



MSF - OPERATIONAL CENTRE BRUSSELS - **MEDICAL DEPARTMENT**

OCB MEDICAL ACTIVITY REPORT 2017

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OCB Medical Activity Report 2017

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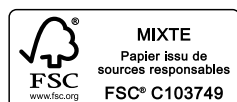
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INTRODUCTION

Dear Colleagues, Dear Friends,

Reading and reflecting on the chapters of this latest edition of the Medical Activity Report, I am truly inspired by the incredible work accomplished by our field teams in 2017. I urge you all to take some time to do the same – to read about and reflect on the extent of our activities, and to contemplate the lessons learned and challenges identified by the different advisors of the Medical Department.

This report not only serves to document the past, but to also inform the future decisions of Médecins Sans Frontières -Operational Centre Brussels (OCB).

The collection and analysis of field-based data shines a light on our actions. These data help us to navigate the medical humanitarian needs that exist, supported by focused operational research. Data reveal gaps, failures and successes; they trigger innovative thinking. The struggle around collecting and accessing relevant and reliable data is a challenge that prevails throughout this report; harmonizing our approach to monitoring and surveillance is questioned. We will face this challenge head-on; we will also explore the implementation of better quality indicators (the recording of post-operative site infection being just one example).

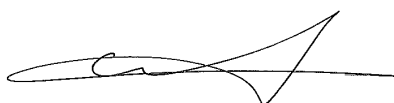
The primary purpose of the OCB Medical Department is to support our frontline healthcare providers; it is a relationship- centered approach. The department's primary purpose is to meet these frontline needs, so that high-quality care can be provided for the beneficiaries of this care – patients, families, communities. Turning the pages of this report you will marvel at the number of trainings being provided, developed or desired. Capacity building is not new to us; the transformative potential is in our willingness and capacity to formalize its deployment at field level and to turn it into a core component of all our projects. Bedside clinical teaching and mentoring is key to improving quality of care. Guidelines, protocols and tools also contribute. Many such tools are either in development or seen as priorities (care for victims of torture, good distribution practices, wound care, mental health and psychosocial care). Better knowledge management will improve the impact of these documents and tools in our projects. Enormous strides can be made without increasing the complexity of field-based technology.

Although vertical programmes have helped us to build expertise, we now have the opportunity to explore integration, such as providing HIV testing, tuberculosis screening and vaccination activities in our nutritional services, or integrating nutrition and mental health in our paediatric activities. HIV activities will have to be more integrated in our primary health care initiatives and in our hospital-based projects in the future, even in emergencies. Water, sanitation and hygiene activities (WASH) should not be underestimated as an essential component of outbreak responses: our management of the plague outbreak in Madagascar benefited from the WASH experience that we acquired during the 2014 West Africa Ebola outbreak.

There is no shortage of challenges for 2018. The clinical management of HIV advanced disease is high on the agenda. For infection, prevention and control we will adopt a stepwise approach focusing on hand hygiene, cleaning and disinfection of the environment and transmission-based precautions. Multi-drug resistant community and hospital outbreaks require us to be better prepared. This includes the provision of laboratories with microbiology capacity in some of our structures. New projects are calling for the development of expertise in substance abuse. The management of insulin-dependent diabetes must be addressed. In high malaria transmission settings we will implement a pan pLDH rapid diagnostic test. We will maintain our commitment to provide safe abortion care.

Together nothing is impossible,

Thanks to all those who contributed to this report,



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EXECUTIVE SUMMARY

In 2017, Médecins Sans Frontières – Operational Centre Brussels (MSF-OCB) ran 112 projects in 45 countries. Overall, 1,951,415 out-patient department (OPD) consultations were performed, of which 455,656 were for children under the age of five. There were 228,792 admissions to in-patient department (IPD); 36,523 patients were children (1-59 months) and 7,417 were neonates.

While continuing the support of projects for asylum seekers in and around Europe and continuing the crisis response in Burundi, the major responses for OCB in 2017 included: i) distribution of rehabilitation material to the population affected by the hurricane that devastated Haiti in October 2016, ii) intervening for the malnutrition crisis in Borno State in Nigeria and initiating a long term project in the Anambra State; iii) providing assistance to the injured escaping the conflict in Mosul in Iraq; iv) responding to a pulmonary plague outbreak in Madagascar; and v) initiating support to the Rohingya refugee crisis. Geographically, activities in sub-Saharan Africa remained at the core of MSF-OCB interventions (Figure).

In 2017

2,443,418 doses of vaccines were administered

312,802 cases of confirmed malaria were treated

81,801 deliveries; 5,018 of these by C-section

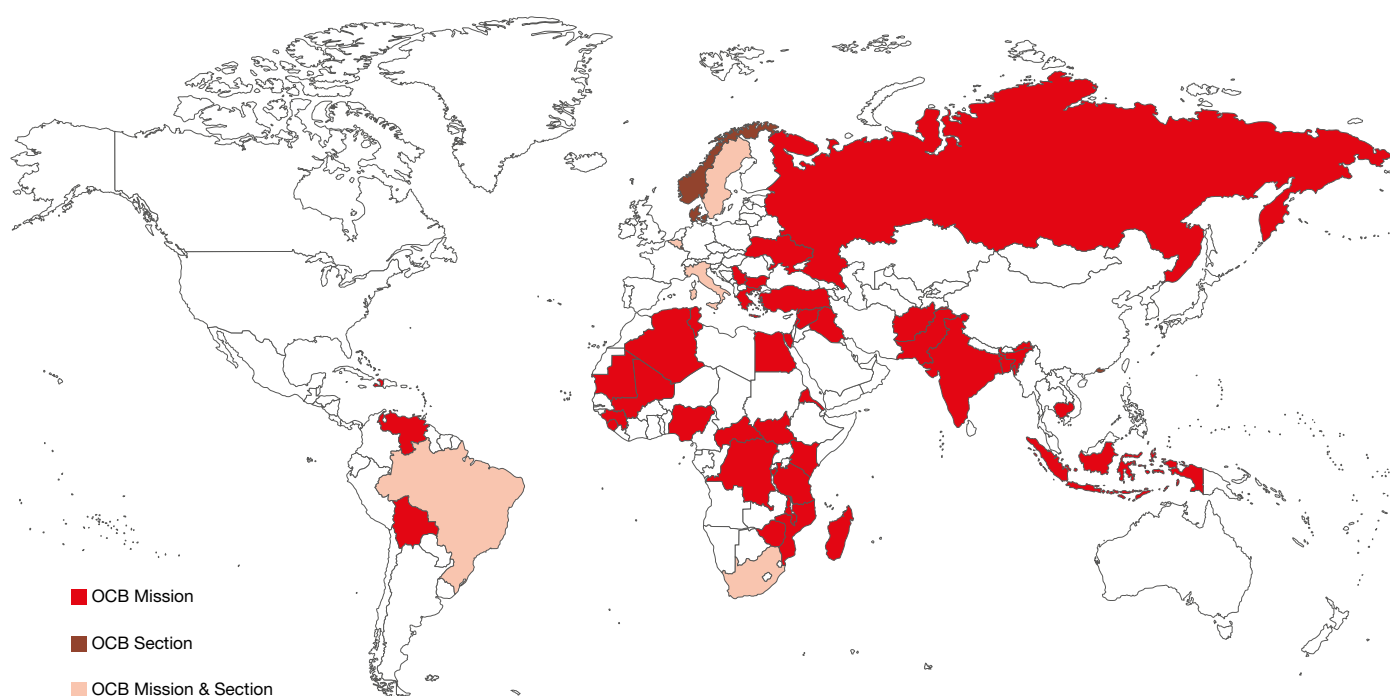
52,736 individual mental health sessions were provided

24,169 surgical interventions were undertaken

4,907 victims of sexual violence accessed care

1,934 cases of Multi-Drug Resistant TB were diagnosed and treated

Figure: Global OCB sections and missions, 2017



1. YEAR IN REVIEW

During 2017, Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) continued to provide primary and specialized medical care (including mental health care) in contexts ravaged by protracted conflicts. Post-surgical care and rehabilitation for the war-wounded in Iraq and Syria, psychosocial care for victims of torture, and primary health care for the population of Central African Republic (CAR) were just a few examples of how MSF OCB assisted those in need.

In response to the escalating European migrant crisis, MSF played an important role in the well-being of migrants and refugees, providing care along the migration routes and within European arrival countries (Italy and Greece), transit countries (Serbia) and destination countries (Sweden, Belgium and Norway).

A nutrition crisis in the north of Nigeria – the bitter result of internal conflict in the region – saw MSF OCB providing assistance for the affected internally displaced population (IDP), particularly children most at risk. There were several outbreak emergencies in 2017, with the pulmonary plague outbreak in Madagascar requiring substantial mobilisation of resources. By the end of the year, MSF OCB began operations in the Rohingya refugee camps in south-eastern Bangladesh in response to the alarming water, sanitation and hygiene situation.

With the ever-growing volume and complexity of hospital-based activities and surgical interventions, MSF OCB began introducing Antibiotic Stewardship (AS) programmes which are designed to monitor and promote the optimal use of antibiotic medications.

The first thematic operational research course, WASH IT (a Water, Sanitation and Hygiene themed course) had its first module in 2017. This training was open to the WASH sector at large, to augment the evidence-based impact of WASH interventions.

Regular OCB projects in 2017 were marked by an increase in medical activities across a number of domains including vaccination, tuberculosis (TB), hepatitis C (HCV), health promotion (HP), water, hygiene and sanitation (WASH), sexual and reproductive health (SRH) and surgical care. Mental health, HIV/TB, SRH, nutrition and HP activities continued to be better integrated into comprehensive packages of care.

The Mobile Unit Surgical Trailer (MUST) – a high quality mobile health structure with European hospital-equivalent standards of sterilization and radiology equipment – was deployed for the first time in Iraq. Lessons learnt from this deployment led to the development of MUST II – a unit composed of 16

trucks, two Operating Theatres (OTs), an intensive care unit (ICU) of 14 beds and a sterilisation unit. This innovative ‘mobile hospital’ offers a potentially quantum improvement in MSF’s ability to save lives in conflict and disaster zones.

Efforts to promote more consistent and standardized tools for the monitoring and reporting of medical programme data by the eHealth team saw an increase in projects utilising standardised data collection tools. An innovative eHealth tool (EasyNut) that runs on a tablet, was rolled out in the Fori nutrition project in Nigeria to better manage patient flow and basic clinical records.

Special attention was given to improving and standardising the quality of care in OCB projects: there was a greater focus on ensuring that essential WASH requirements were in place; expertise on addressing medical waste management was developed further (e.g. for expired drugs, viral load products and hazardous waste); standard operational procedures, guidelines and protocols were worked on and streamlined; and the value and service afforded by interdisciplinary platforms was capitalised on in multiple areas. There were several new referents, coordinators, mobile implementation officers and field coaches introduced in different departments to improve interaction, expertise and field support. And in order to ensure intersectional coherence, intersectional working groups and numerous trainings were held across different medical domains.

2. CHALLENGES AND PROSPECTS

In 2017, the main challenges faced were related to the evolving complexity of OCB projects (higher technical needs, higher expected standards of care, and higher volumes of activities) and to the complexity of the different contexts where OCB works (in terms of logistics and supply, security, politics and human resources).

Human resource constraints continued to pose a challenge in many areas. For example, in nutrition, due to the decrease in activities in previous years, it was challenging to find adequately experienced medical staff to respond in emergencies; in surgery and intensive care, the high turnover of specialists hindered capacity to provide quality care.

Recent years have seen greater demand for and greater importance placed on WASH activities within emergency contexts and regular projects. To address this, trainings, workshops, on-the-job training and thematic operational research programmes have been introduced into MSF OCB.

With respect to OCB’s operational prospects, some of the objectives identified as priorities for 2017 were not fully achieved and these

will thus require further attention in 2018. MSF OCB will continue to focus on improving the quality of care provided in the contexts that it works; in middle income countries, new technologies and services relevant to that context will be introduced; and where possible, concerted efforts will be made to provide more patient-centred care. Finally, special focus will be channelled into integrating antibiotic stewardship programmes into projects in order to reduce antimicrobial resistance.

In 2018, the OCB Medical Academy is scheduled to open, its aim being to strengthen the capacity and quality of medical services in many of our projects.

In conclusion, OCB’s presence in more challenging and complex settings (e.g. conflict areas or settings with limited supply processes), the increased importance being placed on integrated models of care, and the expectations towards MSF as a leading humanitarian organisation, will necessitate the development and implementation of more innovative models of care delivery, guided and supported by a diversity of operational research.

LIST OF ABBREVIATIONS

ABR: Antibiotic Resistance	HMTT: Hospital Management Team Training	OPD: Out-Patient Department
ACT: Artemisinin-based Combination Therapies	HP: Health Promotion	OR: Operational Research
AIDS: Acquired Immune Deficiency Syndrome	HPV: Human Papilloma Virus	OT: Operating Theatre
ALSO: Advanced Life Support in Obstetrics	HQ: Head Quarters	PBO: Piperonyl Butoxide
AMR: Antimicrobial Resistance	HR: Human Resource	PCR: Polymerase Chain Reaction
ANC: Antenatal Care	HRP: Histidine Rich Protein	PCV: Pneumococcal vaccine
ART: Anti-Retroviral Treatment	iCCM: integrated Community Case Management	PEP: Post-Exposure Prophylaxis
AS: Antibiotic Stewardship	ICRC: International Committee of the Red Cross	PEPFAR: The United States President's Emergency Plan for AIDS Relief
ATFC: Ambulatory Therapeutic Feeding Centre	ICT: Information and Communication Technologies	PHC: Primary Health Care
BASIC-DHS: Basic Assessment and Support in Intensive Care for Developing Healthcare Systems	ICU: Intensive Care Unit	pLDH: Parasite Lactate Dehydrogenase
BCG: Bacille Calmette Guérin (TB vaccination)	IDP: Internally Displaced People	PLHIV: People Living with HIV
BEmONC: Basic Emergency Obstetric and Neonatal Care	IPC: Infection Prevention and Control	PMR: Project Medical Referent
bOPV: bivalent Oral Polio Vaccine	IPD: In-Patient Department	PMTCT: Prevention of Mother-to-Child Transmission
CAR: Central African Republic	IPV: Intimate Partner Violence	PNC: Postnatal Care
CDC: Centres for Disease Control and Prevention	IPV: Inactivated Polio Vaccine	POC: Point of Care
CEmONC: Comprehensive Emergency Obstetric and Newborn Care	IT: Information and Communication Technologies	PPD: Preparation for Primary Departure
CHW: Community Health Worker	ITFC: In-Patient Therapeutic Feeding Centre	PrEP: Pre-Exposure Prophylaxis
CNCD: Chronic Non-Communicable Disease	ITM: Institute of Tropical Medicine in Antwerp	PSP: Populations in Precarious Situations
CPAP: Continuous Positive Airflow Pressure	KZN: KwaZulu-Natal	PUC: Pool d'Urgence Congo
CPT: Cognitive Processing Therapy	LAM: Lipoarabinomannan Assay	RDT: Rapid Diagnostic Test
CrAg: Cryptococcal Antigen	LBW: Low Birth Weight	REMIT: Research Impact Monitoring Tool
CS: Caesarean Sections	LEEP: Loop Electrosurgical Excision Procedure	RPR: Rapid Plasma Reagin
CSW: Commercial Sex Worker	LLIN: Long Lasting Insecticide Treated Nets	RTI: Respiratory Tract Infection
CTC: Cholera Treatment Centre	LOC: Level of Care	RUTF: Ready-to-Use Therapeutic Food
DAA: Direct-Acting Antivirals	LPA: Line Probe Assay	SAC: Safe Abortion Care
DBS: Dry Blood Spot	LRTI: Lower Respiratory Tract Infection	SAM: Severe Acute Malnutrition
DHIS2: District Health Information Software 2	LSHTM: London School of Hygiene and Tropical Medicine	SAMU: South African Medical Unit
DOC: Direct Obstetric Complications	LuxOR: Luxembourg Operational Research Unit	SAR: Search and Rescue
DoE: Declaration of Equivalence	M&E: Monitoring and Evaluation	SATS: South African Triage System
DRC: Democratic Republic of Congo	MAM: Medical Activity Manager	SEU: Stockholm Evaluation Unit
DRTB: Drug Resistant TB	MAST: Monitoring and Surveillance Tools	SGBV: Sexual and Gender Based Violence
DRTB: Drug Resistant Tuberculosis	MCV: Measles Containing Vaccination	SOP: Standard Operating Procedure
DSTB: Drug Sensitive TB	MDR: Multi-Drug Resistant	SORT IT: Structured Operational Research and Training Initiative
ED: Emergency Department	MENA: Middle East and Northern Africa	SRH: Sexual and Reproductive Health
EML: Essential Medicines List	MH: Mental Health	STI: Sexually Transmitted Infection
EmOC: Emergency Obstetric Care	MHPSS: Mental Health and Psychosocial Support	SV: Sexual Violence
EMR: Electronic Medical Records	MHS: Management of Health Structures	SVR12: Sustained Virologic Response at 12 weeks after treatment completion
EPI: Extended Programme on Immunisation	MINOS: Medical Information Network for Operational Support	TB: Tuberculosis
EPREP: Emergency Preparedness	MIO: Mobile Implementing Officer	TFC: Therapeutic Feeding Centre
EQAS: External Quality-Control System	MoH: Ministry of Health	ToP: Termination of Pregnancy
ER: Emergency Room	MSF: Médecins Sans Frontières	toPV: trivalent oral polio vaccine
ERB: Ethics Review Board	MSM: Men who have Sex with Men	ToT: Training of Trainers
ESBL: Extended Spectrum Beta Lactamase	MUAC: Middle Upper Arm Circumference	UNAIDS: Joint United Nations Programme on HIV/AIDS
EU: European Union	MUST: Mobile Unit Surgical Trailer	UNDP: United Nations Development Program
E-Unit: Emergency Unit	NAM: Nursing Activity Manager	UNICEF: United Nations Children's Fund
EVD: Ebola Virus Disease	NCD: Non-Communicable Disease	URTI: Upper Respiratory Tract Infection
FLMT: First Line Medical Training	NDRA: National Drug Regulatory Authority	VC: Vector Control
FP: Family Planning	NET: Narrative Exposure Therapy	VCS: Vaccination Coverage Survey
FPR: Family Protection Ration	NFI: Non-Food Item	VIAC: Visual Inspection Acetic Acid and Cervicography
GAM: Global Acute Malnutrition	NG: Nasogastric Tube	VL: Viral Load
GDP: Good Distribution Practice	NGO: Non-Governmental Organization	VoT: Victims of Torture
GIS: Geographic Information System	NICD: National Institute of Communicable Diseases	WASH: Water, Sanitation and Hygiene
GPP: Good Pharmacy Practice	NIV: Non-Invasive Ventilation	WFP: World Food Program
GTFCC: Global Task Force for Cholera Control	OC: Operational Centre	WG: Working Group
Gyn-Obs: Gynaecology/Obstetrics	OCA: Operational Centre Amsterdam	WHO: World Health Organisation
HBV: Hepatitis B Virus	OCB: Operational Centre Brussels	YF: Yellow Fever
HC: Health Centre	OCBA: Operational Centre Barcelona	
HCV: Hepatitis C Virus	OCG: Operational Centre Geneva	
HH: Household	OCP: Operational Centre Paris	
HIV: Human Immunodeficiency Virus	OCV: Oral Cholera Vaccine	
	OD: Operating Department	

A YEAR IN SNAPSHOTS

ANTIBIOTIC RESISTANCE

- Antibiotic Resistance (ABR) has been recognised as a priority for MSF since 2015, and a multidisciplinary task force composed of members of the Medical Department (infection control, laboratory, bacteriology, infectious diseases, and pharmacy), Operation Departments from different sections, together with CAME (Campaign for Access to Essential Medicines), was created.
- Antibiotic Stewardship (AS) refers to a set of coordinated interventions to monitor and promote the optimal use of antibiotic medications with the goal of optimising clinical outcomes, minimising unintended consequences of antibiotic use (such as resistance, toxicity, adverse effects etc.) and decreasing unnecessary costs.
- A structured AS strategy was implemented in 2017 in two OCB projects: Ahmad Shah Baba in Afghanistan and Tabarre in Haiti. ABR activities were also run in Castors, Central African Republic; this was unplanned and driven by the *Klebsiella pneumoniae* outbreak. It showed good results despite the challenges that arose as a result of intervening in the name of an 'emergency'.

