Emergency Surgery Data and Documentation Reporting Forms for Sudden-Onset Humanitarian Crises, Natural Disasters and the Existing Burden of Surgical Disease

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Abbreviations:
FFH: Foreign Field Hospitals
FMT: Foreign Medical Team
NGO: non-government organization
WHO: World Health Organization

Abstract

Following large-scale disasters and major complex emergencies, especially in resource-poor settings, emergency surgery is practiced by Foreign Medical Teams (FMTs) sent by governmental and non-governmental organizations (NGOs). These surgical experiences have not yielded an appropriate standardized collection of data and reporting to meet standards required by national authorities, the World Health Organization, and the Inter-Agency Standing Committee's Global Health Cluster. Utilizing the 2011 International Data Collection guidelines for surgery initiated by Médecins Sans Frontières, the authors of this paper developed an individual patient-centric form and an International Standard Reporting Template for Surgical Care to record data for victims of a disaster as well as the co-existing burden of surgical disease within the affected community. The data includes surgical patient outcomes and perioperative mortality, along with referrals for rehabilitation, mental health and psychosocial care. The purpose of the standard data format is fourfold: (1) to ensure that all surgical providers, especially from indigenous first responder teams and others performing emergency surgery, from national and international (Foreign) medical teams, contribute relevant and purposeful reporting; (2) to provide universally acceptable forms that meet the minimal needs of both national authorities and the Health Cluster; (3) to increase transparency and accountability, contributing to improved humanitarian coordination; and (4) to facilitate a comprehensive review of services provided to those affected by the crisis.

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Introduction

Following the January 2010 earthquake in Haiti, thousands of surgical procedures were performed to alleviate suffering, save lives, and allow for rehabilitation and recovery. Surgery was provided by a large, disseminated group of clinicians from Haiti and around the world, including some with considerable experience in humanitarian or disaster settings, and many with none. Multiple Foreign Medical Teams (FMTs) or Foreign Field Hospitals (FFHs) were mobilized, but of the 44 deployed in the first 3-15 days, only 25% adhered to the essential deployment requirements, and none followed the full requirements of the

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World Health Organization/Pan American Health Organization (WHO/PAHO).[1] Whereas more FMTs were sent to Haiti in 2010 than in any previous sudden-onset disaster, the lack of data and transparency made it impossible to reliably compare the activities or outcomes of these FMTs, leaving little concrete evidence to guide future deployments or improvements to this system.[1] Recent reviews of the humanitarian response to the earthquake have showed that while many FMTs provided high-quality care, they were not coordinated and lacked common terminologies, definitions and frameworks.[2] In the absence of systematic information management and data collection, it is unlikely that the true impact, both positive and negative, of FMTs in crisis settings will ever be known.

The final number of FMTs deployed to Haiti is unknown, but anecdotally may number as high as 70. A 2008 study of FFH in sudden-onset disasters in Iran (2003), Haiti (2004), Indonesia (2004), and Pakistan (2005) showed that FMTs, while designed to provide emergency trauma care for the initial 48 hours post-disaster, tended to be operational much later. Of the 43 FFHs responding to these events, none met the WHO/PAHO essential requirements, nor did they provide "detailed information" on their activities.[3] This problem is not new. It is symptomatic of what is at risk of occurring in both chronic and sudden-onset crises where emergency surgery is required. In a recently published review of surgical caseload data, researchers located 2,171 publications that focused on emergency surgery. Ninety-nine were relevant to surgical care in crisis settings, of which only 18 contained surgical caseload data. Of these, only 11 studies contained sufficient epidemiological data of value in the overall assessment of the burden of surgical disease. Half of the data in one study was related, not to the crisis event, but to the chronic unmet burden of surgical disease (eg, obstetrical, hernia repairs). In all crisis surgery reports, there was a call for "standardization of data collection and reporting tools."[4]

