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Trauma Admission Guidelines for Elderly Isolated Orthopedic Injuries

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by

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Abstract

A rise in complications at a southeastern level one trauma center had the trauma department and performance improvement personnel looking for a cause and a solution. It was determined through data mining that the patient population that was driving certain complication cohorts above acceptable levels was the injured elderly patient admitted by the non-surgical hospitalist group. Patients admitted by this group commonly sustained a single injury, mostly hip fractures. Elderly patients are admitted by this group in efforts of successfully managing the many co-morbidities these patients typically possess with co-management by the orthopedic group to manage the injury. A meeting was conducted by trauma staff with these two service lines to discuss the complication rise. It was evident through discussion that roles and responsibilities pertaining to patient management were not clear to either group. It was determined that development of an admission guideline was critical in clearing up confusion the groups faced in efforts to decrease complications in the elderly trauma population.

Keywords: co-management, hip fracture, elderly trauma patient, non-surgical service, orthopedic service, communication, guideline

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CHAPTER I

Introduction

As an American College of Surgeons (ACS) verified level I Trauma Center, the program cannot admit more than 10% of patients to a non-surgical service (NSS). Prior to being ACS verified, over 40% of trauma admissions were to an NSS team. Needless to say, there was a lot of work to be done prior to verification. With the approval of the ACS, the trauma department made an agreement with the NSS group that the NSS service would admit patients who were greater than or equal to 65 years of age with an isolated hip fracture with an orthopedic consult. This cohort would not be included in the 10% NSS admits, only those who were less than 65 years of age with a hip fracture or those with other injuries admitted by NSS team would make up the NSS admit percentage. The trauma management team worked tirelessly to decrease the NSS admits percentage to less than 10%. For the last couple of years, the NSS trauma admits average anywhere from 4-7% monthly.

The NSS admits an average of 30 trauma patients per month. These are a mix of patients that go into the NSS admit percentage cohort and ones that meet the exclusion criteria based on the agreement with the NSS group. However, no matter the admitting service, all patients go into the trauma registry and are followed by the trauma performance improvement coordinator (TPIC) to ensure exceptional care and to identify complications and opportunities for improvement (OFI). The latest Trauma Quality Improvement Program (TQIP) benchmark report issued revealed unplanned intensive care unit (ICU) admissions were above average compared to other centers. After a deep dive into the data, the team realized the trauma population admitted by NSS with

Orthopedic on board to assist with injuries was the main population driving the unplanned ICU admission cohort.

