as midodrine (Orvaten, Proamatine) may help with orthostatic hypotension.[47,48]

PARKINSON DISEASE DEMENTIA

Dementia eventually develops in most patients with Parkinson disease. Older age and the akinetic rigid form of the disease are associated with higher risk. Diagnosis of idiopathic Parkinson disease before the development of dementia is essential for the diagnosis.

The Movement Disorder Society Task Force has developed new diagnostic criteria.[49] Deficits must be present in at least two of the

Previous diagnosis of Parkinson disease is essential for the diagnosis of Parkinson dementia

four core cognitive domains (attention, memory, executive, and visuospatial functions) and must be severe enough to affect daily functioning.

Behavioral symptoms such as affective changes, hallucinations, and apathy are common.

MRI shows characteristic brain atrophy in Parkinson disease dementia

MRI shows reduced gray matter volume in the frontal lobe in patients with Parkinson disease without dementia compared with controls. In Parkinson disease dementia, reduced volume extends to temporal, occipital, and subcortical areas. No significant volumetric differences have been observed in Parkinson dementia compared with dementia with Lewy bodies.[50] A greater decrease of glucose metabolism has been found in the inferior parietal and occipital lobes in Parkinson disease dementia than in Parkinson disease without dementia.[51]

Rivastigmine effective for dementia

A Cochrane review supports the use of acetylcholinesterase inhibitors in patients with Parkinson disease dementia, with a positive impact on global assessment, cognitive function, behavioral disturbance, and activities of daily living rating scales.[19] At this time, rivastigmine is the only FDA-approved cholinesterase inhibitor for treating Parkinson disease dementia. In clinical trials, memantine did not improve global clinical status or behavioral symptoms of dementia of Parkinson disease.[51]

Rivastigmine is the only drug approved for treating Parkinson dementia

FRONTOTEMPORAL DEMENTIA

Frontotemporal dementia frequently starts before age 65 and accounts for 20% to 50% of dementias in this age group.[52] Recognition of the condition in older patients is also growing.[53] Frontotemporal dementia encompasses a spectrum of dementias, including behavioral variant frontotemporal dementia, semantic dementia, and progressive nonfluent aphasia.[54]

Gradual onset of uncharacteristic behaviors

Accepted diagnostic criteria include core features of gradual onset, early decline in social and interpersonal conduct, early impairment of self-regulation, emotional blunting, and loss of insight. Many patients are diagnosed with psychiatric conditions. Changes reported by family and caregivers typically deviate substantially from the person's usual behavior, such as impulsive and inappropriate behaviors or complete withdrawal and apathy.

Language sometimes affected in frontotemporal dementia

Language impairment may be present in some variants. Behavioral and language changes often accompany other forms of dementia (Alzheimer disease, vascular dementia, primary progressive aphasia), making diagnosis more challenging. Office-based testing often does not reveal any deficits, although the Frontal Behavioral Inventory may help.[55] A referral to a clinical neuropsychologist may help identify and quantify cognitive impairments.

MRI shows frontotemporal lobes affected

Structural neuroimaging may not reveal abnormalities initially, but with progression, atrophy may be seen in the frontal and temporal lobes. Functional neuroimaging (positron emission tomography, brain SPECT, functional MRI) show hypometabolism in the same areas.

Treat symptoms

There are no specific FDA-approved therapies for frontotemporal dementia. Acetylcholinesterase inhibitors can help progressive nonfluent aphasia in some cases. Selective serotonin reuptake inhibitors may alleviate depressive symptoms, and low doses of atypical antipsychotic medications may help with impulsivity, disinhibition, and aggressive or disruptive behaviors.[56]

PRIMARY PROGRESSIVE APHASIA

Language impairment predominates

Primary progressive aphasia is a rare form of dementia in which symptoms typically develop around age 60. Pathology is varied. In a study of 60 patients with initial clinical symptoms of primary progressive aphasia, postmortem histology of brain tissue revealed various findings, including those consistent with Alzheimer pathology and motor neuron disease-type inclusions.[57]

Patients typically present with expressive language problems as the primary deficit for

the first 2 years of the disease, with preservation in other cognitive areas such as memory, visuospatial skills, and executive function.[58] Office-based testing may overstate the severity of the dementia, given the dependence of performance on intact language.

