



OCB SAGE UNIT

2015 – OCB SURGICAL CARE ANNUAL REPORT

Preamble...

*We will like to begin this annual report paying a sincere tribute to our colleagues that died in the early hours of October 3rd, 2015, when **MSF Kunduz Trauma Centre** was bombed by the US air force and the main pavilion was completely destroyed. At least 42 persons were killed, among them, 14 members of the hospital staff that were currently giving medical care to the patients, staying in their working posts even if the violence around the hospital was evident. We can only be proud of them and express to them our sincere thanks for being an example of ethical medics, human dignity, and spiritual determination. At the same time, we give our tribute to our colleagues that survived the attack and were in the hospital working day and night during the last days of September and the first days of October during the siege of the city of Kunduz. As a team, they did an incredible, remarkable and huge work when the armed conflict moved to inside the city, a situation that demanded from all of them unprecedented efforts to maintain surgical care with quality, notwithstanding the increased workload and the absence of rest.*

The unjustifiable and incomprehensible attack was a blatant violation of International Humanitarian Law and the Geneva Conventions, a war crime and an incursion on the sanctity of humanitarian action globally¹. Unfortunately, the destruction of Kunduz Trauma Centre is not an isolated case as MSF was already condemning similar attacks to other health structures in war zones; and after Kunduz, the world witnessed attacks to MSF supported hospitals in Syria and Yemen. This type of warfare in conflicts is challenging the principles and fundamentals of humanitarian relief that are based in an absolute neutrality and impartiality.

During 2015 MSF as an international organisation has been expressing the worries of humanitarian workers towards the ongoing loss of humanitarian space to perform medical activities in conflict environments where the needs in health care are the biggest. Everyone following its basic principles on medical ethics should be attentive and supportive to any effort done by the organisation to keep the provision of health care respected, safe, independent and neutral.

¹ Liu J. Médecins Sans Frontières (MSF), Switzerland, 2015.

1. OVERVIEW

MSF OCB Surgical Policy describes surgical care as the “**provision of quality surgery and anaesthesia**”. Surgical care provision includes: general surgery, obstetrics / gynaecology, orthopaedic, specialized surgery, and others. In order to reduce mortality, morbidity and disability, surgical care should be every time considered as an integral part of a whole medical care; as it is widely recognized that surgical and anaesthetic services are also interventions that aim to prevent death and disability. However, if a lot of progress has been done to face the burden of communicable and preventable diseases, the burden of surgical diseases remains “neglected”, and by contrary, is increasing. The inequalities in surgical care are great: overall in the world more than 75% of the health resources (human and material) are used by less than 25% of the population. In MSF contexts, these inequalities are bigger. Although surgery commonly is viewed as a costly and high demanding activity, surgical care provided in low cost district hospitals is cost-effective, and “might compare favourably with selected primary health interventions in terms of cost-effectiveness²”. In MSF OCB projects, it is provided assuring access to quality surgical / anaesthetic management supporting MSF organizational values.

OCB surgical care activities began in the early 1980’s, mostly in high insecure / conflict settings, at district hospital level. During the 1990’s a more primary health care focus led to a reduction of hospital based activities and a decrease in surgical care activities; and from 2000 to 2012 it is acknowledged an increase of the number of projects with surgical care activities. Therefore, in order to support the Operations Department and the field teams, the GAS³ unit was created in 2006 within the Medical Department. In 2010 the GAS unit became the SAGE⁴ unit, when the importance of acute medical care within the supported hospitals grew and Emergency Medicine and Intensive Care services were added to the GAS unit. To note that due to the specificity of surgical care, this report will only describe surgical care activities in OCB projects during 2015⁵.

During 2015, following the trends of previous years, surgical care in OCB mainly consisted of lifesaving⁶ and essential⁷ surgery. In most of the projects, this care required only low technology and was based in district hospitals or in some primary health centres with surgical capacity. And at the same time, OCB continued its operational strategy of developing trauma-related surgery, where high-standard orthopaedic care⁸ was performed. Specialized surgical care also was given to women with Obstetric Fistula pathology. Also, during 2015 OCB supported emergency interventions after catastrophes (e.g. Nepal earthquake) and began to treat manage victims of conflict / violent environments (e.g. Burundi turmoil). Finally, indirect support was given to health staff working in Syria through trainings, knowhow and supply. Surgery (including gynaecology / obstetrics and orthopaedics) and anaesthesia were performed by specialists (expatriates and national) as well as non-specialists (national medical doctors with general surgery and / or emergency obstetrical skills, nurses with knowledge in anaesthesia management).

Following operational needs, surgical activities were provided by:

- Default: classical emergency interventions.
- Choice: enhancing local insufficient surgical capacity.

² Spiegel D, Gosselin R. Surgical services in low-income and middle-income countries. The Lancet, vol 370; 1013-15, September 2007.

³ Gynaecology / Obstetrics, Anaesthesia, and Surgery

⁴ Surgery/Orthopaedics, Anaesthesia/Reanimation, Gynaecology/Obstetrics, and Emergency Medicine / Intensive Care.

⁵ For information regarding Emergency Medicine and Intensive Care activities, please consult the specific annual report.

⁶ Lifesaving surgery: generally performed for an acute surgical state in which the patient’s life / organ / limb is at stake and which needs to be done as soon as possible, usually within a few hours.

⁷ Essential surgery: addresses a condition amenable to a proven surgical treatment which may not affect health/life immediately, but considerably impairs the quality of life and/or may present a serious health threat in the future.

⁸ Internal fixation procedures were performed only in specific trauma centres where the necessary means and skills are met, as it is the most demanding type of orthopaedic procedures. This also implied the inclusion of more material to the available arsenal of orthopaedic surgery.

Surgical care was performed under the following approaches: emergencies, stable contexts, training, and specialized care. Also this care was performed at four levels of complexity to answer in an effective way the field demands: health centres, district hospitals, referral hospitals, and specialized hospitals.

Linked to OCB policy of Surgical Care, the following key principles were followed:

- Privacy and respect for the patient.
- The use of consent of the patient, or, if incapable, his representative.
- Surgery was intrinsically linked to anaesthesia, and vice-versa.
- Surgical and anaesthesia providers had a formal qualification or OCB validation.
- Surgery and anaesthesia arsenals (techniques, equipment and drugs) were safe, simple and effective, allowing in most of the cases a low dependence on sophisticated technology.
- Tight collaboration between the surgery and anaesthesia providers was assured.
- Before the start of new projects, a number of defined pre-requisites were already in place.
- Surgery and anaesthesia care encompassed pre-, intra- (per-) and post- operative care.
- Quality control was assured following MSF institutional policies, guidelines and protocols; and by an appropriate recordkeeping of patient files, anaesthesia / surgical records, data collection.
- Emergency preparedness was essential, ensuring the maintenance of skills, the permanent availability of minimum material, the good functioning of the sterilisation facilities, the regular review and updated of the Multiple Casualty Plan.

The agreed definition⁹ of a surgical intervention and highlighted in OCB policy of Surgical Care is the following: **Major surgery is defined as any intervention occurring in a hospital operating room involving the incision, excision, manipulation, or suturing of tissue, requiring local, regional and/or general anaesthesia.** The term “major” is used in order to avoid mixing small interventions (such as incisions of small abscess and suture of wounds treated by medical and paramedical staff in the emergency department) and the operations performed in the operating room. The term “major” does not define the condition or the type of operation but the fact that it is done in the operating room and there is some form of anaesthesia. The performed interventions included emergent and planned elective surgery.

If OCB supports any aspect of a surgical programme, then we consider it as a “MSF” one, and its data are included in this report. Different kinds of OCB involvement are:

- Surgical care performed only by national staff where there are expatriates in the health facility. This is met when the skills and knowledge of the national staff allow surgical care to be run without expatriates specialists, being complete supported by OCB.
- Surgical care performed only by national staff but supported by expatriates in terms of bedside training.
- Surgical care performed by national staff and by expatriates (in some specialities).
- Surgical care completely performed by expatriates (substitution).

Since 2008, reliable data from every project has been collected. The different indicators give a rough measure of quality, however, this data should be used prudently, and data between projects cannot always be compared given the differences in circumstances and resources. No data in this report is an estimation or approximation: **only data accurately collected is reported.**

This report aggregates data from each project. Individual project level data is available at the SAGE unit and has already been distributed to the relevant Operational Cells, mission and field teams.

⁹ Joined Statement (Position Paper); Surgical Working Group & Anaesthesia – Emergency Medicine – Intensive Care Working Group; Stockholm, June 2015.

2. PROGRAM ACTIVITIES

2.1. EXECUTIVE SUMMARY¹⁰:

In the Table № 1 are shown the main indicators for OCB surgical activities for 2015. A summary for each project is presented in Table № 3. In the aggregated data it is done a subdivision between total (direct and indirect activities) and direct. While taking into account all the activities, in order to be coherent with the OCB operational strategy, only the trends of data of **direct** surgical activities will be considered.

Table № 1: Main indicators for 2015.

Main Indicators	2012		2013		2014		2015	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total
Patients ¹¹	14583	15813	14199	14404	12005	12216	13570	13770
Cases ¹²	19145	20443	19395	19600	18281	18543	21502	21702
Procedures ¹³	20865	22212	21774	21979	21730	21996	25178	25378
Violent trauma ¹⁴	1277 (8,8%)	1293 (8,2%)	1445 (10,2%)	1446 (10,0%)	1342 (11,2%)	1356 (11,1%)	1930 (14,2%)	1937 (14,1%)
Caesarean sections ¹⁵	5296 (36,3%)	5624 (35,6%)	5030 (35,4%)	5233 (36,3%)	3877 (32,3%)	3983 (32,7%)	4589 (33,8%)	4734 (34,4%)
Number of projects ¹⁶	19	22	18	20	15	17	16	17

In order to understand better the table, it is necessary to point-out the project that is considered to perform "indirect" surgical activities (*) during 2015: Nyabiondo (from 2011).

Nyabiondo is a MoH health centre with surgical capacities supported by Masisi project, where exclusively emergent surgery (mainly obstetric) is performed when referral is not possible to Masisi hospital. These surgical procedures are performed by the health facility staff without direct supervision of MSF. Therefore, the activities are considered indirect.

¹⁰ A brief epidemiological summary of MSF OCB surgical activities during 2015.

¹¹ Reflects the number of new cases (primary) that shows also the number of treated patients.

¹² Reflects the number of entrances to the Operating room, as well as the number of given anaesthetics.

¹³ Reflects the number of surgical procedures performed during an intervention. MSF data tools allows to report up to three procedures. In this report, for data analysis, there will be taken into consideration only the first entry because not all the projects reported multiple procedures in one surgical intervention.

¹⁴ Violent trauma cases as cause for intervention (only new cases).

¹⁵ The percentage of Caesarean sections uses the patients' number (new cases) as denominator.

¹⁶ It reflects the number of projects that were active during 2015.

2.2. SURGICAL CARE AT PROJECT LEVEL

2.2.1. Project status

Table № 2 illustrates the opening, closing, and handover of activities at project level. It should be considered that some projects continued to provide non-surgical care despite the end of OCB support to surgical care.

Table № 2: Project status through 2015.

Mission	Project	Type of intervention	Ongoing from 2014	Opened	Closed / handed over	Continuing on 2016
Afghanistan	Kabul	Choice	X			X
	Khost	Choice	X			X
	Kunduz	Choice	X		October 3 rd	
Burundi	Bujumbura	Choice		July 3 rd		X
	Gitega	Choice	X		August 15 th	
Central African Republic	Bangassou	Default	X			X
	Castors	Default	X			X
DR Congo	Bikenge	Choice		March 23 rd		X
	Bili	Default		February 17 th		X
	Masisi	Choice	X			X
	Nyabiondo (*)	Choice	X			X
Haiti	Tabarre	Choice	X			X
Mauritania	Bassikounou	Default	X			X
Nepal	Charikot	Default		July 23 rd	November 22 nd	
Pakistan	Timurgara	Choice	X			X
South Sudan	Gogrial	Choice	X		November 19 th	

As from January 2016 there were 12 OCB projects performing surgical activities: Kabul, Khost, Bujumbura, Bangassou, Castors, Bikenge, Bili, Masisi, Nyabiondo (indirect), Tabarre, Bassikounou, and Timurgara.

Reminder: for coherence in this report, for 2015, ONLY direct surgical activities will be analysed in detail in 15 projects: excluded Nyabiondo project.

2.2.2. Main surgical activities

2.2.2.1. Afghanistan, **KABUL**¹⁷ – ongoing

MSF supports medical activities in the MoH Ahmad Shah Baba District Hospital since October 2010. This health facility follows the Afghani BPHS¹⁸ regulations. The scope of surgical activities is the stabilisation of life-threatening pathologies, care of emergent cases, and if needed, referral to another structures with an available higher care in complexity. At the same time, the health facility also performs CEmONC¹⁹ activities. After the tragic events at Kunduz project, the end of activities at the project is been reviewed, but until the release of this report, the main idea is to handover the project at the end of 2016.

2.2.2.2. Afghanistan, **KHOST** - ongoing

MSF performs CEmONC in an entirely owned health structure in Khost. After an opening and temporary closure of activities due to security constraints in 2012, activities are running smoothly since the beginning of 2013. Khost project has an important impact in maternal and neonatal health in the area and is very appreciated by the local community. The high acceptance of this project has been leading to a steadily increase of activities through all these years. The project benefits also of a very performant neonatal unit (observation and intensive care areas) where important achievements are acknowledged.

2.2.2.3. Afghanistan, **KUNDUZ** – closed

Kunduz project was a complete MSF hospital structure exclusively dedicated to trauma care. The first surgical intervention was performed in August 30th, 2011. The opening of this project was directly linked to the unstable context in the region, and the weak trauma capacity of the regional hospital located in the city. High standards for MSF settings were in place, and complex orthopaedic procedures were performed, including internal fixation that were implemented in January 2013. As a high complexity trauma centre, there were available a strong performant emergency department and intensive care unit, the last with capacity for invasive mechanical ventilation. Quality surgical care was also supported by high standards in the in- and out-patient departments, reliable ancillary services (imagen diagnostic service, laboratory with microbiological capabilities) and an impressive operating department. In order to give a holistic and comprehensive approach to trauma patients, physiotherapy (in collaboration with Handicap International) and mental health services were also available.

During the attack of October 3rd, the data collection system was heavily damaged and a lot of information was lost, despite the big efforts done by the hospital team in keeping good records and patients' files. It is necessary to state that the project and mission teams have done exceptional efforts to retrieve the most updated information, being capable to obtain data up to September 18th for the ED, IPD and ICU. For all the other services and departments, it was possible to obtain data only up to August 31st, 2015. For the Operating department, the available data is up to September 12th, 2015. Therefore, it is not possible to demonstrate the incredible and huge work done by the hospital team during the last days of September and the first days of October, when the armed conflict move to inside the city of Kunduz. As a proxy, from September 27th to October 2nd, there were seen in the ED 337 patients in an MCP schema, from which 87 were red and 144 yellow cases, and 39 were triaged as black cases.

¹⁷ In order to identify easily the projects, the common practice is to name it as the location (town) where it is located. In the case of Kabul project, managed by OCB, it reflects the project located in Ahmad Shah Baba neighbourhood. Two years ago, OCP opened another project in Kabul, in Dasht-e-Barchi neighbourhood, but for OCB reporting purposes, we still naming the Ahmad Shah Baba project as Kabul in order to be coherent with previous reports.

¹⁸ BPHS (Basic Package of Health Services): a District Hospital supports the primary health services and it is the entry point to the hospital referral system, being the link between both. In a sense it overlaps the function of the Primary Health System and the Secondary one. Certainly, there is an overlap by the DH of the two levels of health care.

¹⁹ CEmONC: Comprehensive Emergency Obstetric and Neonatal Care.

2.2.2.4. Burundi, **BUJUMBURA** – opened

MSF OCB project in Bujumbura (capital of Burundi) targets the needs of care for patients, victims of violence due to the political turmoil that the country is suffering from May 2015. It is a project by choice that began by supporting wounded patients to have access to adequate care in different identified hospitals from the second half of May. At the same time, in order to face possible escalation of violence in the country, OCB decided to open a completely MSF owned health structure to provide surgical trauma care for new victims of violence, and to provide correct follow-up of the patients previously managed in other hospitals. After identifying a private health structure (Arche Médicale de Kigobe), important logistic works were performed in order to adapt the structure to the MSF operational needs. While the works stilled ongoing, the first surgical intervention was performed on July 3rd, 2015. At the same time, due to the limit capacity of the health structure, the project continues referring patients to some private structures in the city.

2.2.2.5. Burundi, **GITEGA** – handed over

Gitega was a MSF project, dedicated exclusively to obstetric fistula repair opened in 2010. The project follows the strategy of giving care in a permanent way, and not through temporary sessions using expatriate specialists to improve the skills and capacity of expatriate surgeons and to train national human resources. The activities supported by MSF were handed over on August 15th, 2015. The last surgical intervention was performed on August 3rd 2015. During all the time the project was hosted inside the MoH Gitega hospital, but OCB involvement was only related to obstetric fistula activities, and thus, supported the Operating department, sterilisation, laundry and waste management. The hospitalisation wards were also completely separated from the MoH ones. During 5 years of MSF project, there were recorded 2021 surgical interventions (entrances to the OT) in 1498 patients (new cases).

2.2.2.6. Central African Republic, **BANGASSOU** – ongoing

On November 2013 MSF began to support the MoH hospital of Bangassou to provide quality health care to the local population suffering of the violence in the country and after the hospital was previously looted by an armed group. Several logistic works were performed in the health structure, and surgical interventions began to be performed at the end of February 2014. The performed surgical activities mainly target emergent surgical conditions, being at the same time performed a few number of planned elective surgeries.

2.2.2.7. Central African Republic, **CASTORS**²⁰ – ongoing

MSF performs CEmONC in a MoH health structure in Bangui. Castors project began to be supported by MSF OCB at the end of June 2014, after OCBA finished its intervention some months before (December 2013 – March 2014). At the same time, the project is meant to be prepared for the first aid management of conflict-related surgical cases, which is linked to the non-stable situation in the city. As one of the few, or even the only one health structure dedicated to emergent obstetric care, the project has an important impact in maternal and neonatal health in the area and is appreciated by the local community. This good acceptance has made that the activities show a steadily increase through the last 18 months of MSF intervention. The project benefits also of a neonatal unit that is the standard OCB is trying to keep.

Around September 25th, 2015, the violence in the city lead to the evacuation of the international team that only returned after one month, around October 25th, 2015. This return didn't mean that the security situation in the city improved, and the patients have been having some problems to access the health facility since that time.

²⁰ Castors is a neighbourhood of Bangui. As OCB has more than one project in the city, the denomination of this neighbourhood is used to identify the project.

2.2.2.8. Congo Democratic Republic, **BIKENGE** – opened

MSF project of Bikenge supports a MoH health centre where surgical activities are offered. It was a project of choice to provide second line health care to the local population, after some exploratory missions were done during 2014 in the province of Maniema. The decision was taken as health services were lacking in the area, with a population performing farming and mining activities (extraction of gold), and where the suspicion of the presence of heavy metal intoxication was present. The town is isolated and of difficult access. From the beginning of 2015 important logistic works were performed in order to improve the available infrastructure of the health centre, and surgical activities began during the last week of March. In Bikenge are mainly performed life-saving surgical procedures. During the Annual Review of Operations it was taken the decision to close the project during 2016.

