Twelve tips for assessing and managing mild cognitive impairment and major neurocognitive disorder in older people

Twelve practical and evidence-informed recommendations can help in the delivery of dementia care.

ABSTRACT: Assessing and managing older patients with mild cognitive impairment and dementia (classified as major neurocognitive disorder in DSM-5) can be challenging. A comprehensive literature review provides support for 12 practical and evidence-informed tips: (1) Cognitive testing should be routine when assessing older patients, although an abnormal result is not necessarily diagnostic of cognitive impairment or dementia, especially in the presence of delirium. (2) The cognitive test chosen should be based on the patient’s functional status. (3) Brain imaging is recommended in a number of clinical situations according to commonly accepted guidelines but is not necessary in all cases. (4) Comprehensive geriatric assessment can add value if the cognitive diagnosis is unclear or geriatric syndromes are present. (5) Medical treatment of modifiable vascular risk factors for mild cognitive impairment and major neurocognitive disorder should be optimized. (6) Cholinesterase inhibitors should be considered as first-line pharmacotherapy in patients with the diagnosis of major neurocognitive disorder. (7) A baseline electrocardiogram should be obtained before a patient commences cholinesterase inhibitor therapy. (8) Antipsychotic medications should not be used routinely in dementia care, and nonpharmacological approaches should be considered when managing behavioral and psychological symptoms of dementia. (9) Monitoring disease progression and response to treatment should be part of dementia care. (10) Safety concerns should be addressed with the involvement of other professionals. (11) A goals-of-care discussion should be part of dementia care. (12) The impact of stress on care providers should be assessed routinely and managed proactively.

A comprehensive literature review reveals how much our understanding of cognitive impairment and dementia (classified as major neurocognitive disorder in DSM-5) has changed over the last 2 decades. The incidence of dementia is projected to significantly increase in the next 30 years, and the burden of illness on society will be huge. Physicians who are assessing, diagnosing, managing, and monitoring older patients with cognitive impairment or dementia may be helped by 12 recommendations based on current evidence and guidelines, summarized in the accompanying box and described in more detail below.

Recommendations

While the following recommendations apply to older adults being treated in a variety of clinical settings, the

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management suggestions must be tailored to each patient.

1. Cognitive testing should be routine when assessing hospitalized older patients. Older patients who are hospitalized due to acute illness are at risk of developing delirium, especially if they have underlying and perhaps undiagnosed cognitive impairment. Multiple factors can contribute to delirium, including medication use, infection, electrolyte and acid-base metabolic disturbances, stroke, intracranial hemorrhage, urinary retention, fecal impaction, the use of restraints, sleeping difficulties, and altered nutrition. Although patients who develop delirium during their hospital stay can experience transient cognitive decline and improve once the acute illness has resolved, in-hospital delirium can also be a starting point for further cognitive decline and is predictive of future dementia. Recurrent hospitalizations may also increase the rate of a progressive cognitive decline.

Because findings on cognitive testing can be affected by the presence of delirium, a definitive diagnosis of mild cognitive impairment, and major neurocognitive disorder requires further cognitive testing at a later time. Specifically, we recommend conducting cognitive testing when the delirium has resolved and the patient has returned to the best possible cognitive baseline. It is entirely appropriate to schedule an outpatient follow-up appointment for cognitive assessment. In fact, this can also provide an opportunity to establish a new baseline or determine a cognitive trajectory, thereby providing a more realistic prognosis.

2. The cognitive test should be chosen based on the patient’s functional status. Cognitive testing in older patients is usually done to differentiate between normal aging, mild cognitive impairment, and major neurocognitive disorder. Two commonly used cognitive tests are the Mini-Mental State Exam (MMSE) and the Montreal Cognitive Assessment (MoCA). Both tests have good psychometric properties, are easy to administer, and are standardized and validated. Both are available in multiple translated versions.

