ICD-10 Diagnostic Criteria for Dementia (any cause)

G1.1 decline in memory, esp. learning new information; both verbal and nonverbal material

G1.2 decline in other cognitive abilities; deterioration in judgment and thinking

G2 Preserved awareness of environment

G3 decline in emotional control or motivation, or change in social behaviour, eg emotional lability, irritability, apathy, coarsening of social behaviour

G4 criterion G1 clearly present for at least 6 months
Epidemiology of Dementia

• Prevalence in Canada:
  – Over age 65: 8%
  – Over age 85: 35%
  – Over age 95: 58%
  – At least 250,000 cases

• Incidence:
  – 1% each year (25,000 new cases)
Classification of Dementias

Irreversible dementias

✓ neurodegenerative
✓ vascular dementia (9 – 33%)
✓ mixed—vascular & Alzheimer’s (10 - 36%)

Reversible dementias (less than 3%)

✓ Secondary dementias
✓ medical conditions usually resulting in chronic delirium
✓ psychiatric pseudodementias
Neurodegenerative Dementias

- Alzheimer’s disease (60%)
- Diffuse Lewy body disease (15 – 27%)
- Pick’s disease
- Parkinson’s disease
- Huntingdon disease
- Progressive supranuclear palsy
- Amyotrophic lateral sclerosis with dementia
- Olivopontocerebellar degeneration
Vascular Dementias

- cardiac disorders
- vasculitis of central nervous system
- delayed effects of irradiation

- hemorrhage
- hypoperfusion
- multiple infarcts
- strategic single infarct
- senile leukoencephalopathy
Secondary Dementias

• normal pressure hydrocephalus
• mass lesions
• infectious diseases
• Collagen-vascular diseases
• endocrine disorders
• nutritional dementias
• Miscellaneous
Medical Conditions Usually Resulting in Chronic Delirium

- disturbances in fluid and electrolytes
- hepatic failure
- renal failure
- pulmonary failure
- infection
- cardiovascular disorders
- postoperative status
- medication toxicity
Medication Toxicity

- tricyclic antidepressants
- neuroleptics
- benzodiazepines
- lithium
- psychostimulants
- barbiturates; non-barbiturate sedatives
- anticholinergic agents

- antihypertensive agents; diuretics
- anticonvulsants
- antihistamines
- narcotic analgesics
- antiparkinsonian agents
- cardiovascular agents
- others
Ten Warning Signs of Alzheimer Disease
(Alzheimer’s Association, U.S.)

- Memory loss that affects day-to-day function
- Difficulty performing familiar tasks
- Problems with language
- Disorientation of time and place
- Poor or decreased judgment
- Problems with abstract thinking
- Misplacing things
- Changes in mood or behavior
- Changes in personality
- Loss of initiative
Why Screen for Dementia?

- Treatments are available
- Identify those at risk for delirium
- To permit planning for the future, eg mandates, research
- To identify drivers at risk for accidents
Severity of Dementia

• **mild**
  although work and social activities are significantly impaired, the capacity for independent living remains, with adequate personal hygiene and relatively intact judgment

• **moderate**
  independent living hazardous, some supervision necessary

• **severe**
  activities of daily living are so impaired that continual supervision is required
## Global Deterioration Scale (GDS)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Cognitive Decline</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>• Experiences no problems in daily living</td>
</tr>
</tbody>
</table>
| 2     | Very mild         | • Forgets names and locations of objects  
• May have trouble finding words |
| 3     | Mild              | • Has difficulty travelling to new locations  
• Had difficulty handling problems at work |
| 4     | Moderate          | • Has difficulty with complex tasks (finances, shopping, planning dinner for guests) |
| 5     | Moderately severe | • Needs help to choose clothing  
• Needs prompting to bathe |
| 6     | Severe            | • Needs help putting on clothing  
• Requires assistance bathing; may have a fear of bathing  
• Has decreased ability to use the toilet, or is incontinent |
| 7     | Very severe       | • Vocabulary becomes limited, eventually declining to single words  
• Loses ability to walk and sit  
• Becomes unable to smile |
Diagnostic Criteria
(NINDS-ADRDA: National Institute of Neurological Disorders and Stroke-Alzheimer’s Disease and Related Disorders Association)

• Definite AD
  – Clinical criteria for probable AD
  – Histopathologic evidence from autopsy or biopsy

