Validation of indicators of the management of cognitive impairment in geriatric assessment units

Isabelle Payot MD  Judith Latour MD FRCPC CSPQ  Fadi Massoud MD FRCPC CSPQ  Marie-Jeanne Kergoat MD CCFP FCFP CSPQ

ABSTRACT

OBJECTIVE  To analyze and adapt a set of quality indicators for assessment and management of patients with cognitive disorders, which are seen very frequently in geriatric assessment units in Quebec.

DESIGN  Modified Delphi technique.

SETTING  Province of Quebec.

PARTICIPANTS  Seven clinicians from 3 different medical faculties in Quebec were selected for their expertise in dementia and geriatric care.

METHOD  From among the indicators developed in 2001 using the RAND method, 22 items selected for their relevance to evaluation and management of cognitive disorders were adapted to clinical practice in the Quebec hospital system. These indicators, along with evidence from the literature, were submitted by mail to a panel of experts. The experts were asked to rate, on a scale of 1 to 9, their level of agreement with the indicators in terms of their validity and quality and the need for them to be recorded in patients’ medical charts. For an indicator to be retained, it had to be accepted according to its median value, to be rated in the upper third of the scale, and to be approved by the panelists. Indicators not accepted at first were modified according to experts’ comments and then resubmitted to the same panel for a second round.

RESULTS  Of 22 indicators submitted in the first round, 21 were validated. They covered assessment, investigation, evaluation, treatment, and follow-up. The indicator found questionable was modified and then accepted during the second round.

CONCLUSION  This study identified 22 indicators relevant to assessment and management of patients with cognitive disorders in geriatric assessment units. These indicators will serve as a basis for evaluation of dementia in a larger study of the quality of care in all short-term geriatric assessment units in Quebec.

EDITOR’S KEY POINTS

• This study identifies quality indicators for assessment and management of cognitive impairment in elderly patients in hospital geriatric assessment units.
• These indicators will be used to assess the quality of care in all short-term geriatric care units in Quebec and might help improve the care given to vulnerable elderly patients.
The elderly represent an increasingly large segment of the population, demographically and economically. The prevalence of all forms of dementia is rising in Canada, and the management of cognitive impairment in persons over the age of 65 years is challenging the organization of the healthcare system.

One-third of all acute care medical beds are occupied by elderly patients with significant cognitive impairment. In geriatric assessment units—the optimal setting for the care of vulnerable elderly patients—over 50% of hospitalized patients are diagnosed with some form of cognitive disorder.

The care received by elderly patients for certain conditions such as dementia, incontinence, and falls is often suboptimal. In spite of growing awareness of the magnitude of cognitive impairment in an increasingly elderly population and in spite of the treatments that are available, the detection and management of cognitive impairment in hospitals remains inadequate.

In contending with scarce resources, health care administrators and professionals are increasingly concerned with making care more efficient and improving the quality of care. Indicators have been developed so that quality of care can be measured objectively. Some studies have shown that the use of these indicators improves both compliance with the recommendations for certain conditions and the quality of care that is delivered. However, their clinical benefit remains to be validated in a number of areas.

For the purpose of harmonizing and improving clinical interventions, we wanted to identify indicators of quality that apply specifically to the assessment and management of cognitive impairment in elderly hospital patients. These indicators will be used to determine the quality of care procedures in a study involving all geriatric assessment units in Quebec.

Method

We used a modified Delphi technique (i.e., an iterative consultation of experts on a given subject) inspired by the RAND approach to reach a consensus on the validity and feasibility of the quality indicators.

First, using information drawn from the scientific literature, we developed an algorithm for each step in the assessment and management of cognitive impairment. To analyze the relevance of these various steps, we based our research on recommendations issued by the relevant medical associations that we felt were reflective of clinical practice in Quebec and on a number of articles that we felt were relevant.

With the help of three geriatricians associated with the research program on the quality of care delivered in geriatric assessment units, and using the algorithm, we then selected 22 ACOVE (Assessing Care of Vulnerable Elders) indicators that we felt were essential to the optimal management of cognitive impairment in elderly patients hospitalized in geriatric assessment units.

Next, we submitted these indicators to a panel of experts for validation. The panel members were chosen for their recognized clinical expertise in cognitive impairment and their experience working with hospitalized geriatric clientele. Seven physicians who teach care of the elderly and dementia and who work in the teaching hospitals of three Quebec faculties of medicine took part in this validation process. They included 4 geriatricians, 2 neurologists, and one general practitioner.