The MoCA is the more challenging of the two tests and the preferred screening tool for patients who have memory complaints but are otherwise functionally intact. These patients would usually have MMSE scores in the normal range. The MoCA has a sensitivity value of 92% for detecting mild cognitive impairment and 100% for detecting early Alzheimer disease in patients who score 26 or higher on the MMSE. The test has a specificity value of approximately 82% for detecting mild cognitive impairment. MoCA results can be affected by the patient’s language and level of education.

The MMSE is the preferred screening tool for patients with cognitive deficits accompanied by functional loss. Reviewing the individual item scores rather than the total score can often provide useful information about a patient’s cognition. The MMSE has good sensitivity (71% to 92%) and specificity (56% to 98%) for detecting dementia among community dwelling older people. It has, however, low sensitivity for detecting mild cognitive impairment. MMSE results can be affected by the patient’s language, level of education, and social and cultural background.

3. Brain imaging is recommended in a number of clinical situations but is not necessary in all cases. Current Canadian consensus guidelines recommend brain imaging for patients with cognitive decline when the following clinical features are present:

**Box. Recommendations for assessing and managing mild cognitive impairment and major neurocognitive disorder**

1. Cognitive testing should be routine when assessing hospitalized older patients.
2. The cognitive test should be chosen based on the patient’s functional status.
3. Brain imaging is recommended in a number of clinical situations but is not necessary in all cases.
4. Comprehensive geriatric assessment can add value if the cognitive diagnosis is unclear or geriatric syndromes are present.
5. Medical treatment of modifiable vascular risk factors for mild cognitive impairment and major neurocognitive disorder should be optimized.
6. Cholinesterase inhibitors should be considered as first-line pharmacotherapy in patients with the diagnosis of major neurocognitive disorder.
7. A baseline electrocardiogram should be obtained before a patient commences cholinesterase inhibitor therapy.
8. Antipsychotic medications should not be used routinely in dementia care, and nonpharmacological approaches should be considered when managing behavioral and psychological symptoms of dementia.
9. Monitoring disease progression and response to treatment should be part of dementia care.
10. Safety concerns should be addressed with the involvement of other professionals.
11. A goals-of-care discussion should be a part of dementia care.
12. The impact of stress on care providers should be assessed routinely and managed proactively.
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age less than 60 years, rapid progression or short duration of dementia, unexplained neurological symptoms or focal neurological signs, recent significant head trauma, use of anticoagulants or bleeding disorder, history of gait disorder and urinary incontinence early in the course of dementia, history of cancer, and atypical cognitive symptoms or presentation. Neuroimaging in these situations may provide additional diagnostic or prognostic information that alters the management plan. The preferred modality is magnetic resonance imaging because it is more sensitive in detecting hippocampal and entorhinal cortex atrophy, which can be predictive of early Alzheimer disease. Medial temporal lobe volume loss or global brain volume changes on MRI are also associated with the clinical conversion from mild cognitive impairment to major neurocognitive disorder, albeit with limited accuracy. Brain CT is a reasonable alternate neuroimaging modality given the ease of access in most centres. Fluoro-D-glucose (FDG) positron emission tomography (PET) and single photon emission computed tomography (SPECT) of regional cerebral blood flow (rCBF) can be helpful for differential diagnostic purposes, although they are not routinely used. Amyloid PET is used mainly in the research setting. Functional MRI is not recommended for patients with cognitive decline at this time.6

4. Comprehensive geriatric assessment can add value if the cognitive diagnosis is unclear or geriatric syndromes are present. In British Columbia and many jurisdictions in Canada, the initial diagnosis and subsequent management plan for mild cognitive impairment and major neurocognitive disorder are often initiated by family physicians, geriatricians, and geriatric psychiatrists. In the primary care setting, screening for cognitive changes can occur over multiple office visits.7 When the cognitive diagnosis is unclear or patients present with additional geriatric syndromes (delirium, depression, or drug-related problems), comprehensive geriatric assessment can be helpful. Many older patients present with a number of symptoms suggestive of geriatric syndromes, including falls, frailty, incontinence, dizziness, and functional decline. Comprehensive geriatric assessment can be helpful in these situations, with evidence to suggest benefits in reduced inpatient mortality, preserved function, and delayed placement in long-term care.8

