Investigation of acute confusion in the elderly

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In this series, we present authoritative advice on the investigation of a common clinical problem, especially commissioned for family doctors and written by members of the Royal Australasian College of Physicians.

Delirium is a common syndrome affecting many elderly patients in both hospital and community settings. It is complex and often multifactorial and therefore continues to be underdiagnosed and consequently poorly managed. With the increasing burden of an ageing population, delirium remains a major challenge for all healthcare workers.

DEFINITION

The Diagnostic and Statistical Manual of Mental Disorders V (DSM-V) defines delirium as: ‘a disturbance in attention (i.e. reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment ... [that] develops over a short period of time (usually hours to a few days), that represents a change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.’

Delirium should be suspected in any elderly patient presenting with an acute change in cognition, reduction in clarity of awareness, inability to focus or distractibility. Delirium can be clinically divided into three categories:
- hyperactive – characterised by periods of agitation, aggression or wandering
- hypoactive – patients are often quiet and withdrawn
- more commonly, a fluctuation between the two.

Key points
- Presume that every elderly patient with confusion has delirium until proven otherwise.
- Early detection can be improved with the use of the Confusion Assessment Method and detailed history taking from family or carers.
- Formulate individual nonpharmacological management plans, and reserve antipsychotic or sedative medication for those with the most distressing symptoms.
- Education and support of families, carers and residential home staff is essential.
- Ensure close follow up in the community and good communication between carers and primary care practitioners.
because delirium can lead to significant consequences, including increased residential care, rehabilitation, and falls (despite the use of restraints)\textsuperscript{4,15} with lower scores on the Mini Mental State Examination (MMSE) at discharge compared with control patients\textsuperscript{16} and increased risk of placement in a residential home\textsuperscript{13,14} and increased risk of developing dementia even in patients with no cognitive impairment at baseline\textsuperscript{17,14}.

**PATHOPHYSIOLOGY**

In recent years, there has been significant research aimed at untangling the pathophysiology underlying delirium and its consequences in an attempt to allow more targeted prevention and management strategies. Not surprisingly, much of this research has been performed in the intensive care setting which has the highest prevalence of patients with delirium.\textsuperscript{18}

There are several hypotheses concerning the pathophysiology of delirium including an imbalance in dopaminergic, cholinergic, and/or serotonergic neurotransmitter systems; endothelial dysfunction; reduction in brain perfusion; and deterioration in the effectiveness of the blood–brain barrier increasing the exposure of the brain to potentially toxic pathogens. Another view is that delirium could be a consequence of a systemic inflammatory response leading to increased levels of proinflammatory cytokines that cause injury to the brain and brain dysfunction.\textsuperscript{19}

**CLINICAL FEATURES**

Clinical features that can be associated with delirium are described in Box 1.\textsuperscript{20} Delirium can be preceded by a period of prodromal illness, usually hours to a few days, where the patient may appear impatient, anxious, restless, distracted and develop urinary incontinence. They may refuse investigations. In hindsight, family members are able to give a history of this prodromal period. The pathophysiology underlying delirium and its consequences is not fully understood. For example, the terms delirium and dementia are used interchangeably, but it is difficult to detect clinically.\textsuperscript{21} Elderly patients with delirium often present with behavioural changes first, which may be the only indication of underlying medical illness.

Lewy body dementia has a rapid onset, and the confusion often fluctuates and patients have vivid visual hallucinations. This makes Lewy body dementia an important differential diagnosis to consider when a person presents with suspected delirium.
RISK AND PRECIPITATING FACTORS
Most elderly patients have multiple risk factors, making them more susceptible to delirium (see Box 2). Precipitating factors include prescribed medication and polypharmacy or alcohol and benzodiazepine withdrawal (a full list is given in Box 3). Attention to all possible risk and precipitating factors, and modification if possible, will ensure the best outcome for the patient.