The first responsibility in data collection is to report findings to the national authorities and secondly to WHO's Global Health Cluster, which ensures that international providers adhere to the same national reporting standards. Furthermore, the Health Cluster serves as the external coordinating mechanism during crises. The goal of the Health Cluster is to "reduce mortality, morbidity and disability, and restore the delivery of, and equitable access to, preventive and curative health care as quickly as possible and in as sustainable a manner as possible."[5] This requires "up-to-date information and monitoring of the health situation and regular situation reports/health bulletins."[5] In total, data reported from the *Haitian Health Cluster Bulletin* indicated that in the "health sector alone, 390 agencies" (mostly international) were registered with the Health Cluster, but admittedly many health providers did not register, and data from indigenous surgical care are lacking.[6] This, unfortunately, represents a repeated failure common to every major international disaster. Arguably, the complexity of the immediate aftermath of the Haiti earthquake and the chaos it caused in the health care system contributed to the pitfalls of data collection. The Haitian health system was fragmented, under-resourced, and failed to provide access to basic health services for years before the earthquake. The earthquake itself compounded these effects, resulting in a humanitarian crisis on a scale previously unseen by even seasoned humanitarian workers. Many of the Haitian and international providers of health assistance provided excellent care under very difficult situations. However, there was no system for monitoring the availability and functionality of health services, leading to the duplication of some services and the absence of others.[7] Furthermore, little is known in most international crises of the burden of surgical disease in crisis settings, nor about the quality of care provided to patients.[8] In a combined quantitative and qualitative assessment of available surgical data in Haiti, Redmond and colleagues concluded that the quality of care in humanitarian surgical operations needed to be improved, especially in regards to the development of a minimum dataset and uniform reporting. These recommendations were based on observing several inconsistencies in the available data, and several concerns such as the large variation in amputation rates among surgical providers, ranging from one percent to >45%.[9] Benjamin and colleagues in their "lessons from Haiti" emphasized that "prospectively" health care professionals should "rigorously prepare themselves and make provisions for collecting and reporting data."[10] Reporting of earthquake-related injuries was "incomplete and often inadequate," suffering from "incomplete record keeping especially during the first 7-10 days of field hospital operations" (before FMTs become mobilized), resulting in the "underestimation of total earthquake-related injuries and deaths reported."[11] Patterns of poor decision making are caused as much by the lack of data as by problems with data interpretation.[9]

At a PAHO/WHO meeting in Cuba in December 2010, participants stressed the need for international standards, greater accountability, more stringent oversight, better coordination, and improved reporting. The meeting stressed that there must be a mechanism to ensure the "complementarity" of FMTs, and to coordinate their different services before deployment and on arrival. The need to collaborate with the Inter-Agency Standing Committee response coordination mechanisms, and to collect and share data through agreed health coordination mechanisms (including completing and keeping medical records), was emphasized as a priority for enhancing the role of FMTs deployed during sudden-onset disasters.[12] Additional Consensus Statements regarding the multidisciplinary care of limb amputation patients, rehabilitation medicine in disasters or humanitarian emergencies,[13,14] and Best Practice Guidelines on Surgical Response in Disasters and Humanitarian Emergencies have since been established. These Guidelines are based on a broad consensus from a number of different experts in surgical care in humanitarian crises who met in 2011 to discuss the challenges faced in the field.[15] They emphasize the need for accountability in humanitarian surgical care in emergencies and the need for minimum standards in surgical care and basic medical recordkeeping, basic infrastructure, and the establishment of a referral system to other care providers.

A 2011 Davos Global Health Risk Forum conference reviewed emergency surgical findings to date and again called for improved data collection.[16] Surgical, anesthesia and orthopedic attendees agreed fully with the need for proper data collection. However, they voiced concern that they themselves did not possess field-level epidemiological skills, while being fully aware through their own practices in their countries of origin of the need for the routine reporting of data gathered by trained staff within their surgical departments or hospital systems. When asked what they felt was optimal for greater transparency and reporting and data documentation during a crisis setting, the consensus was for reporting guidelines inclusive of:[16]

- A utilitarian and universal form for reporting and data documentation, ideally a one-page format that could be easily reproduced and completed under austere conditions, including pertinent medical information identifying the patient plus prior comorbidities/surgeries/medications/allergies;

- Essential indicators for the disaster event itself and outcomes;
- Essential indicators for those interventions arising from the chronic global burden of surgical disease and outcomes, which may account for >50% of cases during the post-crisis phase;[4]
- Disposition and transfer data;
- Simple check-off regarding whether patient will require physical therapy/rehabilitation medicine, psychosocial care, etc;
- Data acceptable to the required Health Cluster reporting scheme; and
- Minimal data set and indices necessary for scientific documentation and analysis.