2.2.2.9. Congo Democratic Republic, **BILI** - opened

On January 2015 it was acknowledged an important influx of refugees from the neighbouring country, Central African Republic, to the localities of Bili and Bosobolo (Nord Ubangi, Equateur province). Due to the identified health needs, OCB initiated a project by default to offer quality health care to the autochthones and refugees. Important logistic works were done in order to improve the existing infrastructure in the MoH hospital, and the first surgical intervention was performed on February 17th, 2015. Following the operational strategy, surgical activities are mainly focused in life-threatening conditions, while some planned elective surgery is offered to the population.

2.2.2.10. Congo Democratic Republic, **MASISI** – ongoing

In September 2007 MSF OCB decided to support the MoH hospital in Masisi in connection with the violence that was ongoing in the area. MSF intervention began in the hospital supporting surgical activities for life-threatening conditions, mainly linked to violence trauma. However, almost immediately surgical support began to cover also emergent obstetrical conditions in the frame of CEmONC. Afterwards, following the operational strategy, some elective planned surgery began to be provided.

2.2.2.11. Congo Democratic Republic, **NYABIONDO** – ongoing

Since October 2010, the MoH Health Centre of Nyabiondo is being supported by OCB giving the opportunity to perform emergent surgical procedures, mainly obstetrical. The aim is to reduce the maternal mortality in the area, when an in-time referral to Masisi referral hospital is not possible (e.g. night time, violence in the area, weather conditions, etc.). The support is done through training and supply but non MSF staff is engaged in the activities, thus, surgical activities are considered indirect.

2.2.2.12. Haiti, **TABARRE**²¹ – ongoing

Tabarre project, in Port-au-Prince, is a MSF owned hospital dedicated to acute surgical and trauma care. The project was conceived as a response to the need of the population after the devastating earthquake of 2010, and it is a continuation of Sarthe project, as the situation in the country remains non stable. The first surgical intervention was performed in February 14th, 2012, and very soon the first internal fixation procedure was performed, two days afterwards. This was linked to the fact that high standard of care and standard precautions were quickly achieved in the project.

From January 1st, 2015 a more in-detail database has been implemented in the project to monitor the main activities of the hospital with an integrated database that can allow easily following the activities of the hospital.

²¹ Tabarre is a neighbourhood of Port-au-Prince. As OCB has more than one project in the city, the denomination of this neighbourhood is used to identify the project.

2.2.2.13. Mauritania, **BASSIKOUNOU**, ongoing

Surgical activities began to be offered in January 2013, after the health centre was upgraded to have surgical capacity. The project already was running from March 2012 to offer health care to the refugees fleeing the conflict that emerged in Mali, and also to the local population. Surgical care is offered as surgical capacity only could be found very far from Bassikounou, being a risky situation if basic surgical care could not be performed in due timing increasing morbidity and mortality. The operational strategy in place is to perform only life-saving interventions.

2.2.2.14. Nepal, **CHARIKOT**, opened and closed

MSF intervention in Nepal was triggered after an earthquake on April 25th, 2015 and several aftershocks hit the country. After some exploratory missions, it was decided to intervene in Charikot where an existing structure was already available. MSF did several logistical works in order to render capable the structure to run health activities and the activities were focused only in the Emergency, Operating and In-Patient departments. The Out-Patient department, as well as the Maternity continued under MoH responsibility, while it was decided that MSF will also support with Caesarean section interventions. The first surgical intervention was performed on July 23rd. After four months of intervention, the decision of handing-over the project was taken and MSF closed the Emergency and Operating departments on November 23rd, and the In-Patient department in November 26th, 2015, not being possible to perform any handover with any organisation.

2.2.2.15. Pakistan, **TIMURGARA**, ongoing

MSF supports some activities of the Timurgara HQ hospital. While before January 2010 the support given by MSF was circumscribed to the Emergency department, following the events of violence in that year, it was decided to support the surgical department and deal with emergent surgical care, and the first surgical intervention was performed on January 13th, 2010. During the following months the incidence of surgical cases decreased, and in October 2010 it was decided to extend MSF support to the Maternity. Afterwards, all the surgical activities were handed over to the MoH on June 2014, and from that moment, MSF in Timurgara focuses in CEmONC activities. From mid-September to mid-November the project run only with national staff, as MSF was negotiating a new MoU. Proudly, the activities in the project continued with good results even if there were not present expatriate human resources.

2.2.2.16. South Sudan, **GOGRIAL**, closed

The surgical activities in Gogrial PHCC²² were put in place in order to be prepared for possible violence in the Sudanese general elections of April 2010 and the referendum for secession in January 2011. That is why; a temporary structure (an inflatable tent) was built, while a new hospital was built by the MoH in the nearby town of Kwajok (around 50 Km south). In April 2010 there was a surgical team in standby in the project, but fortunately, expected violence didn't arise. When the project arrived to standards for surgical care it was taken the decision to begin surgical activities and the first intervention was performed on June 29th, 2010. Surgical activities were assured by the presence of an expatriate team (surgeon and anaesthetist) that only did substitution as it was not possible to find national staff to whom teach and coach, or to whom handover the activities.

In Gogrial there were only performed life-saving surgical procedures, but surgical activities never arrived to expected levels and several times it was discussed the pertinence or not of these activities. At the end, a decision was taken to end surgical activities and the last surgical intervention was performed on November 11th. In Kwajok the MoH began to perform surgical activities and somehow it was possible to make a sort of handover. In 5½ years there were recorded 2999 entrances to the OT (surgical interventions) in 1852 patients (new cases).

²² PHCC: Primary Health Care Centre.

2.2.3. OCB surgical indicators by project in 2015

In order to be able to have a quick view on the performed surgical activities in different projects, it is given in Table № 3 a summary of the main indicators by project for 2015. The explanation for the given indicators is as follows:

- Patients: Reflects the number of primary interventions (new cases).
- Cases: Reflects the number of entrances / interventions to the Operating department and the number of anaesthesias. This number can be higher than the number of patients because one patient can be re-intervened several times for the same pathology.
- Procedures: Reflects the number of surgical procedures. This number can be higher than the number of cases (and therefore, from patients) because the data collection tools allows to encode up to three procedures for one intervention.
- The denominator is the number of patients for: mean age, female, trauma cases (all and violent), and Caesarean section.
- Postoperative infection: The denominator is the number of patients. It is only possible to develop it once. This indicator should carefully be analysed due to biases that can confound the reality, and data should be carefully interpreted, since it is not 100% reliable.
- The denominator is the number of cases for: primary interventions, emergent cases (urgent and delayed), minor / wound surgery, spinal anaesthesia, and intraoperative mortality.
- Spinal procedures for Caesarean section: It allows analysing the quality of anaesthesia in a project since the best technique for Caesarean section is the spinal one. Here there are considered spinal and combined techniques, because the second one is a procedure that begins with a spinal anaesthesia that afterwards is converted into general.
- Occupancy rate comprises: theatre time (entrance to operating room, anaesthesia induction, surgical intervention, anaesthesia wake-up, and discharge from operating room) by the quantity of days. The period in the recovery room is not recorded in this indicator.
- NA – not applicable, if the project didn't perform this activity.
- ND – non data, if the project didn't reported the needed information.

Table № 3: Summary of main indicators by project for 2015.

Mission		AFG	AFG	AFG	BDI	BDI	CAF	CAF	COD	COD	COD	COD	HTI	MRT	NPL	PAK	SSD
Project		Kabul	Khost	Kunduz	Bujumbura	Gitega	Bangassou	Castors	Bikenge	Bili	Masi	Nyabiondo (*)	Tabarre	Bassikounou	Charikot	Timurgara	Gogrial
Patients	number	1166	713	1664	262	114	967	1224	281	255	2224	200	3129	278	70	1129	95
Cases	number	1195	729	3462	873	168	1611	1344	300	338	3400	200	6409	324	89	1162	98
Procedures	number	1241	846	4889	941	176	1618	1406	322	363	3572	200	7980	327	89	1304	104
Mean Age	years	26	31	24	31	32	27	25	23	28	25	23	28	24	28	33	23
Female	%	66,0	100,0	13,1	10,3	100,0	52,8	100,0	74,7	54,9	79,1	89,5	26,3	73,0	67,1	100,0	63,2
All trauma	%	4,4	0,0	99,9	100,0	0,9	13,3	0,1	4,6	13,7	15,5	4,0	92,3	19,0	24,3	0,3	27,4
Violent trauma	%	2,0	0,0	47,5	95,4	0,9	1,8	0,1	0,0	2,7	3,5	1,5	23,9	1,8	0,0	0,0	17,9
Caesarean section	%	38,3	77,7	0,0	0,0	0,0	14,3	67,4	42,7	25,1	56,3	72,5	0,0	43,5	52,9	87,5	45,3
Post-op infection	%	0,9	0,7	10,2	ND	5,3	ND	ND	2,8	ND	1,4	ND	4,2	ND	ND	0,5	ND
Primary interventions	%	97,6	97,8	48,1	30,0	67,9	60,0	91,1	93,7	75,4	65,4	100,0	48,8	85,8	78,7	97,2	96,9
Emergent cases	%	91,6	100,0	100,0	100,0	0,6	92,2	100,0	97,0	82,8	96,1	100,0	100,0	100,0	100,0	100,0	100,0
Minor / wound surgery	%	8,2	0,4	60,8	87,4	4,8	65,6	9,2	27,0	27,0	50,9	22,5	49,4	43,5	40,4	1,2	14,2
Spinal anaesthesia	%	77,5	68,3	19,6	10,5	91,1	15,8	37,8	33,7	34,0	36,9	68,5	22,7	40,4	51,7	79,9	43,9
Spinal procedure / C-section	%	97,3	85,9	NA	NA	NA	66,7	61,6	70,8	37,5	90,5	91,7	NA	88,4	97,3	88,5	88,4
Intraoperative mortality	%	0,2	0,5	0,3	0,6	0,0	0,1	0,1	0,0	0,3	0,1	0,0	0,3	0,0	1,1	0,5	2,0
Occupancy rate	minutes/day	272	150	881	254	91	209	223	69	57	490	26	1509	61	45	192	24

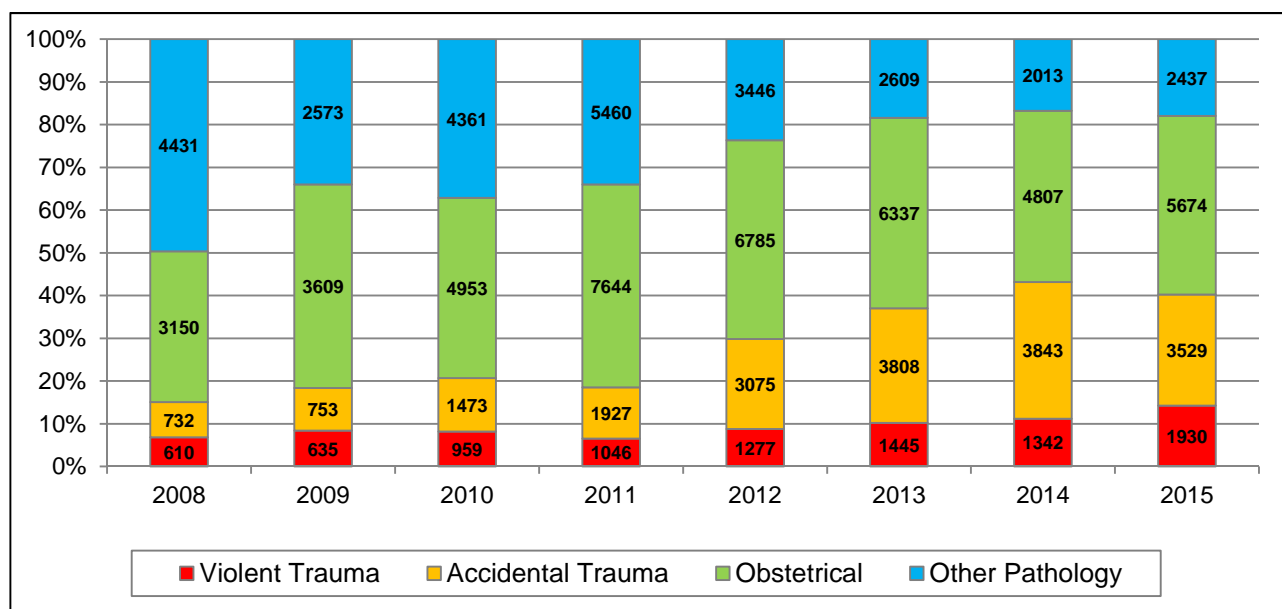
2.3. SURGICAL ACTIVITIES BY INDICATION

During 2015 there were performed 13570 primary interventions (new cases), that is an increase in around 13% from the previous year (2014, n=12005). This number reflects also the number of patients (as new persons) who benefited of surgical care. This important increase in primary interventions, however, put the level of new cases only higher than the ones that were obtained in 2010 (n=11746). This is because from 2011 (n=16077) until 2014 there was noted a decreasing trend in new cases. The increase of new cases during 2015 can be explained partially to the high level of activities in new projects (Bujumbura, Bangassou, Castors) and the increase of activities in trauma centres (Kunduz, Tabarre). In Table № 4 it can be seen their numbers and percentages, and in Graphic № 1 their annual distribution.

Table № 4: Indications for surgery, quantity and percentage, 2015.

Cause of Intervention	2012		2013		2014		2015	
	№	%	№	%	№	%	№	%
Violent trauma	1277	8,8	1445	10,2	1342	11,2	1930	14,2
Accidental trauma	3075	21,1	3808	26,8	3843	32,0	3529	26,0
Obstetrical	6785	46,5	6337	44,6	4807	40,0	5674	41,8
Other pathologies	3446	23,6	2609	18,4	2013	16,8	2437	18,0
Total	14583	100,0	14199	100,0	12005	100,0	13570	100,0

Graphic № 1: Indications for surgery, percentage in relative weights, 2015.



By comparing the proportions of 2015 with the ones of 2014, it is clear that the indications for surgery follow the same trend as in the previous year: increase of violent trauma. By contrary, and very interestingly, accidental trauma shows for the first time a decrease in the caseload. This is very unusual because the literature support the fact that unintentional injuries predominate in populations affected by prolonged insecurity²³. One explanation can be the fact that in Kunduz,

²³ Lafta R., Al-Shatari S., Cherewick M., et al. Injuries, Death, and Disability Associated with 11 Years of Conflict in Baghdad, Iraq: A Randomized Household Cluster Survey. PLoS One. 2015;10(8):e0131834.

before the dramatic stop of activities, there was a steady increase of violent trauma cases that was not correlated to an increase in accidental trauma cases due to the high violent situation ongoing in that context.

- Violent trauma as indication for surgery shows an increase in proportion that is seen since 2011, from around 7% to 14% of all new cases in the last five years. More important, in absolute numbers there is a sharp increase of new cases in relation to the previous year of 2014, recording an increase of around 40%.
- Accidental trauma shows a decrease in proportion of around 6%, while in absolute numbers the decrease is more important, in around 8%, being already statistically significant.
- In 2015 it is seen an important increase in the number of obstetrical pathology, in around 18%, while the proportion only increased in around 2%. This is very important because in terms of new cases, obstetrical causes are higher than in 2010 (n=4953), reverting a trend noted since 2011 (n=7644) of a constant decrease of obstetric causes.
- Other pathologies, in proportion, are in similar levels than the two previous years, while in absolute numbers show an increase in around 20%. It should be noted that in absolute numbers, the caseload of other pathologies has been decreasing since 2008.

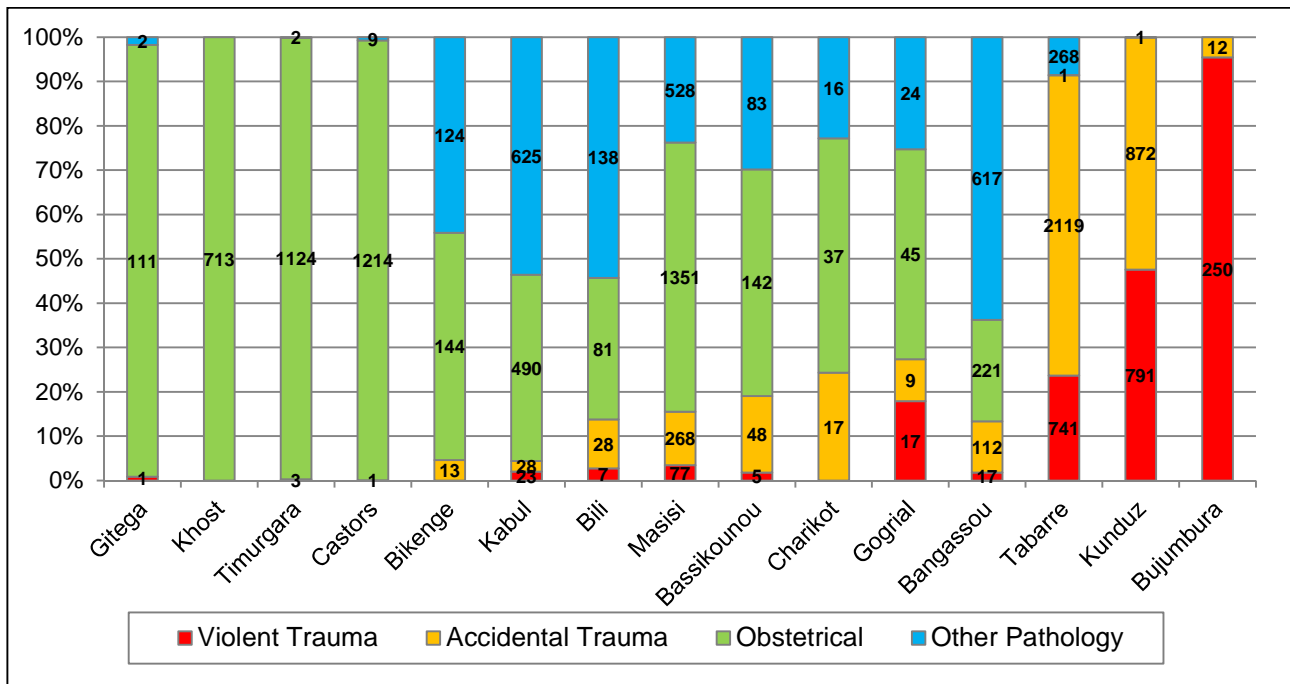
For better understanding, it is necessary to divide this information by the 15 projects where direct surgical activities were performed. In Table № 5 it is shown the detailed information, and in Graphic № 2 can be seen the relative weight of each indication for surgery by project.

In summary, OCB provided different types of surgical projects in response to differing needs in various contexts. Looking to the graphic it is possible to separate the projects in different groups. All these different types of patterns are useful to predict for planning surgical activity in new OCB projects, because indirectly they show us what kind of pathology we might find, linked with the environment, type of hospital and operational strategy. Collecting data has been critical in planning for human and material resources.

Table № 5: Indication for surgery (new cases) by project, quantity and percentage, 2015.

