
Preface

“The last part of surgery, namely operations, is a reflection on the healing art; it is a tacit acknowledgment of the insufficiency of surgery. It is like an armed savage who attempts to get that by force which a civilized man would get by stratagem.”

—Lectures on the Principles of Surgery at St. George’s in London, John Hunter, 1786

The field of surgery and surgical illness care has developed faster than nearly all other fields in medicine. Although the fundamental biological substrates contributing to surgical disease are far from being completely understood and there are great variations in the manifestations and complexity of illnesses, there are, nevertheless, well-established treatment options for correction and palliation of most medical conditions and the associated pathophysiology is, generally, well understood. In recent years, global expenditures for health have risen substantially, particularly for infectious diseases. Although conditions amenable to surgery account for 28 % of the global burden of disease, the external funds directed toward global surgical delivery are low. Given the large global demand for surgical care and the crosscutting nature of surgery, scale-up of basic surgical services is crucial to strengthening health systems worldwide.

It seems, however, that despite unprecedented levels of spending on surgical care, preventable medical and surgical errors have not been reduced, uncoordinated care continues to frustrate patients, caregivers, and providers, and healthcare costs continue to rise. There are, of course, many possible factors at the root of these conditions, including the inexorable and ongoing introduction of new technologies that alter rather than improve systems of care, the lack of engagement of frontline staff in strategic decision-making and change, the lack of appreciation for the complex socio-technical challenges in the operating room, and the limited but evolving ability to collect and analyze meaningful clinical data as applied to quality and safety metrics.

High reliability—or consistent performance at high levels of safety over prolonged periods—is a hallmark for non-health-related, high-risk industries, such as aviation and nuclear power generation. Moving surgical care from low to high reliability is centered on supporting and building a culture of trust, transparency, and psychological safety among surgical team members. This remains a major obstacle in moving healthcare toward safer, high-valued care. In the face of health reform and increased competition in the market, moving to high reliability requires adopting and supporting a culture



Fig. 1 High-reliability organizations and their organizational culture*

that appreciates the relationships among a variety of organizational and technical risk factors and their effects on patient harm and procedural inefficiency. This concept (Fig. 1) underscores the central role of creating an organizational culture of safety that enables improving surgical safety and quality and providing high value surgical care. This requires that clinicians acknowledge their primary responsibility to care for patients and their families as well as to manage processes for optimization, standardization, and continuous measuring and monitoring of outcomes.

This book focuses on safety, quality, and reliability along the surgical health continuum, particularly the perioperative environment with its unique socio-technical issues and challenges. The book is designed to grow a larger appreciation for what brings surgical clinicians joy and supports their surgical expertise and how other experts can better design tools and systems that can better meet clinician’s needs. While it is intended as a “go-to” resource for all healthcare professionals that interact with surgical patients, it is primarily designed for the frontline practitioner, those at the “sharp end.” The strong interprofessional and cross-disciplinary orientation of this book is by intentional design and is organized using a “systems” framework throughout its pages using the conceptual model depicted (Fig. 2.)

There is worldwide fascination and concern with what happens in the operating room, fueled by well-publicized breakthroughs, feats of technology, but also investigations, inquiries, and sensational media. More recently, apart from the occasional new gadgets developed to be used on patients, attention has been directed at high variability and suboptimal surgical results. A consistent theme in safety inquiries is that many staff, patients, and managers have raised concerns previously about the unsafe conditions under which care is provided to patients. For example, the events surrounding the Veterans Health Affairs scheduling affair, UK Bristol Royal Infirmary, the Japanese Gunma Hospital Inquiry and the Canadian Manitoba Healthcare inquiries—all came to light thanks to courageous whistleblowers—highlight the importance of climate of safety in which engaged leaders and clinicians appreciate

*The more I know, the less I sleep, Global perspectives on clinical governance. Lead author Marc berg, Paul Barach co-author, KPMG Global Health Practice. December 2013.