For the validation process, the indicators were mailed to the panel members with evidence from the literature. The indicators were presented in the form of fiches or information sheets, with supporting documentation. In every case, the documentation was supported by three guidelines on the assessment and management of dementia.

For each indicator, the panel member was instructed to indicate his or her level of agreement with statements pertaining to the validity and quality of the indicator and the need to enter it into the patient's medical record. Level of agreement was recorded on a 9-point Likert scale (with 1 representing complete disagreement and 9 representing complete agreement).

Each indicator was judged according to 4 criteria. Hence, an indicator was considered valid if:

- The scientific evidence or a professional consensus showed a link between the process identified by the indicator and some benefit to the patient's health;
- The indicator was relevant for measuring the quality of care delivered to vulnerable elderly patients;
- It had been determined that care deliverers who followed this indicator closely provided better quality care and services; and
- The information on this indicator was in the patient's record.

Our analyses were based on the RAND/UCLA Appropriateness Method, a method of statistical measurement frequently used and adapted to all panel sizes. In order for an indicator to be retained, it had to be the subject of a consensus according to the median values, it had to be in the top tertile (7 to 9), and it had to receive the approval of the experts. The scores were recorded, and the comments were analyzed. Inter-expert agreement was determined by the level of agreement or disagreement according to the InterPercentile Range (IPR), a statistical measurement of distribution on the InterPercentile Range Adjusted for Symmetry, using the
Figure 1. Algorithm for clinical decision-making with respect to cognitive impairment

Screening

Cognitive assessment upon admission to the geriatric unit

Abnormal cognitive function

Work-up:
- Search for risk factors
- In-depth anamnesis and neurological examination
- Functional anamnesis
- Lab tests (TSH, Vit. B-12-folates, VDRL and HIV, if necessary)
- Cerebral imaging (CT scan or MRI)
- Rx chest to eliminate cause of delirium
- Screening for depression
- Assessment of medications

Investigation/assessment

Dementia

Assessment:
- Functional autonomy
- Safety at home/behind the wheel
- Financial competency
- Self-administration of medications
- Ability to feed correctly
- Present and future abilities (financial, legal, instructions for future care)

Severity:
- Mild
- Moderate
- Severe

Care Plan:
- Pharmacological and non-pharmacological treatment
- Treatment of comorbidities aggravating dementia
- Treatment of complications

Care Plan

File Summary

Follow-up

Long-term follow-up

Care Team
- Patient
- Family
- Care Team

Support
- Social network
- Community resources

Cognitive impairment of some other origin

Not assessed

Normal

Screening

Not assessed

Normal

Abnormal cognitive function

Investigation/assessment

Dementia

Assessment:
- Functional autonomy
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Table 1. Synthesis of our review of the relevant literature on the management of cognitive impairment

<table>
<thead>
<tr>
<th>Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given the prevalence and repercussions of cognitive impairment and the possibilities for intervention, screening is recommended for at-risk populations, especially individuals presenting with subjective complaints and age groups in which the prevalence is high (&gt;80 years).</td>
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<table>
<thead>
<tr>
<th>Investigation</th>
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<tbody>
<tr>
<td>If screening suggests cognitive impairment, assessment and management are necessary. Assessment involves a clinical history and a complete physical examination with special attention to the neurological system. Functional autonomy, i.e., the activities of daily living, must also be fully assessed; a decline in this area is an important diagnostic criterion for dementia. Basic lab tests are indicated in some situations, as is structural neuro-imaging, especially to rule out a cause secondary to, or aggravating, the dementia.</td>
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</table>

<table>
<thead>
<tr>
<th>Assessment</th>
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</thead>
<tbody>
<tr>
<td>Once the assessment is complete, the diagnosis must be delivered, discussed, and explained to the patient and his or her family and caregivers. Once the diagnosis has been delivered, there are several non-pharmacological factors to consider: functional autonomy, safety behind the wheel, instructions for future care (decisions with respect to end-of-life care, the disposition of property, etc.), and care services.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Treatment</th>
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<tbody>
<tr>
<td>In terms of pharmacological treatment, the prevention and aggressive treatment of cardiovascular risk factors and the introduction of an acetylcholinesterase inhibitor represent the gold standard for the treatment of Alzheimer’s disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>The diagnosis and management of dementia require a multi-dimensional approach. Information about diagnostic tests and interventions for dementia must be systematically communicated to the patient’s family physician and front-line care providers in the community to ensure continuity of care when the patient is discharged.</td>
</tr>
</tbody>
</table>

