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Clarifying the confusion about confusion: Current practices in managing geriatric delirium

Distinguishing delirium from other conditions with similar symptoms is the first step in treating this common psychiatric and medical emergency.

ABSTRACT: Geriatric delirium, commonly referred to as "confusion," is a treatable condition that must be differentiated from dementia and other conditions. A high index of suspicion is important when identifying delirium, which typically has an acute onset and fluctuating course. Delirium in the frail elderly often involves multiple underlying medical conditions. Medications, infection, metabolic disturbances, structural insults, and retention or elimination problems can be precipitating factors. Managing delirium requires addressing psychiatric symptoms and care needs with the help of an interdisciplinary team. Antipsychotic agents, both conventional and atypical, may be used in the short-term.

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Delirium is a psychiatric and medical emergency with rates as high as 50% in older hospitalized patients.[1] A substantial number of patients are delirious upon admission or later develop delirium during the course of hospitalization. Delirium is usually triggered by acute medical or surgical illness, or by certain medications. Often referred to as "confusion" by health professionals and the lay public alike, the term "delirium" is more specific and should be used to distinguish between this acute condition and other geriatric syndromes such as dementia. This can be challenging clinically, especially when such mental conditions occur concurrently. However, in most cases the core features of delirium allow for recognition.

Diagnosis and management

The prompt diagnosis and management of delirium is especially important in seniors. Delirium is underrecognized in 32% to 66% of cases,[2] especially in patients 80 years or older and those already experiencing dementia, a hypoactive (apathetic) subtype of delirium, or concomitant visual impairment.[3] Underdiagnosis can be even more problematic in residential care facilities.[4] When only the physical conditions are treated and the psychiatric manifestations are not addressed (e.g., sleep-wake reversal), the delirium perpetuates and higher morbidity (e.g., deconditioning) and mortality may result. Using physical restraints alone for management is not appropriate as it can worsen delirium,[5] can contribute to further decline, does not address distressing psychiatric symptoms that are treatable, and is potentially life threatening.[6]

Managing geriatric delirium requires differentiating it from other conditions using contemporary educational resources for practitioners, patients, and family members. Detailed management of alcohol withdrawal

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delirium[7] and management of delirium in ICU[8] and palliative care settings[9] is beyond the scope of this article.

How do I know my patient is delirious?

Delirium is diagnosed according to *DSM-IV-TR* criteria,[10] and can sometimes be diagnosed at the bedside. Usually, however, diagnosis requires 24 hours so that caregiver observations (e.g., nursing notes, comments of family members) can be taken into account and any acute change from baseline cognition, function, and/or behaviors can be considered. The hallmarks of delirium are an acute onset in disturbances of consciousness and attention followed by a fluctuating course. This fluctuation means that a patient assessed in the daytime may show no signs of delirium; the same patient may be quite different in the evening because of the nocturnal worsening (sundowning) that commonly occurs in delirium. Conversely, the patient may seem fine if drowsy in the morning, leading to the erroneous assumption that a dose of sedative administered in the middle of the night is the cause, when in fact the sedative was needed because of insomnia associated with nocturnal agitation or aggression. Associated features that are helpful in distinguishing delirium from dementia include new-onset visual illusions or hallucinations, certain agitated behaviors (disrobing, "picking at the air"), and distractibility or poor attention during assessment. It is helpful to ask about the patient's perception of their caregivers (i.e., paranoia regarding them), the presence of vivid dreams or nightmares, and sleep quality of the previous night, although some patients will have little recollection of being symptomatic the night before. Anxiety and transient mood disturbances can manifest. Not all delirious patients present with agitation (hyperactive subtype), however; some present with apathy (hypoactive subtype) instead.[11] Apathetic delirium can look like depression. And although sleep-wake disturbance is the norm, some delirious patients do sleep well.

In geriatric delirium, more subtle manifestations include new-onset incontinence, falls or refusal to mobilize, dysphagia, dysarthria, mild disorientation, and slowing in the speed of mental processing. Some English-as-a-second-language patients may lose their ability to communicate in English. Others may manifest initially with hypersensitivity to environmental stimuli and hypervigilance, which progress to acute anxiety and then paranoia.

