

Do guidelines improve the process and outcomes of care in delirium?

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Abstract

Objective: to develop consensus guidelines for management of delirium and to assess their effectiveness in improving the outcomes and process of care in delirium.

Method: guidelines for delirium were developed following a literature search and a formal multi-disciplinary consensus process using a two-stage Delphi technique. The process and outcomes of patients with delirium were then observed in a 'before' (211 patients) and an 'after' study (125 patients). Three levels of intervention were made in the 'after' study. (i) Feedback of baseline data only (low intensity intervention). (ii) As in (i), but also formal distribution of the guidelines to nurses and doctors (medium intensity intervention). (iii) As in (ii), but in addition the guidelines were reinforced with teaching sessions for the nurses and doctors (high intensity intervention).

Setting: older people (aged over 65 years) with delirium admitted to acute medical or acute elderly care wards in five district general hospitals in England.

Results: only in the high intervention group was there an improvement in process and outcome of care, but this failed to reach statistical significance.

Conclusion: delirium is a poorly managed condition in older people and guidelines alone fail to improve the process and outcomes of care.

Keywords: *delirium, older people, guidelines, outcomes, district general hospital*

Introduction

Delirium (acute confusional state) is common, under-recognised and has poor outcomes in elderly patients [1]. This is despite delirium being potentially a reversible condition [2].

The aim of the present study was to devise guidelines for optimal management of delirium in clinical practice and to evaluate whether guidelines improve the process and outcomes of care.

Method

Baseline study

Five district general hospitals in the North of England and Midlands participated in the study. All five provided acute medical services to a predominantly urban population. All patients aged over 65, admitted over a three-month period to general medical or elderly care wards, were screened for delirium on admission using the Confusion

Assessment Method [3], based on DSM IV. The medical and nursing notes of patients identified as having delirium were reviewed and length of stay, use of mental test score, use of sedation, use of orientation cues (clocks and calendars), assessment of vision and hearing, alcohol history, complications and ward moves were recorded.

Development of guidelines

Guidelines were initially developed informally in Carlisle by multidisciplinary consensus (Draft 1), [4]. A literature search using MEDLINE and BIDS was carried out using 'delirium' and 'confusion' as text words to identify studies of delirium in the elderly, particularly controlled trials. A second draft was developed incorporating evidence from the literature search (Draft 2). Draft 2 was subjected to a formal multidisciplinary consensus process using a panel of 21 professionals and carers using a two-stage Delphi technique [5].

The 'expert' panel included doctors with an interest in delirium (from neurology, geriatrics and psychiatry), as well as representatives from therapy and nursing professions

and carers of patients who had experienced delirium. The panel graded each recommendation on a 9-point scale (9 = extremely appropriate, 1 = extremely inappropriate). The guidelines were modified twice after being reviewed by the panel to produce a final draft (Draft 3) (summarised in Table 1). There was a high degree of agreement with all recommendations after the formal multidisciplinary consensus (all mean scores greater than 6.5). The final complete guidelines were approved by the British Geriatrics Society (BGS) and since the completion of the study are available on the BGS website [6].

Implementation of guidelines

Part 1 of the study was repeated in the five hospitals. All patients admitted over a three month period were screened for delirium, as before. Three levels of intervention were performed (low: feedback of baseline data; medium: feedback of baseline data and distribution of guidelines to nurses and doctors; high: as medium, but also teaching sessions for nurses and doctors in each centre). One hospital was randomised to 'low' intervention and two hospitals to medium and high intervention respectively.

Teaching sessions for the high intervention group were held for each participating ward. A suitable time and venue was identified with the ward manager and as many staff as ward duties permitted attended (Range 5–10). Each session lasted up to 1 hour and covered features of delirium, management guidelines with supporting evidence and information regarding current practice in that unit, obtained from the first phase of the study. Separate sessions were conducted with medical staff, covering the same areas and use was made of medical 'grand round' meetings for this. Sessions with medical staff were targeted after the change of house in February, with the after phase of the study conducted in the same 6-month period. All hospitals studied had relatively stable nursing populations.

The process and outcomes of care of the patients with delirium were recorded, as in the baseline study.

The results were analysed using the epi info statistical package and comparing the high intervention hospitals with the medium and low intervention hospitals using chi squared tests and Kruskal Wallis tests for two groups. The study was co-ordinated by a research registrar (LJY) and by audit assistants at each of the participating centres, and was funded by National Audit monies. All 'before' phases of the study were conducted in the late summer/early autumn and ran concurrently. The 'after' phases were conducted in the spring of the following year.

