Assessment, Diagnosis and Management of Dementia

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Faculty/Presenter Disclosure

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The information presented in this CME program is based on recent information that is explicitly "evidence-based".

This CME Program and its material is peer reviewed and all the recommendations involving clinical medicine are based on evidence that is accepted within the profession; and all scientific research referred to, reported, or used in the CME/CPD activity in support or justification of patient care recommendations conforms to the generally accepted standards

ECHO Presentation Overview

1. Who should be assessed for possible dementia?
2. What are the key steps to include when assessing someone for dementia?
3. What are the key supports, non-pharmacological and pharmacological treatment options who are recently diagnosed with dementia?

Dementia Best Practices

Canadian Consensus Conference Guidelines on Diagnosis and Treatment of Dementia

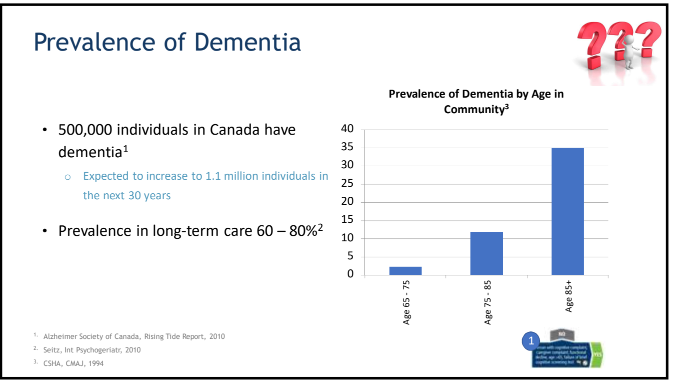
- Created in 1999, updated in 2001 and 2007, 2012, 2019
- Cover topics from risk factors to severe dementia
- Guideline papers published in *Alzheimer's & Dementia*, 2007 (CCCDTD3):
  - » 146 guideline recommendations, 178 pages
  - » 6 summary documents published in CMAJ in 2008
- Updated CCCDTD4 in Can Geriatr J, 2012
- CCCDTD5 October, 2019 (Alzheimer Dementia 2020)
  - » 88 recommendations, 8 topics

Why assess cognition in the elderly?

- Evaluation of cognitive complaints
- To aid in establishing a diagnosis
- Assess effects of psychiatric, medical conditions or substances on cognition
- Evaluate changes over time
- Communication with other healthcare providers
- Promote safety and enable autonomy

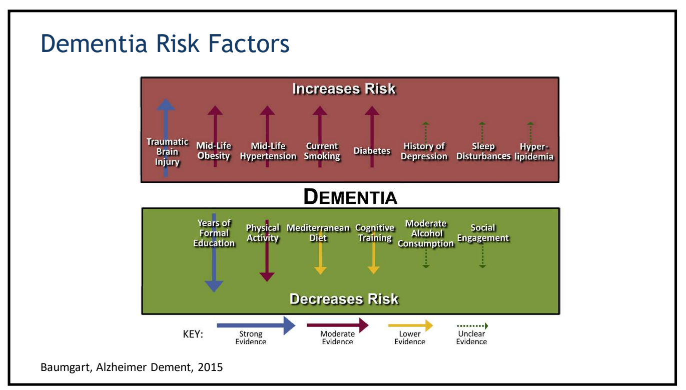
Prevalence of Dementia

- 500,000 individuals in Canada have dementia[1]
  - Expected to increase to 1.1 million individuals in the next 30 years
- Prevalence in long-term care 60 – 80%[2]



1. Alzheimer Society of Canada, Rising Tide Report, 2010
2. Seitz, Int Psychogeriatr, 2010
3. CSHA, CMAJ, 1994

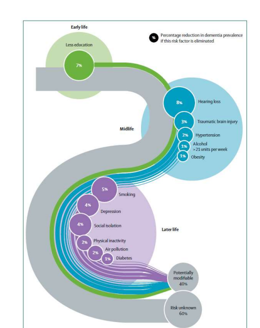
Dementia Risk Factors



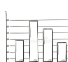
Baumgart, Alzheimer Dement, 2015

Prevention of Dementia

- Up to 40 % of dementia may be preventable
- Incidence of dementia now is declining compared to previous generations
  - Better education, control of dementia risk factors