CAM: Confusion Assessment Method
The diagnosis of delirium requires the presence of features 1 and 2, *plus* either 3 or 4.

Feature 1: Acute onset and fluctuating course
This feature is usually confirmed by comments of a family member or health care professional and is shown by positive responses to the following questions:
- Is there evidence of an acute change in mental status from the patient's baseline?
- Does the (abnormal) behavior fluctuate during the day, tending to come and go, or increase and decrease in severity?

Feature 2: Inattention
This feature is shown by a positive response to the following question:
- Does the patient have difficulty focusing attention? For example, is the patient easily distracted or having difficulty keeping track of what is being said?

Feature 3: Disorganized thinking
This feature is demonstrated by a positive response to the following question:
- Is the patient's thinking disorganized or incoherent, as evidenced by rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

Feature 4: Altered level of consciousness
This feature is shown by one answer other than "alert" to the following question:
- Overall, how would you rate the patients level of consciousness?
  - Alert (normal)
  - Vigilant (hyperalert)
  - Lethargic (drowsy, easily aroused)
  - Stuperous (drowsy, difficult to arouse)
  - Comatose (unarousable)

How do I know my patient doesn't have dementia or depression or both?

Dementia is the most likely predisposing factor for delirium. Recurrent delirium should raise the index of suspicion for dementia. Unlike the rapid onset of delirium, the onset of dementia is usually insidious and not associated with fluctuations in mental state. Exceptions can be found, however, including Lewy body dementia, which has fluctuations in cognition as one of the cardinal features. Severe dementia can also be associated with decreased attention, possibly through involvement of frontal and subcortical regions. Collateral information noting a change from baseline is often key to verifying the diagnosis of delirium in those with dementia. Screening tools with high sensitivity and specificity may sometimes help. The briefest and best known is the CAM or Confusion Assessment Method,[12] which is validated for front-line health professionals (see CAM box). Positive results for this test should lead the practitioner to further investigate the likelihood

of delirium, even if dementia is established. The Folstein Mini-Mental State Exam is not useful in screening for delirium or differentiating it from dementia.

As a subspecialist, I will often see patients with dementia and suspected depression, who then develop delirium as a result of failure to thrive. Addressing delirium can aid in the diagnosis of depression because of the overlap in some features (mood change, anorexia, insomnia, psychomotor change). When these features result from a major depressive disorder they will be present for at least 2 weeks and will not be associated with changes in attention or level of consciousness. This is unlike delirium, which is transient in nature and features fluctuating mental disturbances.

What are common causes of geriatric delirium?

As with delirium in younger adults, certain medications, including narcotics and anticholinergic drugs (e.g., Cogentin, Ditropan, Gravol, Benadryl), are the most common culprits and should be discontinued or switched. Narcotics such as meperidine (Demerol) and morphine are more likely than hydromorphone (Dilaudid) and oxycodone (Oxycontin) to trigger delirium. High doses of corticosteroids may provoke delirium, hypomania, or psychosis. Lesser known delirium-producing drugs include some beta-blockers (e.g., metoprolol) and antibiotics (e.g., fluoroquinolones[13]). In some of these cases, medications may prove toxic because patient age or renal or hepatic impairments were not taken into consideration. Benzodiazepines alone may also provoke delirium in susceptible individuals.

Certain surgical procedures such as cardiac surgery or emergency hip fracture surgery also confer higher risks for delirium compared with other procedures. The rate of ICU delirium is also high.

Common precipitating factors involving drugs, infection, metabolic disturbances, structural insults, and retention problems are listed here according to the DIMS-R mnemonic (see DIMS-R box). Ordering a post-void residual bladder scan can pick up occult retention quickly, while checking for constipation should be routine. Frail geriatric patients commonly have multiple conditions, occurring either at once or consecutively, which precipitate or perpetuate delirium. It is not uncommon for symptoms of delirium to subside with good management, only to recur because of nosocomial conditions associated with immobility, instrumentation, or treatment for a new infection (urinary tract, lungs, skin ulcers, *C. difficile*, colitis), deep vein thrombosis, or a fall with a concussion.