It is important to distinguish primary progressive aphasia from other dementias that also affect language. In the frontal variant of frontotemporal dementia, the primary language problem is anomia (inability to name objects) or diminished speech output, which may be accompanied by behavioral problems. Semantic dementia affects word recognition as well as comprehension. In Alzheimer disease, language may be affected along with memory and other areas of cognitive function.

Imaging shows focal degeneration in the left hemisphere

Structural neuroimaging does not initially reveal any deficits, but later it may reveal atrophy in the frontal, perisylvian complex, and temporal areas of the left hemisphere, reflecting the focal nature of the degeneration.[59] Functional neuroimaging (positron emission tomography, SPECT) may reveal hypometabolism or diminished blood flow in these areas prior to changes in structural neuroimaging.[60]

Other communication methods may help

There are no FDA-approved therapies for primary progressive aphasia. Off-label use of some agents (eg, selective serotonin reuptake inhibitors and small doses of antipsychotic medications) has been found useful in small trials.[56] Patients may benefit from learning other forms of communication, such as using sign language, laminated cards with printed words or pictures, or artificial voice synthesizers, to express their needs.

NORMAL-PRESSURE HYDROCEPHALUS

Classic triad: Gait, cognition, incontinence

With the onset of symptoms in the sixth or seventh decade, normal-pressure hydrocephalus affects less than 1% of people age 65 and older. It represents up to 5% of dementias, although estimates are influenced by the varied criteria for diagnosis.[61] It is characterized by the classic triad of gait impairment, cognitive impairment, and urinary frequency or incontinence.[62]

Symptoms progress over a period of years, with gait impairment often predominating. As this triad is common in the geriatric population, identifying other explanations is important. Gait impairment caused by spinal stenosis, peripheral neuropathy, or parkinsonism should be explored. Cognitive impairment could be due to depression, Alzheimer disease, or other forms of dementia. Urinary symptoms may be related to detrusor instability or an enlarged prostate.

Gait impairment initially manifests as slowing of gait, but progresses to difficulty with gait initiation. Gait tends to be wide-based (stance more than 1 foot wide).

Cognitive impairment is typically subcortical, manifested as slowed processing speed and impaired executive function. Recall and working memory may be impaired.

Enlarged ventricles seen on imaging in normal-pressure hydrocephalus

Structural neuroimaging reveals enlarged ventricles (Evan's ratio > 0.358). This can be difficult to distinguish from ventriculomegaly due to cerebral atrophy; assessing the callosal angle on MRI may distinguish the two.[63,64] Diagnosis of normal-pressure hydrocephalus can be confirmed using a cerebrospinal fluid infusion test to assess resistance of fluid to resorption.[65]

Frontotemporal dementia accounts for up to 50% of dementias in people younger than 65

Treat with cerebrospinal fluid drainage

Specific tests should be performed to determine candidacy for surgery. These include a high-volume lumbar puncture (40 to 50 mL) or a trial of external lumbar drainage (10 mL per hour for 48 to 72 hours).[65] Definitive treatment is surgical placement of a shunt to allow cerebrospinal fluid to drain into the atria or peritoneal cavity.

