

A Quality Assurance Study to Assess the One-Day Prevalence of Delirium in Elderly Hospitalized Patients



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DOI: <http://dx.doi.org/10.5770/cgj.15.15>

ABSTRACT

Background

Research indicates that 40% of hospital-acquired delirium cases may be preventable. However, despite its clinical significance, delirium often goes unrecognized or is misdiagnosed. The purpose of this study was to assess the need for delirium education in acute care hospitals in Hamilton, Ontario.

Methods

Approximately 100 health professionals were trained as delirium screeners. On 'Delirium Day', all patients ≥ 65 years of age in non-critical care areas in all acute care sites in Hamilton were identified. Those willing to take part in the prevalence study were assessed for delirium using the Standardized Mini-Mental State Examination and the Confusion Assessment Method. The Research Ethics Boards at Hamilton Health Sciences and St. Joseph's Healthcare Hamilton approved this quality assurance project.

Results

Of the 562 patients eligible for screening, eight were excluded and six did not have sufficient data collected to assess for delirium. Of the 548 individuals screened for delirium, 10.6% screened positive. Prevalence estimates ranged by site from 0% to 21% and type of unit from 3.8% to 16%. Recognition of delirium by nursing staff was fair; but, documentation was usually absent.

Conclusion

While the prevalence rates were somewhat lower than in other studies, the results support the need for education among

health-care providers in the prevention, identification, and management of delirium.

Key words: delirium, elderly, acute care, education, health-care providers

INTRODUCTION

Hospitalization can be distressing for the elderly. The environment is generally cold and sterile, and many patients feel unsettled and anxious.⁽¹⁻³⁾ In 2003, the Canadian population aged ≥ 65 years represented about 13% of the overall population; however, they accounted for a third of all hospitalizations.⁽⁴⁾ These vulnerable adults are at high risk of developing complications. Of primary concern is the risk of delirium, an acute confusional state characterized by disruptions in cognition and attention with a recent or fluctuating onset.⁽⁵⁾ Causes of delirium are multipronged, and generally occur due to a combination of patient risk factors (e.g., visual and hearing impairment, pre-existing dementia, immobility), acute physiologic factors leading to hospitalization, infections, metabolic disturbances and dehydration, and hospital processes of care (i.e., procedures, medications).⁽⁶⁾ Elderly patients have a higher risk of delirium when predisposing factors such as pre-existing dementia, multiple co-morbid diseases, and polypharmacy are present.⁽⁶⁾ While most medications can cause delirium in the elderly, those most often associated with delirium include opioids, benzodiazepines, antidepressants, and other drugs with anticholinergic side effects.⁽⁷⁾

Delirium in older persons has been associated with adverse outcomes including, higher mortality,⁽⁸⁻¹⁴⁾ longer lengths of hospital stay,^(12,13,15,16) increased likelihood of institutionalization,^(9,12,14) and cognitive and functional decline.^(9,17,18) In acute care, prevalence rates have ranged from 12% to 56%.⁽¹⁹⁻²³⁾ Importantly, once delirium occurs, treatment is complicated because of its multifactorial nature.

⁽⁶⁾ Further, the symptoms of delirium can persist for more than one year,⁽²⁴⁾ as can the resulting impairments in cognitive function.⁽¹⁷⁾ Research indicates that approximately 40% of cases of hospital-acquired delirium may be preventable.^(25,26) However, despite its clinical significance, delirium often goes unrecognized or is misdiagnosed.^(27,28) Failure to detect and diagnose delirium increases the risk of poor outcomes.^(29,30) The most effective means of reducing the occurrence of complications associated with delirium is prevention.⁽⁶⁾

To assess the need for delirium education among health-care providers in Hamilton, Ontario, as well as a delirium management program, a delirium prevalence study was undertaken on one day (“Delirium Day”) in all acute care sites in the city. This paper describes the methods and results of this needs assessment.

METHODS

This project was approved as a quality assurance initiative by the ethics review committees at both Hamilton Health Sciences and St. Joseph’s Healthcare Hamilton.