5. Medical treatment of modifiable vascular risk factors for mild cognitive impairment and major neurocognitive disorder should be optimized. Patients with mild cognitive impairment are at risk of progressing to major neurocognitive disorder, with the literature suggesting a conversion rate of 10% to 15% a year. Some risk factors for dementia are not modifiable, including advanced age, female gender, lower education, family history, Down syndrome, traumatic brain injury, and genetic factors such as the presence of an APOE e4 allele and mutations in the APP gene that cause formation of abnormal amyloid precursor protein. Other risk factors are potentially modifiable, including hypertension, dyslipidemia, diabetes, and cigarette smoking. These modifiable risk factors have been shown to play a possible role in accelerating the progression of Alzheimer disease, vascular cognitive impairment, and mixed dementia. Recent studies have suggested that multidomain interventions, including dietary intervention, exercise, cognitive training, and vascular risk factor management can significantly improve cognition in at-risk older people after 2 years of intervention.9 Hence, we recommend optimizing treatment of modifiable vascular risk factors and counseling for smoking cessation in all patients with mild cognitive impairment and major neurocognitive disorder. In addition, regular and moderate aerobic exercise, moderate alcohol intake, and Mediterranean diet have been shown to have potentially protective effects in preventing cognitive decline.10,11

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6. Cholinesterase inhibitors should be considered as first-line pharmacotherapy in patients with the diagnosis of major neurocognitive disorder. Cholinesterase inhibitors have been studied in patients with mild cognitive impairment and major neurocognitive disorder. While there is no good evidence to support their use in mild cognitive impairment and they are not recommended for this, reasonably strong evidence supports cholinesterase inhibitors as first-line therapy in patients with dementia, including Alzheimer disease, vascular dementia, and mixed dementia. There is also good evidence that patients with mild, moderate, or severe Alzheimer disease or vascular dementia experience increased cognitive function, better global clinical state, and improvement in activities of daily living (ADL) function and behavior after 6 months of treatment with cholinesterase inhibitors.\(^{12-15}\)

Currently, three cholinesterase inhibitors are commonly prescribed in Canada (Table 1).

### Table. Cholinesterase inhibitor medications for managing dementia.

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Indications</th>
<th>Benefits</th>
</tr>
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<tbody>
<tr>
<td>Donepezil</td>
<td>5.0–10.0 mg/day</td>
<td>AD (mild, moderate, severe)</td>
<td>+ + +</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VD (mild, moderate)</td>
<td>+ + +</td>
</tr>
<tr>
<td>Rivastigmine</td>
<td>4.5 or 9.5 or 13.3 mg/day</td>
<td>AD (mild, moderate, severe)</td>
<td>+ + +</td>
</tr>
<tr>
<td>Galantamine</td>
<td>8.0 or 16.0 or 24.0 mg/day</td>
<td>AD (mild, moderate, severe)</td>
<td>+ + –</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VD (mild, moderate, severe)</td>
<td>+ + –</td>
</tr>
</tbody>
</table>

 Abbreviations: AD = Alzheimer disease; VD = vascular dementia

7. A baseline electrocardiogram should be obtained before a patient commences cholinesterase inhibitor therapy. Patients should undergo electrocardiography before starting cholinesterase inhibitor therapy since a number of cardiovascular side effects are associated with this therapy, including vagotonic effects, bradycardia and/or heart block, prolonged QT interval, and other conduction abnormalities. Patients with sick sinus syndrome, bradycardia with a heart rate persistently less than 50 beats per minute (bpm), or conduction abnormalities such as second- and third-degree heart block and left bundle branch block should not receive cholinesterase inhibitor therapy until their underlying cardiac condition is treated. Furthermore, caution and close monitoring of the heart rate are needed when a patient has first-degree heart block, a history of unclarified syncope, or any combination of the above.\(^{16}\)

