Crisis Management – A fresh look

Veronica Gin
Auckland City Hospital

Abstract

In modern day medicine, there is increasing emphasis on the delivery of quality healthcare by multidisciplinary teams. During operating room crises, our teams need to deliver potentially life saving care by optimally implementing standard techniques of diagnosis and treatments. Maintaining situational awareness over our environment, equipment and team, under stress and time pressure in a dynamic and complex environment remains difficult[1]. Effective teamwork underpins successful crisis management; including team leadership, mutual performance, backup behavior, adaptability and team orientation[2]. Mutual trust, closed-loop communications and shared mental models underpin these.

Despite our increased understanding of delivering evidence based medicine, human factors and teamwork, there are still going issues in delivering optimal crisis management. It is well documented in the literature that communication failures and poor team culture contribute significantly to medical errors and compromises to patient safety and outcomes[3-5].

Therefore, there is a movement to pro-actively prevent crisis events from occurring and to introduce organisational systems that allow teams to perform optimally. There is emphasis on delivering education to build teamwork and to identify latent threats or hazards in our processes and systems that can compromise patient care. Changes in our organizations' culture and teamwork though protocols & procedures, such as checklists, briefings and debriefings may also prove beneficial.

Education – team training and the use of simulation

The aim of team training through simulation is to enhance patient safety through avoiding direct exposure of patient to harm. Simulation serves 4 general purposes:- education (knowledge and skill acquisition), assessment, research, and health system integration (organizational processes and structure)[6]. Team training has shown to significantly improve clinical care processes and lead to improved patient outcomes[7]. However, access by entire operating room teams may be prohibitive in certain workplaces. The transference of learning into the workplace through in-situ simulation may overcome these barriers. In-situ simulation increases fidelity (both physical and functional) and it has the potential to drive individual, team and organizational learning[8]. A great benefit, not necessarily able to be tested through exercises in the simulation centers, is identification of latent threats in the clinical environment.

However, limitations of in-situ simulations, include:-

- Simulations need to fit the needs of an area
- Requires expert simulation staff & equipment
- Resource intensive - time, location, cost
- Need to allow time for briefing and debriefing
- Quality improvement measures need to be accounted for after the scenario
  - Individual learning of skills
  - Changes in organizational process and structure

Organisational: Supporting teamwork through protocols, procedures and culture change

Checklists:

Emergency manuals have been available many years, but generally regarded as reference resources. There has been renewed interest to modify them such that they can be used during a critical event by the operating room team as a cognitive aid to remember essential steps of crisis management and as a communication tool.

Crisis checklists therefore are typically a list of action items arranged in a systematic manner. The checklists help identify the presence/absence of essential steps to ensure all are considered or completed, or can act as verification after completion of a task[9]. Therefore it can aid refractory situation recovery. The use is not only restricted crisis events, but can be used in pre-crisis preparation/education and post-crisis debriefing/event review[10] (see Figure 1).

Recently, developed checklists were validated through a high fidelity simulator setting by 17 operating teams in 106 simulated surgical-crises[11]. A reduction of 75% in the failure to adhere to lifesaving processes was less common when checklists were available (see table 1). Every team performed better with checklists. There was high acceptability of the checklist use as reported by 97% of participants who would want checklist used on them if they were the patient.

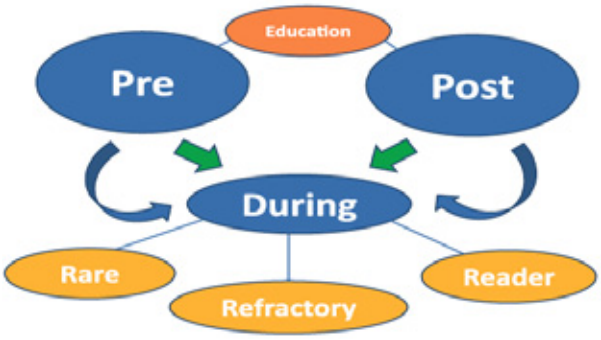

Figure 1. Clinical uses of emergency manuals. The double arrows from "Pre" and "Post" to "During" emphasize that both content and format familiarity are increased when emergency manuals are utilized for educational review. During a crisis, specific categories of events may be appropriate for emergency manual consultation in particular ways.

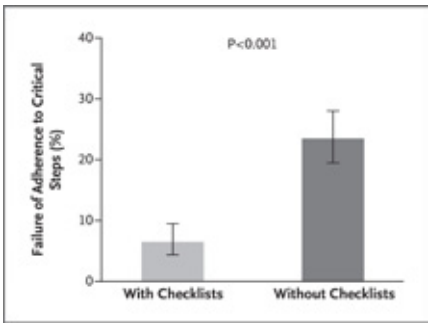

Table 1. Association between Use or Nonuse of Operating-Room Crisis Checklists and Failure to Adhere to Critical Steps in Management. The use of checklists during operating-room crises resulted in nearly a 75% reduction in failure to adhere to critical steps in management.