Setting

There are two acute care hospitals (with a total of five sites) in Hamilton. All sites participated in Delirium Day. Combined, these hospitals operate over 1,600 beds and service a population of approximately 500,000.

Recruitment & Training of Screeners

Pamphlets providing a brief overview of Delirium Day and inviting all professional staff to participate were circulated across the two multi-site acute care hospitals. This was supplemented by a snowball sampling approach to identify volunteers.

Approximately 100 individuals (including nurses, occupational therapists, physiotherapists, social workers, dietitians, pastoral care workers, and speech-language pathologists) were recruited as screeners and participated in a four-hour training session that included education about delirium and provided practice opportunities for the use of screening tools. At the end of the training session, screeners were required to complete a post-test and achieve a minimum of 80%. On Delirium Day, the first few screens were to be done in pairs as an additional measure of quality control. An honorarium was offered to the screeners for their participation.

Sample

All patients 65 years of age or older on all medical, surgical, rehabilitation, and psychiatry units at the five sites of the two hospital corporations in Hamilton were assessed for delirium. Critical care areas (ICU, CCUs, and post-anesthetic recovery units) were excluded because of the potential burden that participation might cause for patients in these areas given the critical nature of their

conditions. Emergency departments and day surgery units were also excluded because the patients in these areas represented different populations than those in acute inpatient beds and we wanted to ensure more homogeneity in our sample.

Tools

The Standardized Mini-Mental State Examination (SMMSE)⁽³¹⁾ and the Confusion Assessment Method (CAM)⁽³²⁾ were used to assess for the presence of delirium. The CAM has been demonstrated to be 94–100% sensitive and 90–95% specific for a validated diagnosis of delirium.⁽³²⁾ The CAM (see Appendix A) has three components: an interview with the patient, an interview with the patient’s nurse, and a review of the patient’s chart. Patients were excluded if both patient and chart were unavailable for the entire screening period. When a patient was unable to be interviewed, results from the other two components of the CAM were used to determine the presence of delirium.

Procedure

On Delirium Day, all patients aged 65 years and older were identified through hospital information databases. Screeners were assigned to each unit. Screening took place during the day shift (approximately 8:30 a.m.–4:30 p.m.). A data collection tool was developed to assist with recording findings.

A verbal explanation of the study was provided to each eligible patient. The SMMSE and CAM were administered to patients who agreed to participate. Nurses were questioned about each patient’s mental state in the preceding 24-hour period and were asked, “Is this person delirious today?” Screeners recorded whether or not items on the CAM were noted in the chart and whether the terms “delirium”, “acute confusion” or “confusion” appeared in the 24-hour period preceding Delirium Day. Screeners then determined whether the patient screened positive for delirium. For patients who screened positive, an “alert” was appended to their chart, notifying staff that the patient had screened positive for delirium and provided recommendations for interventions.

Data Collection and Analysis

The data collection tools were collected centrally, and the data were cleaned and entered into SPSS version 14.0. Descriptive analyses generating means and standard deviations (SD) for continuous data and proportions for categorical data were conducted. Delirium prevalence rates were calculated overall, by site, and by type of unit.

RESULTS

On Delirium Day, 562 patients were eligible for screening across all sites. The majority were female (53%; N = 301) and the average age was 79 (SD = 7.7) years.

Of those eligible for screening, eight patients and their charts were unavailable for the entire shift, and six others were excluded because more than one component of the CAM could not be completed. Of the remaining 548 patients, interviews were attempted with 454 (83%) patients. Interviews were not attempted because of: patient refusal (N = 31), language barrier (N = 30), and severe illness (N = 11). Of the interviews attempted, 411 (90.5%) were completed. Reasons for not completing an interview included: language barrier (N = 9), patient refusal to complete the interview (N = 7), patient drowsiness (N = 5), aphasia (N = 5), and illness (N = 5). Figure 1 summarizes the screening responses.