Surgery may improve gait, but cognitive symptoms often remain,[66] and clinical decline may occur after the shunt is placed. Once gait dysfunction is resolved, other explanations for cognitive impairment or residual gait impairment should be considered. An underlying reason for progression of normal-pressure hydrocephalus symptoms after surgical intervention should be identified.[67]

TABLE 3

Diagnosis of Creutzfeldt-Jakob disease

Two of the following must be present:

Myoclonus (muscle twitching)

Pyramidal or extrapyramidal findings

Visual or cerebellar deficits

Akinetic mutism (patient appears alert but is unresponsive)

In addition, one of the following tests must be positive:

Electroencephalography positive for periodic sharp-wave complexes

Cerebrospinal fluid with a positive 14-3-3 protein assay

Magnetic resonance imaging with high signal abnormalities in the caudate nucleus and putamen in diffusion-weighted imaging or fluid-attenuated inversion recovery

RAPIDLY PROGRESSIVE DEMENTIAS

Rapidly progressive dementias are among the most challenging of dementing illnesses. They are characterized by a subacute course and an accelerated rate of decline, developing in less than 2 years. Evaluation should typically be more comprehensive than for other types of dementia. The main goal is to diagnose potentially treatable conditions, such as Hashimoto encephalopathy or paraneoplastic limbic encephalitis, and to distinguish these conditions from diseases with a very poor prognosis, such as Creutzfeldt-Jakob disease.

It is important to distinguish primary progressive aphasia from other dementias that affect language

Creutzfeldt-Jakob disease

Creutzfeldt-Jakob disease is a fatal prion-related neurodegenerative illness. Sporadic disease is most common, but variant, familial, and iatrogenic types have been reported. The most common initial symptoms in sporadic disease are cognitive (39%), cerebellar (21%), behavioral (20%), constitutional (20%), sensory (11%), motor (9%), and visual (7%).[68]

Chronic neurodegenerative diseases can be misdiagnosed as Creutzfeldt-Jakob disease because of an atypical time course and multisystem neurologic findings.

The US Centers for Disease Control and Prevention has adopted criteria for diagnosing probable Creutzfeldt-Jakob disease (TABLE 3). Routine investigations should also not suggest an alternative diagnosis.[69]

Autoimmune diseases

Autoimmune conditions may present as a rapidly progressive dementia, including Hashimoto encephalopathy and antibody-mediated limbic encephalitis, either associated with cancer (paraneoplastic) or without cancer (nonparaneoplastic).

Paraneoplastic limbic encephalitis is a group of inflammatory conditions involving antibodies produced within the cerebrospinal fluid and serum resulting in neurologic symptoms. These antibodies react against proteins expressed mostly by a tumor somewhere else in the body.[70]

Hashimoto encephalitis is a subacute to chronic encephalopathy that may present as dementia with abnormally high levels of thyroid antibodies. The symptoms can vary from confusion to psychosis. There are two main presentations: one involves a relapsing-remitting course with stroke-like episodes (27% of patients) and the second consists of insidious onset of seizures (66% of patients).

Diagnosis involves testing for elevated antithyroid peroxidase and thyroglobulin antibodies. MRI findings are nonspecific. Hashimoto encephalitis responds to treatment with corticosteroids, plasmapheresis, or immunosuppressive therapy.[71]

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Diagnosis and Management of Dementia in Long-Term Care

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Dementia is a complex medical illness that primarily affects older adults. The prevalence of dementia can exceed 60% in U.S. long-term care facilities, and management of the disease can represent a challenge to clinicians. Diagnosis of dementia relies mostly on ascertainment of the resident's history, and the evaluation should include an interview with a family member or close friend. Treatment of cognitive impairment due to Alzheimer's disease, the most common cause of dementia, may include cholinesterase inhibitors and/or memantine. Behavioral symptoms are common among residents with dementia. Treatment should include nonpharmacologic strategies, but may require cholinesterase inhibitors, antidepressants, or antipsychotics. Residents with advanced dementia are also at risk for falls and fractures, pressure sores, and weight loss. Use of preventive strategies to reduce risk and enable early recognition of these common conditions is essential. Early identification of end-of-life wishes is extremely important. (*Annals of Long-Term Care: Clinical Care and Aging* 2005;13 [11]:17-24)

