

Establishing an evaluation tool for trauma team leader performance during trauma resuscitation

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ABSTRACT

Introduction: Trauma training is an important part of medical and surgical education. Evaluation of training is an essential part of medical education. A formal valid assessment method for trauma training is not available. The purpose of this study is to establish a formal and scientifically-based Trauma Team Leader Evaluation Tool.

Methods and Results: A literature review was conducted on the assessment of trauma team leaders. The available published studies were reviewed and assessed, as well as references on the principles and practice of assessment methods used in medical education. Input on points of assessment was obtained from trauma team leaders at the Hamilton General Hospital. An evaluation form was formulated with five domains, each containing five items. Definitions of the domains and items were clarified and attached to the form. The form was reviewed and revised by trauma team leaders of adult trauma and education leaders in pediatric trauma at Hamilton General Hospital and Health Science Education Program McMaster University and then finalized based on the discussed suggestions.

Conclusions: Assessment of trauma team leader performance is an important part of trauma training and feedback. Developing an assessment tool involves a comprehensive process that needs review, input, and participation from various sources related to trauma. More work to validate the tool will be needed to evaluate its utility.

Keywords: Trauma, teamwork, team leader, medical education, assessment methods

INTRODUCTION

Injury is a major cause of death and disability worldwide.¹ In 2010, trauma death was the fifth cause of mortality in all ages in the United States and accounted for 9% of global mortality.² For every death, it is estimated that there are dozens of hospitalizations and hundreds of emergency department visits. Therefore, there is an increasing demand to improve trauma care and service. Trauma care is a major part

of the health care provided worldwide and has developed significantly in the past few decades. Organized approaches to trauma prevention and treatment are needed to improve care, with one major aspect being better training of trauma personnel.

Trauma training programs and fellowships have steadily increased over time, and trauma training has become a growing part of surgical education and training. Trainees of all levels and with varying degrees of surgical background participate in trauma rotations. Measuring progress and evaluating training is an essential part of medical education, with several methods of evaluation being used.^{3,4} Some of these methods or tools are well designed and studied, while others, such as subjective non-systematic observation, are poorly-structured.

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There are no published formal evaluation tools to assess the performance of a Trauma Team Leader (TTL), in general or specifically during trauma resuscitation. Since resuscitation is the core activity of the trauma team and leader, evaluating this performance would assist in assessing training progress and efficiency level in trauma care. A direct observation assessment is a suitable method for this type of evaluation. It assesses the domains that are involved in TTL work (clinical skills, communication, teamwork, presentation skills, organization and work habits).⁵

This study was conducted to develop a tool to evaluate TTL performance during trauma resuscitation. This tool can then be used to assess the training progress of trauma trainees of various levels and has potential future application in assessing practicing TTL. We introduce our novel tool and discuss the methods involved in its development and its basic principles and concepts.

METHODS AND RESULTS

A PubMed search was conducted to review the available published studies related to TTL evaluation. The search was conducted using the key words “trauma”, “injury”, “care”, “service”, “team leader”, “trauma resuscitation”, “evaluation”, and “assessment”. The result of the search revealed three studies related to the main theme of TTL evaluation.

The first was a prospective study conducted by Sugrue et al which assigned a score to each team leader to assess his or her performance. The score was calculated by a panel of trauma management specialists, who assessed different categories of care performed during initial trauma resuscitation.⁶ The other two studies utilized video recordings of trauma teams to evaluate their performance retrospectively.^{7,8} While these studies helped analyze the quality of the trauma team’s performance, they did not provide a comprehensive tool that could assess overall TTL performance nor the level of training progress of trainees.

The project of establishing a TTL evaluation tool was discussed with the trauma staff and faculty of Hamilton

Health Sciences – General Site for input on both the process and aspects of evaluation. After a review of references on the principles and practice of assessment methods used in medical education, a draft of the general evaluation form was developed.^{9–11} Initial drafting was made by the trauma director, trauma surgeons, trauma fellows, trauma nurses, and ATLS instructors. This form consists of five domains: Critical Assessment, Communication and Leadership, Decision Making, Clinical Performance, and Teaching. Each domain contains 5 items that assist with scoring purposes, ranging from N/A-Non Assessable, 1-Poor, 2-Marginal, 3-Good, 4-Very Good, and 5-Outstanding. A description of each domain and details of its scoring criteria are attached to the evaluation form. The draft was reviewed with the trauma staff at Hamilton General Hospital and McMaster University Hospital, the faculty of McMaster University, trauma fellows, residents and nurses. The form was modified to implement the contributors’ suggestions for improvement to establish a final evaluation form, which is attached in Tables I and II.