Dementia Risk Reduction



- Mediterranean diet, low saturated fat, increase fruits/vegetables (1B)
- Moderate physical exercise (aerobic/strength) for dementia and MCI (1B)
- Assess and treat hearing loss (1A)
- Treat sleep apnea and avoid sleep deprivation (1C)
- Group or online cognitive training (1B) and maintain or increase cognitively stimulating activities (1C)
- Promote social engagement (1B) and early life education (1C)
- Reduce anticholinergic medications (1B)
- Assess and treat hypertension and stroke (1B)

Rockwood, Alzeheimer Dement, 2020

Dementia Case Finding

- Do not screen asymptomatic individuals (1C)
- Screen (interview, cognitive testing, review with family) individuals with functional change, cognitive complaints, or new-onset psychiatric disorders late in life (1C)
- Individuals at very high risk (advanced age, stroke, Parkinson's, head injury, recent delirium) ask about presence of cognitive concerns (2C)
- Use validated tests like MMSE, MoCA (for MCI or normal MMSE) for assessment of cognition (1B)
- Include assessment of informant and use tools (AD8, IQCODE) (1B)

Tang-Wai, Alzeheimer Dementia, 2020

Why should we try to diagnose dementia?

- Up to 2/3 of dementias are not detected[1,2]
- Importance of diagnosing dementia:
  - Most people want to know
  - Early initiation of treatment
  - Eligibility for some services
  - Future planning at early stages
  - Opportunity for lifestyle modification

1. Borson, J Gen Intern Med, 2007
2. Sternberg, JAGS, 2000

Which tests can be used for screening of cognitive changes?

- Mini-Mental Status Exam
- Cognitive evaluations to Distinguish Mild Cognitive Impairment from Alzheimer's (Grade B, Level 2)
  - **Montreal Cognitive Assessment***
  - **St. Louis University Mental Status Exam**
- Caregiver or Informant Reports:
  - **AD8***
  - IQCODE
- Rapid screens[1]:
  - Mini-cog*

1. Brodaty, Am J Geriatr Psychiatry, 2006
2. Ismail, Int J Geriatr Psychiatry, 2010

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Mini-Mental Status Exam

- Widely used
- Standardized MMSE more reliable than original MMSE
- Focuses on memory, attention, construction and orientation domains
- 12 items
- Requires little training
- Age and education can introduce bias
- Copyrighted

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Test Properties of the MMSE

Cognitive domains evaluated	Memory (immediate recall), orientation, attention, language, visuo-construction, praxis
Time to administer (min)	10 - 15
Score range	0 - 30
Sensitivity	44 - 100%
Specificity	46 - 100%

Feldman, CMAJ, 2008

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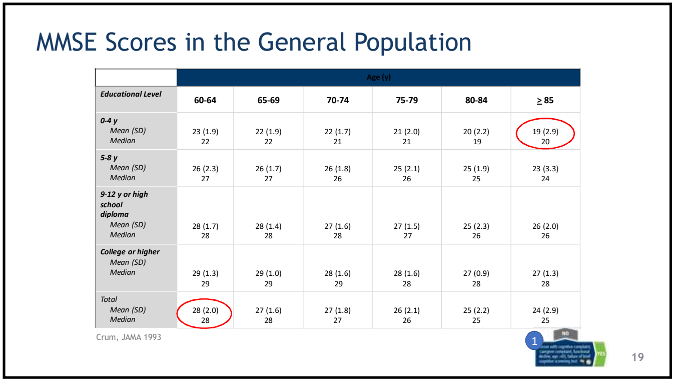
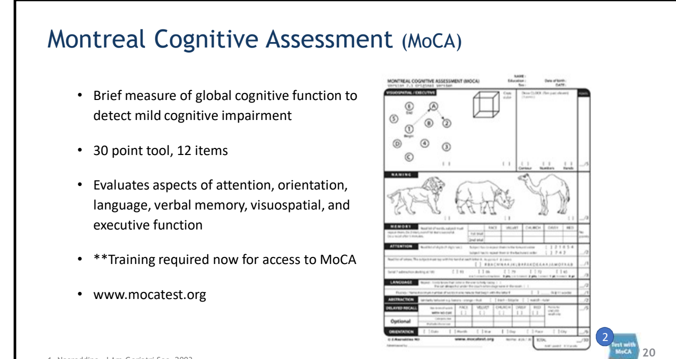
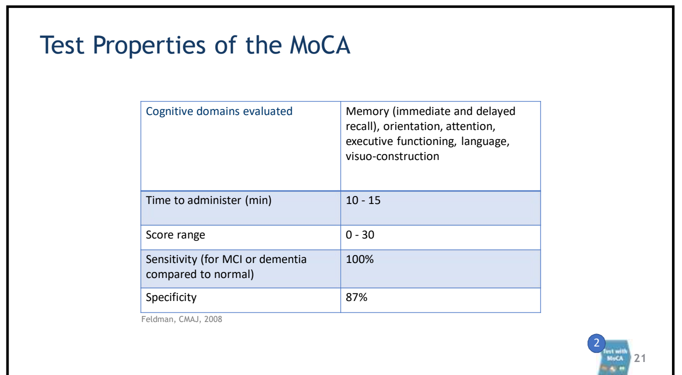
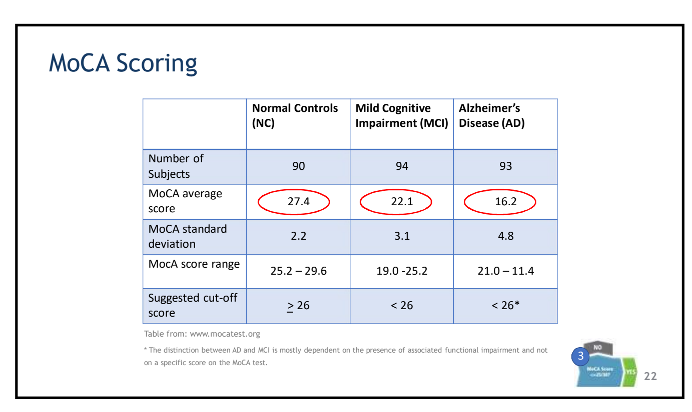


