

Delirium Watch:

Evaluation of a Multidisciplinary Surveillance Program

The literature is fraught with examples of how risky hospitalization can be for older adults (Creditor, 1993; Dudek, 2000; Inouye, 1998; Palmer, 1995). Research has suggested that many older adults come to hospital with individual characteristics indicative of vulnerability that increase their susceptibility to delirium, which compounds the effects of hospitalization (Inouye & Charpentier, 1996; Inouye, 2000).

Though delirium can develop in anyone, it is more common in older adults with prevalence rates of more than 70% depending on the patient population, the care setting and the study methodology (Heruti et al, 1999; Inouye, 2000; 1998; Inouye & Charpentier, 1996; McNicoll et al, 2003). In hospitalized older adults, delirium accounts for increased mortality, prolonged hospitalization, and reduced capacity to perform basic activities of daily living, which often leads to higher rates of institutionalization (Bettin et al,1998; Eden & Foreman,1996; Marcantonio, et al, 2003; Milisen et al,1998;). Although said to be a reversible phenomenon, up to 20% of delirious older adults do not return to their pre-morbid cognitive status because of higher complication rates, missed diagnosis and/or inappropriate treatment. As such, it has been suggested that up to 70% of delirium cases not diagnosed and treated appropriately results in an excess yearly cost of over a billion dollars in the United States alone (Inouye, 1998; St. Pierre, 1996). Given these circumstances, hospitals must address the issue of delirium and to be “elder friendly” requires a coordinated system response.

What is Delirium Watch?

Delirium Watch is defined as an interdisciplinary surveillance process that combines high risk screening with interdisciplinary interventions to enable acute care staff to anticipate,

prevent and should it occur, reverse this clinical problem as soon as possible. Components of Delirium Watch are: (a) regular (three times per day) assessment checks; (b) service specific care standards, screening tools, assessment and management protocols; (c) targeted interventions; and (d) physician based protocol orders for contributing antecedent clinical problems (e.g., pain management, constipation, disruptive behavior). Physician based protocol orders included Elder Alerts for lower dosing of medications or specific requirements on IV drug monographs and physician pre-prepared orders. The implementation of these components of care was adapted to best suite the unique function and staff culture of the hospital units.

Delirium Watch: Development Process

The development process consisted of a two-pronged approach:

1. Education - The education plan focused on the needs of older acute care patients and began with the topic of pain management. Although the education plan focused on older acute care patients, a key message in the educational plan was that any patient experiencing delirium would benefit from the program. All education sessions were held off the ward, delivered in two or four hour blocks, and had interdisciplinary staff participation (i.e., regular/casual nursing, therapy, liaison, social work, nutrition). Refreshments were provided at each session and participates were either paid for their attendance or were relieved from duty if they were working on education days.

Attempts to heighten staff awareness occurred prior to the education session by:

- posting selected articles from the literature on delirium;
- creating poster boards on the physiological changes associated with aging, delirium risk factors and confusion being a symptom of an underlying problem; and
- bi-weekly quiz on elder delirium facts (with correct answers).

2. Unit-Based Interdisciplinary¹ Working Groups – An interdisciplinary grass roots approach was organized. Frontline staff identified their greatest learning needs and interdisciplinary working groups were created by self-selected hospital staff following an open invitation from the program manager. Such groups were designed to:

- (a) Locate department, unit, program or service gerontological champions at the local service level,
- (b) Educate champions with best practices in elder care thereby empowering them to act on improving hospital systems in their locale and,
- (c) Build capacity of the front line acute care staff through support, education and the celebration of successes.

Initially, interdisciplinary team meetings occurred weekly. At the meetings information related to the incidence of disruptive behavior, work place injuries, geriatric consultation data and administrative data on length of stay were analyzed. The team reviewed hospital processes and systems to create a high-risk screening process to identify older adults at risk for delirium and then monitor their progress from admission to discharge with an individualized plan of care. Education and information on delirium was explored by the group and applied in ways they felt was meaningful to their work. The process was facilitated by a Clinical Nurse Specialist in older adult health with input from other clinical experts (i.e., Geriatrician, Recreation Therapist and surgeons). The unit manager and clinical resource nurse guided implementation. Staff, representing their discipline, took back information to the frontline from the meetings and brought back feedback to be utilized by the group. Support and understanding of the process from surgeons was a key component to the success of this work change.

¹ Interdisciplinary team = nurses, physiotherapist, occupational therapist, manager, clinical resource nurse, orthopaedic surgeon, geriatrician, clinical nurse specialist, social worker, nutritionist, recreational therapist

Creating Delirium Watch influenced future work on all the units. Principles for elder friendly care became an overlay to all care planning. In orthopedics for example, elder friendly goals were embedded in the Fractured Hip Mobility Protocol, kardex communication system, environmental changes to the physical unit and purchase of new equipment. In cardiac surgery, pre-operative telephone contact, physician orders and nursing care plans were adapted to include elder alerts. The most significant change however was in staff attitude, values and beliefs.