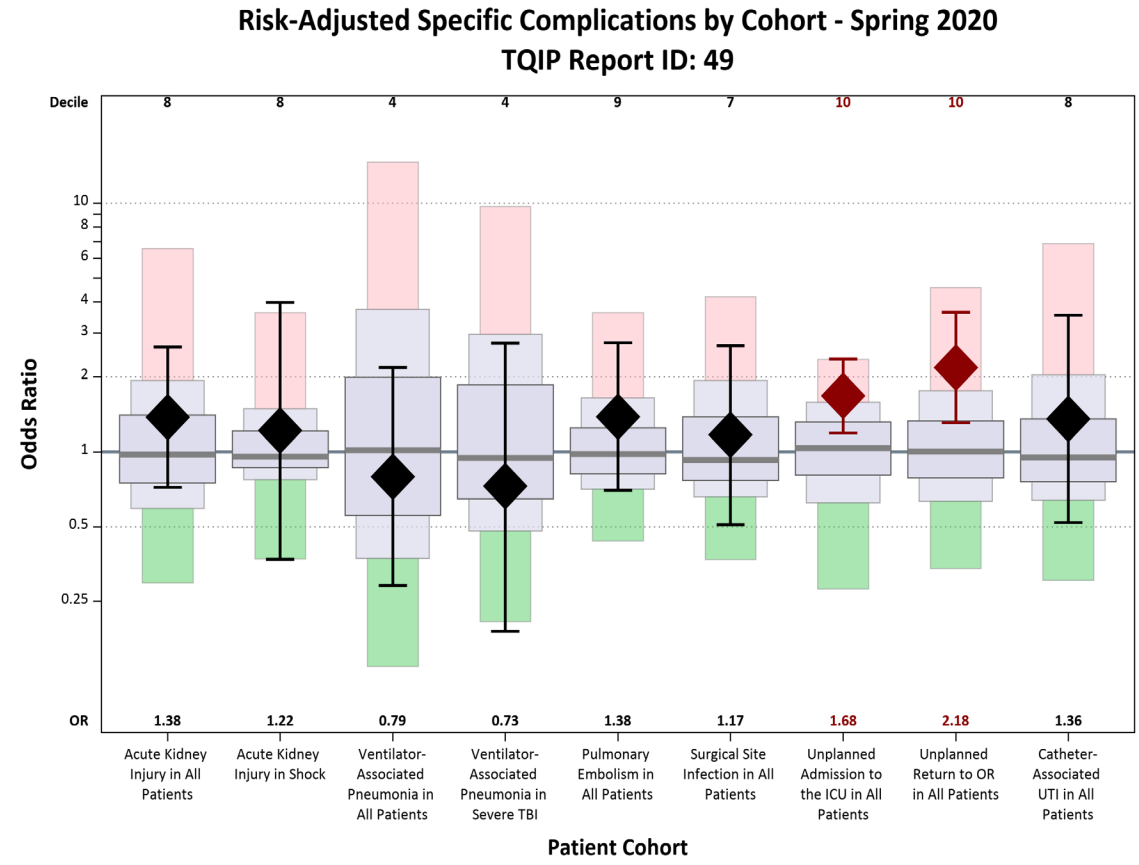
Upon meeting with the Orthopedic and NSS groups, it became clear that there was confusion among the groups regarding responsibilities. The main confusion was related to pain medications. During data drill down, it was discovered that most, especially elderly, were bouncing back to the ICU related to over sedation related to pain medication administration. It came to light that NSS was under the impression that the Orthopedic group was responsible for pain regimen and dosing while the Orthopedic service was ordering a standardized pain medication order set that is ordered for all Orthopedic patients, but under the impression that NSS was adjusting pain medication depending on patient's age, co-morbidities, and specific needs. Needless to say, all patients were receiving an order set of pain medication geared more toward the younger healthier population with no adjustments considering age, co-morbidities, and other medications on board. Similarities were also found with anticoagulation medications. Orthopedics were ordering standardized anticoagulation protocol medications, and no one was taking into consideration health issues such as atrial fibrillation, stroke, heart attack, etc., and not taking into consideration other medications the patient had been placed on by the NSS team. However, Orthopedic physicians were under the impression the NSS team, considering they are the primary team, was looking at and adjusting anticoagulation medications for each patient's specific needs. On both, the NSS group felt whatever was ordered by the Orthopedic group to assist in caring for the orthopedic injury was best and should not be tweaked, considering orthopedics is not their specialty. As a result, there was a great need for discussion and collaboration.

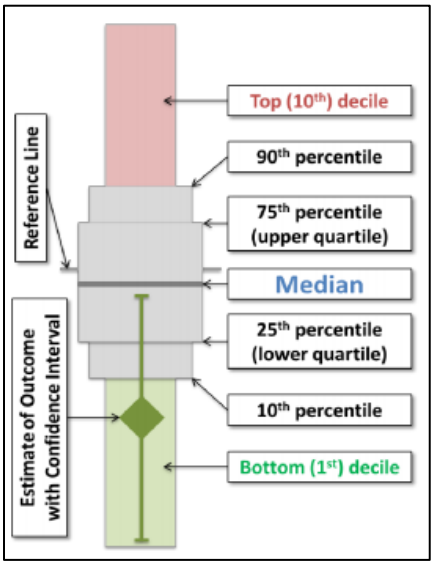
Problem Statement

Spring 2020 TQIP report for the southeastern level 1 trauma center highlighted above average unplanned ICU admissions. It was discovered during data drill down that trauma patients admitted by NSS group with Orthopedic consulting were the majority of the unplanned ICU cohort. After analyzing the data with the two groups, it was evident there was great need for clarification on each group's roles and responsibilities during the patient's hospital course (Figure 1).