• Probable AD

• Possible AD
Probable AD

- dementia established by clinical examination, documented by mental status testing, and confirmed by neuropsychologic tests
- deficits in two or more areas of cognition
- progressive worsening of memory and other cognitive functions
- onset between ages 40 and 90 yrs
- absence of other disorders that could account for the dementia
Features which suggest other diagnoses

- Presence of Parkinsonian signs
- Absence of language impairment
- Absence of visuospatial impairment
- Early, marked personality change
- Focal neurological signs
Risk Factors for Alzheimer’s

- family history of dementia
- family history of Down’s syndrome
- family history of Parkinson’s disease
- late maternal age
- head trauma
- viral agents
- smoking
- aluminum and other toxic agents
- depression
- vitamin B12
- apolipoproteins
- estrogen
- atherosclerosis
Course of Alzheimer's

<table>
<thead>
<tr>
<th>Progression</th>
<th>Manifestations</th>
</tr>
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</table>
| Stage I (1 to 3 years) | • recent memory dysfunction  
|                   | • anomia                                             
|                   | • topographic disorientation                         
|                   | • depression                                          |
| Stage II (2 to 10 years) | • prominent amnesia                                  
|                   | • fluent aphasia                                      
|                   | • constructional impairment                           
|                   | • acalculia                                           
|                   | • personality change                                  |
| Stage III (8 to 12 years) | • severe dementia                                   
|                   | • nonsense speech or mutism                          
|                   | • rigidity and flexion posture                        
|                   | • incontinence                                        |
Behavioural Disturbances in Dementia

- Occur in 90% of dementia patients
- Disinhibition: 35%
- Apathy-indifference: 31%
- Catastrophic reaction: 32%
- Sundowning: 62%
- Denial: 37%
- Sexual disinhibition: 3%
- Self-destructive behaviours: 3%
Agitation

pacing, aimless wandering, inappropriate dressing or disrobing, spitting, hitting/kicking, throwing objects, making strange noises or screaming, biting, self-destructive acts, cursing or verbal aggression, constant unwarranted complaints/requests/statements, and general restlessness

Categories:
– Aggressive
– Repetitious
– Socially objectionable
Wandering

- stress—noise, clutter, crowding
- lost—looking for someone or something familiar
- restless, bored—no stimuli
- medication side effect
- lifelong pattern of being active or usual coping style
- needing to use the toilet
- environmental stimuli—exit signs, people leaving
Difficulty with personal care tasks

- task too difficult or overwhelming
- caregiver impatience, rushing
- cannot remember task
- pain involved with movement
- cannot understand or follow caregiver instructions
- fear of task—cannot understand need for task or instructions
- inertia, apraxia; difficulty initiating and completing a task
Suspiciousness, paranoia

- forgot where objects were placed
- misinterpreting actions or words
- misinterpreting who people are; suspicious of their intentions
- change in environment or routine
- misinterpreting environment
- physical illness
- social isolation
- someone is actually taking something from patient
Agitation
(also: “sundowning”, catastrophic reactions)

- discomfort, pain
- physical illness (such as urinary tract infection)
- fatigue
- Overstimulation—noise, overhead paging, people, radio, television, activities
- mirroring of caregiver’s affect
- overextending capabilities (resulting in failure); caregiver expectations too high
- being “quizzed” (multiple questions that exceed abilities)
- medication side effect
- thwarted from desired activity (for example, attempting to escape)
- lowered stress threshold
- unfamiliar people or environment; change in schedule or routine
- restless
Incontinence

- infection, prostate problem, chronic illness, medication side effect, stress or urge incontinence
- difficulty in finding bathroom
- lack of privacy
- difficulty undressing
- difficulty in seeing toilet
- impaired mobility
- dependence created by socialized reinforcement
- cannot express need
- task overwhelming
Sleep disturbance

- illness, pain, medication effect (for example, causing daytime sleep or nocturnal awakening)
- depression
- less need for sleep
- too hot, too cold
- disorientation from darkness
- caffeine or alcohol effect
- hunger
- urge to void
- normal age- and disease-related fragmentation of sleep (like that of an infant or toddler)
- daytime sleeping
- fear of darkness
- restless
Inappropriate or impulsive sexual behaviour

