

Dementia

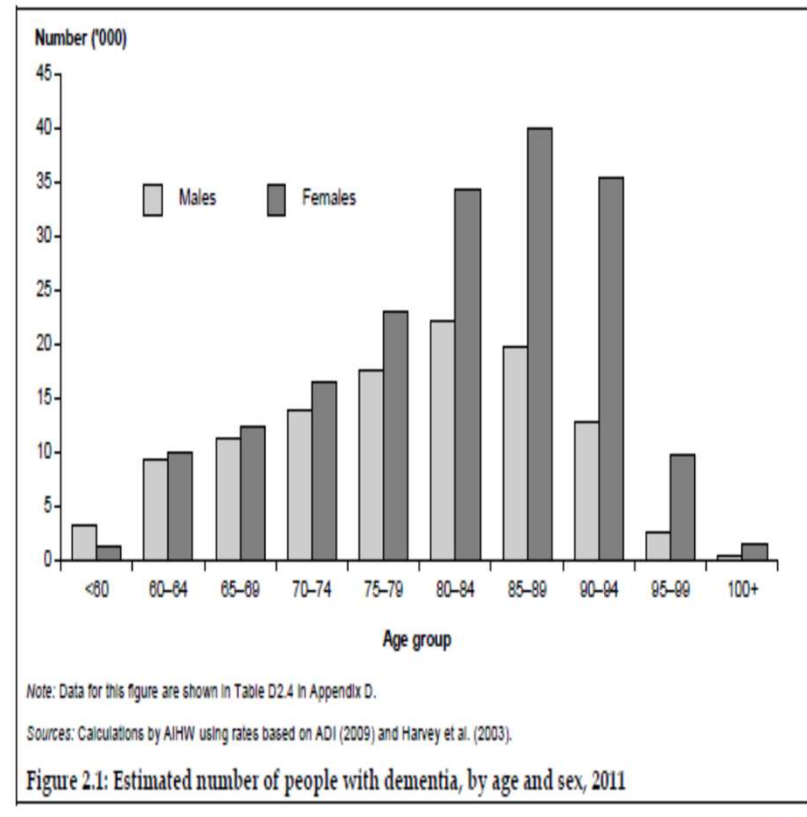
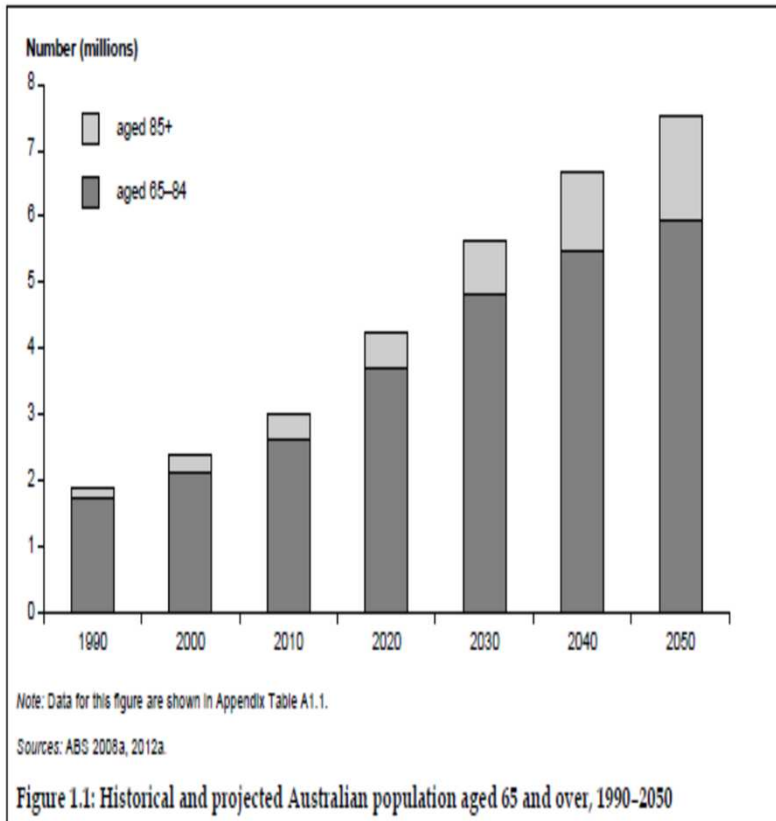
Aetiology, pathophysiology and the role of
neuropsychological testing

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Topics to cover

- ▶ Why is dementia important
- ▶ What is dementia
- ▶ Differentiate between dementia, delirium and depression
- ▶ Different types of dementia
- ▶ Cognitive testing
- ▶ Role of neuropsychological testing
- ▶ Cognitive enhancers and impact on bladder
- ▶ Management of incontinence in people with dementia
- ▶ Cases

Why is Dementia important?