	Age (y)					
Educational Level	60-64	65-69	70-74	75-79	80-84	≥ 85
0-4 y *Mean (SD)* *Median*	23 (1.9) 22	22 (1.9) 22	22 (1.7) 21	21 (2.0) 21	20 (2.2) 19	19 (2.9) 20
5-8 y *Mean (SD)* *Median*	26 (2.3) 27	26 (1.7) 27	26 (1.8) 26	25 (2.1) 26	25 (1.9) 25	23 (3.3) 24
9-12 y or high school diploma *Mean (SD)* *Median*	28 (1.7) 28	28 (1.4) 28	27 (1.6) 28	27 (1.5) 27	25 (2.3) 26	26 (2.0) 26
College or higher *Mean (SD)* *Median*	29 (1.3) 29	29 (1.0) 29	28 (1.6) 29	28 (1.6) 28	27 (0.9) 28	27 (1.3) 28
Total *Mean (SD)* *Median*	28 (2.0) 28	27 (1.6) 28	27 (1.8) 27	26 (2.1) 26	25 (2.2) 25	24 (2.9) 25

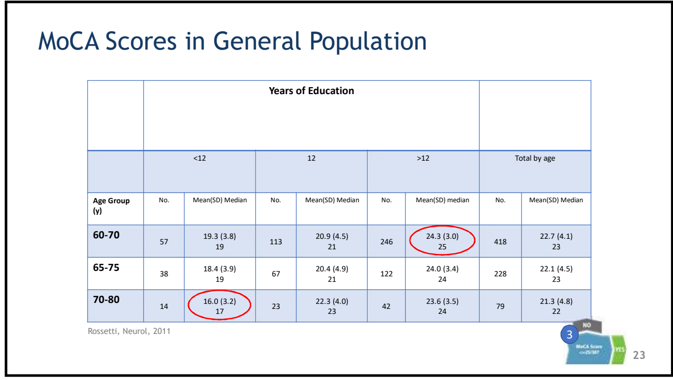




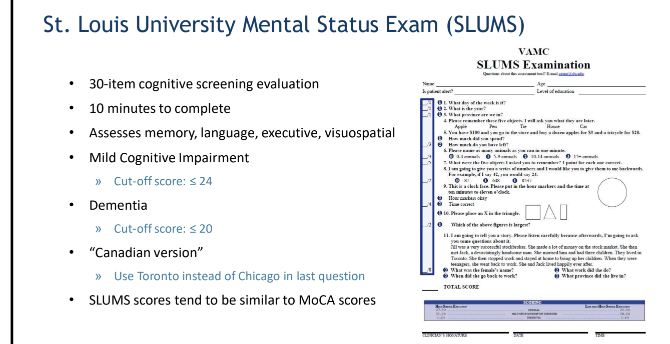
Cognitive domains evaluated	Memory (immediate and delayed recall), orientation, attention, executive functioning, language, visuo-construction
Time to administer (min)	10 - 15
Score range	0 - 30
Sensitivity (for MCI or dementia compared to normal)	100%
Specificity	87%