Cause of intervention		Gitega	Khost	Timurgara	Castors	Bikenge	Kabul	Bili	Masisi	Bassikounou	Charikot	Gogrial	Bangassou	Tabarre	Kunduz	Bujumbura
		№	1	0	0	1	0	23	7	77	5	0	17	17	741	791
	%	0,9	0,0	0,0	0,1	0,0	2,0	2,7	3,5	1,8	0,0	19,9	1,8	23,7	47,5	95,4
Accident	№	0	0	3	0	13	28	28	268	48	17	9	112	2119	872	12
	%	0,0	0,0	0,3	0,0	4,6	2,4	11,0	12,1	17,3	24,3	9,5	11,6	67,7	52,4	4,6
Obstetrical	№	111	713	1124	1214	144	490	82	1351	142	37	45	221	1	0	0
	%	97,4	100,0	99,6	99,2	51,3	42,0	32,2	60,7	51,1	52,9	47,4	22,8	0,0	0,0	0,0
Others	№	2	0	2	9	124	625	138	528	83	16	24	617	268	1	0
	%	1,7	0,0	0,1	0,7	44,1	53,6	54,1	23,7	29,8	22,8	25,2	63,8	8,6	0,1	0,0
Total		114	713	1129	1224	281	1166	255	2224	278	70	95	967	3129	1664	262

Graphic № 2: Causes of intervention by project, percentage in relative weights, 2015.



The projects have been grouped as follows:

- Gitega, Khost, Timurgara and Castors. Obstetric causes for intervention were almost 100% as all of them are projects focusing exclusively on reproductive health. Gitega was a project dealing specifically with obstetrical fistula pathology, while all the other three are maternities.
- Bikenge, Kabul and Bili are hospitals²⁴ providing surgical care to all pathologies. While obstetrical care is important (between 25 - 50%), other pathologies account for almost 50% of causes of intervention. Trauma pathology accounts for <15%.
- Masisi, Bassikounou, Charikot and Gogrial are also hospitals²⁵ providing surgical care to all pathologies. However, differently to the previous group of projects, obstetrical care accounts for around 50% or more of causes of intervention, while other pathologies only accounts for around 25%. It is important also to note that the incidence of trauma is already important, in between 15 to 25%.
- Bangassou is a general hospital where other pathologies²⁶ account for more than the half of causes for intervention, while obstetrics is <25%..
- Tabarre, Kunduz and Bujumbura are hospitals²⁷ specialized in trauma care. While Tabarre and Kunduz admission criteria are all type of trauma, in Bujumbura only are admitted trauma linked to violence. It is interesting to note the difference of incidence of accidental trauma between Tabarre, located in an urban area where road traffic accidents are frequent, and Kunduz, a project that was located in a conflict context.

²⁴ Bikenge is an upgraded Health Centre with capacity to perform surgical care.

²⁵ Bassikounou and Gogrial are upgraded Health Centre with capacity to perform surgical care.

²⁶ Other pathologies: in the data collection system mainly stands for visceral morbidity.

²⁷ Tabarre project also provides surgical care for non-trauma visceral morbidity.

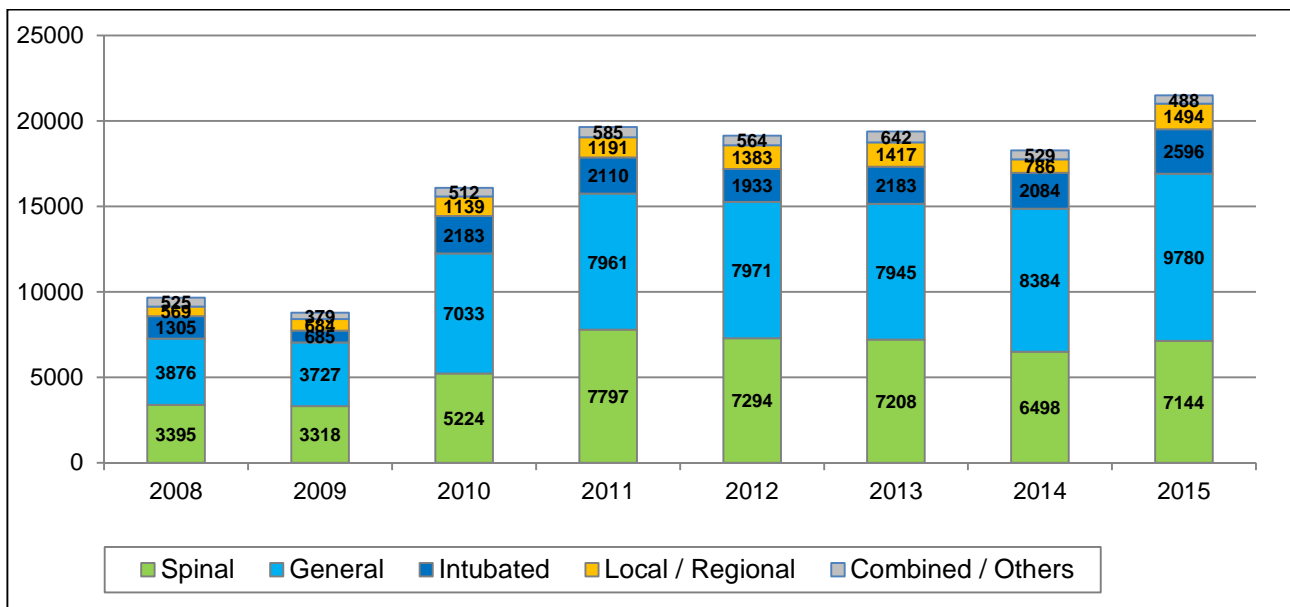
2.4. PERFORMED ANAESTHESIAS

During 2015 MSF OCB provided anaesthesia for 21502 interventions (in all the 15 projects with direct activities) which shows an important increase of around 18% from the previous year (2014, n=18281). The total number of anaesthetics equals the total number of entrances to the Operating department²⁸ which is higher than the numbers of primary interventions as a proportion of cases were re-interventions. The increase of 18% of entrances correlates with the one of new cases, 13%. The higher workload (entrances to the operating room) in relation to the caseload (new cases) can be explained by the fact that there is an important increase in violent trauma cases that due to the nature of the injury, in most of the circumstances need of re-interventions. In Table № 6 can be seen their numbers and percentages, and in Graphic № 3 the trend of performed anaesthesias (entrances to operating room).

Table № 6: Types of anaesthesia, quantity and percentage, 2015.

Type of anaesthesia	2012		2013		2014		2015	
	Nº	%	Nº	%	Nº	%	Nº	%
Spinal	7294	38,1	7208	37,2	6498	35,5	7144	33,2
General	7971	41,6	7945	41,0	8384	45,9	9780	45,5
Intubated	1933	10,1	2183	11,2	2084	11,4	2596	12,1
Local / Regional	1383	7,2	1417	7,3	786	4,3	1494	7,0
Combined / Others	564	3,0	642	3,3	529	2,9	488	2,2
Total	19145	100,0	19395	100,0	18281	100,0	21502	100,0
Spinal procedures for Caesarean section	4401 / 5296	83,1	4323 / 5030	85,9	3436 / 3877	88,6	3808 / 4589	83,0

Graphic № 3: Types of anaesthesia (total entrances to operating room), 2015.



²⁸ In very exceptional cases there were vaginal deliveries in the operating room that are accounted as an obstetric intervention but didn't receive anaesthesia. These cases are very few and are included as "Others" in order to keep coherence in the collected data.

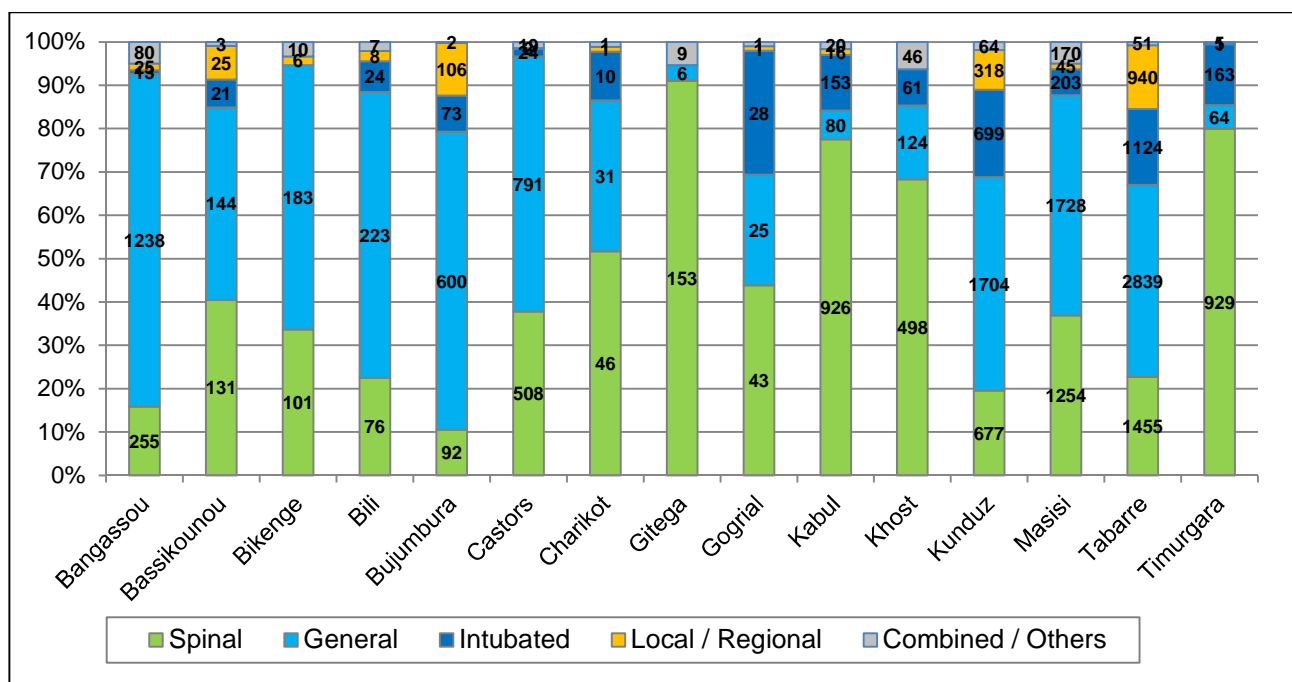
It is difficult to analyse the performed anaesthetic procedures because they are directly related to the type of performed procedure. It is also important to consider the skills of the anaesthesia provider and the type of available bio-medical devices. However, comparing the proportions of 2015 with the ones of previous years, there are not noted statistically valid differences.

Table № 7 shows the detailed information of the type of performed anaesthesia by project, and in Graphic № 4 can be seen their relative weights. These data is only informative because it is impossible a faire comparison between projects.

Table № 7: Types of anaesthesia by project, quantity and percentage, 2015.

Type of anaesthesia		Bangassou	Bassikounou	Bikenge	Bili	Bujumbura	Castors	Charikot	Gitega	Gogrial	Kabul	Khost	Kunduz	Masisi	Tabarre	Timurgara
Spinal	№	255	131	101	76	92	508	46	153	43	924	498	677	1254	1455	929
	%	15,8	40,4	33,7	22,5	10,5	37,8	51,7	91,1	43,9	77,3	68,3	19,6	36,3	22,7	79,9
General	№	1238	144	183	223	600	791	31	6	25	79	124	1704	1728	2839	64
	%	76,8	46,4	61,0	66,0	68,8	58,9	34,8	3,6	25,5	6,6	17,0	49,2	50,8	44,3	5,5
Intubated	№	13	21	0	24	73	24	10	0	28	153	61	699	203	1124	163
	%	0,8	6,5	0,0	7,1	8,4	1,8	11,3	0,0	28,6	12,8	8,4	20,2	6,0	17,5	14,0
Local / Regional	№	25	25	6	8	106	2	1	0	1	16	0	318	45	940	1
	%	1,6	7,7	2,0	2,3	12,1	0,1	1,1	0,0	1,0	1,4	0,0	9,2	1,3	14,7	0,1
Combined / Others	№	80	3	10	7	2	19	1	9	1	23	46	64	170	51	5
	%	5,0	1,0	3,3	2,1	0,2	1,4	1,1	5,3	1,0	1,9	6,3	1,8	5,0	0,8	0,5
Total		1611	324	300	338	873	1344	89	168	98	1195	729	3462	3400	6409	1162

Graphic № 4: Types of anaesthesia by project, percentage in relative weights, 2015.



The quality of anaesthesia care is difficult to assess between projects because the types of surgical intervention greatly varies. In order to assess quality of anaesthesia care, to compare the types of anaesthesia used for Caesarean sections is a useful proxy²⁹. It is widely known that the anaesthesia of choice for obstetric surgery is the spinal³⁰, and therefore, it is good to compare the ratios of spinal procedures³¹ for Caesarean section. A good percentage (>65%) of spinal anaesthesia can indicate a good quality of anaesthesia provision, and at the same time, being aware that doesn't exist a gold standard for this ratio, one over 75% can be considered a good indicator.

In Table № 8 it is given the detailed information and in Graphic № 5 can be seen the relative weight of spinal procedures for Caesarean section, by project. Specific information for each project concerning this important quality indicator is described in each of the 2015 annual project review for surgical activities. In this report it is made a comparison between projects, and not within a particular one. There are excluded from the table and graphic the following projects:

- Gitega: specialized project for Obstetric Fistula.
- Bujumbura, Kunduz and Tabarre: trauma centres.
- Charikot: short intervention (already closed) with low caseload.

Table № 8: Spinal procedures for Caesarean section by project, percentage, 2015.

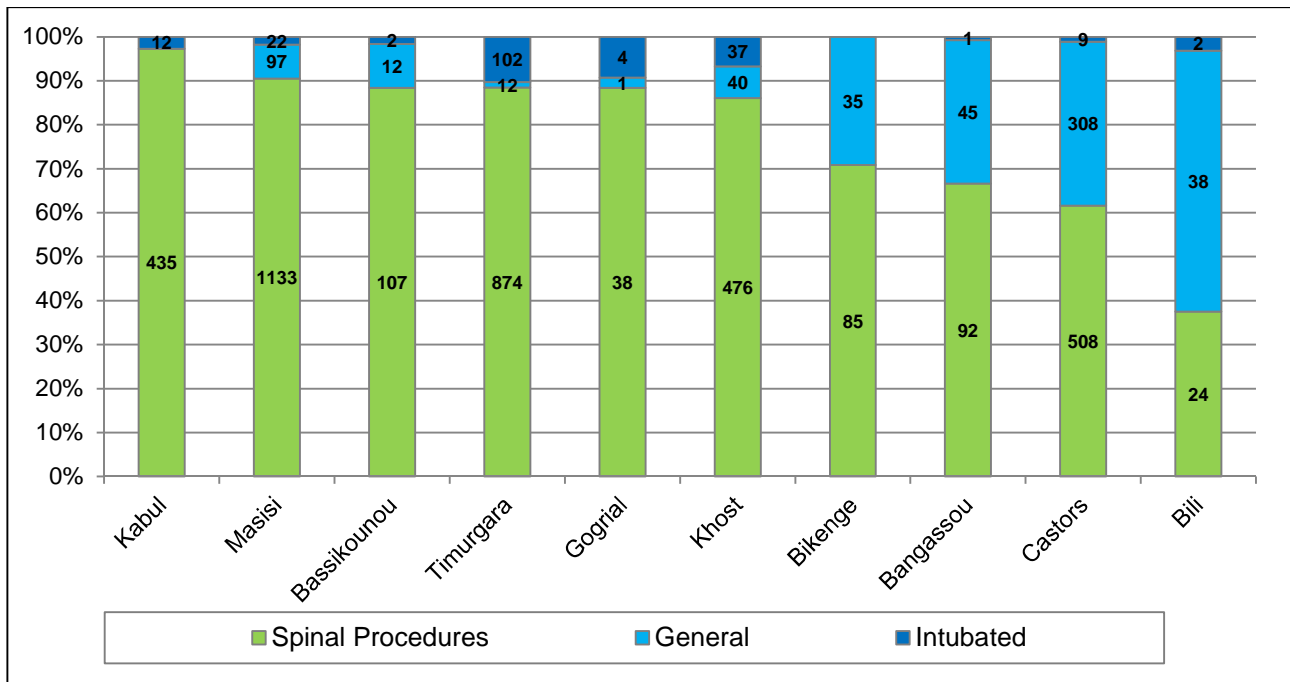
Type of anaesthesia		Kabul	Masisi	Bassikounou	Timurgara	Gogrial	Khost ³²	Bikenge	Bangassou	Castors	Bili
Spinal procedures	№	435	1133	107	874	38	476	85	92	508	24
	%	97,3	90,5	88,4	88,5	88,4	85,9	70,8	66,7	61,6	37,5
General	№	0	97	12	12	1	40	35	45	308	38
	%	0,0	7,7	9,9	1,2	2,3	7,2	29,2	32,6	37,3	59,4
Intubated	№	12	22	2	102	4	37	0	1	9	2
	%	2,7	1,8	1,7	10,3	9,3	6,7	0,0	0,7	1,1	3,1
Total Caesarean Sections		447	1252	121	988	43	554	120	138	825	64

²⁹ Spinal anaesthesia for Caesarean section: The general goals are the safety of the mother, the safety of the baby, the comfort of the mother and the ability to perform the surgery. General anaesthesia is reserved for a true emergency; however there are some associated risks that can be avoided with spinal anaesthesia. The fact that the mother can remain awake, see the baby and interact with the baby as soon as it is born and does not require a breathing tube are all advantages. General anaesthesia does affect the newborn, another reason why spinal anaesthesia is preferred.

³⁰ Hawkins JL (Clin Obstet Gynecol. 2011 Jan; 117 (1):69-74) reported a risk ratio between spinal and general anaesthesia of 1.7 (2,5 vs. 16,8 deaths per million).

³¹ There is a need to add the combined techniques, where it was performed at the beginning a spinal procedure that afterwards was converted to general.

³² In Khost once it was performed a Caesarean section without anaesthesia in a pregnant in asystole in order to save the life of the baby (perimorten Caesarean section). This entrance was encoded as "other" anaesthesia and it is not included in this given information.

Graphic № 5: Spinal procedures for Caesarean section, project, percentage in relative weights, 2015.

It is very encouraging to acknowledge that the overall proportion of 83% was reached during 2015. This excellent level of anaesthesia provision for Caesarean sections is slight lower than the previous year (2014, %=88). This can be partially explained to the fact that there were some new projects where the ratio was around 70% or below, and all the efforts are ongoing to improve the anaesthesia management in those settings.

Regarding the provision of quality anaesthesia by spinal procedures in Caesarean sections, the projects also can be separated in groups. It should be reminded that combined anaesthesia is an attempt to perform spinal anaesthesia that for some reason doesn't work and the anaesthesia is converted to general. In that sense, it is possible to add the numbers of combined procedures to the one of spinals.

- Excellent level, above 90%: Kabul and Masisi.
- Very good level, between 75 and 90%: Bassikounou, Timurgara, Gogrial and Khost.
- Good level, between 65 and 75% (1 project): Bikenge and Bangassou.
- Low level, less than 65%:
 - Castors is a project where national nurses anaesthetists are been trained by international staff in order to improve anaesthesia management. However, due to security constraints, international staff cannot be present in the hospital during night shifts when mainly Caesarean sections are performed, and therefore, a lot of them are performed under general anaesthesia.
 - Bili is a new project where during the first months of MSF support (up to May), the capacity to perform spinal anaesthesia was not present due to lack of supply. However, already during the month of June was noted and increase of spinal procedures, and during the last two months of the year, the ratio was already over 80%. As in the report are given averages, in the case of Bili is not so fair, and hopefully in the next year report, the ratios will be good.