What is Dementia





Dementia

A chronic or persistent disorder of the mental processes caused by brain disease or injury and marked by memory disorders, personality changes, and impaired reasoning (*Dictionary*)

Dementia describes a collection of symptoms that are caused by disorders affecting the brain. It is not one specific disease. (*Dementia Australia*)

Dementia is not a single, specific disease. It is an umbrella term for a syndrome associated with more than 100 different diseases that are characterised by the impairment of brain functions, including language, memory, perception, personality and cognitive skills. Although the type and severity of symptoms and their pattern of development varies with the type of dementia, onset is usually gradual and the disease is progressive and irreversible. (*Australian Government Department of Health, Ageing and Aged Care*)

DSM-IV and DSM-5 criteria for dementia

DSM-IV criteria for dementia	DSM-5 criteria for major neurocognitive disorder (previously dementia)
<p>A1. Memory impairment</p> <p>A2. At least one of the following:</p> <ul style="list-style-type: none"> - Aphasia - Apraxia - Agnosia - Disturbance in executive functioning 	<p>A. Evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains*:</p> <ul style="list-style-type: none"> - Learning and memory - Language - Executive function - Complex attention - Perceptual-motor - Social cognition
<p>B. The cognitive deficits in A1 and A2 each cause significant impairment in social or occupational functioning and represent a significant decline from a previous level of functioning</p>	<p>B. The cognitive deficits interfere with independence in everyday activities. At a minimum, assistance should be required with complex instrumental activities of daily living, such as paying bills or managing medications.</p>
<p>C. The cognitive deficits do not occur exclusively during the course of delirium</p>	<p>C. The cognitive deficits do not occur exclusively in the context of a delirium</p> <p>D. The cognitive deficits are not better explained by another mental disorder (eg, major depressive disorder, schizophrenia)</p>

The 3 D's

Dementia, delirium, depression

- ▶ Dementia has to be distinguished from delirium.
- ▶ Depression can mimic dementia
- ▶ 5 key features of delirium:
 - ▶ Disturbance in attention
 - ▶ Disturbance develops over short period of time (hours to days), represents a change from baseline, and tends to fluctuate during the course of the day
 - ▶ An additional disturbance in cognition (memory deficit, disorientation, language, visuospatial ability, or perception)
 - ▶ The disturbances are not better explained by another pre-existing, evolving or established neurocognitive disorder
 - ▶ There is evidence from history, physical examination or lab findings that the disturbance is caused by a medical condition, substance intoxication nor withdrawal, or medication side effect

Dementia vs Delirium vs Depression

Features	Dementia	Delirium	Depression
Onset	Insidious	Acute	Acute or insidious
Course	Progressive	Fluctuating	May be chronic
Duration	Months to years	Hours to weeks	Weeks to years
Consciousness	Clear	Altered	Clear
Attention	Normal except in severe dementia	Altered	May be decreased
Psychomotor change	Normal	Increased or decreased	May be slowed in severe cases
Reversibility	Irreversible	Usually	Usually

CAM & 4AT



Assessment test
for delirium &
cognitive impairment

Patient name: _____ (label)
Date of birth: _____
Patient number: _____
Date: _____ Time: _____
Tester: _____

[1] ALERTNESS CIRCLE

This includes patients who may be markedly drowsy (eg. difficult to rouse and/or obviously sleepy during assessment) or agitated/hyperactive. Observe the patient. If asleep, attempt to wake with speech or gentle touch on shoulder. Ask the patient to state their name and address to assist rating.

Normal (fully alert, but not agitated, throughout assessment)	0
Mild sleepiness for <10 seconds after waking, then normal	0
Clearly abnormal	4

[2] AMT4

Age, date of birth, place (name of the hospital or building), current year.

No mistakes	0
1 mistake	1
2 or more mistakes/untestable	2

[3] ATTENTION

*Ask the patient: "Please tell me the months of the year in backwards order, starting at December."
To assist initial understanding one prompt of "what is the month before December?" is permitted.*

Months of the year backwards	0
Achieves 7 months or more correctly	0
Starts but scores <7 months / refuses to start	1
Untestable (cannot start because unwell, drowsy, inattentive)	2

[4] ACUTE CHANGE OR FLUCTUATING COURSE

Evidence of significant change or fluctuation in: alertness, cognition, other mental function (eg. paranoia, hallucinations) arising over the last 2 weeks and still evident in last 24hrs