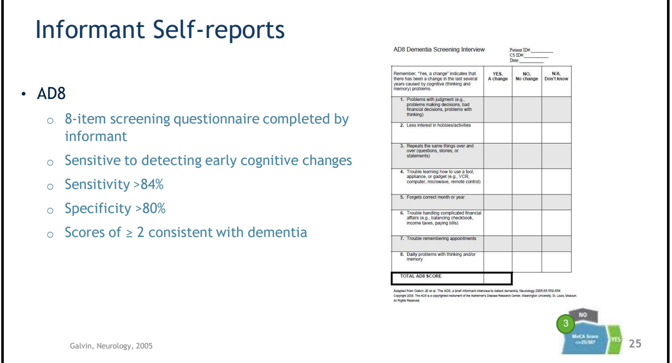


	Normal Controls (NC)	Mild Cognitive Impairment (MCI)	Alzheimer's Disease (AD)
Number of Subjects	90	94	93
MoCA average score	27.4	22.1	16.2
MoCA standard deviation	2.2	3.1	4.8
MocA score range	25.2 – 29.6	19.0 -25.2	21.0 – 11.4
Suggested cut-off score	≥ 26	< 26	< 26*



	Years of Education						Total by age	
	<12		12		>12			
Age Group (y)	No.	Mean(SD) Median	No.	Mean(SD) Median	No.	Mean(SD) median	No.	Mean(SD) Median
60-70	57	19.3 (3.8) 19	113	20.9 (4.5) 21	246	24.3 (3.0) 25	418	22.7 (4.1) 23
65-75	38	18.4 (3.9) 19	67	20.4 (4.9) 21	122	24.0 (3.4) 24	228	22.1 (4.5) 23
70-80	14	16.0 (3.2) 17	23	22.3 (4.0) 23	42	23.6 (3.5) 24	79	21.3 (4.8) 22





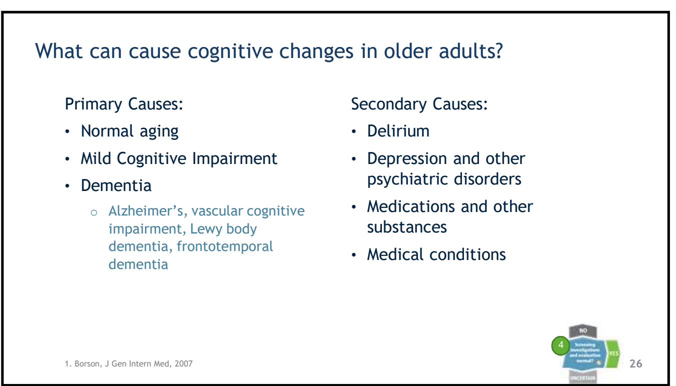
AD8 Dementia Screening Interview

Patient ID#:________
CS ID#:________
Date:________

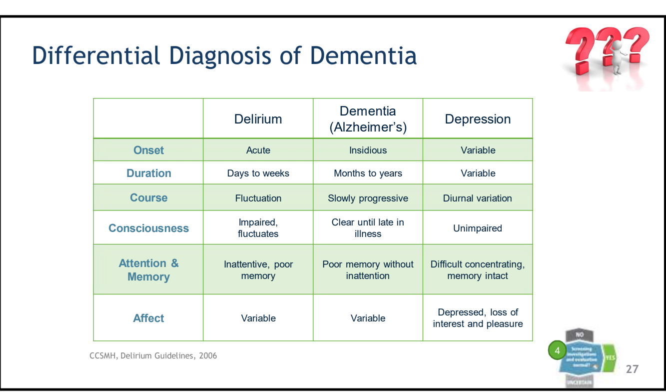
Remember, "Yes, a change" indicates that there has been a change in the last several years caused by cognitive (thinking and memory) problems.	YES, A change	NO, No change	N/A, Don't know
1. Problems with judgment (e.g., problems making decisions, bad financial decisions, problems with thinking)			
2. Less interest in hobbies/activities			
3. Repeats the same things over and over (questions, stories, or statements)			
4. Trouble learning how to use a tool, appliance, or gadget (e.g., VCR, computer, microwave, remote control)			
5. Forgets correct month or year			
6. Trouble handling complicated financial affairs (e.g., balancing checkbook, income taxes, paying bills)			
7. Trouble remembering appointments			
8. Daily problems with thinking and/or memory			
TOTAL AD8 SCORE			

Adapted from Galvin JE et al, The AD8, a brief informant interview to detect dementia, Neurology 2005:65:559-564

Copyright 2005. The AD8 is a copyrighted instrument of the Alzheimer's Disease Research Center, Washington University, St. Louis, Missouri. All Rights Reserved.