While cholinesterase inhibitor therapy can begin in asymptomatic patients with a heart rate above 50 bpm, monitoring of the heart rate should continue and patients should be educated about symptoms of bradycardia. If the patient becomes symptomatic, further cardiac investigation is required.\(^{17}\)

8. Antipsychotic medications should not be used routinely in dementia care, and nonpharmacological approaches should be considered when managing behavioral and psychological symptoms of dementia (BPSD). Examples of BPSD include depression, apathy, agitation, restlessness, delusions, and hallucinations, all of which can contribute to safety concerns. The presence of behavioral and psychological symptoms of dementia is the strongest predictor of care provider burnout, increased institutionalization rate, and overall health care costs. For patients presenting with behavioral and psychological symptoms, delirium must be ruled out first. Common precipitating causes of delirium include drug effect, infection (pneumonia, urinary tract infection, skin infection), metabolic abnormalities, intracranial structural lesion, urinary retention, and fecal impaction. After delirium has been ruled out, nonpharmacological measures should be considered. These include care provider education, behavioral therapy such as the antecedent-behavior-consequence approach, and development of an individualized care plan.

For depression or apathy, selective serotonin reuptake inhibitor (SSRI) antidepressants can be considered. For agitation and aggression in the context of moderate to severe dementia, the cholinesterase inhibitors rivastigmine and donepezil may be effective.\(^{18}\)

There is inconclusive evidence for the effectiveness of typical antipsychotic medications such as haloperidol, loxapine, and methotrimeprazine in managing BPSD. There is also
inconclusive evidence for the effectiveness of the atypical antipsychotic quetiapine. Two other atypical antipsychotics, olanzapine and risperidone, have been studied in patients with severe agitation or psychosis who are at imminent risk of self-harm or harming others, and their use in managing BPSD remains controversial. Furthermore, a number of atypical antipsychotic medications have been shown to increase all-cause mortality in patients with dementia. A recent study has extended the evaluation to patients who have been treated with first- or second-generation antipsychotic medications, benzodiazepines or benzodiazepine-like medications, and tricyclic or serotonergic antidepressant medications. The all-cause mortality was actually shown to be significantly higher in all medication groups when compared with control groups. Side effects associated with the use of antipsychotic medications included sedation or decreased level of consciousness, extrapyramidal symptoms, prolonged corrected QT interval with increased risk of ventricular arrhythmias, and metabolic changes. In the case of SSRIs, side effects included hyponatremia secondary to the syndrome of inappropriate antidiuretic hormone secretion.

9. Monitoring disease progression and response to treatment should be part of dementia care. When patients are diagnosed with cognitive impairment, it is important to document their cognitive and functional baseline and emphasize the importance of follow-up care. In patients with mild cognitive impairment, it is worthwhile to outline the role of vascular risk factor management, and nutritional status, care provider health, and personal safety issues. Urinary and fecal incontinence should also be documented, as these can play an important role in decisions about placement in a long-term care facility.

10. Safety concerns should be addressed with the involvement of other professionals. The use of multiple medications, declining driving skills, and wandering behavior all pose risks to the personal safety of patients with dementia and are challenging areas for care providers. When appropriate, other professionals should be asked to help address these risks.

The risk posed by polypharmacy is common in older people and can be especially problematic in patients with dementia. If possible, the number of medications and the dosing frequency should be reduced, and the use of medications to treat the side effects of other medications (a prescribing cascade) should be avoided. It is important to regularly review medications, both prescription and over-the-counter, and document whether the patient is taking medications from vials, using a dosette or a blister pack, or has issues with medication adherence. A formal medication reconciliation should be undertaken annually and after each hospitalization to prepare a comprehensive list of the medications the patient is taking, the indication for each, and any concerns about responses to therapy and possible side effects. A pharmacist can help conduct a medication review or reconciliation, suggest medication reduction strategies, and review medication administration.