Table 2. Description of indicators of quality in clinical practice

<table>
<thead>
<tr>
<th>THE CLINICAL DIMENSION</th>
<th>INDICATORS OF QUALITY (IQ)</th>
<th>MEDIAN</th>
<th>IPRAS/IPR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>1: If a vulnerable elderly person is hospitalized in a geriatric department (short-term geriatrics unit), a comprehensive geriatric assessment, including cognitive function and functional status, must be performed.</td>
<td>8</td>
<td>6.8/0.07</td>
</tr>
<tr>
<td>Investigation</td>
<td>2: If a vulnerable elderly person admitted to a short-term geriatrics unit is assessed for cognitive impairment, his or her Vitamin B12 and thyreostimulin (TSH or thyroid-stimulating hormone) levels must be measured.</td>
<td>7</td>
<td>5.35/2</td>
</tr>
<tr>
<td>Investigation</td>
<td>3: If a vulnerable elderly person admitted to a short-term geriatrics unit presents with cognitive impairment that has never been investigated and clinical symptoms suggesting an intracranial process, a neuro-imaging test such as a cerebral CT scan must be performed.</td>
<td>7.5</td>
<td>6.85/2</td>
</tr>
<tr>
<td>Investigation</td>
<td>4: If a vulnerable elderly person admitted to a short-term geriatrics unit presents with cognitive impairment, the physician must review the list of medications the patient is taking in order to determine whether the onset of symptoms coincides with the initiation of pharmacological treatment and, if so, he must discontinue this treatment if the patient’s clinical condition permits.</td>
<td>9</td>
<td>8.35/0</td>
</tr>
<tr>
<td>Investigation</td>
<td>5: If a vulnerable elderly person admitted to a short-term geriatrics unit presents with cognitive impairment, this person must receive screening for depression during the initial assessment and, if necessary, treatment must be initiated.</td>
<td>8</td>
<td>7.17/0.43</td>
</tr>
<tr>
<td>Investigation</td>
<td>6: If a vulnerable elderly person with dementia is admitted to a short-term geriatrics unit a possible diagnosis of delirium must be investigated and, if confirmed, the precipitating factors must be assessed and treated.</td>
<td>8</td>
<td>6.42/1.43</td>
</tr>
<tr>
<td>Assessment</td>
<td>7: If a vulnerable elderly person with dementia is assisted by a caregiver, the physician or a competent profession must have a discussion with the patient, if possible, or with his or her caregiver about safety, his or her need for support services, the resources available in the community for persons with dementia, and strategies for resolving conflicts related to the progression of the disease.</td>
<td>8</td>
<td>7.6/1</td>
</tr>
<tr>
<td>THE CLINICAL DIMENSION</td>
<td>INDICATORS OF QUALITY (IQ)</td>
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<tr>
<td>Assessment</td>
<td>8: If a vulnerable elderly person admitted to a short-term geriatric unit was recently diagnosed with dementia and has a valid driver's license, the physician who made the diagnosis along with his team must assess the patient's ability to drive safely and, if necessary, notify the Société d'assurance automobile du Québec.</td>
<td>8.5</td>
<td>7.28/1.43</td>
</tr>
<tr>
<td>Assessment</td>
<td>9: If a vulnerable elderly person with dementia is hospitalized, the medical record must contain the name of the person who is the patient's significant caregiver or a legal representative who can be contacted in any situation or the record must indicate that there is no such person.</td>
<td>7</td>
<td>6.1/1</td>
</tr>
<tr>
<td>Assessment</td>
<td>10: If a vulnerable elderly person diagnosed as having advanced dementia is hospitalized in a short-term geriatric unit, the level of intervention must be determined with the guardian or caregiver, following the patient's instructions for future care.</td>
<td>8</td>
<td>6.42/1.43</td>
</tr>
<tr>
<td>Assessment</td>
