Delirium in the Long-Term Care Setting: Clinical and Research Challenges

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Delirium is a common problem in post-acute and long-term care. We present an updated review of delirium in those settings. Special considerations are the border between delirium and dementia, and in knowing when what presents as delirium might be the type of preterminal cognitive decline that manifests among people who are dying. A work-up that focuses on the common causes of delirium (which, in essence, are the common illnesses that befall frail older adults) is likely to have a high yield. We note that preventing delirium requires a multicomponent approach, the details of much of which is known, but nevertheless have proved to be challenging to bring about in routine care. **(J Am Med Dir Assoc 2008; 9: 157–161)**

Keywords: Delirium; long-term care; nursing homes; frailty; mobility; balance; end-of-life care

Delirium (the acute confusional state) manifests in the most vulnerable individuals, so it is not surprising that it should be a common challenge in post-acute and long-term care institutions. As a classic geriatric syndrome, it has been reviewed recently to emphasize how it might best be recognized, managed and prevented in long-term care institutions.[1] Here, we build on those points, to also consider the special challenge of delirium that complicates dementia and some practical issues around delirium as an aspect of end-of-life care.

SEARCH STRATEGY

A PubMed search using the MeSH terms "delirium" and "nursing home," restricted to English-language studies in human adults yielded 83 papers in the past 10 years. We focused particularly on papers that have appeared since the Lyons 2006[1] review. Excluding reviews, editorials, papers that focused on nursing home admission as an outcome, and those which concentrated on aspects of delirium research (such as data collection or protocol validation), yielded 20 papers for inclusion, which are summarized here. They are supplemented by additional papers from their bibliographies, or data otherwise known to us.

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DELIRIUM AND ITS KEY FEATURES

Delirium is an acute cognitive syndrome that manifests as sudden disturbance of cognition and attention. As discussed by Lyons,[1] delirium is the product of multiple predisposing factors with superimposed triggers. Though the underlying cause may not be clinically apparent, some factors are often implicated, which requires a methodical yet empirical strategy of management.

DELIRIUM: THE SCOPE OF THE PROBLEM

Although there is notable variability between health care systems, in general, people are admitted to nursing homes/skilled nursing facilities either for post-acute/convalescent care, or for institutional long-term care. Either pathway to admission encompasses people whose reasons for being in such facilities correspond to common risk for incident delirium: advanced age, frailty, and cognitive impairment.[2] These same risk factors independently predict hospital discharge to a nursing home with delirium,[3] an experience that becomes more common under pressures to reduce hospital length of stay. Furthermore, a backlog of so-called "transitional care" patients can remain in acute hospital settings longer than is required or desirable prior to placement; this exposes them to increased risk of iatrogenic delirium.[4]

Delirium is an important problem both in hospital and in long-term care. Delirium is associated with high mortality.[5,6] Delirium survivors carry a high risk of institutionalization within 1 year[4] and this may extrapolate to a high incidence of delirium recurrence within long-term care. Survivors may have impaired quality of life[7] and frequently fail to return to baseline level even after adjustment for age, pre-morbid function and dementia.[8] In consequence, people who have survived delirium have greater nursing needs, with resource and cost implications. Notably, too, delirium shares features that predispose people to pressure ulcers and falls[2] and as argued

below, has an important impact on mobility which can allow some insights into tracking its course. Delirium affects around one third of the older hospital population, although reported rates differ widely.[9]

The prevalence of delirium within long-term settings is also variable; the Canadian Study on Health and Aging demonstrated a long-term care prevalence of less than 1% (9 of 1255), similar to community living older adults.[10] By contrast, a study of Swedish nursing homes demonstrated a prevalence of 35%, possibly reflecting a higher incidence of dementia and, by contact with care services, frailty.[11] Other prevalence samples have demonstrated intermediate rates of delirium (14%[12] to 16%[13]). Even in these more modest predictions, subsyndromal delirium, that is, acute confusion not fulfilling formal delirium criteria, has been noted to affect up to two thirds of residents[13] and is associated with a poor outcome,[14] including elevated risk of institutionalization.[15] A sporadic, transient and fluctuating illness such as delirium may not be captured accurately by point prevalence studies and its incidence remains unknown outside of institutions. The rate of delirium in long-term care is contentious, yet its future escalation in relative and absolute terms is predicted.