2.5. SURGICAL PROCEDURES BY TYPE

During 2015 there were reported 25178 surgical procedures in the 15 OCB projects performing direct activities. This number is even higher than the entrances to the Operating room (performed anaesthesias) because in some cases there were performed more than one surgical procedure to a patient during the same anaesthesia procedure (in one intervention). This is important information that shows the work done by the surgical team and allows controlling correctly the use of the material resources in a project.

However, not all the projects used the possibility to record more than one procedure during the performed intervention³³ while registering this information (can be written up to three procedures for each performed intervention / anaesthesia). For this reason, and to avoid statistical errors, it is taken into consideration for the analysis only the data submitted as “type I” from projects that reported more than one intervention. For this reason, the numbers can be slight different to the specific reports done for each single project, that strongly depends of what was considered by the surgical team as the most important performed procedure during the surgical intervention. Therefore, the total number of performed procedures arrives to be the same than the number of entrances to the OD (performed anaesthesias = 21502).

Due to the ongoing increase of the complexity of surgical procedures that includes specialized surgery, from this 2015 Annual Report, specialized surgery will be quoted separately from orthopaedics, even if their quantity if not so big. At the same time, urology procedures will be included within specialized surgery as it is more logical than to include them within gynaeco-obstetrics procedures.

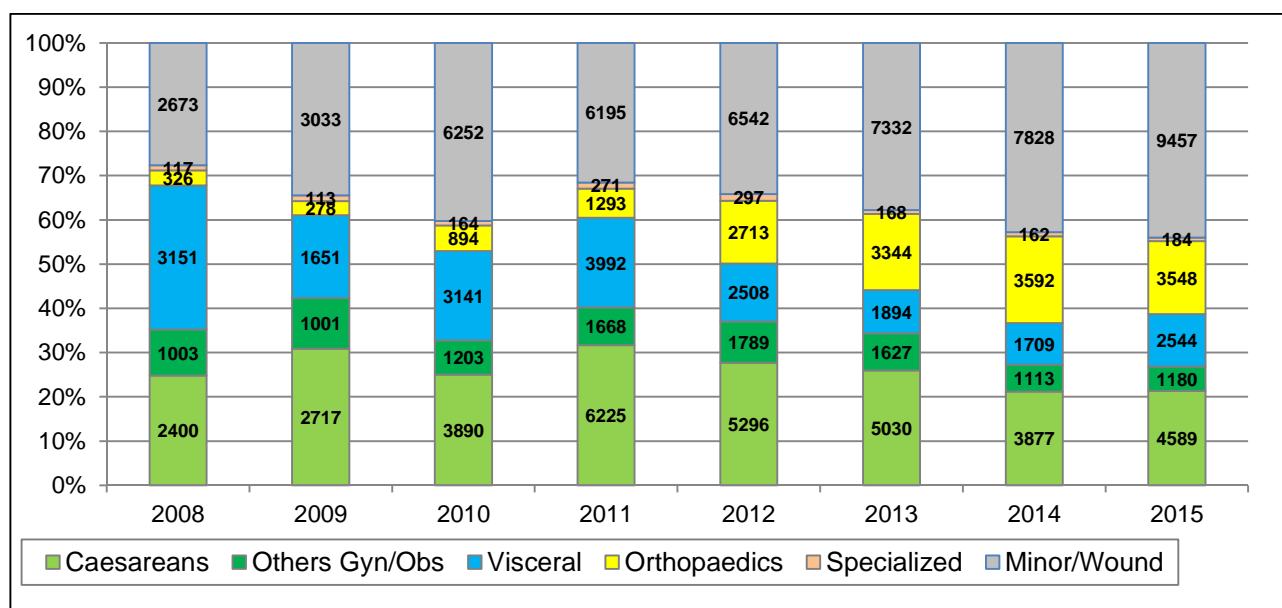
In Table № 9 can be seen their numbers and percentages, and in Graphic № 6 their relative weight.

Table № 9: Surgical procedures, quantity and percentage, 2015.

Type of procedure	2012		2013		2014		2015	
	№	%	№	%	№	%	№	%
Caesareans ³⁴	5296	27,7	5030	25,9	3877	21,2	4589	21,3
Others Gyn/Obs	1789	9,3	1627	8,4	1113	6,1	1180	5,5
Visceral	2508	13,1	1894	9,8	1709	9,3	2544	11,8
Orthopaedics	2713	14,2	3344	17,2	3592	19,6	3548	16,5
Specialized	297	1,6	168	0,9	162	0,9	184	0,9
Minor/Wound	6542	34,2	7332	37,8	7828	42,8	9457	44,0
Total	19145	100,0	19395	100,0	18281	100,0	21502	100,0

³³ To clarify again, one surgical intervention is done with one anaesthesia procedure, in one entrance to the Operating room. In one intervention it is possible to record up to three surgical procedures. In this case, we are considering only one type of procedures because not all the projects reported all the performed procedures, and also, because the reporting is very biased, depending of what the surgical team understands for different types of procedures. E.g., an extensive debridement in an upper limb might be considered more important than an external fixation in a lower limb for a surgical team, which necessarily will not be the same opinion of another surgical team.

³⁴ The given percentages are slightly different to the ones given in the Executive Summary (Table № 1) because here are considered all the entrances, while in that summary are considered only the new cases / patients.

Graphic № 6: Surgical procedures, percentage in relative weights, 2015.

It is very difficult to make a fair analysis of the performed surgical procedures when considering only one variable of three. Considering that there might be biases in the reporting, the following characteristics could be identified:

- The proportion of obstetrical procedures (including Caesarean sections) remains almost the same in relation of the previous year. In the last two years, these proportions are below 30% of the performed surgical procedures, which is lower to all the other years since 2008 where the proportions were over 30%.
- Visceral surgery shows a discrete increase in proportion, around 3% from 2014. But in absolute numbers, the increase is important, in around 45%. This can be partially explained to the fact that violent causes of intervention increased during 2015, that implies also the need of visceral surgery.
- Orthopaedic surgery shows a slight decrease in proportion of around 3%, while in absolute numbers, in 2015 there performed almost the same number of orthopaedic procedures than in 2014. This also can be partially explained due to the increase of violent trauma cases and decrease of accidental trauma cases. Violent trauma is linked to multiple re-interventions and minor/wound surgery.
- Following the trends in orthopaedic surgery, in the other hand, minor/wound surgery shows a slight increase in proportion of around 2%, while in absolute numbers, the increase is important, in around 20%. This trend can be also partially explained to the fact that in 2015 there was recorded an increase of violent trauma causes, that as was explain before, are linked to multiple re-interventions and minor/wound surgery due to the nature of the injury.

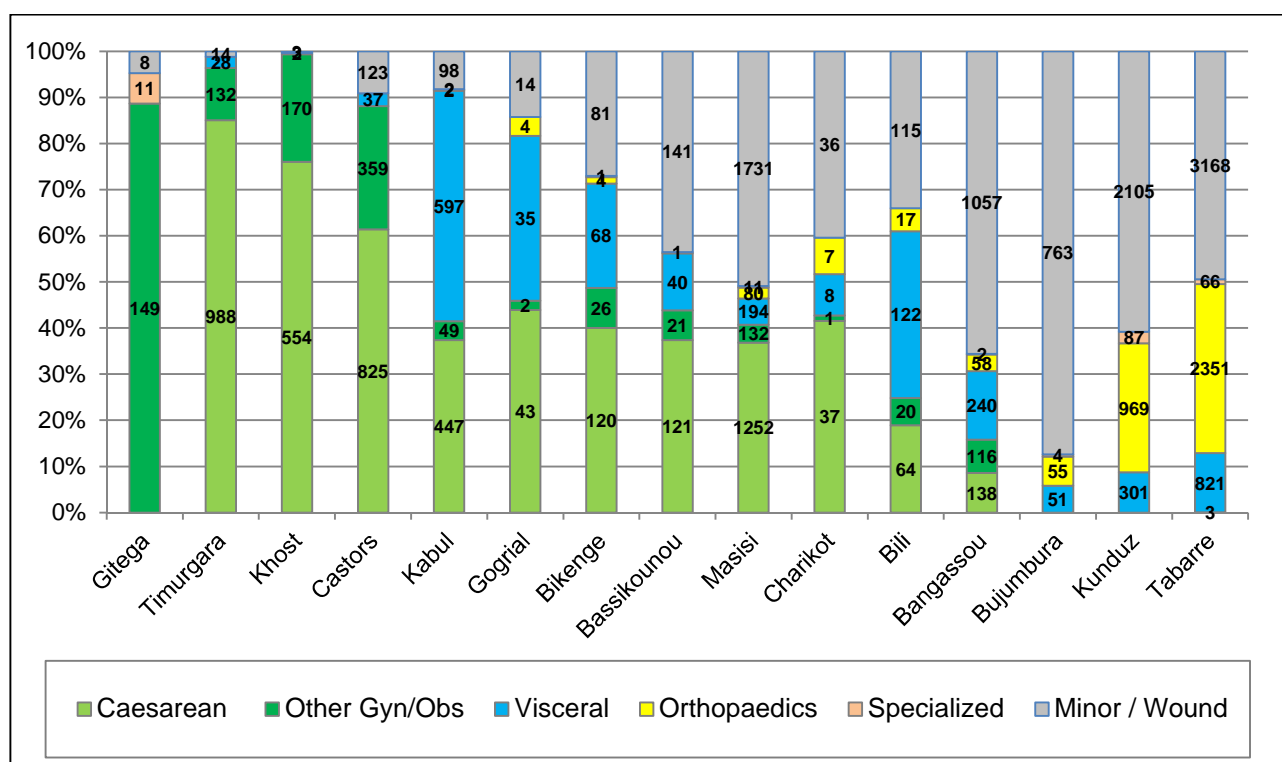
These are overall data gathered from all the projects performing surgical activities. In order to be more descriptive, it is necessary to divide this information by project. Table № 10 shows the detailed information, and in Graphic № 7 can be seen the relative weight of each type of intervention.

Analysing the types of performed interventions, it is possible to join the projects in groups, and also it is possible to find some differences between them. This gives a value information to foreseen the possible type of surgery that will be done depending of the context and human resources, and also, to improve the surgical care given to our patients.

Table № 10: Surgical procedures by project, quantity and percentage, 2015.

Surgical procedures		Gitega	Timurgara	Khost	Castors	Kabul	Gogrial	Bikenge	Bassikounou	Masisi	Charikot	Bili	Bangassou	Bujumbura	Kunduz	Tabarre
		Caesarean section	№	0	988	554	825	447	43	120	121	1252	37	64	138	0
	%	0,0	85,0	76,0	61,4	37,4	43,9	40,0	37,3	36,8	41,6	18,9	8,6	0,0	0,0	0,0
Other Gynaecology / Obstetrics	№	149	132	170	359	49	2	26	21	132	1	20	116	0	0	3
	%	88,7	11,4	23,3	26,7	4,1	2,0	8,7	6,5	3,9	1,1	5,9	7,2	0,0	0,0	0,0
Visceral	№	0	28	2	37	597	35	68	40	194	8	122	240	51	301	821
	%	0,0	2,4	0,3	2,8	50,0	35,7	22,7	12,3	5,7	9,0	36,1	14,9	5,8	8,7	12,8
Orthopaedics	№	0	0	0	0	2	4	4	1	80	7	17	58	55	969	2351
	%	0,0	0,0	0,0	0,0	0,2	4,1	1,3	0,3	2,4	7,9	5,0	3,6	6,3	28,0	36,7
Specialized	№	11	0	0	0	2	0	1	0	11	0	0	2	4	87	66
	%	6,5	0,0	0,0	0,0	0,2	0,0	0,3	0,0	0,3	0,0	0,0	0,1	0,5	2,5	1,0
Minor / Wound	№	8	14	3	123	98	14	81	141	1731	36	115	1057	763	2105	3168
	%	4,8	1,2	0,4	9,2	8,2	14,3	27,0	43,5	50,9	40,4	34,0	65,6	87,4	60,8	49,4
Total		168	1162	729	1344	1195	98	300	324	3400	89	338	1611	873	3462	6409

Graphic № 7: Surgical procedures by project, percentage in relative weights, 2015.



The projects can be grouped as follows:

- Gitega: a vertical project where specific gynaecologic interventions were performed: obstetrical fistula repair.
- Timurgara, Khost and Castors: all of them maternities where the level of performed Caesarean sections was >60%. There are some differences between them, and mainly regarding other gynaeco / obstetrics procedures. In Khost there were several procedures performed for post-partum complications as cervical tear lacerations / tears that in other projects might be performed in the delivery room. And in Castors, there were a lot of performed curettages (>200) that in other projects are performed in the delivery room with the use of MVA³⁵.
- Kabul, Gogrial and Bikenge: all of them are general hospitals where the level of Caesarean sections was between 30 and 50%. However, it is important also the level of visceral procedures that account for almost 25% in Bikenge, up to 50% in Kabul. It is important to note that in Kabul there are performed planned elective surgeries where mainly visceral surgery is performed, that is not the case for the other two projects where life-saving surgical procedures are most performed.
- Bassikounou, Masisi and Charikot: all of them are general hospitals where the level of Caesarean sections is important as in the previous group (between 30 and 50%) but where minor / wound surgery is importantly performed, also in levels between 30 and 50%. In these projects, visceral surgery is present but <15%. The important presence of minor / wound surgery can be partially explained to the fact that in these projects there were recorded important numbers of trauma cases, in between 15 and 30% of causes for intervention.
- Bili and Bangassou: there are also general hospitals where the level of Caesarean sections is <30% in general. In Bangassou the level of Caesarean sections was even <10%, but it needs to be considered that in the project there were performed several planned elective surgery, mainly herniorrhaphies in important number (around 160 procedures), a fact that might have reduced the proportion of Caesarean sections. Also in Bangassou there was a time during 2015 that a lot of minor / wound surgery was performed inside the operating room, that might not be related to specific needs but to the habits of the surgeon in that moment, a fact that also might be detrimental by reducing more the ratio of Caesarean section in this project.
- Bujumbura: it is a new project focused in trauma cases. However, due to the emergency of its beginning and the ongoing works to improve more the provided quality care and local human resources skills, complex and specific orthopaedic procedures were not performed. That is why the level of them was <10% while the level of minor / wound procedures was >85%.
- Kunduz and Tabarre: both were during 2015 specific and very developed trauma centres in OCB. Due to the difference in context and the nature of the injury it is possible to explain the differences between both projects. Kunduz project was receiving important number of violent trauma (<50%) that mainly were open fractures in need of several re-interventions for wound care and where it was not absolutely needed specific orthopaedic procedures. In the other hand, Tabarre project was receiving mainly accidental trauma (>65%) that in most of the cases were closed fracture that needed specific orthopaedic procedures.

³⁵ MVA: Manual Vacuum Aspiration is considered one of the safest medical procedures that replaces instrumental curettage. It is performed with a handheld syringe as a source of suction for removing uterine contents. The procedure can last between 5 and 15 minutes and can be easily done in the Delivery room with proper analgesia.

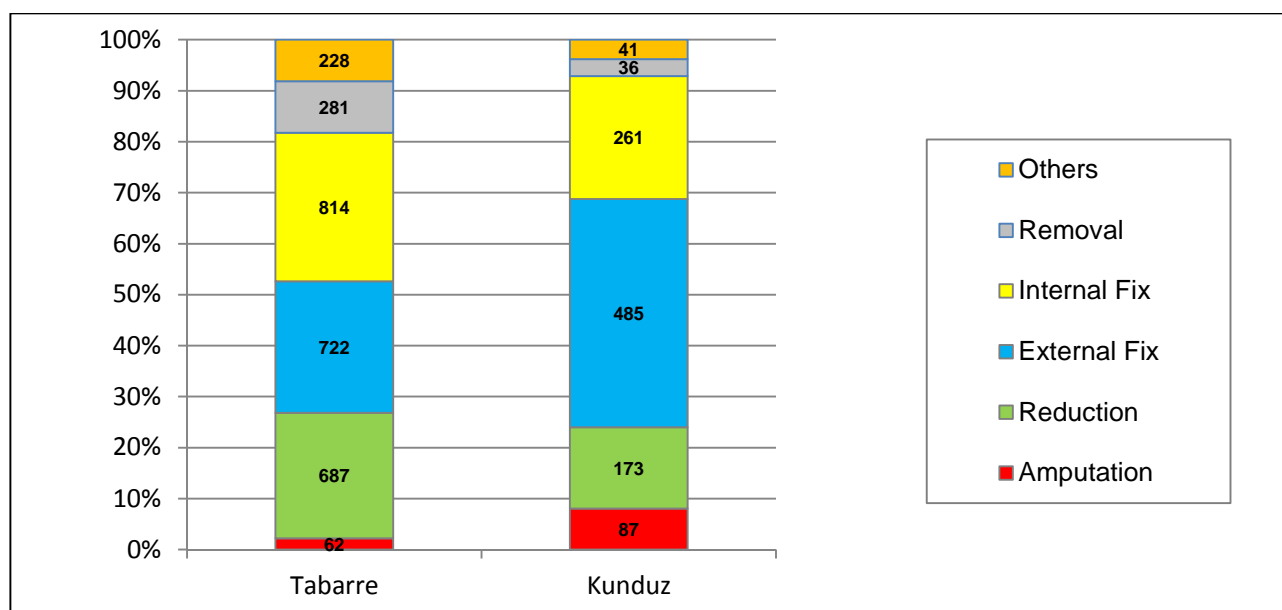
2.6. ORTHOPAEDIC CARE

During 2015 OCB run two projects where complex orthopaedic care was offered: Tabarre and Kunduz. As trauma centres, it is necessary to go more in detail in orthopaedic care: in Tabarre there were performed 2794 orthopaedic procedures and in Kunduz, 1083. The shown data consider all the performed orthopaedic procedures (including Type 1, 2 and 3). In Table № 11 is given detailed information for the last three years, and in Graphic № 8 it can be seen the relative weight of each type of intervention for 2015.

Table № 11: Orthopaedic procedures by project, percentage in relative weights, 2015.

TABARRE	2013		2014		2015	
	№	%	№	%	№	%
Amputation	32	1,6	65	2,6	62	2,2
Reduction	343	17,6	523	20,8	687	24,6
External fixation	360	18,5	572	22,7	722	25,8
Internal fixation	904	46,6	956	38,0	814	29,1
Removal of fixators	165	8,5	187	7,5	281	10,1
Others	140	7,2	212	8,4	228	8,2
TOTAL	1944	100,0	2515	100,0	2794	100,0
KUNDUZ	2013		2014		2015	
	№	%	№	%	№	%
Amputation	85	5,6	121	6,8	87	8,0
Reduction	438	28,7	448	25,3	173	16,0
External fixation	332	21,7	412	23,3	485	44,8
Internal fixation	485	31,7	672	37,9	261	24,1
Removal of fixators	114	7,5	64	3,6	36	3,3
Others	74	4,8	55	3,1	41	3,8
TOTAL	1528	100,0	1772	100,0	1083	100,0

Graphic № 8: Orthopaedic procedures by project, percentage in relative weights, 2015.