Differential Diagnosis of Dementia



	Delirium	Dementia (Alzheimer's)	Depression
Onset	Acute	Insidious	Variable
Duration	Days to weeks	Months to years	Variable
Course	Fluctuation	Slowly progressive	Diurnal variation
Consciousness	Impaired, fluctuates	Clear until late in illness	Unimpaired
Attention & Memory	Inattentive, poor memory	Poor memory without inattention	Difficult concentrating, memory intact
Affect	Variable	Variable	Depressed, loss of interest and pleasure

CCSMH, Delirium Guidelines, 2006

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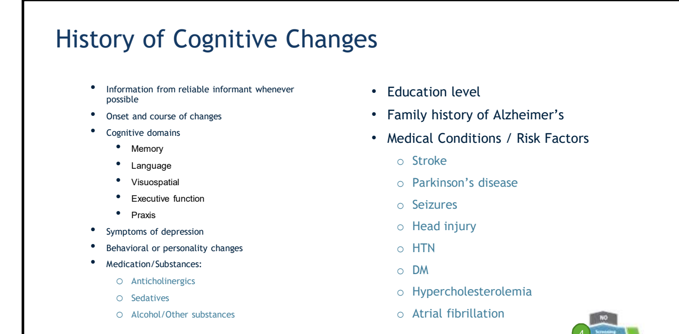
History of Cognitive Changes



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Medication Review

- Ensure that medications are being taken consistently or implement measures to maximize adherence (CCCDTD, Grade B, Level 3)
- Discuss need future need for assistance with medications (CCCDTD, Grade B, Level 3)
- Review anticholinergic medications and substitute or discontinue (CCCDTD, Grade D, Level III)

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Investigations

- Physical Exam:
  - General physical examination
  - Vital signs
    - hypertension, infection
  - Neurological exam:
    - Potential signs of stroke*
      - Hyperreflexia
      - Extensor plantar responses
      - Frontal gait apraxia
      - Pseudobulbar palsy
    - Parkinsonism*
      - Rest tremor, cog-wheel rigidity, bradykinesia, postural instability

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Screening Bloodwork (CCCDTD2;Grade B, Level 3)

- TSH
- Electrolytes
- Calcium
- Glucose
- B_{12} (CCCDTD3; Grade B, Level 2)
- +/- RBC folate (CCCDTD, Grade E; Level 2)
  - Individuals with poor diet, malabsorption

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DPS3

Neuroimaging

- Anatomical neuroimaging recommended in most situations (CCCDTD5, 1C):
  - Onset of cognitive changes within 2 years
  - Unexpected decline in cognition or function in someone with dementia
  - Recent head trauma
  - Unexplained neurological symptoms at diagnosis or after
  - History of cancer at high risk for brain metastases
  - At risk for intracranial bleeding
  - Symptoms compatible with normal pressure hydrocephalus
  - Significant vascular risk factors
- MRI is preferred over CT whenever possible

Brisson, Alzheimer Dementia, 2020

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Functional Assessment

- Change in functioning necessary for diagnosis of dementia
- Instrumental activities of daily living affected before basic activities of daily living
  - Finances, driving or taking public transportation, medications, use of telephone, meal preparation
- Functional change has to be due to memory impairment (i.e. not physical problem)

Functional Activities Questionnaire

Administration
Ask informant to rate patient's ability using the following scoring system:
- Dependent = 3
- Requires assistance = 2
- Has difficulty but does by self = 1
- Normal = 0
- Never did [the activity] but could do now = 0
- Never did and would have difficulty now = 1

1.	Writing checks, paying bills, balancing checkbook	
2.	Assembling tax records, business affairs, or papers	
3.	Shopping alone for clothes, household necessities, or groceries	
4.	Playing a game of skill, working on a hobby	
5.	Heating water, making a cup of coffee, turning off stove after use	
6.	Preparing a balanced meal	
7.	Keeping track of current events	
8.	Paying attention to, understanding, discussing TV, book, magazine	
9.	Remembering appointments, family occasions, holidays, medications	
10.	Traveling out of neighborhood, driving, arranging to take buses	
	TOTAL SCORE:	

Evaluation
Sum scores (range 0-30). Cut-point of 9 (dependent in 3 or more activities) is recommended to indicate impaired function and possible cognitive impairment.