Results

Baseline study

Two hundred and eleven patients with delirium were identified over 3 months: mean age 81.5 ± 7.3 years, 36% male, 18.5% from institutions, 47% with dementia. In these patients, delirium was not noted in 26.4% of nursing and 49.8% of medical notes. Usual cognitive status (UCS) was not recorded in 24.6% of nursing and 49.8% of medical notes.

Mental test score (MTS) was attempted in 30.5%. The diagnosis of delirium was recorded more often when the UCS was recorded (72.6% *versus* 42.9%, $P < 0.0001$, chi square) or MTS attempted (73.4% *versus* 51.4%, $P = 0.005$, chi square). Alcohol history was recorded in 51.2% and Barthel Index in 45.5% (Median 7, IQR 3.5–11.5). Cot-sides were used in 36.2% of patients, sedation in 38.3%, multiple sedative drugs in 12.9%. Forty-nine percent of patients could see a clock, 10.6% a calendar. Sixty-one per cent had one or more ward move (Median 1, Range 0–4). In hospital mortality was 27% and 20.4% of all cases were discharged to new institutional care (27.9% of survivors). Median length of stay was 18 days (IQR 9–33). Seventy-six percent of patients had one or more in-hospital complication: 63.3% had a new continence problem, 29.3% had falls (Median 0, IQR 0–1, Range 0–12) and 33.5% had a hospital-acquired infection

Table 1. Summary of final guidelines for management of delirium

In all stages during the hospital admission ensure good communication with the patient and carer and between professionals caring for the patient.
1. Identification of delirium using DSM (IV) Criteria.
2. Recognition of delirium can be increased by the routine use of the Abbreviated Mental Test Score (AMT). Repeated use of the AMT may help to determine the recovery or onset of delirium in those not delirious on admission.
3. Patients' pre-admission cognitive and functional status should be ascertained. This information may need to be clarified with the carer.
4. Risk factors such as dementia, severe illness, sensory impairment and alcohol use should be identified.
5. The underlying cause of delirium should be identified (commonly infection, drugs or drug withdrawal).
6. Treat underlying cause and remove any offending drugs.
7. Avoid physical restraint, if possible including cot-sides.
8. Avoid major tranquillisers, where possible, but if necessary use only one drug (haloperidol) and in the lowest dose possible. Review drug treatment regularly.
9. Multidisciplinary team involvement in treatment and discharge planning.
10. Create optimum environment for care including good lighting, clocks and calendars and avoid ward moves.
11. Use reality orientation techniques and rehabilitative care models.
12. Ensure adequate discharge and follow-up to avoid unnecessary readmissions and support to patients and carers.

Table 2. Implementation of guidelines

	High before	High after	<i>P</i> value*	Medium and low before	Medium and low after	<i>P</i> value*
Number	101	88	–	110	37	–
Age (mean)	80.6 ± 7.3	82.9 ± 7.1	0.02 (KW)	82.0 ± 7.2	82.4 ± 6.8	NS (KW)
% Female	59.4%	68.2%	NS	68.2%	59.5%	NS
Median LOS (days)	16 (IQR 8–30)	10.5 (IQR 5–29)	0.07 (KW)	19 (IQR 4.5–33)	14 (IQR 7–31)	NS
Mental test score completed	16.8%	27.9%	0.07	19.3%	13.5%	NS
Vision recorded (medical)	5.9%	11.4%	NS	5.5%	2.7%	NS
Vision recorded (nursing)	52.5%	46.6%	NS	11.1%	18.9%	NS
Hearing recorded (medical)	5%	15.9%	0.02	10.1%	10.8%	NS
Hearing recorded (nursing)	76.2%	72.7%	NS	32.7%	27%	NS
Alcohol history	42.6%	48.9%	NS	59.1%	64.9%	NS
UCS recorded (medical)	47 (46.5%)	43 (48.9%)	NS	58 (52.7%)	23 (62.2%)	NS
Delirium recorded (medical)	28.7%	27.3%	NS	15.5%	24.3%	NS
Delirium recorded (nursing)	15.8%	15.9%	NS	10.3%	10.8%	NS
Sedatives used	36%	40.7%	NS	38.7%	37.8%	NS
Cot-sides	30.3%	38.1%	NS	41.7%	37.9%	NS
Incontinence	67%	68%	NS	60.0%	54.1%	NS
Pressure sores	13.9%	11.5%	NS	24.8%	21.6%	NS
Falls	28.0%	21.8%	NS	30.6%	24.3%	NS
New infection	33.7%	33.7%	NS	33.3%	40.5%	NS
Clock	52.5%	51.4%	NS	51.4%	53.8%	NS
Calendar	10.1%	12.7%	NS	11.0%	0	NS
Median no of moves	2	1	0.08 (KW)	2	2	NS (KW)
(Range)	(1–4)	(1–5)		(1–5)	(1–5)	
Mortality	24.8	19.3	NS	29.1	35.1	NS

* For difference between groups. Chi squared unless stated.