DELIRIUM: PSYCHOMOTOR SUB-TYPES

Classically, delirium is divided into that which presents with and without psychomotor agitation, although the usefulness of that distinction has been disputed.[16] Mixed delirium may represent a combination of features drawn from extremes of psychomotor behavior.[17] Arguing in favor of the distinction is that some differences in management are obviously necessary and that prognosis may be affected by psychomotor type. Long stay units may not be equipped to manage the psychomotor disturbance associated with the condition resulting in potential harm to the patient and or staff while interrupting care delivery to surrounding patients. The distinction is also worth knowing because some standard teaching reserves delirium with psychomotor agitation as the archetypal syndrome (of which the alcohol withdrawal of delirium tremens is the prototype) and calls everything else acute confusion. This is misleading: hypoactive delirium represents possibly the greatest diagnostic challenge and may be missed if not specifically considered, especially in older adults.[18] The symptoms of delirium can be confused with depression. Also a problem is that the lack of florid features may result in attempts to "normalize" the listless behavior.[19] Among almost all delirium researchers "delirium" compared with "acute confusion" is a distinction without a difference, so that the term delirium encompasses the entire range of acutely altered cognitive states. Notwithstanding some evidence for the usefulness of delirium subtypes, a lack of robust clinical features hampers the development of operational criteria.

PREVENTION OF DELIRIUM

A systematic review which included 3 studies (1 RCT, 2 controlled trials) supported the use of preventive strategies to reduce both the incidence and morbidity associated with delirium in hospitalized patients.[20] Good basic care, a coordinated multidisciplinary approach, education and encouragement with regard to treatment adherence were common denominators in the studies. The same principles have been realistically applied in an acute geriatric setting with replication of the prevention of delirium in both previously demented (66% risk reduction) and nondemented individuals (73% risk reduction).[21] It remains uncertain as to what single intervention, or combination of treatments, achieves this outcome. Indeed, the ability to isolate the intervention to just one component may not be knowable in a heterogeneous and multifactorial condition such as delirium. Of 801 hospitalized inpatients, multicomponent intervention to prevent delirium did not affect rate of institutionalization compared to usual care but reduced subsequent nursing home costs and duration of stay.[22] This, as the authors state, demonstrates that gains in preventing delirium extend beyond the hospital setting.

That there is hope in the prevention of delirium in the hospital setting should stimulate the investigation of the role of multicomponent strategies in the avoidance of delirium in long-term care, as previously hailed by Lyons.[1]

DELIRIUM MANAGEMENT

Clinical guidelines have been developed for the management of delirium.[23] As a consequence of the paucity of evidence[24] these are mainly consensus based. Guidelines, however, are an incomplete remedy: their uptake is inadequate, even with supplemental educational interventions[25] medical teams are "refractory to persuasion" in delirium management.[26] This last is a source of much soul searching amongst geriatricians.[27] Historically, such guidelines have been developed around a framework of secondary care where, conventionally, the bulk of patients with delirium have been cared for. Delirium remains poorly recognized and managed in the hospital environment[28,29] and the root causes are mainly common conditions that may be treatable without exhaustive investigations or invasive treatments (Table 1).

The management of delirium in long-term care, on account of this anachronism, remains uncertain.[7] The pessimistic outlook for delirium in hospital care lends merit to the management of delirium in the absence of severe systemic illness within the long-term care setting and has been considered in other conditions.[30] Reassuringly, markers of poor outcome in delirium in the long-term setting are to hand. Furthermore practitioners are able to recognize that delirium is a prompt for further medical attention in nursing home residents with infection,[31] which is a good foundation to build on. However,

Table 1. *Common Causes of Delirium in Elderly People*

Medications (prescription)
Medications (over-the-counter)
Medications (alcohol and illicit drugs)
Infection (especially pneumonia and urinary tract infection)
Heart disorders (especially congestive heart failure)
Metabolic problems (especially hyponatremia, dehydration and hyperglycemia)
Some combination of these causes

Adapted from Rockwood K. Causes of delirium, Psychiatry 2007. In press. doi:10.1016/j.mppsy.2007.11 .003.

championing avoidance of hospitalization may prejudice older patients against receiving appropriate secondary care access.

