



Review article

Preventing delirium in dementia: Managing risk factors



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ABSTRACT

Delirium is a common, disabling medical condition that is associated with numerous adverse outcomes. A number of inter-related factors, including pre-existing cognitive impairment, usually contribute to the development of delirium in a particular susceptible individual. Non-pharmacological approaches to prevention typically target multiple risk factors in a systematic manner (multicomponent interventions). There is generally good evidence that multicomponent interventions reduce the incidence of delirium in hospital populations but there are limited data in people with dementia and those living in the community. It is likely that there is a differential effect of specific interventions in those with cognitive impairment (e.g. people with dementia may respond better to simpler, more pragmatic interventions rather than complex procedures) but this cannot be determined from the existing data. Targeted interventions focussed on hydration, medication rationalization and sleep promotion may also be effective in reducing the incidence of delirium, as well as the active involvement of family members in the care of the elderly hospitalized patient. Hospitalization itself is a potential risk factor for delirium and promising data are emerging of the benefits of home-based care as an alternative to hospitalization but this is restricted to specific sub-populations of patients and is reliant on these services being available.

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Abbreviations: CI, confidence interval; CAM, Confusion Assessment Method; CGA, comprehensive geriatric assessment; HELP, Hospital Elder Life Program; HITH, hospital in the home; ICU, intensive care unit; MCI, mild cognitive impairment; MI, multicomponent intervention; MMSE, mini-mental state examination; OR, odds ratio; RR, relative risk; RCT, randomized controlled trial; vs, versus.

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1. Introduction

Delirium is a serious medical condition associated with alterations in consciousness together with cognitive impairment and attention deficits. It usually develops over a short period of time and fluctuations in intensity and clinical presentation are characteristic of its course. Other associated symptoms include agitation, psychosis, disturbed sleep and mood changes [1]. Delirium has an overall prevalence of 15% among hospitalized older adults although

this is considerably higher in certain patient populations, such as those undergoing major surgical procedures [2]. Community prevalence is lower although prevalence in newly admitted nursing home residents is similar to hospital-based populations and estimated at around 16% [3]. Delirium is frequently under-diagnosed and can go unrecognized in 32–66% of individuals [4].

Once established, few treatments are available to lessen the duration and severity of delirium. Typical approaches involve identifying a presumed underlying cause and manipulation of the environment to lessen confusion and associated distress [5]. Targeted pharmacological approaches are usually aimed at symptom reduction in the more severe cases but appear to have little impact on altering the course of delirium and in some cases may aggravate the confusion associated with this [6].

Dementia is a leading cause of disability worldwide and affects approximately 6.5% of the population over the age of 65 [7]. Cognitive impairment that is not severe enough to meet criteria for dementia (mild cognitive impairment – MCI) is a more frequent occurrence with prevalence rates of around 20% in elderly population cohorts [8,9]. Pre-existing cognitive impairment is one of the principal risk factors for delirium and greatly increases the likelihood of delirium developing in a particular individual. The prevalence of delirium superimposed on dementia is clearly higher than that in cognitively unimpaired populations with estimates ranging from 13% to 89% depending on whether the population is hospital or community-based [10,11].

Delirium contributes to poorer outcomes for patients, their families and the health system in general [12]. Delirious patients have longer hospital stays [13], increased morbidity and mortality [14], and are more likely to have a failed discharge [15]. Adverse outcomes associated with delirium may be accentuated in those with pre-existing cognitive impairment. Delirium may impact negatively on the prognosis of dementia and may accelerate the trajectory of cognitive decline with patients not returning to their premorbid baseline once the acute delirium resolves [16,17]. The presence of delirium in patients with dementia leads to longer periods of hospitalization, increased morbidity, greater likelihood of entry to residential care following discharge and a greater than 5-fold increased risk of death [10,18]. Recognition rates may also suffer given the difficulties establishing a clear baseline of cognitive function and misattributing the symptoms of delirium to the underlying dementia [19]. The management of delirium in the setting of dementia is broadly similar to that in all individuals although consideration of increased susceptibility to side effects of pharmacological agents needs to be considered.