CONCLUSION

There are no published evaluation tools to comprehensively assess trauma team leader performance to date. Based upon literature review, medical education performance assessment guidelines, and trauma faculty and personnel expert input, a comprehensive evaluation tool was formulated. This tool assesses the necessary skills of effective trauma team leaders, many of which lie outside of the domain of technical skills but have a vital role in trauma outcomes. The skills being measured are not only applicable to trauma surgery physicians, but also to physicians of any specialty that involves running trauma codes, particularly emergency medicine. Furthermore, the form is designed in such a way that any person with trauma experience is eligible to evaluate another. This assessment aims to provide valuable performance feedback and a means to measure progress, which enhances the learning experience of trainees in any type of trauma setting. Formal validation and assessment of the tool’s reliability will be the next step in utilizing the tool in medical education and clinical practice.

Table I. Trauma Team Leader (TTL) Evaluation form

Staff/Evaluator:.....

TTL:.....

Level of trainee/experience level.....

Date:.....

Criterion Score	Poor (1)	Marginal (2)	Good (3)	Very good (4)	Out-standing (5)	Not Assessable (0)
A- Initial Critical Assessment						
1- Promptly arriving to trauma resuscitation area						
2- Obtaining and sharing relevant info efficiently						
3- Analysing data						
4- Prioritizing management						
5- Reassessing as needed						
B- Communication & Leadership						
1- Introducing team and maintaining sufficient communication						
2- Directing and coordinating team activities						
3- Maintaining clarity of instructions						
4- Maintaining organized & quiet environment						
5- Maintaining calm demeanor						
C- Decision Making						
1- Interpreting and analyzing available data						
2- Using available resources and services						
3- Planning in a timely fashion						
4- Acting promptly when needed						
5- Maintaining awareness of limitations						
D- Clinical Performance						
1- Applying relevant protocols (ATLS, ACS...)						
2- Responding to findings accordingly						
3- Utilizing knowledge of trauma practice						
4- Practicing quality procedural skills						
5- Anticipating future interventions						
E- Medical Teaching						
1- Demonstrating awareness of learners						
2- Involving learners in suitable teaching moments						
3- Finding and presenting teachable material						
4- Following-up and answering questions						
5- Providing feedback to learners						

Table II. Descriptions of evaluation form criteria and grading

GRADING SCALE	
(1) poor	Consistently performing below standards of patient care. Serious improvement is required
(2) marginal	Occasionally missing important aspects of patient care; needs review/improvement
(3) good	Satisfactory performance in most patient care situations
(4) very good	Consistently performing safely and maintaining standards of patient care
(5) outstanding	Always performing and maintaining the highest standards of patients care
(0) not assessable	Unable to assess performance
A. CRITICAL ASSESSMENT	
1	Promptly arriving to the trauma resuscitation area to prepare for trauma management
2	Gathering information related to the trauma efficiently from different sources
3	Analyzing available data from history, clinical assessment and investigations to guide trauma management
4	Prioritizing the steps of management according to the assessment info and the patient's response to the initial resuscitation
5	Reassessing the patient status and modifying management as needed
B. COMMUNICATION AND LEADERSHIP	
1	Introducing self and other members to each other and maintaining proper communication during resuscitation
2	Delegating level-appropriate tasks to involved team members
3	Maintaining clarity of instruction in terms of speech volume and appropriate level of detail, specifying the person to receive the instructions, and ensuring closed loop communication.
4	Maintaining an environment that limits attending personnel to only those directly involved; limiting outside noise, and sequentially organizing various aspects of care
5	Maintaining a calm demeanor during high-stress situations
DECISION MAKING	
1	Interpreting the data and using this to determine the plan of management
2	Using the available resources (labs, imaging, procedural equipment) and specialty services (general, orthopedic and/ or thoracic surgery, neurosurgery and anesthesia
3	Tailoring the pace of performance according to the trauma severity and situation, and preparing for the subsequent steps in advance.
4	Supporting other members when time is critical
5	Awareness of any limitations in management, such as unavailability of a specialty service, some devices, blood products or medications

Table II. Descriptions of evaluation form criteria and grading (Continued)

CLINICAL PERFORMANCE	
1	Applying ATLS or other relevant protocols properly
2	Responding to all clinical findings as appropriate
3	Utilizing a broad and up-to-date knowledgebase of trauma practice and using evidence-based practice
4	Practicing quality skills while performing a variety of bedside procedures
5	Proactively anticipating the direction headed following initial resuscitation, preparing for potential additional interventions and resources that may be required
MEDICAL TEACHING	
1	Demonstrating awareness of the learners involved, and setting appropriate learning objectives for the given situation
2	Appropriately delegating roles and assignments according to the learner's level of experience and permissiveness of the situation
3	Sharing educational clinical findings with learners during appropriate teaching moments
4	Discussing the case with learners, and providing opportunities to answer questions
5	Giving feedback to the learners

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