



Standards and Essential Requirements for Surgical Projects in MSF OCG

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Abbreviations

ACH	Air changes per hour
BP	Blood pressure
Ca ²⁺	Calcium
Crea	Creatinine
CRP	C-reactive protein
D/C	Dilatation & Curettage
DRC	Democratic Republic of the Congo
ECG	Electrocardiogram
EMT	Emergency Medical Team
ER	Emergency Room
etCO ₂	end tidal Carbon Dioxide concentration
ENT	Ear Nose and Throat / Otorhinolaryngology
FAST	Focused Assessment with Sonography for Trauma
GI	Gastro Intestinal
Gyn	Gynaecology
Hb	Haemoglobin
Hct	Haematocrit
HEPA	High Efficiency Particulate Air
HR	Heart Rate
ICU	Intensive Care Unit
K ⁺	Potassium
MCI	Mass Casualty Incident
MD	Medical Doctor
MSF	Médecins sans Frontières
Na ²⁺	Sodium
OCA	Operational centre Amsterdam
OCB	Operational centre Brussels
OCBA	Operational centre Barcelona
OCG	Operational centre Geneva
OCP	Operational centre Paris
OT	Operation Theatre
INR	International Normalized Ratio
PEP	Post Exposure Prophylaxis
PPH	Post Partum Haemorrhage
PTT	Partial thromboplastin time
RDSU	Rapid Deployment Surgical Unit
RISK	Rapid Intervention Surgical Kit
SOP	Standard Operating Procedure
WBC	White blood cell
WHO	World Health Organization
SAE	Severe Adverse Event
spO ₂	Saturation of Peripheral Oxygen
TST	Temperature, Steam, Time

1 Summary

This document outlines Core Standards and Essential Requirements for surgical activities in MSF OCG projects. The main objective of these standards and requirements is to improve safety and quality of surgery and anaesthesia in the field. Furthermore, they will help field teams and coordination with their operational planning and decision making. The list of requirements can also be used as a reference point to evaluate non-MSF surgical facilities that receive referrals from MSF OCG projects.

The document has three parts:

- a. **Core Standards** mandatory for all surgical interventions in the operating theatre as well as surgical procedures performed outside the OT. These core standards are expected to be followed by all medical staff involved in surgical acts within MSF OCG projects.
- b. A **classification** of different surgical activities within MSF OCG according to their complexity.
- c. **Essential Requirements** according to the scope of the project. This set of requirements is meant as a reference point for medical teams, coordination and headquarters to plan, conduct and monitor surgical activities in the field.

2 Core standards

The following list defines core standards for every surgical intervention in any of the categories defined and explained below. The surgical team is responsible to follow these standards concerning patient safety, pre- and post-operative care and staff safety in their day to day activities.

Management and Organization standards are the responsibility of the medical line management. See also (MSF OCG, 2013) for basic hospital standards.

2.1 Patient Safety

1. Use of the MSF OCG Safe Surgery Checklist for EVERY intervention in the OT (MSF Berlin Medical Unit, 2017; World Health Organization, 2009)
2. Counting Controls for instruments and sponges before and after each surgery
3. Documentation of all surgical procedures in patient notes (including postop treatment plan)
4. Mandatory protocols in place: antibiotic prophylaxis, post-op analgesia
5. Dedicated, trained anaesthesia provider present at all times during interventions requiring sedation, general anaesthesia, spinal anaesthesia or nerve blocs. During induction of general anaesthesia an additional assistant must be present in the OT
6. Minimum monitoring for any intervention: pulse oximetry, heart rate, manual blood pressure measurement
7. Reliable oxygen source, suction devices and lighting systems available during all interventions. Oxygen is mandatory during all major interventions (Merry, Cooper, Soyannwo, Wilson, & Eichhorn, 2010; World Health Organization, 2017)
8. Airway management equipment and resuscitation equipment available at all times
9. Mandatory use of capnography if endotracheal intubation is used
10. Adequate hygiene conditions, sterile instruments and appropriate sterile field for all interventions, see: (MSF OCP, 2013)

2.2 Pre-operative Care

11. Patient is evaluated by the surgeon prior to the procedure and the indication for surgery and planned procedure are documented in the chart

12. Patient informed consent (inform patients in their own language, according to cultural context, documented)ⁱ
13. A pre-anaesthesia assessment by the anaesthetist is performed and documented in the chart
14. Appropriate perioperative antibiotics administered as per MSF protocol (MSF, 2011; World Health Organization, 2017)