Alcohol-dependent seniors may occasionally go into alcohol withdrawal delirium (delirium tremens), but many of the patients who do so are medically compromised as well. Failure to recognize concurrent medical conditions will lead to greater morbidity and mortality. A number of frail seniors will curtail or stop their heavy consumption of alcohol over days or weeks as they become medically ill, and a careful review of alcohol consumption just before hospitalization using collateral informants is recommended. The symptom checklist of a withdrawal screening tool such as the CIWA-Ar[14] contains features common to delirium related to general medical conditions, and thus may lead to the inappropriate assumption that symptoms relate to alcohol withdrawal,[15] triggering the excessive use of benzodiazepines.

DIMS-R (Drugs, Infection, Metabolic, Structural, Retention): Common precipitating factors for delirium

Drugs
- Prescribed (narcotics, steroids, anticholinergic, NSAIDs)
- Over-the-counter (dimenhydrinate, diphenhydramine)
- Drug intoxication or withdrawal (alcohol, sedative-hypnotics, narcotics

Infection (urinary tract, lungs, skin, blood)

Metabolic disturbances
- Fluid (dehydration, hypovolemia)
- Electrolyte (sodium, potassium, magnesium)
- Nutrition (malnutrition, thiamine deficiency, anemia)

Structural insults
- Cardiovascular (angina, infarction, congestive heart failure)
- Central nervous system (stroke or ischemia, concussion)
- Pulmonary (hypoxia [e.g., COPD exacerbation])
- Gastrointestinal (bleeding with anemia, *C. difficile,* colitis)

Retention problems (urinary retention, constipation)

What about obtaining consent from my delirious patient?

The fluctuating course of delirium can allow for lucid intervals in which some delirious patients may have the capacity to consent to specific health care treatments, but many will not be able to do this because of their clouded mental state or the presence of concurrent paranoia. Some patients will need to be involuntarily detained under the Mental Health Act, as otherwise they may leave care against medical advice without having their urgent needs addressed. The assessment of personal, financial, and testamentary decision making should be deferred in cases of delirium unless there is an absolute necessity to do so, which is rare.

What are the targets for treating my delirious patient?

The following evidence-based measures have been shown to prevent the development of delirium: promoting

mobilization, avoiding physical restraints, encouraging intake of food and fluids, reorienting, ensuring proper toileting and elimination, and optimizing sensory inputs.[16] It can be inferred that these measures also help address perpetuating factors for delirium. Before treatment begins, a swallowing assessment could be considered to rule out dysphagia, and the physician should ask whether the patient usually wears hearing or visual aids and ensure these are available. Support, education, and reassurance can help relieve anxiety for patients and their family. Having a family member by the bedside at night, if this is possible, may help with agitation.

While the majority of geriatric patients do recover fully, sadly there are a number of patients who do not return to their cognitive or functional baseline.

Major targets for pharmacological treatment are agitation or aggression, psychotic symptoms, and sleep disturbances. Addressing the sleep-wake reversal is particularly important as insomnia can perpetuate delirium.[17] Medications may also be beneficial for sedation so that necessary investigations can be undertaken. Antipsychotic medications are the treatment of choice for short-term use until the delirium subsides. The aim is to restore the dopamine-acetylcholine imbalance, which is presumed to be the primary mechanism for delirium to develop, although other theories exist.[18,19] Atypical antipsychotics have been linked to elevated mortality[20] or stroke risk in the context of longer-term treatment for behavioral and psychological symptoms of dementia, but no risk data exist for shorter-term treatment of delirium. Given the urgent nature of delirium, the benefits will usually outweigh the risks, and in many cases no other suitable alternative treatment exists.

What psychotropic medications should I prescribe?