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INTRODUCTION

With as many as 12% of individuals over age 65 and half of all individuals over age 85 affected by dementia of the Alzheimer's type,[1] the economic and social impact of this disease is tremendous.[2] Due to worsening cognitive function, concurrent physical declines, and changes in behavior, persons with Alzheimer's disease (AD) and other dementias often require management in a long-term care setting. It is estimated that 60-80% of elderly nursing home residents have dementia.[3] Since increasing age is associated with both dementia and nursing home admissions, the number of persons with dementia residing in nursing homes is expected to increase.[4] Additionally, the average length of stay for nursing home residents is increasing, with more than one-third residing in nursing homes for three years or longer.[4] Although many older adults are admitted to nursing homes after the diagnosis of AD, the longer duration of stay may result in more individuals developing and being diagnosed with dementia after their admission to a skilled nursing facility.

DIAGNOSIS OF AD IN THE NURSING HOME

The diagnostic criteria for AD require a history of a gradual onset and progressive decline in memory with at least one other cognitive domain affected.[5] The cognitive impairment must also negatively impact the ability to perform activities at the previous level of function. Establishing a diagnosis of AD in persons recently admitted to a nursing home can be challenging, especially if the individual was not previously known by the clinician. An important component of the initial assessment is an interview, in person or by phone, with a family member or friend who can provide details of the cognitive and physical function of the individual prior to admission. A list of pertinent questions that will assist in the diagnosis of dementia is included in Table I.

Table I: Suggested Questions to Ask a Reliable Informant about a Resident's Cognitive Function

1. What prompted the individual's admission to long-term care? Was a change in memory or thinking a factor in the decision?
2. What changes have been noted in his/her memory and thinking?
3. If changes noted, describe onset, course, and any prior evaluation or treatment.
4. Is he/she able to remember medications and appointments?
5. Has there been a decline in abilities to handle financial and business matters?
6. Has there been a change in personality or behavior?
7. Was he/she able to perform shopping and community activities independently?
8. Has there been a decline in personal care or hygiene?
9. Is he/she safe to be left alone?

While administering a cognitive screening tool may be helpful, the informant's sensitivity to early cognitive change can exceed that of neuropsychologic tests.[6] However, there are several screening tools available to the clinician including the Short Blessed Test[7] and the Mini-Mental State Examination,[8] which are relatively easy to administer. Caution must be used in interpreting the results of these tests, since older adults with higher educational levels may score in the normal range, and less educated persons or those with sensory deprivation without cognitive decline may have errors. The key is to focus on whether there has been a decline from the previous level of function. Although the screening tools may be less important in establishing the initial diagnosis, they are sometimes useful in subsequent assessments to follow cognitive decline. Yearly cognitive assessments are recommended in persons without a prior diagnosis of dementia, and twice-yearly follow-up assessments should be considered in those with known cognitive impairment. A review of medications, and determinations of thyroid function and vitamin B_{12} levels is warranted to exclude potential contributors to cognitive dysfunction in persons with cognitive impairment.

NON-ALZHEIMER'S CAUSES OF COGNITIVE IMPAIRMENT

Admission to a nursing home is often prompted by an increased need for assistance with activities of daily living (ADLs) or by behavioral changes. Since dementia can be associated with both, it is important to consider AD and other causes of cognitive impairment in the differential diagnosis. Hallucinations and delusions may occur in moderate and severe AD; however, if persons with mild memory loss have hallucinations or delusions, dementia with Lewy bodies (DLB) must be considered. Dementia with Lewy bodies is characterized by cognitive impairment, prominent hallucinations, parkinsonism, and fluctuations in attention and alertness. Unexplained falls, delusions, syncope, and sensitivity to neuroleptics can support the diagnosis of DLB. The latter issue is important when determining appropriate drug treatment for psychosis, and there are data to suggest that these persons may be more responsive to cholinesterase inhibitors. Frontotemporal dementia is less common, but should be considered if early loss of personal and social awareness, hyperorality, and pronounced language dysfunction are observed, especially in persons under 70 years of age.