<td>11: If a vulnerable elderly person with dementia requires elective surgery, the medical record must document the patient's ability to understand the risks, benefits, and consequences of the proposed procedure before the consent form is presented for signing or if the patient is unable to understand the risks, benefits, and consequences of the surgery, they must be explained to the patient's legal representative or next of kin.</td>
<td>9</td>
<td>7.6/1</td>
</tr>
<tr>
<td>Assessment</td>
<td>12: Any vulnerable elderly person with dementia who is hospitalized in a short-term geriatric unit must be weighed and his or her weight must be recorded in the medical record.</td>
<td>8</td>
<td>7.17/0.43</td>
</tr>
<tr>
<td>Intervention</td>
<td>13: If it has been documented that a vulnerable elderly person with dementia who has been admitted to a short-term geriatric unit has lost weight involuntarily, a potential reversible cause of this weight loss must be investigated.</td>
<td>8</td>
<td>7.6/1</td>
</tr>
<tr>
<td>Treatment</td>
<td>14: If a vulnerable elderly person who has been admitted to a short-term geriatric unit suffers from mild to moderate Alzheimer's disease, vascular dementia, mixed dementia or dementia with Lewy bodies, the attending physicians must discuss treatment with acetylcholinesterase inhibitors with the patient and/or his or her caregiver.</td>
<td>7</td>
<td>6.85/2</td>
</tr>
<tr>
<td>Treatment</td>
<td>15: If a vulnerable person is admitted to a short-term geriatric unit with dementia and concomitant cerebral vascular disease, he or she must receive appropriate secondary prevention treatment.</td>
<td>8</td>
<td>5.35/2</td>
</tr>
<tr>
<td>Treatment</td>
<td>16: A vulnerable elderly person with cognitive impairment who is admitted to a short-term geriatric unit should not receive medication with major anticholinergic effects.</td>
<td>8</td>
<td>7.6/1</td>
</tr>
<tr>
<td>Treatment</td>
<td>17: A person with dementia who is admitted to a short-term geriatric unit should not receive medication with long-acting sedative (hypnotic, anxiolytic) properties, unless this medication is explicitly justified in the medical record.</td>
<td>8</td>
<td>7.6/1</td>
</tr>
<tr>
<td>Treatment</td>
<td>18: If an elderly person with cognitive impairment must be physically restrained in a short-term geriatric unit, within 48 hours, the factors justifying the use of the restraints (behavioral problems, safety problems) must be explained to the patient (if he or she is capable of understanding) or to his or her legal representative and entered into the record and the restraints should be used for the absolute minimum amount of time.</td>
<td>8</td>
<td>7.6/1</td>
</tr>
<tr>
<td>Intervention</td>
<td>19: If a vulnerable elderly person with dementia is admitted to a short-term geriatric unit, planning for discharge with the appropriate home care organization should begin as soon as the patient's health situation has stabilized.</td>
<td>8</td>
<td>5.78/1.43</td>
</tr>
<tr>
<td>Follow-up</td>
<td>20: The short-term geriatric unit staff must ensure that vulnerable elderly patients with cognitive impairment or their caregivers are able to identify a regular attending physician or care manager who will ensure follow-up.</td>
<td>7</td>
<td>6.1/1</td>
</tr>
<tr>
<td>Follow-up</td>
<td>21: If a vulnerable elderly patient is discharged from the short-term geriatric unit and sent home or to a long-term care facility or any other health institution, a hospitalization summary must be sent to the attending physician or the physician responsible for the patient within 2 weeks.</td>
<td>7</td>
<td>6.1/1</td>
</tr>
<tr>
<td>Follow-up</td>
<td>22: If a vulnerable elderly patient with cognitive impairment is discharged from a short-term geriatric unit and a service plan was suggested to him, care must be taken to ensure that his or her caregiver is informed of this plan (description of services offered, objectives and targeted outcomes, reason for their inclusion in the plan) and commits to it.</td>
<td>7.5</td>
<td>6.1/1</td>
</tr>
</tbody>
</table>

