

Quality of Care in Humanitarian Surgery

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Abstract Humanitarian surgical programs are set up de novo, within days or hours in emergency or disaster settings. In such circumstances, insuring quality of care is extremely challenging. Basic structural inputs such as a safe structure, electricity, clean water, a blood bank, sterilization equipment, a post-anesthesia recovery unit, appropriate medications should be established. Currently, no specific credentials are needed for surgeons to operate in a humanitarian setting; the training of more humanitarian surgeons is desperately needed. Standard perioperative protocols for the humanitarian setting after common procedures such as Cesarean section, burn care, open fractures, and amputations and antibiotic prophylaxis, and post-operative pain management must be developed. Outcome data, especially long-term outcomes, are difficult to collect as patients often do not return for follow-up and may be difficult to trace; standard databases for post-operative infections and mortality rates should be established. Checklists have recently received significant attention as an instrument to support the improvement of surgical quality; knowing which items are most applicable to humanitarian settings remains unknown. In conclusion, the quality of surgical services in humanitarian settings must be

regulated. Many other core medical activities of humanitarian organizations such as therapeutic feeding, mass vaccination, and the treatment of infectious diseases, such as tuberculosis and human immunodeficiency virus, are subject to rigorous reporting of quality indicators. There is no reason why surgery should be exempted from quality oversight. The surgical humanitarian community should pull together before the next disaster strikes.

Introduction

After three successive hurricanes tore through Haiti in 2008, surgical care was destroyed in the Arbonite region, and an operating theater and hospital had to be set up in a warehouse. In January 2010, a massive earthquake struck in Port-au-Prince, injuring as estimated quarter of a million victims. In the absence of functional surgical services, emergency surgical care was provided in temporary structures, including inflatable hospitals and partially destroyed hospitals.

Such settings are typical for the provision of humanitarian surgical assistance in emergency or disaster settings. Programs are set up de novo within days or hours, and the high number of injuries can overwhelm services. Even after the initial disaster is over, surgical delivery is hindered by the limited number of trained staff members available, limited resources, and poor supply chains.

In such circumstances, ensuring the quality of humanitarian surgical delivery is challenging. Often the quality of the response is unknown, as humanitarian agencies are rarely required to report medical data. Where data are collected, it is usually limited to descriptions of interventions: patient demographics, operative indications, surgical procedures.

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Measures of surgical quality have been categorized into structural, process, and outcome measures [1]. In this article, we briefly review the applicability of these measures to humanitarian settings.

Structural approaches

Structural approaches to quality measurement relate to the availability and use of certain essential material or human resources. Médecins Sans Frontières (MSF) has established minimum criteria for structural inputs that must be in place before humanitarian surgery can be delivered. They include a safe structure, electricity, clean water, a blood bank, sterilization equipment, a postanesthesia recovery unit, anesthetics, analgesics, antibiotics, and qualified surgery and anesthesia providers [2]. Such indicators could serve as a basis for structural measures of surgical quality in humanitarian settings.

Currently, no specific credentials are needed for surgeons to operate in a humanitarian setting. Most major disasters take place in countries with few trained surgeons. Many agencies recruit surgeons from Europe and North America, but the broad range of general surgery, orthopedic, and gynecology skills needed is often beyond the scope of their training. [3]. MSF and the International Committee for the Red Cross provide additional trauma training for their surgeons. Studies in high-income countries have shown that surgical quality is directly related to surgeon experience [4–7]. Needless to say, the training of more humanitarian surgeons is desperately needed.

Process variables

Process variables reflect the care provided, such as treatment protocols or specific operative techniques [1]. In the humanitarian setting, standard perioperative protocols for common procedures such as Cesarean section, burn care, open fractures, and amputations are needed. Also needed are protocols for antibiotic prophylaxis and postoperative pain management. Given the high staff turnover and changing acuity of the disaster, such protocols would help ensure the quality of care.

Outcome measures

Outcome data, especially long-term outcomes, are difficult to collect as patients often do not return for follow-up and may be difficult to trace. This is in stark contrast to what occurs in high-income countries such as the United States, where hospitals and office-based practices providing

surgical care must meet Joint Commission criteria to become accredited [8]. Moreover, surgical programs in these more sophisticated settings routinely report outcome data to standard quality improvement programs such as the U.S. National Surgery Quality Improvement Program [9].