Figure 1

2020 Spring TQIP Report





Significance

While the ICU provides the highest level of care to a patient, it is also known that every day a patient spends in a critical care unit increases their risk of morbidity and mortality. Patients often require this level of care to survive and this level of care serves its purpose; however, we want to ensure as a system and department that our actions and care practices are not placing patients at unnecessary risk that could result in requiring critical care services. With the realization there was disconnection between service lines, light was shown on patient complications that were potentially caused by care provided.

Purpose with Definition of Terms

The aim of this project was to develop a guideline with collaboration of the Trauma, Orthopedic, and NSS groups to demonstrate each service line's roles and responsibilities depending on primary or consulting team during a patient's hospital course after a traumatic injury. "A guideline is a rule or instruction that shows or tells how something should be done" (Merriam-Webster, n.d.).

Theoretical/Conceptual Framework

The framework on which this project is based is that of Florence Nightingale's statement capturing the performance-quality-management relationship:

> The ultimate goal is to manage quality. But you cannot manage it until you have a way to measure it, and you cannot measure it until you can monitor it. This involves the use of performance indicators (PIs) or measures to capture a variety of health and health system-related trends and factors. PIs require an operational definition of quality to be developed, since they are in essence a quantitative measure of quality. Various stakeholders in health all hope that PIs will provide

> meaningful data for making decisions and steering health systems. Therefore, and given that conceptual frameworks are often the starting points in PI development, our aims are: to understand the underlying concepts of national and international performance frameworks for health systems; to explore effectiveness and its indicators; and to see how and in what context the resultant performance data are used to drive improvement. (Arah et al., 2003, pp. 377-378)

The trauma department strives for quality care. With that said, there is consistent collection, measuring, and monitoring of data which drives decision making to provide better care. In this case, the TQIP data sounded an alarm that activated the department to dive in and locate the problem. Now that the problem has been identified, actions are taking place and continuous data collection and measurement will show if the actions are resolving the problem.

Summary

When a TQIP report was issued and highlighted an above average unplanned ICU admission, the trauma team delved into the possible causes of the complication outlier. Trauma administration discovered the uncertainty and disagreement among the Trauma, Orthopedic, and NSS groups when it came to order sets and the responsibility each group played in the patient's care. With a guideline development, it is hopeful that each group will know their specific role for each patient and provide better care resulting in fewer opportunities for complications.

CHAPTER II

Literature Review

The use of communication, guidelines, and protocols have been shown through an abundance of research studies to be a necessity in both the healthcare and business world. A review was performed from 2011 to present using EBSCO host and Google Scholar. The following topics were used in gathering scholarly articles: hip fracture management, trauma, orthopedic, hospitalist, co-management, elderly, complications, outcomes, guidelines, protocols, and communication. Articles were found pertaining to elderly trauma and the benefits of co-management, as well as research discussing protocols, guidelines, and communications.

A study in 2019 was performed looking at the impact of hospitalist versus non-hospitalist services on length of stay and 30-day readmission rate in hip fracture patients (Stephens et al., 2019). The study was performed retrospectively over a 1-year time span at an academic medical center. The study concluded that patients with hip fractures managed by hospitalist versus non-hospitalist services had lower odds of 30-day readmission but no difference in odds of hospitalization less than or equal to 7-days and overall, suggest benefit to hospitalist co-management of hip fracture patients (Stephens et al., 2019).

A study performed by Cipolle et al. (2016) indicated that embedding a trauma hospitalist in the trauma service reduces mortality and 30-day trauma related admissions. The level one trauma center recognized the increasing age and comorbid conditions of patients admitted to the trauma service. The study was designed to differentiate outcomes in trauma patients who received care from the trauma hospitalist program and similarly

medical patients who did not receive trauma hospitalist care. Patients in each group were matched based on injury severity scores (ISS), age, and comorbid conditions. While there was an increase in hospital length of stay by 1-day and an increase in upgrades to the intensive care unit (ICU), there was a decrease in mortality, readmissions, and patients who developed renal failure (Cipolle et al., 2016).

Hughson et al. (2011) discussed evidence-based best practice for the elderly patients with hip fracture. There was much evidence highlighting the benefit of implementing a formal hospitalist and orthopedic co-management care model. The co-management models include a standardized order set to provide guidance to staff to minimize confusion with nonstandard orders. Many centers have shown great success with co-management care models and most have decreased length of stay, time to surgery, and complications such as blood clots, delirium, pressure ulcers, etc. (Hughson et al., 2011).

