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A Pilot Study Comparing Over and Under Triage Systems at a Center Pursuing Trauma Accreditation

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Introduction

Trauma centers are tasked with the complex role of providing appropriate care to each patient. Triage is typically used to ensure necessary resources are mobilized according to predetermined criteria. The Cribari Matrix Method (CMM) has been established as a standardized method to calculate Over and Under Triage (OUT) in trauma activations. The CMM depends in large part on the Injury Severity Score (ISS). Another trauma triage tool gaining in popularity is The Need For Trauma Intervention (NFTI). NFTI has been shown to have better model fit and stronger associations with appropriate resource utilization. We are seeking to improve our institutional OUT rates by comparing our institutional criteria with both CMM and NFTI. Our goal is to create institutional triage criteria which meets American College of Surgeon Committee on Trauma recommendation of under-triage <5% and over-triage <35%.

Methodology

This quality improvement project utilized a trauma database of state defined metrics. The trauma database generates “raw” OUT rates based on CMM. This “raw” CMM OUT rate was compared to calculations using institutional triage criteria and NFTI. Data was collected over the first 4 months of the institution’s period of pursuing trauma accreditation and compared descriptively.

Results

From July through October, the institution had 65, 73, 73 and 73 trauma patients per month, with 3, 6, 3, 3 classified by CMM as over-triage. The remaining 62, 67, 70 and 70 patients were used to calculate under-triage proportions. The under-triage rates (percent) as determined by “raw” CMM, institutional criteria and NIFT were as follows for July through October: 12.9/3.2/3.2, 10.5/3.0/3.0, 8.6/0.0/2.9, 7.1/1.4/2.9. Overtriage rates were: 66.7/0.0/66.7, 66.7/0.0/50.0, 100.0/0.0/100.0, 66.7/33.0/0.0.

Conclusions

This preliminary data shows that there are discrepancies in OUT rates between CMM, NFTI, and local institutional criteria. The low N of the dataset limits meaningful interpretation for overtriage. For under-triage, this single site pilot cohort shows some degree of agreement between NFTI and institutional criteria. The use of ISS, available only at discharge, may impact this use of CMM as a triage tool. Further study on the agreement between CMM, NFTI and individual institutional triage criteria may improve both resource utilization and patient outcomes.

	July	August	September	October
Under Triage Rate	12.9%	10.5%	8.6%	7.1%
Adjusted Under Triage Rate by Trauma Alert Criteria	3.2%	3.0%	0.0%	1.4%
Adjusted Under Triage Rate by NFTI Criteria	3.2%	3.0%	2.9%	2.9%
Over Triage Rate	66.7%	66.7%	100.0%	66.7%
Adjusted Over Triage Rate by Trauma Alert Criteria	0.0%	0.0%	0.0%	33.3%
Adjusted Over Triage Rate by NFTI Criteria	66.7%	50.0%	100.0%	0.0%

Table I. Adjusted Under and Over Triage Rates