Remark: From January 1st, 2015, a detailed data collection system was introduced in the Operating departments of OCB trauma centres. The system allows knowing what types of internal fixation procedures are performed: intramedullary nailing, plates and dynamic hip screws. Gamma-nails were introduced during 2015 and the data collection system was not settled to record them. Therefore, they were recorded among “others”. Corrections to the OCB data collection for Operating department were already done in order to have the capacity to record also gamma-nail procedures from January 2016

2.7. OBSTETRIC FISTULA ACTIVITIES

Obstetric fistula (OF) is a complication of delivery that occurs in resource-poor countries where there is lack of comprehensive emergency obstetrical care, and mainly, provision of Caesarean section in time. This pathology also is present when the surgery provider is not enough trained that produces serious damages in the women’s pelvis. This pathology affects the poorest layers of the society, where women with OF are stigmatised by the population due to the smell and leakages, and often they are excluded from the community.

During 2015, only Gitega project developed this kind of activities and 109 patients (new cases) with obstetrical fistula underwent a surgical repair³⁶. However, it is also important to remember that there were more surgical OF repairs, but to old patients, being 39 women. That means that in Gitega, during 2015, 148 women underwent a OF surgery. In Table № 11 it is given a summary of performed surgical OF repair, new cases.

Due to operational strategies, closure of projects and instability in some contexts, obstetric fistula activities are not foreseen for the year 2016.

Table 12: Patients that underwent a surgical intervention in Gitega project, yearly

	2010	2011	2012	2013	2014	2015	TOTAL
Total patients	160	408	485	429	363	167	2012
New patients	146	335	352	292	259	114	1498
Old patients	14	73	133	137	104	53	514
Total OF repairs	144	380	463	385	322	148	1842
New patients	132	320	342	278	243	109	1424
Old patients	12	60	121	107	79	39	418

In obstetric fistula surgery, the meaning of degree of urgency is different, and it is use to identify the re-interventions performed during a same hospitalisation period:

- Planned: there are all the first interventions performed during a hospitalisation period.
- Delayed: there are subsequent interventions performed during a hospitalisation period.
- Urgent: when an intervention is performed due to complications after OF surgical repair, meaning that they are re-interventions, or when an intervention is performed urgently due to the pathology of the patient (mostly not related to OF), meaning that they are primary interventions.

³⁶ The surgical repair is defined as a planned but essential intervention.

2.8. EMERGENT SURGERY

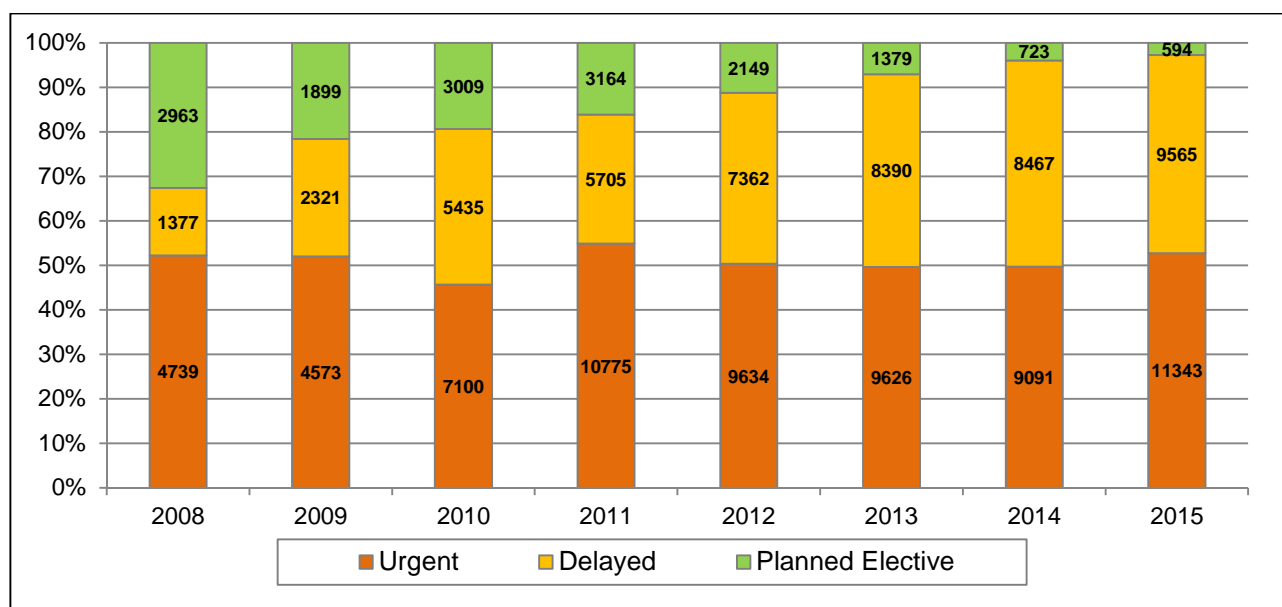
Emergent surgery is defined as urgent or delayed cases. Urgent cases are life-saving conditions and acute emergencies. Delayed cases cannot wait more than few days without significant morbidity. Planned elective surgery can be delayed for a significant period of time without an increase in morbidity. In MSF, certain planned procedures are considered essential and address conditions amenable to a proven surgical treatment which may not affect the patient's health / life immediately but brings to the patient suffering, handicapping and disability. In MSF data collection tools for surgical activities, the interventions can be divided in three degrees of urgency³⁷: urgent, delayed and planned elective. As the understanding of what can be urgent and what can be delayed might be different depending of each person that reports the case, it is better to talk about emergent surgery, and by that, this indicator can be comparable between projects. For further analysis, it is going to be used only the data of direct surgical activities.

In Table № 13 and Graphic № 9 can be seen the detailed information of emergent surgery within MSF-OCB activities.

Table № 13: Emergent surgery and planned surgery, quantity and percentage, 2015.

Degree of Urgency	2012		2013		2014		2015	
	№	%	№	%	№	%	№	%
Urgent	9634	50,3	9626	49,6	9091	49,7	11343	52,7
Delayed	7362	38,5	8390	43,3	8467	46,3	9565	44,5
Planned elective	2149	11,2	1379	7,1	723	4,0	594	2,8
Total	19145	100,0	19395	100,0	18281	100,0	21502	100,0

Graphic № 9: Emergent surgery and planned surgery, percentage in relative weights, 2015.



³⁷ Degrees of urgency:

- Urgent. Acute emergency (e.g. haemostatic hysterectomy, peritonitis, open fracture, etc.).
- Delayed, moderately urgent surgery that may be postponed for a few days but must imperatively be performed: The patient cannot be sent back home (e.g. secondary closure, skin graft, dressing under general anaesthetic, etc.).
- Planned elective, non-urgent and programmed surgery. The patient may be sent home (e.g. non-complicated hernia, varicose veins, etc.)

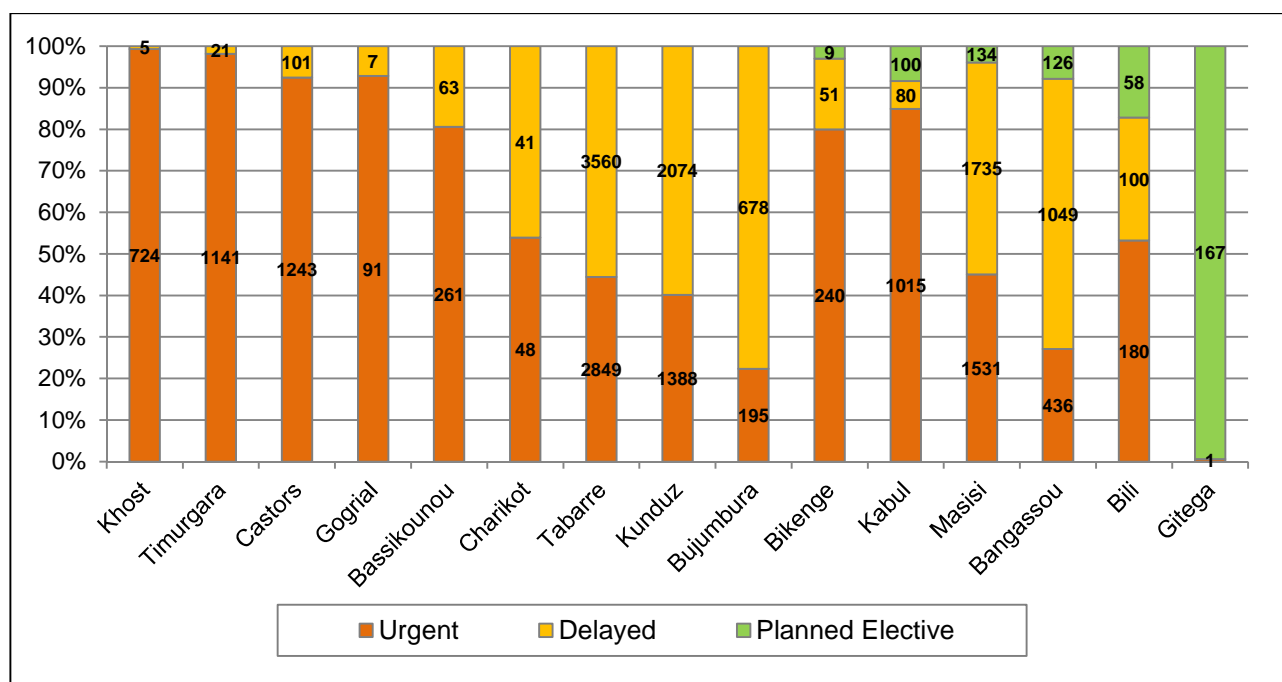
For 2015 there were reported 20908 emergent cases, scoring a level of around 97% (cases=21502). The percentage of emergency surgery in relationship with the previous year remains almost the same (2014, %=96; 2013, %=92; 2012, %=88) showing anyway a slight increase in proportion but an important increase in absolute number in around 20%. This also meant that planned elective surgery continued to show a decreasing trend in OCB surgical activities in absolute and relative numbers.

For better analysis, it is necessary to discriminate this data by project, what it is shown in Table No 14 and in Graphic No 10.

Table No 14: Emergent and planned surgery, by project, 2015.

Degree of urgency		Khost	Timurgara	Castors	Gogrial	Bassikounou	Charikot	Tabarre	Kunduz	Bujumbura	Bikenge	Kabul	Masisi	Bangassou	Bili	Gitega
Urgent	Nº	724	1141	1243	91	261	48	2849	1388	195	240	1015	1531	436	180	1
	%	99,3	98,2	92,5	92,9	80,6	53,9	44,5	40,1	22,3	80,0	84,9	45,0	27,1	53,2	0,6
Delayed	Nº	5	21	101	7	63	41	3560	2074	678	51	80	1735	1049	100	0
	%	0,7	1,8	7,5	7,1	19,4	46,1	55,5	59,9	77,7	17,0	6,7	51,1	65,1	29,6	0,0
Planned elective	Nº	0	0	0	0	0	0	0	0	0	9	100	134	126	58	167
	%	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,4	8,4	3,9	7,8	17,2	99,4
Total	Nº	729	1162	1344	98	324	89	6409	3462	873	300	1195	3400	1611	338	168
Emergent	%	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	97,0	91,6	96,1	92,2	82,8	0,6

Graphic No 10: Emergent and planned surgery, by project, percentage by relative weight, 2015.



The ratio of emergent to planned elective cases is an important indicator in programmatic planning. Knowing what types of surgical cases are performed assists in human resource planning (type and number of specialists). It also influences on the type of infrastructure, medical equipment and supply needed. It assists the operations in determining their future strategy (e.g. if a surgical programme in a conflict area has non-trauma and has mainly planned cases, then perhaps it should be moved closer to the active conflict).

It is important to clarify that all type of re-interventions are considered or urgent, or delayed. At the same time, all interventions which cause is trauma also are considered or urgent, or delayed. This is linked to the fact that such kind of interventions should be performed anyway, and patient cannot be sent home without it.

In order to compare transversally between projects, it is interesting to take into account the percentage of emergent surgery, and within it, the level of delayed surgery. Following this schema, the projects can be grouped in the following way:

- Khost, Timurgara, Castors and Gogrial: The first three are maternities while the Gogrial was a general hospital. In all of them the proportion of emergent surgery was of 100% following the operational strategy in place. Also it should be considered that Gogrial project had a low caseload comparing to the maternities, and therefore, a faire comparison is not possible. AT the same time, there is recorded around 10% of delayed surgery in Castors project, which mainly is linked to minor / wound surgery after post-operative site infection. It can be the case that in Khost and Timurgara the infection rate was lower and that some minor / wound surgeries were performed in the hospitalisation ward and not in the operating room.
- Bassikounou and Charikot: Both general hospitals performed exclusively emergent surgery, from which delayed one was between 20 to 50%. Due to the low caseloads of both projects, it is not possible to do correct comparisons. However, it should be clear that perhaps Bassikounou would had be included in the previous group if several delayed surgery linked to minor / wound surgery for re-interventions would had been done in the hospitalisation ward and not in the operating room.
- Tabarre, Kunduz and Bujumbura: All these three centres are dedicated to trauma care (and in Tabarre also some emergent visceral surgery) and therefore, all the performed interventions were emergent. The difference in urgency is linked to the following:
 - Tabarre project managed also visceral surgery, and most trauma cases were accidental. This meant that the need of scheduled re-interventions was not important.
 - Kunduz project managed also trauma cases, being the majority linked to violence. This type of cause for intervention is linked with several re-interventions.
 - Bujumbura project managed exclusively violent trauma cases, and that is why the number of delayed surgery linked to several re-interventions is very important.
- Bikenge and Kabul: Both are general hospitals were some planned elective surgery is offered. The reduce proportion of delayed surgery is linked to the low incidence of trauma in both projects.
- Masisi, Bangassou and Bili: All of them are also general hospitals, were also some planned elective surgery is offered. Comparing with the previous group, delayed surgery has an important relative weight as all these projects are dealing with several cases of trauma.
- Gitega: This is a very specific project where obstetric fistula repair was done in a much planned order, and therefore, emergent surgery is almost not present.

2.9. ORDER OF THE INTERVENTION

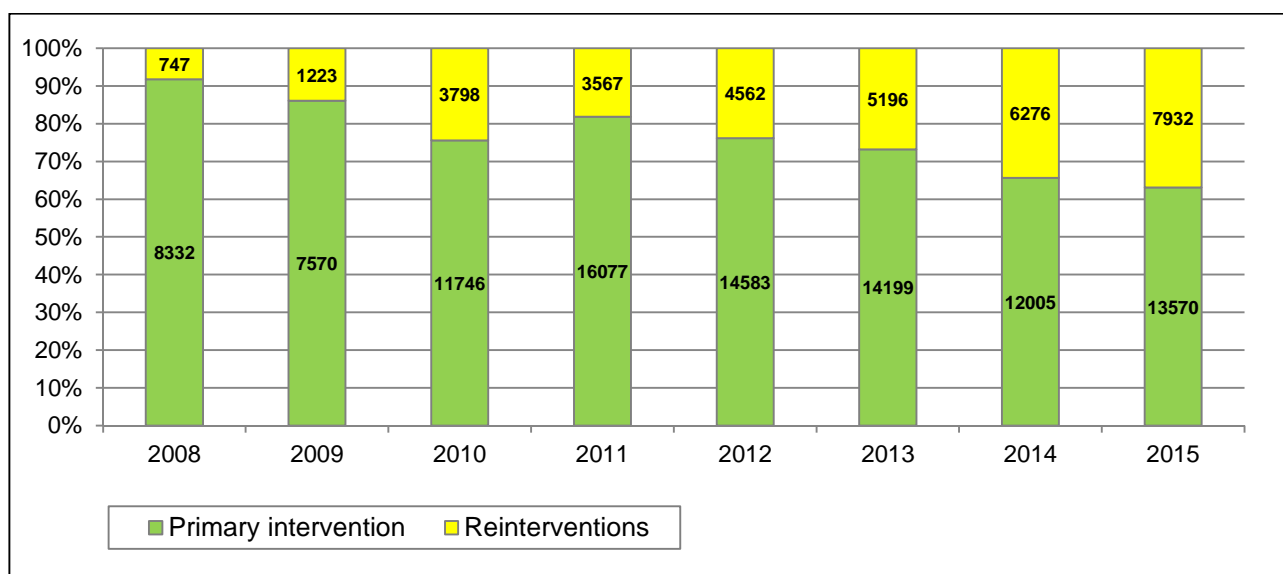
All the surgical interventions can be performed as first / primary, planned re-intervention, and unplanned re-intervention. Basically this is the difference between the number of registered new cases and the entrances to Operating department. This indicator is important to know because some projects had a big quantity of planned re-interventions that indirectly shows us the type of patients they were managing (e.g. wounded, burns). The unplanned re-interventions³⁸ can be a quality indicator because they represent post-operative complications of the surgical procedure that can be linked to professional performance (no experience or not sufficient skills), lack of medical material and supply, no availability of immediately post-operative recovery room, or lack of nursing follow-up of the patient in the hospitalisation ward. But, exactly as for emergent surgery where the understanding of the case definition might be different depending of each person that reports the case, several unplanned re-interventions are not reported as such and therefore, in the analysis all the re-interventions will be merged. Here will be explained the relative weight of primary interventions in projects where direct surgical activities were performed.

In 2015, 63% were primary interventions and 37% were re-interventions. If comparing with previous years, it is possible to realize a trend in the decrease of primary interventions and an increase of re-interventions. This can be explained partially to the fact that OCB is performing more and more surgery related to trauma causes which are morbidities that require several re-interventions during the treatment period. In Table № 15 and Graphic № 11 it can be seen the detailed information of order of intervention within OCB activities.

Table № 15: Order of intervention, quantity and percentage, 2015.

Order of intervention	2012		2013		2014		2015	
	№	%	№	%	№	%	№	%
Primary intervention	14583	76,2	14199	73,2	12005	65,7	13570	63,1%
Re-intervention	4562	23,8	5196	26,8	6276	34,3	7932	36,9%
Total	19145	100,0	19395	100,0	18281	100,0	21502	100,0

Graphic № 11: Order of intervention, percentage in relative weights, 2015.



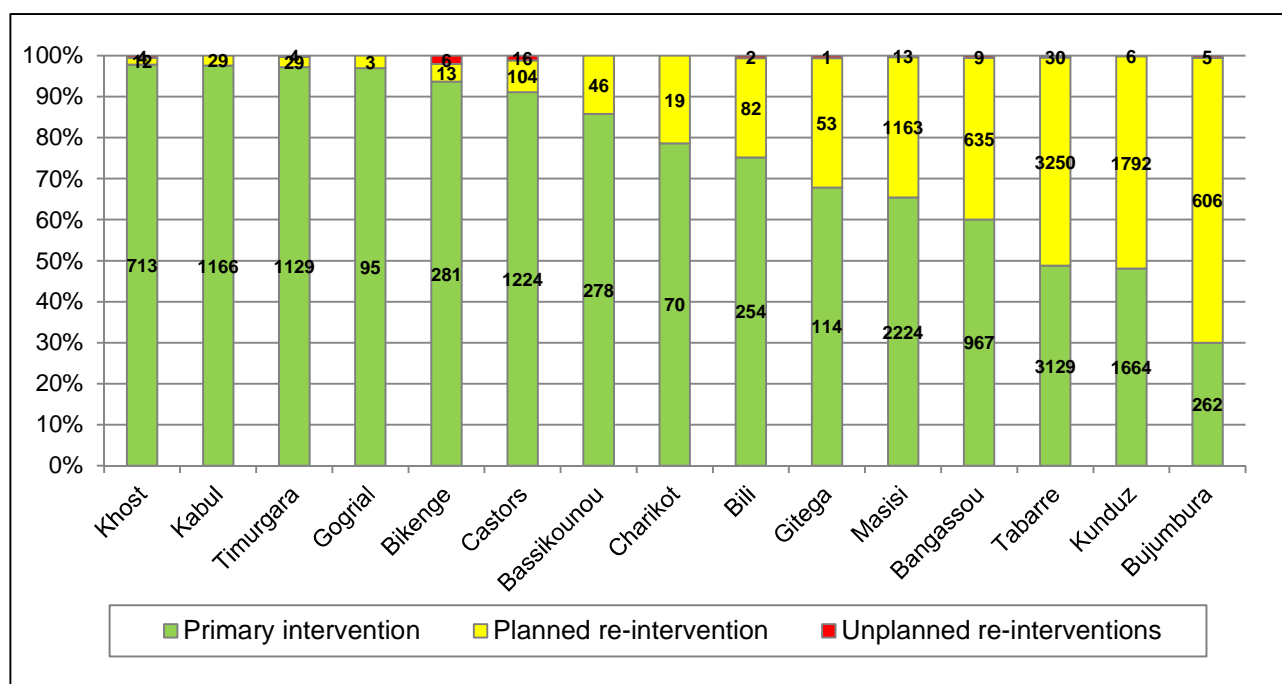
³⁸ Due to the high number of reporting persons and the differences between projects, even though the indicator is valuable, it is not possible to make any analysis because there might be present high level of biases in the reported data.