Driving assessment must be a routine part of dementia care. It is important to ascertain whether there are any concerns about recent at-fault accidents, near misses, problems with

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parking, being impulsive on the road, making mistakes, or getting lost while at the wheel. Self-reported information is not reliable, as the patient may have impaired insight. Red flags during the assessment include a patient’s admission to driving only in a limited geographic area or with supervision, and a family member’s report of being afraid while in the passenger seat. Any concerns about a patient’s driving safety should prompt a full cognitive and functional assessment and referral to the licensing authority for further evaluation. This is a legal requirement in British Columbia and many other jurisdictions.

Wandering puts patients at risk of falls and other injuries. Patients with dementia who exhibit wandering behavior may be registered with the Alzheimer Society MedicAlert Safely Home program or may consider using the Alzheimer Society MedicAlert Safely program. Alzheimer Society MedicAlert Safely helps dementia who exhibit wandering and falls and other injuries. Patients with dementia who exhibit wandering behavior may be registered with the Alzheimer Society MedicAlert Safely Home program or may consider using the Alzheimer Society MedicAlert Safe program. Alzheimer Society MedicAlert Safe helps dementia who exhibit wandering and falls and other injuries.

11. A goals-of-care discussion should be a part of dementia care. As dementia progresses, the patient’s capacity to make personal and health care decisions is reduced, although difficult, task. There is no single best time to initiate such a conversation, and the discussion must be tailored to the background health values and attitudes of the patient. Once the patient and care providers have time to accept and learn more about the diagnosis of dementia, they may be ready for a guided, open-ended discussion about plans for future care. Research shows that patients who engage in a goals-of-care discussion are more likely to think about their future and their wishes, and to report feeling relieved and less anxious about the future.26 A better education and higher executive function have been shown to be positive predictors of the patient’s willingness to engage in a goals-of-care discussion.27 It is important to discuss resuscitation (code) status, power-of-attorney arrangements, representation agreements, and feeding issues, especially when the patient’s dementia is progressing to the advanced stage.

12. The impact of stress on care providers should be assessed routinely and managed proactively. Care providers who are responsible for dementia patients experience stress from both the subjective and objective burdens of caregiving, and are known to be at higher risk for clinical depression. Care provider stress is associated with the severity of the dementia patient’s cognitive and behavioral symptoms, repetitive or aggressive behavior, and the need for long hours of caregiving. In addition, care providers may also experience resentment, lack of support, financial strain, and a loss of personal freedom. Engaging in self-improvement, self-care, spirituality, humor, and mindfulness-based stress reduction, as well as increasing social and family support can help care providers cope. Education, support groups, and the services of home care workers, case managers, and social workers are crucial. Referral to the Alzheimer Society’s First Link program, preferably at the time of diagnosis or early in the follow-up process, can ensure connections are made to appropriate resources (www.alzheimer.ca/en/We-can-help/Resources/For-health-care-professionals/First-link or 1 800 936-6033). Offering the care provider some relief through home care, respite care, or day programs can ensure some private time for leisure activities and stress reduction and contribute to a better quality of life for both the care provider and the patient.28,29

Summary
In this article, a comprehensive literature review provides support for 12 practical and evidence-informed tips for assessing and managing older patients with mild cognitive impairment or major neurocognitive disorder. These recommendations include guidance about cognitive testing and brain imaging, medical treatment of modifiable vascular risk factors for dementia, and the use of cholinesterase inhibitors and other medications. We also reviewed and summarized information about monitoring disease progression and response to treatment, addressing safety concerns with the involvement of other professionals, ensuring a goals-of-care discussion is part of dementia care, and managing care provider stress. While these recommendations apply to older adults treated in a variety of clinical settings, the management suggestions must be tailored to each patient.

Competing interests
None declared.

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