The Evaluation Process: The Orthopedic Experience

To date evaluation has been completed on the orthopedic service. The evaluation questions were:

1. Are patients at risk for delirium identified?
2. Is the delirium plan of care implemented?
3. Did the plan of care make a difference for: (a) the older patient and family and (b) the multidisciplinary team?

The evaluation process involved:

1. Pre and Post operative cognitive testing interviews with patients,
2. Focus groups and questionnaires with interdisciplinary staff;
3. Focus group with orthopaedic surgeons²;
4. Concurrent chart audits; and
5. Post-operative telephone follow-up at one year.

Thirty patients admitted for a Total Hip or Total Knee surgery agreed to participate in a two-phase evaluation - 19 from Site One and 11 from Site Two. Phase One occurred between January 21st 2002 and February 25th, 2002 and involved a pre-admission high-risk screening for patients at risk of delirium (N=30), interdisciplinary focus groups and interviews with professional staff. Phase Two occurred one year later in February 2003 and involved patient follow-up questionnaire survey and telephone interviews.

² Medical services dispute during the evaluation period prevented accomplishment of this method.

Data collection

All patients (>65 years) were invited to participate in the Delirium Watch evaluation process. Initial contact was made prior to surgery during a preoperative assessment visit at the hospital Pre-Admission Clinic (PAC). Those who agreed to participate received an information sheet and a signed consent. The health region Research and Ethics Department reviewed evaluation procedures.

Two occupational therapists (OT), one at each hospital site conducted pre – operative and post-operative cognitive testing (24 and 72 hours) and a health care record audit. The Confusion Assessment Method - CAM and the Folstein Mini Mental Status Exam - FMMSE were used to measure patients' cognitive status. Each test was chosen for the evaluation because of their demonstrated clinical utility, validity and reliability (Folstein et al, 1975; Inouye, 1990).

The health care record audits conducted at 24 hours and 72 hours identified secondary postoperative indicators for delirium (i.e., constipation, pain, infection, urinary tract infection). The audits also ascertained if the Delirium Watch care plan interventions were fully implemented. Information about each patient's post-operative use of community resources was collected from administrative data as an indicator for functional outcome.

Preoperative assessment findings

Of the thirty older patients who volunteered to participate, six were identified at risk for delirium and one was identified as having delirium in the Pre-Admission Clinic during the initial assessment visit. Patients assessed at risk had a corresponding lower FMMSE score than those who were assessed not-at-risk. Scores ranged between 21/30 and 27/30. Only one patient with a FMMSE score less than 25 (23/30) was not identified at risk and they did not develop delirium post-operatively.

Pre-operative risk factors included history of dementia, previous delirious episode, alcohol consumption, smoking and use of CNS medications. Most patients had more than one risk factor and of those risk factors identified the most common factor pre-operatively was a history of alcohol consumption (N=12/30). The use of CNS medications was the next most frequent indicator of risk (N = 8/30). Nine patients (N = 9/30) were screened to have no pre-operative risk indicators. Most patients received a general anesthetic (N = 14/30), or both a light general anesthetic and regional block (N = 12). Only two patients received a regional block without light general anesthetic.

Health care record audits

Health care record audits conducted in the postoperatively indicated that four secondary delirium-producing clinical problems were monitored namely, constipation, pain, infection and urinary retention. Of these secondary indicators 17 patients experienced some degree of postoperative pain (N=30). Infection was absent in all patients.

The Delirium Watch care plan interventions began in the operating room with short acting anesthetic choices and administration routes for more effective pain relief (e.g., intrathecal morphine). Postoperative care interventions targeted pain management (e.g., regular administration of acetaminophen 1000mg four times daily for 48-72 hours, low dose morphine only if needed and no administration of Meperidine), continence care (e.g., foley catheter removed in 24 hours), enhanced mobility program and, if disruptive behavior presented, regular low dosing of neuroleptic medication with a corresponding monitoring and tapering schedule.

All patients received acetaminophen 1000 mg every six hours for 48 hours post-operatively. Morphine was the most frequently administered pharmaceutical for additional pain management. Neuroleptic medications were absent from the plan of care in all patients

suggesting that patients did not require management of disruptive behavior. Meperidine was used only once where the patient had an allergy to morphine. Most patients were catheterized at 24 hours but by 72 hours, all catheters had been removed. In most cases, patients had more than one intervention in place. Chart audit information did not fully reflect the critical judgment used by professionals in their delivery of postoperative care.

