

Hospitals in the home for patients with delirium: No place like home?

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BRIEF REPORT

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ABSTRACT

Background

Management of patients with delirium presents a challenge.

Aims

Supported discharge with Hospital in the Home (HITH) for patients with delirium was developed and evaluated.

Methods

Patients admitted acutely to internal medicine and geriatrics, with a diagnosis of delirium were considered for HITH. Patients with a full time career and who lived in their own residence were eligible for the program. Delirium was diagnosed using CAM. Outcomes were compared against historical control. All data was collected prospectively.

Results

A total of 89 patients (9.2 per cent) were diagnosed with delirium. Of 31 patients eligible for HITH, 17 had suitable carers. Sixteen patient-caregiver teams were successfully discharged on HITH. Age, frailty score, length of stay and readmissions did not vary significantly between the intervention and control group (N=7). Thirteen patient-caregivers provided feedback and which was supportive of the

intervention.

Conclusion

This innovative model of care was feasible and well received. Further studies are recommended.

Key Words

Delirium, home care, hospital-based, family caregiver

Implications for Practice:

1. What is known about this subject?

Management of delirium in hospital remains a challenge and acute stay is often prolonged.

2. What new information is offered in this report?

HITH/ delirium (THDP) management is a feasible and patient centred intervention.

3. What are the implications for research, policy, or practice?

Individualized care with multidisciplinary HITH/delirium intervention on discharge (THDP) provides a viable and feasible approach and further studies are called for.

Background

Delirium is a common condition in hospitalized older patients. Management of delirium in hospital is a challenge, outcomes are poor and discharge home is often delayed.¹ Delirium is frequently a traumatic experience for the patient and their loved ones, often compounded by the unfamiliarity of a hospital environment.² There is a place for consideration of alternative models of care, in particular, management within the patients' own home.³ The home environment may also present certain advantages over hospital based care of delirium, including passive reorientation through experiencing a familiar environment. At the time of writing, supported discharge of delirium has not been previously described.

The significant care needs of a patient with delirium dictate that any home based intervention needs to be well supported. Hospitals in the Home (HITH) services, comprising medical and multidisciplinary services, have already been shown to reduce the incidence of delirium and are robust and cost effective for other medical conditions.^{4,5} The HITH based model of care presents an opportunity to explore the management of patients with a new diagnosis of delirium within their own home setting.

This pilot study aimed to assess the feasibility and effectiveness of HITH supported discharge for patients with delirium. In addition to selecting patients that were physically and medically eligible, an important component of the intervention was that there was a full-time caregiver. Our group reported on a delirium HITH discharge model of care, The HITH Delirium Pathway (THDP), and its outcomes.

Methods

This was a before-after prospective pilot study investigating the role of a supported discharge in delirium through THDP. THDP was evaluated within a general medicine service at a metropolitan hospital in Australia between December 01 2013 and July 31 2014.

Population

All patients over the age of 65 years, admitted to the general medical/ geriatric wards, were assessed for eligibility. Patients with delirium were eligible for HITH if they lived in their own home with a full-time care-giver. Patients were excluded if they were medically unstable, from a residential care facility or at a palliative phase of care. Before THDP data was collected from December 01 2013 to January 31 2014 and those with an available caregiver were used as controls.

Intervention

THDP represented a bundle of care including carer information and support, patient management plan (see appendix 1 for details), a clear pathway and transition guide and staff education. Patients on THDP were assigned an individualized, needs based and multidisciplinary treatment plan. Care-givers were provided delirium information (THDP -patient passport to care –see appendix 1). Both patient and care-giver had access to 24 hour phone support with team leader of the local tertiary referral cognitive assessment and management unit. Typical daily interventions included gait assessment and re-education [physiotherapy], cognitive status, home safety and equipment check [occupational therapy], delirium status and general observations [nursing], medical review [medical registrar], reconciliation

of medications [pharmacy], community support post discharge from HITH [social worker] and accompanied walks, card games and reminiscence therapy [assistant in nursing]. There were no specific interventions proposed for the caregiver but they were required to be in a position to supervise the patient for the duration of THDP. All twenty seven THDP staff were provided a standard delirium education tutorial [KH] prior to the intervention. Delirium understanding was assessed using a standard questionnaire,⁶ and shown to be satisfactory (17/27 completion: mean score 84 per cent).

Governance for patients discharged on THDP remained under the aegis of the treating consultant as usual HITH practice. Patients were discharged from THDP once delirium free for two consecutive days with a discharge letter sent to the patient's general practitioner. In order to maximise subsequent roll-out of THDP following completion of this pilot study, adaptation of HITH processes of care were undertaken without changing HITH infrastructure.

