What attributes define excellence in a trauma team? A qualitative study

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Background: Hospital trauma teams consist of a diverse spectrum of health care professionals who work together to deliver quality care. Although the qualities of a well-performing trauma team are often believed to be self-evident, there is little objective information about the most desirable personal and professional characteristics associated with quality trauma care. The aim of this study was to determine the traits and characteristics deemed of greatest value for a trauma team leader and a trauma team member in the adult trauma care setting.

Methods: Semistructured interviews were conducted with trauma team leaders and trauma team members at a tertiary Canadian trauma centre. Standard qualitative research methodology was used. Interviews were recorded, transcribed and analyzed via an inductive analysis approach.

Results: Thematic saturation was achieved after 5 interviews, and 6 further interviews were conducted to ensure that a breadth of trauma care disciplines were included. Six attributes were identified to be of greatest value for trauma team leaders: communication, role clarity, experience, anticipation, management and decisiveness. Four attributes were identified to be of greatest value for trauma team members: engagement, efficiency, experience and collaboration. We further characterized the language defining the ranking of performance for each of these attributes.

Conclusion: Results of this qualitative study involving an experienced and diverse spectrum of trauma team practitioners provide insight into the characteristics that are critical to establishing a "good" trauma team. These findings can be used to inform future determinations of the quality of trauma teams, the education of trauma practitioners and continuing medical education training and assessment tools.

Contexte : Les équipes de traumatologie des hôpitaux sont formées de professionnels de la santé de divers horizons qui travaillent ensemble pour offrir des soins de qualité. Bien que les attributs d'une bonne équipe de traumatologie soient souvent vus comme étant évidents, il existe peu de données objectives sur les caractéristiques personnelles et professionnelles les plus fortement associées à des soins traumatologiques de qualité. Cette étude avait pour but de déterminer les traits et caractéristiques les plus recherchés chez les chefs et les membres d'équipes de traumatologie pour adultes.

Méthodes : Nous avons mené des entrevues semi-structurées auprès de chefs et de membres d'équipes de traumatologie, dans un centre tertiaire de traumatologie canadien. Une méthode de recherche qualitative standard a été utilisée. Les entrevues ont été enregistrées et transcrites, puis analysées selon une approche inductive.

Résultats : Le seuil de saturation thématique a été atteint après 5 entrevues, mais nous avons mené 6 entrevues supplémentaires pour garantir une variété dans les disciplines représentées. Six attributs ont été relevés pour les chefs d'équipe de traumatologie : communication, clarté du rôle, expérience, anticipation, gestion et esprit de décision. Quatre attributs ont été relevés pour les membres de l'équipe : engagement, efficacité, expérience et collaboration. Pour chaque attribut, nous avons caractérisé avec précision les termes définissant la qualité des soins prodigués.

Conclusion : Les résultats de cette étude qualitative, qui rassemblait des professionnels de la traumatologie expérimentés et d'horizons diversifiés, mettent en lumière les caractéristiques essentielles à la mise en place d'une « bonne » équipe de traumatologie. Ils pourront servir dans l'évaluation des équipes, dans la formation des praticiens et à la création de cours et d'outils d'évaluation pour l'éducation médicale continue.

Injury is the leading cause of death for young people in both Canada and the United States, and it is a major cause of hospital admissions at all stages of life.^{1,2} Trauma centres are responsible for treating patients with potentially life-threatening injuries to prevent morbidity and mortality associated with trauma. The highly specialized health care practitioners who are responsible for treating such critically ill patients come from a variety of health care backgrounds and work together as a multidisciplinary team.³ These trauma teams work under high-stakes and time-sensitive conditions, despite typically having limited prior experience working together.⁴ For this reason, excellence in trauma team functioning is critical to ensure that optimal patient outcomes are achieved in trauma activations and resuscitations.

Although the qualities of a well-performing trauma team are often believed to be self-evident, there is little objective information about the personal and professional characteristics associated with quality trauma care. For instance, although it is well understood that strong leadership skills are particularly important in high-stress situations such as trauma care, the attributes that specifically define a strong leader have not been well investigated.⁵ Additionally, although the trauma team leader is a critical component of the trauma team and is often the focus of investigation, the attributes that make good trauma team members are also important and these have been less well characterized.

