Outcomes Associated with Using the Identification of Seniors at Risk (ISAR) Score to Determine Geriatric Evaluations of Trauma Patients with Hip Fractures

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Background

- Falls are a leading cause of injury in older adults.
- Older adults who sustain a hip fracture may not return to their baseline function.
- Henry Ford Macomb Hospital (HFMH) is a community teaching hospital with Level II American College of Surgeons Adult Trauma verification and in-state designation.
- Falls with hip fracture accounted for 15% of Trauma admissions in 2014-2016 and 21% in 2017-2019 at HFMH.
- In 2013, the Trauma Quality Improvement Program (TQIP) stressed the need for specialized geriatric care.
- In 2016, the Identification of Seniors at Risk (ISAR) screening tool was utilized for Trauma patients 60 years and older to help capture their need for a Geriatric evaluation.

Background

Identification of Seniors at Risk (ISAR)

If the response to two or more of the following questions is "yes," Geriatric consultation should be obtained.

1. **Before you were injured, did you need someone to help you on a regular basis?**
2. **Since the injury, have you needed more help than usual to take care of yourself?**
3. **Have you been hospitalized for one or more nights during the past six months?**
4. **In general, do you have problems seeing well?**
5. **In general, do you have serious problems with your memory?**
6. **Do you take more than three medications every day?**

Aim

- The purpose of this study is to understand the outcomes of older adults in relation to their ISAR who were:
  - Over the age of 60
  - Admitted to the Trauma Service with a hip fracture
  - Sustained a fall

- The study will review data two (2) years prior and two (2) years after HFMH implemented the use of the ISAR screening tool and Geriatric evaluations for patients who had a score of two or greater (≥2).

Methodology

Design

- Retrospective program evaluation conducted via chart review
- **Pre-Implementation:** July 1, 2014 - June 30, 2016
- **Post-Implementation:** January 1, 2017 - December 31, 2019

Setting/Sample

- Inclusion criteria:
  - Patients ages 60 years and older
  - Admitted for a hip fracture
  - Admitted to Trauma Service

Variables

- ISAR score (0-6 or if incomplete/not completed)
- Presence of a Geriatric evaluation
- Injury Severity Score (ISS)
- Discharge disposition
- Presence of a Hospice consult
- In-hospital mortality
- Length of stay (LOS)
- Intensive Care Unit LOS
- 30-day hospital readmission
- Demographics: gender, race, age, ethnicity, and language