CHRONIC NON-COMMUNICABLE DISEASES

- OCB appointed its first full-time technical referent for Non-Communicable Diseases (NCDs).
- An inter-sectional NCD Working Group was formally established in MSF and the Access Campaign undertook an exploration of potential avenues through which to incorporate NCD-related challenges into its portfolio.
- Geographically, NCD activities in OCB had two primary centres: East Africa (Kenya, Zimbabwe) and the Middle East (Lebanon with migrant projects in Greece also logically falling into this group). Other projects with an emphasis on NCDs were in South Asia (India, Pakistan and Afghanistan, including hospital level NCD care) and elsewhere in Africa (Mauritania).
- 2018 will largely be marked by the continuation and consolidation of the areas for development identified and embarked upon in 2017

EMERGENCY MEDICINE

- Emergency Care was provided in 23 health facilities across 11 countries. A total of 311,972 emergency department (ED) consultations were performed during the year. More than half of these consultations were undertaken in Kabul, Martissant and Timurgara.
- Within OCB, the South African Triage Scale (SATS) is the routine triage system used within the ED. During the year, the SATS was being used in 12 projects. Findings from several recent studies demonstrating the reliability and validity of the SATS in the contexts where MSF works, should be disseminated to all relevant OCB projects, and the SATS should be implemented in the EDs where it is still not being used.
- Emergency care in MSF continued to be promoted through internal training courses, including the BASIC DHS (Developing Healthcare Systems) for medical and paramedical staff. Specific trainings on mass casualty incidents for triage, management and planning were also given.
- An OCB standardized ED database for capturing individual patient data greatly facilitated project evaluation and planning and should be implemented in all relevant projects in order to facilitate better monitoring and analysis of ED activities.

EMERGENCY UNIT

- The E-Unit directly intervened in 11 countries and supported 10 interventions (in eight countries) managed by the cells. Two exploration missions were performed of which one was followed by an intervention.
- Following hurricane Matthew in October 2016 in Haiti, the E-unit distributed shelter materials and non-food items to the affected vulnerable population scattered in the mountains.
- The E-unit intervened for the malnutrition crisis in Borno State in Nigeria and initiated a long-term project in the Anambra State. The intervention targeted malnutrition among children aged less than 10 years old. This included a therapeutic feeding centre and outreach activities in the community (door-to-door screening).
- In Iraq, the E-unit provided assistance to the injured escaping the conflict in Mosul. In Hamam-Al-Alil surgical activities were

provided through the Mobile Unit Surgery Trail (MUST). Long term post-operative surgical care was provided in Hamdaniya in March.

- In Toamasina, Madagascar, the E-unit responded to a pulmonary plague outbreak. MSF supported the plague triage and treatment centre.
- There were 48 departures to the field during the year - 32 for direct support in emergencies and 16 for support to cells in emergency responses or gap filling in specific contexts.

EPIDEMIOLOGY/EPICENTRE

- Epicentre provided epidemiological support for MSF-OCB field interventions in Haiti (vaccine coverage survey) and the Democratic Republic of Congo (DRC), (retrospective mortality survey, with components on nutrition and violence).
- The key research areas of Epicentre included: the Ebola Virus Disease (EVD) (e.g. rVsV-ZEBOV trial), vaccine preventable diseases (e.g. the stability of measles vaccines in controlled temperature chain), HIV (e.g. first-line HIV resistance and its associated risk factors), and Hepatitis C Virus (e.g. HepaMUD; developed and supported by Epicentre) and Tuberculosis (TB), (e.g. feasibility of using the LAM test for TB diagnosis),
- Research was also conducted to support MSF operations in diarrhoeal diseases, mental health, surgery, diagnostics, antibiotic resistance, nutrition, malaria and neglected diseases.
- In terms of training, Epicentre conducted two PSP (Populations in Precarious Situations) and two REPEPI (Responding to Epidemics) courses. It also supported the preparation of a course on "Responding to emergencies and epidemics" in DRC and ran this course for staff of all MSF sections in Afghanistan.

EVALUATION UNIT

- The Stockholm Evaluation Unit followed twenty-one dossiers and completed sixteen reports. More than half of these were requested by OCB operations.
- The number of evaluations, as opposed to reviews, being conducted is quite low. There is a need to emphasise the added value of the judgement inherent in the evaluation process.

- The proportion of evaluation exercises being carried out outside of OCB is becoming too high and the ratio of external to internal evaluations needs to be curtailed so that the focus remains on OCB.

HEALTH INFORMATICS

- Use of MINOS continued to grow, with OCB working on preparing the upgrade of the MINOS software to support greater diversity of routine medical data.
- The EMR (Electronic Medical Record) database was rolled out in Kinshasa (HIV project) and in Mumbai to monitor TB.
- Out of 68 OCB projects ongoing at the end of the year, 21 were using MINOS as their primary data collection tool, and two projects were using DHIS2 (Kenya, Embu project) and Lebanon). In total, 23 of the 68 projects (34%) were provisioned with standard Monitoring and Surveillance Tools, compared to 18% at the end of 2016.

HEALTH PROMOTION AND SOCIO-ANTHROPOLOGY

- Health Promotion (HP) activities were conducted in 54 projects across 29 missions (not including vertical HIV/TB projects). These projects included seven migration intervention projects, seven emergency intervention projects, and 40 regular projects.
- The HP approach continued to be more holistically orientated with the introduction of more social work activities. Social work is dedicated to creating a more supportive environment for beneficiaries, and, although a specific field of expertise requiring specific and dedicated staff, it comes under the umbrella of HP.
- MSF's commitment to engage with the communities where it works continued; although, there is clearly a need to better define the level of engagement that it is seeking to achieve in different projects.

HIV/TUBERCULOSIS/HEPATITIS C

- Sixteen HIV/TB projects were running in seven countries. Two projects closed in 2016. Some tentative integration with sexual and reproductive health (SRH) was ongoing in Masisi (DRC), Rustenburg (South Africa) and Bangui and Bengassou (CAR). The total number of people tested for HIV increased for the second consecutive year (n=303,654).
- TB activities were running in 11 vertical TB/DRTB (drug resistant TB) and HIV/TB. A total of 8,432 TB patients were detected and started on treatment during the year; out of these, 6,798 were DSTB (drug sensitive TB) cases and 1,634 were DRTB cases. Increased access to Bedaquiline and Delamanid for DRTB patients oc-

curred in South Africa and India. Some projects increased the use of TB LAM for the detection of TB in HIV patients with advanced disease.

- Hepatitis C virus (HCV) testing and treatment activities were implemented in three OCB projects. A total of 2,934 patients were enrolled to be treated. Of these, 2,024 patients were initiated on treatment with DAA (direct-acting antivirals) and 990 patients completed follow-up.

INFECTION PREVENTION AND CONTROL (IPC)

- While the severity of illness of hospitalized patients in MSF projects is increasing, and the use of invasive devices is expanding, there is a higher risk for hospital acquired infections, often caused by antimicrobial pathogens. Hospitals act as referral sites for difficult-to-treat infections. As such, the need to avoid cross-transmission within and between health care facilities is paramount.
- The IPC unit works in close collaboration with the AMR task force and several technical referents in the Medical Department to ensure the integration of IPC measures in all relevant guidelines, protocols and tools within MSF-OCB.
- In 2017, several field visits were undertaken in Central African Republic (CAR), Guinea, Burundi, Pakistan, DRC and Haiti to: i) support outbreak responses; ii) tailor on-the-job training for the IPC supervisors; and iii) conduct situation analyses for IPC implementation, design an action plan accordingly and initiate implementation of activities with the field teams.

INTENSIVE CARE

- Intensive Care was offered in specific units in three projects: two of them dealing mainly with trauma: Tabarre (Haiti) and Bujumbura (Burundi); the third providing general hospital care in Bili (DRC).
- A total of 1,862 patients were admitted to the three ICUs during the year. Despite contextual limitations, the quality of care provided in the units was maintained at a level deemed acceptable by international standards.
- Specialized expatriate support was provided through ongoing training - both scheduled training sessions and bedside training.

LABORATORY

- Laboratory activities were supported in 28 projects across 15 countries.
- An ABR Multidisciplinary Task Force composed of different Medical Department members (infection prevention control, laboratory, bacteriology, infectious diseases), Operations and the Access cam-

paign, was created to develop the initial road map for tackling antibiotic resistance.

- Focus on a technical bacteriology dossier was ongoing to provide on-the-ground support for OCB activities in Afghanistan, Iraq and the DRC-HIV project.
- TB, Hepatitis B and C (HBV and HCV) diagnostic activities were slowly scaled up. Large strides also continued to be made in the area of point of care (POC) diagnostic tests with increased task shifting of these testing services to lay workers (nurses and counsellors).

MALARIA

- A total of 630,346 rapid diagnostic tests (RDTs) were performed in OCB projects with 311,601 positive (55% positivity rate). Malaria continued to be a leading cause of morbidity and mortality in MSF-OCB projects, particularly in South Sudan, DRC and the CAR.
- The new MSF Intersectional Malaria Policy document underwent a long and arduous validation process by the Medical Directors during the year, but will be ready for dissemination in 2018.
- Roll out of the pLDH-based RDT continued in Nigeria and South Sudan. Implementation in DRC, Guinea and Sierra Leone was rendered difficult by the fact that pLDH is not the standard RDT used in these settings.
- A concerted effort was made to implement malaria preventive tools such as long-lasting insecticide treated nets (LLIN) and indoor residual spraying in the community. The new OCB malaria policy stipulates the use of LLINs impregnated with piperonyl butoxide (PBO), rather than pyrethroids, due to emerging resistance; this is a transitory measure until new bed-nets become available.
- The research project that is ongoing in Preah Vihear, Cambodia, was further expanded during the malaria transmission season of 2016/2017 to include more villages. The project aims to better inform local malaria-elimination efforts in areas where there is partial resistance to artemisinin.

MEDICAL EQUIPMENT

- The Logistics, Medical and Supply departments continued to work in synergy to provide projects with the information and support required for the effective and efficient use of ever more complex equipment. Approximately 230 different machines were being used in MSF-OCB projects during the year, with over half of these being diagnostic equipment for laboratories. New European Union (EU) regulations for medical devices forced a

number of MSF's suppliers to stop producing some of the standard equipment used by MSF, with many more suppliers likely to follow suit.

- The Mobile Unit Surgical Trailer (MUST) was developed for MSF-OCB in 2017 and is a high quality mobile health structure designed for fast deployment, with European hospital-equivalent standards of sterilization and radiology equipment.
- Unity between sections was facilitated by local supplier mapping and validations, intersectional development of standard operating procedures (SOPs), and increased sharing of resources and knowledge; such interaction should help to decrease overhead costs.

MENTAL HEALTH

- Excluding HIV/TB programmes, OCB provided Mental Health and Psycho-Social Support activities in 50 projects across 24 countries.
- A four-day intersectional workshop was organised covering SGBV and adolescents, intimate partner violence, and sexual violence in men and children.
- By the end of the year, all projects working with migrants, and most of those focusing on sexual violence, had a Social Worker integrated into the team, linking with existing external and social support, including legal and protection support.

NURSING CARE

- Nursing care is a core component of all MSF medical activities. Across all MSF projects, there were an impressive number of health care workers providing nursing care during the year (approximately 1,820 national staff and 80 expatriate nursing staff positions).
- The high volume of activities in field projects cover a wide range of specialties provided by staff with heterogeneous educational backgrounds and this poses a challenge in relation to setting up functional health care projects.
- OCB has committed to investing in adequate, sustainable and good quality nursing care; this led to the opening of a Nursing Care Referent position in the Medical Department in February. The role of this position is focused on the quality and organizational aspects of nursing care.
- Wound care is a regular part of the package of care offered in the majority of MSF health care facilities and represents a high volume of activities. Seventeen projects reported performing 127,006 dressings in the out-patient department (OPD) and the emergency room (ER) – and this was just a small proportion of the overall wound care activities that took place.

NUTRITION

- Although two emergency vertical nutrition projects opened during the year, the value of such projects, versus integrated nutritional services, was a subject of reflection.
- The bulk of OCB nutritional activities are integrated into paediatric or adult inpatient (IPD) and outpatient (OPD) services. There have been discussions, however, on how to shift the focus in all services towards a more holistic package of child health care.
- There were two nutritional emergency responses in 2017: one in Borno, Nigeria, and another in Kasai, DRC. They provided valuable learning opportunities with regards what works well and what needs to be improved on in our vertical programmes.
- The predominant focus in 2017 was on improving the quality of care in our nutrition services in various ways e.g. revision of existing protocols; production of short guidance documents; pilot short-term Nutrition Coach positions and Nutrition Support Nurse positions; develop tablet-based applications for patient flow management in OPD nutrition services.
- With increasing numbers of hospital projects, specifically trauma centres in OCB, there have been ongoing efforts to improve the nutritional assessment and care for every patient. These efforts did not materialise into overly impressive outcomes in 2017 and this therefore remains a priority for 2018.

OPERATIONAL RESEARCH AND DOCUMENTATION

- LuxOR (Luxembourg Operational Research unit) focused on strengthening its way of working by implementing an interaction model. The model is designed to better manage the ever-increasing demand for Operational Research (OR) support within MSF and help LuxOR to streamline its workflow.
- In September, LuxOR launched its first thematic OR training in Luxembourg focusing on Water, Sanitation and Hygiene (WASH) projects, "the WASH IT". Eight participants from Africa, Asia, and Europe kick-started their research projects, and will submit their papers for publication in 2018.
- Publications are a recognized scientific indicator of successful study completion and reporting. During the year, 99 studies were authored by MSF-OCB and published in open access journals covering 15 thematic areas.
- Ten LuxOR team members supported over 60 ongoing OR studies worldwide. The team also provided medical data support in MSF projects and conducted

field visits in the Central African Republic, the DRC, Egypt, Italy, Lebanon, Greece, Madagascar, Malawi, Mozambique, Serbia, and Sweden.

- With a new policy, practice and communication advisor, LuxOR started to work on targeted communications to publicise research findings, aimed at facilitating the uptake of operational research for policy change and improved practice.
- The MSF Field Research website (<http://fieldresearch.msf.org/msf/>) continued to show-case MSF-authored publications from the entire MSF movement. Since 2010, there have been over 1.2 million cumulative downloads around the world. This shows an increasing global interest in research done by MSF across the borders.

PAEDIATRIC CARE

- There were 455,656 under-five out-patient consultations (excluding ambulatory therapeutic feeding centers (ATFCs), emergency room and Antenatal Care (ANC) consultations), were conducted in 21 OCB projects or interventions in 12 countries. Based on the morbidity data available from MINOS, there were 360,195 under-five OPD consultations performed in the year. The reported morbidity pattern of children under five was similar to previous years: respiratory tract infections (RTIs) represented the majority of cases (39%), followed by cases of confirmed malaria (19%), non-bloody diarrhoea (15%), infectious skin diseases (5%), eye infections (3%), intestinal parasitosis (2%), and fever without identified cause (2%).
- A total of 36,523 children under five were admitted to in-patient services (excluding ITFCs), in 21 OCB projects in 12 countries. The main diagnoses for patients seeking in-patient care at OCB hospitals in 2017 were severe malaria (44%), lower respiratory tract infections (LRTI) (22%), and non-bloody diarrhoea (6%).
- There were 7,417 exits from in-patient neonatal services and 901 neonatal deaths, from 10 projects in six countries. Almost 200 neonates (2% of under-five exits) received care on the general paediatric wards of three projects.
- Specific data for children aged 5 – 14 years was only available from four projects. For this age group, there were 1,858 exits, and 41 deaths, accounting for 13-31% of in-patient paediatric exits and 14-44% of paediatric deaths in these projects. The top three causes of morbidity in this age group were severe malaria (60%), non-bloody diarrhoea (7%), and LRTI (6%).
- Paediatric care goes beyond hospital care. There is a need to focus on the con-

tinuum of care from the community to the health centre to the hospital and vice versa. Opportunities to develop clinical networks should be further explored. More attention to the preventive component of paediatric projects (such as vaccination, WASH activities) is also needed.

