Delirium: effectiveness of systematic interventions

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Authors' objectives
To review evidence related to the effectiveness of systematic interventions in preventing or detecting and treating delirium in hospitalised patients.

Searching
MEDLINE was searched from January 1987 to December 1997 using the keywords 'prevention and control', 'drug therapy', 'rehabilitation' and 'therapy'. In addition, the bibliographies of retrieved articles, relevant chapters in major texts, and review articles were also searched. Only articles published in English or French were included in the review.

Study selection
Study designs of evaluations included in the review
Controlled trials (randomised and non-randomised) were eligible for inclusion. For detection and treatment studies, cohort studies using accepted criteria for delirium were also included.

Specific interventions included in the review
Studies of any intervention to prevent delirium were eligible for inclusion. Such interventions included: psychiatric assessment and support reorientation, psychiatric interview, spousal education, patient education, special nursing care, patient-controlled analgesia, and special medical and surgical care. Interventions to detect and treat delirium included: screening for post-operative confusion, monitoring, screening for hypoxia and provision of supplementary oxygen, geriatric psychiatric consultations, special nursing care, and training of house staff to diagnose and manage delirium.

Reference standard test against which the new test was compared
The review did not include any diagnostic accuracy studies that compared the performance of the index test with a reference standard of diagnosis.

Participants included in the review
Studies conducted in hospitalised, elderly patients were eligible for inclusion. The participants reported in the review included those undergoing cardiac, orthopaedic, or chest surgery, and unspecified medical patients.

Outcomes assessed in the review
No inclusion criteria relating to the outcome measures were specified. The incidence of delirium was considered in the assessment of prevention studies. The assessment of detection and treatment studies considered the incidence of delirium, post-operative complications and severe confusion; length of hospital stay, level of cognition, anxiety, depression and function; and mortality.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Six criteria described by the Evidence-Based Medicine Working Group (see Other Publications of Related Interest no.1) were used. These focused on the use of randomisation, similar groups at baseline, equally treated groups, blind-rated outcomes, complete follow-up and intention-to-treat analysis. The author did not state how the papers were assessed for validity, or how many reviewers performed the validity assessment.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data
Methods of synthesis

How were the studies combined?
ARRs were calculated for the incidence of delirium in the prevention studies. The results of the detection and treatment studies were reported in a narrative summary.

How were differences between studies investigated?
Differences between the studies were discussed in a narrative summary.

Results of the review

Seventeen studies with over 2,142 participants were included. There were 10 studies of prevention and 7 studies of detection and treatment.

Prevention studies (10 studies: 4 randomised controlled trials and 6 non-randomised)

The studies were very heterogeneous. Five trials involved middle-aged cardiac surgery patients, three involved elderly surgical patients, and two involved elderly medical patients. The sample sizes ranged from 20 to 235. The ARRs for delirium ranged from -13 to 19% (median 13%) among surgical patients and from -3 to 3% among elderly medical patients. The ARRs for younger and older surgical patients were similar. However, there was great variability in the incidence rate of delirium in the control groups (0 to 80%), suggesting extreme heterogeneity or differing criteria for delirium. Consequently, an overall estimate of the risk difference was not calculated. There was, however, little variability in the results of the 2 trials involving elderly medical patients (ARRs: -3 to 3%).

Detection and treatment studies (7 studies: 2 randomised, 4 non-randomised, 1 cohort)

The studies were very heterogeneous. Five trials involved elderly medical or surgical patients, and two involved younger surgical patients. The sample sizes ranged from 16 to 434 and the length of follow-up from 5 to 56 days. Most interventions were aimed at the early detection of delirium and the management of potential etiologic factors. These interventions appeared to have important beneficial effects on the cognitive and functional status of younger and older delirious surgical patients, and a modest benefit on elderly delirious medical patients. The larger effect among surgical patients might have been related to the fact that the medical precipitants of the delirium were more specific in the surgical patients (e.g. post-operative hypoxia) and were more readily treated (e.g. with supplemental oxygen). Quality of the studies.

None of the prevention or the detection and treatment studies fulfilled all of the six quality criteria used. Frequent flaws in study design included non-randomised designs, differences between the treatment and control groups at baseline, and outcomes not rated blind.

Authors’ conclusions

A broad spectrum of systematic interventions appeared to be modestly effective in preventing delirium in young and old surgical patients, but not elderly medical patients. Systematic detection and treatment programmes and special nursing care appeared to add large benefits to traditional medical care in young and old surgical patients, and modest benefits in elderly medical patients. However, it seemed that the more precise the target of the detection and the treatment programme, the greater the benefit.

CRD commentary

This review was based on clearly stated inclusion criteria. A reasonable search of the published literature was performed but, as only English and French articles were included in the review, relevant studies might have been missed. In addition, publication bias is a potential problem as no specific attempts to locate unpublished material were...
made. Few details of the methods used to select the studies and extract the data were described, e.g. how many
reviewers were involved in these processes and in the assessment of study quality. The criteria on which the quality of
the studies was judged were, however, clearly stated and reported. A wide range of study designs was included in the
review, including randomised and non-randomised controlled studies and cohort studies. The studies were also very
heterogeneous and, consequently, the methods used to present the findings would appear to be appropriate. The author
also correctly identified a number of limitations in the analysis: the lack of studies, the limited quality of the studies,
and the high level of heterogeneity between the studies. In view of these limitations and the aforementioned problems,
the results of this review should be treated with caution. A very similar review was published by the same group of
authors in 1996 (see Other Publications of Related Interest no.2).

Implications of the review for practice and research

Practice: The author gave a number of implications but these should be treated with caution. It was stated 'the evidence
suggests that a broad spectrum of systematic interventions (education, support, reorientation, anxiety reduction,
preoperative medical assessment) may be modestly effective in preventing delirium among middle-aged and elderly
surgical patients'. Also, 'systematic detection and treatment programs appeared to result in important additional
benefits in young and old surgical patients as did special nursing care; the same intervention resulted in more modest
benefits in elderly medical patients'.

Research: The author stated a number of implications for further research, which all appear to be valid. It was stated
'further trials among surgical patients should target populations specified by age, pre-morbid level of cognition,
general physical health, severity of illness, surgical procedure and presence of other major risk factors for delirium';
'they should use randomised designs and determine adequate sample size'; 'outcomes should be rated blind to study
group; standard criteria should be used to diagnose delirium; and symptom scales should be used to rate the severity of
delirium'. In addition, 'relatively simple interventions involving education (by nurses) of the patients and/or spouse
about the impending surgery and possible psychiatric complications should be compared to procedures involving
special medical or psychiatric assessments (by physicians) before surgery and follow-up after surgery'. Also, 'because
the quality of usual medical-nursing care is probably quite variable from one unit to the next, the trials should include
process measures that indicate the actual differences in care received by the treatment and control groups. The cost
benefit of these interventions should be determined' and 'controlled trials should replicate the effectiveness of patient-
controlled analgesia'.

Bibliographic details

Cole M G. Delirium: effectiveness of systematic interventions. Dementia and Geriatric Cognitive Disorders 1999;
10(5): 406-411

PubMedID
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Other publications of related interest

1. Guyatt GH, Sackett DW, Cook DJ. Users' guides to the medical literature: how to use an article about therapy or

Indexing Status
Subject indexing assigned by NLM

MeSH
Clinical Protocols /standards; Clinical Trials as Topic; Delirium /diagnosis /prevention & control /therapy; Evidence-
Based Medicine /standards; Humans; Mass Screening /standards; Treatment Outcome
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.