Methodology

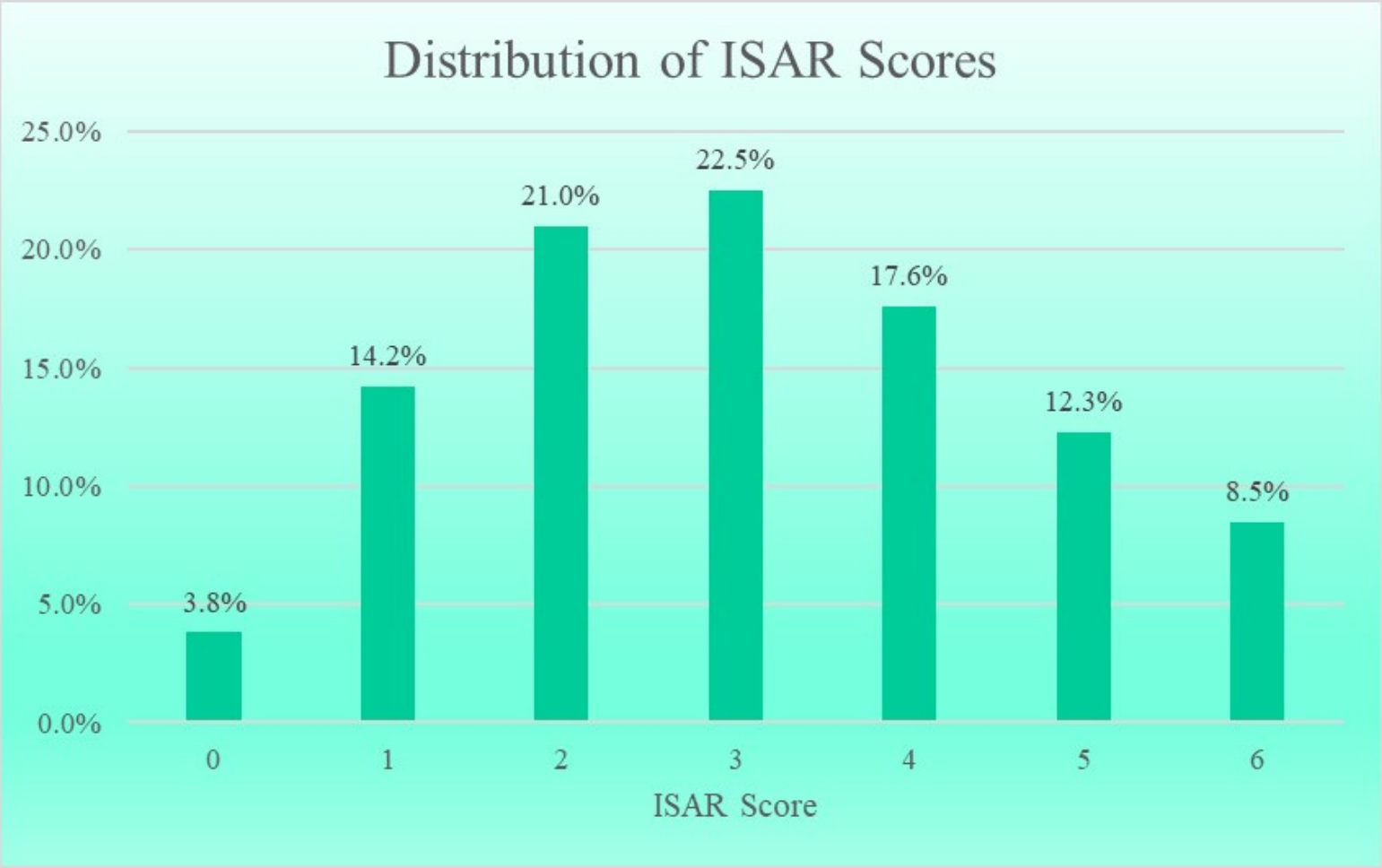
Data Analysis

- Statistical analysis was performed by study site statistician.
- Variables were described using means and standard deviation for continuous variables and counts/percentage for nominal data.
- Continuous variables that did not follow a normal distribution were described via medians and interquartile ranges.
- The two groups were compared with Student's t-Tests and Chi-squared tests dependent on variables.
- To evaluate variables related to each ISAR score, Kruskal-Wallis analysis was used. The p-value was adjusted as needed to conclude significance using Hochberg's adjustment.

Results

- A total of 1,142 charts were reviewed.
  - Of the qualifying patients, 380 were included in our pre-Geriatric Service implementation period and 680 in post.
- Most hip fractures were intertrochanteric (IT) fractures, followed by proximal femur fractures and then femur shaft fractures.
- Majority of Trauma patients sustaining a hip fracture were non-Hispanic, English-speaking, Caucasian females.

Results



- The longest ICU stays occurred in patients with a score of 3
- In-hospital mortality & readmissions were highest in scores of 5
- Scores of 1 had the lowest rate of readmission
- Hospice was consulted more frequently as the score increased (p=0.034), with the highest number of consults noted in patients with a score of 6

Results

Outcomes Compared By ISAR Score

- There was a significant difference in age between each ISAR score (p=0.001), as the age increased, so did the ISAR score.
- No correlation between the ISS and increasing ISAR score (p=0.102).
- Length of stay increased with ISAR scores (p=0.012).
- There is no correlation between in-hospital mortality & increasing ISAR scores (p=0.664).
- Majority of patients were discharged to SNF regardless of ISAR score (p=0.092).