KW = Kruskal Wallis test. NS = Not significant at 0.05% level. UCS = Usual cognitive state.

(Median 0, IQR 0–3). Cot-sides were associated with higher mortality (37.3% *versus* 21.2%, $P=0.02$, chi square), falls (% with fall 43.8% *versus* 22.1%, $P=0.002$ chi square), pressure sores (29.7% *versus* 14.4%, $P=0.014$, chi square), infections (50% *versus* 24.4%, $P=0.0004$, chi square) and longer lengths of stay (Median 21, IQR 11–36 *versus* 15, 7–28, $P=0.008$, Kruskal Wallis test for two groups).

Implementation of guidelines

The results are shown in Table 2. The results of the intervention at hospitals 1 and 2 (High intervention) and the combined results for hospitals 3 and 4 (Medium intervention) and hospital 5 (Low intervention) are analysed separately. There was no statistical difference between the patients and outcomes from the five different hospitals in the baseline study. The only significant difference between the patients in the before and after studies was that the mean age of the patients in the ‘before’ high intervention group were slightly younger than in the ‘after’ group. Patients in the high intervention

group had a reduced median length of stay, were more likely to have a formal mental test score recorded, were more likely to have their hearing assessed and were less likely to be moved between wards. However, only the frequency of recording a hearing assessment by medical staff achieved statistical significance.

Discussion

This study confirms that delirium is an under-recognised and poorly managed condition [1]. Specifically, delirium was only recorded in 26% of nursing notes and 50% of medical notes in this population of patients. Complications, including falls, pressure sores and secondary chest infections are common. Previous studies in the UK have also shown a high mortality rate and institutionalisation rate for patients with delirium [7]. We found evidence of poor management, including lack of orientating environment (for example, no visible clocks) and patients with delirium were frequently moved between wards and were restrained, using cot-sides. Furthermore, poor process of

care, such as use of cot-sides, seemed to be related to poor outcomes.

Despite the paucity of randomised controlled trials, we were able to develop guidelines using a formal consensus approach. However, we clearly demonstrated that guidelines by themselves do not improve the process of care or the outcomes of delirium. When reinforced by teaching sessions there was some improvement in the recording of a mental test score, hearing assessment and median length of stay. However, only improvement in recording of hearing assessment reached statistical significance.

A possible criticism of this study is that it may be underpowered to demonstrate improvement in outcomes. In particular, there was a fall-off of recruitment to the after study, particularly in the low and medium intervention group. This was possibly due to a seasonal effect. Other studies on guidelines [8] have also shown that guidelines alone are ineffective unless accompanied by a systematic communication and education process.

A randomised controlled trial methodology for this study was not practicable on a number of grounds. Randomisation of individual patients would be impossible as the same staff would be caring for 'guideline' and 'non-guideline' patients, resulting in contamination of the control group. Similarly, randomising individual wards was also impractical as medical, paramedical and nursing staff frequently move between wards, again resulting in contamination of the control group.

This study was carried out in five acute hospitals that all employ the modern practice of admitting all emergency medical patients through an admission unit. Many of the recommendations in the guidelines are difficult to implement in this 'transit' environment (e.g. use of orientation cues, avoidance of ward moves, full cognitive assessment, multidisciplinary working, rehabilitation approach, avoidance of sedation and of restraint, and correction of sensory impairments). This makes optimal care difficult and may contribute to poor outcomes and complications. Overcoming 'organisational barriers' to implementation of guidelines may be more difficult than overcoming 'professional barriers', which may respond to an educational approach [9]. In practice, persuading clinicians to recognise and treat delirium can be difficult [10]. Management of delirium provides a 'window' into the overall quality of care given by a hospital [11] and it is very disappointing that the process of care and outcomes of care of delirium seems to be universally sub-optimal from our study.

Perhaps delirium should be treated as a 'special' case and patients with delirium should be 'fast tracked' to a more suitable ward environment with specially trained staff using an integrated care plan. Although it is relatively easy to agree on what constitutes good quality care in delirium, further research is needed into the educational and organisational changes that are needed to ensure that best practice is universally applied.

Key points

- Delirium is a poorly managed condition in hospital with a high use of sedation, cot-sides, frequent ward moves and failure to use orientation techniques.
 - Poor management of delirium is reflected in a high mortality, frequent complications and long lengths of stay.
 - Guidelines alone do not appear to improve management of delirium; educational and organisational change is also required.
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