Vascular disease often coexists with AD and other dementias, but certainly can occur as the primary cause for cognitive impairment. Vascular dementia due to cerebral infarcts is the most common clinical diagnosis and is characterized by an acute cognitive decline temporally related to an acute cerebrovascular event. The history of an acute-onset or stepwise decline in cognition, and evidence of cerebral infarct by neuroimaging, are generally sufficient for the diagnosis of vascular

dementia. The presence of infarcts on brain imaging alone, however, is insufficient for the diagnosis since infarcts often coexist with other dementias. Additionally, other vascular changes resulting in cognitive impairment, such as cerebral amyloid angiopathy and subcortical arteriosclerotic disease, may present with an insidious onset similar to AD, but with more executive dysfunction (ie, sequencing, abstract thinking, organization).

Depressive symptoms may be among the initial presenting features of dementia, and depression often coexists with dementia. Consequently, distinguishing depression from early cognitive impairment can be challenging. Although symptoms of major depression can mimic dementia, cognitive impairment associated with depression is usually not reversible.[9,10] The majority of older adults with depression and cognitive impairment will continue to have cognitive impairment even after the depressive symptoms improve. Interviewing the resident and an informant is key to differentiating the two disorders. Using a screening tool such as the Geriatric Depression Scale in the early stages of the disease[11] may also be helpful. Characteristics of the most common causes of cognitive impairment are listed in Table II.

TREATMENT OF DEMENTIA IN LONG-TERM CARE

The treatment of residents with dementia must be individualized to meet their physical, spiritual, and psychosocial needs. Communicating with the resident, family, and other members of the health care team is extremely important in delivering quality care.

Review of Medications

Initial management of dementia should include addressing potential contributors to cognitive impairment such as adverse medication effects. Nursing home residents are prescribed more medications

Table II: Common Causes of Cognitive Impairment in Older Adults and Key Differentiating Factors

Disease	Initial Presentation	Memory Loss	Executive Dysfunction	Hallucinations	Parkinsonism	Apathy
Alzheimer's disease	Insidious memory loss	Hallmark	Occurs, but less noticeable than memory loss	Occasionally in moderate-to-severe	Occasionally in moderate-to-severe	Occurs, but may indicate depression
Vascular dementia	Sudden memory loss or executive dysfunction	Sudden after stroke	May be predominant feature in some cases	Seldom	Seldom	If present, likely due to depression
Dementia with Lewy bodies	Parkinsonism, hallucinations, fluctuations	Mild initially	Occasionally	Frequent, often visual	Frequent	May occur
Frontotemporal dementia	Disinhibition, aphasia, or apathy	May be mild	Common	Rare	Rare	Common
Depression	Apathy, low mood, forgetfulness	Inconsistent forgetfulness	Seldom	Rare	Rare	Usually present

than any other patient group, and are likely to suffer from adverse effects of these medications.[12] Residents with dementia are particularly susceptible to the adverse effects of medications on the central nervous system, which can result in delirium, dizziness, functional decline, injurious falls, anorexia, and disrupted sleep patterns. Criteria for inappropriate medication use in these residents have been adopted by nursing homes.[13] Classes of drugs to avoid or minimize include antihistamines, traditional antipsychotics, tricyclic antidepressants, bowel/bladder antispasmodics, benzodiazepines, muscle relaxants, and barbiturates.