A study conducted by Bracey et al. (2016) investigated the benefits of co-management. Prior to the study, patients with hip fractures were admitted to general medicine service or trauma service with a consult to orthopedics. Upon initiating Orthopedic Hospitalist Co-management (OHC), the patients were admitted by both an orthopedic surgeon and a hospitalist physician who both round on the patients daily. The orthopedic team is responsible for surgical management and disposition planning. All co-morbidities, evolving medical pathology on the floor, and pre-operative clearance are managed by the hospitalist. Both providers work together to determine medical clearance, optimal timing of surgery, anticipate potential complications, and facilitate discharge planning postoperatively. Since the introduction of OHC at the facility, inpatient length

of stay (LOS) and time to surgery (TTS) has significantly decreased. Reducing TTS and LOS reduces inpatient costs, enables to accommodate larger patient volumes, and may improve outcomes (Bracey et al., 2016).

Rosenfeld et al. (2012) focused on proper guideline development. Guidelines are intended to take evidence and translate into best practice in efforts to reduce healthcare variations, improve diagnostic accuracy, promote effective therapy, and discourage ineffective interventions. The authors walk the reader through systemized guideline development with emphasis on the importance of one understanding what a guideline is and is not (Rosenfeld et al., 2012).

Communication is vital in most aspects of life: at home with family members, at work with co-workers, etc. Vermeir et al. (2015) discussed the importance of communication in the health care world and how poor communication in health care can lead to negative outcomes such as: discontinuity of care, compromise of patient safely, patient dissatisfaction, and economic consequences. In most cases, face-to-face communication is preferable; however, in healthcare hand-written communication is most useful. Hand-written communication can always be referred to and is easiest for health care providers to relay care plans to other providers. Communication should be prominent in graduate and post-graduate training to become engraved as an essential skill for each caregiver (Vermeir et al., 2015).

Weller et al. (2014) discusses how healthcare is now delivered by multidisciplinary teams and we know that there is an alarming amount of unintended patient harm, much attributed to failure of communication between healthcare providers. Literature reveals that successful teams must have shared mental models, mutual respect

and trust, and closed-loop communication. Weller et al. (2014) proposed a seven-step plan to overcoming the barriers that effect communication. Evidence suggests that improving teamwork and communication can have great impact of reducing patient adverse events (Weller et al., 2014).

Physicians in a large integrated health system recognized that hip fractures commonly lead to morbidity and mortality, and implemented their co-management program, American Geriatric Society (AGS) CoCare: Ortho® (Sinvani et al., 2020). The authors educate through their publication the four phases they used to develop the program: two phases were communication and system-level planning and two phases were hospital-level planning and implementation. The goal in developing the program was to standardize care and improve outcomes. Results from data collection indicates implementation of the program improved outcomes and promoted standardized care (Sinvani et al., 2020).

Strengths and Limitations of Literature

Research provides an in-depth view of a topic we are interested in studying. There were many research articles found supporting co-management of geriatric injured patients and described the positive outcomes that have resulted in co-management. Literature was found that expressed the importance of communication and guideline development and adherence as well. Common downfalls recognized in the literature consisted of time constraints of studies, issues with participant samples and selection, and the possibility of personal bias.

Summary

Current literature discloses many positive outcomes when the elderly patient with isolated orthopedic injury, most commonly hip fracture, are co-managed by the hospitalist and orthopedic groups. Literature also discloses that proper communication and guideline development and adherence play huge roles in making the co-management process a success. With much supporting literature, the goal is for all parties to join in compiling a guideline that will decrease morbidity and mortality for the elderly trauma population.

CHAPTER III

Needs Assessment

Guidelines vary in what is required to ensure it flourishes and meets the desired outcome. There are many aspects that must be considered when creating a change such as a guideline. Most will find, the team who is brought to the table to create and agree on a guideline is one of the most challenging. Some flow with the idea of change while others are quick to resist. This chapter will discuss the many aspects of generating a co-management guideline.