Given that the optimal leadership style and characteristics of trauma teams are largely unknown,⁴ the purpose of this study was to determine which attributes define excellence in a trauma team. Specifically, we investigated the traits and characteristics deemed of greatest value for trauma team leaders and team members from the perspective of a variety of health care practitioners working in trauma care. By investigating the specific language used to describe key traits and characteristics, this study achieves an important first step in developing objective measures to assess trauma team function.

METHODS

Data collection

Semistructured interviews were conducted with volunteer trauma team leaders and trauma team members at the Vancouver General Hospital in Vancouver, Canada. A multidisciplinary approach was used to identify trauma team leaders and trauma team members. Specifically, general surgeons, anesthesiologists and an emergency physician were interviewed as trauma team leaders. All interviewed trauma team leaders had trauma subspecialty training. Moreover, the trauma team leaders and team members included in this study all had experience participating in in-hospital trauma simulations, which are intended to improve trauma team dynamics.

In terms of the trauma team members, emergency registered nurses, trauma registered nurses and a respiratory therapist were interviewed. All interviews were conducted, audio recorded and transcribed by a single researcher (a medical student at the University of British Columbia [F.K.]) to ensure consistency of the interview method.

The final sample size of participants was determined using the concept of theoretical saturation, which is defined as the stage where no new themes arise from continuous sampling and analysis of data.⁶ Ethics approval was obtained from the University of British Columbia Behavioural Research Ethics Board and from the Children's and Women's Health Centre of British Columbia Research Ethics Board.

Data analysis

A type of inductive analysis known as thematic content analysis was used in this study to analyze the interview transcripts. This process of analysis involved 3 stages. In the first stage, themes that "emerged from the data" were identified by searching for repeating themes common among the transcripts.⁷ Themes were identified via open coding, a process by which the researcher reads each transcript and composes a summary statement or word to summarize elements discussed in the transcript. Exceptions to open coding are made if the interviewee has clearly strayed from the topic under discussion, in which case the researcher does not create a summarizing statement.

The second stage involved reviewing all of the summarizing statements and themes identified in the initial coding framework. From this, a consolidated list of categories was created to capture the emergent themes in a concise manner. Once the categories were identified, each transcript underwent a final review whereby the researcher allocated data from each transcript to the appropriate category. This step served as a confirmatory process to ensure that data from transcripts were appropriately reflected in the categories. The third stage was a peer review stage, which involved 2 other experienced researchers (A.C., A.S.) independently reviewing the transcripts, thematic categories and data analysis. This step was carried out to reduce the impact of lone researcher bias and to provide additional insight into the thematic development.⁷

RESULTS

Theoretical saturation was achieved after 5 interviews; 6 further interviews were conducted to ensure that a breadth of trauma care disciplines were included and that no new themes emerged. The total sample size was therefore 11 health care practitioners working in trauma care. Specifically, 3 trauma registered nurses, 2 general surgeons, 1 emergency physician, 2 emergency registered

nurses, 1 respiratory therapist and 2 anesthesiologists were interviewed. Among the 11 participants, 5 (45%) were women and 6 (55%) were men.

Team leader attributes

Six attributes were identified to be of greatest value for trauma team leaders: communication, role clarity, experience, anticipation, management and decisiveness (Table 1). Interestingly, the themes identified by surgical and nonsurgical trauma team leaders were similar. Additionally, the themes identified by male and female health care practitioners were similar. No appreciable differences were noted between male and female interviewees regarding the attributes that are valued in trauma team leaders.

The language used by health care practitioners in each interview was further analyzed for any commonalities. Although there was variability in how respondents described each attribute, via the open coding technique it was discovered that common descriptive terms were emphasized in the interviews. For communication, respondents emphasized the terms “close-looped,” “clear” and “directive.” For role clarity, respondents emphasized the importance of “clear leadership handover” and “responsibilities made clear.” For experience, respondents emphasized “knowledge,” “expertise” and “ability to prioritize.” For anticipation, “situational awareness” and “sees the bigger picture” were emphasized. For management, “delegation of tasks,” “controlled noise and chaos” and “minimize staff anxiety” were emphasized. Finally, for decisiveness, “clear and confident decision-making” was emphasized. In terms of confident decision-making, both trauma team members and trauma team leaders described the importance of timely decision-making.