Treatment of Cognitive Impairment

Cognitive symptoms of dementia may include declines in memory, language, praxis, and executive function. These changes can impair the person's ability to perform self-care, participate in activities, and communicate with others. Two classes of medications have been approved by the Food and Drug Administration (FDA) for the treatment of cognitive symptoms due to AD: cholinesterase inhibitors and *N*-methyl-D-aspartate (NMDA) receptor antagonists. Three cholinesterase inhibitors—donepezil, rivastigmine, and galantamine—are routinely used and have similar efficacy and side effects. These drugs were initially studied in community-dwelling patients with mild-to-moderate AD, and have shown consistent but modest delays in cognitive decline.[14-16] Clinical stabilization should be expected rather than frank improvement in cognition. Given the lack of other effective and safe drugs for the treatment of dementia, their clinical use has been expanded to persons with moderate-to-severe AD[17] and those with non-Alzheimer's dementia.[18] Although cholinesterase inhibitors are generally well-tolerated, their efficacy and cost-effectiveness in the nursing home setting are unclear.[19,20] These agents have been shown to preserve the ability to perform ADLs in some studies,[21,22] which remains a worthwhile goal for residents in the nursing home, and they may reduce costs of care. Some data suggest that cholinesterase inhibitors may also have a role in managing problem behaviors. In light of the potential risks associated with antipsychotic agents outlined below and the lack of efficacy for other medications, cholinesterase inhibitors are an attractive agent for the first-line management of both cognitive and neuropsychiatric symptoms of dementia.[19,23] Prior to initiating a cholinesterase inhibitor, the rationale and expectations should be clearly outlined to the resident and his or her surrogate decision makers. Adverse effects, including nausea, diarrhea, and anorexia, can be minimized by appropriate dose initiation and titration (Table III).

Memantine is the only currently available NMDA receptor antagonist, and was recently approved for the treatment of moderate-to-severe AD.[24] It may reduce functional and cognitive decline and is generally well tolerated. One advantage of memantine is that it has been initially studied in persons with more severe dementia who are likely to require long-term care. Dose titration is recommended to minimize side effects. Combination therapy with both memantine and a cholinesterase inhibitor appears to have additive benefits.[25] A summary of the medications used for the treatment of AD is shown in Table III.

Persons with vascular dementia and other dementia subtypes often have cardiovascular and cerebrovascular risk factors such as hypertension, diabetes, atrial fibrillation, elevated homocysteine, and dyslipidemia. Appropriately addressing these risk factors may prevent further physical and cognitive decline regardless of the underlying etiology of the dementia. Data would indicate that similar outcomes can be achieved by treatment with cholinesterase inhibitors in mixed or vascular dementias.[26]

Treatment of Behavioral Symptoms

Neuropsychiatric symptoms affect many individuals with dementia and often contribute to nursing home placement. Acute changes in behavior are often the manifestation of a change in physical health, such as a urinary tract infection, pneumonia, or an adverse drug reaction. Chronic behavioral problems include wandering, agitation, aggression, delusions, hallucinations, repetitive vocalizations, and refusal of care. Observed behaviors can be the result of comorbid

Table III: Summary of Pharmacologic Agents for the Treatment of Alzheimer's Disease

	Frequency	Initial Dose	Dose Escalation	Adverse Effects
Donepezil	Once daily	5 mg	Increase to 10 mg after 4 weeks	Nausea, fatigue, diarrhea, vomiting
Rivastigmine	Twice daily	1.5 mg	Increase by 1.5 mg bid every 2-4 weeks up to total daily dose of 9-12 mg	Nausea, weight loss, diarrhea
Galantamine	Twice daily	4 mg	Increase to 8 mg bid after 4 weeks; an additional increase to 12 mg bid may be considered 4 weeks later	Nausea, vomiting, anorexia, diarrhea
Galantamine ER	Once daily	8 mg	Increase to 16 mg daily after 4 weeks; an additional increase to 24 mg daily may be considered 4 weeks later	Nausea, vomiting, anorexia, diarrhea
Memantine	Once daily initially, then twice daily	5 mg	Increase by 5 mg weekly to total of 20 mg daily (5 mg qd, 5 mg bid, 10 mg in AM and 5 mg in PM, 10 mg bid)	Headache, dizziness, constipation

ER = extended-release.

psychiatric diseases (depression, anxiety, psychosis, etc), which can be difficult to diagnose in the setting of dementia.

The mnemonic **DRNO** (**D**escribe the behavior, **R**eason for the behavior, **N**onpharmacologic approach, **O**rder medication as a last step) may provide a useful approach to managing these behaviors. The goal in addressing difficult behaviors is to specifically describe the unwanted activity, and identify any precipitants (eg, roommate stress, pain, need to void, anxiety). Nonpharmacologic approaches based on behavioral interventions and restructuring the environment should be attempted first and are listed in Table IV.[27] Medications should be the last step unless the behavior poses an immediate threat to the person or others.