RECOGNISING PATIENTS WITH DELIRIUM
Elderly patients with an acute decline in cognition should be presumed to have delirium until proven otherwise. Studies show that 30 to 67% of patients with delirium go undetected, which is why a corroborative history from family or carers is essential to establish the acute decline in cognition, in addition to cognitive screening. The Australian and New Zealand Society for Geriatric Medicine (ANZSGM), the American Psychiatric Association and the British Geriatrics Society all recommend the Confusion Assessment Method (CAM), a

### 3. COMMON PRECIPITATING FACTORS
- Prescribed medication and polypharmacy
- Alcohol and benzodiazepine withdrawal
- Sepsis, shock, hypothermia
- Electrolyte disturbance (sodium, calcium, magnesium, phosphate)
- Endocrine disturbance (blood sugar, thyroid)
- Nutritional deficiencies (thiamine, vitamin B12, folate)
- Cardiac, liver or renal failure
- Pulmonary disorders (particularly in the setting of hypoxaemia)
- Cerebrovascular accident or seizures
- Postsurgery, especially cardiac, orthopaedic or with intensive care unit stay
- Falls and fractures
- Anaemia or gastrointestinal bleed
- Pain
- Cancer and terminal illness

### 4. CONFUSION ASSESSMENT METHOD (CAM)
1. Acute onset and fluctuating course
   - Is there evidence of change in cognition from baseline?
   - Does this fluctuate during the day?
2. Inattention
   - Does the patient have difficulty focusing attention?
   - Do they seem distracted?
3. Disorganised thinking
   - Does the patient have disorganised thinking, rambling speech or seem incoherent?
4. Altered level of consciousness
   - Would you describe the patient as being hyperalert, lethargic or drowsy, or in a stupor or coma?

A diagnosis of delirium requires a yes answer to questions 1 and 2 and either 3 or 4.

Note: Exclude Lewy body dementia.

Adapted from Harrison’s Online, Chapter 26. Confusion and delirium, McGraw-Hill Companies.

### TABLE. DIFFERENTIATING BETWEEN DELIRIUM, DEMENTIA AND DEPRESSION

<table>
<thead>
<tr>
<th></th>
<th>Delirium</th>
<th>Dementia</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Acute</td>
<td>Insidious</td>
<td>Variable</td>
</tr>
<tr>
<td>Course</td>
<td>Fluctuating</td>
<td>Progressive</td>
<td>Diurnal variation</td>
</tr>
<tr>
<td>Consciousness</td>
<td>Altered, clouded</td>
<td>Clear until late stages</td>
<td>Clear</td>
</tr>
<tr>
<td>Attention</td>
<td>Inattention</td>
<td>Normal</td>
<td>Poor</td>
</tr>
<tr>
<td>Memory</td>
<td>Poor short-term memory</td>
<td>Poor short-term memory</td>
<td>Normal</td>
</tr>
<tr>
<td>Thinking</td>
<td>Disorganised, incoherent</td>
<td>Difficulty with abstract thought</td>
<td>Intact, low self-worth, hopelessness</td>
</tr>
<tr>
<td>Perception</td>
<td>Misinterpretation; hallucinations; delusions</td>
<td>Hallucinations, delusions rare except in Lewy body dementia</td>
<td>Can have complex delusions, paranoid psychosis</td>
</tr>
<tr>
<td>MMSE</td>
<td>Distracted, difficulty completing MMSE</td>
<td>Struggles; tries to find correct reply</td>
<td>Lacks motivation; ‘I don’t know’</td>
</tr>
</tbody>
</table>

ABBREVIATIONS: MMSE = Mini Mental State Examination. Adapted from Milisen K et al. Nurs Clin Nat Am 2006; 41: 1-22.

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screening tool specifically designed to detect delirium (see Box 4). This has a reported sensitivity of more than 94% and a specificity of more than 90% and is easy to use in a clinical setting.4,23

The MMSE is often used to test cognitive function and although it is used in the setting of delirium, it was not designed for this purpose. To use the MMSE in patients with delirium, it is necessary to know baseline scores and engage the patient in repeat testing throughout their illness, which may be effective but is also time-consuming.

It can be difficult to differentiate between delirium, dementia and depression in clinical practice. About 42% of inpatients referred to psychiatric services for depression actually have delirium.24 The Table summarises the main differences; however, even in patients diagnosed with dementia or depression, any new changes in cognition must be investigated as delirium.25

**INVESTIGATION**
Delirium may be reversible if the causes can be identified and treated promptly. Investigation of a patient presenting with an acute confusional state is summarised in the Flowchart on this page. There is no evidence to support a specific chemical biomarker to detect delirium.26

**MANAGEMENT**

**Nonpharmacological management** Nonpharmacological strategies are particularly useful for patients in hospitals or residential homes. The plan should be tailored to the individual and, whenever possible, implemented before the use of antipsychotic or sedative medications (see the Flowchart on page 46). It should be highlighted that pharmacological intervention should be the last resort and often is associated with side effects.