No	0
Yes	4

4 or above: possible delirium +/- cognitive impairment
1-3: possible cognitive impairment
0: delirium or severe cognitive impairment unlikely (but delirium still possible if [4] information incomplete)

4AT SCORE

Confusion assessment method (CAM) for the diagnosis of delirium*

Feature	Assessment
1. Acute onset and fluctuating course	Usually obtained from a family member or nurse and shown by positive responses to the following questions: "Is there evidence of an acute change in mental status from the patient's baseline?"; "Did the abnormal behavior fluctuate during the day, that is, tend to come and go, or increase and decrease in severity?"
2. Inattention	Shown by a positive response to the following: "Did the patient have difficulty focusing attention, for example, being easily distractible or having difficulty keeping track of what was being said?"
3. Disorganized thinking	Shown by a positive response to the following: "Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?"
4. Altered level of consciousness	Shown by any answer other than "alert" to the following: "Overall, how would you rate this patient's level of consciousness?"
	Normal = alert
	Hyperalert = vigilant
	Drowsy, easily aroused = lethargic
	Difficult to arouse = stupor
	Unarousable = coma

*The diagnosis of delirium requires the presence of features 1 AND 2 plus either 3 OR 4.

GDS

Geriatric Depression Scale (Short Form)

Patient's Name: _____ Date: _____

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

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

Scoring:

Assign one point for each of these answers:

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

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

Source:

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

DEMENTIA

Alzheimer's
Dementia

Young Onset
Normal Onset

Vascular
Dementia

Mixed Dementia

Lewy Body
Dementia

Frontotemporal
Dementia

Other Dementias

- ETOH
- Drugs/toxin exposure
- Mass effect
- Infections
- Parkinson's disease
- Genetic syndromes
- Delirium

Alzheimer's Disease

- ▶ Most common form of dementia affecting up to 70% of all people with dementia
- ▶ First recorded by Dr Alois Alzheimer. Dr Alzheimer reported the case of Auguste Deter.
 - ▶ Shrinking of the outer layer
 - ▶ Plaques
 - ▶ Neurofibrillary tangles
- ▶ In the 1970s Dr Robert Katzman reported that 'senile dementia' and 'Alzheimer's disease' were the same condition and that neither were a normal part of aging.

Alzheimer's Disease: Clinical features

Age of onset

Symptoms

- ▶ Memory impairment
- ▶ Executive function
- ▶ Behavioral and psychological symptoms
- ▶ Others
 - ▶ Apraxia
 - ▶ Olfactory dysfunction
 - ▶ Sleep disturbances
 - ▶ Seizures
 - ▶ Motor signs

Vascular Dementia

- ▶ Second most common form of dementia
- ▶ Makes up 10-20% of cases
- ▶ Risk factors
 - ▶ Hypertension, hypercholesterolemia, smoker, diabetes, obesity
- ▶ Different presentation to Alzheimer's Dementia
 - ▶ Step wise decline in cognition
 - ▶ Presentation depends on area affected



Vascular Dementia: Clinical features

- ▶ Cortical syndrome
 - ▶ Medial frontal: executive dysfunction, abulia, apathy
 - ▶ Left parietal: aphasia, apraxia or agnosia
 - ▶ Right parietal: hemineglect, confusion, agitation, visuospatial and constructional difficulty
 - ▶ Medial temporal: anterograde amnesia
- ▶ Subcortical syndrome
 - ▶ Focal motor signs
 - ▶ Early presence of gait disturbance
 - ▶ Falls
 - ▶ Personality and mood changes
 - ▶ Cognitive disorder characterized by relatively mild memory deficit, psychomotor retardation, abnormal executive function

Lewy Body Dementia

- ▶ Abnormal deposits of protein were discovered in 1912 by Frederic Lewy
- ▶ LBD was first described by Kenji Kosaka in 1976
- ▶ Clinical features
 - ▶ Visual hallucination
 - ▶ Parkinsonism
 - ▶ Cognitive fluctuation
 - ▶ Sleep disorder
 - ▶ Dysautonomia
 - ▶ Neuroleptic sensitivity

Other dementias

- ▶ Frontal temporal dementia
- ▶ PSP
- ▶ MS
- ▶ Alcohol related dementia
- ▶ Infections (HIV, syphilis)
- ▶ Metabolic (Wilson's disease, B12 deficiency)
- ▶ ABI
- ▶ Down Syndrome

Cognitive testing

Mini Mental State Examination (MMSE)

Rowland Universal Dementia Assessment Scale (RUDAS)

Montreal cognitive assessment

Trails Test

Addenbrooke's cognitive examination (ACEr)