Humanitarian surgical programs do not have standardized databases. Interpretation and comparison of data collected by various agencies is difficult. MSF, using a standardized database containing nearly 20,000 procedures, reported an operative mortality rate of 0.2% [10]. How this compares to other agencies is not known as there are no other reports in the literature to date. For example, numerous agencies performed thousands of procedures during the 2010 earthquake, but mortality and infection rates were not reported [11–15].

Existing tools

Recent emphasis has been given to improving the quality of surgical care in low-income countries [16]. In 2007, the World Health Organization (WHO) launched the Safe Surgery Saves Lives Project aimed at “improving the safety of surgical care around the world by ensuring adherence to proven standards of care in all states.” The WHO Situation Analysis to Assess Emergency and Essential Surgical Care tool [17] has been used to evaluate surgical care in Sierra Leone, Afghanistan, Liberia, Sri Lanka, Tanzania, Mongolia, San Tome and Principe, the Gambia [18], and Ghana [19]. For humanitarian surgery, this tool would be useful as part of a rapid needs assessment but would not alone be sufficient to measure quality.

Checklists have recently received significant attention as instruments to support the improvement of surgical quality [20, 21]. A WHO study demonstrated that implementation of a 19-item operating room checklist demonstrated significant reductions in morbidity and mortality in eight countries with varying resources [21]. Subsequently, implementation of an exhaustive 110-item checklist encompassing all areas of surgical care—including preoperative imaging studies, surgical equipment list, and postoperative care—showed similar results [20]. How these checklists lead to improved outcomes is unclear [22]. Decreases in operative blood loss, for example, would unlikely be the direct result of team members introducing themselves. One theory is that the checklists give the surgeon more “peace of mind” regarding the system, allowing him or her to focus on the operation itself. Critics have cautioned that the checklist cannot be a “stand-alone” solution for quality assurance [23], but it can serve to “reinforce accepted safety practices and foster better communication and teamwork between clinical disciplines” [24]. Humanitarian surgery could benefit from

Table 1 Elements of humanitarian surgery safety checklist

1. Perform anesthesia pre-operative evaluation
2. Pulse oximetry is available and working
3. Procedure explained to patient and written consent signed
4. Confirm patient identification
5. Mark operative site
6. If significant fluid/blood loss expected, obtain appropriate intravenous access and ensure availability of fluid/blood products
7. The appropriate surgical instruments are available to perform procedure
8. Antibiotics have been given if wound is/expected to be contaminated
9. Postanesthesia care is available
10. Postoperative care protocol is established
11. In a mass casualty, the procedure performed, date of dressing change or re-intervention are written on the bandage
12. Patient and surgical data entered into a database

checklists. Staff turnover is high, and often new surgeons arrive every few weeks. Language barriers exist between the local and international staff. It is difficult to enforce protocols with high staff turnover and an overworked staff.

Knowing which items on current checklists are most applicable to humanitarian settings remains unknown. We propose a simple, practical checklist to be adapted for the humanitarian surgery setting (Table 1).

Conclusions

The quality of surgical services in humanitarian settings is rarely assessed. During emergencies, most countries are grateful for surgical care and do not have the resources to provide oversight. As an increasing number of actors are becoming involved in the delivery of humanitarian surgery, the need to establish a framework for quality surgical delivery is more pressing. The quality of surgical care may be regulated through a combination of structural, process, and output measures that could include minimum standards for safe surgery, the deployment of appropriately trained surgeons and anesthesiologists for these contexts, protocols for pre-operative evaluation, intraoperative management and postoperative care, and standardized databases to record postoperative infection and mortality rates. A simple checklist for each patient can be utilized to ensure compliance. Standardizing data collection can help to evaluate surgical delivery.

There may be resistance to such measures in that they may be considered too cumbersome to implement during emergencies or not relevant for surgeons whose focus is the number of procedures performed. How successful is an operation, though, if the patient dies because of inadequate postanesthesia monitoring? Many other core medical activities of humanitarian organizations—e.g., therapeutic feeding, mass vaccination, treatment of infectious diseases

such as tuberculosis and human immunodeficiency virus infection—are subject to rigorous reporting of quality indicators. There is no reason why surgery should be exempted from quality oversight. The surgical humanitarian community should pull together before the next disaster strikes.

Conflicts of interest The authors declare no conflicts of interest.

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