Target Population

Trauma patients who are 65 years of age and older and sustain a single orthopedic injury, most commonly hip fracture, are admitted by the non-surgical service team with the orthopedic group consulting. These patients, most commonly, are what we consider "bad hosts"; meaning, along with the new injury insult, these patients typically have a multitude of health issues already. Considering the patient's co-morbidities, is why it is best for these patients to be admitted by the hospitalist group and receive multi-system care along with care for their injury. The elderly trauma population elevates the complication rates: one, because they may not be healthy to begin with, and second, because it has been discovered that the management responsibilities of these patients have been unclear.

Sponsors and Stakeholders

For the project proposed the trauma team is considered the primary sponsor, considering the need for such guideline came to light because of this team. Other sponsors would be the orthopedic and hospitalist groups as well as other team members

that assist in the guideline evolution. Stakeholders are those that are impacted by the outcome of the guideline. The above sponsors are also stakeholders along with the patients whom this guideline will affect and hospital executives due to the financial savings the guideline is set to produce.

SWOT Analysis

Table 1

SWOT Analysis

Strengths	Weaknesses	Opportunities	Threats
Team experience	Scheduling constraints	Complication reduction	Guideline non-adherence
Supporting research	Communication	Length of stay reduction	
No financial costs		Mortality reduction	
Physician support		Financial savings	
		Improved patient outcomes/satisfaction	

Available Resources

Experience is a valuable resource that is held within the team constructing the guideline. The trauma department, as well as other team members, has taken problems and created resolutions many times in the past. Guideline and policy development and revision is a common task the team members of this project are faced with. The healthcare professionals are also experienced in caring for the particular population of patients. The basis of caring for these individuals is present however, aspects require adjusting and providing better care. Supporting research is also available, displaying positive outcomes when guidelines provide clear guidance for continuity of care.

Desired and Expected Outcomes

Upon agreement of each party's roles and responsibilities in patient care, it is desired complications in this population will begin to trend downward. A decrease in complications in the elderly trauma population should decrease overall length of stay and decrease mortality. When patients from this population expire, it is typically not from the injury but from complications and co-morbidities. If complications are decreased, it is hopeful that mortality will decrease as well. It is desired that a decline in length of stay, complications, and mortality would in turn save the hospital institution money, resources, and open beds quicker for new patients.

Team Members

The trauma department is ultimately held responsible for rise in complications and patient outcomes. The American College of Surgeons monitors the level one center's complications and outcomes and holds the department responsible for developing a plan for improving an outlier. For this guideline, the trauma medical director, trauma program manager, and trauma performance improvement coordinator would be a part of the guideline development team. Additionally, designated members of the orthopedic group and non-surgical service group are pertinent to have during guideline development. These designated professionals could be the department chair or someone chosen by the department chair along with nurse practitioner involvement from each group. It is important to have nurse practitioner involvement and input considering the amount of work they put into the care of this patient population. It is mostly the nurse practitioners that complete daily rounding and compute orders. Lastly, including ancillary staff such as palliative care, physical therapy, occupational therapy, case management, respiratory

therapy, pharmacy, and nurse managers of the floors where these patients reside will provide needed information and viewpoints when creating the guideline.

Cost/Benefit Analysis

There are no significant financial costs to develop this particular guideline. The biggest cost is people's time, time for all parties to come together to create and agree on co-management guidelines. While the cost may seem compact, the benefit is hoped to be significant. A clearer understanding of who is managing each aspect of the patient's care is expected to decrease complications, which will ripple into decreased length of stays and mortality. There is great benefit in these decreases including benefit to the hospital's finances and resources, and benefit to the patient experience and outcome.

CHAPTER IV

Project Design

Goal and Objective

The overall goal of this project is to lower complication events in trauma patients over 65 years of age that are admitted by the hospitalist team. Decreasing complication events will result in lowering hospital financial costs related to complications, decrease hospital length of stay for some patients, increase patient satisfaction, and improve patient outcomes. The objective is to develop a guideline that clearly identifies the roles and responsibilities of the orthopedic group and the NSS group in caring for the isolated orthopedic injured elderly patient in efforts to achieve the goal.