Atypical or "novel" agents for psychosis have been widely embraced, but are inadequately studied in older adults[23] and may cause sedation, impaired balance, weight gain, glucose intolerance, and orthostasis. Persons with DLB are particularly susceptible to the extrapyramidal side effects of antipsychotics and may develop severe parkinsonism. Despite these concerns, newer antipsychotics can be useful for managing difficult behaviors. Based on the available literature and experience, a summary of pharmacologic agents that may be used for behaviors is listed in Table V. For difficult cases, referral to a geropsychiatrist is advised.

The FDA recently disseminated a public health advisory regarding untoward deaths from "novel" antipsychotic use in elderly persons with behavioral disturbances.[28] Specifically, the FDA reported on a total of 17 placebo-controlled trials that were performed with olanzapine, aripiprazole, risperidone, and quetiapine in elderly persons with dementia and

behavioral disorders. Fifteen of these trials showed an increase in mortality in the drug treatment group compared to the placebo group. These studies enrolled a total of over 5000 individuals, and several analyses have demonstrated a 1.6-fold increase in mortality. The specific types of deaths included heart failure, sudden death, or infections (pneumonia).[28] Although these studies are not yet available in peer-review format, the findings appear to be robust and need to be taken into consideration when prescribing these types of medications. It should also be noted that the FDA plans to label these medications with a "Black Box" warning, and they also will expand this warning to other medications, such as clozapine and ziprasidone. These agents should be used with particular caution in persons with cardiovascular and cerebrovascular disease.

In many residents with dementia and behavioral disturbances, the risk/benefit ratio for prescribing these medications still warrants utilization of these drugs. Each case should be individualized and a specific determination made whether to initiate the medication or to taper and discontinue these agents. Until further data are available, the following are recommendations regarding antipsychotic drug use in persons with dementia:

- Efforts should be made to determine reversible and treatable causes for behavioral problems in persons with dementia (eg, infections, drugs, pain control).
- Attempts should be made to handle behavioral difficulties using nonpharmacologic methods.
- Cholinesterase inhibitors with or without memantine should be considered for behavioral symptoms, and antidepressants should be considered when depressive or anxiety symptomatology is present.
- If an antipsychotic medication is to be initiated or continued, discussion with the resident and family should occur regarding the recent FDA findings, and the discussion of the acceptability of these risks should be documented in the resident's chart.
- Residents should routinely be monitored for hyperglycemia, weight gain, excessive sedation, and parkinsonism.

Table IV: Environmental or Behavioral Interventions for Managing Difficult Behaviors in Dementia

- Educate about dementia and agitation
- Reduce isolation
- Talk to residents/distract attention
- Join AA support groups
- Identify specific precipitants to behavior
- Provide a predictable routine
- Separate disruptive persons from quieter persons
- Experiment with targeted changes to schedule
- Provide reassurance and verbal efforts to calm
- Structure the environment
- Control door access, use safety latches to prevent egress
- Provide orienting stimuli
- Provide bright daytime lighting
- Use a nightlight in bedroom

ETHICS AND END-OF-LIFE ISSUES

When discussing medical options, all parties should be aware of the risks and benefits, the probable outcome of the intervention or refusal of the plan, and any additional alternatives to the diagnostic test or procedure.[29] The residents' decision-making capacity should be routinely assessed since many are able to voice their desires in the mild and moderate stages of dementia. Determining capacity should include assessing the ability to communicate choices, understand and retain relevant information, appreciate the situation and its consequences, and manipulate information rationally.[30] Attempts to solve differences of opinion should be made with family conferences to include all members of the treatment team and concerned family members.