PHARMACY

- Ongoing emergencies in Syria, Nigeria and Iraq, together with increased MSF activities in countries with significant drug and medical material constraints, continued to represent major challenges to the medical supply chain.
- Focus on compliance with Good Distribution Practices (GDP) remained a pillar of pharmaceutical quality assurance in 2017.
- Based on reviews of how the Integration Policy has been implemented, there was a re-focus on Good Medical Stock Management Practices within the Medical Stock Management Policy.
- The first OCB Good Pharmacy Practice policy for end-user pharmacies was validated and published during the first part of the year.
- Antibiotic resistance has been recognised as an emerging problem in the world and has been identified as a serious problem in several MSF projects.

SEXUAL AND REPRODUCTIVE HEALTH

- The volume of Sexual and Reproductive Health activities increased in during the year, despite the total number of projects providing Emergency Obstetric Care decreasing.
- Provision of Safe Abortion Care (SAC) has been promoted at field level and various platforms resulting in a four-fold increase in Termination of Pregnancy (ToP) activities and a 28% increase in women presenting to MSF services and requiring post abortion care.
- Services which provide care to victims of sexual violence experienced a 41% increase in caseload compared to 2016. This year's analysis emphasized the proportion of male victims presenting to MSF SV services, and different strategies to engage male SV victims have been explored, such as the integration of SV into Mental Health services and the provision of care for non-violence related matters such as HIV testing and Sexually Transmitted Infections (STI) management.
- The total number of STIs reported increased due to improved diagnosis and recording. The Gutu project in Zimbabwe screened 4,691 women for cervical cancer, with an approximately 30% HIV positivity rate.

SURGICAL CARE

- Surgical care in OCB consisted mainly of lifesaving and essential surgery, requiring low technology that was performed mainly in district hospitals. OCB also continued its operational strategy of supporting maternal health through obstetric surgery (e.g. in Khost, Afghanistan) and developing trauma-related surgery (e.g. in Bujumbura, Burundi).
- Post-operative surgical and rehabilitation care was also provided to victims of armed conflicts (e.g. in Al-Hamdaniya, Iraq) and outpatient wound care was offered in Kunduz, Afghanistan. Finally, support continued to be provided to health staff working in Syria.
- By the end of the year, there were 11 projects offering surgical care and 14,274 primary interventions (new cases) were performed. The proportions of different surgical indications have not changed significantly in the last four years.
- MSF-OCB provided anaesthesia in 24,155 interventions - an increase of approximately 5% compared to the previous year. Ninety percent of Caesarean sections (Cs) were performed under spinal anaesthesia. This is an excellent level of anaesthesia provision for CS.
- Emergent cases (23,609) represented 98% of all surgeries - a similar trend to the previous year (97%).
- Out of the 24,155 entries into the operating department, 51 (0.2%) intra-operative deaths were reported.

TORTURE AND OTHER FORMS OF ILL-TREATMENT

- MSF-OCB currently has three vertical outpatient clinics providing torture rehabilitation. These clinics offer a comprehensive package of care through multidisciplinary teams composed of psychologists, medical doctors, cultural mediators, physiotherapists, social workers and intercultural mediators.
- During the year, the three MSF clinics saw 1,296 new victims of torture (VoT) - individuals of 38 different nationalities (25 African, 12 Asian, and 1 South American). Of these, 693 had suffered torture in their home-countries, 435 during transit, and for the remaining 168 cases, information on place of torture was unknown.
- In addition to the above, 275 VoT cases were reported from the MSF project in Lesbos (Greece) and 11 cases from the project in Bujumbura (Burundi).

VACCINATION

- More than 2.4 vaccine million doses were provided to beneficiaries by MSF-OCB. Two thirds of these doses were given

through mass vaccination campaigns: in response to measles epidemics in Guinea (1) and DRC (11) and to a cholera epidemic in Mozambique.

- Two thirds (68%) of the doses were given during mass reactive vaccination campaigns, while 3% of them were given during catch-up campaigns. More than a quarter (28%) doses were given through routine vaccination activities, while 2% of doses were in the name of post-exposure prophylaxis.
- Vaccination coverage surveys were organised after 11 out of the 13 mass reactive vaccination campaigns. All surveys performed after reactive measles vaccination campaigns showed one-dose vaccination coverages above 97%.
- The plan to implement Human Papilloma Virus (HPV) vaccination in the project in Zimbabwe faced huge challenges due to vaccine supply. This issue is being followed closely by the Access Campaign and will hopefully be resolved in 2018.

WATER, SANITATION AND HYGIENE

- Reinforcement of the operational prospects showed a clear commitment of MSF to increasing the activities and role of Water, Sanitation and Hygiene (WASH) in the field.
- Prevention is key to improving the quality of curative care by reducing caseloads and the demand on health care resources, and targeted WASH interventions in the community are one way to achieve this. During emergencies, MSF has started to find a better balance between curative care and preventive WASH activities.
- Efforts were made to respond to the rapid surge in acute emergencies. One major challenge was finding appropriate actors to handover expensive WASH activities to. Planning an exit-oriented strategy in which appropriate actors are identified for handover must thus happen at the beginning.
- Rural projects in Burundi and DRC, and urban WASH pilot projects in Haiti and Zimbabwe, were launched during the year. These required increased proximity with populations, and integration of appropriate WASH and Vector Control (VC) tools into the daily lives of the population at risk, to guarantee disease prevention.
- The Cox's Bazar district hospital in Bangladesh represented an important WASH investment, together with MSF's involvement in the Rohingya refugee camps. There are still major WASH needs in the camps and a worsening situation is expected with the onset of the next rainy season, the monsoon, and the risk of landslides.

ANTIBIOTIC RESISTANCE

1. OVERVIEW

Antimicrobial resistance (AMR), and more specifically antibiotic resistance (ABR), is an increasingly serious threat to global public health and has become a priority in the global health agenda. ABR has been recognised as being a priority for MSF since 2015, and a multidisciplinary task force composed of members of the Medical Department (infection control, laboratory, bacteriology, infectious diseases, and pharmacy), Operation Departments from different sections, together with CAME (Campaign for Access to Essential Medicines), was created. The objective of the ABR task force is to develop a road map for ABR based on a three-pillar approach: i) infection prevention and control (IPC), ii) antibiotic stewardship (AS) and iii) access to bacteriology diagnostic & surveillance activities.

Antibiotic stewardship refers to a set of coordinated interventions to monitor and promote the optimal use of antibiotic medications with the goal of optimising clinical outcomes, minimising unintended consequences of antibiotic use (such as resistance, toxicity, adverse effects etc.) and decreasing unnecessary costs. ABR activities should be seen as transversal in nature and necessary for improving the quality of our medical care. Other transversal topics such as access to vaccine for preventable diseases, access to quality assured antibiotics, are also in the scope of ABR activities.

ABR activities in MSF are mainly focused on hospitals in the first instance. The minimum package of activities includes a combination of IPC and structured AS interventions; the full package includes the latter as well as access to bacteriology. Hospital projects focusing on post traumatic surgery, paediatrics and neonatology, and those projects seeing Intensive Therapeutic Feeding Centre (ITFC) patients and HIV patients, are targeted by priority. AS interventions go beyond the walls of hospitals and also involve projects with an Outpatient Department (OPD) component.

In 2017, in line with the ABR Task Force recommendations, OCB's Medical and Operations Departments created a MEDOPS platform. Through this platform, technical recommendations are discussed with the implementers; action points are compiled, monitored and updated over time; and functional working groups with transversal competences within the Medical Department respond to specific needs (e.g. the *Klebsiella pneumoniae* outbreak in Central African Republic (CAR)).

2. PROGRAMME ACTIVITIES

A structured AS strategy was implemented in 2017 in two OCB projects: Ahmad Shah Baba in Afghanistan and Tabarre in Haiti. IPC activities are explained in detail in the IPC chapter of this report.

Ahmad Shah Baba (ASB):

ASB is a general district hospital with an in-patient Department (IPD), an OPD, a maternity and a neonatal unit. A structured ABR programme was implemented in the IPD. The minimum ABR package was implemented due to lack of access to good quality bacteriology diagnostics. The two main lines of intervention focused on strengthening IPC and AS implementation under the responsibility of the Project Medical Referent and Project Pharmacist. A specific pocket book on the rational use of antibiotics was developed by the team and is in use. Monitoring of ap-

propriateness of antibiotic prescription and consumption is ongoing.

Tabarre: post trauma surgery project:

A structured full package ABR programme was implemented in the IPD including: access to quality bacteriology diagnostics for suspected osteomyelitis, other surgically-related infections and clinical suspicion of sepsis through an external bacteriological laboratory. IPC was strengthened and an AS Focal Point (specifically a surgeon in the project) was identified and offered the opportunity to attend ABR training at the Institute of Tropical Medicine in Antwerp (Belgium). An AS committee was created whose members regularly meet to monitor and evaluate ABR activities: roles and transversal disciplines among members are discussed (AS focal point, pharmacist, lab technician, Hospital Director, Project Medical Referent). A specialist in Infectious Diseases was also deployed

(for four months) in the project who has helped to set-up the AS activities, providing daily coaching for the AS focal point, reviewing prescription patterns and bacteriological results, and optimising antibiotic protocols.

A formal assessment of the appropriateness of antibiotic prescription was conducted in Nsanje project, Malawi, through a point prevalence survey in the IPD. The results have been used to better target AS activities in the hospital.

3. OPERATIONAL RESEARCH

A number of operational research initiatives were undertaken in the field of ABR. Generally, the research strategy in ABR has three main aims:

- To document the local prevalence and typology of ABR in order to inform the existing guidelines on antibiotic use, as well as

to advocate at a broader level on the need for a global response to ABR.

- To assess the performance and impact of AS programmes in various settings in order to document the lessons learnt, provide guidance for future interventions, and generate evidence that can be used for internal and external advocacy on such programmes.
- To develop strategies for better diagnostics that will allow the reduction of antibiotic usage in the field.

Studies initiated over the course of 2017 included:

- CAR: in March 2017, an outbreak of ESBL (Extended-spectrum beta lactamase) *Klebsiella pneumoniae* was detected in Castors neonatal unit in Bangui. Twenty-five confirmed blood stream infections were reported, with a 28% case fatality rate (n=7). The referral laboratory for bacteriology was Pasteur Institute laboratory.
- Lebanon: a study on the added value of introducing the Joachim score and rapid test for Group A streptococcal infections

A multidisciplinary outbreak response included case management, epidemiology, laboratory, IPC and communication. An action plan to improve the IPC standards in Castors was put in place (see IPC chapter). Systematic blood cultures were done for neonates not responding to first line antibiotics. An environmental study was conducted to identify potential sources of infection in water and on surfaces. ESBL-KP was isolated from sinks in the delivery room and neonatal unit but was not found in water samples. Following the outbreak, strengthened surveillance of multi drug resistant (MDR) pathogens and prevention measures to avoid further nosocomial outbreaks (e.g. isolation) were put in place. A study to assess the prevalence of ESBL pathogens in the community has been planned and will be conducted by April 2018.

in the paediatric OPD in Shatila refugees camp. This study investigates whether the introduction of a clinical score that has been shown to discriminate viral from bacterial upper respiratory tract infections based on patient symptoms, combined with a rapid test, can reduce the antibiotic prescription rate for paediatric outpatients. An external bacteriological laboratory was used. Results of the study are anticipated by April 2018.

- Pakistan: a study into the feasibility and added value of introducing microbiology for the management of neonatal sepsis in Timurgara neonatal unit. The study aims to document to what extent microbiological diagnosis (done by an external laboratory) impacts the clinical management of neonatal sepsis. Additionally, the study will provide an insight into the prevalence of resistance among neonatal sepsis cases. Preliminary results will be evaluated in February 2018.

4. LOOKING BACK AND AHEAD

CHALLENGES AND ACHIEVEMENT IN 2017

Challenges

- At Headquarter (HQ) level: to maintain the progression of the ABR dossier and to be able to respond in a structured way to MDR hospital outbreaks. MDR hospital outbreaks are a relatively new area for OCB, as their final confirmation is dependent on access to bacteriology laboratory. Specific expertise on the topic needs to be developed over time.
- At field level: assuming and maintaining full ownership of the ABR initiatives e.g. in Afghanistan, lack of access to bacteriology has challenged the motivation of the medical team as no direct correlation between the appropriateness of AB prescription and preventing the occurrence of antibiotic resistance could be proved. Moreover, the decision to close the project in 2018 affected the motivation of the team to uphold the AS activities.
- Lack of standard indicators: monitoring of ABR implementation in the field has not been standardised and made clear. As a result, many positive field initiatives have probably not been fully acknowledged at HQ level (e.g. scattered information from Tabarre and lack of follow-up and knowledge of their progress at HQ level).
- Operational research: changes in the context, together with HR turnover, have impacted ongoing operational research (this has been the case in CAR and Pakistan).

Achievements

- Three projects were running ABR activities (ASB, Tabarre, Castors): the type of AS approach put in place for each project varied considerably according to the context and available Human Resources (HR). The focus on ABR in Castors was unplanned and driven by the *Klebsiella pneumoniae* outbreak. It showed good results despite the challenges that came as a result of intervening in the name of an 'emergency'.
- In line with the ABR Task Force recommendation, OCB Medical and Operations Departments worked on ABR and on creating a MEDOPS platform. This platform allows technical recommendations to be discussed with the implementers, and action points to be compiled, monitored and updated. Functional working groups with transversal competences within the Medical Department have started to respond to specific needs (e.g. *Klebsiella pneumoniae* outbreak in CAR).

PROSPECTS FOR 2018

- In order to reinforce the capacity of the Medical Department to support projects, two new referent positions will be added in 2018 to increase the pool of ABR specialists: one infectious diseases specialist and one microbiologist. Opening and recruitment was done in 2017 but positions functional in 2018. Both positions will be decentralised to Beirut, being part of the MENA Hub.
- There is will to invest in quality diagnostics (bacteriology lab and general lab), either by installing MSF bacteriology laboratory or

outsourcing it to external quality laboratory whenever available.

- Emergency preparedness and specific guidelines to intervene in MDR community outbreaks and MDR hospital-based outbreaks (e.g. MDR typhoid fever outbreak; MDR bacteria hospital outbreaks) will be developed.
- Operational research will continue to be the focus of 2018, together with capitalization exercises of 2017 experiences in certain projects (e.g. Tabarre). This will include developing specific antibiotic prescription protocols for projects with access to bacteriology lab, standardizing monitoring tools to capture data necessary for successful antibiotic surveillance and defining clear ABR indicators.
- Pilot surveys and full surveys to monitor patterns of antibiotic prescription (quantity and quality of use) will be conducted in 2018. Regular Point Prevalence Surveys will be used to complement quantitative information by providing information on indications for use and compliance with antibiotic prescription guidance.
- Roll out of the use of Point Prevalence Surveys (PPS), and quantitative antibiotic consumption monitoring will be undertaken through use of the WHO Defined Daily Dose (DDD) Methodology or measured as Days of Therapy (DOT). This will help to i) identify targets for quality improvement; ii) facilitate the design of hospital interventions aimed at promoting prudent use of antibiotics; and iii) assess the effectiveness of such interventions, through repeated surveys.
- An essential component of the surveillance framework of antibiotic use will be the arrangement for regular feedback of surveillance information to prescribers. Feedback is an important part of local antibiotic stewardship activity and can drive improvements in prescribing. This to minimise the evolution, spread and persistence of resistant organisms.
- OCB operations will invest in the implementation of the full ABR package in key projects located in potential ABR hot spot areas, such as:
 - Afghanistan: Khost maternity & neonatology (MSF bacteriology lab)/ Kunduz trauma center (MSF bacteriology lab)
 - Iraq: Mosul post-operative care (Referral lab)
 - Lebanon: Bar Eliaas surgery (Referral lab)
 - Democratic Republic of Congo (DRC): Kinshasa: HIV hospitalization (Referral lab)
 - Sierra Leone: Kenema paediatric hospital (MSF bacteriology lab) in 2019

The feasibility and practicalities of implementing a structured full ABR package in Burundi (Bujumbura trauma centre) and CAR (Bangui neonatal unit), and a basic ABR package ABR in the DRC (Masisi general OPD), will continue to be discussed in 2018.

CHRONIC NON-COMMUNICABLE DISEASES

1. OVERVIEW

In 2017, OCB appointed its first full-time technical referent for Non-Communicable Diseases (NCDs). The perceived need for this new position had been growing for some time:

- Increasing interest in NCDs due to Middle East and migrant programmes, and evolution of the scope of OCB activities to include conditions not previously thought to be within the range of MSF therapeutic programmes
- Need for standardisation and strategic orientation of NCD activities, with a clearer articulation of OCB's stance on NCDs
- Demand for technical advice at a level exceeding the traditional MSF expertise, including: i) structuring of programmes, ii) choice and prioritisation of conditions falling under the NCD umbrella, iii) clinical knowledge required to simplify and adapt gold standard western treatment to resource limited settings (including drugs and therapeutic agents and diagnostic tests), and iv) monitoring and evaluation
- Representation of OCB's NCD activities, both internally in MSF and externally

Inter-sectionally in MSF, in 2017 an NCD Working Group was formally established and the Access Campaign undertook an exploration of potential avenues through which to incorporate NCD-related challenges into its portfolio.