Team member attributes

Four attributes were identified to be of greatest value for trauma team members: engagement, efficiency, experience and collaboration (Table 2). Common terminology was also found in respondents’ descriptions of attributes for trauma team members. For engagement, the term “focused” was emphasized. For efficiency, “reports back to the team leader” and “minimizes delays” were emphasized. For collaboration, “respect for team leader and team members” was emphasized. Team members described the importance of a trauma team leader who respects team members’ opinions, which creates an environment in which team members feel comfortable voicing their concerns in a resuscitation. Experience was described in similar terms in relation to both team members and team leaders. Identifying the attributes of greatest value and the descriptive terminology used is critical

Table 1. Attributes most valued in trauma team leaders

Attribute	Common descriptive terms
Communication	Close-looped
	Clear
	Directive
Role clarity	Clear leadership handover
	Responsibilities of self and others made clear
Experience	Knowledge
	Expertise
	Ability to prioritize
Anticipation	Situational awareness
	Sees the bigger picture
Management	Delegation of tasks
	Controlled noise and chaos
	Minimize staff anxiety
Decisiveness	Clear and confident decision-making

Table 2. Attributes most valued in trauma team members

Attribute	Common descriptive terms
Engagement	Focused
Efficiency	Reports back to team leader
	Minimizes delays
Experience	Knowledge
	Expertise
Collaboration	Respect for team leader and team members

to objectively determining what attributes define excellence in a trauma team.

DISCUSSION

It has been well established that effective leadership in trauma teams is important to ensure optimal team functioning and patient outcomes. In particular, communication is a widely studied attribute, with several studies linking effective communication with team performance and medical outcomes.^{3,8–12} However, there have been few investigations into the many other attributes that are critical components of an excellent trauma team. In a recent systematic review investigating the “nontechnical” performance of hospital action teams, it was determined that most tools currently in use assess only 4 domains: communication, leadership, teamwork and situational awareness.¹³ The several other more specific attributes discovered to be important to high-functioning trauma teams in this study (role clarity, management, decisiveness, engagement, etc.) are rarely independently assessed in trauma teams. Moreover, the systematic review found that the current assessment tools for team functioning lack field-testing and evidence of psychometric validity.¹³ It is therefore vitally important to assess an adequate breadth of attributes necessary for high-functioning trauma teams to create assessment tools that truly measure the intended objective accurately.

The findings of this study are significant as they define a breadth of attributes identified by trauma practitioners as qualities that are needed to compose an excellent trauma team. There is currently a lack of research on the specific terminology used by trauma practitioners to define the attributes they deem of greatest value in trauma care. By investigating the specific language used to describe key attributes, this study achieves an important first step in developing objective measures to assess trauma team functioning. Future studies may use quantitative techniques such as surveyed preferences or discrete choice experiments to quantify the value awarded to each attribute, in efforts to determine which ones are most important. Findings from these investigations can then be used to determine how to create the most effective initial education and continuing medical education for practitioners working in trauma care.

A similar study conducted in Vancouver at the BC Children's Hospital identified traits of trauma team leaders that were valued by members of a pediatric trauma team¹⁴ (attributes valued in trauma team members were not investigated in that study). The attributes valued in trauma team leaders that overlapped in the 2 studies were communication, decisiveness and role clarity. The pediatric study found that collaboration, organization and protocols were also valued attributes, whereas we found that role clarity, anticipation and management were additional traits that were valued.

Limitations

A key limitation of our study is that the interviews were all conducted at a single hospital. Environmental factors such as the culture of the hospital and the geographic region in which it was located probably influenced the selection of attributes deemed to be of greatest value and the language used to describe them. For this reason, it is uncertain whether the findings are applicable in other geographic areas where cultural influences may yield different results. To further establish consistency among the attributes valued in trauma team members and trauma team leaders, as well as to reduce the impact of hospital culture and geographic influences, future studies should investigate this topic in other parts of the world to determine how widely applicable the findings are.

CONCLUSION

The results of this qualitative study, which involved an experienced and diverse spectrum of trauma team prac-

tioners, provide insight into the characteristics that are critical to establishing an excellent trauma team. These findings can be used to inform future determinations of the quality of trauma teams, the education of trauma practitioners and continuing medical education assessment tools.

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Contributors: All authors designed the study. F. Kassam, A. Cheong and A. Singhal acquired and analyzed the data and wrote the article. All authors reviewed the article and approved it for publication. All authors agreed to be accountable for all aspects of the work.

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