A reader, who reads out-loud the essential critical steps can aid adherence to critical steps. When tested in a simulator based, the use of a reader ensured that all critical actions were performed in comparison to simulated events in comparison to the absence of a reader[12].

Benefits of crisis checklists [9,10]:

- Error reduction
- Aid memory recall, standardisation, best practice adherence
- Promote effective teamwork & communication
- Shared mental model & Closed-loop communication
- Potentially reduce morbidity and mortality

Barriers to adoption in the operating room [9,10]:

- Operationally
  - Difficult to standardise certain processes
  - Disruption to workflow
  - Checklist fatigue
  - Implementation issues – creation, familiarization, use
  - Introduction of errors by choosing the wrong checklist
- Culturally
  - Limits autonomy and admission of "weakness"
  - Limited evidence on effects on teamwork
  - Limited evaluation against patient outcome

Briefing and debriefing:

Briefing and debriefings are verbal exchanges to help creating a shared mental-model. It intends to build teamwork, improve communication and reduce errors. During briefings, all patients are discussed before the list starts with the entire team to identify potential problems, preventable harm and allow pre-planning for events. Debriefings assess what went well, challenges and potential improvements[13].
The successful introduction of briefing and debriefings has been reported to reduce the number of non-routine events[14], wrong site surgeries[15], subjective benefits to teamwork and perceptions of safety culture. Another study also reports increased theatre efficiency and reduction in unexpected delays[16].

Similarly to checklists, successful implementation requires planning and education sessions before the techniques are integrated. Sustained and consistent use relies on strong leadership by clinical champions[13].

Conclusion:

Effective teamwork and communication are vital components to successful crisis management. The shift on emphasis currently in crisis management is on delivering better education and communication tools in order to build teamwork, promote more effective communication, and to identify latent threats and hazards in our processes and systems. Activities such as in-situ simulation and tools such as checklists, briefings and debriefings have been shown to have positive effects on the performance of teams, both functionally and culturally. However, none of these are easily implemented and require resources, local champions and leadership for their sustainability and success in the workplace.

References:

1. Gaba DM, Fish KJ, Howard SK. Crisis management in anesthesiology. New York: Churchill Livingstone; 1994.
2. Salas E, Sims D, Burke CS. Is there a big five in teamwork? Small Group Res. 2005;36:555–99.
3. Lingard L, Espin S, Whyte S, et al. Communication failures in the operating room: an observational classification of recurrent types and effects. *Qual Saf Health Care* 2004;13:330-334
4. Sutcliffe, KM, Lewton E, Rosenthal MM. Communication Failures: An Insidious Contributor to Medical Mishaps. *Acad Med* 2004;79:186-94
5. Greenberg CC, Regenbogen SE, Studdert DM, et al. Patterns of Communication Breakdowns Resulting in Injury to Surgical Patients. J Am Coll Surgeons 2007 204(4):533-40
6. Schmidt E, Goldhaber-Fiebert SN, Ho LA, McDonald KM. Simulation Exercises as a Patient Safety Strategy A Systematic Review. Ann Intern Med. 2013;158:426-432.
7. Weaver SJ, Dy SM, Rosen MA. Team-training in healthcare: a narrative synthesis of the literature. *BMJ Qual Saf* 2014;23:359-72.
8. Rosen MA, Hunt EA, Pronovost PJ, Federowicz MA, Weaver SJ. In situ simulation in continuing education for the health care professions: a systematic review. J Contin Educ Health Prof. 2012 Fall;32(4):243-54
9. Hales BM, Pronovost PJ. The checklist--a tool for error management and performance improvement. J Crit Care 2006 Sep;21(3):231-5.
10. Goldhaber-Fiebert SN, Howard SK. Implementing emergency manuals: can cognitive aids help translate best practices for patient care during acute events? *Anesth Analg*. 2013 Nov;117(5):1149-61
11. Arriaga AF, Bader AM, Wong JM, et al. Simulation-based trial of surgical-crisis checklists. *N Engl J Med* 2013;368:246-253
12. Burden AR, Carr ZJ, Staman GW, Littman JJ, Torjman MC. Does every code need a "reader?" improvement of rare event management with a cognitive aid "reader" during a simulated emergency: a pilot study. *Simul Healthc* 2012 Feb;7(1):1-9
13. Health Quality & Safety Commission New Zealand. 2014. *Checlists, briefings and debriefings: An evidence summary.* URL: http://www.open.hqsc.govt.nz/surgery/publications-and-resources (Accessed 16/7/2014)
14. Einav Y, Gopher D, Kara I, et al. Preoperative briefing in the operating room: shared cognition, teamwork, and patient safety. *Chest* 2010;137(2):443-449.
15. Leonard M, Graham S, Bonacum D 2004. The Human Factor: The critical Importance of Effective Teamwork and Communication in Providing Safe Care. *Qual and Safety in Health Care* 13:85-90.
16. Bethune R, Sasirekha G, Sahu A, Cawthorn S, Pullyblank A. Use of briefings and debriefings as a tool in improving team work, efficiency, and communication in the operating theatre. *Postgrad Med J* 2011 May;87(1027):331-4.