Antipsychotic medications used to treat delirium include older (conventional) and newer (atypical) agents. There are few controlled studies of these medications for delirium and no placebo-controlled randomized controlled trials (RCTs).[21,22] Haloperidol (Haldol) is recommended in clinical practice guidelines[6,23] mostly based on clinical tradition. In one of the earliest RCTs, patients on haloperidol or chlorpromazine did equally well, while those on lorazepam monotherapy did poorly.[24] However, haloperidol, while devoid of hypotensive and anticholinergic effects, may not be sedating except at high doses. It is more likely to lead to extrapyramidal parkinsonian side effects (EPS), especially above 4.5 mg a day in the elderly.[21] Prolonged QT syndrome and ventricular arrhythmias are a concern, particularly with intravenous use, so baseline ECGs are recommended when haloperidol is used. Haloperidol has also been compared to risperidone and olanzapine in RCTs and they are considered equally effective in treating delirium. Haloperidol tends to be combined with other agents such as benzodiazepines (e.g., lorazepam) to achieve the desired sedative effect, but since benzodiazepines can independently cause delirium and contribute to ataxia and falls, they should be avoided in delirium unless required for alcohol or sedative-hypnotic withdrawal.[6] However, benzodiazepines may help in antibiotic-induced CNS toxicity.

Conventional agents with more sedative effect include loxapine (Loxapac),[25] perphenazine (Trilafon), methotrimeprazine (Nozinan), and chlorpromazine (Largactil). On occasion, orthostatic hypotension may result, particularly with the latter two agents. Conventional agents can sometimes produce a particular type of EPS called akathisia (motor restlessness) that can add to the agitation of a delirious senior. While concerns have been raised that some of these conventional agents may have anticholinergic properties and provoke delirium, this has not been borne out clinically at the lower doses used for managing geriatric delirium,[25] as opposed to higher doses used for those who are younger or have a chronic psychotic illness. Moreover, low-dose loxapine has atypical properties [26,27] similar to some of the atypical antipsychotics. Vancouver General Hospital's Consultation-Liaison Psychiatry Service has vast experience over a 25-year period with prescribing loxapine rather than haloperidol for delirium, without adjunctive benzodiazepines. An open-label

prospective study at VGH of 32 older patients with postoperative delirium (mean age 74, mean loxapine dose = 40 mg/d, range = 10–100 mg/d) indicated loxapine was safe and effective in this population[28] and did not lead to adverse cardiac events, even in the proportion of coronary artery bypass graft patients included in the study.

Case reports and limited controlled trials of atypical antipsychotics for delirium have shown favorable responses, but the lack of a parenteral form for patients refusing oral medications limits their usefulness. Atypical antipsychotics are much less likely to provoke short-term reversible (parkinsonism) and long-term irreversible (tardive dyskinesia) EPS. Commonly used agents include risperidone (Risperdal), olanzapine (Zyprexa), and quetiapine (Serognel). Quetiapine in particular has been used at VGH because of its sedative and hypnotic qualities. Very limited data exist for the use of aripiprazole (Abilify). Concerns have been raised that ziprasidone (Geodan) can prolong the QTc interval. Based on a limited number of RCTs, atypicals are reasonable alternatives to conventionals in managing geriatric delirium.[6]

A list of commonly used antipsychotics appear in the **Table**. Some patients need higher doses for sufficient sedation. For those who are particularly sensitive to dopamine blockade, such as those with Parkinson disease or Lewy body dementia, initial choices could include quetiapine, olanzapine, or methotrimeprazine.

Some medications can be given by intramuscular, subcutaneous, or intravenous routes if patients refuse orally administered agents. Subcutaneous injection is less painful than intramuscular injection and seems as effective. IV administration is generally avoided except in critical care areas. When sleep-wake reversal occurs, or if there is "sundowning," administering two daily doses toward nighttime (at dinner and bedtime) can be useful. Morning doses are usually avoided. Regular and as-needed doses should be used for as short a time as possible, and tapering should be considered beyond 24 to 48 hours of when symptoms clear.

Table. Antipsychotic agents for treating geriatric delirium.