For better understanding of the information, it is necessary to discriminate this data by project, what it is shown in Table № 16 and in Graphic № 12. However, it is not correct to attempt to directly compare projects between them because the level of primary interventions are linked to the type of activities each project performs, therefore, it is given only the information³⁹. At the same time, it is possible to make some links between the order of intervention and the degree of urgency.

Table № 16: Order of intervention, by project, 2015.

Degree of urgency		Khost	Kabul	Timurgara	Gogrial	Bikenge	Castors	Bassikounou	Charikot	Bili	Gitega	Masisi	Bangassou	Tabarre	Kunduz	Bujumbura
Primary intervention	№	724	1166	1129	95	281	1223	278	70	255	114	2224	967	3129	1664	195
	%	99,3	97,6	97,2	96,9	93,7	91,1	85,8	78,7	75,4	67,9	65,4	60,0	48,8	48,1	22,3
Planned re-intervention	№	5	29	29	3	13	104	46	19	82	53	1163	635	3250	1792	678
	%	0,7	2,4	2,5	3,1	4,3	7,7	14,2	12,3	24,3	31,5	34,2	39,4	50,7	51,7	77,7
Unplanned re-intervention	№	0	0	4	0	6	17	0	0	1	1	13	9	30	6	0
	%	0,0	0,0	0,3	0,0	2,0	1,2	0,0	0,0	0,3	0,6	0,4	0,6	0,5	0,2	0,0
Total	№	729	1195	1162	98	300	1344	324	89	338	168	3400	1611	6409	3462	873

Graphic № 12: Order of intervention, by project, percentage by relative weight, 2015.



³⁹ High levels of planned re-interventions are directly linked to the surgical management of trauma morbidities. This characteristic should be taken into consideration because in projects with trauma cases, the quantity of patients (new cases) can be low, but the workload can be very high (e.g. Kunduz).

2.10. SURGICAL WORKLOAD BY PROJECTS

The surgical workload differs from project to project because of various factors such as the number of staff and Operating rooms (OR)⁴⁰ inside the Operating department (OD)⁴¹, as well the type of surgical interventions, the technology available, and the skills of the providers.

Two indicators are used to measure the surgical workload⁴²:

- Operating theatre occupancy: Describes the time (in minutes) a patient is inside the operating room. This includes the time to perform the anaesthesia as well as the surgical intervention. The ratio is the average of minutes per day.
- Caseload: The number of interventions performed in one project in one month. This is used to compare projects to each other as well as to compare a single project to itself over time.

These surgical workload indicators are useful for programme planning to assess the need to improve infrastructure and supply. At the same time, it should be seen as average numbers, because each project has specific trends (that are individually explained in each project report). For example, if there is a high caseload and occupancy rate in the Operating room, then an additional one may be needed. If the caseload is high, then this could justify the request for more human resources. These data need to be examined with other surgical indicators such as the mortality and post-operative site infection rates. Each project must be assessed individually, there is no “magical” number for case load or occupancy rate as some projects perform a few long and complicated interventions while others do many shorter, simpler cases a day. It might be the case that surgical care is not available in the area where MSF project is located, and thus, surgical care is provided even if the caseload is not high. And it also should be consider the urgency of the performed interventions (e.g. Caesarean section vs. wound debridement)

In Table № 17 and Graphic № 13 can be seen the detailed information by project. The following projects are not considered as were closed / handed-over and had a low caseload: Charikot, Gitega and Gogrial.

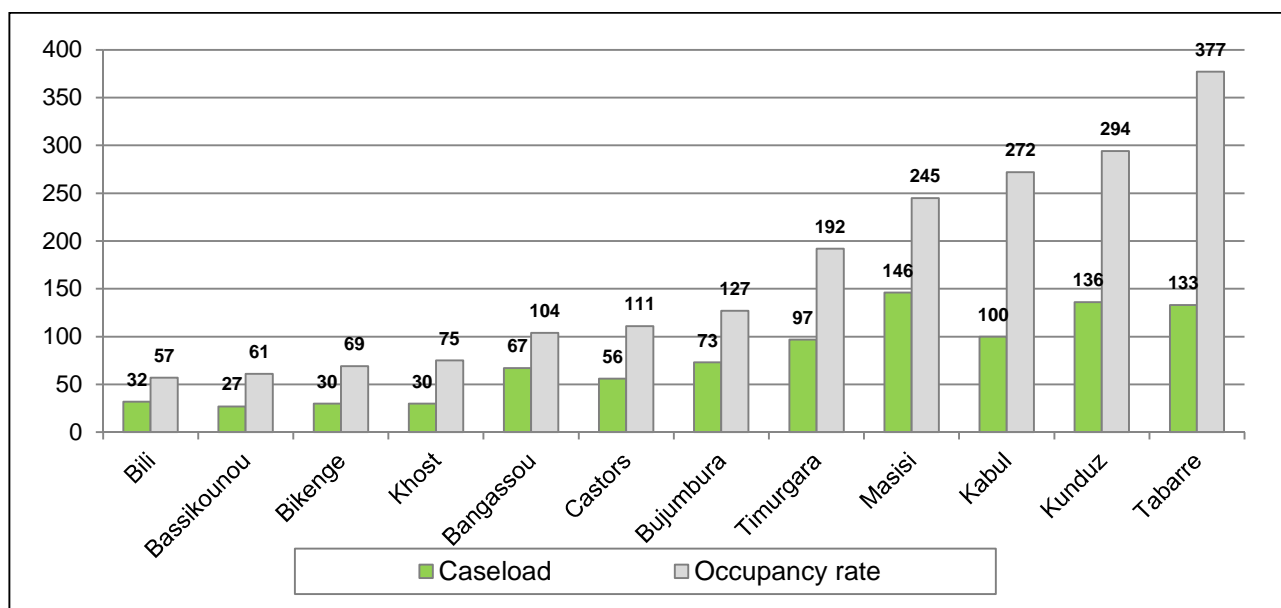
Table № 17: OCB project presence, caseload and occupancy rate, by project, 2015.

Surgical workload indicators		Bili	Bassikounou	Bikenge	Khost	Bangassou	Castors	Bujumbura	Timurgara	Masisi	Kabul	Kunduz	Tabarre
Cases per year		338	324	300	729	1611	1344	873	1162	3400	1195	3462	6409
Caseload	cases / month	32	27	30	61	134	112	146	97	283	100	407	534
Occupancy rate	minutes / day	57	61	69	150	209	223	254	192	490	272	881	1509
Operating room	quantity	1	1	1	2	2	2	2	1	2	1	3	4
Monthly OR caseload	monthly cases / quantity of OR	32	27	30	30	67	56	73	97	146	100	136	133
Monthly OR occupancy rate	minutes day / quantity of OR	57	61	69	75	104	111	127	192	245	272	294	377

⁴⁰ OR – Operating Room (Operating Theatre): place where surgical activities / interventions are performed.

⁴¹ OD – Operating department: building or complex of structures where are performed surgical interventions.

⁴² To remember: these two indicators are average of the whole Operating department, and as such, for further analysis it should be considered the number of available operating rooms.

Graphic № 13: Caseload and occupancy rate, by available operating room, by project, monthly, 2015.

The specificities of these indicators are the following:

- **Bili, Bassikounou and Bikenge:** All these projects are general hospitals performing all kind of emergent surgery with one available operating room. The monthly caseload is low (almost one per day) but all these three projects are located in very isolated environments where surgical care only is available very far from the project.
- **Khost and Castors:** Both are maternities. The caseload is high in relation with the occupancy rate, and it is due to the fact that obstetric surgery is not a so long procedure. Both projects have room to perform more surgeries (if the bed capacity allows) maintaining good standards of quality, as there are available two operating rooms.
- **Bangassou:** This project is a general hospital where all kind of surgery is performed. There are available two operating rooms. However, the relation between the caseload and the occupancy rate is not big, as during 2015 several short minor / wound surgeries were performed (already explained in previous chapters).
- **Bujumbura:** New project dealing with violent trauma cases. They are not performing complex orthopaedic procedures, but mainly minor / wound care. That explains the important caseload that doesn't correlate to a proportional low occupancy rate. However, it should be considered that if the complexity in surgical procedures will rise, it might be the case that the two available operating rooms will not be any more enough.
- **Timurgara, Masisi and Kabul:** Timurgara is a maternity, while Masisi and Kabul are general hospitals with a very important proportion of obstetric care. Therefore, they are similar by having important level of cases per month with also an important level of occupancy rate. It should be considered the fact that Masisi is the only project with two available operating rooms. If in the case of Timurgara, the caseload can be somehow absorbed by one operating room, the attention should be given to Kabul, where it seems they already are working in / over the acceptable limits.
- **Kunduz and Tabarre:** Both are trauma centres. The caseload per operating room appears to be the same, while the occupancy rate in Tabarre is more important. This is linked to the fact that in Tabarre there are performed more complex orthopaedic procedures that are long procedures (e.g. internal fixation for closed fractures).

2.11. INTRAOPERATIVE MORTALITY

The intraoperative mortality rate is strongly associated with the patient's ASA score, emergency procedures, and the type of indication for surgery. It is also affected by the available type of supportive care and resuscitation. Certain patients with severe pathology (e.g. severe head trauma) are never operated on or die before entering the Operating room. Others have a high likelihood of intraoperative mortality but are operated on anyway if there is a reasonable chance of survival. Therefore, comparing data between projects can be misleading. However, as a crude proxy, the intraoperative mortality is still useful specially to compare a project to itself over time.

For the purpose of this report, intraoperative mortality is defined as any death occurring between the induction of the anaesthesia and the patient discharge from recovery room (immediately recovery period). We do not include any other postoperative time since time spent at the hospital varies between projects and surgical pathologies. Also, in the postoperative period, non-surgical causes of death are also possible, and this makes interpreting the data difficult.

In the 15 projects where there was a direct involvement of OCB during 2015, there were reported 55 deaths, with an overall ratio of 0,3% (cases=21502), that is a slight increase from the level of previous years (2014, %=0,2; 2013, %=0,2; 2012, %=0,2). In absolute number, there is an increase of around 25% (2014, n=44). This can be explained partially with projects leading with important levels of violent causes of intervention (e.g. Bujumbura, Kunduz). This indicator can be used to measure the quality of care in a surgical programme. The reported data should be interpreted with caution: data should not be compared across programmes because there are notable differences between them.

In Table № 18 it is shown the percentages of intraoperative mortality for 2015, and if it is possible, to the ones of previous years, for comparison within a specific project, and not between them. We don't consider Gitega project as there were no reported deaths and was handed-over.

Table № 18: Intraoperative mortality, by project, 2015.

Intraoperative mortality		Bangassou	Bassikounou	Bikenge	Bili	Bujumbura	Castors	Charikot	Gogrial	Kabul	Khost	Kunduz	Masisi	Tabarre	Timurgara
2010	№	---	---	---	---	---	---	---	1	---	---	---	11	---	4
	%	---	---	---	---	---	---	---	0.4	---	---	---	0.6	---	0.4
2011	№	---	---	---	---	---	---	---	5	0	---	4	7	---	8
	%	---	---	---	---	---	---	---	0.8	0.0	---	0.7	0.3	---	0.7
2012	№	---	---	---	---	---	---	---	2	0	0	5	5	3	4
	%	---	---	---	---	---	---	---	0,3	0,0	0,0	0,2	0,2	0,2	0,2
2013	№	---	1	---	---	---	---	---	2	1	0	14	5	10	1
	%	---	0,6	---	---	---	---	---	0,2	0,1	0,0	0,4	0,2	0,3	0,1
2014	№	4	0	---	---	---	3	---	1	2	1	8	5	17	3
	%	0,4	0,0	---	---	---	0,6	---	0,2	0,2	0,2	0,2	0,2	0,4	0,2
2015	№	1	0	0	1	5	1	1	2	2	4	9	2	21	6
	%	0,1	0,0	0,0	0,3	0,6	0,1	1,1	2,0	0,2	0,5	0,3	0,1	0,3	0,5

2.12. POSTOPERATIVE SITE INFECTION

As for what said for intraoperative mortality, this indicator also can be used to measure the quality of care in a surgical programme. The reported data should be interpreted with caution: data should not be compared across programmes because there are notable differences between them. All the presented data should be very carefully analysed. This indicator is very difficult to follow up and there might be a lot of biases while reporting it, even from year to year within the same project. That is why it is understandable that not all the projects reported this indicator.

A postoperative site infection is understood as an infection that occurs within 30 days after the operation if no implant is left in place; or within 1 year if implant is in place and the infection appears to be related to the operation. In our MSF-OCB settings, it's very difficult to know what occurred with a patient after discharge from the hospital, and that is why infection are mostly detected during the immediate postoperative period before discharge, or eventually, when a patient returns to the hospital with complaints. There is a big constraint in collecting this indicator, but anyway, it gives an insight of the surgical quality the surgical teams are giving in the field.

In Table № 19 can be seen the detailed information by project. It should be considered, as explained before, that this data should be analysed carefully as the reporting is different from project to project, and from year to year within a project. However, it is fair to include the reported data to support the projects that are trying to collect it (even if the results are not reflecting the project reality) and to motivate and encourage the others to try to collect it.

Table № 19: Postoperative site infection, by project, 2015.

Postoperative site infection		Bangassou	Bassikounou	Bikenge	Bili	Bujumbura	Castors	Charikot	Gitega	Gogrial	Kabul	Khost	Kunduz	Masisi	Tabarre	Timurgara
2008	%													ND		
2009	%													1,9		
2010	%								3,2	ND				3,5		9,2
2011	%								1,5	3,2	---		---	2,9		0,8
2012	%								5,4	ND	---	3,6	---	1,1	3,7	---
2013	%		ND						4,5	ND	1,4	0,4	2,4	0,4	2,8	---
2014	%	ND	ND				ND		5,4	ND	1,7	---	6,4	0,8	2,9	---
2015	%	ND	ND	2;8	ND	ND	ND	ND	5,3	ND	0,9	0,7	10,2	1,4	4,2	0,5

The follow-up of postoperative infections is inherent in monitoring the quality of care and should be improved in the future:

- For trauma centres, big efforts are ongoing in order to improve the quality of collected data.
- For projects where the data is not reliable, efforts should be putted in place in order to better collect the data.
- For projects that are located in stable contexts, efforts should be done to begin the collection of this information.

2.13. PATIENT DEMOGRAPHICS

Knowing the gender and age of our patient population is useful in programme planning. These variables give us an overview of the kind of patients that our health services are taking care. However, it is not correct to compare this variable between projects because each of them has a different specificity, a different target population and are in different contexts. At the same time, to present aggregated data for our report is not statistically correct. However, these data give us the type of patients MSF-OCB projects are treating.

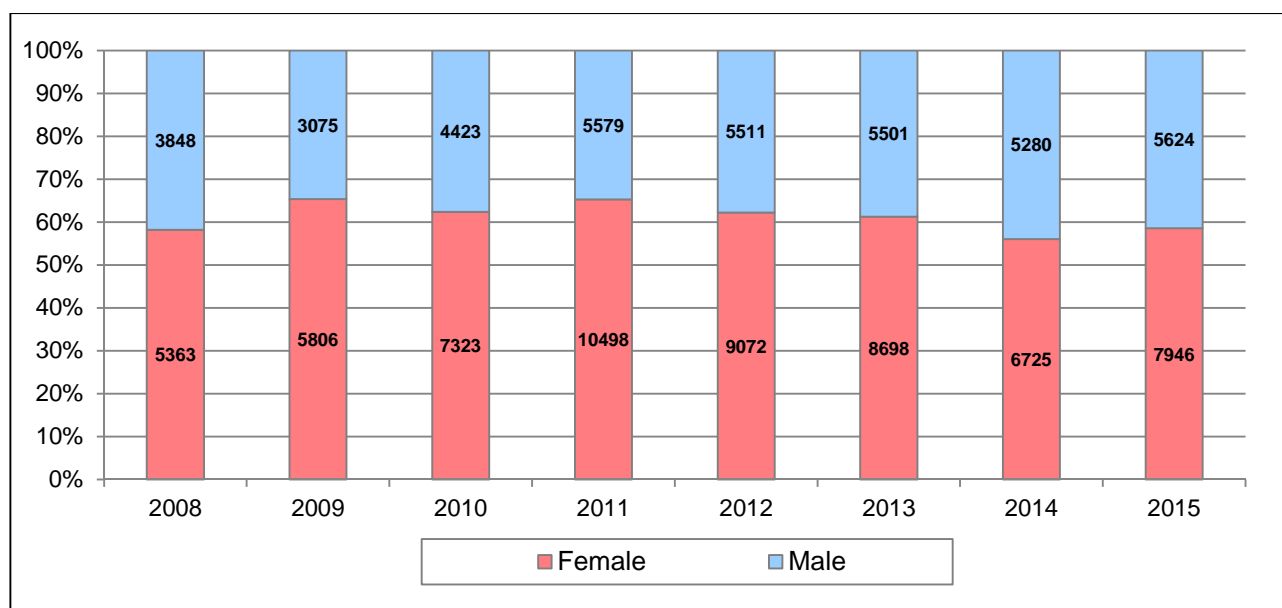
In Table № 20 and Graphic № 14 it is shown the gender distribution of patients treated (only with direct activities). From the reported data it is possible to state that mainly, as for the precedent years, the beneficiary of surgical activities were women, 59%, that is a slight increase from the previous year, where a steadily but slightly decrease in proportion was noted since 2011. This might be partially explained by the closure of Kunduz project at the beginning of October where <15% were female patients

And in Graphic № 15 it is given the distribution by age. For 2015 the main age of the patients was of 27 (2014, n=27). Specifically for women it was of 27 (2014, n=28), and for men 26 (2014, n=27). As for previous years, it is also possible to state that mainly the patients that underwent surgical interventions were young.

