Tools for Assessment of Communication Skills of Hospital Action Teams: A Systematic Review

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BACKGROUND: Hospital action teams comprise interdisciplinary health care providers working simultaneously to treat critically ill patients. Assessments designed to evaluate communication effectiveness or "nontechnical" performance of these teams are essential to minimize medical errors and improve team productivity. Although multiple communication tools are available, the characteristics and psychometric validity of these instruments have yet to be systematically compared.

OBJECTIVE: To identify assessments used to evaluate the communication or "nontechnical" performance of hospital action teams and summarize evidence to develop and validate these instruments.

METHOD: A literature search was conducted using MEDLINE/PubMed database to identify original articles related to assessment of communication skills in teams working in acute care medicine not exclusive to emergency room, operating room, prehospital air and ground transport, or code blue/rapid response resuscitations.

RESULTS: Ten communication assessment tools were identified. Six tools (60%) were designed to measure communication performance of the whole team, whereas 4 tools (40%) were created to assess individual team member's communication skills. Regardless of the type of analysis, the most commonly assessed behavior domains were Leadership, Teamwork, Communication, and Situation awareness. Only 1 of 16 articles describing a particular communication assessment tool reported all the validation criteria, other authors underreported efforts to validate their instruments.

CONCLUSION: A number of tools designed to measure the communication or "nontechnical" performance of hospital action teams are available. Unfortunately, limited reported validity evidence may hamper the utility of these tools in actual clinical practice until further validation studies are performed. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: communication, resuscitation, trauma, teamwork, tools, validity

COMPETENCIES: Team Flow, Team Relationships, Team Space Negotiation, Team Noise Management, Team Listening, Team Emergent Leadership

INTRODUCTION

Hospital action teams comprise interdisciplinary health care providers who assemble and disassemble quickly to treat critically ill patients.[1-3] These action teams typically include 2 or 3 physicians (e.g., anesthesiologist, medical or surgical resident/attending), a qualified nurse or physician assistant, and ancillary /support staff (e.g., radiographer or EKG technician). Action teams are health care providers who have various medical training backgrounds and experiences and who function together as a single unit during medical emergencies. Trauma teams summoned to the emergency room to treat multiple trauma injuries and code blue resuscitation teams are both examples of hospital action teams.[4-7] Effective interdisciplinary teamwork is essential in emergency settings as medical care is now more specialized, and the complexity of skills required to treat critically ill patients continues to expand.[8-10]

Effective communication is therefore key to ensuring coherency of hospital action teams. Adapting to the chaotic

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nature of critical care medicine often greatly interferes with team member coordination and collaboration. Furthermore, recent enforcement of duty-hour regulations, staffing limitations, and multiple patient care handoffs have all contributed to this phenomenon.[11] Consequently, treating critically ill patients requires strategic navigation among multiple team communication barriers embedded in the emergent care environment.

Although medical errors attributed to miscommunication are well documented, uncertainties exist over measurement of interdisciplinary communication skills in emergency care settings and how these "nontechnical" or "soft" skills may contribute to more positive patient outcomes.[8,12-14] In the era of evidence-based medicine, there is a great need to use validated assessment tools that can reliably measure hospital action teams' performance to provide means for team feedback that promotes staff development and patient safety. We, therefore, conducted this systematic review to identify available assessments designed to measure communication performance of teams working in emergency care settings, including trauma emergency room, air-life transit support, operating theaters, and code blue activations. Additionally, this review offers comprehensive descriptions of the psychometric properties identified in these communication assessment tools.

METHODS

Literature Search

We queried MEDLINE/PubMed for available English language literature between January 2001 and December 2015, to identify articles concerning evaluation of communication skills in hospital action teams. The literature search was conducted with the assistance of an expert librarian at our home institution. Search syntax was initially developed using a combination of 79 keywords, including Medical Subject Headings and text words. Following consensus among authors, a 23-term list was generated for the final search. Search terms included "air ambulances," "assessment tools," "attitude of health personnel," "code blue," "communication," "cooperative behavior," "critical care," and "emergency service" (full search list can be found in Appendix 1).

Studies were screened for relevance based on their titles and abstracts. Studies evaluating "nontechnical" skills (e.g., communication, teamwork, and workflow) in both simulated and human settings were included. Studies only assessing clinical performance without evaluating communication skills were excluded. Case reports, letters to the editor, conference abstracts, meeting proceedings, and expert opinions or reviews were also excluded. Full-text review of articles satisfying inclusion criteria was then performed. Bibliographies of retrieved articles were manually searched for further relevant articles. Finally, articles

were segregated by level of evidence as prescribed by Oxford Center for Evidence-Based Medicine Levels of Evidence.[15,16]

Data Extraction

Data were collected using data abstraction form, created a priori. Any disagreement was resolved by consensus between authors. Data pertaining to tool characteristics, implementation, and validity were abstracted. Tool characteristics included year of publication, country of origin, study design, number of behavior domains, and assessment tool scoring system. Implementation referred to the target group (i.e., group of health care providers the tool is designed to assess) and setting of the experiment (i.e., simulated, live, or video resuscitations). For example, was the tool designed to measure communication performance and interdisciplinary team in any emergency care setting or designed to measure performance within specific specialties such as tools designed for anesthesiologists, surgeons, or emergency room (ER) trauma team providers? Furthermore, was the tool intended to measure the performance of the team as a whole (team centric) or to evaluate performance of individual members within different hospital action teams (individual centric)? Summary results were tabulated and presented. If a study did not explicitly report an outcome, it was not included in the respective analysis.

Data Analysis

The validity and reliability (psychometric strength) of communication assessment tools were analyzed. Validity refers to the ability of a tool to measure what is supposed to measure, whereas reliability refers to the reproducibility or consistency of results across various conditions.[17-19] Because of the heterogeneity of construct domains of communication assessment tools and their reporting methods, a meta-analysis was not feasible. For reporting psychometric properties of individual tools, we followed the criteria described by Valentine et al.,[20] which are as follows:

Content validity: It refers to descriptions of tools' items selection. Experts in the field usually determine items that best represent construct being measured. It follows a systematic and documented approach of steps taken or criteria thought for test scale items selection. This process is to safeguard researchers from adding items that they think is important rather than including items measuring the true dimensions.[17,21,22]

Construct validity: It refers to the ability of items in the test scale to move together thus to reflect the dimensionality of the scale as expected.[20,23] It is usually an indication of construct strength when measuring the concept it is designed to measure. Construct validity is, therefore, good for measuring variation in performance between experts and novice groups.