Delirium as a capricious and sporadic phenomenon allows for little adjustment from carers to the high incidence of death and possible burden of recall disturbance in individual survivors.[32] Interestingly, aside from case reports,[33] this phenomenon has not been studied outside palliative care.

If recognition and management of delirium is problematic then it would seem intuitive to invest in early detection and an integrated approach to management. A systematic review of 4 studies assessing the use of multicomponent intervention strategies[20] showed no benefit in the outcome of delirium.

Overall, management may be hindered by difficulty in recognizing a condition that may manifest in many guises. Perhaps this is an opportunity to review the fundamental way in which delirium is conceptualized. Delirium has been defined as a disorder of consciousness,[34] but difficulty in rating this parameter clinically led to reliance on other features to make a diagnosis. If, however, consciousness is broken down into ways in which it can be measured, namely, arousal, attention and temporal orientation then improved delirium recognition may follow.[35] This may account for the spectrum of presentation, predilection for advanced age and why in later life its boundaries blend with dementia, common issues in long-term care and an area worthy of future investigation.

TREATMENT OF PSYCHIATRIC SYMPTOMS

Sedation, almost as a marker of success, will promote sleep with effects lasting throughout therapeutic daytime window for meals, social interaction, medication, and so forth. Other adverse effects include flattened cognition, extrapyramidal side effects, increased pressure ulcers,[36] increased risk of falls,[37] and worsening of the symptoms of Lewy-Body dementia. Furthermore, the anticholinergic properties of sedation may in fact cause delirium[38] or worsen the symptoms of established delirium.[39] The main aim of sedation is to relieve distressing psychiatric symptoms (hallucinations, delusions) and to reduce the risk of harm to self and others from agitation. Such symptoms may be absent in hypoactive delirium[40] obviating the need for such interventions. If, after careful judgement, sedation is deemed appropriate to an individual's care, the lowest dose should be commenced, increasing in increments of every 2 hours and its indication reviewed every 24 hours.[23] Concerns over the risk of cerebrovascular events in atypical and typical neuroleptic drug use with dementia[41] do not appear to have translated to increased mortality in frail older patients from long-term care.[42]

Psychotropic medications are frequently prescribed in nursing homes, up to one third of residents taking more than 1 psychotropic on a regular basis.[43] The pattern of prescribing in the context of delirium in long-term care has not been evaluated.

POST–ACUTE CARE SETTING

Post–acute care settings by way of their temporal proximity to medical illness are associated with delirium burden: 16% of patients with CAM defined delirium and 68% with one or more CAM criteria.[13] Recovery from delirium influences rehabilitation outcome; persistent delirium is associated with worse functional outcome[44] and chronic delirium (greater than 1 month) is recognized in this setting.[45] Conversely, full and persistent resolution of delirium is associated with attainment of full rehabilitation outcomes.[45] It is underrecognized, increasing the risk of harm, and increases the length of stay and rate of nursing home placement, important factors to a rehabilitation unit. Furthermore, effective restorative care will be postponed or may be rendered inappropriate after the functional decline during delirium and its aftermath. However, delirium has the opportunity to be reliably detected amongst new admissions to postacute care with early detection offering the chance for prompt treatment and, potentially better outcome.[9]