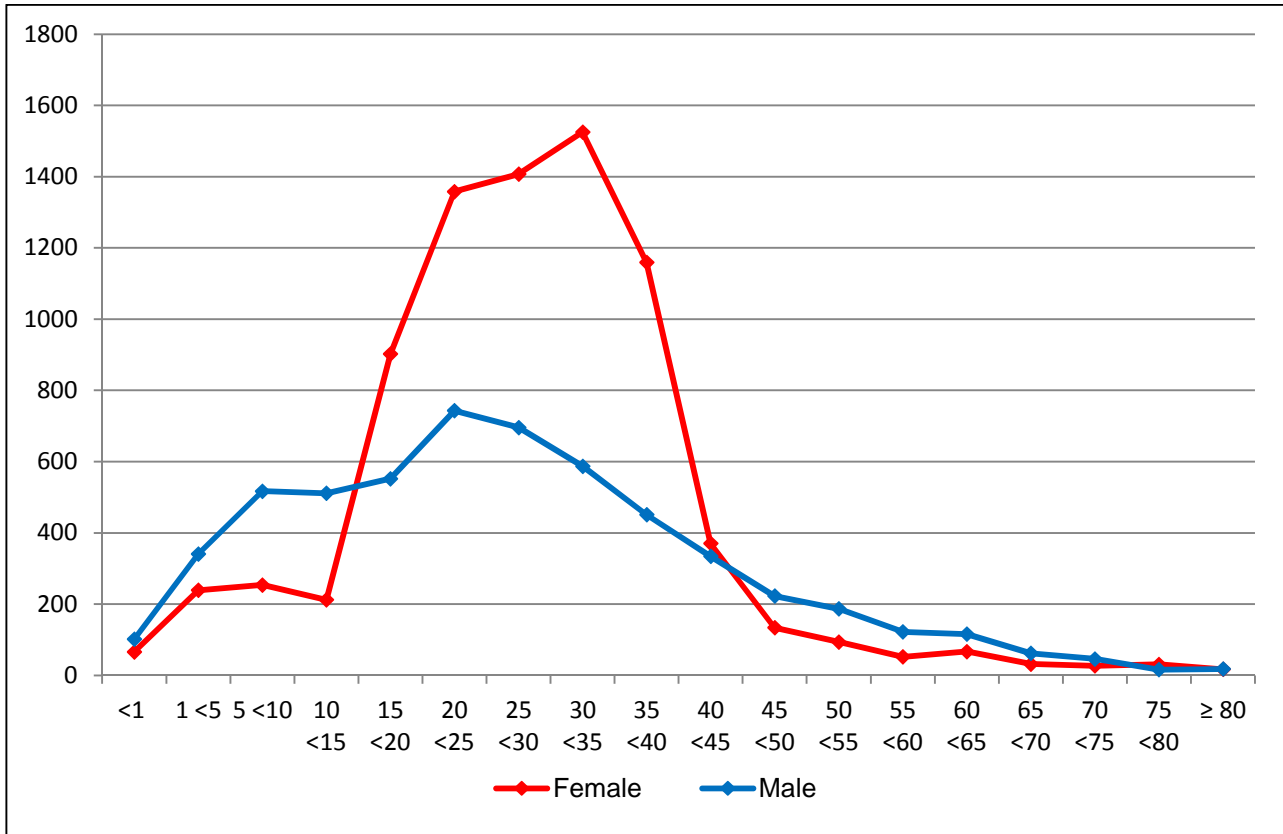
Table № 20: Gender distribution of patients, quantity and percentage, 2015.

Gender	2012		2013		2014		2015	
	№	%	№	%	№	%	№	%
Female	9072	62,2	8698	61,3	6725	56,0	7946	58,6
Male	5511	37,8	5501	38,7	5280	44,0	5624	41,4
Total	14583	100,0	14199	100,0	12005	100,0	13570	100,0

Graphic № 14: Gender distribution of patients, percentage in relative weights, 2015.



Graphic № 15: Age distribution of patients, by gender, 2015.



In order to understand better each project, in Graphic № 16 it is shown the gender distribution by project in relative weight, and in Table № 21, the gender distribution and main age by project.

Graphic № 16: Gender distribution, by percentage, by project 2015.

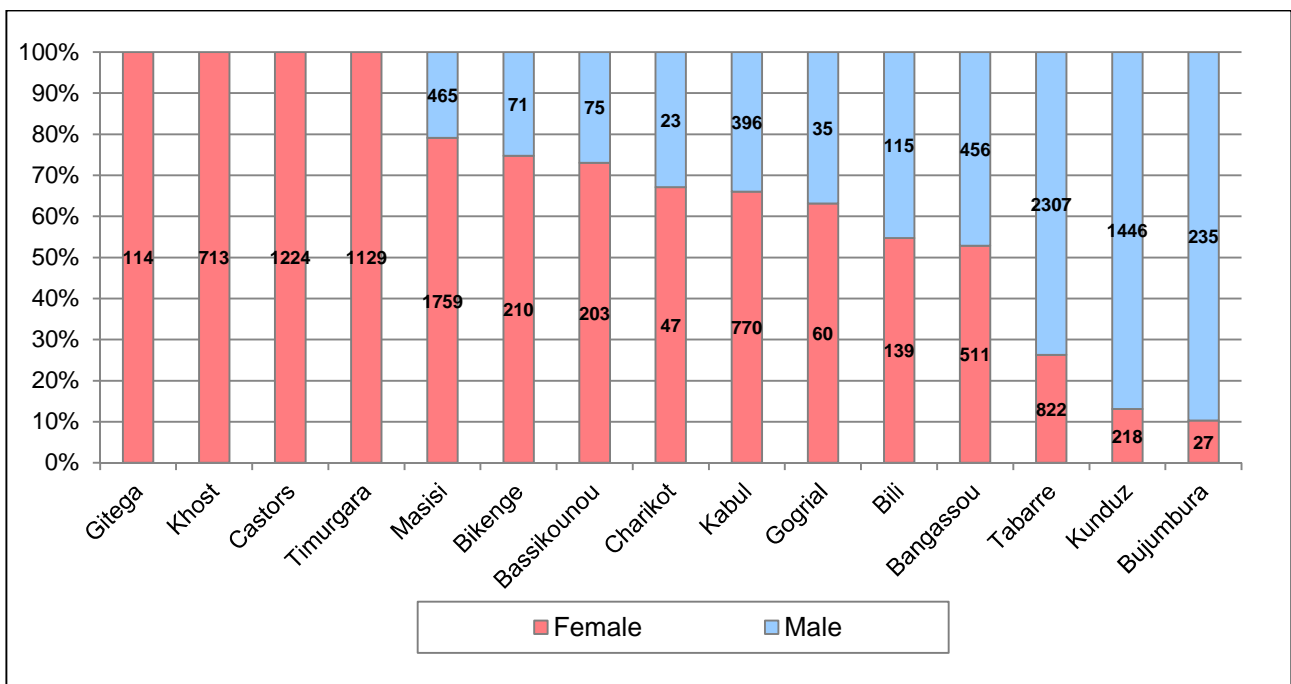


Table № 21: Gender distribution and age, by project 2015.

		Gitega	Khost	Castors	Timurgara	Masisi	Bikenge	Bassikounou	Charikot	Kabul	Gogrial	Bili	Bangassou	Tabarre	Kunduz	Bujumbura
Gender of patients																
Female	№	114	713	1224	1129	1459	210	203	47	770	60	140	511	822	218	27
	%	100,0	100,0	100,0	100,0	79,1	74,7	73,0	67,1	66,0	63,2	54,9	52,8	26,3	13,1	10,3
Male	№	0	0	0	0	465	71	75	23	396	35	115	456	2307	1446	235
	%	0,0	0,0	0,0	0,0	20,9	25,3	27,0	32,9	34,0	36,8	45,1	47,2	73,7	86,9	89,7
Total	№	114	713	1224	1129	2224	281	278	70	1166	95	225	967	3129	1664	262
Main age of patients (in years)																
Project		32	31	25	33	25	23	24	28	26	23	28	27	28	24	31
Female		32	31	25	33	26	24	23	27	27	25	26	27	28	21	29
Male		NA	NA	NA	NA	22	20	25	30	25	20	30	27	28	25	31

2.14. ASA SCORE – PATIENT PHYSICAL STATUS

This ASA score⁴³ subjectively categorises patients into six subgroups by preoperative physical fitness. It makes no adjustment for age, sex, weight, or for pregnancy, nor does it reflect the nature of the planned surgery, the skill of the anaesthetist or surgeon, the degree of pre-operative preparation or facilities for post-operative care. The reporting of the ASA score is a proxy for the preoperative anaesthesia visit (no ASA can be assigned if no pre-Op visit was done). The ASA score is also a good predictor of perioperative morbidity and mortality. If it is ≥ 3 , it is considered as a risk factor for anaesthesia and for the development of postoperative surgical site infections.

Overall, from the 21502 entrances to the Operating room, around 94 (2014, %=94%) of the patients arrived with an ASA score of 1 or 2. That means that only around 7% of patients had a severe systemic disease, or a severe incapacitating disease threatening his/her life. In Table № 22 it is shown their percentages within all the entrances.

Table № 22: Patients' ASA score, 2015.

ASA	1	2	3	4	5	6	Total
№	12656	7496	1207	131	12	0	21502
%	58,8	34,9	5,6	0,6	0,1	0,0	100,0

⁴³ The ASA (American Society of Anaesthesiologists) scoring system is as follows:

- ASA 1 – Patient in apparent good health notwithstanding his surgical problem.
- ASA 2 – Patient with mild systemic disease: e.g. mild hypertension, mild to moderate anaemia, etc.
- ASA 3 – Patient with systemic disease severe enough to limit activity but not incapacitating.
- ASA 4 – Patient with severe incapacitating disease that is a constant threat to life.
- ASA 5 – Moribund patient not expected to survive 24 hours with our without surgery.
- ASA 6 – Declared brain-dead patient whose organs are being removed for donor purposes.

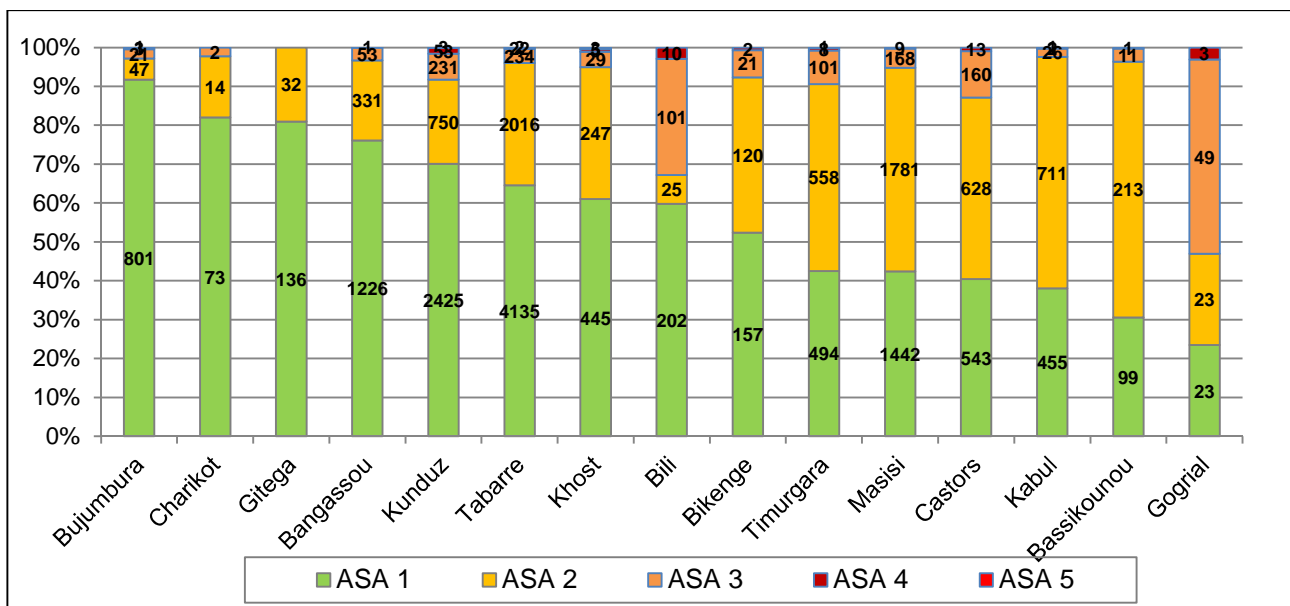
As each project has different characteristics, this is not a variable that can be compared between them. Also, it should be considered certain bias in this type of reporting since the anaesthesia provider can have different opinion in this score. In Table № 23 it is shown their percentage within all the entrances, and in Graphic № 17 it can be seen these percentages as specific weights.

To note that Gogrial and Bili projects showed an unusual high proportion of ASA 3 patients, that might be a problem of understanding of case definition rather than the real status of the patient.

Table № 23: ASA score of intervened patients (all entrances to OD), by project, 2015.

Patient physical status		Bujumbura	Charikot	Gitega	Bangassou	Kunduz	Tabarre	Khost	Bili	Bikenge	Timurgara	Masisi	Castors	Kabul	Bassikounou	Gogrial
ASA 1	№	801	73	136	1226	2425	4135	445	202	157	494	1442	543	455	99	23
	%	91,8	68,2	81,0	76,1	70,0	64,5	61,0	59,8	52,3	42,5	42,4	40,4	38,1	30,6	23,5
ASA 2	№	47	14	32	331	750	2016	247	25	120	558	1781	628	711	213	23
	%	5,4	26,2	19,0	20,5	21,7	31,5	33,9	7,4	40,0	48,0	52,4	46,7	59,4	65,7	23,5
ASA 3	№	21	2	0	53	231	234	29	101	21	101	168	160	26	11	49
	%	2,4	5,6	0,0	3,3	6,7	3,7	4,0	29,9	7,0	8,7	4,9	11,9	2,2	3,4	50,0
ASA 4	№	3	0	0	1	53	22	5	10	2	8	9	13	2	0	3
	%	0,3	0,0	0,0	0,1	1,5	0,3	0,7	2,9	0,7	0,7	0,3	1,0	0,2	0,0	3,0
ASA 5	№	1	0	0	0	3	2	3	0	0	1	0	0	1	1	0
	%	0,1	0,0	0,0	0,0	0,1	0,0	0,4	0,0	0,0	0,1	0,0	0,0	0,1	0,3	0,0
Total		873	89	168	1611	3462	6409	729	338	300	1162	3400	1344	1195	324	98

Graphic № 17: ASA score in percentage, by project, 2015.



2.15. NEONATAL DEATHS

All death newborns at the end of the Caesarean section were recorded as neonatal deaths regardless if they died during the procedure or before (it is not possible to always have the capacity to differentiate them with our limited foetal monitoring). In Table № 24 it can be seen the ratio of death newborns.

In this report it is only given descriptive information and are excluded of the analysis the following projects:

- Gitega: specific project for obstetric fistula.
- Bujumbura, Kunduz and Tabarre: all of them are trauma centres.

Table № 24: Newborn outcome, by project, 2015.

Neonatal deaths		Bangassou	Bassikounou	Bikenge	Bili	Castors	Charikot	Gogrial	Kabul	Khost	Masisi	Timurgara
2010	%							25,0			9,6	22,7
2011	%							31,2	3,6		7,6	24,4
2012	%							23,1	5,6	2,6	5,1	21,5
2013	%		16,2					22,8	5,2	16,9	4,7	16,8
2014	%	9,8	12,1			10,2		16,0	6,0	12,9	4,3	17,3
2015	Caesarean sections	138	121	120	64	825	37	43	447	554	1252	988
	Newborns	142	126	125	65	837	37	46	483	580	1277	1044
	Death newborns	24	6	7	15	84	1	13	20	98	54	185
	%	16,9	4,8	5,6	23,1	10,0	2,7	28,3	4,1	16,9	4,2	17,7

Here are only given the proportions without any analysis as there are several factors, context dependent, which can directly influence in: qualification of the staff, accessibility to the health facility, iatrogenic misuse of uterine stimulants, the project acts as a referral centre, etc. Also, it remains always the bias of good reporting when recording the activities in the logbooks.

At the same time, some words:

- Remarkable improvements in death newborns in Bassikounou project, and an analysis should be done by the field in order to understand the reasons of such improvements, and to share with other projects.
- In Kabul, Khost, Masisi and Timurgara project we can observe almost the same proportions as the previous years that could be showing an expected average in these settings.
- Bangassou shows almost a twofold increase in the ratio of death newborns. It can be the case that as the project already is in its second year, more and more patients are arriving to the hospital. However, this situation should be analysed by the team in the field.

3. IN-PATIENT ACTIVITIES

In-patient activities also were reported during 2015. In Table № 25 it can be seen the main indicators; Excluded are the following projects:

- Castors, Khost and Timurgara: as they are exclusively maternities which data is available in the SRH report.
- Gitega: closed project that performed exclusively obstetric fistula repair, already in-depth analysed in this report.
- Charikot: punctual intervention in Nepal after the 2016 earthquake that already is closed, where there was not a separate ward for surgical patients.

Table № 25: Surgical IPD main indicators, by project, 2015
(NA = not applicable).

		Bangassou	Bassikounou	Bikenge	Bili	Bujumbura	Gogrial	Kabul	Kunduz	Masisi	Tabarre
Admissions total		917	177	130	194	326	179	649	2403	900	3858
< 5y	№	5	20	25	11	1	83	18	202	177	244
	%	0,5	11,3	19,2	5,7	0,3	46,4	2,8	8,4	19,7	6,3
≥ 5y < 15y	№	38	39	31	NA	17	34	138	638	163	631
	%	4,2	22,0	23,9	NA	5,2	19,0	21,3	26,6	18,1	16,4
≥ 5y	№	ND	NA	NA	183	NA	NA	NA	NA	NA	NA
	%	ND	NA	NA	94,3	NA	NA	NA	NA	NA	NA
≥ 15y	№	874	118	74	NA	308	62	493	1563	560	2983
	%	95,3	66,7	56,9	NA	94,5	34,6	75,9	65,0	62,2	77,3
Exits total		862	180	129	186	276	174	630	2589	879	3861
Discharged	№	808	128	117	168	237	144	615	2410	816	3711
	%	93,7	71,1	90,7	90,3	85,9	83,7	97,6	93,1	92,8	96,1
Defaulter	№	11	3	3	8	4	1	8	84	13	18
	%	1,3	1,7	2,3	4,3	1,4	0,6	1,3	3,2	1,5	0,5
Referral	№	36	46	6	4	32	19	7	74	27	24
	%	4,2	25,5	4,7	2,2	11,6	11,0	1,1	2,9	3,1	0,6
Mortality (deaths)	№	7	3	3	6	3	10	0	21	23	108
	%	0,8	1,7	2,3	3,2	1,1	5,7	0,0	0,8	2,6	2,8
Mean length of stay (days)		6	3,6	5,3	9	11,4	8,0	3,2	7,0	12,2	11,6
Occupancy rate (%)		83,9	66,0	44,1	60,8	77,0	NA	78,9	90,6	52,1	109,0

It should be noted the following:

- In this table there are only considered surgical activities, and not the ones linked to emergent obstetrics. This is valid for the following projects: Bangassou, Bassikounou, Bikenge, Bili, Gogrial, Kabul and Masisi.
- Bangassou: There is not data available in MINOS; and the main information was given directly by the project.
- Bili: In this project they were not using MINOS in 2015, and therefore, the patients admitted are divided in two age groups (<5y, ≥5y) and not in three (<5y, ≥5y to <15y, and ≥15y) and as all the other projects. From 2016, patients are encoded in MINOS.
- Gogrial: All medical and surgical patients were kept in the same ward and therefore, it is not possible to give a specific occupancy rate.
- Kabul: There were admitted 58 patients only for observation (e.g. suspicion of acute abdomen) and then sent home without surgical treatment.
 - < 5y: 2 patients
 - ≥ 5y to < 15y: 12 patients
 - ≥ 15y: 44 patients

This might have been linked to the lack of space in the ED. Therefore, recalculations have been performed in order to make the data of Kabul comparable to other projects.

