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Original Article

Implementing a Delirium Admission Protocol in the Emergency Department

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SUMMARY

Background: The purpose of this quality improvement project was to determine whether implementing a delirium admission protocol in the emergency department (ED) would decrease the expected hospital and intensive care unit (ICU) length of stay (LOS) or discharge status for patients with delirium.
Methods: This was a quality improvement project at an urban community hospital. A retrospective chart audit was conducted following an intervention which consisted of screening older adults in the ED using the brief Confusion Assessment Method (bCAM) and following those with positive bCAM scores until discharge.
Results: Participants included 180 older adult patients treated in the ED. Early delirium diagnosis and intervention proved to nullify significant differences in discharge disposition, hospital LOS, and ICU LOS between the bCAM-positive and the bCAM-negative groups.
Conclusions: A delirium admission protocol positively impacts the LOS and discharge disposition for older adult patients who have delirium.

1. Introduction

As the population of older adults increases, delirium is becoming more prevalent in the hospital setting. The U.S. Census Bureau[1] estimates that in 2035 there will be 78 million adults over age 65 compared to 76.7 million individuals under age 18. As a result, more older adults will be seeking emergency treatment. According to the National Hospital Ambulatory Medical Care Survey,[2] "in 2015, 21.3 million older people, aged 65 and over, were treated in emergency departments across the United States". Healthcare system staff and administrators, including emergency department (ED) staff, are adjusting to the influx of older adult patients and the specialty care they require.

While hospital administrators develop new policies and processes to enhance care for older adults, healthcare providers are becoming better informed as to their healthcare needs including the inherent complications experienced when ill or injured. One such complication is delirium, which is present in 8–17% of older adults seen in EDs across the U.S. annually.[3] Delirium is an insidious syndrome often associated with a fluctuating course marked with disturbances in orientation, memory, attention, thought, and behavior.[3] The diverse origins of delirium often reflect the pathophysiological consequences of acute illnesses, medical complications, or drug intoxications.[4] Early diagnosis and treatment of delirium is rapidly becoming the standard of care in all hospitals.

Although the negative effects of delirium in older adults are well-documented, delirium is often overlooked by healthcare professionals and can be clinically silent thus remaining unrecognized without formal assessment.[5] Additionally, delirium is an independent predictor of prolonged hospitalizations during the 12 months following the misdiagnosis.[6] Because delirium is often treatable and potentially reversible if identified early, the ED is a suitable area for initiating a delirium screening during the admission process. Evidence-based methods for improving the care of hospitalized older adults include screening for delirium, assessing functional status, maintaining mobility, and implementing interventions to prevent delirium, accidental falls, and acute functional declines in the hospital.[7]

De and Wand, in 2015, performed a comprehensive literature review of bedside instruments for assessing delirium which screened 3541 citations with specific inclusion criteria which addressed quality of data, potential bias and diagnostic accuracy.[8] There were a total of 31 articles that met these criteria and did describe 21 instruments. These authors indicated that the confusion assessment method (CAM) with an administration time of five minutes was the most well-known and most commonly used instrument, with high interrelater reliability and supportive data for ease of use and test performance. The authors also noted that the brief CAM (bCAM) was advantageous for the ED secondary to its ease and brevity. The bCAM was found to be both valid and reliable in the older adult patient population in the ED, enabling healthcare professionals in the ED to screen for delirium efficiently, regardless of their clinical background.[9]

Research has shown that patients with delirium are more likely to have a longer hospital length of stay (LOS) and to be discharged to a long-term care facility (LTCF) instead of home. Compared to those without delirium.[4,10] Prior to this study, a retrospective review of data at the project site over a twelve-month period, in a sample of 277 patients, only 71 patients had a CAM-ICU score recorded and

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this was completed in the ICU, not in the ED. Of those, 32.4% (n = 23) had a positive CAM ICU score and 67.6% (n = 48) had negative CAM ICU scores. The average LOS for the CAM-positive patients was 27.6 days and for the CAM-negative patients was 16.8 days. The discharge disposition for the CAM-positive patients was 34.8% (n = 8) to a skilled nursing facility, 17.4% (n = 4) to a long-term acute care hospital, 13% (n = 3) to hospice, 26% (n = 6) to home; and 8.6% (n = 2) deceased. The discharge disposition for the CAM-negative patients was 20.8% (n = 10) to a skilled nursing facility; 10.4% (n = 5) to a long-term acute care hospital; 4.2% (n = 2) to hospice; 39.6% (n = 19) to home; and 25% (n = 12) deceased. Our review did reflect the literature, but posed the question of whether the patients had delirium prior to admission and could delirium be assessed in the ED which could then offer the opportunity for intervention earlier.