2. PROGRAMME ACTIVITIES

Prior to 2017, the cornerstone of OCB NCD activities, and the model from which other NCD projects were largely extrapolated, was Kibera in Kenya. Thus NCD activities in OCB have been delivered through a vertical primary care approach to the prevention of cardiovascular disease, with a major focus on hypertension and type 2 diabetes (excluding insulin treatment and type 1 diabetes) and minor focus on asthma and epilepsy (delivered through a predominantly nurse-led structure). This model of NCD care often excludes or poorly defines complex NCD conditions such as insulin dependent diabetes,

secondary prevention of cardiovascular disease and hospital level care, leaving a needs gap for further development of NCD programmes.

Geographically, NCD activities in OCB had two primary centres: East Africa (Kenya, Zimbabwe) and the Middle East (Lebanon with migrant projects in Greece also logically falling into this group). Other projects with an emphasis on NCDs were in South Asia (India, Pakistan and Afghanistan, including hospital level NCD care) and elsewhere in Africa (Mauritania). During the course of 2017, new projects were added in Kenya (Embu, a rural primary care project with a mentorship

model for delivery of care in partnership with the Ministry of Health (MoH)) and Lebanon (Akkar, a primary care project following the model of the Shatila project). NCD activities in Mauritania and Greece were marked for closure. Most significantly, 2017 saw the final closure of the Kibera project, drawing the curtain on five years of NCD activities that critically influenced the shaping of NCD programmes within OCB. An evaluation of the Kibera project was undertaken, but from an NCD perspective, a more detailed examination of lessons learned and analyses of the extensive data collected over the lifetime of the project would be invaluable and must be prioritised in 2018.

3. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

Definition of the focus of programmes to better target resources to the most effective therapeutic activities

- NCD programmes across the board are confronted by a mismatch between patient numbers and available resources. A large proportion of the population is potentially eligible for treatment for conditions such as hypertension and type 2 diabetes. This means that NCD programmes may rapidly reach saturation point and be faced with the choice of either putting an arbitrary ceiling on new admissions, or narrowing patient entry criteria in order to prioritise patients with the greatest treatment benefit potential.

Greater focus on complex conditions

- Existing programmes are heavily dominated by treatment of hypertension and non-insulin dependent diabetes. There is a need to develop better protocols and training for conditions that are more medically complex, such as insulin-dependent diabetes, care of patients following a cardiovascular event, and hospital-level care for acute complications of NCDs.

Review and standardisation of protocols

- Currently there is no single OCB NCD protocol. Although almost all NCD protocols used have taken as their foundation the protocol from the Kibera project, there is a clear need to improve, harmonise and standardise existing protocols, and to refine their technical precision.

Review of monitoring and evaluation

- NCDs are not currently represented in the standard OCB M&E data gathering. Each project which reports NCD activities has developed not only its own independent data collection tool, but also choice and definition of indicators. This means that summation of data across OCB NCD activities is challenging or even impossible, and there is an urgent need to develop a standard data collection tool for NCD projects plus a standard set of NCD programme indicators. Ideally there should be a core package of data variables and indicators which could be integrated into the standard OCB M&E tools, with a supplementary package to be used in projects with a strong NCD focus.

Improving intersectional co-operation

- The establishment of the first NCD Working Group in MSF has kickstarted the process of moving towards a common MSF position on areas such as treatment protocols for key NCDs, NCD indicators and external NCD representation.

PROSPECTS FOR 2018

2018 will largely be marked by the continuation and consolidation of the areas for development identified and embarked upon in 2017.

In particular:

- Refinement of standard NCD protocols including protocols for hospital level care
- Development and implementation of a model of care for insulin management
- Improvement and standardisation of M&E tools and indicators

EMERGENCY MEDICINE

1. OVERVIEW

Delivering effective emergency healthcare in resource-limited settings is challenging. Difficulties exist at many levels, not least: communication, transportation, availability of equipment and drug supplies, and affordability and availability of skilled healthcare providers. Patients may present at a health facility in an advance state of disease, medical and paramedical teams often have to rely on clinical diagnosis rather than laboratory and imaging diagnostics (due to the latter being unavailable), and patient management is often difficult because of lack of monitoring equipment. In some cases too, lack of qualified referral centres makes the continuity of care difficult; similarly, lack of intensive care units reduces the survival chances of severe cases.

In some of the settings where MSF works, MSF is the only emergency care provider. As such, ensuring that all MSF projects have the capacity to deliver effective emergency care should be a priority. In this line, adequate investment is needed for both planning and improving the organization of emergency care systems.

2. PROGRAMME ACTIVITIES

2.1. EMERGENCY DEPARTMENT STRUCTURES

Hospital-based emergency departments (EDs), where Emergency Care services are integrated into a hospital, are the most common type of emergency unit found in OCB projects. The advantage of this set-up is that the ED service is complimented by other medical services (including surgery, imaging and hospitalization), and the continuity of good quality care can be assured.

Free-standing EDs are units that are structurally separate and distinct from a hospital. These types of unit are usually set up in contexts where hospital-based emergency care services are inaccessible or difficult to access by the target population. Setting up a free-standing ED requires careful planning: good communication links and coordination efforts need to be established with reputable referral centres, and the ED facilities need to be adequately equipped to be able to provide ongoing care for patients.

2.2. ACTIVITIES AT PROJECT AND MISSION LEVEL

2.2.1. Emergency Department Presentations

In 2017, Emergency Care was provided in 23 health facilities across 11 countries: Afghanistan (Chardara and Kabul), Burundi (Bujumbura), Central African Republic (Bangassou), Democratic Republic of the Congo (Bili, Masisi and Nyabiondo), Guinea (Babila, Cissela, Douako, Kiniero, Komola-Koura and Kouroussa), Haiti (Martissant and Tabarre),

Iraq (Hamam Al-Alil), Mauritania (Bassikounou), Pakistan (Bajaur, Karachi and Timurgara), South Sudan (Doro and Pibor) and Syria (Qunnaya).

A total of 311,972 emergency medicine consultations were performed during the year (Annex 1). More than half of these consultations were undertaken in Kabul, Martissant and Timurgara. The majority of ED patients were male (this being most notable in projects managing trauma cases).

The proportion of ED patients under five years of age (<5 y/o) was largely dictated by the type of project (Annex 1): for example in projects providing paediatric care (e.g. projects in Kouroussa and Bili), not surprisingly, more than 90% of the ED presentations were under five years of age. In contrast, projects providing primarily trauma care (e.g. Chardara and Tabarre) reported the lowest percentage of under-fives among their ED presentations (less than 10%). Across the spectrum of other OCB projects, the proportion of under-fives that make up ED presentations was high (25-50%).

2.2.2. Triage

An efficient triage system is one of the cornerstones of a well-functioning ED. Within OCB, the South African Triage Scale (SATS) is the routine triage system used within the ED. During 2017, the SATS was being used in 12 projects (Annex 1); projects not using this system included: Guinea (this being a new project), South Sudan (where care is provided at the level of health centres), Qunnaya (due to contextual challenges), and Bili hospital. In Hamam Al-Alil, the START (simple triage and rapid treatment) system was being used (this

because the project involved collaborations with other MSF sections, the likes of whom are not currently using the SATS system).

Projects seeing a high proportion of severe ED cases (the “high acuity proportion”) is an important ED indicator as it has important resource implications as a high acuity projects are expected to hospitalise a greater proportion of ED patients. The reference value for high acuity cases is $\geq 25\%$ of all ED presentations; the majority of projects reported a high acuity proportion of between 25% and 40% (Annex 1). In Timurgara project, the proportion of ‘high acuity’ ED cases was high, reflecting the operational strategy of the project. In Karachi and Bujumbura on the other hand, this proportion was below the reference value; 82% of patients in Karachi were seen due to a medical condition, whereas in Bujumbura 96% of patients arrived with trauma related injuries. In both projects the majority of patients were not experiencing life threatening conditions.

2.2.3. Outcomes

Outcomes for ED patients are categorised as follows: discharged, admitted (i.e. hospitalised), and referred to another health facility, died or defaulted (left the ED without medical consent). Across all projects seeing ED presentations, 82% of patients were discharged, 13% were hospitalised, 3% were referred, 0.3% died, and 1.2% defaulted (Annex 2). The Kouroussa project reported the highest proportion of hospital admissions, a reflection of the fact that it is a referral centre for several health centres. Hospitals located in settings where there are no other health facilities nearby (including Masisi and Bili) also reported high rates of hospital admissions.

2.2.4. Under-triage/Over-triage

ED outcomes can be used as surrogate markers to assess how accurately a triage system is measuring a patient's true acuity (i.e. their urgency for medical care). Under-triage refers to the proportion of patients who are triaged into a lower acuity level when their true acuity rating is higher; over-triage refers to the proportion of patients who are triaged into a higher acuity level when their true acuity rating is lower. Understandably, the context, operational strategy and characteristics of a project will affect under- and over-triage rates.

Under-triage is calculated as the proportion of 'routine, non-urgent' patients requiring hospitalisation or needing to be referred for care, and over-triage, the proportion of 'very urgent' and 'emergency' patients being discharged. Internationally accepted thresholds for under- and over-triage are set at 10% and 50% respectively.

Three health facilities with a high trauma caseload (Bujumbura, Martissant and Tabarre) showed high rates of over-triage, although Martissant was the only project that exceeded the 50% threshold. This is likely explained by the fact that there is no inpatient department at Martissant and therefore there is a need to discharge patients as soon as possible. All the health facilities demonstrated acceptable under-triage rates (below the 10% threshold), (Annex 2).

2.3. HUMAN RESOURCES AND TRAINING

Ongoing challenges around human resource capacity for emergency medicine continued to be tackled. Emergency medicine doctors were distinctly distinguished as a separate pool and the profile for emergency medicine nurses was fully established.

Local staff providing emergency medicine services have different backgrounds, knowledge and skills. Ongoing training for medical and paramedical staff (including both scheduled sessions and daily bedside training)

was the core activity during 2017 used to achieve quality care standards according to international guidelines. Emergency medicine guidelines and protocols adapted to MSF contexts were developed by all MSF operational centres in order to standardise emergency medicine care across all MSF emergency departments.

Emergency care in MSF continued to be promoted through internal training courses, including the Basic Assessment and Support of Seriously Ill Patients in Developing Health-care Systems (BASIC DHS) for medical and paramedical staff. Specific trainings on multiple / mass casualty incidents (MCI) for triage, management and planning were also given in 2017.

Finally, external courses, such as Primary Trauma Care (PTC), Advanced Cardiac Life Support (ACLS) and Advanced Trauma Life Support (ATLS), were offered. Although these courses are not MSF-generated they are organised at field level and are used to address specific field needs.

3. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- A thorough analysis of ED activities is essential to improve the level of care offered.
- Constant refresher trainings for ED staff are needed, as both the high turnover of field staff and variability of supervision hampers the continuous improvement of our activities.
- Use of an OCB standardized ED database for capturing individual patient data greatly facilitated project evaluation and planning.
- Provision of care in newly established EDs needs to be standardised from the beginning to eliminate the unnecessary time, work and resources that subsequent modifications to care provision require.

PROSPECTS FOR 2018

- Findings from several recent studies demonstrating the reliability and validity of the SATS in the contexts where MSF works, should be disseminated to all relevant OCB projects, and the SATS should be implemented in the EDs where it is still not being used.
- Efforts to standardise care in all OCB EDs following international and MSF standard operating procedures (policies, guidelines and protocols), should continue.
- The OCB standardized ED database for collecting individual patient data should be implemented in all relevant projects in order to facilitate better monitoring and analysis of ED activities.
- More robust data collection tools should be implemented in order to improve data reliability.
- Expatriate staff working in any area related to emergency care should continue to be briefed and followed up by the Emergency Medicine advisor.

EMERGENCY UNIT

1. OVERVIEW

The emergency unit (E-Unit) oversees the direct management of emergency projects and supports emergency interventions run by the operational cells through the provision of experienced human resources and/or technical support. In 2017, the E-Unit directly intervened in 11 countries and supported 10 interventions (in eight countries) managed by the cells. Two exploration missions were performed of which one was followed by an intervention.

While continuing the support of projects for asylum seekers in and around Europe and continuing the crisis response in Burundi, the major responses in 2017 included: i) distribution of rehabilitation material to the population affected by the hurricane that devastated Haiti in October 2016, ii) intervening for the malnutrition crisis in Borno State in Nigeria and initiating a long term project in the Anambra State; iii) providing assistance to the injured people escaping the conflict in Mosul in Iraq; iv) responding to a pulmonary plague outbreak in Madagascar; and v) initiating support to the Rohingya refugees crisis.

2. PROGRAMME ACTIVITIES

2.1. SUMMARY OF EMERGENCY ACTIVITIES IN 2017

Over the course of 2017, 21 interventions (direct or providing support) were performed by the E-Unit (Table 1). These included management of disease outbreaks, nutrition interventions, care for Internally Displaced Persons (IDP) due to conflicts and natural disasters, care for refugees and care for the war-wounded. In addition, two assessments were undertaken: (i) Dominica, after the Hurricane Maria affected the Caribbean area, in collaboration with Operational Centre Paris (OCP), to assess unmet needs and (ii) Lesbos, Greece, where adequate support was not being provided for the migrants trapped in Moria camp.

SOME OF THE EMERGENCY RESPONSE ACTIVITIES IN 2017

2.2.1. HAITI – SHELTER AND NON-FOOD ITEM DISTRIBUTION POST HURRICANE MATTHEW

In the South and Grande Anse provinces, the living conditions of the population scattered in the mountains and affected by the hurricane, were extremely poor. The poor economic situation and the geographic isolation diminished the population's ability to cope with the short and mid-terms effects of the hurricane, and increased their vulnerability in terms of hygiene and sanitation. Support in the form of Non-Food Items (NFI) and shelter was provided to help improve these conditions. The vulnerability of the people was closely linked to their geographical isolation and by difficult

Table 1: Emergency activities managed by the E-Unit (direct and support), 2017

Managed by the E-Unit	Reason for intervention	Comments
Burundi	Conflict	Direct since Mai 2016 - handed over to Cell 1 Sept 2017
Haiti	Hurricane Matthew	From Oct 2016 - (ended Feb 2017)
Tunisia	Asylum seekers	Handed over to Cell 2 May 2017
Destination Countries (3)	Asylum seekers (Sweden, Belgium, Norway)	Ongoing (Sweden and Norway ended 2017 - Belgium ongoing since 2017)
Nigeria	South: regular project North emergency: intervention (nutrition)	Direct since Nov 2016 - handed over to Cell 2 Oct 2017
Kurdistan	Conflict	Direct since beginning 2017 - handed over to Cell 6 Nov 2017
Democratic Republic of Congo	Ebola	Direct
Madagascar	Pulmonary plague	Direct
Bangladesh	Refugees	Direct
Support given by the E-Unit to cells and/or other sections	Reason for intervention	Comments
Central African Republic	Conflict	Human resources & technical support
DRC	Conflict (Kasai)	Human resources & technical support
Sierra Leone	Landslides	Human resources & technical support
Venezuela	Conflict	Technical support
Afghanistan	Conflict	Human resources
Guinea	Measles	Human resources
Mozambique	Cholera	Technical support
Lebanon	Refugees	Human resources
Kenya	Elections crisis	Technical support
Uganda	Marbourg	Technical support to OCP
Kenya	Marbourg	Human resources support to OCG
South Sudan	Crisis management team	Human resources

physical access (no roads, far from a main road), the likes of which meant that the help and support provided by other organisations could not reach these people. Distribution by MSF was done mainly by helicopters.

In total, 15 landing sites were identified covering 186 villages and supporting 9,324 families. The distributed materials for shelters included metal sheets for roofs and tools for reconstruction (nails, hammer, saw working gloves, rope). NFI included blankets, jerry cans, soap, energetic biscuits and chlorine tablets (Aqua tabs).

2.2.2. NIGERIA – MALNUTRITION IN MAIDUGURI, BORNO STATE

In November 2016, the E-Unit arrived in Maiduguri to respond to the growing nutritional crisis in Maiduguri, Borno State, on the request of OCP. The insecurity related to insurgent groups had led to large-scale displacement of the population and subsequent poor access to health care and food sources. An increase in malnutrition rates in Borno State had been reported by various organisations.

MSF activities began in four wards in a hospital in Southern Maiduguri - South Maiduguri being a refuge spot for an estimated 177,000 internally displaced persons (IDPs) who were residing amongst the host community. In July 2017, two additional wards were included. The objectives of the intervention were to: provide access to free care for children <10 years old with severe acute malnutrition; provide food assistance to vulnerable households in Southern Maiduguri; monitor and raise alerts on potential outbreaks of epidemic prone diseases and seasonal high burden diseases; and to respond in a timely and effective manner by setting up relevant preventive and responsive interventions.

The medical activities included:

- i) Fori Therapeutic Feeding Centre (TFC):
 - Ambulatory Therapeutic Feeding Centre (ATFC): Outpatient nutritional care
 - Fori Therapeutic Feeding Centre (ITFC): 88-bed in-patient care, extendable to

100 beds (8 stabilisation, 36 Phase 1, 27 Phase 2 and 17 isolation wards)

- Family Protection Rations (FPR) of 2,100 kcal/person/day for a family of six persons
- Support services including laboratory + blood transfusion services, mental health care and health promotion services
- Water, Sanitation and Hygiene (WASH) support at Fori Health Centre

In the meantime, other primary health care services were provided by other actors. The Ministry of Health (MoH) oversaw outpatient care, antenatal care, deliveries, routine immunization (>1 year old), HIV screening, TB management and referrals.

ii) Outreach programme:

- Active case finding of children with severe acute malnutrition (SAM): 88 Community Health Care workers (CHWs) conducted door-to-door daily screening of children aged <10 years in the host and IDP households. This also included spreading health messages. SAM cases were referred to Fori TFC.
- Market surveys and monitoring of vulnerability in the target population was undertaken to monitor the level of food security and basic livelihoods in the area. MSF conducted market surveys every 2-3 months and household surveys on a daily basis, and results were communicated to food sector actors.
- Monitoring for epidemic prone diseases: eight nurses were part of the outreach team monitoring the area for these diseases. Alerts were reported to the MoH. Sick children and adults with non-epidemic prone disease symptoms were referred to the closest health facility.
- Food distributions: FPR (grain, super-cereal products, oil, legumes and salt) were distributed at Fori TFC and on an ad-hoc basis to highly vulnerable communities.