2.3 Post-Operative Care

15. An operative note by the surgeon is documented in the chart along with a post-operative treatment plan
16. Appropriate post-operative pain management as per MSF protocol (MSF, 2003) (MSF, 2016)
17. All patients who underwent anaesthesia are monitored in a dedicated recovery area under supervision of the anaesthetist and transferred to the ward according to the modified ALDRETE discharge score (Aldrete & Kroulik, 1970)
18. Appropriate postoperative nursing care and physiotherapy is provided

2.4 Staff safety and protective equipment

19. Basic protective equipment including surgical mask, gown (liquid proof gown or gown + apron), eye protection and double gloves should be used
20. Safe disposal of sharps and needles
21. Access to Post Exposure Prophylaxis (PEP) for accidental exposure to blood and body fluids within 1 hour (MSF OCB, 2014)

2.5 Management and Organization

22. Definition of the expected scope of surgical activities and surgical admission criteria of the project
23. Team qualification and equipment must correspond to the expected scope of activitiesⁱⁱ and their job descriptions
24. The minimum composition of a surgical team, present during any major intervention at all times, is:
 - a. 1 anaesthesia provider,
 - b. 1 surgical provider
 - c. 1 OT technician/nurse or assistant (sterile)
 - d. 1 circulating nurse or non-sterile assistant
 - e. Additional personnel is required for more complex interventions according to the scope of surgical activities
25. Standardized data collection in place, including intervention and outcome data
26. SOPs and protocols in place according to level of activity
27. All projects should have a context specific MCI plan in place
28. Process in place to review surgical complications and severe adverse events (SAE), formal review of every surgical mortality and major complication (e.g. Mortality and Morbidity conference).

3 Classification of MSF OCGs surgical activities in humanitarian settings

In order to help the projects to define strategy, needs and resources, different surgical activities are classified according to their complexity.

Present and future surgical activities in OCG can be divided into **five categories**:

1. Projects with no regular surgical activity but capacity to provide limited emergency surgical care remote settings (**Category A**)
2. Regular surgical projects for essential and emergency surgery (**Category B**)
3. Specialised or advanced surgical facilities (**Category C**)
4. Mobile surgical platforms and rapid deployment units (**Category M**)
5. Projects without a dedicated Operating Theatre (OT), minor surgical acts are performed in ER, ward or maternity (**Category Z**)

These categories can only provide a rough framework and some projects might fall in between two categories.

3.1 Category A: Projects providing limited emergency surgical care in remote settings. MSF Examples: Boga, DRC

These facilities provide only very limited life or limb saving emergency surgery for cases that cannot be transferred to a higher level on time (this includes obstetric surgery).

Performing major surgery in a Cat. A facility does come with an increased risk for complications due to suboptimal infrastructure, resources and the level and expertise of the surgical team.

Complications occurring during or after surgery may exceed the capacity of these facilities and they have to expect a higher risk of adverse events and a higher postoperative mortality.

Performing surgery in this setting is only acceptable if the condition of the patient or the urgency of the situation do not allow for timely transfer to a higher level of care. If MSF assumes responsibility for such activities, elective interventions should not be undertaken in this setting. As soon as the case load for emergency surgery increases, these facilities should be upgraded to the recommended level (Category B).

3.2 Category B: Regular surgical projects for essential and emergency surgery.

MSF Examples: Agok, South Sudan, Kousserie and Maroua in Cameroun, Kilo project in Yemen.

Cat. B surgical facilities are staffed and equipped to provide safe anaesthesia and surgery for emergency and essential surgery. From a patient safety perspective, they offer adequate standards to perform a well-defined range of elective surgery within their scope of activitiesⁱⁱⁱ. The necessary benchmark in terms of infrastructure and staff is determined by the need to provide safe anaesthesia (including endotracheal intubation on the OT) for Caesarean Sections and laparotomies (Merry et al., 2010) as well as the capacity to manage the most frequent surgical complications. Cat. B facilities face limitations in the definitive treatment of complex surgical cases requiring highly specialized surgical expertise, extra diagnostic capabilities or capacity for post- op intensive care. At this point of

time, most of the surgical projects in MSF OCG fall into this category. This category is compatible with the EMT Type II for surgical activities in the aftermath of a natural disaster (Norton, von Schreeb, Aitken, Herard, & Lajolo, 2013)

3.3 Category C: Specialized surgical facilities

MSF Examples: dedicated Trauma or Burn Centre, Reconstructive Surgery

These facilities provide specialized surgery with the highest requirements for surgical expertise, infection control and postoperative care. They do fulfil some, but not necessarily all requirements for Level III hospitals according to the WHO system (Mock et al., 2015) – e.g. lack of specialized services like ENT or ophthalmology.

