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Creating a Geriatric-Focused Model of Care in Trauma With Geriatric Education

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ABSTRACT

The literature suggests that by 2050, about 40% of all trauma patients will be over age 65 years. We already exceeded this prediction at Lehigh Valley Health Network in 2013, with 46.6% of the Pennsylvania trauma registry qualifiers being age 65 or greater, and 17.7% age 85 and greater. Currently, only 8.8% of trauma centers incorporate Geriatric Resource Programs into trauma care. Our trauma team has incorporated geriatric education for nurses by incorporating an educational nursing program called Nurses Improving Care for Healthsystem Elders, to improve outcomes, reduce hospital complications, and reduce health care costs for this high-risk population. The older adult population is on the rise and trauma nurses must be provided the tools to care for this high-risk patient group.

Key Words

collaborative rounds, elderly, falls, Geriatric Resource Programs, geriatric trauma, NICHE, nursing education, nutrition, older adult, pain

AN AGING POPULATION

Forty percent of all trauma patients are expected to exceed age 65 years by 2050.[1] That number has already been surpassed at Lehigh Valley Health Network (LVHN). For the purpose of this project, the defined age of a geriatric trauma patient is 65 years and more. Although "aging" occurs at different chronological ages, it is important that all trauma centers define this age, so studies can be compared as the research in this population continues to grow. Currently, the older adult population makes up approximately 12% of our population, but is expected to grow to 20% by the year 2030.[2] One of the main contributors to this population growth is the "baby boomer" generation turning the age of 65 years as of 2011, with 1 in every 5 persons being 65 years or older by 2050.[2]

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Worldwide, the population is aging and life expectancy is increasing with advances in medicine.[2] The 85-year and older age group is among the fastest growing age groups.[2] This population growth has started and will continue to place an enormous economic burden on our health care system. Older adult patients consume a large number of health care resources, leading to higher health care costs, due to higher rates of readmission, hospital-acquired complications, and longer length of stays.[3]

According to the US Census Bureau, 2010, Pennsylvania ranks fourth in the highest percentage of population aged 65 years and more at 15.4%.[2] For the oldest old, age 85 years and more, Pennsylvania is tied for the third highest in the United States at 2.5%.[2] Florida has the highest population of older adults in both the 65 years and older at 17.3% and the 85 years and older at 2.8%.[2] Within the Lehigh Valley, the 75-year and older age group is among the fastest growing age group.

Over the past 11 years, LVHN has seen an increasing trend in the number of geriatric trauma patients. Similar to many other trauma centers, LVHN has seen a higher percentage of older adult trauma patients in the 65-year and older age group as well as the 85-year and older. The 85-year and older population continues to be among the fastest growing population at LVHN, exceeding 15% of the geriatric trauma admissions in 2013.

In 2014, LVHN treated 1420 Pennsylvania trauma registry qualifiers aged 65 year and more, accounting for 46.3%, with 514 aged 85 years and more, accounting for 16.7% of trauma patients. In this group, 58.3% were female, 41.7% were male. The average age was 80.2 years, with an overall average injury severity score of 10. At LVHN, almost all geriatric trauma patients admitted in 2014 were due to blunt trauma. At LVHN, falls remain the primary mechanism of injury in the geriatric trauma population.

MECHANISM OF INJURY

Falls are the most common method of injury in the elderly, accounting for approximately 75% of all traumas.[4] Of those falls in the elderly, 90% are the result of a simple fall, such as a fall from standing.[4] In the geriatric population, far less mechanism and velocity is required to produce injuries.[4] The causes of falls in the elderly are multifactorial, including weakness, generalized deconditioning, loss

of visual acuity, balance and gait instability, and slowed reaction times.[4]

Trauma is the fifth leading cause of death in the geriatric trauma population.[4] Advanced age correlates with increased mortality in trauma patients.[4] Increased mortality is seen across the trimodal death curve in the older adult population. Negative outcomes after trauma are not always due to the traumatic injuries alone.[4] Complications after trauma can result from interventions during hospitalization, as well as exacerbation of comorbidities. When comparing older adult patients with younger ones, geriatric patients typically have longer hospital stays, longer inpatient rehab stays, more complications, increased mortality, and have a higher risk of new dependence on others for activities of daily living.[5]