Therefore, the purpose of this quality improvement project was to determine whether implementing a delirium screening for older adults in the ED with the bCAM and providing interventions to those who screen positive for delirium would decrease their hospital LOS and/or influence their discharge disposition.

2. Methods

2.1. Design and sampling

For this quality improvement project, a delirium assessment and management protocol was developed for use in the ED of an urban trauma center. A two-month retrospective chart review was performed for all patients who met the eligibility criteria. The population included English-speaking older adult patients over age 65 who were seen in the ED. Exclusion criteria included those older adults who were non-English speaking, blind, deaf, comatose, or nonverbal prior to their acute illness.

This project was reviewed and approved by the institutional review board (IRBNet ID # 725778-4) and was deemed "not regulated" (exempt) as a quality improvement project using de-identified retrospective data.

2.2. Instrument

In 2012, the Richmond Assessment Sedation Scale (RASS) was incorporated into the CAM-ICU (a variation of the CAM for use in ICU patients), and was renamed the bCAM.[9] This new tool was more sensitive and could be administered more quickly than its predecessor. In fact, nurses in the emergency setting can administer the bCAM in under one minute.[11,12] The bCAM has a specificity of 95.8% (95% CI 93.2% to 97.4%) and sensitivity of 84% (95% CI 71.5% to 91.7%) when performed by an emergency physician. When performed by a non-physician healthcare provider, the bCAM had a specificity of 97% (95% CI 94.6% to 98.3%) and a sensitivity of 78% (95% CI 64.8% to 87.2%).[9]

2.3. Procedure

Prior to implementing the bCAM protocol, the nurses went through an eight-week training. Initially, the tool was introduced in morning and evening huddles before the start of the shifts. Then the tool was emailed with a link to the electronic medical record (EMR) playground where the nurse could practice administration of the tool and compare their answers to the correct scores. When the protocol went live, the nurse educator rounded for the first eight weeks making sure that the nurses had support if any questions arose during the implementation.

The delirium screening protocol began with a nursing admission assessment in the ED. A best-practice advisory (BPA) for admission assessment, prompted by the EMR, was activated for all English-speaking patients 65 years and older. A BPA is a notice that flashes on the screen when nurses open patient charts for the first time upon starting their assessment. Nurses cannot override this notice and must address it before proceeding to other tasks. If the patient is critical, the nurses can close the bCAM, but this action is reflected in the EMR.

Per ED policy, the older adult patient is placed in a room within 30 minutes of arrival and the BPA instructs the nurse to perform the bCAM screening. The first BPA feature asks the nurse to determine if there is any evidence of altered mental status. If the answer is no, the bCAM is negative. If the answer is yes, the second feature becomes visible immediately, requiring the nurse to ask the patient, "Can you name the months backwards from December to July?" If the patient performs the task with zero or one error, the bCAM is negative. If the patient makes more than one error, the third feature becomes visible asking the nurse to perform the RASS to evaluate for altered level of consciousness. If the RASS score is anything but zero (indicating a normal level of consciousness), the bCAM is positive for delirium. If the score is zero, the fourth feature becomes visible directing the nurse to evaluate for disorganized thinking by asking the following four questions:

1) "Will a stone float on water?"
2) "Are there fish in the sea?"
3) "Does one pound weigh more than two pounds?"
4) "Can you use a hammer to pound nails?"

After these questions, the nurse is told to ask the patient to "Hold up this many fingers" while holding up two fingers, and then ask, "Now do the same thing with the other hand" while not demonstrating. If the patient makes any errors, the bCAM is positive; if there are no errors, the bCAM is negative.

Anytime the bCAM is negative, the program automatically brings up the bCAM-negative score and the screening is complete. When the bCAM-positive, another BPA becomes visible sending a message to the clerical team in the ED to request an immediate consultation with the geriatric resource team (GRT) and mandates that the GRT follows the patient from admission to discharge. The GRT implements evidence-based measures to reduce delirium while the older adult is hospitalized including orientation, uninterrupted sleep, supervised mobilization, hydration, nutrition, drug chart review, elimination, oxygenation, pain management.[13] The positive bCAM also triggers another BPA alerting physicians and other medical providers via the EMR that the patient scored positive for delirium. The physicians and other medical providers rely on the nurses' screenings in the ED to generate the diagnosis of delirium upon admission. They then document the diagnosis of delirium as well as treatment interventions in their plan of care.