Pfeffer, R.I., Kurosaki, T.T., Harrah, C.H. Jr., Chance, J.M., & Filos, S. (1982). Measurement of functional activities in older adults in the community. *Journal of Gerontology, 37*(3), 323-329. Reprinted with permission of Oxford University Press.

Pfeffer, J Gerontol, 1982

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Diagnosis of Dementia

- Dementia is a clinical diagnosis (CCCDTD1; Grade B, Level 3)
- Diagnosis requires integration of information from:
  - detailed history
  - physical examination
  - psychometric testing (eg. MoCA)
  - assessment of functioning (e.g. FAQ)
  - may need longitudinal testing to establish diagnosis

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Slide 32

DPS3 Update with most recent CCCDDTD Guidelines
Dallas Seitz, 2021-03-10

DSM 5 Criteria: Major Neurocognitive Disorder

- Evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains (***complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition***) based on:
  - Concern of the individual, a knowledgeable informant, or the clinician that there has been a significant decline in cognitive function; and
  - A substantial impairment in cognitive performance, preferably documented by standardized neuropsychological testing or, in its absence, another quantified clinical assessment.
- The cognitive deficits interfere with independence in everyday activities (i.e., at a minimum, paying bills or managing medications).
- Do not occur exclusively in the context of a delirium.
- The cognitive deficits are not better explained by another mental disorder
- Specify whether due to: **Alzheimer's disease**, **Frontotemporal lobar degeneration**, **Lewy body disease, vascular disease**

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Types of Dementia

	Alzheimer's Disease (Grade A, Level 1)	**Vascular/ Mixed Dementia (Grade B, Level 2)**	**Dementia with Lewy Bodies/ Parkinson's disease (Grade B, Level 2)**	**Frontotemporal Dementia (Grade A, Level 2)**
Age at onset (average)	70 – 80	60 - 70	70 – 80	50 – 60
Percentage of Dementia	50 – 60%	10 – 20%	10 – 20%	10% (younger)
Associated Symptoms	• Early problems with short-term memory • Lack of insight • History of MCI may be present • CVD also common	• Registration of events better than recall • "Patchy deficits" • Often occurs with AD as well "mixed dementia"	If motor sx first then **PDD**, memory first **DLB** **DLB**: • Early visual hallucinations • Fluctuating LOC • Early falls • Parkinsonian symptoms • Sleep disturbances (REM sleep disturbance)	• Disinhibition • Loss of insight • Eating disturbances • Impaired social skills • May be associated with movement disorders or motor neuron disease
Family history	Increase risk of AD (age of onset)	• Cardiovascular or cerebrovascular disease • Neuroimaging findings of stroke	Often no family history	May have strong family history (20 – 40%)
Neurological signs	Absent early on	May have focal signs	Parkinsonian symptoms (TRAP: tremor, rigidity, akinesia, postural instability)	Frontal release signs (grasp, glabellar, tap, snout)
Course	5 – 15 year course, slowly progressive 2 – 3 point decline on MMSE annually	Variable, may be sudden or "step-wise"	• DLB tends to have more rapid progression than AD • PDD may have slower progression than AD	Rapid progression over few years

Mild Cognitive Impairment

- Most dementias are preceded by a phase of mild cognitive decline (CCCDTD3; Grade B, Level 3)
  - Mild cognitive impairment (MCI) or Cognitive Impairment Not Demented (CIND), Mild Neurocognitive Disorder (DSM 5)
- Associated with increased risk of developing dementia (CCCDTD3; Grade B, level 2)
  - 10% per year conversion rate on average[1], 50% within 3 years
  - Conversion rates highest in memory clinic populations compared to community samples

1. Bruscoli, Int Psyhogeriatr, 2004

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Mild Cognitive Impairment

- Diagnosis (all criteria required)[1]:
  1.) **Cognitive complaints**
  2.) **Cognitive decline greater than expected for age**
    - Compared to age and education matched group
  3.) **No functional impairment**
  4.) Intact general cognitive functioning
  5.) Does not meet criteria for dementia
- DSM 5: mild neurocognitive disorder (identical to major neurocognitive disorder except no functional impairment)
- Subjective cognitive impairment (SCI): complaints without cognitive decline on testing, increased risk of dementia

Petersen, Arch Intern Med, 1999

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Not Sure if It's Dementia or Not?