Of the 548 patients included in the screening, 58 screened positive for delirium—a point prevalence of 10.6%. Prevalence varied by hospital site from 0% to 20.9% (see Table 1). When analyzed by type of unit, point prevalence ranged from 3.8% (rehabilitation units) to 16.0% (medical units); no delirium was detected in the psychiatry units.

A positive response to the question “Is this patient delirious today?” was obtained from nurses in 16.1% (89) cases. Using the CAM as the gold standard against this assessment, sensitivity was 69.4% and specificity 88.1%.

Patient chart reviews revealed that “delirium” and “acute confusion” were recorded in less than 2% of charts; “confusion” was recorded in almost 15% of charts (see Table 2).

DISCUSSION

In this study, the 10.6% prevalence rate for delirium is lower than the 12% to 56% reported elsewhere.⁽¹⁹⁻²³⁾ Most studies in acute care calculated prevalence over a period of time rather than on a single day. This lower rate may have been due, in

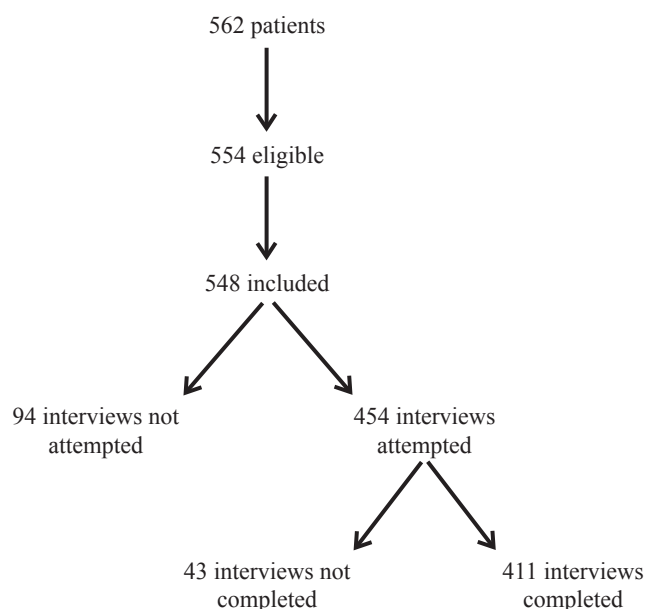


FIGURE 1. Overview of study response rate

TABLE 1.

Overall prevalence rate and prevalence by site and type of unit

<i>Site/Unit</i>	<i>Prevalence Rate</i>
Overall	10.6% (58/548)
Overall (excluding Site E)	10.9% (58/534)
By Site:	
Site A	20.9% (14/67)
Site B	11.5% (15/130)
Site C	9.4% (17/180)
Site D	7.6% (12/157)
Site E	0% (0/14)
By Unit:	
Medical units	16.0% (39/243)
Surgical units	8.7% (15/172)
Rehabilitation units	3.8% (4/105)
Psychiatry units	0% (0/26)

TABLE 2.

Documentation related to delirium in the 24 hour time period preceding Delirium Day (N = 548)

<i>Term</i>	<i>Percentage (Number)</i>
Delirium	1.4% (8)
Acute confusion	1.8% (10)
Confusion	14.8% (82)

part, to the fact that there was no length of stay criteria used to determine participant inclusion or exclusion.

If, as the current study suggests, 10% of patients in non-critical care areas are delirious on any given day, there are significant implications for patients and the health-care system, including increased hospital stays with associated costs to hospital care, as well as rehabilitation, institutionalization, and home care.^(19,33) In the United States, annual hospital costs associated with delirium have been estimated at more than \$8 billion.⁽¹⁹⁾

Site-specific prevalence rates in the current study ranged from 0–21%. Site D (prevalence 7.6%) is a trauma and cardiac centre that may serve individuals with a lower pre-admission probability of dementia, a known risk factor for delirium.⁽³⁴⁾ The higher prevalence found in Site A is inexplicable, as it is similar to some of the other sites. Site E, in which no patients screened positive for delirium, was a 19-bed geriatric psychiatry inpatient unit providing care to older adults with

dementia and challenging behaviours. Older patients may be at lower risk for delirium in environments rich in geriatric expertise and that may proactively identify and modify potential risk factors. When data from Site E were removed from the calculation, the delirium prevalence rate increased slightly to 10.9%.