Measures

Screening for delirium was undertaken on admission using the Confusion Assessment Method instrument (CAM)⁷ by project officer (KH), a senior registered nurse. Diagnosis of delirium was confirmed when screening and consultant opinion agreed on the presence of delirium. A second opinion from a geriatrician was sought to estimate patient suitability to embark on discharge to THDP. CAM screening was undertaken daily whilst on THDP with two successive negative results indicating delirium resolution.

Demographic data was collected and frailty identified as a convenient summative health measure. Our group used the Clinical Frailty Scale, a 9 point interval scale which is an 'at the bedside' clinical measure of frailty that compares well with other tools.⁸ The assessment process was the same for before and during THDP phase of study.

The primary outcome was feasibility of THDP which was defined as the number of patients discharged on THDP exceeding 1.5 per cent of all cases with delirium, as per clinical targets for other conditions.⁹ Secondary measures included length of stay, 28 day readmissions, mortality and caregiver satisfaction. A survey of the caregiver was undertaken post discharge from THDP (28 days post discharge from hospital). The survey comprised a series of standard open ended questions that was developed by the multidisciplinary advisory group with consumer feedback and based upon standard HITH feedback forms already in use. The questionnaire was administered by phone

interview [KH] with a hand written record of responses.

The project was registered as a quality assurance project [HREC/14/XXX/76: The Delirium Pathway Program. THDP]. Consent was gained from the relevant caregiver for patients who were not competent to consent for themselves.

Statistics

Comparable pilot studies are lacking but a sample size of $n=30$ was estimated from other feasibility studies of delirium.¹⁰ Data was collected and compiled using the Microsoft Excel package (2010) and analysed using Stata statistical software package (version 13). Baseline descriptive statistics for patients screened and testing positive using the CAM tool are presented in Table 1, along with a comparison of those that were/were not eligible for inclusion based on assessment of their physical health. The analysis reported in Table 2 compares characteristics of people who were potentially eligible, both from the historical and intervention cohort, respectively. Chi square tests and two-sample t-tests were conducted to compare baseline characteristics and outcomes of interest between these groups. Where the number of observations per group was less than five, Fischer's exact test was used in place of the chi square test. The distributions of continuous variables were assessed and transformations applied where necessary to satisfy modelling assumptions.

Results

A total of 970 patients aged over 65 years were admitted to the general medical and geriatric wards at a single centre metropolitan hospital from 1st of February 2014 to July 31st 2014 and assessed for delirium. Of these, 89 patients (9.2 per cent) admitted to either ward during the entire study period were diagnosed as having delirium. A flow chart demonstrating the selection of the study population is shown in supplementary figure 1. Of the 89 patients initially diagnosed with delirium, 14 patients were excluded because their symptoms resolved and five were excluded because they were lived out of the hospital's catchment area. A further 36 patients were ineligible because they lived in an aged care facility prior to admission or because they were assessed as being unsuitable for inclusion due to physical co-morbidities. Three patients had insufficient documentation to determine their reason for exclusion. Of the 31 patients who were assessed as being potentially eligible for THDP, 17 had available carers. Of these, 16 patient-caregiver teams (18 per cent of the cohort with delirium) opted to participate in the THDP and were successfully discharged with HITH.

Of 403 patients admitted before introduction of THDP, 29 (7.2 per cent) were diagnosed with delirium. Although the prevalence of delirium was lower than in the intervention group, Chi square analysis indicated this difference was not significant ($p=0.23$). The distributions of age ($p=0.15$) and gender ($p=0.44$) were comparable across the source populations for the historical control group and the intervention groups. Fifteen of these 29 patients diagnosed with delirium were identified as being medically and physically eligible for THDP but only seven these patients had an available caregiver. Thus, the comparison group reported in Tables 1 and 2 comprises these seven patients in addition to a single patient from the patient-caregiver team whose caregiver refused THDP.

Baseline descriptive statistics for eligible patients by THDP status are presented and compared in Tables 1 and 2. For patients on THDP, mean age was 85.5 years and ranged from 72 to 97 years with a median of 6 co-morbidities (range 4-16). Nine out of 16 patients (56 per cent) were female and 3 were from a culturally and linguistically diverse background. The mean frailty score on THDP was 5.8, which approximates to moderate frailty - people that need help with all outside activities and keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance with dressing.⁸ Most patients were discharged with a spouse ($n=13$), the remainder being supported by their children or wider family. Median length of stay in hospital for THDP was six days (Table 1). Age, frailty score and length of stay did not vary significantly between the intervention and control groups. However, length of stay was reduced in comparison with unmatched pre-THDP cases of delirium (median 6 versus 16.5 days; $p=0.04$). All patients on THDP survived and one quarter of patients were readmitted to hospital within one month. These proportions did not vary significantly between the intervention and control groups.