Timely recognition is therefore important in order to treat underlying conditions and to improve outcomes. Two conditions are entangled within the spectrum of cognitive impairment: delirium and dementia are a risk factor for one another. Cognitive impairment is common and frequently missed, and the distinction between delirium and dementia is rarely made especially in long-term care.[46] Diagnostic criteria have been developed to for both conditions, but not for recognizing their coincidence. Delirium develops quickly with parallel loss in function, fluctuates and manifests as prominent inattention. Dementia, by contrast, is a cognitive disorder that usually has an insidious onset although dementia following stroke, or that comes on after a delirium fails to resolve would be obvious exceptions[47] that is slowly progressive with a slow orderly loss of function. Memory loss is the main deficit observed in dementia. In many ways, however delirium and dementia are marked more by their similarities than their differences; that delirium often is superimposed on a dementia may be a reason for this. In a recent systematic review of both hospital and community the reported rates of delirium superimposed on dementia were between 22% and 89%.[48] The presentation of delirium and delirium superimposed on dementia are reportedly similar in delirium severity and electroencephalographic findings. Obviously, more marked cognitive impairment is seen in patients with both cognitive disorders.[49] That the 2 share so many features has led to the suggestion that only studies which compare their prognoses can help discern meaningful differences between them, with improvement being the feature that best marks delirium.[50]

DELIRIUM COMPLICATING DEMENTIA

In long-term care, cognitive impairment is more typically commonly composed of dementia with the proportion of delirium increasing with temporal proximity to acute services. But a reciprocal turn of events may follow on from cognitive impairment: increased risk of institutionalization from hospital and more frequent hospitalization from long-term care.

It is conceivable that the functional decline that prompts long-term care considerations is secondary to veiled geriatric presentations, such as the confusional state that marks delirium. Indeed, previously unrecognized cognitive impairment has been unmasked in 50% of individuals following specialist assessment prior to long-term care placement.[51] Comprehensive geriatric assessment appears to have favourable consequences in terms of functional outcome, reduced rate func-

tional decline and less problematic behaviors with similar cost compared with standard case management.[51]

DELIRIUM AND END-OF-LIFE CARE

Progressive or predictable conditions such as cancer may give people time to provide advanced directives for future care, including end of life care. Even so, cognitive impairment, which is both common within long-term care and itself a risk factor for delirium, may deny the opportunity to explore end-of-life management with individuals and leave decision making to others who may not be best prepared or placed to do so.

As the population ages, more people are living, and ultimately dying, in long-term care. Many people who die, including nursing home residents,[52] have a period in the hours prior to death in which their cognition and consciousness becomes impaired. Whether to call this delirium is an unresolved issue.[53] It is important suffering secondary to delirium not be added to the burden of dying. On the other hand, recognizing that death is imminent is not always easy, so clinicians are often left with the dilemma of wondering when a change in cognition merits investigation, how much investigation it merits, and what the prospects for treatment are. It has been argued that the multifactorial nature of terminal agitation may help to distinguish it from delirium in a nursing home setting.[54] For practical purposes, in the context of multiple comorbidity common to most long-stay residents, the discrimination between the 2 entities remains a challenge to most practitioners. The predictable decline of progressive diseases or terminal conditions may afford the clinical confidence to identify delirium associated with dying. In these patients comfort and symptomatic care, arguably, can and should be provided within the nursing home environment[54] thus helping to avoid unneccessary impositions.[55] Conventional multidisciplinary teams may not be accessible and a pragmatic but coordinated approach between involved healthcare professionals and family remains paramount. Recognizing and managing delirium as a final chapter in life in long-term care requires further study. Such treatments have a tendency to be withdrawn toward the end of life within nursing homes; this has not been evaluated with respect to delirium.

SUMMARY

Cognitive impairment is common in long-term care and, although not easily detected in population-based samples, harbors a strong risk for delirium. Cognitive impairment that persists after classic delirium features largely have resolved, as well as persistent or chronic delirium are familiar to many experienced clinicians, but as yet have received systematic study, especially in post–acute care and long-term care settings. Having received little formal study, they often can go unrecognized in usual care. Especially when not detected delirium can limit rehabilitation in the post acute setting and increase need in long-term care. There is evidence that applying multicomponent strategies in patients at risk of delirium works. Management guidelines are consensus based, the evidence for their efficacy lacking and uptake poor. The saying "prevention is better than cure" has merit: the failure of management strategies to reduce the impact of delirium needs further attention. That cognition should be evaluated and delirium recognized and managed each are sensible principles. Further research is needed however to determine how to make this part of usual care in nursing home settings.

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