Results by project:

i) Fori TFC:

All children aged <10 years presenting at Fori primary health centre (PHC) were screened for malnutrition. Children were admitted if they presented with: i) SAM and/or oedema, ii) SAM with medical complications or iii) Moderate Acute Malnutrition (MAM) with medical complications.

A total of 21,038 children were screened using MUAC (Mid Upper Arm Circumference) for acute malnutrition, of whom 2,739 (13%) were malnourished and admitted to the TFC (Figure 1). Only six children were admitted with oedema. Based on information from 2,222 caretakers, 87% resided within the catchment area. By the end of June 2017, 1,440 children out of the 2,739 admissions were still enrolled in the programme (1414 in the ATFC and 26 in the ITFC); 82% were discharged as cured. The mortality rate was 1% (below the programme target). Average length of stay in the programme was 56.5 days in the ATFC and 8 days in the ITFC. Average weight gain in the ATFC was 5.1 g/kg/day. There were 23 patients who defaulted and were then re-admitted to the programme after tracing. The main reason for defaulting was transient stay in the community. Eighteen patients relapsed and were readmitted to the ITFC after being discharged. A total of 7,261 FPRs were distributed.

ii) Outreach programme:

During 2017 (the programme beginning in February 2017), the community health worker (CHW) team screened children in 167 villages. They approached 86,244 households (HHs) and found at least one child <10 years old in 74,011 (86%) of these HHs (in 48,779 (66%) of these HHs there were IDPs residing). Among these 74,011 HHs, MUAC measurements were taken in 60,614 HHs (83%).

Between February and May 2017, 159,693 children aged between 6 months and 10 years were screened, of whom 612 (0.4%) had SAM and 10,745 (6.7%) had Global Acute Malnutrition (GAM).

During April 2017, 49 villages in the TFC catchment area showed a rise in GAM rates. These vulnerable villages were reported to the food sector (Figure 2). The World Food

Figure 1: Total number of children aged <10 years old screened and admitted at Fori Therapeutic Feeding Centre (TFC), 2017

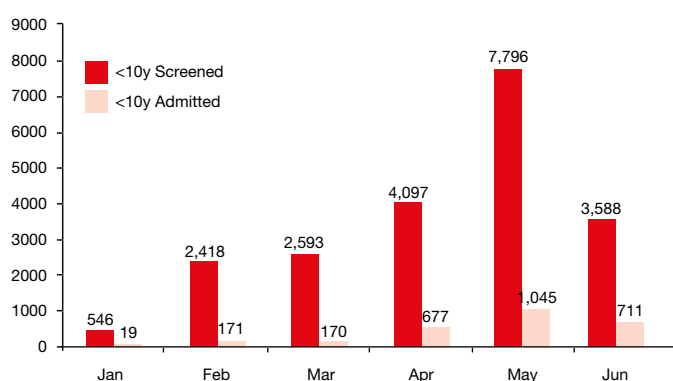
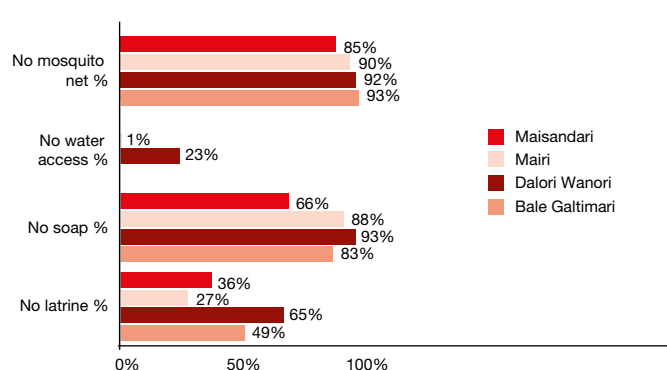


Figure 2: Distribution of vulnerability factors per administrative ward, Maiduguri, Nigeria, 2017 (n=26,074)



Programme (WFP) and its implementing partners responded by re-targeting food distributions to these villages and MSF helped to fill the gap and distributed FPR to 697 HHs.

2.2.3. MOSUL

In October 2016, in view of the fact that conflict in East Mosul was starting, MSF conducted an acute needs assessment. The Mobile Unit Surgery Trail (MUST) arrived in the area at the beginning of December 2016 and was set up by MSF experts within 10 days. However, due to difficulties importing the necessary drugs, the project only started at the end of January 2017. This was too late in relation to the conflict in East Mosul, so MSF decided to set up the surgery trucks in an accessible area in West Mosul, in Hamam-Al-Alil. The activities of this field trauma hospital (using the MUST) started in February 2017 and the PHC centre in April 2017.

With thousands of people severely wounded during the fighting, many of them facing long months of convalescence and rehabilitation, MSF began offering long-term post-operative care in Al-Hamdaniya in March 2017.

Mid-July 2017, MSF stopped its surgical activities, intensive care unit, emergency room and mental health activities in Hamam al Alil. All patients were discharged or referred to other facilities before the closure of the MSF hospital. By the end of July, all MSF activities in Hamam-Al-Alil had been stopped: the PHC centre was handed over to the MoH (supported by ICRC) and the ATFC to Action Contre la Faim (ACF).

ii) Hamam Al Ali

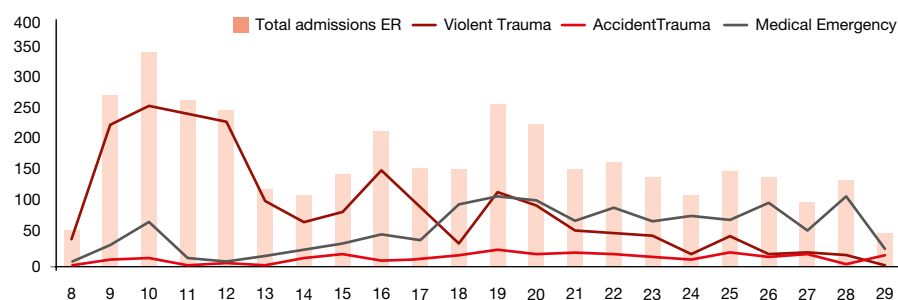
Operating Theatre (OT):

A total of 664 patients underwent surgical interventions (Figure 3) during the duration of the project. Of these, 69% were male and 437 (66%) aged >14 years. In total, seven patients died due to bomb- and gunshot-related injuries.

Emergency Room (ER):

There were a total of 3,945 admissions: 2,150 (54%) were related to violent trauma; 370 (9%) accidental trauma; and 1,425 (36%)

Figure 4: Number and causes of admissions to Emergency Room (ER) by epidemiological week, Hamam Al Ali, Iraq, 2017 (n= 3,945)



medical emergencies (Figure 4). Based on the South African Triage Scale (SATS), 602 (15%) patients were coded as red and 2,384 (60%) as yellow.

- MSF set up its project activities in Hamam Al Ali because of the area's trauma care needs and because the area lacked access to medical care. As other actors became active in the area and as the conflict shifted, the need for this emergency project was reconsidered, and it was closed.
- The number of patients and the severity of the cases seen in this facility highlighted the need for long-term post-operative care.

- 3,498 cases seen in the Emergency Room (ER), of which 2,599 (74%) were surgical cases.

- 612 surgical operations were conducted, and many of the patients were referred for follow-up surgery; it was clear that many of these would require post-operative follow-up and rehabilitation, which was not at that point available.

- MSF's PHC support in Hamam Al Ali was there to improve access of care to the community, as well as the IDP population. This project covered the gap until the time when the ICRC could start supporting the MoH PHC centre as planned.

ii) Hamdaniya post-operative surgical care project:

- Hamdaniya was the site of choice for the post-operative surgical care project given:

- Its convenient location in terms of referral routes: on the referral route between Hamam Al Alil and Erbil, between Mosul and Erbil, and close to the Kurdistan camps

- The relative security of the town

- No surgical interventions were undertaken at Hamdaniya; the main surgical referral structure was the Samaritans Purse.

- Due to the high occupancy rate at the 42-bed facility – highlighting the continued need for post-operative and rehabilitation care in the Mosul area – a decision was made to relocate the project to Al Sheefa hospital in the East of Mosul.

Admissions:

A total of 416 patients were admitted, of whom 251 (60%) were new admissions and 165 (40%) were re-admissions. Of the 251 new admissions, 231 (92%) were violent trauma cases, 14 (6%) accidental trauma cases, and 6 (2%) for non-trauma pathologies (Figure 5).

2.2.4 MADAGASCAR – PULMONARY PLAGUE

Madagascar saw the onset of an unprecedented outbreak of plague in August 2017. Plague is endemic in the Hauts-Plateaux of Madagascar, including Ankazobe district, where this 2017 outbreak originated. Recurrent outbreaks of plague occur as seasonal upsurges between September and April, usually in the form of bubonic plague. The plague season in 2017 began earlier, and the

Figure 3: Surgical intervention by epidemiological week, Hamam Al Ali, Iraq, 2017 (n=664)

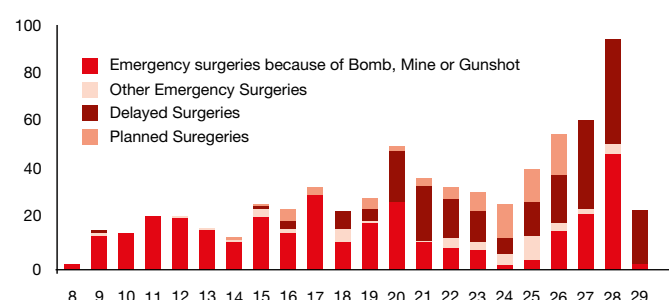
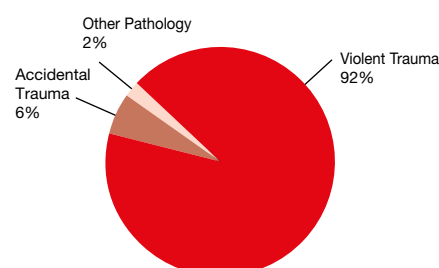


Figure 5: Causes of new admissions to post-operative surgical care project, Hamdaniya, Iraq, 2017 (n=251)



outbreak that ensued was mainly pneumonic in form. It affected both endemic and non-endemic areas, including major urban centres such as Antananarivo (the capital city) and Toamasina (the port city). As such, it provoked a WHO Grade 2 emergency event. From August to December 2017, a total of 2,601 confirmed, probable and suspected cases of plague, including 225 deaths (case fatality rate of 8.7%), were reported. Reported cases were found in 58 (51%) districts out of 114, and in 17 (77%) out of 22 regions in Madagascar.

In Toamasina, MSF supported the plague triage and treatment centre by supporting IPC and WASH activities. Treatment and surveillance were also provided. In Antananarivo, the Centre of Plague was also supported with some rehabilitation. In the south, support was provided to set up a triage system and treatment at the hospital, as well as to initiate vector control activities in the community.

MSF was part of the operational review and planning of the response during the epidemic season and operational readiness plan for the next plague outbreak in December.

3. EMERGENCY PREPAREDNESS

In 2017, Emergency Preparedness (EPREP) steps for cholera were put in place in Sierra Leone following a series of landslides, and the EPREP nutrition follow-up in East and Central Africa was initiated.

4. HUMAN RESOURCES AND TRAINING

In 2017, the E-Unit had four permanent Emergency Coordinators and five permanent Support Staff (two Human Resources, one Logistic/Supply and two Finance personnel).

The number of Field Emergency Coordinators (2/3 medical and 1/3 non-medical) remained between 10 and 15 during the year. By the end of the year, the field team had covered 48 departures - 32 for direct support in emergencies and 16 for support to cells in emergency responses or gap filling in specific contexts. The coordinators from the E-Unit continued to be part of trainings as facilitators and/or trainers throughout the year, especially during the Head of Mission and/or Medical Coordinator trainings and the Populations in Precarious Situations (PSP) training. They also participated in meetings regarding the persistence of the Ebola virus in

semen. Emergency Medical Team meetings organised by the World Health Organization were also followed by the E-coordinators as external observers or as technical support.

5. COMMUNICATION AND E-UNIT

The E-Unit contributed to specific communication initiatives to increase operational visibility and leverage. Major communication initiatives were done for the Mosul intervention and the plague in Madagascar.

6. MOBILE UNIT SURGICAL TRAILER (MUST) DEVELOPMENT

Development of the MUST was undertaken in collaboration with the Medical Department and Logistics. The first unit was deployed in Mosul with the aim of having an easily mobile unit able to follow a constantly shifting frontline. Later, the unit was deployed in Hamman Al Alil, a city located 15 km from the frontline. The lessons learnt from this experience were around the lack of space in the OT and the difficulties of cleaning between consecutive surgeries. This led to the construction of the MUST II - a unit composed of 16 trucks and comprising two OTs, one 14-bed ICU and one sterilization unit.

7. LOOKING BACK AND AHEAD

CHALLENGES AND ACHIEVEMENTS IN 2017

- A model of care for mental health support was developed by the project in Sweden to support migrants in their destination country.
- An evaluation of the reconstruction material distribution in Haiti highlighted the need to better define the objectives of the intervention in order to better target the most vulnerable. It also highlighted the need for an actual shelter policy.
- An extensive surveillance system was developed in an urban area of Borno State, Nigeria, in collaboration with E-Health and GIS units. Utilising smartphones and a national team who travelled by rickshaw, areas of vulnerability were able to be identified in the South part of Maiduguri and active case finding of severely malnourished children was possible. Rapid analysis of the data also allowed appropriate actions to be taken in a timely manner.
- The intervention launched in response to the pulmonary plague in Madagascar (in the aftermath of the Ebola outbreak response) demonstrated the real added value that came from IPC and WASH activities. The plague is a neglected disease however and guidelines on how to respond to such disease outbreaks would be beneficial. Re-opening a mission in Madagascar was unexpected, but the issue of importation issue was relatively smooth in collaboration with the MoH.
- A small-scale Ebola outbreak in DRC and Marburg in Uganda/Kenya indicated that MSF is not the only actor on the ground any more. It also demonstrated the challenges of working with different actors with different objectives.
- Issues around visas for Burundi resulted in the E-unit having to expend more time and effort than normal preparing the mission to function without international staff in certain key positions.
- Migration continued to be a challenge in 2017. The projects in Europe were not easily accepted especially in Norway, where the project proposal (project for undocumented migrants) was not accepted by the associative during a board meeting. In Sweden, the project of mental health support in one centre for asylum seekers was closed as planned. This was followed by the development of a manual "Model of care" for mental health support. In Belgium, in collaboration with FEDASIL, projects were still running in both parts of the country.

DOSSIERS ONGOING IN 2018

- Medical / Operation perspective: revision of scenarios and emergency stock; Paediatric Toolbox for primary and secondary health care in emergency; HIV/TB and non-communicable disease care in emergencies; aerial disease pandemic preparedness; finalisation

of exploratory guidelines; Sexual and Reproductive Health Toolbox revision; Flood Manual revision was achieved; reporting forms in emergency; data collection in emergency; malaria and vaccination in emergencies.

- Medical / WASH perspective: a toolbox for WASH in emergencies; tool for quick assessments; research on equipment with easier hand-over of water supply systems; research on WASH interventions for scattered populations.
- Human Resources dossier: revision of the HR toolbox for emergencies; analysis of the first mission departures in emergencies and “HOMERE” for emergency.
- Supply perspective: need to prepare a supply toolbox for each phase of an emergency (phases 1 and 2 emergency and post-emergency set up); need to finalise a toolbox on the exit strategy by involving all departments.
- Logistic side: several innovation dossiers are ongoing especially on information & technology development; others include different discussions on shelter availability for medical structures (MFH 2nd version, Risk 3rd version, and other possibilities for shelters) and meetings with the log back-office. Other challenging dossiers include: Rapid ‘Telecom’ Deployment Kit, Rapid ‘Supply Tools’ in Emergency, New way of ‘Off Road Shifting’.
- Finance perspective: a toolbox for headquarter (i.e. simplified table for day-to-day expenditure); toolbox for project level (i.e. budget file for emergencies by phases); toolbox for the field (like the HR tool, which can support finance in an emergency intervention during different phases); tool for field visits (check-list and reporting).
- Discussion on the added value of MSF in vaccination activities in big cities like Conakry and Kinshasa.

PROSPECTS FOR 2018

- The training and support for EPREP will continue in particular in contexts where emergency scenarios are anticipated.
- Collaboration with external specialists (Orthopaedist International Association, Renal Disaster Relief Task Force, Handicap International, and Disaster Epidemiology Centre) will continue to be strengthened.
- Collaboration with the Pool d’Urgence Congo will continue. Training on response to emergencies will be conducted with support of the pool in April 2018.
- The pool of Mobile Team Members will kept at between 10 and 15 people.
- A detached E-Unit position will be opened in South Africa, following the Scandinavian model.
- A second log supply position will complete the team.
- The preparation of the E-coordinators on security and risk analysis management will continue.
- Training on how to deal with chemical weapons will be organised.
- Follow-up of the impact of food security crisis will be ensured.
- Revision of the MFH will be done.
- Finalisation of the MUST II will be ensured.

EPIDEMIOLOGY

EPICENTRE

1. OVERVIEW

Epicentre's epidemiological studies support Médecins Sans Frontières (MSF) with evidence to improve their interventions and medical care. The three main areas of work of Epicentre's studies include: research in emergencies; support to MSF programme monitoring activities; and research designed to enhance operational strategies as well as preventive, curative and diagnostic tools and protocols. Results may be used to support advocacy in the scientific community and among local, national and international authorities. Epidemiologists, statisticians and laboratory specialists comprise the Epicentre scientific team. In 2017, two epidemiologists were integrated into the MSF Operational Centre Brussels (MSF-OCB) Medical Department to enhance communication and facilitate the implementation of new research projects.