Median duration on THDP was 4.5 days, with an average of 0.2 medical, 1.1 nursing and 0.6 allied health visits, per patient, per day over the course of THDP. This compares with 0.9 medical, 1.0 nursing and 1.0 allied health documented interventions per day in patients with delirium managed in hospital ($p<0.05$).

Three patients were newly commenced on antipsychotics (haloperidol [2] and risperidone [1]) prior to THDP. Three patients were newly prescribed antipsychotics on a PRN basis on THDP. No PRN antipsychotics were needed or given in any of these cases. A single caregiver call was made to the support line and concerned a medication enquiry.

Of the post THDP cohort, lack of a suitable carer was the major reason for not adopting the intervention (14 of 15 patients). This suggests that where suitable carers were available, the patient/carer unit were very receptive to the intervention. Dialogue obtained from the questionnaire responses following discharge from THDP support this view (see supplementary table 3). All thirteen respondents out of the cohort of 16 stated that they would recommend the intervention in the future, to others, or their own situation.

Discussion

This innovative model of care was feasible and well received. A high proportion of patient-caregiver teams opted to embrace the intervention. In contrast with delirium persisting in over half of patients at one month,¹¹ most patients were described as being 'back to normal' following THDP. Since successful roll-out of THDP, there have been a further 30 successful discharges with only 3 readmissions and no deaths.

THDP was backed up with an education program, multidisciplinary representation, medical governance and 24 hour expert access. However, resource utilization was less than hospital based care. It could be argued that a 1.5 per cent separation target is artificially too low to determine feasibility. This figure is derived from Queensland Health targets for other HITH amenable Diagnostic Related Groups.⁹ Despite this proportion seeming low, these patients often spend the longest period of time in hospital. Combined with the high prevalence of delirium, it could then be anticipated that even if only a small number of patients were discharged early, this might have a disproportionate impact on overall length of stay.

There are limitations to this study. Rates of delirium were lower than expected for the control group. In addition, the small sample size may have increased the risk of type II error. There is some circumstantial evidence that this was indeed the case. Whilst length of stay showed no difference against cases matched to caregiver status, a reduced length of stay was observed in comparison with cases of delirium without a caregiver. Further, THDP compared favourably with a median length of stay in delirium of 11 days observed from the same hospital units from 2010 ($p=0.04$).¹² Another limitation was the pilot nature of the study which necessitated using a highly selective patient group for the intervention (THDP) with both factors affecting potential generalizability to other settings. There were fewer cases of delirium in the before group than anticipated which necessitated aggregating comparison of THDP patients with patients who had a full-time caregiver during the entire study.

Also, it was intended that the project be undertaken as a cluster controlled study comparing intervention and standard care between two wards but changes to our in-hospital model of care left a before and after approach as the next best alternative.

There has been little in the way of successful innovations in the management of delirium and therefore creative models of care are called for. An understanding of the potential role of home as an orientation strategy in of itself is conceptually attractive.

Conclusion

THDP management of delirium is a feasible and patient centred alternative of on-going delirium management. THDP showed no increase in mortality or additional risk of adverse event. Length of hospital stay was no different to standard care. Further studies are required.

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PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