Delirium is a multifactorial problem and it follows that multidisciplinary interventions are likely to be successful. However, clinical trials have failed to show significant results in terms of reducing the duration of delirium, length of inpatient stay or healthcare costs.27,28 Two Cochrane reviews on delirium in hospitalised patients and residential home residents are available.29,30 Multicomponent intervention directed at the prevention of delirium is likely to have a much greater impact than strategies aimed at treatment.31 Moreover, this has been shown to have a positive effect on staff attitudes and patient care.32

**Pharmacological management**
Administration of pharmacological agents should be reserved for patients with severe agitation or behavioural disturbance resulting in risk to themselves or others or severe patient distress that outweighs the risks associated with sedative and antipsychotic medications. No specific agent is licensed for use in patients with delirium and there is no evidence that specific therapeutics have an effect on the duration or severity of delirium. Utmost caution should be exercised when prescribing antipsychotic medication to patients with a diagnosis of Levy body
dementia because they exhibit increased sensitivity to these drugs and this condition can mimic delirium as mentioned earlier. Adverse reactions include Parkinsonian side effects such as rigidity, immobility, reduction in function and ability to communicate. There has been an association with sudden death in some studies.

Antipsychotics are the most common class of drug prescribed for patients with delirium, and traditionally haloperidol has been the agent of choice. However, haloperidol has poor sedative properties, and the doses required to improve severe agitation are associated with increased risk of anticholinergic and extrapyramidal side effects. More recent evidence supports the use of atypical antipsychotics such as olanzapine, risperidone and quetiapine (all used off label), which appear to have equal efficacy when compared with haloperidol. They also appear to be better tolerated in the elderly population and allow for flexible dosing regimens with lower side effects.

There is some emerging evidence that quetiapine may decrease the severity of delirium symptoms, but studies are small and more research is needed. At present, there is no evidence to support the use of cholinesterase inhibitors in the treatment (or prevention) of delirium.

Benzodiazepines are an appropriate treatment for patients with alcohol or drug withdrawal, or when antipsychotic medication is contraindicated (i.e. in patients with Lewy body dementia or Parkinson’s disease). Benzodiazepines with a short half-life and no active metabolites, such as lorazepam, oxazepam or midazolam, are preferred (all used off label). Benzodiazepines can be associated with a worsening of confusion and sedation and should be used with caution.

Whichever agent is chosen, frail elderly delirious patients will be at increased risk of adverse events associated with antipsychotic and sedative medication, and longer-term use is associated with an increase in all-cause mortality. General principles for use are as follows:

- reserve medication for severe agitation causing distress or putting the patient, staff or other patients at risk
- start at a regular low dose and titrate if necessary
- avoid multiple agents
- use in a supervised environment, such as a residential home or with carer supervision
- reduce and stop the medication

ABBRIVIATIONS: CAM = Confusion Assessment Method; GDS = Geriatric Depression Scale; SC = subcutaneous.
ACUTE CONFUSION IN THE ELDERLY CONTINUED

Once the symptoms of delirium have improved.

Despite early detection and best management, some patients will require hospital admission to further investigate delirium and manage behaviours. Consider early referral to specialist services such as the Community Geriatrician, mental health services for older people, the Dementia Behaviour Management Advisory Service (http://dbmas.org.au/) or community service package providers. Studies have shown that almost half of patients with delirium are discharged from the acute hospital setting with persistent symptoms and, of these, 20 to 40% still have delirium at 12 months. There should be close communication between primary care practitioners and the family or carers to provide education and ongoing support. Further assessment and monitoring of cognitive function may be required, and the minimum follow up for cognitive assessment should be six months.\textsuperscript{50}

CONCLUSION

Acute delirium is very common in the elderly and is associated with significant morbidity and mortality. It is often under-diagnosed and places a significant burden on patients, families and the healthcare system. With Australia’s changing demography, every doctor should be well equipped to manage delirium. Delirium is an important diagnosis to make and manage. \textit{MT}

REFERENCES

A list of references is included in the website version (www.medicinetoday.com.au) and the iPad app version of this article.

COMPETING INTERESTS: None.

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