2. ACTIVITIES

2.1. RESEARCH IN EMERGENCY SETTINGS

In 2017, Epicentre provided epidemiological support for MSF-OCB field interventions in Haiti and the Democratic Republic of Congo (DRC) (Table 1). In three communes of the Southern Department of Haiti (Charbonnières, Côteaux, and Port-à-Piment), Epicentre implemented a vaccine coverage survey. The survey assessed the two vaccination campaigns (first dose of oral vaccine Euvichol at the end of 2016; second dose in Mid-2017) conducted by the Ministry of Health (MoH) with the support of MSF-OCB in response to the increased incidence of cholera after Hurricane Matthew. The coverage for having received two doses of the vaccine was high. In addition, a protocol was submitted for ethical review; the protocol proposed a study to determine the vaccine effectiveness of Euvichol using "the screening method", based on the reinforcement of the cholera surveillance system in the same communes.

In DRC, Epicentre conducted a retrospective mortality survey, with components on nutrition and violence, in the Province of Central Kasai following the conflicts and the population displacements in the region. The survey underlined a worrying humanitarian situation, especially in terms of nutrition.

2.2. SUMMARY OF OTHER RESEARCH CONDUCTED IN 2017

The key research areas of Epicentre include the Ebola Virus Disease (EVD), vaccine preventable diseases, diarrhoeal diseases, mental health, surgery, diagnostics, antibiotic resistance, nutrition, Human Immunodeficiency

Table 1: Epicentre/MSF-OCB field interventions in 2017

Country/project	Intervention	Topic
DRC, Kasai Central	Mortality survey with violence and nutrition components	Mortality
Port-à-Piment, Haiti	Vaccine coverage survey	Cholera
Port-à-Piment, Haiti	Vaccine effectiveness study	Cholera

Virus / Acquired Immunodeficiency Syndrome (HIV/AIDS), Hepatitis C Virus (HCV), tuberculosis, malaria and neglected diseases. During 2017, MSF-OCB collaborated on a number of these research activities.

2.2.1. Ebola Viral Disease

In 2017, Epicentre progressed with the data analysis of the 2015 rVsV-ZEBOV trial aiming to assess the safety and effectiveness of the vaccine among Guinean frontline health workers. Final results on the immunogenicity and safety of the vaccine are expected to be published in 2018. Information on the qualitative study concerning acceptability and barriers to future use of the vaccine as well as safety information on the vaccine were both accepted for publication.

In 2017, Epicentre continued to prepare the implementation of the single arm, open-label, non-randomized, phase IIIb trial of one dose of rVsV-ZEBOV against the Ebola virus disease (EVD). The primary outcome is to assess overall vaccine effectiveness in preventing laboratory-confirmed EVD cases. This study will provide additional evidence to support the obtainment of Emergency Use Assessment and Listing (EUAL) or licensure from the Food and Drug Administration for rVsV-ZEBOV. As the location of future outbreaks is unforeseeable, the preparation of the trial implementation takes place in several countries, each under the responsibility

of one MSF-OC. In particular, during the reported EVD outbreak declared in May 2017 around the main town of Likati, in the Province of Bas-Uele, Epicentre supported MSF and the MoH in the preparedness of the vaccine trial in DRC. In the aftermath of the outbreak, a specific workshop was organised in July in Kinshasa to clarify the roles and consolidate the engagements of all partners for implementing the vaccine trial in possible future outbreak. Epicentre, the Access Campaign, and Medical Directors are also working together to ensure that the vaccine is brought through to licensure.

In 2017, Epicentre continued supporting the sharing of pooled MSF intersectional data externally through the Ebola Initiative-Oxford agreement. Also, Epicentre provided some statistical support in the analysis of the data of EVD cohorts.

2.2.2. Vaccine preventable diseases

In 2017, Epicentre set up automatic online reporting to monitor the measles outbreak in the former Kasai provinces¹, and in the provinces of Maniema and Tshopo in DRC. Based on surveillance data, the reports provide figures on the weekly evolution of the outbreak in terms of the incidence and case fatality by age group, province, and health zones. In order to guide MSF preventive vaccination activities, the reports also attempt to "predict" the health zones that are more

¹ Kasai Occidental and Kasai Oriental.

at risk based on the situation of neighbouring health zones, road density, and reported suspected cases of the previous weeks. In 2017, in terms of measles vaccine research, Epicentre and MSF-OCB, with the support of the Access Campaign, continued to investigate the stability of measles vaccines in controlled temperature chain. Further stability analyses were conducted using laboratory data generated by the Serum Institute of India at 37°C and 40°C. The results were discussed with regulators from Health Canada to provide definitive information on the limitations and possibilities for the use of the measles vaccine in controlled temperature chain. Finally, the results of the measles vaccine coverage and vaccine effectiveness surveys conducted in 2016 in Kunda, Maniema province, DRC, were presented at the 10th European Congress on Tropical Medicine and International Health².

In 2017, Epicentre wrote a protocol for an open-label, randomized, non-inferiority trial to evaluate the immune responses to a delayed second dose (6 and 12 months interval between doses) of oral cholera vaccine compared to the standard 14-day interval. This trial will be conducted in an MSF-OCB project, possibly in Haiti.

2.2.3. HIV and Hepatitis C Virus (HCV)

Four additional publications³ of the results from the HIV population survey conducted in KwaZulu-Natal, South Africa have been published or prepared in 2017. In addition, a comparison of the survey data with similar HIV survey conducted in other countries allowed exploring other research questions that will be published in 2018.

In 2017, Epicentre finalised the analyses and reports of the two population surveys that measured the HIV prevalence and each step of the cascade of care in the MSF-OCB projects of Gutu (Zimbabwe) and Nsanje (Malawi). Publications are planned for 2018. Also in Nsanje (Malawi), in 2018, Epicentre and MSF-OCB will implement a study to evaluate the cascade of HIV care among the sex workers working and/or living in the district. Because the sampling method used for the 2016 population survey is not adequate for “hidden” populations, such as sex workers, the study will use a respondent-driven sampling approach. The protocol will be submitted for ethical review in early 2018.

In 2017, in Mozambique, Epicentre and MSF-OCB, together with MSF-OCG, South African laboratory partners⁴ and MoH, initiated a study on first-line HIV resistance and its associated risk factors. The study was approved by the national and MSF Ethics Review Board (ERB) in mid-2017. The study has two components: (i) A cross-sectional design to assess the prevalence of pre-treatment drug resistance (PDR) for both antiretroviral treatment (ART)-naïve and pre-exposed HIV adults patients⁵ initiating ART; and (ii) A follow-up phase to assess the frequency of acquired drug resistance (ADR) in HIV adult patients after at least 6 months of first-line ARTs. The recruitment, initiated in September 2017, is ongoing in Tete Province (aiming to recruit 460 participants for the assessment of ADR in 2 health facilities, and 350 for PDR in 7 health facilities). Participant recruitment is finalized in Maputo city (640 participants were recruited for the ADR assessment and 350 for PDR). The data collection is expected to be completed by the end of 2018.

Also in Mozambique, in 2017, Epicentre continued supporting the development of a database, a standardised reporting format and standard operating procedures for a study on Pre-exposure prophylaxis (PrEP) among sex workers in Beira. After data management, a preliminary report was written and shared with the project team. The report is to be finalised, and published if relevant, in 2018.

From October to December 2017, in Kinshasa (DRC), Epicentre and MSF-OCB implemented a resistance study to assess the frequency of major genotypic ART resistance mutations (and their associated factors) among patients hospitalized with advanced HIV disease under long-term first line ART. The results will be released in July 2018 and will inform the MoH and the World Health Organisation (WHO) on the need for ART switch in these severely ill patients.

In 2017, MSF-OCB continued to collaborate on the intersectional UNITAID cohort studies assessing the introduction of a new HCV treatment for HIV patients. In 2017, three MSF-OCB HCV projects (Karachi in Pakistan, Meerut in India, and Kibera in Kenya) have been using the HCV cohort database (HepaMUD; developed and supported by Epicentre) for monitoring the project and the

cohort of HCV patients. Intersectional results have been shared with the WHO⁶ and communicated at the World Hepatitis Summit in Brazil 2017⁷ and the International Liver Congress⁸.

An article on the low serological HCV prevalence observed in Kibera and other African HIV cohorts will be published in 2018. In addition, site-specific and intersectional analyses on the HCV epidemiology in the different countries are planned for 2018 to assess and communicate findings of the effectiveness and model of care of the MSF HCV projects.

In 2017, in Cambodia, Epicentre also organised in collaboration with the different MSF sections, an intersectional workshop to facilitate exchange between 40 field and coordination representatives from the different MSF HCV projects as well as a training of 15 participants (including MSF-OCB staff) on data quality and analysis with HepaMUD.

The population-based survey in Meerut Region (India), aimed at assessing HCV prevalence and identifying factors associated with HCV infection and the main routes of transmission, has been postponed. Discussions are ongoing regarding possible implementation with local partners.

2.2.5. Tuberculosis

In the absence of Randomized Controlled Trials (RCTs) to assess new treatments for (multi/poly) Drug-Resistant Tuberculosis (DRTB), retrospective cohort analyses may provide important information on how to improve the management of DRTB patients. In 2017, a publication from a multi-centric analysis of MSF DRTB-HIV co-infected patients was accepted in PLoS ONE. The analysis of two other multi-centric cohorts of MSF patients with DRTB (i.e., Isoniazid mono-resistant patients and multi-drug resistant patients) will be finalised and published in 2018.

In 2017, the preparation of the study on the feasibility of using LAM⁹ test for TB diagnosis in Kinshasa made good progress, including a field visit from the study coordinator and the amendment of an existing protocol comparing Xpert in urine and the LAM test to introduce the assessment of the LAM feasibility. The amendment was approved by the ERB of DRC and submitted to the MSFERB. The implementation of the study is planned in 2018.

² Coulborn RM, *et al.* Field challenges to measles elimination in the Democratic Republic of Congo.

³ High risk sexual behaviour associated to HIV unawareness and lack of viral suppression (*Huerga et al. Sci Rep 2017*); Comparison between self-reported and antiretroviral detection to inform ARV coverage, viral suppression and HIV incidence (*Huerga et al. BMC Infect Dis 2017*); Combined interventions to reduce HIV incidence: modelling study (*Blaizot et al. BMC Infect Dis 2017*); HIV incidence estimates using combined synthetic cohort and recency biomarker approaches (*Grebe et al. In preparation*).

⁴ National Institute of Communicable Disease, in Johannesburg and the University of Cape Town.

⁵ Prevention of mother-to-child transmission, Pre- or Post-exposure prophylaxis, ART discontinuation for at least 3 months.

⁶ Real-World effectiveness and safety of Daclatasvir/Sofosbuvir in HCV.

⁷ Hepatitis C care in Limited Resource Settings: The experience of Médecins sans Frontières (Loarec A *et al.*); Developing a simplified mode of care for HCV (*Loarec A et al.*)

⁸ Using Hepatitis C viral load distribution data from a global database to derive the optimal limit of detection for point-of-care diagnostic testing; *Freiman MJ et al.*

⁹ Test based on the detection of mycobacterial lipoarabinomannan.

2.2.6. Nutrition

The protocol of the research project conducted in collaboration with Ghent University (Belgium) on kwashiorkor was finalised and submitted for ethical review in 2017. The study aims to use omics-based technologies to improve the understanding of the pathogenic pathways underlying kwashiorkor that currently remain largely unexplained. Field implementation is planned for 2018 by the Epicentre Research Centre in Niger.

2.2.7. Niger Research Centre

In 2017, MSF-OCB, through MSF-Norway, continued to support the Epicentre Research Centre based in the Maradi Region in Niger. Several studies were underway in 2017. One included a descriptive study evaluating the risk of healthcare-associated infections in the inpatient nutritional treatment centre of Madarounfa. Another constituted an operational study investigating the impact of withholding the routine administration of amoxicillin during the ambulatory treatment of children 6-59 months with uncomplicated severe acute malnutrition. In addition, in 2017, a

trial addressed the lack of vaccine for *N. meningitidis*. Reactive vaccination is the only currently-recommended preventive measure for use during meningitis epidemics in the African meningitis belt. Antibiotic prophylaxis is used in other settings, but not routinely in Africa. We assessed the effectiveness of single-dose oral ciprofloxacin, administered to household contacts and in village-wide mass distributions, on the overall attack rates in an epidemic. In this three-arm, open-label, cluster-randomized trial during a meningitis epidemic in Madarounfa District, Niger, the study found that the village-wide distribution of a single-dose of oral ciprofloxacin within 72 hours of the notification of a case reduced overall meningitis attack rates. This information is now being used for epidemic preparedness in MSF-OCB and in MSF as a whole.

2.3. TRAINING

During the course of 2017, Epicentre conducted two Populations in Precarious Situations (PSP) courses and two Responding to Epidemics (REPEPI) courses. These were attended by staff from all MSF sections including MSF-OCB. In April, in Kabul, Epi-

centre and MSFOCB ran a course entitled "Response to Emergencies and Epidemics" for the staff of all MSF sections (OCB, OCP, OCA) working for the projects in Afghanistan. In addition, Epicentre and MSF-OCB initiated the preparation of a two-week course on "Responding to Emergencies and Epidemics" for the MSF staff working for the emergency pool in DRC (Pool d'Urgence Congo - PUC). The content and general structure of the PSP was again revised to align with the realities in the field.

2.4. MISCELLANEOUS

Members of Epicentre were involved in presenting and participating at internal (including working groups) and international meetings on the different themes discussed in Sections 2.1 and 2.2.

The FUCHIA helpdesk continued to provide regular technical support to all projects where a FUCHIA monitoring system was implemented. In 2018, the MSF-OCB HIV project in Kinshasa will migrate from Fuchia to e-Tier software. Epicentre helped with the preparation for this migration.

3. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

The collaboration between MSF-OCB and Epicentre was harmonious. In particular, the collaboration with the Southern African Medical Unit (SAMU) was fruitful, with three Epicentre epidemiologists supporting the implementation of HIV population surveys and other studies in the region.

However, for several reasons, the interactions between the Epicentre epidemiologists based in Brussels and the emergency pool were lower than expected at the time of the opening of the second Epicentre position in MSF-OCB. The set-up of this position will be revised in 2018.

PROSPECTS FOR 2018

- As in previous years, Epicentre will continue to ensure the dissemination of recent study results and to discuss new research ideas with the MSF-OCB Medical and Operations Departments.
- Epicentre will also continue to work on improving its interaction, communication and collaboration with MSF-OCB partners both in the field and at headquarters.
- Due to budget restrictions, MSF-OCB decided not to send trainees to the REPEPI trainings in Paris in 2018. Epicentre will do its best to adapt and ensure that the REPEPI trainings can be organised smoothly for the other MSF sections. Further discussions will take place in 2018 to clarify the contribution of MSF-OCB in the REPEPI in the future. Other collaborations between Epicentre and MSF-OCB regarding trainings will be maintained, including the implementation of a two-week training in Kinshasa to strengthen the knowledge and capacities of the staff working for the PUC in DRC. Epicentre will also continue to improve the PSP training materials.
- The collaboration between MSF-OCB and Epicentre promises a motivating research agenda for 2018. This includes the projects mentioned above as well as additional challenging studies, such as:
 - A second HIV population-based survey that will be conducted in the district of Mbongolwane and Eshowe (Kwazulu-Natal, South Africa), five years after the first survey. This will allow for an evaluation of the cascade of HIV care and assessment of the impact of the pilot HIV programme¹⁰ that MSF-OCB has been implementing since 2011.
 - A study to describe the prevalence of invasive diseases, the type and antibiotic sensitivity of associated bacterial agents and their risk factors, in HIV-infected adult patients in the MSF-OCB project in Kinshasa.

¹⁰ Bending the curves: interventions to reduce HIV incidence, TB prevalence, and HIV/TB-associated morbidity and mortality in Mbongolwane and Eshowe.

EVALUATION UNIT

1. OVERVIEW

The SEU (Stockholm Evaluation Unit) continued to carry out evaluations, reviews and other exercises aimed at institutional learning and accountability. Over the course of 2017, twenty-one dossiers were followed, and sixteen reports were completed. More than half of these were requested by Operational Centre Brussels (OCB) operations.

2. PROGRAMME ACTIVITIES

During the course of 2017, the unit carried out and completed 16 evaluation exercises. Of these, four were conducted on behalf of the International Office, two on behalf of partner sections, one on behalf of another OC and the remaining nine on behalf of OCB. Of these nine, two looked at crisis management following critical incidents, three looked at management tools within headquarter (HQ) operations and four looked at core project-based activities in the field. Of these, one was a capitalisation exercise and three were evaluations.

- In Haiti, the evaluation of the emergency response following Hurricane Mathew showed that although the overall response appeared relevant, the shelter component suffered several shortcomings. Lack of clear objectives and planning impacted on the effectiveness and efficiency of the distribution, and the impact of the project in supporting the reconstruction of housing was limited. MSF has a role to play in shelter provision during emergencies, and as such it needs to reinvigorate its shelter policy framework.
- The Real-Time evaluation in Guinea found that the measles vaccination campaign in Conakry was delayed by misalignment of strategies between MSF and the Ministry

of Health (MoH). Despite the delays, MSF's capacity to respond was seen to have added value in achieving vaccination quality and coverage; MSF's presence and support was also well received by the MoH.

- An end-of-funding-cycle evaluation looked at the HIV, tuberculosis (TB) and non-communicable diseases (NCD) projects in Guinea, Kenya, Mozambique, South Africa and Zimbabwe. It focused on assessing the HIV care continuum, viral load monitoring and differentiated models of care. It also assessed whether MSF's advocacy efforts have resulted in long-term policy change to optimise prevention, diagnosis and care of the diseases at stake. The resultant report emphasised the importance of training and mentoring to ensure viral load monitoring results in better patient care. It also showed the need to offer a selection of Differentiated Models of Care in order to overcome the barriers associated with stigma and fear of disclosure. Beyond its contribution to the last two 90's of the global "90-90-90 HIV targets", MSF made impressive strides into the first 90 - 90% of people living with HIV knowing their status. MSF has been able to influence national policies in all five countries, although there has been tension between MSF's desire to provide high level quality care and its

desire to see the sustainability of activities beyond the lifetime of a project.