2.4. Measures

The measures used for this quality improvement project were bCAM scores, hospital and ICU LOS, and discharge disposition. The level of significance was set at $p < 0.05$ a priori. Data were analyzed using SPSS (version 23.0).

3. Results

3.1. Sample

During the eight-week period chosen for data collection, 1277

older adult patients were treated in the ED and 665 (52%) were screened for delirium using the bCAM. Of those screened, 45 (6.8%) were diagnosed with delirium. In consultation with a statistician and in order to increase the power of the analysis, the 45 bCAM-positive patients were matched with three bCAM-negative patients using the variables of age, gender, and race (white and non-white). This process produced a group of 45 bCAM-positive patients and a group of 135 bCAM-negative patients.

3.2. bCAM compliance

Although the overall screening compliance was 52%, it began with a weak start of 35% in week one, progressing to 62% in week eight. After the data collection for this QI project was completed, the bCAM compliance rate continued to be monitored and compliance was improving. Of the 8567 geriatric patients seen in the ED during fiscal year 2018 (July 1, 2017 to June 30, 2018), 6735 (78.6%) were screened during their initial assessment using the bCAM.

3.3. Hospital and ICU LOS

An independent sample t-test was performed to evaluate whether patients would have a comparable hospital and ICU LOS regardless as to whether they ruled in for delirium. The bCAM positive group (M = 4.3556, SD = 3.60653) had a similar hospital LOS to the bCAM negative group (M = 3.3630, SD = 5.16534), t(178) = 0.234, p = 0.134. The bCAM positive group (M = 0.8444, SD = 2.53122) also had similar ICU LOS to the bCAM negative group (M = 0.7185, SD = 3.14963), t(178) = 0.898, p = 0.801. These results indicated that there was no statistically significant difference in hospital or ICU LOS between the bCAM-positive patients and the bCAM-negative patients.

3.4. Discharge disposition

A Chi-Square test was performed to determine whether patients who presented from home and were bCAM-positive had significantly different discharge dispositions compared to bCAM-negative patients. No significant difference in discharge disposition was noted between the bCAM-positive patients compared to the bCAM-negative patients X^2 (1, N = 180) = 0.307, p = 0.579.

4. Discussion

While the presence of delirium community-wide remains low (1–2%), it is the new onset of symptoms that usually brings the older patient to emergency departments where delirium is present in 8–17% of all seniors and 40% of those being skilled nursing facility residents.[3] Sixty percent of those seniors that did present with early symptoms of delirium that came from home, hope to eventually return to home, without complications. Evidence suggests that delirium is associated with increased LOS.[4] However, these results demonstrated that the delirium screening protocol may mitigate this effect resulting in a similar LOS for the bCAM-positive and bCAM-negative patients. Older patients with delirium are often discharged to LTCFs instead of home[10] and the goal of this study was to see if instituting an early screening would help avoid this disposition. Similar to LOS, discharge disposition did not differ between bCAM-positive and bCAM negative patients which also supports the use of the delirium screening protocol. Overall, the results served as an impetus for hospital administrators to expand delirium screening and the use of a GRT for older adults who screen positive for delirium.

4.1. Limitations

As with any QI project, these were some limitations. First, collecting retrospective data from a single institution limits the generalizability of the results. Further, institutions who do not employ some type of specialized geriatric team will be unable to replicate this QI project. Also, it was anticipated that delirium rates of older adults seen in this ED would mimic those noted in the literature (8–17%).[3] The rate of delirium in the project population fell below this range (6.8%). This may be due to the low rate of bCAM compliance. The low number of bCAM-positive scores limited the sample size. Faced with a fast-paced, dynamic environment in the ED, nurses need time to adapt and change, especially when another assessment is added to their already numerous duties. The goal continues to be a 90% screening rate and compliance boosting efforts need to be explored. It would be worthwhile to replicate this QI project when the delirium screening rate improves.

5. Conclusion

The delirium admission protocol has been ongoing since the quality improvement project ended. Additionally, the facility's geriatric nurse specialists follow all older adult patients 65 and older who have a positive bCAM, not just those who come from the ED. This team of geriatric nurses continues to receive BPAs when a patient is bCAM positive in the ED. This quality improvement project revealed that a nurse-run delirium screening protocol could positively impact patient outcomes. Instituting a comprehensive, interdisciplinary approach to screening and caring for patients with delirium has the potential to improve outcomes including reducing hospital and ICU LOS and positively impacting discharge disposition.

Declaration of financial interest

There are not any financial (nor non-financial) interests that might be interpreted as influencing this project.

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