COMPLICATIONS OF TRAUMATIC INJURY

Frailty and iatrogenesis are of great concern in the geriatric trauma population, which can lead to higher complication rates. Although the definition of frailty is vague, it is defined as a combination of age-related changes and variety of medical problems.[6] Iatrogenesis is an adverse event or poor outcome related to an intervention that was intended to assist in patient recovery.[6] These factors create an increased risk of complications after trauma, resulting in a unique challenge and complex care for nurses caring for geriatric trauma patients. In addition, older adults have an increased risk of complications because of the physiological changes in all body systems that occur with aging, leaving less physiological reserve.[4] Frailty on admission places the geriatric trauma patient at high risk for iatrogenesis and is a reliable indicator of imminent decline in health status.[6] Geriatric syndromes may result as an outcome of iatrogenesis and frailty and impacts morbidity and mortality. Examples of geriatric syndromes that may result in the older adult patient include sleep disorders, eating or feeding problems, incontinence, delirium, falls, and skin breakdown.[6] Older adult trauma patients are also at higher risk of developing complications such as cardiovascular events, pneumonia, and sepsis.[4] These complications lead to poor outcomes and high-cost health care.

The spiraling effect often seen in the older adult patient during hospitalization is called cascade iatrogenesis.[6] This process is often difficult to reverse once it has started and is associated with poor prognosis after hospital discharge.[6] Factors that increase the risk of iatrogenesis include polypharmacy, atypical presentation of illness, multiple comorbid chronic illnesses, impaired cognitive and functional capacity, reduced physiologic reserve, and altered compensatory mechanisms.[6]

REVIEW OF CURRENT STATE

In 2004, the first Geriatric Trauma Program was established at LVHN after identifying a need for increased focus on this high-risk population. A monthly geriatric trauma conference was initiated to discuss geriatric trauma topics. A proactive geriatric consultation model was implemented to provide a comprehensive geriatric assessment. Comprehensive geriatric assessments focus on prevention and management of geriatric syndromes, function preservation, and discharge planning.[7] Geriatric consultation has been shown to improve outcomes and decrease hospital-acquired complications.[7]

Although these initiatives increased focus on this high-risk population, nursing education specific to geriatric trauma patients was limited. Little emphasis was placed on nursing interventions to improve the daily care provided by trauma nurses. Adding to the challenge, when comparing LVHN geriatric trauma patients with similar trauma center patients, LVHN had a higher percentage of patients admitted with congestive heart failure, stroke, hypertension, bleeding disorders, dementia, and functional dependence in 2013, placing LVHN trauma patients at even higher risk of complications. These concerns and growing population prompted the need to increase attention on the nursing care of geriatric trauma patients.

Although the evidence indicates that patient outcomes improve when older adults receive care from nurses with geriatric training, geriatric education for nurses remains limited for all nurses.[8] Fewer than 1% of registered nurses are certified in gerontology nursing.[8] In addition, the number of geriatricians remains unable to meet the needs of the growing number of geriatric patients nationwide.[8]

Upon review of the literature, only 8.8% of trauma centers in the United States incorporate Geriatric Resource Programs, the majority are in level I trauma centers.[9] In Pennsylvania, 17 of the 26 trauma centers are Geriatric Resource Program sites.[9] The extent of incorporating Geriatric Resource Programs in trauma is unknown, and incorporation of these programs into trauma remains slow.[9] This may be due to a lack of champions, lack of evidence of their impact on outcomes, or lack of financial support.[9]

GERIATRIC MODELS OF CARE

There are a variety of different geriatric models of care currently incorporated into health care organizations. One example of a geriatric model of care is Nurses Improving Care for Healthsystem Elders (NICHE). Nurses Improving Care for Healthsystem Elders is a nurse-driven program designed to help hospitals improve the care of older adults.[10] The vision of NICHE is that all patients aged 65 years and more to be given sensitive and exemplary care.[10] The mission of NICHE is to provide principles and tools to stimulate a change in the culture of health care facilities to achieve patient-centered care for older adults.[10]