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ETHICS COMMITTEE APPROVAL

The Prince Charles Hospital: HREC/14/XXX/76: The Delirium Pathway Program

Supplementary Figure 1: Flowchart of pilot study population

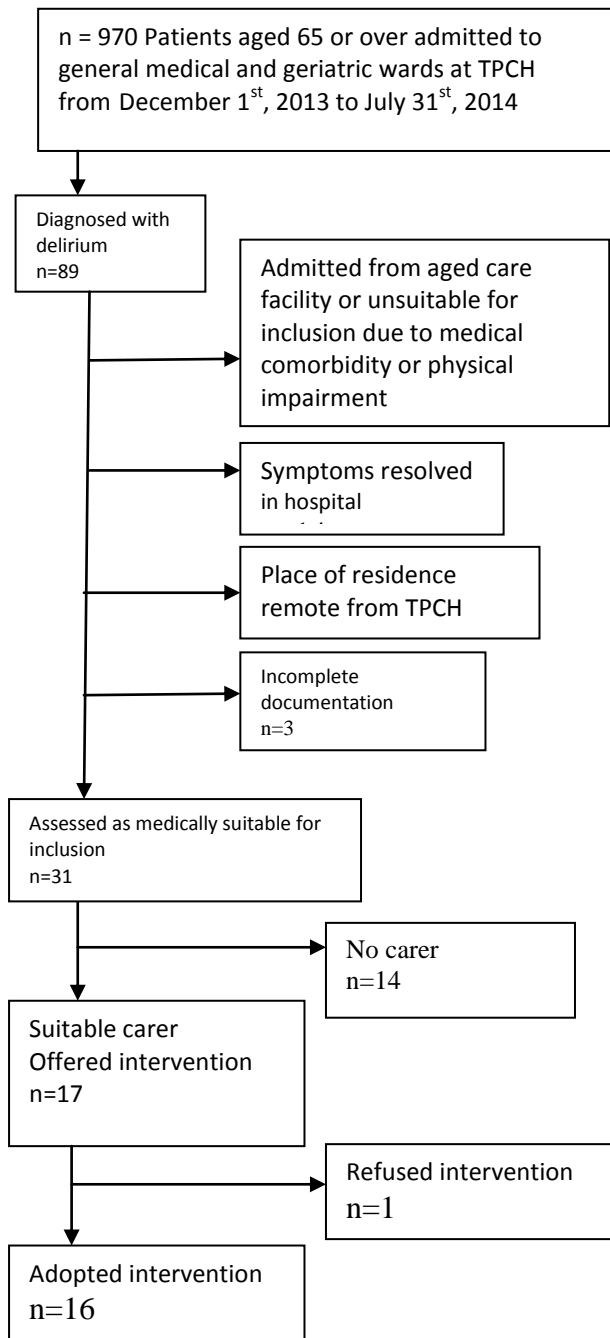


Table 1: Comparison of continuous variables between THDP and usual care in patients with delirium matched to caregiver status

	No intervention (N=8)		Intervention (N=16)		p-value
	Mean (SD)	Median (IQ range)	Mean (SD)	Median (IQ range)	
Age (years)	80.9 (8.3)	82 (74-88)	85.5(6.9)	87 (81-90)	0.92
Frailty score	5.5 (1.4)	6 (4-7)	5.8 (1.2)	6 (5-7)	0.69
Length of stay (days)	12.5 (12.5)	7 (3-22)	10.8 (13.8)	6 (2-13)	0.36*
*p-value derived from log-transformed variable					

Table 2: Comparison of categorical variables across between THDP and usual care in patients with delirium matched to caregiver status

	Total (%)	No intervention (N=8) N (%)	Intervention (N=16) N (%)	p-value
Gender				1.0 [^]
female	13 (54)	4 (50)	9 (56)	
male	11 (46)	4 (50)	7 (44)	
Adverse events by 12 months follow-up				1.0 [^]
Nil reported	18 (75)	6 (75)	12 (75)	
readmission	6 (25)	2 (25)	4 (25)	
^ Fisher's exact p-value				

Supplementary Table 3: Caregiver’s responses to questionnaire. Comments are divided into the themes that pertain to the patient, staff and HITH process

Themes	Feedback
The HITH Delirium Pathway	
Location preference	<p>‘From his point of view he wanted to stay in hospital’</p> <p>‘Treating her at home was ideal</p> <p>Terrific scheme to keep people at home rather than keeping in ward’</p>
The service	<p>‘Mum was discharged in her nightie and dressing gown’</p> <p>‘Marvellous program, hopefully you will get further funding to keep it going. We are grateful she could be part of it’</p>
Professionalism	<p>‘HITH staff were very good-nice and helpful</p> <p>Every staff member was courteous, professional and went out of their way to help us. It definitely reduced carer stress’</p>
Egress from the service	<p>‘At the end of HITH dad wanted to lead a normal life ...no home visits’</p> <p>‘If it were long term-have the same people coming... more comfortable with them than a different nurse every day’</p>
Transition to THDP	<p>‘Mum was discharged in her nightie and dressing gown’</p> <p>‘(The) Change in him was instantaneous once home. No PRN medication required’</p>
Continuity	<p>‘If it were long term-have the same people coming... more comfortable with them than a different nurse every day’</p> <p>‘(A) urine sample was sent off for testing then she was discharged from HITH so we had follow up with the GP but the service was pretty good’</p>
Activities	<p>‘He looked forward to staff coming to play cards...enjoyed meaningful activities with the OT’</p>
Prior expectations	<p>‘I didn’t think we were ideal candidates but dad did well’</p>