How can delirium best be prevented and managed in older patients in hospital?

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CRD summary
This review evaluated strategies for the prevention and management of delirium in hospitalised older patients. The authors concluded that limited evidence supported multicomponent strategies for preventing delirium in such patients. The authors’ conclusion reflects the evidence presented, but potential methodological limitations in the search and review processes made the reliability of this conclusion unclear.

Authors' objectives
To evaluate strategies for the prevention and management of delirium in hospitalised older patients.

Searching
MEDLINE, EMBASE and Cochrane Database of Systematic Reviews were searched for articles in English. Search dates spanned from 1950 to 2007. Search terms were reported. Reference lists of reviews and retrieved articles were scanned for further studies.

Study selection
Randomised controlled trials (RCTs) that focused on strategies for prevention or management of delirium in hospitalised adults primarily aged at least 65 years were eligible for inclusion in the review. Outcomes of interest were delirium rates, morbidity, length of hospital stay and mortality.

Prevention strategies included multicomponent and pharmacological interventions. Multicomponent prevention studies included hip fracture patients. Multicomponent management studies included medical in-patients. All multicomponent interventions included specialists in geriatrics and contained strategies to tackle one or more of the risk factors: cognitive impairment, functional impairment, fluid imbalance, high-risk medications, pain, impaired vision or hearing, malnutrition, iatrogenic complications and sleep deprivation. All management strategy RCTs were multicomponent interventions. Delirium management strategies comprised a range of multicomponent interventions (reported in the paper). Methods used to identify delirium varied across the studies and included Confusion Assessment Method, Organic Brain Syndrome Scale and Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria. Pharmacological interventions varied between studies and included morphine, haloperidol, donepezil and diazepam given for hip or knee fractures or during bowel cancer surgery.

Two reviewers independently selected studies for inclusion. Disagreements were resolved by discussion.

Assessment of study quality
Trial quality was assessed on methods of randomisation, allocation concealment, blinding, withdrawal rates and use of intention-to-treat (ITT) analysis.

The authors did not state how many reviewers carried out the quality assessment.

Data extraction
Data were extracted to enable calculation of relative risks/risk differences (RR) for binary outcomes and mean differences for continuous outcomes, with 95% confidence intervals (CIs).

The authors did not state how many reviewers carried out data extraction.

Methods of synthesis
Relative risks, weighted mean differences (WMDs) and 95% CIs were pooled in a random-effects meta-analysis (DerSimonian and Laird). Inverse-variance weighting was used. Number needed to treat (NNT) was calculated.
Statistical heterogeneity was assessed and p values were reported. Multivariate analysis was conducted to adjust for study differences, where necessary. A narrative synthesis was used where studies could not be combined statistically.

**Results of the review**

Eleven RCTs were included. Eight trials (1,324 participants) assessed prevention. Three trials (489 participants) assessed management strategies. The method of randomisation was described in eight trials. Allocation concealment was conducted in six trials. Nine trials reported blinding of outcome assessment. Withdrawals ranged from zero to 48 patients. ITT analysis was used in seven trials.

Multicomponent interventions were effective in the prevention of delirium in patients hospitalised due to hip fracture (RR 0.75, 95% CI 0.64 to 0.88; three trials, no statistically significant heterogeneity. NNT was 7 (95% CI 4 to 20). Multivariate analysis produced non-statistically significant results. One trial found that this intervention group was associated with statistically fewer days of postoperative hospital stay (28 days compared to 38 days in the control group). One of two trials found a statistically significant decrease in hospital mortality (0.6% compared to 5.5% in the control group).

One study of a pharmacological intervention showed that patients who received haloperidol for hip fracture had a statistically significant shorter duration of delirium (5.4 days compared to 11.8 days) and a shorter hospital stay (17.1 days compared to 22.6 days) compared to placebo. Another study found that patients who received diazepam combined with flunitrazepam and pethidine infusions for colon cancer surgery had statistically significant lower postoperative delirium (5% compared to 35%) than patients who received usual care. No other statistically significant results for pharmacological interventions were reported. None of the multicomponent pharmacological prevention interventions for the management of delirium showed any statistically significant impacts on the outcomes of interest.

**Authors' conclusions**

Limited evidence supported the implementation of multicomponent preventive strategies for delirium in hospitalised older patients. There was insufficient evidence to support the use of any pharmacologic intervention for prevention or management of delirium.

**CRD commentary**

This review addressed a clear question and was supported by sufficiently reproducible inclusion criteria, although these were broad for interventions. The search strategy included some relevant data sources. The exclusion of a number of studies in languages other than English and the absence of any reported search for unpublished material mean that language and publication biases were possible and relevant studies may have been missed. The authors attempted to minimise reviewer error and bias during study selection; it was unclear whether similar attempts were made during quality assessment and data extraction. Appropriate quality assessment criteria were applied and the results indicated that trials were of a reasonable methodological standard. Statistical heterogeneity was assessed. The chosen method of synthesis was conservative. Generalisability of the main finding was limited, based on results from a small number of trials in patients with hip fracture.

The authors' conclusion reflects the limited evidence presented, but some potential methodological flaws made the reliability of this conclusion uncertain.

**Implications of the review for practice and research**

**Practice:** The authors stated that implementation should place emphasis on adherence to preventive strategies contained within the multicomponent interventions.

**Research:** The authors stated that further research to evaluate the potential for antipsychotic agents to reduce the duration of delirium was warranted.

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