Two forms were developed to meet these requirements. Appendix 1 provides an inclusive individual surgical patient template, and Appendix 2 provides an international standardized reporting form that documents both the crisis event and the relevant global burden of disease. The content of these forms is based on a previously published systematic review,[4] reporting guidelines from Médecins Sans Frontières (MSF) surgical programs (original data collection tool developed by Xavier Lasalle, Peter Rosseel and Serge Balandine of MSF Epicentre, Paris, 2011), and the expert opinion of the authors.

Together these two forms provide the minimal data required to improve surgical care in humanitarian settings, and to further inform the national authorities and the international community about the growing burden of surgical disease as well as outcomes data for patients receiving surgical interventions and anesthesia in austere settings. Further guidance is required from large institutions including the WHO, the International Committee of the Red Cross (ICRC) and the Sphere Project, each of which provide unique services and recommendations for the surgical care of patients in conflict and humanitarian settings. The Sphere Project, which leads the humanitarian community with guidelines on each component of aid delivery, must expand its section of surgical care and anesthesia to ensure that organizations and providers supply all that is required for the complexity of surgical delivery in austere settings. For example, MSF's basic list also includes water requirements for surgery, sterilization, blood products, essential anesthesia and medications (including antibiotics and pain medications).

Reporting of the activities of FMTs was the subject of a recently published systematic review of surgical care in crisis settings.[4] In developing the form for a global burden of disease register to report on the delivery of surgical services (Appendix 1), the first task was to identify relevant reporting domains and concerns that emerged through this systematic review and analysis. These included the need for sex- and age-specific data, basic patient outcomes (such as perioperative mortality) and an indication of the origin of surgical pathology as being either a direct or indirect result of the event, or an unrelated condition. Furthermore, the systematic review revealed a paucity of data on the proportion of patients presenting to health facilities who require surgical intervention. This was frequently a result of incomplete or selective reporting of caseload data. The analysis was again further compromised by incomplete reporting of dates, with very limited data available to understand the evolution of the nature of and need for surgical intervention following rapid-onset crises.

A further limitation of data reporting uncovered in the systematic review was the inconsistent terminology and procedural grouping of surgical procedures. For instance, some reports referred only to groups of procedures ("general surgery" or "trauma surgery"), rather than specific identification of a surgical procedure. To address these concerns in developing the proposed form in Appendix 1, procedural groups and records of the sequence of intervention (first/primary, planned re-intervention, unplanned re-intervention) were based on the 2011 International Data Collection guidelines for surgery developed by MSF.[17,18] To address concerns regarding lack of follow-up or referral mechanisms for post-operative patients,[9,13] a data collection section was included to record surgical patient outcomes, including perioperative mortality and referrals for rehabilitation and mental health and psychosocial care.

The individual patient surgical record (Appendix 2) was developed using a similar approach. To ensure consistency in reporting, the procedural groupings of surgical interventions are the same in the two forms presented, though the patient surgical record also includes space for listing relevant comorbidities. It is presumed that such a form would be used in addition to a more robust patient chart where a thorough medical history and physical findings would be recorded, as well as a standard anesthesia record.

Also included are other relevant data sources that would be useful for evaluating the nature of surgical services provided and the physical status of the patient. An American Society of Anesthesiologists (ASA) Physical Status Classification System score has been included, as well as an indicator of the degree of urgency.[19] Given that austere anesthesia approaches have been employed in the past,[20] a record of the types of anesthesia provided was included using standard descriptors and types. Patient outcomes are again based on the MSF surgical data, with the addition of data collection for recording patient referrals to other health facilities and providers.

While comprehensiveness has given way to brevity and utilitarianism, it is proposed that these forms offer a preliminary contribution to the development of robust reporting criteria and guidelines for FMTs. These forms are easily completed in a short time by providers of surgical, orthopedic, anesthesia, and obstetrical care irrespective of surgical facilities. The purpose is to provide a universally acceptable form that meets the minimal needs of the national authorities and Health Cluster reporting. This will ensure that all surgical providers, especially indigenous first responder teams and others performing emergency surgery before and after the arrival of established FMTs, contribute relevant and purposeful reporting. Proper reporting will contribute to improved humanitarian coordination and facilitate a comprehensive review of services provided following an emergency.