Plan and Material Development

The first meeting will include the three service lines reviewing previous data, discussing the need for the guideline, and the overall goal of the project. It will be determined how often the group will meet with a 3-month guideline completion goal and when it is best to bring aboard other ancillary services. The early meetings will discuss the many components of patient care and hospital stay and disseminating each component to the service line that will be responsible for that component. The latter meetings will include other service lines' thoughts and concerns, best approach to educating appropriate staff of guideline, guideline go live date, and discuss a meeting time post guideline go live date to discuss any concerns or problems. The group will meet quarterly in the year after guideline initiation to review data to ensure guideline is achieving desired goal. The guideline will be easily accessible for providers through the institution's hub page under

Trauma Program Manual, alike other policies, procedures, and guidelines for the trauma department.

Timeline

From initial planning meeting to guideline implementation go live date, it is projected that 6 months will be necessary to complete all needed components. The first 3 months will consist of weekly or bi-weekly meetings with the Orthopedic, Trauma, and NSS liaisons at each meeting. Throughout, there will be meetings when other department liaisons are asked to join the meeting to provide input and their unique perspective. When all parties have developed and agreed on guideline components it will be presented to each services' physicians for approval. Once final approval is complete, the last month will consist of educating all parties in each group: physicians, residents, nurse practitioners, etc.

Budget

There is no budget needed for the project at hand. The development of guidelines rarely require money to develop and implement. The greatest need is one's time. It will be a necessity for each party to put in a certain amount of time towards the project; the most time will be needed from the trauma, orthopedic, and hospitalist groups.

Evaluation Plan

Complications, patient length of stay, and mortality will continue to be monitored concurrently by trauma quality personnel. This data will be reviewed by the project committee quarterly post guideline implementation. The data will indicate if the guideline is achieving the desired goal. It is very unlikely that complications would increase after this guideline implementation. During the quarterly data reviews, the data results and/or

physicians may suggest addendums to the guideline. It is not uncommon for guidelines to be tweaked in the months after implementation as guideline adherence in real life sometimes reveals challenges that were not considered in guideline development.

CHAPTER V

Dissemination

Dissemination Activity

A meeting was held with all stakeholders reinforcing the problem and need for guideline development. With patient outcomes in question and much uncertainty, stakeholders were supportive of guideline development in efforts to decrease confusion regarding patient care and responsibility in efforts of improving care and outcomes. Financial stakeholders within the system were on board as this project does not require funds and decreasing complications will save the institution some financial burden that comes with complications.

Dissemination and Limitations

Once this guideline is put into effect, it will be an ongoing guideline to follow for the specific patient population. The guideline may be adjusted after initiation and in years to come as issues present themselves and as healthcare and processes change. It is hopeful that other level one trauma centers could use this guideline to aid in their admission process to decrease complications and improve outcomes as well. While the guideline may be of great assistance in other level one trauma centers with similar patient populations, it may not be helpful in level two, three, or four centers and may not be helpful with other patient populations or service lines as the circumstances are very different.

Implications for Nursing

One purpose of the guideline is to clear any confusion regarding who is responsible for each aspect of patient care. It is projected that the guideline will assist

nursing in contacting the correct provider the first time for the specific aspect of patient management in question or concern. This will decrease the time nurses are attempting to contact providers as well as decrease frustration. Nurses often express frustration with attempting to contact providers to relay an issue, concern, or ask a question due to having to make multiple phone calls, or physician called not wanting to take ownership and instructing the nurse to contact another provider. The main goal of the guideline is to decrease complications. Complications require more resources, time, and work. If complications are decreased, nursing workload should decrease as well. Complications can also result in poorer patient outcomes.

Recommendations

After guideline implementation, it is imperative that data collection continues to ensure the guideline is meeting the expectation. Data collection and review is what triggered performance improvement (PI) personnel of the issue; therefore, continued monitoring of data can indicate if the action put into place is working and can also shine light on other potential problems. It is also important to continue to meet with the guideline development team and stakeholders to provide feedback of data collection and to receive feedback on components that may or may not be working.

Conclusion

It was discovered that elderly injured patients admitted by the NSS hospitalist group were experiencing an uprise in complications. After a consideration of this issue, it was agreed upon that a guideline laying out the responsible party for each patient care component was needed. The goal of guideline development and implementation is to decrease confusion among the service lines. This effort will decrease complication rates

which will then decrease morbidity and mortality and increase patient satisfaction rates and improve patient outcomes.

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