Nurses Improving Care for Healthsystem Elders is a program of the Hartford Institute for Geriatric Nursing at

New York University College of Nursing.[10] There are currently approximately 500 hospitals and health care facilities in the United States that have achieved NICHE certification.[10] Nurses Improving Care for Healthsystem Elders provides resources, programs, and the framework for the hospital and embeds evidence-based geriatric knowledge into practice.[10] The core components of NICHE include guiding principles, leadership, organizational structures, physical environment, patient- and family-centered approaches, aging-sensitive practices, geriatric staff competence, and interdisciplinary resources and processes.[11] The foundation of NICHE is the Geriatric Resource Model, which provides evidence-based geriatrics within the clinical practice, prepares nurses as clinical resource leaders on geriatric issues, and is considered the foundation for improving geriatric care.[10] Nurses completing the Geriatric Resource Model education are known as geriatric resource nurses (GRNs). Geriatric education is also available for nursing assistants, who also play a vital role in the prevention of hospital-acquired complications. Nursing assistants who complete the NICHE education modules are known as geriatric patient care associates (GPCAs).[10] Some benefits associated with NICHE designation include improved clinical outcomes, positive fiscal results, enhanced nursing competencies, community recognition, and greater patient, family, and staff satisfaction.[10]

In April 2010, LVHN was officially designated as an NICHE hospital. Network-wide, LVHN has approximately 100 GRNs and 24 GPCAs. Although LVHN had been a NICHE-designated hospital, NICHE was not initially incorporated into trauma. Little was known about the potential benefits of NICHE for trauma.

In November 2013, the rollout of NICHE to trauma units began. Nurse champions engaged staff in the importance of geriatric education for trauma nurses. To date, there are 19 GRNs in trauma at LVHN, 11 on the transitional trauma unit (TTU), 8 on the trauma-neuro intensive care unit (TNICU), and 3 GPCAs on the TTU. These numbers continue to grow as NICHE expands to all staff. The GRN in trauma is able to provide comprehensive geriatric nursing assessments, consult with peers on geriatric issues, role model, educate, and develop ways to improve the care of geriatric trauma patients. The trauma-neuro intensive care unit was the first ICU at LVHN to participate in NICHE education.

The concepts of NICHE needed to be adapted to trauma care and incorporate not only geriatric knowledge, but also trauma knowledge to combine these 2 worlds for better care of geriatric trauma patients. Trauma NICHE meetings were initiated to discuss geriatric trauma concerns, develop ways to improve care, and provide continuing education for nurses after the completion of NICHE education. All GRNs and GPCAs from both TTU and TNICU were invited to join in process improvement projects and education. The incorporation of the Geriatric Resource Model of care and NICHE meetings were led by nursing champions. In addition, 2 trauma attending physicians were appointed as geriatric physician champions to assist in project development with the NICHE nurses and nursing leadership.

Discussions were held among the NICHE nurses to develop methods to improve geriatric trauma care from what they learned through the NICHE education modules. Process improvement projects were then initiated by identifying opportunities for improvement of geriatric trauma care. Some examples of geriatric-focused projects that were formulated, after the implementation of NICHE, included Geriatric-Focused Collaborative Rounds, orthostatic blood pressures, pain management, reducing inappropriate medication use, and nutrition.

GERIATRIC-FOCUSED COLLABORATIVE ROUNDS

Geriatric-Focused Collaborative Rounds were initiated in August 2014 on the TTU. Collaborative Rounds provide a standardized approach to coordinate care among the interdisciplinary team, including the trauma team, case management, physical therapy, occupational therapy, and nutrition. Geriatricians were included in rounds to provide collaboration and recommendations on geriatric trauma patients. In addition, a GRN also attends rounds to increase focus and provide input on geriatric issues or concerns. Geriatric considerations in Collaborative Rounds include early mobilization, orthostasis, medication changes, pain control, nutrition, delirium prevention and recognition, family concerns, and disposition. Each care concern is addressed and discussed among the team to determine required interventions and also develop a plan of care for the patient. Contribution from all disciplines assists with transitioning the patient to the next level of care.