- "Wait and see" – observation and repeat testing and informant interview in 3 - 6 months time
- Refer to specialist services
- Refer for neuropsychological evaluation (usually through specialist services)

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Referral to Specialized Services

- May include memory clinic geriatric medicine, psychiatry, neurology or psychologist (CCCDTD2, Grade 3, Level 3)
- Reasons to refer:
  - Diagnostic uncertainty
  - Request by family or patient
  - Presence of significant depression
  - Problems with dementia medications
  - Assistance with management (i.e. behaviors, home safety)
  - Genetic counselling
  - Participation in research or clinical trials

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Disclosure of Diagnosis

- In general, disclosure should be made to patient and care partner (when person with dementia consents) (CCCDTD, Grade B, Level 3)
  - Exceptions: severe dementia, severe phobia or anxiety about diagnosis
- The vast majority of individuals want to know and would like to have a straightforward answer
  - Need to also consider patient's expressed wishes (Grade B, Level III)
- The earlier the discussion about memory changes and potential causes the better (CCCDTD, Grade B, Level III)
- Involve family member or other primary sources of support
- Consider patient and family understanding, are they looking for confirmation of their concerns or expressing concern or hesitancy to acknowledge changes?

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Disclosure of Diagnosis

- Provide a specific diagnosis including dementia and Alzheimer's disease if this is the diagnosis:
  - Discuss difference between normal aging and dementia
  - Discuss the types of dementia or conditions that can cause of dementia
  - "...one of which is Alzheimer's disease, the most common cause"
- Acknowledge uncertainty: "We can't know with 100% certainty that this is Alzheimer's disease, but given what you've told me and the testing, this is probable Alzheimer's disease dementia... We'll continue to monitor things to see if there are further changes."

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Disclosure of Diagnosis

- Be *honest* but offer *optimism*:
  - "Cognitive changes will tend to slowly get worse over time, however,
  - You are in the early stages...
  - Everyone with Alzheimer's is a bit different..."
- Focus on quality of life and strengths: "You should be able to continue doing a number of things for some time (e.g. live at home, etc.)"
- Opportunity for education and discussion (CCCDTD, Grade A, Level III)
- Follow up plans must accompany diagnosis (CCCDTD, Grade A, Level III)

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Disclosure of Dementia

- Transition to discussion of what can be done:
  - **Information** on **disease** and **supports**
  - Measures to minimize extent of further decline (**lifestyle and risk factor** management)
  - Explore treatment options (**non-pharmacological** and **pharmacological**)
  - Follow-up plans and monitoring

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Safety Assessment

- Following disclosure, there may be immediate safety concerns which should take priority for immediate management
- These concerns may not be present at the time of diagnosis and will need to be monitored in follow-up to ensure safety
- Common issues related to safety may include:
  - Home safety (e.g. fires, nutrition, getting lost or wandering)
  - Driving
  - Capacity to make decisions
  - Behaviours

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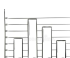
Education and Community Supports



Tailor discussion to person and care partner needs

- Psychoeducation about dementia
- Current and future needs for supports
- Future planning (advanced directives, powers of attorney)

- Assessment of Care Partner well-being and supports

- Day programs
- Respite
- Information about long-term care

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Psychosocial Interventions (CCCDTD5)

- Exercise for everyone with dementia (1B)
- Group cognitively stimulating activities (2B)
- Psychoeducational programs for care givers (2C First Link!)
- Case management to improve the continuity and coordination of services (2B)
- Discuss lifestyle and health components addressed in prevention of dementia
  - https://alzheimer.ca/en/Home/Living-with-dementia/Day-to-day-living/

Vedel, Alzheimer Dement, 2020

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Pharmacological Treatment

- All individuals with Alzheimer's disease and related forms of dementia should be offered a trial of cholinesterase inhibitor (CCCDTD, Grade A, Level 1)
  - Also includes vascular, mixed, dementia with Lewy bodies, Parkinson's disease dementia
- Selection of therapy should be based ease of use, cost, physician familiarity and patient caregiver input
- All are approved for treatment of mild to moderate Alzheimer's disease dementia (CCCDTD, Grade A, Level 1)
  - Donepezil is also approved for treatment of severe dementia
- All three cholinesterase inhibitors are similarly effective although tolerability and response may differ for each individual (CCCDTD, Grade B, Level 1)