Discussion

Simple and robust data collection is the backbone of a responsible health system, even in a resource scarce disaster setting. The Foreign Medical Teams Working Group (FMT-WG) of WHO and the Global Health Cluster[12] have commissioned a stream of work to provide a more robust reporting form. This manuscript is complimentary to that process and is part of a wider move to improve the professionalization of FMTs. There has long been a call for the improvement of standardization of minimum essential datasets within disaster response and crisis field epidemiology, though few guidelines exist outside

of internationally recognized standards (such as the Sphere Standards).[21] There is a strong need to establish international consensus among major humanitarian surgical providers on how to collect relevant surgical data in crisis settings. A component of this must be standardized reporting guidelines using an approach similar to what is advocated through the assessment forms proposed in this paper.

The systematic collection of evidence to guide the development of reporting criteria is limited. Few studies exist that comprehensively report on patterns of morbidity and mortality in patients treated by FMTs. Morbidity reporting is crucial to identifying trends and detecting outbreaks that may require broader public health interventions, including preventive services/campaigns. This does not necessarily apply to surgical interventions, where emphasis may be on improving the caseload so national authorities, foreign countries and partners in care can better plan for capacity for the next crisis. A major difficulty is that patients who do not present at the clinics are not counted, and conducting surveys in the chaos of the first week is often not realistic and probably not ethical. Emphasis on ensuring quality of care must dominate, including documenting wound infections; delayed wound closures; secondary surgery; days hospitalized; information that better adapts surgery to shifts in phases; information needed to adapt the types of sub-specialty surgeons needed; information needed to balance both elective and acute surgical capacity, and surgical interventions and inpatient beds; the capacity for physical rehabilitation and psychosocial and behavioral assistance; and the proportion of surgeries performed by FMTs and the national capacity.

Operational research in crisis settings is still a developing field, with limits on the amount of robust data available to guide the development of guidelines and consensus statements. The field of disaster medicine continues to be driven by field-level providers, many of whom have considerable experience in acute and protracted humanitarian emergencies. Reporting guidelines must be responsive to their needs and appropriate for the realities of clinical practice in austere settings. At the same time, balance must be achieved in ensuring the comprehensiveness of the data collected and provided, so as to facilitate evidence-based decision making and aid prioritization within the Ministries of Health and the Health Cluster. Given the evidence available, the reporting forms presented achieve this balance and provide a preliminary contribution to better reporting standards for surgical care in crisis settings. The authors of this paper currently hold academic positions but all have extensive field experience dating back to the 1960s. Inclusivity is crucial, and further commentary and contributions from others are welcome. These forms are dynamic documents representing a first step in a process that has not yet received proper attention, but must be open to further debate, change, and amendments.

Surgical care will continue to take place in non-FMT settings where there is equal need for proper documentation and reporting of data. These forms are applicable to a larger group of emergency surgery providers who are not part of the FMT system. In addition to being in the hands of surgical providers traveling to a disaster site, these utilitarian forms are likely to be used routinely in daily caseload monitoring within low- and middle-income country district hospitals. The suggested forms are part of a long process to improve the quality of care provided by FMTs. A key challenge in the future is to define the normative body responsible for compiling data and ensuring that benchmark criteria are being met. Ideally this body should be the Ministry of Health of the affected country, but given the multiple post-disaster requirements and other priorities, this may be beyond their capacity. A professional body is needed that is open to any agency willing to be transparent and accountable. To be credible, such a body should be based on experience from the difficult austere disaster context. Any surgical provider will admit that it remains impossible to ensure quality of care and accountability without data collection. Gone are the days when it could be claimed that it is the good intention of the action that counts. It has to be shown that these actions are effective.

Lastly, it must be emphasized that the FMT-WG has broader obligations beyond those of reporting forms. The members' overall intent is to improve the quality, standards and classification required for a global registration system, and to improve the processes of coordination and reporting to the national authorities.