Benefits of Neuropsychological testing

- ▶ Evaluates multiple cognitive domains
- ▶ Assist with diagnosis
- ▶ Establish baseline
- ▶ Determine cognitive strengths and weakness
- ▶ Help with strategies to assist patient and family

Cognitive enhancers - Cholinesterase inhibitor

- ▶ Cholinesterase inhibitor
 - ▶ Donepezil
 - ▶ Rivastigmine
 - ▶ Galantamine
- ▶ Inhibits the acetylcholinesterase enzyme from breaking down acetylcholine, therefore increasing both the level and duration of action of the neurotransmitter acetylcholine
- ▶ Symptoms of increased cholinergic stimulation
 - ▶ Salivation
 - ▶ Lacrimation
 - ▶ Urination
 - ▶ Diarrhoea
 - ▶ Gastrointestinal distress
 - ▶ Emesis

Cholinesterase inhibitor and anticholinergics

- ▶ Cholinesterase inhibitor vs anticholinergics (cholinergic antagonist)
- ▶ Opposing pharmacological effect



Medications with strong anticholinergic properties

Table 9. Drugs with Strong Anticholinergic Properties

Antihistamines <ul style="list-style-type: none"> • Brompheniramine • Carbinoxamine • Chlorpheniramine • Clemastine • Cyproheptadine • Dimenhydrinate • Diphenhydramine • Hydroxyzine • Loratadine • Meclizine 	Antiparkinson agents <ul style="list-style-type: none"> • Benztropine • Trihexyphenidyl 	Skeletal Muscle Relaxants <ul style="list-style-type: none"> • Carisoprodol • Cyclobenzaprine • Orphenadrine • Tizanidine
Antidepressants <ul style="list-style-type: none"> • Amitriptyline • Amoxapine • Clomipramine • Desipramine • Doxepin • Imipramine • Nortriptyline • Paroxetine • Protriptyline • Trimipramine 	Antipsychotics <ul style="list-style-type: none"> • Chlorpromazine • Clozapine • Fluphenazine • Loxapine • Olanzapine • Perphenazine • Pimozide • Prochlorperazine • Promethazine • Thioridazine • Thiothixene • Trifluoperazine 	
Antimuscarinics (urinary incontinence) <ul style="list-style-type: none"> • Darifenacin • Fesoterodine • Flavoxate • Oxybutynin • Solifenacin • Tolterodine • Trospium 	Antispasmodics <ul style="list-style-type: none"> • Atropine products • Belladonna alkaloids • Dicyclomine • Homatropine • Hyoscyamine products • Loperamide • Propantheline • Scopolamine 	

Management of incontinence in patients with dementia

- ▶ Home vs nursing home
- ▶ Individualized treatment options
- ▶ Degree of cognitive impairment
- ▶ Management is often complex
 - ▶ Exclude other causes
 - ▶ Hydration and nutrition
 - ▶ Medication review ie diuretics
 - ▶ Exclude infection, obstruction, consider hormonal changes in female, prostate in male

Case 1:

- ▶ 78 year old
- ▶ Home alone, retired school principal, never married, no children, drives
- ▶ PMHx: hypertension, CCF, osteoporosis, OA
- ▶ Medications: atenolol 25mg daily, Lasix 40mg daily, hct 12.5mg daily, aspirin 100mg daily
- ▶ 2 year history of gradual cognitive decline.
 - ▶ Forgetting bills, getting lost in supermarket, left her stove on, abducted neighbours' children
- ▶ Unable to do cognitive testing due to agitation.
- ▶ Diagnosis?
- ▶ Ongoing management plan

Case 2:

- ▶ 60 year old
- ▶ Home with husband. 3 adult children. Educate up to 16 years old. Housewife. Independent with all ADLs. Drives.
- ▶ 6-12 months cognitive deficits - describes forgetfulness, misplacing keys and glasses, can't multitask anymore, can't remember if she's added salt to cooking or not, no safety concerns
- ▶ MMSE: 20/30 (orientation 6/10, registration 3/3, attention 1/5, recall 2/3, language 8/8)
- ▶ GDS 10/15
- ▶ Diagnosis?
- ▶ Ongoing management plan

Case 3

- ▶ 62 year old, degree in accounting, retired in her 40s following migration
- ▶ Home with husband. 2 adult son. Migrated from India in her 40s to be closer to children.
- ▶ 5 years cognitive decline, word finding difficulty, stuttering, difficulty paying bills, getting lost in supermarket, husband providing supervision and assistance in ADLs last 6 months, carer stress.
- ▶ Diagnosis?
- ▶ Ongoing management plan

Thank you

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