3. INNOVATIONS AND COLLABORATIONS

The unit continued to invest in its primary collaboration with the International Evaluation Group (IEG) and continued to run the evaluation website (www.evaluation.msf.org) and Inter-sectional Evaluation Day on behalf of the group.

The unit also continued to develop and invest in external collaborations with others in order to develop capacity, and to learn from others outside of MSF. Collaborations continued too with a multitude of units and initiatives across MSF, both within the field and at HQ.

4. HUMAN RESOURCES AND TRAINING

- The capacity of the unit was strengthened with the addition of an Evaluation Referent and a Unit Coordinator. The unit currently has five full time positions.
- The Unit continued to provide training at the annual MSF evaluation course, which is now organised by the evaluation units in Vienna on behalf of the International Evaluation Group.

5. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- The number of evaluations, as opposed to reviews, being conducted is quite low. There is a need to emphasise the added value of the judgement inherent in the evaluation process.
- The proportion of evaluation exercises being carried out outside of OCB is becoming too high and the ratio of external to internal evaluations needs to be curtailed so that the focus remains on OCB.
- The number of evaluation exercises on field-based project activities has fallen and this should not be the case; emphasis on field-based activities needs to be maintained.
- The preparatory phase of the evaluation process is essential for ensuring satisfactory and high-quality results. The SEU has a central role in ensuring this conceptual process.

- Roles and responsibilities in the evaluation process still need to be clearer and ownership of evaluation results needs to be reinforced.
- The SEU needs to expand the profile of the 'services/activities' that it can offer in order to meet the diverse evaluative needs of the numerous stakeholders.

PROSPECTS FOR 2018

- The roles and responsibilities of the Evaluation Steering Committee will be developed to provide clearer guidance, accountability and reporting.
- The unit will start to diversify its core 'services' and explore ways to support current monitoring and accountability activities.
- The unit will continue to develop its evaluation framework and start to diversify the evaluation toolkit for better targeted support to field teams.
- Efforts to strengthen collaboration with technical departments, specifically the Medical Department, will continue.

HEALTH INFORMATICS

1. OVERVIEW

The eHealth Unit, created in late 2016, consolidates various medical Information & Technology-based services into four pillars:

- Standardized Monitoring and Surveillance tools with MINOS (Medical Information Network for Operational Support) and the DHIS2 software
- Clinical Support Tools with the Electronic Medical Records (EMR) project
- Geographic Information System (GIS service) design
- Direct support to the field in the above areas with the provision of advice and short-term solutions

Médecins Sans Frontières Operational Centre Brussels (MSF-OCB) undertakes the monitoring and reporting of medical programme data using a set of tools that are mostly either designed in-house or developed by Epicentre. In 2017, the use of (MINOS)¹ continued to grow, with OCB working on preparing the upgrade of the MINOS software to support greater diversity of routine medical data. The EMR database was rolled out in Kinshasa (HIV project) and in Mumbai to monitor TB.

2. PROGRAMME ACTIVITIES

OCB uses three main medical data collection tools for the standardised monitoring and reporting of medical programme data: i) Epicentre tools (EpiTools) for Out-Patient and In-Patient Departments (OPD/IPD) and gynaecology/obstetrics services (Gyn-Obs tools); ii) the current MINOS and its forthcoming version based on the DHIS2 platform; and iii) a number of Excel and EpiData-based tools for collecting patient-level non-aggregated data. A key aim for 2017 was to increase the number of projects using MINOS, in order to have a single central data repository, and to promote consistency in monitoring of medical activities.

Out of 68 OCB projects ongoing at the end of 2017, 21 were using MINOS as their primary data collection tool, and two projects were using DHIS2 (Kenya (Embu project) and Lebanon). In total, 23 of the 68 projects (34%) were provisioned with standard Monitoring and Surveillance Tools, compared to 18% at the end of 2016.

For better facilitation of long-term patient follow-up, the Monitoring and Surveillance Tools (MAST) team initiated a strategy in late-2016 to increase the monitoring capabilities of MINOS for longitudinal data. This will allow the design and use of time-bound indicators for programmes such as non-communicable diseases (NCDs), mental health, and sexual and reproductive health (SRH) care. During 2017, the MAST team supported the implementation of DHIS2 as a NCD programme monitoring tool in the Lebanon and Kenya projects. DHIS2 is an open source software platform for reporting, analysis and dissemination of data for all health programmes. The transfer of data to the new system for the Lebanese cohort is complete, however the analytical aspects of the application still need to be completed for both the Kenya and Lebanon projects.

3. CONSOLIDATION OF THE EHEALTH UNIT

In 2017, the eHealth Unit clarified its strategy for gathering pre-existing data initiatives within MSF (MAST team, EMR project, Geographic Information System, mobile health, data analytics) and set its goals as follows:

- To facilitate the operational decision-making process by improving field autonomy and accountability, and the management of medico-operational information
- To reduce the workload of field health workers by reducing irrelevant information, removing duplicate data, removing unnecessary repetitions, automating processes
- To provide digital support to clinical staff
- To improve the medical data maturity of OCB

The governance of eHealth has been strengthened to ensure both effective high-level sponsorship from the Operations Department and the Medical Department while preserving unity of vision and goals amongst the various departments (operations, medical and ICT) which work together to support eHealth activities.

¹ MINOS is an information system, designed and developed in-house, for the collection, storage, transmission, analysis, and reporting of medical service data.

LESSONS LEARNED IN 2017

- MINOS is the storehouse of OCB medical data. As the software was designed in-house using technologies that are now obsolete, the required level of effort to extract, curate and load the data into the new version of MINOS on the DHIS2 platform, was underestimated. This resulted in a delay of three months. Some features existing in MINOS are not currently up and running in DHIS2, with a deeper analysis required identifying areas which require more work.
- In previous years, MSF has relied heavily on external IT service providers. In 2017, the eHealth unit worked on developing in-house knowledge in order to find a balance between internal capacity and external expertise.
- The field remains the most important determinant of health information and technology needs. User feedback is a distinct process from collecting the requirements of technical referents, and although both are mandatory, user involvement is recognised worldwide as a key factor in the success of Information & Technology projects.
- The large variety of data sets, tools and indicators that currently exist calls into question the ability to harmonize a monitoring and surveillance approach of medical activities. Defining the structure of medical data is a serious challenge and requires clear governance. A dedicated Epidemiologist will work together with the Medical Referents and Cells to create a consistent set of indicators and documented terminology, in order that better support can be provided to the field with appropriate software for clinical monitoring, evaluation and surveillance.
- Late 2017, the eHealth Unit started to support the Operation and Medical Departments in harmonising the various Excel tools currently used in the field, in order to improve the clarity and effectiveness of field tools. Although Excel will eventually be superseded by MINOS, this exercise is still significant in reviewing the medical needs and data gathering processes currently utilised and for future planning. This review found that some of these tools will not be easily integrated into MINOS, DHIS2 or the EMR tool, such as the Mobile Clinic Tool used by the E-Unit.

PROSPECTS FOR 2018

Rolling out the replacement for the current version of MINOS

- MINOS is currently based on in-house developed software; however, to better respond to the evolving needs of the field, a decision has been made to migrate MINOS from this legacy platform to a more robust solution called DHIS2. In addition to its current capacity to process aggregated indicators, DHIS2 will allow for the broadening of MINOS to more precise individual-level data as well as longitudinal indicators.

Clinical Support Tools & Electronic Medical Records (EMR)

- Due to operational changes, the location of the second EMR pilot changed from Tabarre to Maadi, Egypt, followed by projects in Bar Elias (Lebanon), Kunduz (Afghanistan), and Kenema (Sierra Leone). The EMR project seeks to introduce innovative digital solutions to support clinical staff in simplifying medical data management at the point of care.

Facilitating operational decisions

- The eHealth Unit will maintain its proximity to the field through deploying additional eHealth and GIS officers as part of field teams, and strengthening the help desk available for the field.

HEALTH PROMOTION AND SOCIO-ANTHROPOLOGY

1. OVERVIEW

The year 2017 saw an ever growing number of MSF-Operational Centre Brussels (OCB) projects and missions with a health promotion component (38 projects in 2015, 45 in 2016 and 54 in 2017). Our health promotion approach also continued to be more holistically orientated with the introduction of more social work activities. Social work is dedicated to creating a more supportive environment for beneficiaries, and, although a specific field of expertise requiring specific and dedicated staff, it comes under the umbrella of HP. In this light, a concept paper on social work and a social work tool kit urgently need to be developed in order to provide a framework for this discipline within the MSF vision.

Our commitment to engage with the communities where we work continued, although, there is clearly a need to better define the level of engagement we are looking to achieve in different projects.

HP is increasingly becoming part of the public health perspective, and social science – anthropology in particular - is the study approach used to identify HP needs and to monitor whether HP project objectives are being achieved. In the same line, communication is one of the methodologies used to convey our HP messages. Linked to the latter, available technologies need to be fully utilised during our endeavours to convey these messages e.g. video, animation movies, social Media.

The health promotion tool kit (HPTK) was updated during the year and a 2017 version is now in circulation. The HP policy document is still under revision.

2. PROGRAMME ACTIVITIES

In 2017, HP activities were conducted in 54 projects across 29 missions (not including vertical HIV/TB projects, which are reported elsewhere – cf. HIV/TB section). These projects included seven migration intervention projects (Annex, Table 1), seven emergency intervention projects, (Annex, Table 2) and 40 regular projects (Annex, Table 3).

3. TRAINING AND HUMAN RESOURCES

The following trainings included a HP component:

- Water, Hygiene and Sanitation (WASH) in emergencies: module “Health promotion in WASH and Emergency”.
- Sexual and Reproductive Health training: a module on “Health promotion and Reproductive health”.
- First Line Medical Training (FLMT) – An integrated approach for community based health care.
- Health Promotion training in Brussels: ten-day training open to all sections.
- NOHA and UCL fall school in International Humanitarian Action: two-hour module on anthropology during a humanitarian response.

- Health Promotion Workshop held in Kinshasa, DRC: five day regional training open to all sections.
- SGBV workshop held in Johannesburg, South Africa: four-day workshop with field representative.
- Workshop on “community work in OCB” held in Brussels for different medical departments.

4. SOCIO-CULTURAL ASSESSMENTS

In order to generate a better understanding of the socio-cultural issues in the context in which OCB works and to better support medical activities, several qualitative assessments were conducted as part of the HP strategy and activities:

- Bolivia, El Alto: “An approach to the barriers, cultural factors and access to sexual and reproductive health services”, by Joaquim Guinart.
- Haïti, Port au Prince: « *Méthodes contraceptives et grossesses non désirées : Représentations et Pratiques dans le Grand Martissant* », by Nathalie Charles and Florence Métrailler.
- Haïti, Port au Prince: « *Enquête sur l'eau et le traitement de l'eau dans le Grand Martissant, volet eau hygiène et sanitation communautaire* », by Nathalie Charles and

Florence Métrailler.

- Haïti, Port au Prince: « *Habitudes de soins dans le Grand Martissant, entre Automédication et Médecine traditionnelle* », by Nathalie Charles and Florence Métrailler.
- Democratic Republic of Congo, Bili: « *Les parcours thérapeutiques dans la zone de santé de Bili. RDC, Une étude anthropologique* », by Pierluigi Taffon.
- Turkey, Hatay: “assessment findings of Reyhanli Recovery and Rehabilitation Houses (RRH), Internal use only”, by Anne-Sophie Loobuyck.
- Venezuela, Maracaibo: “*Diagnóstico sobre experiencias, actitudes y conocimientos de la población adolescente escolarizada y de la población embarazada*”, by the HP team of the Maracaibo project.

5. CONFERENCES

During a Wellcome Trust event (24th May 2017) in London - “Discussion on the role of social science in outbreak response” - we attended a presentation by the London School of Hygiene and Tropical Medicine during which they shared their first findings on the role of social science/scientists in outbreak responses, and also provided recommendations on a rapid ethnographic tool designed to inform outbreak responses.

6. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- The similarities and differences between HP and cultural mediation need to be better defined; cultural mediation is currently considered to be a separate discipline from HP.
- Better collaboration between the HP experts is needed in order to facilitate the regular exchange of information and technical knowledge.
- Excellent collaboration with the HR Department has continued to see the recruitment and development of a pool of experienced Health Promoters.

PROSPECTS FOR 2018

- The HP unit will collaborate with Operational Centre Geneva to develop a second HP training session (in response to the growing number of candidates requesting the training).
- In order to improve the visibility of HP activities and their quality, the HP unit will work in conjunction with the E-health unit to develop standard data collection tools and monitoring indicators, as part of the general medical typology and medical data review (DHIS2).
- New ways of working will have to be employed by the HP referent to accommodate for organizational changes in the Medical Department; similarly a community of practice and a platform of exchange will have to be exercised between the HP Supervisor and the field Manager.

HIV/AIDS, TUBERCULOSIS AND HEPATITIS C

1. OVERVIEW

In 2017, HIV/AIDS programmes re-balanced their focus from reducing HIV incidence to reducing HIV-related mortality, contributing evidence to the WHO new guidelines on 'HIV advanced disease' (i.e. HIV patients with a CD4 <200 or clinical stage III/IV). HIV-related mortality has been plateauing in sub-Saharan Africa since 2016, with around one million deaths per year; MSF's specific role was to develop new practices to address what has been called 'the return of Aids' based on evidence of ongoing 'advanced disease' in all of our projects. Anti-retroviral treatment (ART) naïve late-presenting patients are slowly being replaced by ART experienced patients, with either treatment failures or re-admissions after treatment interruptions. MSF's major contribution has been on differentiated service delivery for advanced disease within a comprehensive public health strategy, including the development of clinical approaches and guidelines for patients at high risk of death. Following major innovations in such differentiated service for stable patients in the first half of the decade, most of these strategies have now been handed over to Ministries of Health (MoH).

In terms of HIV incidence and HIV treatment coverage, Operational Centre Brussels (OCB) has increased its focus on what we have called the triple 'U': untested, untreated, unsuppressed, in line with improving programmes outcomes around the 90-90-90 based results from community surveys implemented by Epicentre in 2014. Further efforts have been dedicated to reaching specific population sub-groups such as sex workers, men who have sex with men (MSM) and prisoners. In terms of innovations, self-testing and Pre-Exposure Prophylaxis (PrEP) have gained momentum, but pre-ART data monitoring has not been a feature of this year, given that it is supposed to be irrelevant in an era of 'test and treat'.

In the area of tuberculosis (TB), more focus has been placed on drug sensitive TB (DSTB) in all settings, with the implementation of more effective case finding, treatment and prevention strategies for the most vulnerable populations (such as children, prisoners and patients with advanced HIV); ongoing efforts on drug resistant TB (DRTB) have pushed for injectable-free regimens with the introduction of new second-line TB drugs such as Bedaquiline and Delamanid as alternatives to the new short course regimen promoted by WHO.

2. INTRODUCTION

2.1. HIV

In 2017, OCB reduced its investment in HIV with a shared commitment to relocating part of its investment from the Southern African region to Central and Western Africa; this in an effort to improve the on-going neglect in low coverage settings, particularly conflict and post-conflict settings. Access to HIV/TB care in these settings remains shockingly inadequate. The so called common 'acceleration plan' following the MSF report ('le Prix de l'oubli') issued in June 2016, and launched together with WHO/UNAIDS/PEPFAR, did not produce the anticipated results in countries targeted by OCB: there was reduced cohort support in Kinshasa, project interruption in Central African Republic (CAR) and diversification towards a vertical malaria project in Guinea. As such, while some programme ambitions in Southern Africa were substantially reduced, no new programmes

were opened and no existing ones further developed in West and Central Africa where other priorities seem to have been on the forefront. HIV/TB integration in emergencies remained a challenge in OCB, contrary to other sections like OC Barcelona (OBA) or OC Amsterdam (OCA): delocalised technical support (South African Medical Unit, SAMU) and poor knowledge of simplified HIV/TB care procedures at emergency desks might be one of the reasons.

While disengaging from Annaba, Tamanrasset (Algeria) and Kibera (Kenya), OCB showed future willingness to cut down its remaining 16 vertical HIV/TB projects (18 in 2016); these projects currently operate in seven countries. Among these projects, Changara and Tete (Mozambique), Chikomba and Nyanga (Zimbabwe), and Dnipropetrovsk (Ukraine) were closed; the closure of all projects in Malawi has also been announced to take place by 2019. Some tentative integration with sexual and reproductive

health (SRH) was ongoing in Masisi (DRC), Rustenburg (South Africa) and Bangui and Bangassou (CAR).

2.2. TB

In 2017, TB activities were running in 11 vertical TB/DRTB and HIV/TB projects in India, Guinea, Ukraine, South Africa, Malawi, Zimbabwe, Mozambique and DRC, and in four transversal projects in India, South Sudan, DRC and Mauritania. Among projects with a relevant DRTB component, the project in Mumbai, India, expanded its activities and started implementing TB/DRTB care in collaboration with the MoH, including a new active case finding strategy among the most vulnerable population living in a slum area. Access and scale up of new drugs (Bedaquiline and Delamanid) for DRTB patients increased in South Africa and India; and a bigger number of projects scaled up the use of the diagnostic tool TB LAM (lipoarabinomannan), for the detection of TB in HIV patients with advanced disease.

2.3. HEPATITIS C

Hepatitis C (HCV) testing and treatment activities in 2017 were implemented in three OCB projects. Similar to 2016: Karachi (Pakistan), Nairobi (Kenya) and Meerut (Uttar Pradesh, India). The OCB mission in South Africa also supported provision of HCV treatment to a limited number of genotype 5 (GT5) patients in cooperation with the University of Cape Town.

The recent introduction of direct acting antiviral agents (DAA), which can be given in a short course of three to six months, have treatment success rates as high as 95% (called SVR12 - sustained virologic response at 12 weeks after treatment completion). Advanced medical diagnostics (e.g. HCV GenXpert assays) simplifies the treatment delivery model and implementation in high HCV burden settings, closer to the patient and at a larger scale.