The needed requirements in this category depend even more on the specific scope of the project. For specialized trauma surgery these facilities have to provide more sophisticated imaging capabilities, intensive care with the possibility for mechanical ventilation and specialized facilities for physiotherapy and rehabilitation (Norton et al., 2013). For reconstructive surgery and advanced treatment of fractures using internal fixation and orthopaedic implants they have to respect higher hygiene requirements.

3.4 Category M: Mobile Surgical Units.

MSF Examples: RISK, RDSU in the early phase of response

Mobile or fast deployable surgical platforms that provide dedicated emergency surgery in a context of natural disaster or violence are a unique entity. These platforms are often by default not capable to provide an ideal surgical infrastructure without losing their characteristic advantages of mobility and rapid deployment. The trade-off is the higher risk for adverse events, accepting a higher surgical mortality and a limited surgical capability.

In the case of disaster response or the forward projection of surgical capacities in conflict zones, the post-surgery care and rehabilitation usually is referred to other structures and thus these units are only effective as part of a system that includes transfer capacity to higher levels of care – similar to the model of echelons of care used by the military (Borden Institute, 2004).

Mobile surgical units have to deal with the most severe surgical problems in an explicitly austere environment. The surgical team will have to compensate for a lack of infrastructure and material and should have adequate training to do so.

Mobile surgical units differ from projects in Category A in their scope of interventions and objective. While Category A projects are prepared to treat a low number of simple surgical emergencies, mobile surgical units fill a specific gap in the surgical infrastructure in the aftermath of a natural disaster or a conflict zone and are prepared to deal with a high caseload and complex and demanding surgical problems.

After the initial deployment phase, Mobile Surgical Units should be upgraded or replaced by Category B facilities as soon as the available resources and the context allow. They must be embedded in a referral system that provides the capacity for definitive surgical/post-surgical treatment and rehabilitation (Asensio & Trunkey, 2016; Baldan, Giannou, & Parker, 2010; Kay et al., 2016; Norton et al., 2013).

3.5 Category ZERO: Project without Operating Theatre

MSF Example: MAYOM, South Sudan; Advanced Medical Post

In projects without an Operating Theatre, minor surgical interventions can be performed by a clinician with adequate training. These procedures do not require a dedicated OT but can be safely performed in a well-equipped Emergency Room, Maternity or as bedside procedures on a ward with a sterile field under local anaesthesia or analgesedation. Examples are minor wound care, suturing of an episiotomy wound, the placement of chest tubes for vital indications, incision of small abscesses and reduction of fractures or joint dislocations. Often, these procedures are not even recognized as “surgical acts”. However, the clinician that performs these interventions must have the necessary skills to perform them safely and core standards that assure patient and staff safety must be in place.

4 Specific surgical activities according to category

This list will not apply to every setting and is not exclusive. A specific set of admission criteria needs to be defined for each project (Core Standard No. 22).