Weight loss and dysphagia are often common in the care of the resident with advanced dementia. In general, weight loss is considered significant if there is a 5% loss of body weight in one month, 7.5% loss in three months, or 10% loss in a six-month period

Table V: Pharmacologic Agents for Treatment of Behavioral Symptoms in the Elderly

Behavior	Medications
Hallucinations/delusions	Risperidone 0.25-2 mg, divided doses Quetiapine 50-400 mg, divided doses
Agitation	Cholinesterase inhibitors (see Table III) Trazadone 50-100 mg daily
Chronic anxiety	Sertraline 50-100 mg qd Escitalopram 10 mg qd Buspirone 5-15 mg tid
Acute anxiety	Lorazepam 0.5 mg orally or intramuscularly (as needed for short-term use)
Insomnia	Trazadone 50-100 mg qhs Zolpidem 5 mg qhs

of time.[31] Weight loss and anorexia have many potential causes including restricted diets, poor dentition, thyroid disease, medications (cholinesterase inhibitors, selective serotonin reuptake inhibitors, diuretics), food preparation and presentation, and possibly ethnic food preferences.

Management of weight loss should include treatment of reversible causes, an evaluation by a dietician, and judicious use of nutritional supplements.[32] Some residents with dementia have oral apraxia and/or dysphagia and require more feeding time or a modification in diet. Families should be advised of this need and the possible limitations of staff time to assist these residents. Family members and volunteers should be encouraged to assist with feedings as long as the person is cooperative. If weight loss continues, a discussion about artificial nutrition and hydration should occur, preferably prior to a crisis.

The risks and benefits of tube feedings and gastrostomy (G-tube) placement should be discussed with the resident and/or the surrogate decision maker early in the disease. Tube feedings can provide calories and prevent dehydration; however, there is a paucity of data to indicate that tube feeding in advanced dementia will prevent pneumonia, prevent or improve pressure sores, or delay mortality.[33] The lack of data to support tube feedings has led some authorities to conclude that long-term care facilities should not offer this option in advanced AD.[34] Obviously, the decision to implement or withdraw tube feedings will be dependent on many factors, including institutional and state-specific policies.[35] As with all therapies, this decision should be based primarily on the resident's wishes.

Advance directives should be discussed with residents and family members upon admission to a facility. A surrogate decision maker is usually required to admit to most long-term care facilities, and open communication between the medical and nursing staff and the health care proxy are imperative. Many residents and/or family members desire to avoid cardiopulmonary resuscitation, intubation, and/or intensive care. As dementia severity advances, discussions should include the desire for hospitalizations, tube feedings, and continuation of certain medications based on the current quality of life, futility of treatment, or the resident's wishes. Preferably, these discussions should occur during a time of stability and not during a time of crisis.

There is a growing trend to include palliative care or "treatment of symptoms" earlier in the disease process with the goal to relieve the person's suffering while maximizing quality and dignity of life.[36] Discussions with family members should focus on the irreversible process and nature of the disease, while simultaneously understanding the values and desires of the resident. These discussions may be very useful in coming to common ground and treatment decisions.[37] Palliative care should be considered as an important service for persons with dementia.

Although there are similarities between palliative care and hospice, physicians and staff should make families aware that palliative care can focus on pain and symptom management, even before it is believed that the resident is terminally ill or life expectancy has declined to less than six months. Residents receiving palliative care may also continue to receive aggressive management of treatable conditions.

As the disease progresses and life expectancy is significantly limited, referral to hospice may be appropriate. Hospice services provide comfort care for the resident and can enhance quality of life for the resident and support for the family. Hospice criteria specifically rely on the Functional Assessment Staging criteria;[38] however, a practical tool based on the Minimum Data Set can estimate prognosis for nursing home residents with advanced dementia.[39] The Alzheimer's Association has many useful tools and resources for end-of-life care on their website.[40] Most long-term care facilities work closely with local hospice organizations. We have found hospice to be very helpful to our residents and their families in the long-term care setting. ✧

Dr. Wilkins is on the speaker's bureau for Pfizer Inc, and Janssen Pharmaceutica Products, LP.

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