Results

Outcomes Compared by ISAR Score

ISAR	Participants (N)	Mean Age (in years)	Mean ISS	Mean LOS in hours	Mean ICU LOS in days	Inpatient Mortality	Readmissions	Hospice Consults	Discharge to SNF
0	3.8% (24/632)	76.5	9.21	98	3.00	0% (0/24)	0% (0/24)	0% (0/24)	66.7% (16/24)
1	14.2% (90/632)	78.0	9.20	104	2.00	1.11% (1/90)	6.67% (6/90)	0% (0/90)	78.9% (71/90)
2	21% (133/632)	81.2	9.33	124	3.00	0.75% (1/133)	12.78% (17/133)	0.75% (1/133)	89.5% (119/133)
3	22.5% (142/632)	81.8	9.42	132	7.18	0.7% (1/142)	11.97% (17/142)	2.11% (3/142)	79.6% (113/142)
4	17.6% (111/632)	83.1	9.41	117	3.75	0% (0/111)	14.41% (16/111)	4.50% (5/111)	77.5% (86/111)
5	12.3% (78/632)	86.0	9.35	122	2.50	2.56% (2/78)	17.95% (14/78)	1.28% (1/78)	82.1% (64/78)
6	8.5% (54/632)	84.7	9.72	142	4.00	1.85% (1/54)	12.96% (7/54)	7.41% (4/54)	81.5% (44/54)
Overall P-value		0.001	0.102	0.012	0.642	0.664	0.413	0.034	0.092

Results

Outcomes Before & After Geriatric Evaluation

- 63.8% of patients in the post-group received a Geriatric Evaluation.
- Age and ISS were significantly higher in the Geriatric Evaluation population.
- No significant difference was found between total LOS, though did decrease by four hours (p=0.075).
- In the pre-group, more patients were admitted to the ICU (5.78%) than the post-group (4.14%); however, the pre-group had a shorter ICU length of stay (5.73 vs 5.89, P = 0.847).

Results

Outcomes Before & After Geriatric Evaluation

- Most patients were discharged to a Skilled Nursing Facility (SNF) for both groups, followed by home with services, or home with self-care.

Post Implementation:

- Thirty-day readmissions trended higher (p=0.106)
- In-hospital mortality was lower (p=0.243)
- Hospice consults and discharges to Hospice were higher (p=0.083)
- Discharge to inpatient rehabilitation unit (IPR) decreased

Results

Outcomes Compared Before & After Geriatric Evaluation

			Pre				Post with Geriatric Evaluation			
Variable		N	Mean	SD		N	Mean	SD		P-value
Age		380	82.06	9.51		434	83.64	8.69		0.026
ISS		380	9.22	0.69		434	9.38	0.92		0.001
LOS (Hours)		380	136.49	67.09		434	132.53	69.06		0.075
ICU LOS (Days)		22	5.73	5.37		18	5.89	5.03		0.847
			%				%			
30-day Readmissions			10.53(40/380)				14.29(62/434)			0.106
Hospice Consults			1.05 (4/380)				3.00 (13/434)			0.083
In-Hospital Mortality			2.11 (8/380)				0.92 (4/434)			0.243

Discussion

- This study adds to the body of literature in relation to ISAR scores and Geriatric evaluations.
- The Injury Severity Score does not correlate with increasing ISAR scores.
  - ISAR questions do not address the severity and/or mechanism of injury.
- The longest ICU LOS occurred in patients with an ISAR score of 3.
  - The screening tool was not originally developed to predict ICU stays.
- 30-day readmissions were the highest in those with an ISAR scores of 4 and 5.
  - Quality and care coordination efforts could be directed towards these patients for readmission prevention on the Trauma Service.

Discussion

- Patients with a Geriatric evaluation, who were older and scored a higher ISS
  - Had a shorter LOS by approximately 4 hours
    - Vital because it can be associated with decreased costs and increased patient satisfaction
  - In-hospital mortality decreased
    - More research is needed regarding the mortality of Trauma patients after undergoing a Geriatric evaluation.

Limitations

- More rigorous research design would be beneficial.
- The six-month period during which the Geriatric service was in the early stages of development, the use of the ISAR score was not included in the study time frame.
- The ISAR score can be challenging to obtain due to altered mental status or lack of family/surrogate presence.
- This study also did not verify the accuracy of the scores.
  - Could impact the outcomes associated with each score in addition to the outcomes related to patients that received Geriatric evaluations.
- Adherence to Geriatric recommendations and plan of care may impact outcomes.
- This study did not address what specifically is included in a Geriatric evaluation.
- Helpful to know which individual ISAR questions are most often answered “yes” to validate if the specific concerns were addressed during the evaluation.

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Questions?