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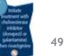
Dosing of Cholinesterase Inhibitors

	Initial Dose	Titration and Maximum Dose	Notes	Other Populations
Donepezil (Aricept)	5 mg	Increase to 10 mg in 4 weeks	Can start at lower doses if necessary (i.e. 2.5 mg)	Also recommended first for vascular dementia
Galantamine (Reminyl) extended release	8 mg	Increase to 16 mg in 4 weeks, (may further increase to 24 mg after additional 4 weeks)	Caution in hepatic or renal impairment	Alzheimer's disease with cerebrovascular component (mixed dementia), and vascular dementia
Rivastigmine (Exelon) Oral	1.5 mg BID	Increase by 1.5 mg PO BID every 4 weeks to a maximum of 6 mg PO BID	Caution in hepatic impairment	Parkinson's disease dementia and dementia with Lewy bodies, vascular dementia
Patch	5 daily	Increase to 10 daily in 4 weeks	Less likely to cause GI side-effects Cost ~$167.00, rash and skin irritation	

Ontario Drug Benefits Limited Use Criteria:

LU Code: 347 MMSE 10 – 26, initial 3 month trial

LU Code: 348 MMSE 10 – 26, continuation with evidence of benefit or stabilization, up to 1 year



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Side-Effects with ChEI

- Contraindication to ChEI: cardiac conduction deficits
  - Consider baseline EKG and follow-up EKG in at risk patients (e.g. cardiac history, history of syncope)
- Caution in individuals with advanced COPD, peptic ulcer disease, seizures

Side Effect	Donepezil	Galantamine	Rivastigmine
Nausea Vomiting	9% 5%	15% 10%	33% 23%
Diarrhea	10%	--	16%
Anorexia Weight Loss	5% 4%	8% 5%	14%
Sleep disturbances	5%	--	--
Muscle cramps/pain	10%		
Dizziness Syncope/bradycardia	3% Uncommon	6% --	10% --
Urinary frequency/ incontinence	--	--	--

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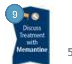
Memantine (Ebixa)

- Treatment option for **moderate to severe** Alzheimer's disease (CCCDTD, Grade B, Level1)
  - Also may be used in vascular, mixed, PDD, DLB
- Can be combined with to cholinesterase inhibitor (CCCDTD, Grade B, Level 1)

	Initial Dose	Titration and Maximum Dose	Notes	Other Populations
Memantine (Ebixa)	5 mg PO OD	Increase to 5 mg BID in 7 days, further increase by 5 mg every 7 days to maximum of 10 mg BID	Not covered on ODB, cost is approximately $125.00/month Needs to be dosed according to renal function: **eGFR**: > 60 no adjustment 30 – 60, max 10 mg daily <30 mg not recommended	May also be used for vascular dementia, mixed dementia, Parkinson's disease, dementia with Lewy bodies and Frontotemporal dementia



Monitoring and Follow-up

- Evaluate every 3 – 6 months after starting treatment (CCCDTD, Grade B, Level III)
  - Caregiver interview, cognitive testing (MoCA) or functional assessment (FAQ)
  - Review capacity for decisions, behavior, safety, and driving (Module 3)
- Treatment should be continued if there is an *initial* stabilization or improvement in memory, other areas of cognition or meaningful manifestations of dementia
  - Loss of initial benefit not a reason to discontinue
- If no response to initial treatment, consider switching to another ChEI
  - ↓ 1st to starting dose and initiate 2nd at starting dose for 2 – 4 weeks, then discontinue 1st ChEI and increase 2nd

Deprescribing Cognitive Enhancers

- Decision should take into account patient and family preferences, prior wishes and in collaboration with family/SDM (1C)
- After > 12 months treatment, consider deprescription of cholinesterase inhibitor or memantine if meaningful worsening of cognition, no benefit realized initially, severe end-stage dementia, side-effects or poor adherence (AD, VaD, DLB, PDD) (1B/1C)
- Gradual dose reduction (50% every 4 weeks until starting dose reached), restart if worsening of behaviours or cognition noted (1B)
- Don't stop in people with significant behaviours unless behaviours were worsened by cognitive enhancer (2B)
- Continue in individuals who had behavioural improvement (2B)

Herrmann et al, Alzheimer Dement, (in press)

Thank you!