During the period of evaluation, most patients did not become delirious while in hospital for total hip or total knee replacement surgery. Of those patients admitted for the elective procedure only two became delirious and each had a pre-operative FMMSE score of less than 25 suggesting that their underlying cognitive ability further increased their risk of developing delirium.

Community resource utilization findings

Combined community resource utilization postoperatively was minimal. In fact, 12 (N=30) patients were discharged from hospital without receiving post-operative community resource support of any type. Of the six identified at risk, one was receiving Community Rehabilitation Program (CRP) support prior to admission and continued; three received CRP support upon discharge and two of the six at-risk patients were discharged without community support.

Staff focus groups findings

Three interdisciplinary focus groups occurred with representatives from physiotherapy, occupational therapy, social work, nursing, community liaison and nutritional services. The staff reported that their ability to care for older orthopaedic patients appeared to improve and their knowledge increased. They reported that predicting and anticipating delirium gave them more control over the clinical situation. With an anticipatory approach to care, staff reported having enhanced ability to implement strategies earlier and with more effectiveness. Anecdotal reports

have surfaced indicating fewer patients are spending the night in the hall; less restraint use and more awareness are assisting staff with assessment and management of delirium.

Length of stay (LOS) comparisons

Length of stay (LOS) comparisons suggest there might be a slight reduction in length of stay but it cannot be said that the decline in LOS is a direct relationship to the implementation of the Delirium Watch initiative because other confounding variables were not controlled and the sample size was small (30/487). These comparisons suggest that given the clinical utility of the Delirium Watch initiative, there *may* also be an additional benefit of reducing length of stay (See Table One: Length of Stay Comparisons).

TABLE ONE

Length of Stay Comparisons

TOTAL KNEE POPULATION		
DATA BY TYPE	NUMBER OF CASES	TYPICAL AVERAGE LENGTH OF STAY (ALOS)
All Total Knee Cases, 2001/02	207	9.9
Delirium Watch Cases (January 21- February 18 2002)	14	8.4
TOTAL HIP POPULATION		
All Total Hip Cases, 2001/02	280	10.8
Delirium Watch Cases (January 21 st - February 18th 2002)	16	8.9

Phase Two: One Year Postoperative Follow-up

Questionnaires modified from the Nottingham Health Profile (McDowell & Newell, 1996) were sent to all patients (N=30) who consented to participate in the evaluation. Thirteen

questionnaires were returned and nine of the thirteen returned questionnaires agreed to a telephone interview. Seven patients were contacted by phone for an interview..

Questionnaire and telephone interview results

Generally, all participants responded positively to their hospital stay. When encouraged to give details of those events that went well or didn't go as well as they had hoped most said they had no expectation of what to expect. When asked what the most important part of the hospitalization was, all identified the physiotherapy component of the program. One participant indicated a preference for therapy out of the home setting. All participants felt that more physiotherapy time would have benefited their recovery. Those who did well postoperatively had no complications in hospital; they were supported by family members (e.g., spouse or children) when they went home. Support from family members included meal preparation, assistance with household activities.

Limitations to the evaluation

Other factors may have contributed to measurable outcomes; it is difficult to determine with certainty if the low incidence of delirium in this evaluation can be directly associated to the implementation of the Delirium Watch. For example, other factors not controlled for in this evaluation may have played a role in outcomes experienced by patients involved in the evaluation (i.e. use of medications, degree of frailty and type and severity of co-morbid conditions). Closer review would be necessary to clearly show a relationship between the Delirium Watch surveillance process, organizational processes and the absence of adverse patient outcomes. This does not diminish however, that surveillance for delirium in older patients (or any vulnerable high risk patient) has clinical utility.

An inherent weakness in chart audit methods is the failure to capture what care is or is not provided to patients. The use of observation methods and interdisciplinary staff interviews

at the time of care delivery might have broadened the evaluation findings. In that way, a full accounting of care practices might have emerged to align Delirium Watch assessment and interventions to patient outcomes. Only then could a comprehensive and detailed understanding of how assessment and interventions for delirium occurred on both orthopedic units.

Conclusion

Findings suggest that Delirium Watch surveillance processes and corresponding care plans have clinical utility. Although formal evaluation has yet to take place in cardiology and cardiovascular surgery, significant progress in anticipation, prevention and timely intervention to reverse delirium are evident in clinical practice.

The interventions within the Delirium Watch plan of care appear to make a difference. The high-risk screening process identified six (N=30) pre-operative at risk older orthopedic patients pre-booked for total hip and total knee procedures prior to their hospital admission. Postoperative acute care chart audits at 24 and 72 hours revealed that professional staff provided Delirium Watch interventions consistently during the hospital stay and therefore may have affected the length of stay.

In any case, anticipating the problem of delirium and being proactive in managing the issues that arise has benefit for the orthopaedic interdisciplinary team and patients; Delirium Watch appears to make a difference.

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