

How Surgical Trainees Handle Catastrophic Errors: A Qualitative Study

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OBJECTIVE: Surgical trainees are often subject to the negative consequences of medical error, and it is therefore important to determine how trainees cope with error and to find ways of supporting trainees when catastrophic events occur. This article examines how trainees interpret catastrophic surgical outcomes and ways to provide support for trainees who have experienced catastrophic events.

DESIGN: Totally 23 semistructured interviews were conducted with surgical trainees. Interviews were conducted in English and subjected to modified thematic analysis.

SETTING: A tertiary care hospital in Toronto, Canada.

PARTICIPANTS: Interviews were completed with 23 surgery residents. Potential participants were recruited through communications via the Department of Surgery and volunteered to take part in the study.

RESULTS: Totally 5 themes emerged: (1) catastrophic errors usually represent system deficiencies; (2) catastrophic events provide lessons for future practice; (3) many trainees did not feel comfortable speaking with the surgical staff; (4) counseling services should be offered to help a subset of trainees; and (5) the culture of surgery may act as a barrier to trainees seeking help.

CONCLUSIONS: This study demonstrates the importance of providing support for the emotional needs of surgical trainees who have experienced catastrophic surgical errors and the continued need for mentoring by staff surgeons. (*J Surg* 72:1179-1184. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: medical error, surgical education, qualitative study, trainee support

COMPETENCIES: Interpersonal and Communication Skills, Patient Care, Systems-Based Practice

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INTRODUCTION

Interest in medical errors rose significantly following the 1999 Institute of Medicine report, which stated that up to 100,000 deaths in the United States may have resulted from medical errors, making it the eighth leading cause of death.¹ This expectedly led to increased calls for improved patient safety from both the medical community and the general population.²⁻⁴ However, medical errors are still common despite concerted efforts at preventing them.^{2,4-7} Most of these errors are described as preventable, some are regarded as inevitable, and approximately 1% to 3% of medical errors result in adverse effects.^{3,4,8,9}

A medical error can occur at any stage of patient's care and is defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. Medical errors include errors in technique, judgment, drug administration, delays in the operating room, diagnostic errors, incomplete hospital record keeping, and many more.² Errors that result in injury are referred to as preventable adverse events¹ and can be termed catastrophic when they result in serious harm or death. Such errors include the rare but devastating wrong-side or wrong-level surgery.^{10,11}

When medical errors occur, attention is understandably and appropriately focused on the patient and their relatives, described as the first victims.¹²⁻¹⁴ The involved health care providers are described as the second victims, and usually receive little or no attention regarding how to cope with the emotional stress to which they are subjected from the error.^{7,12,13} There are only a few studies that have attempted to look at the responses of physicians to the occurrence of medical errors^{2,3,12,15,16} and even fewer studies have evaluated the response of trainee physicians to medical errors with most of these focused on trainees in internal medicine, family medicine, and emergency medicine.^{7,9,17,18} There is no study that has evaluated the responses of surgical trainees to medical errors as a homogenous group. This group is unique in that a large part of their training is technical in nature, putting them at risk of technical errors (in addition

to the risk of other type of errors), which have been found to constitute approximately 15% to 28% of errors recorded in surgical patients, a patient subset that is documented to be more prone to medical errors compared with other patient subsets.²⁻⁴

This study aims to understand the responses and coping strategies of surgical trainees to catastrophic events resulting from medical errors and to recommend appropriate supports for them, given the possible profound implications of these events to the health and future practice of these trainees.

METHODS

Study Design

Qualitative semistructured interviews were conducted with surgical trainees in the Department of Surgery, University of Toronto. Semistructured interviews are distinct from structured interviews because the interviews are open, allowing interviewees to explore a broader range of topics instead of restricting answers to a standard set of questions. The trainees were at different levels of training ranging from first year (postgraduate year 1) residency to postresidency clinical fellowships.

Data Collection, Sample Size, and Analysis

Totally 23 semistructured, open-ended interviews were conducted with resident trainees or postresidency clinical fellows in the Department of Surgery at the University of Toronto. Interviews were conducted by J.A.B. Potential participants were informed of the study either by word of mouth or through email exchanges within the Department of Surgery. Self-selected participants were informed of the objectives of the study, expectations in terms of publication, and the use of quotations from transcripts, and any risks or benefits that might be incurred by participants in the study. Written informed consent was then obtained. There were no specific exclusion criteria.

Although interviews were based on an interview guide (Appendix 1), questions were open ended so that themes could be more fully explored. Totally 23 interviews were completed, a number that is sufficient to achieve data saturation, a qualitative research concept to describe the point at which no new themes arise during successive interviews.¹⁹ All interviews were conducted in English.

Interviews were audio recorded and demographic data including surgical specialty, level of training, age, sex, ethnicity, religion, and marital status were collected (Table 1). Audio transcripts were generated and analyzed using NVivo10 software. The transcripts of the audio files were analyzed by open and axial coding, which breaks down information into common ideas and groups the data according to overarching themes,¹⁹ and analyzed by the authors.

Research Ethics

All data gathered for this study were kept strictly confidential. The audiotapes and anonymous transcriptions were kept in a secure location. Participation in the study was completely voluntary. The study was approved by the University Health Network Research Ethics Board.

RESULTS

Demographic Characteristics

The participants' demographic data are represented in Table 1. There were 14 residents and 9 postresidency clinical fellows. Neurosurgery and general surgery trainees constituted approximately 87% of the participants. The male:female ratio was 2.3:1. The age range was 27 to 38 with a mean age of 32 years. Our cohort had equal representation of single and married individuals. The participants were from varied ethnic and religious backgrounds. The themes are presented, with illustrative quotes in italics.

Catastrophic Errors Often Represent System Deficiencies Rather Than Individual Errors

Many participants thought that catastrophic errors usually result from a summation of mistakes within a flawed system rather than isolated individual error. One of the major barriers cited to preventing catastrophic error is the hierarchical nature of medicine, which often creates an

TABLE 1. Demographic Characteristics of Participants

Characteristic	Category	Value
Age (y)	Mean	32
	Range	27-38
Sex	Male	16
	Female	7
Specialty	Neurological surgery	12
	General surgery	8
	Orthopedic surgery	1
	Vascular surgery	1
	ENT	1
Level of training	Resident year 2	1
	Resident year 3	8
	Resident year 4	3
	Resident year 5	2
	Clinical fellow	9
Marital status	Married	11
	Single	12
Religion	Christian	10
	Jewish	3
	Muslim	3
	Atheist	2
	Unidentified	5
Ethnicity	White	12
	Asian	4
	Arabic	3
	Other	4

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