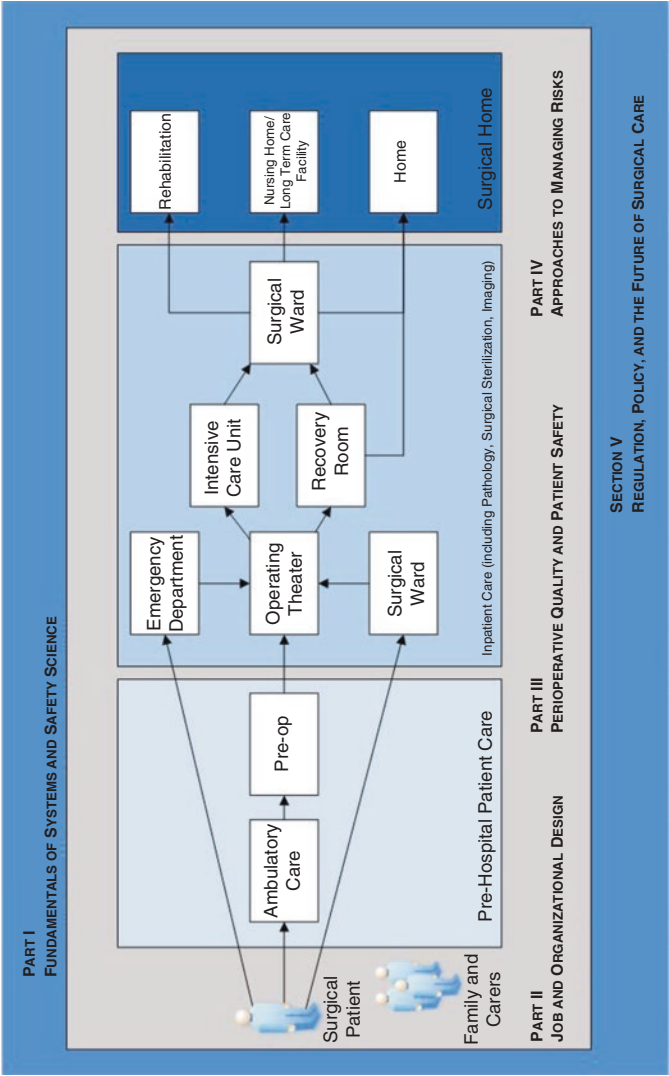


Fig.2 Conceptual model.

the impact of human factors and systems effects in improving outcomes in complex surgical procedures.

Several factors have been linked to poor outcomes in surgical care including low institutional and surgeon- or operator-specific volumes, case complexity, team coordination and collaboration, communication across elements of care, clunky technology and human machine interfaces, and systems failures. Safety and resilience in these organizations can be ultimately understood as a specific characteristic of the system—the sum of all its parts plus its design, relationships, and interactions. Further, many regulatory and government agencies are examining more closely the impact of procedural volume, management of risk and mitigation strategies, and environments of care on the outcomes of surgery in the field. Delivering reliable surgical care is complex, challenging, and expensive and requires an “all hands on deck” approach. The need for heightened situational awareness, heightened communication practices, and an emphasis on the potential for failure should be essential characteristics of the surgical workforce.

The expanding scope of procedures and technology in surgery adds exponential complexity which is highly dependent on a sophisticated organizational structure, the coordinated efforts of a team of individuals, high levels of cognitive and technical performance, and robust and reliable communications. Performance and outcomes have been shown to depend on complex individual, technical, and organizational factors and the interactions among them. These shared properties rely on the specific context of complex team-based care, the acquisition and maintenance of individual technical and nontechnical skills, the role and consequences of technology, and the impact of working conditions on team performance.

The study of human factors is fundamentally about understanding how to optimize socio-technical systems and the complicated relationship between people, tasks, and dynamic environments. An organizational accident model proposes that adverse incidents be examined both from an organizational perspective that incorporates the concept of active and latent conditions and from an individual perspective that considers the cascading nature of human error. Although a particular human action or omission may be the immediate or suspected cause of an incident, a closer analysis usually reveals a preceding series of events and departures from safe practices, usually influenced by the working environment and the wider organizational context and working conditions.

Performance and outcomes depend on complex individual, technical, and organizational factors and the interactions among them. Interventions to improve quality and strategies to implement change should be directed to improve and reduce variations in care and outcomes. To achieve these objectives, it is imperative there be an appreciation of the relevant human factors on the ground, including an understanding of the complexity of interactions between the:

- technical task
- treatment environment (noise, interruptions, distractions, etc)
- consequences of rigid hierarchies within the staff
- adequacy and completeness of briefing and debriefing
- cultural norms that resist change

In addition, the evolving regulatory environment employs strategies such as public reporting and financial penalties for underperformance. Proscriptive rules, guidelines, and checklists have the potential to raise awareness and prevent harm; however, to provide a safe system for patients and their families, we need to understand and improve systems, rethink design and work practices, and sustain a nimbleness or innovation that supports developing resilience to recover from adverse events and to predict and prevent future events.

We believe that innovation in surgical patient care is best designed in concert with those on the front lines of healthcare delivery—patients and clinicians—and by incorporating relevant knowledge from other scientific disciplines such as operations research, organizational behavior, industrial and human factors engineering, and psychology. Our focus in this book is to bring even more scientific discipline and measurement to the design, oversight, and measurement of surgical care to best engage all clinical and administrative healthcare professionals.

The editors feel that the ideas in this book could not be timelier and we are indebted to the wonderful contributions from surgical leaders and experts across many disciplines from around the world. We hope this book provides readers with a roadmap for how to “think differently” as well as a common reference source of current initiatives in outcomes analysis, quality improvement, and patient safety, with the ultimate goal of advancing and optimizing surgical care. Moreover, we hope the content and the authors of this text will inspire readers, engagement, change, and that, through collaboration and sharing, surgical care will be enriched and improved across the world. We hope you will find this book helpful and trust you will enjoy reading it as much as we have enjoyed preparing it.

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