Medication	Trade name	Category	Usual starting dose (mg)	Usual dose range (mg)	Routes of administration
loxapine	Loxapac	Conventional	5.0–15.0	5.0–100.0	intramuscular, subcutaneous, oral
methotrimeprazine	Nozinan	Conventional	2.5–10.0	2.5–100.0	intravenous, intramuscular, subcutaneous, oral
chlorpromazine	Largactil	Conventional	6.25–12.5	12.5–100.0	intramuscular, subcutaneous, oral
perphenazine	Trilafon	Conventional	1.0–2.0	2.0–16.0	intravenous, intramuscular, oral
haloperidol	Haldol	Conventional	0.5–1.0	0.5–5.0	intravenous, intramuscular, subcutaneous, oral
risperidone	Risperdal	Atypical	0.5–1.0	0.5–3.0	oral, sublingual
olanzapine	Zyprexa	Atypical	1.25–5.0	2.5–15.0	oral, sublingual, intramuscular
quetiapine	Seroquel	Atypical	12.5–50.0	12.5–200.0	oral

In the context of delirium, EPS should not be treated with anticholinergic agents, such as benztropine (Cogentin), as this will likely worsen delirium. Switching to an agent with less EPS potential is suggested. Prophylactic use of benztropine should never occur. Conversely, more research is needed to investigate the potential anti-delirium benefits of cholinergic agents currently in use for dementia[29] and psychostimulants such as methylphenidate (Ritalin) for hypoactive delirium.[30]

For those identified as being at high risk to develop delirium, prophylactic use of antipsychotics, cholinesterase inhibitors, or other agents before surgery has yielded mixed results.[31] Nevertheless, preoperative antipsychotic use is worth considering in those who have a number of predisposing risk factors, especially if they have a known history of postoperative delirium. Nonpharmacological multicomponent preventive interventions have shown some favorable results.[32]

When will my patient recover?

While the majority of geriatric patients do recover fully, sadly there are a number of patients who do not return to their cognitive or functional baseline.[33] It is not uncommon for subsyndromal symptoms of delirium[34] to persist even after all identifiable physical conditions have been treated, which makes it especially important to address in an interdisciplinary way the lingering issues such as sleep-wake disturbances, immobility caused by deconditioning, altered oral intake, and incontinence. Therefore, continuing

psychotropic treatment for insomnia or nocturnal agitation may be indicated.

Regardless of whether there is pre-existing dementia, a change from baseline should trigger a complete functional evaluation once the symptoms of delirium clear, and a decision on whether further rehabilitation in hospital (e.g., in the subacute unit) could be beneficial or whether a discharge home with added formal home supports is warranted. Geriatric patients take longer to recover than younger patients. The decision to release a patient should be guided by clinical judgment rather than by the patient's desire to go home, since premature discharges can lead to rapid rehospitalization or intolerable risks at home. Some patients may require placement in a facility and a personal capacity assessment may be indicated. For those already in a facility, an increased level of care may be required, sometimes to the point of special care.

For some frail seniors, recovery may take place only after weeks or months of optimal care.[35] Those deemed mentally incapacitated may need to be formally reassessed. For those who do recover fully, the episode of delirium may be heralding the later onset of dementia,[36] so increased monitoring for signs of dementia in these patients is advised.

What other resources are available for practitioners, patients, and families?

The Canadian Coalition for Seniors' Mental Health (CCSMH) produced national practice guidelines in 2006, including one for geriatric delirium.[6] It is available on the Resources and Publications page of the CCSMH website (www.ccsmh.ca) along with a guide for seniors and their families. Vancouver Island Health Authority's mental health and addiction services also recently developed extensive online resources for practitioners, patients, and their family members (www.viha.ca/mhas/resources/delirium), including two award-winning DVDs and a link to a three-part video for patients and family, posted on YouTube. For those health care providers who wish to learn more in a case-based format, UBC has produced an interactive online module as part of the Care for Elders project (www.careforelders.ca). This focuses on the physical and psychopharmacological aspects of managing geriatric delirium within an interdisciplinary framework.

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Summary

Managing delirium in older adults is challenging but rewarding. A high index of suspicion for delirium is needed. Once delirium is identified, declines in cognition, function, and behavioral control can be addressed by correcting underlying conditions and responding to care needs with the help of an interdisciplinary team. The goal in the next decade is to improve the outcomes for full recovery in seniors experiencing delirium.

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Competing interests

None declared.

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Major targets for pharmacological treatment are agitation or aggression, psychotic symptoms, and sleep disturbances.