x : should be performed (x) : recommended or optional - : under normal circumstances not possible in this setting		Category A	Category B	Category C	Category M	Category Z
TRAUMA	Chest tube placement	x	x	x	x	(x)
	Simple wound care	x	x	x	x	X
	Drainage of superficial abscess	x	x	x	x	x
	Closed fracture reduction and splinting, reduction of joint dislocations	x	x	x	x	(x)
	Open fracture wash out	x	x	x	x	x
	Debridement (extensive, open fracture)	-	x	x	x	-
	External fixation of open fractures	-	x	x	x	-
	Internal fixation of fractures	-	-	x	-	-
	Surgical airway: Cricothyroidotomy	(x)	x	x	x	(x)
	Surgical airway: Tracheostomy	-	x	x	x	-
	Fasciotomy	(x)	x	x	x	-
	Amputations	-	x	x	x	-
	Split Skin Grafts	-	x	x	x	-
	Loco-regional muscle flaps	-	(x)	x	(x)	-
	Neck exploration for bleeding	-	x	x	x	-
	Damage control laparotomy	(x)	x	x	x	-
	Definitive trauma laparotomy (resection anastomosis, management of complications)	-	x	x	x	-
	Bleeding control and vascular shunt for peripheral injury	-	x	x	x	-
	Vascular repair	-	(x)	x	(x)	-
Thoracotomy	-	(x)	x	(x)	-	
Craniotomy/Burr hole	-	x	x	x	-	
GENERAL SURGERY	Appendectomy	(x)	x	x	x	-
	Herniotomy for strangulated hernia	(x)	x	x	x	-
	Drainage and wash out for abdominal infections	x	x	x	x	-
	Definitive management of intestinal obstruction and abdominal sepsis (bowel resection/&anastomosis, ostomy)	-	x	x	(x)	-
	Complex hernia surgery including prosthetic mesh	-	-	x	-	-
	Complex GI surgery (e.g. hepatobiliary)	-	-	x	-	-
	Specialised Paediatric surgery	-	-	x	-	-
	Specialised reconstructive or burn surgery	-	-	x	-	-
Management of severe traumatic brain injury requiring ventilation/ICU support	-	-	x	-	-	
GYN & OBS	Caesarean Section (emergency)	x	x	x	x	-
	Caesarean Section (all indications)	-	x	x	(x)	-
	Surgical PPH Management	(x)	x	x	x	-
	D/C	x	x	x	x	-

5 Essential Requirements according to the different categories

5.1 Anaesthesia

See also (Merry et al., 2010)

Category A	Category B	Category C	Category M
<ul style="list-style-type: none"> ability for safe general anaesthesia <u>without</u> intubation Ability for local anaesthesia Ability for fluid resuscitation Minimum monitoring: pulse oximetry, heart rate, manual blood pressure measurement Locked drug storage Access to cold chain for heat sensitive drugs <p>Optional</p> <ul style="list-style-type: none"> Spinal anaesthesia 	<p>As for Cat. A plus</p> <ul style="list-style-type: none"> General anaesthesia <u>with</u> intubation/airway management Minimum monitoring: continuous: spO₂, ECG , HR, BP, etCO₂ (e.g. DASH 4000) Anaesthesia machine with vaporizer (Gas anaesthesia) Safe spinal anaesthesia Ability to provide loco-regional anaesthesia 	<p>As for Cat B. plus</p> <ul style="list-style-type: none"> Postsurgical ICU: mechanical ventilation required <p>Optional</p> <ul style="list-style-type: none"> Fibre-optic intubation 	<p>As for Cat A plus</p> <ul style="list-style-type: none"> General anaesthesia with intubation/airway management Minimum monitoring: continuous: spO₂, ECG , HR, BP, etCO₂ (e.g. DASH 4000) Safe spinal anaesthesia Ability to provide loco-regional anaesthesia <p>Recommended: Anaesthesia machine with vaporizer</p>

5.2 Physical Infrastructure of the Operating Theatre

See also (Coelho, 2013)

Category A	Category B	Category C	Category M
<ul style="list-style-type: none"> Safe water supply: 100l/intervention Reliable Electricity during interventions Safe waste and wastewater management according to MSF standards Dedicated area with access control restricted to OT personnel Protection from dust, 	<p>As for Cat A plus</p> <ul style="list-style-type: none"> Reliable Electricity 24/7 with backup Temperature control: <ul style="list-style-type: none"> Ability to heat to 27 °C if necessary Ability to keep temperature under 24 ° in hot 	<p>As for Cat. B plus</p> <ul style="list-style-type: none"> Minimum 2 OT Minimum space 36 m² per OT (at least for one OT) Walls equipped for X-ray shielding if fluoroscopy is used For projects performing internal fixation: Controlled ventilation <ul style="list-style-type: none"> Minimum 12 ACH Fine filter (Minimum 1µm, ideally HEPA filter >0,3µm) 	<p>As for Cat A plus</p> <p>Consider additional measures to maintain patient body temperature (see: OT Equipment)</p>

<p>insects, vermin</p> <ul style="list-style-type: none"> • Handwashing/scrubbing area • Washable floor and walls • Ability to keep temperature in OT above 21° • Dedicated recovery area close to OT, minimum 1,5 beds per OT table 	<p>climates</p> <ul style="list-style-type: none"> • Clearly marked clean zone, patient, staff and material circuits respecting separation between clean and unclean areas • Minimum size of OT 24m² per OT table • Dedicated recovery area within OT suite, minimum 1,5 beds per OT table 	<ul style="list-style-type: none"> ○ Recommended: Positive pressure in OT ○ Scheduled filter and ventilation maintenance (World Health Organization, 1998) 	
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5.3 Human Resources