Postimplementation of NICHE, unit leadership, and nursing staff recognized that recommendations from the geriatricians were often not acted upon because there was a lack of understanding of the importance of geriatric considerations and it was not part of the daily care. Orthostatic blood pressures were often ordered by geriatricians, but were not completed, leading to a delay in care. Education was developed on orthostatic blood pressures, and a process was developed to improve compliance with orthostatic blood pressures in geriatric trauma patients. On the TTU, orthostatic vital signs are completed upon the first time out of bed and daily for all patients aged 65 years and more admitted after a fall. Nurses are prepared to review orthostatic vital signs during Collaborative Rounds, so appropriate interventions can be initiated. As a result, trauma providers and geriatricians can make medication adjustments if necessary. Fluids can be

encouraged to prevent dehydration in patients with poor oral intake. In addition, patients identified as high risk of falls can be given education regarding orthostasis and fall prevention. This simple nursing intervention may assist in reducing the number of patients readmitted with recurrent falls, when appropriate medication adjustments are made and orthostatic blood pressures monitored throughout hospitalization.

Nutrition status is frequently compromised in the geriatric trauma patient, which can contribute to functional decline.[12] Hypermetabolism, malnutrition preinjury, long periods of nothing by mouth status, cervical collars, braces, bed rest, pain, and injuries that effect chewing and swallowing can lead to insufficient nutrition after trauma.[12] On the TTU, a registered dietician participates in Collaborative Rounds, with an increased focus on geriatric trauma patients to reduce their risk of malnutrition during hospitalization. As a result, interventions can be implemented immediately to reduce the geriatric trauma patient's risk of malnutrition and resulting functional decline or pressure ulcers. TTU NICHE nurses developed education on the risks of malnutrition after trauma as well as during hospitalization, and provided a review of all hospital nutritional supplement options available. After the rollout of education, nurses began initiating orders for supplements on admission for all geriatric trauma patients, unless contraindicated.

Appropriate pain management is a critical component of geriatric trauma care. Cognitive impairment, fear of addition, fear of adverse side effects, and sensory impairment can all lead to inadequate pain control in this population. At LVHN, it was discovered that residents were often unaware of the unique needs of the geriatric trauma population, which can lead to inappropriate medication orders for pain. The NICHE nurses also identified a need for a resource guiding appropriate pain, agitation, and sleep medications recommended for the geriatric patient. A Pain Medication Recommendation and Agitation/Sleep Recommendation list was developed as a resource for nurses. This list provides appropriate geriatric pain, agitation, and sleep medication doses and frequencies to decrease adverse outcomes associated with inappropriate orders. This list was created by our trauma team by partnering with our geriatricians to include geriatric concepts of pain control, such as low-dose opioids, around-the-clock analgesics when appropriate, dosing guidelines, nonpharmacological pain interventions, and a list of medications contraindicated in the elderly for pain, agitation, and sleep for avoidance of inappropriate medication orders.[13]

There was a change in culture, with a greater sense of understanding and emphasis of the unique care needs of the geriatric trauma patient after the implementation of NICHE. Preventing hospital-acquired complications after trauma injury, which can lead to adverse outcomes, is of great concern in geriatric patients. Upon review of nurse-sensitive indicators on the TTU, the percentage of hospital falls in patients aged 65 years and more was reduced after the implementation of NICHE on the medical surgical trauma unit when comparing data from fiscal year (FY) 2014 to 2015. In FY 14, 61.5% of falls were in patients aged 65 years and more compared with 26.7% in FY 15, despite an increase in the number of falls and number of older adult patients admitted. Although the number of pressure ulcers was reduced in FY 15, pressure ulcers remained prevalent in trauma patients aged 65 years and more, with approximately 77% of pressure ulcers occurring in older adult patients in FY 14 and 79% in FY 15. The need for continued increased focus on prevention of pressure ulcers in geriatric trauma patients remains evident. When looking at the patients' perception of their hospital care with the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, in patients aged 65 years and more, the most significant improvement of survey results for the TTU was based on the questions related to transitions of care. These questions had an approximately 20% increase in scores after the NICHE rollout to nurses on the TTU. HCAHPS survey questions related to pain management also improved after NICHE in patients aged 65 years and more.