*If IPRAS (Interpercentile Range Adjusted for Symmetry) / IPR (InterPercentile Range) < 1: disagreement amongst the experts.
33\textsuperscript{14} and the 67\textsuperscript{th} percentile as the lower and upper limits respectively. If the IPR was higher than the IPRAS, the indicator was scored as being in disagreement. Indicators that had an average score of less than 3 or upon which the experts did not agree were eliminated at the outset. Indicators that had a score of 7 or more in addition to inter-expert agreement were accepted as is. Indicators that had a middling score were modified on the basis of comments by the experts, then resubmitted to the panel for a second round.

**RESULTS**

Of the 22 indicators of quality submitted to the panel of experts, 21 (95\%) were accepted on the first round as valid for the assessment and management of cognitive impairment. All had obtained a median score of 7 or higher and inter-expert agreement. Only one indicator had a median score of 5; it was modified on the basis of the experts’ comments, resubmitted to the panel, and then accepted. Table 2 provides a detailed description of indicators of quality for every stage in the care process.

The indicator that was rejected on the first round dealt with the importance of communicating with the caregiver of a dementia patient and recording the outcome of that conversation in the patient’s medical record within 48 hours of admission. Most of the experts felt that there was not enough scientific evidence linking the result specified by the indicator and the achievement of a benefit for the patient, that the indicator was not relevant enough as a measure of quality of care, and that there was no evidence that care deliverers who followed this indicator provided better care. More than half of the panel members believed that it was not necessary to enter this information into the hospital record and that the 48-hour deadline was too short. This indicator was modified on the basis of the expert’s comments and then accepted.

**DISCUSSION**

The high percentage of agreement may be because of the care taken in selecting the indicators before submitting them to the experts. The indicators drew their inspiration from the American ACOVE\textsuperscript{27} project which involved vulnerable elderly patients with dementia who were either living in the community or hospitalized. The indicators had already gone through a selection process to determine their relevance to the management of cognitive impairment before being selected by our research team.

As several studies have shown, there are definite advantages to using indicators of quality that have already gone through a validation process for a given condition.\textsuperscript{30-32} However, this step requires a certain contextual adaptation of the indicators, based on the country or setting being studied. Hence, the quality indicators were modified to reflect hospital practice in Quebec and supported by literature on vulnerable populations and their social, demographical, and clinical characteristics published previously by our research team.\textsuperscript{33} In addition to this adapted review of the literature, each indicator was supported by three guidelines. Two were completely relevant to the health care system studied (which is to say, a publicly-funded, universal-access system) since one was Canadian and the other was Australian.\textsuperscript{15,16}

The experts were selected for their recognized expertise in geriatrics and cognitive disorders and their clinical experience in a geriatric assessment unit. They reflected the specialties that care for this type of clientele. This may explain their acceptance of certain indicators for which the literature is either unclear (such as ensuring follow-up after discharge) or conflicting (such as systematically administering a CT scan or a dose of cyanocobalamin).

It should be noted that the RAND method recommends a panel of a minimum of 7 to 15 experts.\textsuperscript{14} The number of specialists making up our panel was relatively limited. However, as has been shown by Akins et al.,\textsuperscript{34} if their expertise in a given field is fairly homogeneous, even a small number of panelists can develop quality indicators. Because the subject of the Delphi project was the assessment and management of cognitive impairment in a hospital, a responsibility that initially falls to physicians, this was the only profession represented on the panel.

The indicators had the advantage of covering all of the steps in the care process, from screening for cognitive impairment to arranging for follow-up home care after the patient was discharged from the hospital—a step that is rarely considered in the guidelines. They focused on aspects that are not explored as extensively by physicians assessing cognitive disorders, such as the importance of documenting a patient’s ability to understand the risks of the treatments being proposed or the importance of identifying someone capable of ensuring medical follow-up once the patient returns home. The indicators also highlighted aspects related to the patient’s family and caregivers. They assessed the aspect of instructions for future care or, if need be, the possibility of referring to a significant other whom the patient had identified.

We should point out that caring for the elderly, who are often very ill, requires some adaptation, based on the individual and the clinical context. It is sometimes difficult to perform a full assessment of cognitive function when a patient is hospitalized in a geriatric assessment unit, even when there is sufficient time and professional staff, because of the high number of comorbidities,
which are sometimes decompensated, and in many cases, the presence of delirium. Some procedures have to be postponed until the patient can be stabilized; they are done in an ambulatory setting or after the patient is transferred to a rehabilitation unit.

Asking experts to rank indicators not only on the basis of the evidence in the literature but also on the basis of their own clinical experience enabled us to obtain more precise information on points in dispute in the international recommendations and on practice patterns, notably the use of acetylcholinesterase in cases of dementia with a vascular component. However, it should be noted that the guidelines to which we referred date from 1999, 2001, and 2003 and that new recommendations will be issued in the near future, including here in Canada. Practices with respect to the use of this medication in the treatment of dementia with a vascular component will probably be revised to reflect the most recent data.35-37

Associated with other approaches, these indicators will be used to assess the quality of steps in the care process in a study in all of the short-term geriatric assessment units in general care hospitals in Quebec.13

Contributors
Drs. Payot, Latour, Massoud, and Kergoat contributed to the development of the research protocol, the processing and analysis of the data, and the writing of this article.

Competing interests
None declared

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