Prevention of delirium is clearly the preferred outcome. A number of risk factors (including cognitive impairment) predispose the individual to delirium and thus make them susceptible to its development in the face of a precipitating event (see Table 1). The cause of delirium is usually multifactorial with a variety of risk factors likely contributing to its development [20–23].

The purpose of this review is to provide an overview of non-pharmacological interventions aimed at preventing delirium in older people with underlying cognitive impairment and dementia with a focus on relevant risk factors.

2. Methods

A systematic review of Medline, PsychInfo, Embase and Cochrane databases, from inception to 10 May 2016 was completed, using the following strategy and search terms:

(delirium OR acute confusion) AND (prevent OR preventing OR prevention OR prophylaxis) AND (dementia OR Alzheimer OR cognitive impairment). The electronic search was supplemented by a hand search of the available references. All citations were reviewed,

including systematic and narrative reviews, case-reports, case-series, case-control studies and clinical trials. A meta-analysis was not undertaken due to the heterogeneity of the various studies and variable nature of the interventions.

3. Results and discussion

The electronic and manual search yielded 1171 citations (519 from Medline). Two hundred and forty three of these were retained after excluding duplicates, those reporting pharmacological interventions, those reporting treatment rather than prevention, opinion pieces/editorials and studies in younger age groups. The majority of these 243 articles referred to the prevention of delirium in the general older population rather than in those with pre-existing cognitive impairment. Interventions aimed at modifying risk factors for delirium varied widely as did patient populations and study duration.

Some studies specifically excluded people with existing dementia but these were generally in the minority given that this is a clear risk factor for delirium. Studies that included those with existing cognitive however did not always define this categorically and few studies reported outcomes in this group of individuals. The types of interventions could be broadly divided into those that addressed multiple risk factors in a systematic manner (multicomponent interventions – MI) and those that targeted specific factors in at-risk populations (single component interventions). Interventions were also categorized by whether they were delivered in hospital or at home.

3.1. Multicomponent interventions

Multicomponent interventions are a fairly heterogeneous group of measures that typically target multiple delirium risk factors in a systematic manner [24]. Examples of these may include actively looking for and treating infection, improving communication and environmental cues, cessation of possibly harmful medications, geriatrician review, managing pain, avoiding other iatrogenic causes of delirium e.g. unnecessary catheterisation, addressing sensory impairment, avoiding dehydration and reorientation. These have been incorporated into a number of guidelines, including those published by the National Institute for Clinical Excellence [25]. The origin of MI is often attributed to the trial by Inouye et al. published in 1999 [26] although earlier work systematically addressing risk factors in specific patient populations exists [27,28].

Inouye and colleagues tested a MI (the Hospital Elder Life Program – HELP) in 852 individuals aged 70 years and older admitted to general medical wards in a large teaching hospital. The intervention targeted six common risk factors (cognitive impairment, immobility, sleep deprivation, visual and hearing impairment and dehydration) and patients were non-randomly allocated to intervention or usual care wards. Patients were however matched according to age, gender and delirium risk to ensure an even distribution between the groups. The intervention resulted in a modest reduction in the incidence of delirium (9.9% vs 15% in the intervention vs usual care group; odds ratio (OR): 0.60, 95% confidence interval [95%CI]: 0.39–0.92) and individuals in the intervention group spent fewer days with delirium than those in the control arm (105 days vs 161 days, $p=0.02$). Two hundred and fifty-three individuals had dementia and the prevalence of this was similar between the groups (125/426, 29.3% usual care vs 128/426, 30% intervention). Thirty-two percent (40/125) of people with dementia in the usual care group developed delirium as compared to just 17% (22/128) in the intervention group ($\chi^2 = 7.50$, $p=0.006$).

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