Length-of-stay (LOS) data from 2011 to 2014 was compared with data after the implementation of NICHE education for the same subset of geriatric trauma patients. Overall hospital LOS in geriatric trauma patients aged 65 years and more had been on a downward trend from 2011 to 2013, decreasing from 5.39 days to 4.50 days, respectively. Although LOS slightly increased in 2014, LOS for geriatric trauma patients was 4.70 days, less than the hospital LOS of 5.3 days in patients aged 65 years and more. In addition, LOS in geriatric trauma patients remained below the overall hospital LOS of 4.9 days for patients of all ages.

Despite an increase in LOS during 2014, after the incorporation of NICHE, there are many variables to consider when looking at LOS, which may have contributed to these results. An increasing number of functionally dependent geriatric trauma patients were admitted at LVHN. In 2011, 25.3% of patients were functionally dependent, 28.7% in 2012, 38.6% in 2013, and 43.7% in 2014. Despite the largest growth in the oldest old trauma patients, patients aged 85 years and more, those at the highest risk of complications after trauma, minimal change in LOS was seen. In addition, the average injury severity score in 2013 was 9 compared with 10 in 2014. There were a greater number of comorbid conditions in geriatric trauma patients in 2014 compared with 2013, with an average of 4.20 comorbidities in 2013 and 4.34 in 2014. Also, process improvement projects developed from NICHE were not

implemented until 2014; therefore, full benefits may not have been seen.

PREPARING FOR THE FUTURE

The incorporation of geriatric education for trauma nurses must be considered as a first step in preparing nurses for the care of geriatric trauma patients, in an effort to improve outcomes by decreasing complications associated with hospitalization after trauma. Patient and caregiver transition after trauma can be enhanced through geriatric-specific education provided by the GRN. In addition, partnering with geriatricians, trauma providers, physical and occupational therapists, nutrition, and case managers during daily collaborative rounds, with a focus on geriatric concepts, including early mobilization, pain control, nutrition, delirium prevention and recognition, and disposition can assist in focusing on the unique needs of geriatric trauma patients. Geriatric-focused nursing initiatives may assist in improving patient safety and decrease complications during hospitalization after trauma.

Nursing education, focused on geriatric care, is one consideration in making progress toward improving the care of the geriatric trauma patient. However, improving care of the older adult trauma patient cannot stop with education and incorporation of a Geriatric Resource Program alone. LVHN NICHE trauma nurses now complete 2 hours of geriatric trauma education per year, beginning calendar year 2015 to continue expanding their knowledge base for this specialized population. All GRNs are encouraged to participate in the monthly Geriatric Trauma Conference to discuss geriatric performance improvement through case study review. Regularly scheduled NICHE meetings are held to review and improve processes and practices related to the older adult trauma patients. As NICHE education continues to expand, there is a heightened awareness of the special care needs of the older adult trauma patient.

Trauma nurses must be prepared to care for the unique needs of geriatric trauma patients. The change in culture since the implementation of NICHE has empowered the GRNs to continue to strive for improved care of the geriatric trauma patient. How this education is utilized to improve care will assist in determining future recommendations for trauma care in the older adult patient. Further studies must be initiated on geriatric concepts of care for nurses, geriatric initiatives in trauma, and process improvement projects, measured by nurse-sensitive indicators and quality outcomes to determine the effectiveness of geriatric education for trauma nurses.

KEY POINTS

- Recognize the growing older adult trauma population.
- Understand the need for educational resources for trauma nurses caring for older adult trauma patients.
- Identify need for specialized care of the older adult trauma population.
- Recognize the need to standardize care of the older adult trauma patient.
- Develop process improvement strategies to improve care of this high-risk population.

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