Category A	Category B	Category C	Category M
<p>See Core Standard No. 24 for OT team composition</p> <ul style="list-style-type: none"> • Possibility of task shifting: surgical and anaesthesia providers trained but not necessarily board certified specialists <p>Surgical ward : Nursing ratio: 1 nurse per 10 patients (24hrs)</p>	<p>As for Cat. A plus: Presence of at least one board certified surgeon^{iv} in the project</p> <p>Recovery Room:</p> <ul style="list-style-type: none"> • 1 nurse per 4 patients at all times <p>Recommended:</p> <ul style="list-style-type: none"> • 1 physiotherapist / 20 surgical beds (ICRC, 2016) 	<p>As for Cat. B plus</p> <ul style="list-style-type: none"> • Presence of at least 1 additional board certified surgeon, (sub)specialized according to the scope of the project • Permanent presence of intensivist • Adequate number of physiotherapists to assure inpatient and outpatient services 	<p>As for Cat B plus</p> <ul style="list-style-type: none"> • At least one anaesthesia provider should be MD anaesthesiologist • In natural disaster response presence of at least one specialist in orthopaedic surgery <p>Surgical ward (if patient holding capacity): Nursing ratio 1:8 (Norton et al., 2013)</p> <p>Physiotherapy: 1/20 beds if patient holding capacity, should be added as soon as conditions allow</p>
<p>Recommended: 1 gynaecologist if more than 10 Caesarean Sections per month</p>			

5.4 Operating Theatre Equipment

Category A	Category B	Category C	Category M
<ul style="list-style-type: none"> • Adequate light system powerful enough to visualize deep abdominal structures • Oxygen concentrator or other reliable medical oxygen source^v • Suction device (1 for surgeon, 1 for anaesthesia) • OT table suitable for emergency procedures, ideally head and leg tilt possible • Pneumatic tourniquet • Minimum 1 instrument table and 1 mayo table • 2 soft waste containers of 20L • 1 soft waste container of 60 L • 1 organic waste container (20-60 L) 	<p>As for Cat A PLUS</p> <ul style="list-style-type: none"> • Electrocautery suitable for major surgery • Fully adjustable OT table with pressure pads and accessories for Lithotomy position • Minimum 1 dedicated OT lamp^{vi} as specified by manufacturer • Heating device for infusions and irrigation solution or access to hot water • External Defibrillator <p>Recommended:</p> <ul style="list-style-type: none"> • Active patient warming devices (e.g. Bair Hugger) 	<p>As for Cat B PLUS</p> <ul style="list-style-type: none"> • Orthopaedic table if internal fixation performed • C-Arm (fluoroscopy) and radiation protection equipment • Active patient warming devices (e.g. Bair Hugger) 	<p>As for Cat. A PLUS</p> <p>Recommended:</p> <ul style="list-style-type: none"> • Heating device for infusions and irrigation solution or access to hot water • Electrocautery suitable for major surgery • Active patient warming devices (e.g. Bair Hugger) • OT table, instrument/mayo tables can be non-standard solutions to allow easy deployment

5.5 Sterilization

Essential sterilization requirements applicable for all projects with and Operating Theatre performing major surgery (A, B, C and M):

- Dedicated area protected from dust, insects and vermin, access restricted to sterilization staff
- Separated circuit for dirty/clean material
- Sterilization with steam autoclave: 134°C at 2.1 bar for 10 min
- Double wrapping with sterilization crepe paper only
- Notified expiry dates on sets
- Use of chemical sterilization indicators (i.e. TST strip)
- Use of sterilization steam indicator tape

- Full traceability (logbook for each autoclave)
- Storage of sterilized material in closed cupboards/boxes

Only for minor surgical procedures outside the OT (Category Zero):

- Sterilization with steam autoclave: Minimum 121 °C for 30 min (use of 39l All American possible)

For further details see MSF OCP *Hygiene Guidelines for healthcare facilities, 2013 (MSF OCP, 2013)*

5.6 Laboratory

See also “Diagnostic packages for MSF programs” (MSF Diagnostic Network, 2017)