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References

1. Gerdin M. Waldis A, von Schreeb J. Foreign field hospitals after the 2010 Haiti earthquake: how good were we? [published online ahead of print March 7, 2012]. *Emerg Med J*. doi:10.1136/emermed-2011-200717.
2. Lind K, Gerdin M, Waldis A, et al. Time for order in chaos! A health system framework for foreign medical teams in earthquakes. *Prehosp Disaster Med*. 2012;27(1):90-93.
3. von Schreeb J, Ridder L, Samnegard H, et al. Foreign field hospitals in recent sudden-onset disasters in Iran, Haiti, Indonesia, and Pakistan. *Prehosp Disaster Med*. 2008;23(2):144-151.
4. Nickerson JW, Chackungal S, Knowlton L, et al. Surgical care during humanitarian crises: a systematic review of published surgical caseload data from foreign medical teams. *Prehosp Disaster Med*. 2012;27(2):184-189.
5. World Health Organization: Inter-Agency Standing Committee. Global Health Cluster: A practical guide for country-level implementation of the Health Cluster. June, 2009. http://whqlibdoc.who.int/hq/2009/WHO_HAC_MAN_2009.7_eng.pdf. Accessed May 12, 2012.
6. de Ville de Goyet C. Health Response to the Earthquake in Haiti. January 2010: Lessons to be learned for the next massive sudden-onset disaster. Pan American Health Organization. 2011. http://reliefweb.int/sites/reliefweb.int/files/resources/Full_Report_3342.pdf. Accessed May 12, 2012.
7. Chu K, Stokes C, Trelles M, Ford N. Improving effective surgical delivery in humanitarian disasters: lessons from Haiti. *PLoS Med*. 2011;8(4):e1001025. http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001025.
8. Chu K, Trelles M, Ford N. Rethinking surgical care in conflict. *Lancet*. 2010;375(9711):262-263.
9. Redmond AD, Mardel S, Taithe B, et al. A qualitative and quantitative study of the surgical and rehabilitation response to the earthquake in Haiti, January 2010. *Prehosp Disaster Med*. 2011;26(6):449-456.
10. Benjamin E, Bassily-Marcus AM, Babu E, et al. Principles and practice of disaster relief: lessons from Haiti. *Mt Sinai J Med*. 2011;78(3):306-318.
11. Centers for Disease Control and Prevention. Post-earthquake injuries treated at a field hospital: Haiti, 2010. *Morbidity and Mortality Weekly*. 2011;59(51):1673-1677.
12. Global Health Cluster (GHC). Coordination and Registration of Providers of Foreign Medical teams in the Humanitarian Response to Sudden-onset Disasters: A Health Cluster Concept Paper. World Health Organization. Inter-Agency Standing Committee GHC Policy and Strategy Team Position Paper. http://www.who.int/hac/global_health_cluster/about/policy_strategy/fmt_concept_paper_27_May.pdf. Published 2010. Accessed May 11, 2012.
13. Knowlton LM, Gosney JE, Chackungal S, et al. Consensus statements regarding the multidisciplinary care of limb amputation patients in disasters or humanitarian emergencies: report of the 2011 humanitarian action summit surgical working group on amputations following disasters or conflict. *Prehosp Disaster Med*. 2011;26(6):438-448.
14. Rathore FA, Gosney JE, Reinhardt JD, Haig AJ, Li J, Delisa JA. Medical rehabilitation after natural disasters: why, when and how? [published online ahead of print June 4, 2012]. *Arch Phys Med Rehabil*.

15. Chackungal S, Nickerson JW, Knowlton LM, et al. Best practice guidelines on surgical response in disasters and humanitarian emergencies: report of the 2011 Humanitarian Action Summit Working Group on Surgical Issues within the Humanitarian Space. *Prehosp Disaster Med*. 2011;26(6):429-437.
16. Emergency Surgery Workshop Davos 2011: Emergency Surgery during Disaster Relief Activities: Surgery under Critical Environmental Conditions. AO Foundation, Global Risk Forum (GRF), Davos, Switzerland. December 10, 2011. Agenda Available at: http://riskacademy.grforum.org/userfiles/Programme_ESWS_sm.pdf. Accessed April 2, 2012. .
17. Chu KM, Ford N, Trelles M. Operative mortality in resource-limited settings: the experience of Medecins Sans Frontieres in 13 countries. *Arch Surg*. 2010;145(8):721-725.
18. Chu K, Havet P, Ford N, Trelles M. Surgical care for the direct and indirect victims of violence in the eastern Democratic Republic of Congo. *Confl Health*. 2010;4:6.
19. American Society of Anesthesiologists: ASA Physical Status Classification System. http://www.asahq.org/For-Members/Clinical-Information/ASA-Physical-Status-Classification-System.aspx. Accessed July 16, 2012s.
20. Osteen KD. Orthopedic anesthesia in Haiti. *Ochsner J*. 2011;11(1):12-13.
21. Bradt D, Drummond CM. Rapid epidemiological assessment of health status in displaced populations - an evolution toward standardized minimum, essential data sets. *Prehosp Disaster Med*. 2002;18(1):178-185.