- dementia-related ↓ judgment and social awareness
- misinterpreting caregiver’s interaction
- uncomfortable—too warm, clothing too tight; need to void; genital irritation
- need for attention, affection, intimacy
- self-stimulating, reacting to what feels good
Treatments for Alzheimer’s - 1

Treatments to improve cognition

- Medication
  - Selegiline
  - Vitamin E
  - Ginkgo Biloba
  - Donepezil
  - Estrogen
- 3R Mental Stimulation Programme

Management of problem behaviours

- Medication
  - Antipsychotics
  - Anxiolytics
  - Antidepressants
  - Anticonvulsants
  - b-blockers
- ECT
- Light
- Behaviour modification
Selegiline

- Used for Parkinson’s disease.
- Believed to reduce neural damage.
- Increases the time until a primary outcome, defined as death, institutionalization, development of marked dependency, or progression to severe dementia.
- Adverse effects: falls, fainting; also nausea, hallucinations, confusion, depression, loss of balance.
Vitamin E

• Functions in the body as an anti-oxidant
• Thought to help stabilize or “slow down” the degenerative process in AD
• As effective as selegiline in delaying time to primary outcome, but is safer and cheaper
• In megadoses: anticoagulant effect
• Study dose: 2000 IU per day
Ginkgo Biloba Extract

- Approved in Germany for treatment of dementia
- A combination of substances which act as antioxidants.
- Thought to be a stabilizing agent.
- In North America, there are no standards, so potency can vary considerably.
- The dose used in the study was 40 mg 3 times daily before meals.
Donepezil (Aricept)

- An acetylcholinesterase inhibitor.
- Families report improvements in functioning which are bigger than suggested by improvements in tests of cognitive functioning.
- Can potentially cause a slow heart rate, bladder obstruction, increased stomach acid, seizures, and can worsen obstructive lung disease.

- Side effects: nausea, diarrhea, vomiting, insomnia, fatigue, anorexia, muscle cramps.
- In practice, is very well tolerated.
- Start at 5 mg per day; increase to 10 mg after 4-6 weeks if well tolerated.
Donepezil 5 & 10 mg

ADAS-cog

Clinical improvement

Clinical decline

Baseline 6 12 18 24 30
Study Week Placebo washout

LS mean change from baseline (±SEM)

Placebo
Donepezil
- 5 mg/day
- 10 mg/day

p<0.0001
p<0.0001
p<0.0001
p<0.0001
p<0.0001
p<0.0001
p=0.0005
p<0.0001
p<0.0002
p<0.0315
p=0.0021
Estrogen & Alzheimer's

138 women with probable Alzheimer's

1124 women aged 70 or over, followed for 5 years

mean MMSE scores (out of 30)

- 14.9 estrogen users (10)
- 6.5 estrogen nonusers (128)

% who developed Alzheimer's

- 16.3 estrogen users
- 5.8 estrogen nonusers
Estrogen and Vascular Dementia

• Some evidence of vascular disease in > 50%
• Evidence of AD in 50% of vascular dementia
• In both: diminished regional blood flow
• No studies on estrogen in multi-infarct dementia
• Estrogen effective in vascular dementia of the small vessel type
3R Mental Stimulation Programme

- Reminiscence
- Reality orientation
- Remotivation
- Group meetings weekly for 8 weeks, each with a specific topic
- Goal: to stimulate the senses
Management of Problem Behaviours

• Medications
  – antipsychotic agents
  – anxiolytic agents
  – antidepressants
  – anticonvulsants
  – β-blockers
  – other medications

• ECT

• Bright light therapy

• Behaviour modification

• Other interventions
Behaviour modification

• identify the behaviour
• identify an alternative behaviour
• complete a behavioural analysis
• identify the antecedents/precursors
• identify the reinforcer(s)
• identify reinforcer(s) to reduce problematic behaviours
• finally, develop a strategy
Other Interventions for Disruptive Behaviours

• Validation therapy
• Group programs
• Low lighting and music at meals
• Sounds to decrease screaming
• Massage and Therapeutic Touch
• Pet therapy
• Stimulus items
• Education in nonverbal communication
Other issues

• Resuscitation
• Tube feeding
• Mandates
• Institutional care issues
  – Abuse
  – Restraints
  – Medication
  – Changing attitudes

• consequences of apolipoprotein E testing