When prevalence was examined by type of unit, the highest rate was found among medical units, which is consistent with other studies.⁽³⁵⁾ However, inexplicably, the prevalence of delirium on surgical wards was lower than that reported in other studies.^(34,36) Patients with pre-existing delirium (prevalent delirium) are often excluded from admission to rehabilitation units, which may explain the lower rates found in these units.

Although delirium is commonly under-recognized by physicians and nurses,⁽²⁸⁾ the higher than expected identification of delirium by nurses in this study may be due to the activities undertaken prior to Delirium Day (including a poster outlining prevention strategies, advertisements for volunteers, and notices about Delirium Day), which likely served to increase awareness of the issue. Despite this increased awareness, the low sensitivity of the nurse assessment (69%) supports the need for more education about the identification of delirium. Similarly, minimal delirium documentation highlights the need for education regarding the significance of delirium-related symptoms and the importance of communicating this information.

These findings support the need for further education about delirium for health-care providers, as well as the need for delirium management programs in acute care. Multifaceted interventions have demonstrated reduced delirium in older hospitalized patients.^(37,38) Consistent with this type of approach, educational resources and awareness raising strategies have been developed for the participating hospitals. Delirium Resource Persons who serve as coaches to educate and support staff using a case-based approach have been introduced on some units. As well, the Hospital Elder Life Program (HELP), a multifaceted approach to the prevention of delirium and functional decline involving volunteers and specific protocols targeted towards risk factors for delirium,⁽³⁹⁾ has been implemented at two sites of Hamilton Health Sciences.

Limitations

This study determined the point prevalence of delirium in non-critical acute care units. Critical care areas, for which high rates have been reported,⁽⁴⁰⁾ were not included because of the potentially negative impact on the patients in these areas. Emergency departments, which have prevalence rates of approximately 10%,^(41,42) were also excluded. As a result, the prevalence rates obtained in this study do not provide the complete picture of delirium within acute care. Moreover, while the Delirium Day screeners took part in an extensive training program, the reliability of the screener's assessments was not assessed.

CONCLUSION

Delirium is an important and serious condition that can have significant impacts on patients and the health-care system. Quality of care provided within the acute care system can be improved through increasing awareness and knowledge about delirium, and its prevention.

ACKNOWLEDGEMENTS

This project was made possible by financial and logistic support from the Regional Geriatric Program of Central Ontario (RGPe).

CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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Appendix A

The Confusion Assessment Method (CAM) Diagnostic Algorithm⁽³²⁾

Feature 1: *Acute Onset and Fluctuating Course*

This feature is usually obtained from a family member or nurse and is shown by positive responses to the following questions: Is there evidence of an acute change in mental status from the patient's baseline? Did the (abnormal) behavior fluctuate during the day, that is, tend to come and go, or increase and decrease in severity?

Feature 2: *Inattention*

This feature is shown by a positive response to the following question: Did the patient have difficulty focusing attention, for example, being easily distractible, or having difficulty keeping track of what was being said?

Feature 3: *Disorganized thinking*

This feature is shown by a positive response to the following question: Was the patient's thinking disorganized or incoherent, such as rambling or irrelevant conversation, unclear or illogical flow of ideas, or unpredictable switching from subject to subject?

Feature 4: *Altered Level of consciousness*

This feature is shown by any answer other than "alert" to the following question: Overall, how would you rate this patient's level of consciousness? (alert [normal]), vigilant [hyperalert], lethargic [drowsy, easily aroused], stupor [difficult to arouse], or coma [unarousable])

The diagnosis of delirium by CAM requires the presence of features 1 and 2 and either 3 or 4.