Category A	Category B	Category C	Category M
<ul style="list-style-type: none"> - Haemoglobin - Serum glucose - Urine dipstick (pH, specific gravity, protein, Glucose, Ketone, Blood, Nitrit, Leucocytes) and pregnancy test - Safe direct blood transfusion 	<p>As for Cat. A PLUS</p> <ul style="list-style-type: none"> • WBC count, differentiation • Gram stain • Creatinine <p>Recommended:</p> <ul style="list-style-type: none"> • CRP • Serum K⁺ • PTT/INR <p>Blood bank depending on context</p>	<p>As for Cat B PLUS</p> <ul style="list-style-type: none"> • Thrombocyte counts • K⁺, Ca²⁺, Na⁺ • Arterial Blood Gas • Serum Lactate • PTT, INR , D-Dimere • Blood bank • Access to microbiology and culture for orthopaedic/reconstructive programs 	<p>As for Cat A Plus</p> <p>Recommended:</p> <ul style="list-style-type: none"> • K⁺, Ca²⁺, Na⁺ • Arterial Blood Gas • Lactate • PTT, INR , D-Dimere

5.7 Diagnostic Imaging

See also “Diagnostic packages for MSF programs” (MSF Diagnostic Network, 2017)

Category A	Category B	Category C	Category M
<p>Recommended</p> <p>Ultrasound</p>	<ul style="list-style-type: none"> • Ultrasound • X ray in projects performing more than 5 External Fixations per month 	<ul style="list-style-type: none"> • Ultrasound • X-ray • Fluoroscopy in OT for orthopaedic programs 	<ul style="list-style-type: none"> • Mobile Ultrasound • X-ray recommended depending on mission profile

5.8 Essential Requirements for Minor Surgery in Category Zero

In projects that do not have a dedicated OT or a surgical team present, certain minor surgical acts are performed in the ER, Maternity or in the ward (MSF SAGE UNIT, 2015). For these procedures, the same Core Standards surgical interventions in the OT apply. Anaesthesia is either local anaesthesia administered by the health care provider that performs the intervention or procedural analgesedation (with or without additional local anaesthesia).

For procedural analgesedation the following conditions must be met:

- Analgesedation is not administered by the health care provider that performs the intervention
- Health care providers must be trained in delivering analgesedation and managing complications of analgesedation (airway management, cardiopulmonary complications)

5.9 Additional protocols for surgical projects

Apart from the two mandatory protocols (see Core Standards) the following protocols are recommended according to the project category:

x : recommended (x) : optional depending on setting (discuss with adviser) - : not recommended	Category A	Category B	Category C	Category M	Category Z
MSF Transfusion Guideline (MSF, 2010)	X	X	X	X	X
Massive Haemorrhage in Trauma Protocol (MSF, 2015)	X	X	X	X	X
Thromboprophylaxis protocol (MSF Anaesthesia/ Surgery/ ISRH Working Groups, 2011)	-	X	X	X	-
Local Anaesthetic Systemic Toxicity Protocol (MSF Int Anaesthesia – Emergency Med – Intensive Care working group, 2014)	(X)	X	X	X	-

6 Annex

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ⁱ Projects should have clear rules on how to deal with emergency cases when legal consent cannot be obtained – e.g. unconscious patient with a life-threatening condition and no legal guardian available. These procedures should take local law and customs into account and usually require at a minimum a short written note by the surgeon and anesthetist, confirming indication and circumstances in the patients file prior to the procedure (eg.- *patient has ____, which is life threatening, consent cannot be obtained because of ____ . It is our professional opinion that the emergency procedure ____ should be immediately performed*). A longer note can follow later.

ⁱⁱ If not defined in the Core Standards for Surgery, minimum staffing, equipment and infrastructure requirements are adapted to the surgical activity as defined in the Essential Requirement for Surgical OCG Projects, existing MSF guidelines or defined by the technical referents

ⁱⁱⁱ This does not mean automatically that elective surgery should and will be offered in these projects. This will be an operational choice taking all context specific risks and benefits of an elective surgery program into account.

^{iv} For Expat surgeons: allowed to practise surgery independently in home country. For national staff practitioners: finished specialisation in surgery and allowed to practise surgery without supervision according to national regulations

^v Especially in war context but also in any resource poor setting, oxygen concentrators are the preferred source of medical oxygen due to safety and logistical constraints

^{vi} The current MSF standard is a LED operating light with max 120.00 Lux intensity, fixed light color (95 % daylight), light field 14-26 cm, This lamp in a single configuration can be considered the minimum as a dedicated surgical light in Cat B. Light intensity should not exceed 160.000 , the Maximum light field should not be below 20 cm.