- Bassikounou: In the surgical IPD data are considered all the patients that underwent a surgical intervention (or having a surgical morbidity without been intervened), and also obstetric cases. Therefore, obstetric cases were excluded:
 - 147 admissions, from which 2 patients were <15 years old.
 - 147 exits, from which 145 were discharged and 2 reported as maternal mortality.

In this case, also recalculations were done in order to make the project comparable with the other ones. As obstetrical causes were almost 50% of the cases, further attempts to recalculate the length of stay and occupancy rate were not performed, as the values remains similar.

Surgical morbidity by project is given in Table № 26. While searching for surgical IPD data, it was acknowledged that some projects are classifying surgical morbidity in different ways. It is necessary to insist that in MSF, when talking about surgical morbidity (pathologies), it is considered the cause of the morbidity, and not the surgical diagnosis⁴⁴. As a humanitarian organisation, for MSF it is more important to know the reason of surgery than the exact diagnosis and that should be clear for all the missions. Moreover, the high number of different surgical diagnosis makes almost impossible in present time to have a correct data collection tool.

E.g. For operational reasons, in MSF it is more important that a patient arrived to a hospital due to a gunshot wound or an earthquake, rather to know that it was an open fracture of the right thigh.

Also, some projects encoded causes of intervention and diagnosis. This is not correct as every diagnosis has a cause, and in a pure epidemiological analysis, it is simply wrong.

⁴⁴ This is done in OCB since the MSF International Data Collection was approved in 2004 by the Anaesthesia and Surgical Working Groups and greenlighted by MSF medical directors.

The cause of hospitalisation can be called also surgical surveillance, and every project with surgical IPD should encode it, as it is the same classification used in the Emergency and Operating departments. As the collected data is not based in individual basis but in project health characteristics, it can be used by projects with surgical components for planning, implementation and evaluation of activities.

It is recommended to divide the causes of intervention (surgical surveillance) as follows; and in parenthesis there are given the codes in use, including an extra one for non-surgical conditions. If it is not yet done in the project, it should be urgently asked to the responsible of MINOS to update the data tool of the project.

- Violence trauma (**TV**)
- Accidental trauma (**TA**)
- Non-trauma: infection, inflammation, ischaemia (**PI**)
- Non-trauma: tumours (**PT**)
- Non-trauma: various / others (**PV**)
- Non-trauma: haemorrhage (**PH**)
- Obstetrical: foetal-maternal (**OF**)
- Obstetrical: post-partum complications (**OP**)
- Non-surgical conditions (**MED**)

In Table № 26, the causes are divided only in three groups as there was lacking information of some projects, and it was needed to have something standard to be reported. That is why, through this report, it is preferable that all the projects report in the main 9 sub-groups, rather than be reporting only in 3 groups, in order to have better insight of the activities in the project.

Table № 26: Surgical IPD morbidity (surgical surveillance), by project, 2015.

		Bangassou	Bassikounou	Bikenge	Bili	Bujumbura	Gogrial	Kabul	Kunduz	Masisi	Tabarre
Diagnosis at exit		862	180	129	186	276	149	630	2410	879	3861
Trauma – violence	№	ND	8	5	5	237	30	16	929	34	930
	%	ND	4,4	3,8	2,7	85,9	20,1	2,5	38,5	4,5	24,1
Trauma – accident	№	ND	72	1	63	36	58	12	1481	452	2620
	%	ND	40,0	0,8	33,9	13,0	38,9	1,9	61,5	51,8	67,9
Non-trauma	№	ND	100	123	118	0	54	602	0	393	311
	%	ND	55,6	95,4	63,4	0,0	36,3	95,6	0,0	43,7	8,0

It is necessary to note that:

- Bangassou: There is not available data for surgical surveillance.
- Kabul: There were encoded 58 patients as “others” that were temporary admitted in the ward only for observation; these patients are not considered in the statistics.
- Bikenge: From the 123 patients with non-trauma causes for hospitalisation, 43 were encoded as gynaecological cases.
- Bili: From the 118 patients with non-trauma causes, 54 were encoded as gynaecological.
- Masisi: From the 393 patients with non-trauma, 220 were encoded as gynaecological.

4. OTHER GAS RELATED ACTIVITIES

4.1. LEBANON

Since the beginning of the civil war in Syria, in 2011, MSF have been trying to support health facilities dealing with victims of violence inside and outside Syria. And since 2013, OCB has been consistently assisting Syrian refugees in Lebanon. In this country, the Syrian conflict is a humanitarian crisis as Lebanon is hosting the biggest quantity of refugees. Therefore, in 2014 it was decided to have local capacity to response to the needs, with the identification of a possible second level health facility in the Bekaa valley, in the town of Bar-Elias. During 2015 negotiations have been continued with the MoH in order to have an agreement to the opening of a hospital in Bar-Elias, where MSF can conduct activities following institutional standards, and that constitute a good training spot for Lebanese universities in a schema of shared experience between expatriate and local experts. At the beginning it was planned to open a dedicated Surgical / Trauma Centre to fill an existing gap in the area, but after the situation in the border with Syria changed, there were identified other needs. Therefore, new operational strategies are been developed in order to open a general hospital (excluding Maternity) with capacity of complex orthopaedic care.

Also MSF OCB has a Maternity in Shatila camp, in Beirut. During the year punctual support was given by gynaeco-obstetricians to the local staff by organizing training sessions and evaluation of referral possibilities in case of needs for Caesarean sections.

4.2. LESOTHO

In Roma, MSF OCB developed a project where maternal & child healthcare was integrated with HIV⁴⁵ / TB care. In the country, the maternal mortality doubled during the last 10 years up to 620 deaths per 100000 live births, representing about twice the global average and that was explained by the high prevalence of HIV, 23,4%. MSF supported rural health facilities to ensure that more women from remote areas have access to antenatal services and safe deliveries in identified hospitals and clinics, and waiting lodges also were built in the hope to bring women closer to the health facilities.

During 2015 the project had the support of gynaeco-obstetricians to enhance the performance of local doctors in St Joseph's Hospital. The project ended in September 2015.

4.3. SYRIA

During 2015 OCB has continued supporting medical and surgical teams inside Syria, where the presence of expatriate personnel was and is not possible since the beginning of 2014 when expatriate staff was kidnapped. The support is basically in supply and in strengthening of local capacities. Interesting and new approaches have been used to support the local teams in the enhancement of their knowledge and skills, mainly based in on distance education, where telemedicine has demonstrated how it useful can be in such type of context.

OCB through the EMU (Emergency Medical Unit) has been supporting around 150 health structures inside Syria during the last year, through a network of health workers. Importantly, thanks to the received support, local teams were capable to perform around 79000 surgical interventions.

⁴⁵ Lesotho has one of the world's highest rates of HIV/AIDS infection, being the most important cause of death for 2012 (41.4%), followed by TB and maternal and neonatal deaths. The life expectancy at birth m/f is 48/52 years old, the total fertility rate is 3.0 per woman and the most important causes of deaths in children under five are HIV/AIDS, prematurity and birth asphyxia.

4.4. UKRAINE

After the political turmoil that took place in the country in February 2014, MSF OCB has been supporting different health facilities (primary and secondary) with supply and training. During 2015 exploratory missions were performed to district hospitals in the non-controlled by the government areas, as well as in tertiary referral hospitals, in this case, in both areas of the conflict. Third level hospitals were assessed in Lugansk and Donetsk (in the non-controlled by the government areas) and in Zaporozhe, Dnepropetrovsk and Kharkov.

Several recommendations were given, but it became clear that the needs in different health facilities, and even in different cities, are different and a standardize support was not possible. This made very difficult any intervention or support to these hospitals as the needed material was not standard for MSF, it should had be tailored to each hospital, and considering also that the pharmacopeia is different to the one commonly used in western Europe.

5. TRAINING

Training is an important core activity in MSF, and particularly of the OCB SAGE unit. Specialist doctors such as surgeons and anaesthesiologists are scarce and ones that can operate in resource-limited settings are even rarer. The different training schemes targeted different type of SAGE specialists, taking into consideration their skills and knowledge, and the expected skills and knowledge regarding OCB Operations department strategies and needs. These included:

- Training of expatriate surgeons in developing specific skills:
 - Trauma and orthopaedic surgery: in OCB MSF Hong Kong GAS week and in OCA MSF Germany Surgical Workshop (in Dusseldorf, Germany).
 - Obstetrical Fistula repair surgery: in Gitega (Burundi).
 - War surgery: ICRC seminar (in Geneva, Switzerland)
- Training of national medical doctors performing surgery in developing specific skills:
 - Basic orthopaedic surgery: in OCA MSF Germany Surgical Workshop (in Dusseldorf, Germany), and with bedside training with expatriate general surgeons.
 - Advanced orthopaedic surgery: in OCB trauma centres by bedside training with expatriate orthopaedic surgeons.
 - General surgery: bedside training with expatriate general surgeons.
 - Advanced general surgery: in OCB trauma centres by bedside training with expatriate subspecialized surgeons (e.g. vascular, paediatric, etc.)
 - Basic neurosurgery: in OCB trauma centres by bedside training with expatriate neurosurgeons.
 - Obstetrical surgery: bed side training with expatriate gynaeco-obstetricians.
 - Management: in OCB MSF Hong Kong GAS week and in the OCB HMTT.
- Training of nurses in anaesthesia management:
 - Hong Kong GAS week.
 - Bed side training with expatriate anaesthesiologists.
- Specific training cycles:
 - Haiti, Tabarre: specialized orthopaedic care; in joint venture with the Haitian university. This training consists of rotations of Haitian residents in orthopaedics

6. OPERATIONAL RESEARCH⁴⁶

During 2015 there were published several peer-reviewed articles in scientific journals with the collaboration of SAGE unit advisors. There are the following:

- Chapter: *Anesthesia in Resource-Poor Settings: The Médecins Sans Frontières Experience*; in the book: *The Role of Anesthesiology in Global Health: A comprehensive Guide*; January 2015.
- *An Analysis of Cesarean Section and Emergency Hernia Ratios as Markers of Surgical Capacity in Low-Income Countries Affected by humanitarian Emergencies from 2008 – 2014 at Médecins sans Frontières Operations Centre Brussels Projects*; PLOS Current Disasters; March 2015.
- *A cross-sectional study of indications for cesarean deliveries in MSF facilities across 17 countries*; International Journal of Gynecology and Obstetrics; April 2015.
- *Operative trauma in low-resource settings: The experience of Médecins Sans Frontières in environments of conflict, post conflict, and disaster*; Surgery; May 2015.
- *Orthopaedic surgery in natural disaster and conflict settings: how can quality care be ensured?*; International Orthopaedics (SICOT), July 2015.
- Editorial: *Surgery in low-income countries during crisis: experience at Médecins Sans Frontières facilities in 20 countries between 2008 and 2014*; Tropical Medicine and International Health; August 2008.
- *Surgery for Conditions of Infectious Etiology in Resource-Limited Countries Affected by Crisis: The Médecins Sans Frontières Operations Centre Brussels Experience*; Surgical Infections, August 2015.
- *Surgery for children in low-income countries affected by humanitarian emergencies from 2008 to 2014: The Médecins Sans Frontières Operations Centre Brussels Experience*; Journal of Pediatric Surgery; August 2015.
- *Surgical Burn Care by Médecins Sans Frontières – Operations Center Brussels: 2008 to 2014*; Journal of Burn Care & Research; August 2015.
- *Providing surgery in a war-torn context: the Médecins Sans Frontières experience in Syria*; Conflict and Health, December 2015.

Also, the following posters were published after being accepted in relevant conferences:

- Poster: *Care of surgical infections by Médecins Sans Frontières Operations Centre Brussels in 2008 – 2014*; Surgical Outcomes; The Lancet; April 2015.
- Poster: *A Comparison of Indications for Cesarean Delivery at Médecins Sans Frontières Compared With the United States*; Obstetrics & Gynecology; May 2015.

⁴⁶ During 2015 there were also published two works linked to obstetrical care where the SAGE unit participated. They are not posted in the list as they might be in the list of publications of the Sexual Reproductive Health Unit:

- *Unregulated usage of labour-inducing medication in a region of Pakistan with poor drug regulatory control: characteristics and risk patterns*; International Health; August 2015
- *Dilemmas in managing pregnant women with Ebola: 2 case reports*; Clinical Infectious Diseases; December 2015.

With the help of the Operations department, MSF OCB participated in two relevant conferences showing the results of operational research studies in the trauma centres of Kunduz and Tabarre. It was given the possibility to national staff to be the speakers in these important conferences that was highly appreciated by everyone. The publications of the results of these operational researches are foreseen in 2016. There are the following⁴⁷:

- *Characteristics and management of orthopaedic trauma patients. MSF trauma centres in Haiti and Afghanistan.*
Osteosynthese International 2015, Küntscher Society Annual Meeting. Brussels, September 2015
- *Long term surgical site infection rates in orthopaedic trauma. MSF trauma centres in Haiti and Afghanistan.*
36th SICOT Orthopaedic World Congress, Guangzhou, September 2015

7. CHALLENGES AND WAY FORWARD

7.1. MAIN ACHIEVEMENTS FOR 2015

- Satisfactory follow-up of performed surgical care activities across all projects. Very good communication between project, mission and headquarters responsible.
- Quality set-up of surgical care activities in emergency and violent settings. During 2015 there were several interventions by default in very difficult environments, and pre-requisites were in place to perform quality surgical care.
- Improvement in orthopaedic care in the specific trauma centres with inclusion of new tools (e.g. implants) for more advanced orthopaedic management of fractures.
- Training of local and expatriate surgeons in Obstetric Fistula surgical repair.
- Good data in surgical care: compliance with Operating department databases and development of the hospitalisation one. The use of File Number was more used.
- Aggregated data tools in trauma centres that allowed integrate different data collection tables in one in order to get quickly the main indicators of the project. This was done with the collaboration of the Operational Research Unit, to which we extend our gratitude.
- Increase involvement of medical department in decision making of medical activities in new projects, or needed modifications on ongoing ones.
- Increased intersectional collaboration with both surgery and anaesthesia working groups.
- Several operational research studies ended with publication, and an important quantity of them were initiated. At the same time, it was possible to present the results of several researches in international relevant conferences.
- Good positioning of MSF surgical care in different international forums. OCB advisors were invited to talk about surgical care in MSF in different platforms.

⁴⁷ During 2015 there were also published two works regarding Emergency Medicine and Intensive Care (part of the SAGE unit). These publications are included in the reports of Emergency Medicine / Intensive Care. This footnote is only a reminder for people that will have access to this report:

- *Open Source Software For Patient Data Management In Critical Care*; MED INFO; Sao Paulo; August 2015
- *SATS can be used for Mortality Prediction*; ESICM; Berlin; October 2015

7.2. MAIN SHORTCOMINGS FOR 2015

- The destruction of Kunduz Trauma Centre (Afghanistan) was a shock for all the members of the SAGE unit as not only were all of them familiar with the hospital, but in a lot of cases, they were friends of some of the national staff that were killed. The sudden cessation of activities lead to cancellation of some operational ambitions in surgical care (e.g. basic neurosurgery), some operational research studies (e.g. prospective studies in postoperative infections and postoperative functional recovery), development of new techniques (e.g. regional blocks, peripheral inserted central catheters), among others.
- The handover of the Gitega Obstetric Fistula project (Burundi) left OCB without any project performing this kind of specific surgery, with the unavoidable loss of knowhow and specialized human resources for similar future projects.
- Not enough knowledge from some (few) field managerial teams about surgical activities. A small quantity of expatriates in the field didn't receive adequate support giving space for the implementation of non-standard protocols and tools. Frequently, MSF documents were challenged regarding the basis for their evidence and appropriateness.
- There were isolated cases when surgical activities were implemented without the support of the SAGE unit. This lead to difficulties and frustrations in the field that quickly were resolved by close collaboration of Operations with the Medical department.
- Confusion of roles within MSF by field teams: sometimes operational decisions were thought to be taken by the SAGE unit, as part of the Medical department.
- Lack of technical skills of some expatriates to work in MSF field settings, and in some cases, also lack of management and training skills. Sometimes it was a mismatch of skills: some were too specialized and lacked general surgical skills.
- Risk of compromising quality of surgical care due to a high turnover of specialists.
- Big fluctuation of the needs in specialists, without maintaining a critical volume of them in the field to keep efficiency in the pools.
- Clear impact of the lack of briefings in headquarters of some GAS specialists due to the "urgency" of leaving to the field. Moreover, lack of briefings to management teams at mission and field levels had a detrimental result for surgical provision.
- Again, one more year ended without a clear solution to the lack of appropriate data collection tools for big hospitals, including the ones performing surgery. The lack of better data collection tools makes very difficult, and sometimes impossible to follow correctly the activities performed in these projects, and moreover, it is not possible at all to measure the quality of the care given. Almost all the indicators that are available are quantitative and very few are qualitative outcome indicators, without a proper insight on process indicators.

7.3. MAIN CHALLENGES FOR 2016

- Continue to provide quality briefings for the expatriate specialists.
- Finding expatriate specialists with proper skills and attitude: willingness to train, confident in management, follower of MSF documents, with good knowledge and skills in relation to MSF requirements.
- Increase the strength and support for more specialized activities: sexual and reproductive health activities by general surgeons, orthopaedic programmes, head trauma care (medical and surgical), end-of-life palliative care, thoracic and vascular surgery, wound management (including flaps).
- Increase the skills of expatriate and local specialists: orthopaedic surgeons in external and internal fixation; general surgeons in basic neuro-, thoracic, vascular and plastic surgery.
- Coming out with a strong response in an event of a major disaster.
- Improvement of current data collection tools for hospital based projects for the proper follow up of patients from admission to discharge. This issue has been highlighted already for the last years without any solution, and that hampers quality control of surgical activities.
- Follow quality surgical care through postoperative site infections databases.

- Follow curriculum in all levels for national staff when possible and make it available.
- To maintain a minimum critical number of projects with surgical care activities in order to keep a good pool of specialists.

7.4. MAIN OBJECTIVES FOR 2016

- Provide good support to Operations at cell, mission and field level.
- Provide in-time support to the specialists in the field upon request.
- Support to other medical units by sharing guidelines and protocols.
- Recruitment or training of specialists in managerial and teaching skills.
- Continue task sharing / task shifting with local staff through trainings.
- Provide trainings for SAGE specialists: general surgeons in subspecialties (e.g. neuro-, thoracic and plastic surgery), anaesthetists (e.g. regional anaesthesia, PICC).
- Improvement of care for specific patient conditions: head trauma, polytrauma.
- Consistent and routine monitoring of activities – surgery / anaesthesia – for proper follow-up and general improvement of OCB projects. Good quality indicators should be in place.
- Strengthen the response in case of mass disaster through good coordination between all the actors: emergency medicine doctors, anaesthetists, surgeons, orthopaedic surgeons, nurses, logisticians.
- Improvement and standardisation of surgical IPD databases.
- Publication of Operational Research studies.
- Continue to have a good in-OCB and intersectional collaboration, as well as other external platforms.

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