Appendix 1

Patient Surgical Record Template

Patient Name:		Date of Birth/Age:	
Gender:		Address:	
Name of Medical Team:		Type: ☐Governmental ☐NGO ☐FMT ☐Red Cross/Crescent ☐University ☐Other	
Location:		Contact Info:	
ASA Score: 1 2 3 4 5 6 E		Degree of Urgency: Urgent Delayed Elective	
Surgical Procedures Performed		**Reporting Period: __/__/20__ - __/__/20__**	
Minor Surgery	**Date**	**Wound Surgery**	**Date**
Simple, suturing, abscess		Dressings Change	
Dressings under sedation, drains		Debridement, fasciotomy	
		Skin/Muscle Grafting	
		Foreign body removal	
Other Minor Surgery		Other Wound Surgery	
Visceral Surgery		**Orthopaedics**	
Hernia, hydrocele, hemorrhoids		Reduction of fractures	
Exploratory laparotomy		Fracture fixation	
Solid viscous resection or repair		Curettage for osteomyelitis	
Gut resection/repair		Amputation	
Other general surgery		Other orthopaedics	
Gynaecology/Obstetrics		**Specialized Surgery**	
Caesarean Section		Neurosurgery	
D&C		Vascular surgery	
Other OB/GYN		Thoracotomy	
Comorbidities?		ENT	
Other		Wound infection?	yes/no
		Delayed wound closure?	yes/no
Anesthesia: ☐Local ☐Regional ☐Spinal ☐General ☐Combined ☐Ketamine			
Intervention: ☐First/Primary ☐Planned Re-Intervention ☐Unplanned Re-Intervention			
Outcome			
☐Complete Recovery	☐Expected Recovery	☐Mild/Moderate Impairment ☐Severe Impairment	Days Hospitalized
☐Problem Unresolved	☐Poor Prognosis	☐Deceased	☐Anesthesia complications? (List)
Patient transferred? ☐Yes ☐No ☐N/A	Physical rehab? ☐Yes ☐No ☐N/A	Psychosocial care? ☐Yes ☐No ☐N/A	

Brief Operative Note:

Appendix 2

International Standard Reporting Template for Surgical Care

Name of Medical Provider/Organization:				Type: ☐Governmental ☐NGO ☐ FMT ☐ Red Cross/Crescent ☐ University ☐ Other			
Location:				Contact Info:			
Patient Caseload				**Reporting Period: __/__/20__ - __/__/20__**			
Total # Adult Patients Seen				**Total # Adult Patients Requiring Surgery**			
Male		Female		Male		Female	
Total # Pediatric Patients Seen				**Total # Pediatric Patients Requiring Surgery**			
M(≤5):	F(≤5):	M(>5):	F(>5):	M(≤5):	F(≤5):	M(>5):	F(>5):
Suspected Origin of Surgical Pathology (Number of Cases)							
Direct Result of Disaster		Secondary/Indirect Result of Disaster		Pre-existing/acute unrelated condition			
Number of Surgical Procedures Performed							
Minor Surgery		**# of Procedures**		**Wound Surgery**		**# of Procedures**	
Simple, suturing, abscess				Dressings Change			
Dressings under sedation, drain insertion/removal				Debridement, fasciotomy			
				Skin/Muscle Grafting			
				Foreign body removal			
Other Minor Surgery				Other Wound Surgery			
Visceral Surgery		**# of Procedures**		**Orthopaedics**		**# of Procedures**	
Hernia, hydrocele, hemorrhoids				Reduction of fractures			
Exploratory laparotomy				Fracture fixation			
Solid viscous resection or repair				Curettage for osteomyelitis			
Gut resection/repair				Amputation			
Other general surgery				Other orthopaedics			
Gynaecology/Obstetrics		**# of Procedures**		**Specialized Surgery**		**# of Procedures**	
Caesarean Section				Neurosurgery			
D&C				Vascular surgery			
Other OB/GYN				Thoracotomy			
				ENT			
				Other			
First/Primary Intervention	#	Planned Re-Intervention		#	Unplanned Re-Intervention	#	
Surgical Patient Outcomes							
#Intra-operative Deaths		#Post-Operative Deaths (24 hrs)		# Referred for Physical Rehab		# Referred for MH/Psychosocial Care	