3. PROGRAM ACTIVITIES

3.1. HIV

3.1.1. HIV Testing

Major increases in total HIV tests were seen for the second consecutive year with a record number of 303,654 people tested for HIV (Figure 1). This large increase was due mostly to the increasing number of projects developing initiatives to support outreach testing, focusing on specific 'untested' groups: young adult males, adolescents and young adult women, and socially marginalised populations. This was complemented by a renewed focus on facility-based testing, championed by the projects in Nsanje (Malawi) and by Gutu and Mwenezi (Zimbabwe). The KwaZulu-Natal (KZN) project remained the champion of large scale rural community testing strategies followed at distance by Tete/Changara and a major post Ebola effort in Conakry.

Use of innovative testing strategies played a role in this increase. Innovative methods include night testing for men in Zimbabwe and Khayelitsha, peer-led testing and re-testing among sex workers and truck drivers in Mozambique using oral self-tests. More innova-

Figure 2: Total ART initiations (adults and children) in MSF projects, 2007-2017

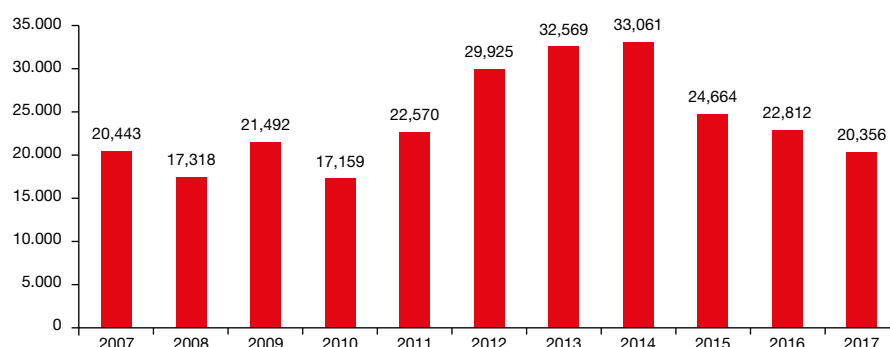
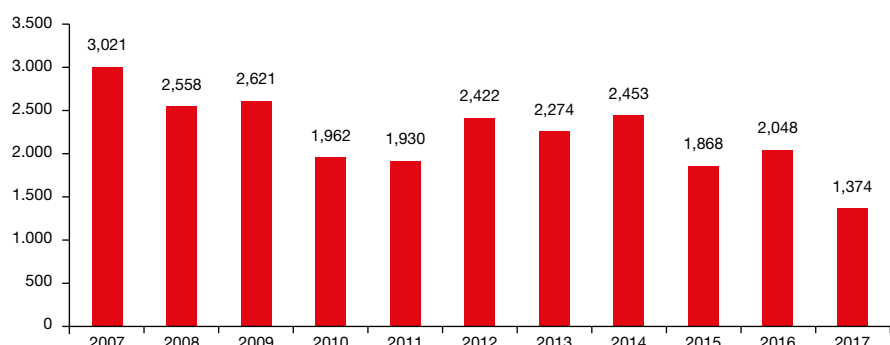


Figure 3: ART initiations among children and adolescents <15 years in eight MSF projects, 2007-2017



tive methods are likely to play a substantial role in 2018.

3.1.2. HIV Treatment and Outcomes

Pre-ART care is no longer monitored in light of the quasi-universal adoption of ART initiation after testing (Test & Treat strategy) irrespective of CD4 count.

The major increase in HIV testing in 2017 did not convert into an increase in ART initiations (Figure 2). On the contrary, ART initiation levels fell back to those of 10 years ago when eligibility criteria (<350 CD4) still applied. Two major factors probably contributed to this decrease: the handover or reduced cohort ambitions for some projects as mentioned above and more systematic HIV testing in low prevalence population groups (school, adolescents, home testing etc.).

In 2017, five projects contributed the most new recruitments: Nsanje, Mwenezi, Cona-

kry, Eshowe and Gutu; all other projects recruited less than 1,000 new patients in the year.

Tentative strategies to target marginal populations yielded mixed results and highlighted major epidemiological differences within key populations depending on context: almost average sero-prevalence in commercial sex workers (CSW) and MSM in Kinshasa, while much higher in CSW in the corridor project between Malawi and Mozambique.

In 2017, ART initiations among children in OCB projects hit a record low with 1374 children started on treatment (Figure 3). Almost all initiations were the product of four projects: Chipinge, Nsanje, Conakry and Tete/Changara. This reflects an MSF strategic move out of mainstream prevention of mother to child transmission (PMTCT) programmes to concentrate rather on older paediatric/ adolescents cohorts at risk of treatment failure. PMTCT involvement remains mostly in Nsanje (75% of all pregnant women initiated on ART in MSF projects) and to a lesser extent in Conakry and Tete/Changara.

The number of patients on second line ART, did not substantially increase in 2017 (Figure 4), exception in Kinshasa, Mbare and Conakry, as these projects are dealing largely with advanced disease patients, and pushed to switch all those failing treatment to an effective ART regimen during 2017. This reflects an ongoing failure of implementing the standard viral load (VL) algorithms with unacceptable delays/reluctance to switch failing

Figure 1: HIV testing supported in MSF projects, 2007-2017

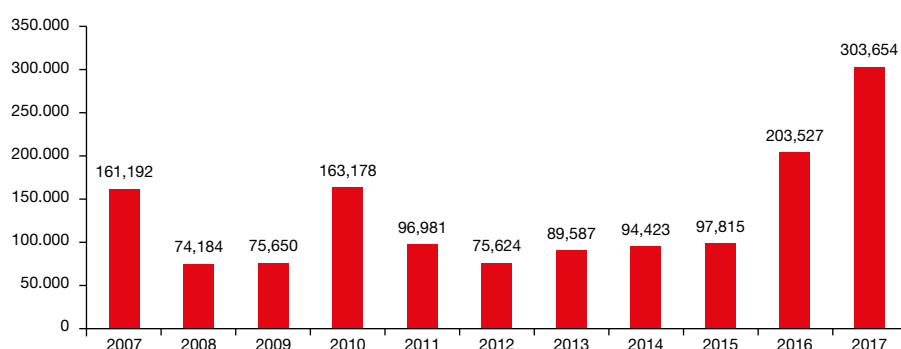


Figure 4: Proportion of cohort on first, second and third line regimens per project, 2017

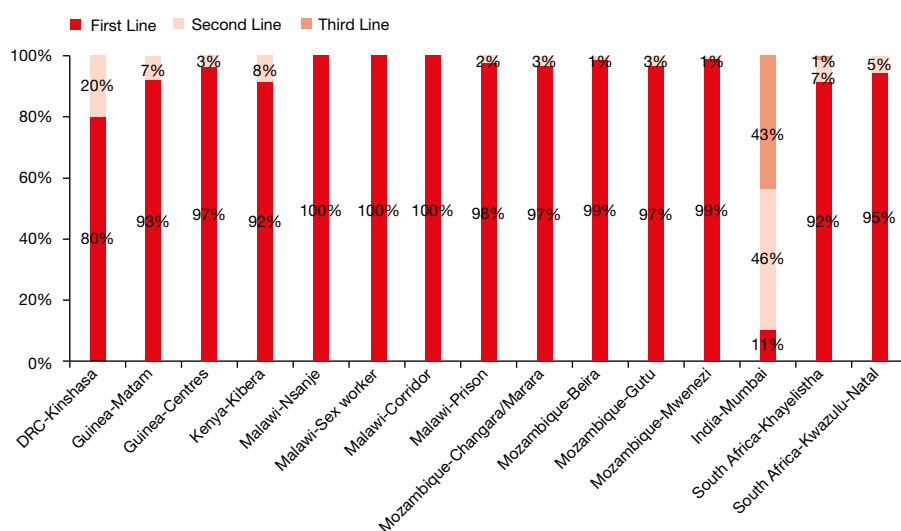
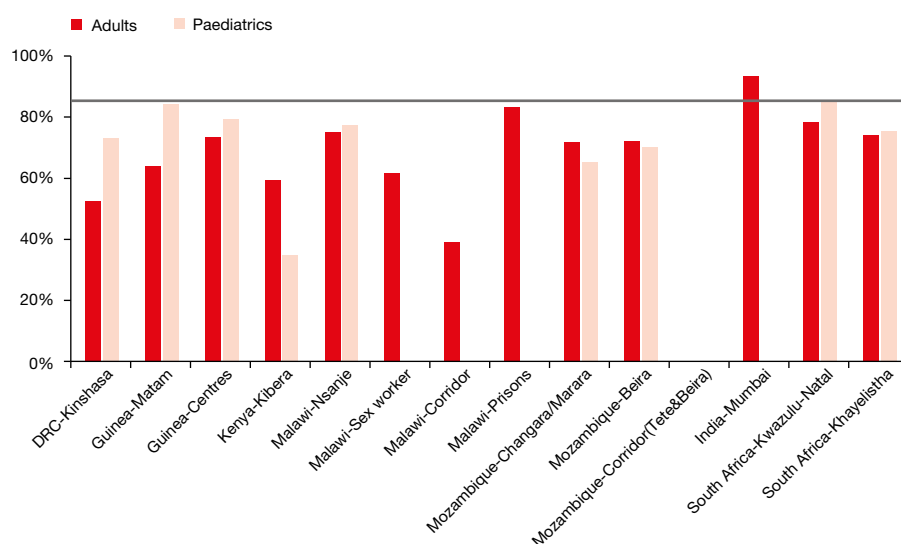


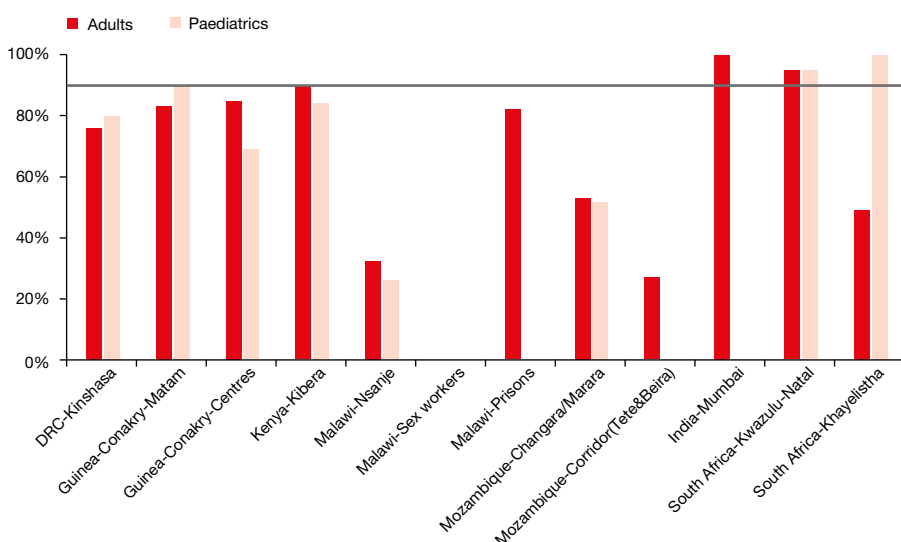
Figure 5: Proportion of retention for adult and paediatric patients after 12 months (patients initiated in 2016), per project, 2017



first line patients to second line treatments in MSF projects. With ageing programmes, it is expected that there would be an increasing proportion of second and third line treatment patients; but these figures remained surpris-

ingly low: in the largest cohort, the proportion on second line treatment remained below 5% of the total cohort (with the exception of Kinshasa (27% on second line treatment)). Commercialisation of low-cost, low side ef-

Figure 6: Proportion of adult and paediatric viral load coverage per project, 2017



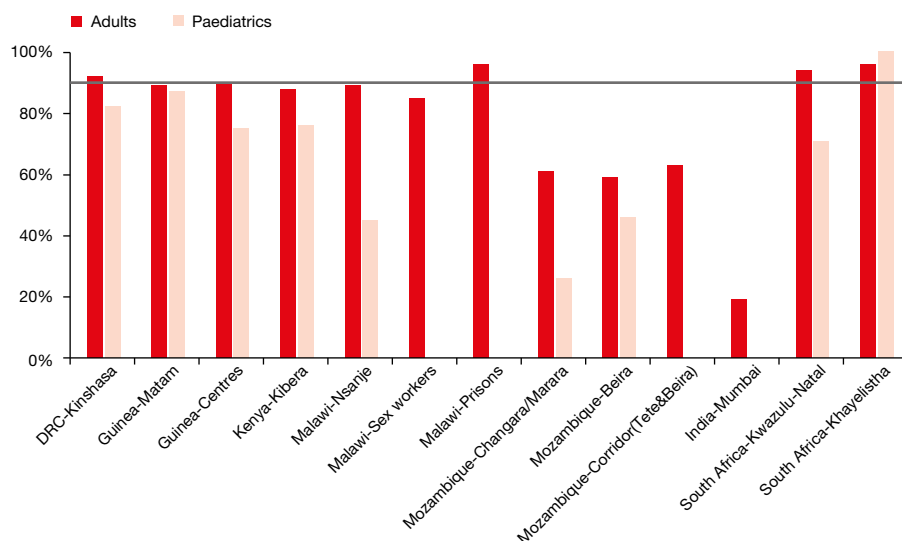
fect Dolutegravir (DTG) fixed dose combination might be a unique opportunity to switch a major backlog of failing patients on to an effective regimen in 2018-2019. Third line regimens remained exceptional, with the exception of Mumbai, specifically dedicated to patients failing first and second line regimens contrary to other MSF sections (i.e. OCP in Uganda and Malawi). This highlights a potential key role for OCB in the future together with the introduction of DTG.

Excluding, for obvious reasons, the Malawi prison project and the Mumbai project (very small cohort), the retention in care champion was Nsanje project in Malawi, with the largest adult ART cohort and best retention rate (Figure 5). Some sub-performance reflects potential monitoring and evaluation (M&E) challenges with patients transferred out ('silent transfers') in Kinshasa, Conakry and Beira. The corridor project in Malawi targeting CSW had a very low retention rate probably linked to patients' mobility.

Data on VL completion rates (number VL done/VL due) were varied and were not always reported in a standardised manner, making comparisons between projects difficult without understanding the specific context (Figure 6). For example, in Nsanje, samples were sent to the central laboratory in Blantyre with a turnaround time of more than 200 day, forcing clinicians to drop VL requests while waiting for a VL platform to be functional in Nsanje District Hospital (NDH). Sex workers generally showed poor retention in care and poor VL coverage – the combined result of a lack of VL access and high mobility. Conversely, in centralised large-scale urban projects (India, Kinshasa, and Conakry) with easy access to VL, achieving a 90% coverage target is possible. A study performed recently in Khayelitsha on the VL cascade showed 16% of VL monitoring was not performed by clinicians, although an additional 21% of results were missing due to lack of capture in M&E reports.

VL completion rates in children were better compared to adults in comparative settings due mostly to much smaller numbers of enrolled patients (Figure 7). Nsanje results reflected the same access problem as adults, while Changara completion rates in children were lower than adults for reasons that are unclear.

The target of 90% VL suppression was achieved by most projects, being over 90% in both South African projects and the Malawi prison project (mostly first line projects). Conakry performed surprisingly well compared to similar projects such as Kinshasa. Suppression rates in India were much lower for obvious reasons (second and third line projects). The role of DTG containing second line regimens for such scenarios warrants

Figure 7: Adult and Paediatric Viral Load Suppression in MSF Projects

study in 2018. Results in Changara/Mbarara were in contrast to all other projects; investigation of potential existing primary HIV resistance and analysis and impact of adherence support strategies is underway.

VL outcomes remained worse in children compared to adults and varied widely between projects. The Mbare project showed very poor results due to the project's focus: challenges around the migrant, peri-urban adolescent population, with poor compliance. In Changara/Mbarara districts, poor VL outcomes may have been a reflection of drug resistance (and ongoing transmission thereof), the likes of which is being investigated.

3.2. TB

3.2.1. TB Testing

For 2017, TB case-finding data were reported from 17 OCB projects. A total of 8,432 TB patients were detected and started on treatment during the year (Figure 8); out of these, 6,798 were DSTB cases and 1,634 were DRTB cases. The overall number of TB and DRTB cases detected considerably increased compared to previous years (4877 patients detected in 2015), reflecting the renovated efforts of MSF OCB in providing TB care in all settings. A major contributor to these numbers was the HIV project in Kinshasa, which reported a cohort of 2,336 pa-

tients; the introduction of new diagnostic and treatment approaches, including TB LAM and more aggressive treatment decision and initiation strategies for severely ill patients, is also to thank. Implementation of the diagnostic tool TB LAM expanded across more projects, and it is now the standard of care in Malawi, Mozambique, DRC and Guinea. Systematic use of TB LAM as a screening test in patients with advanced HIV in South Africa is foreseen in 2018, under operational research conditions.

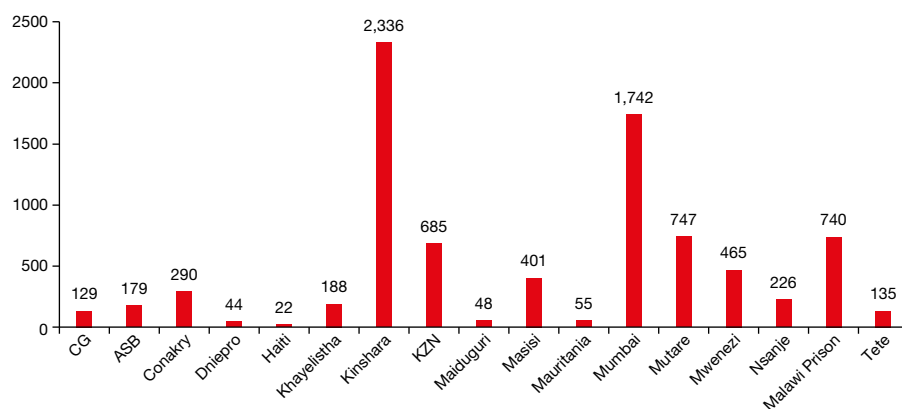
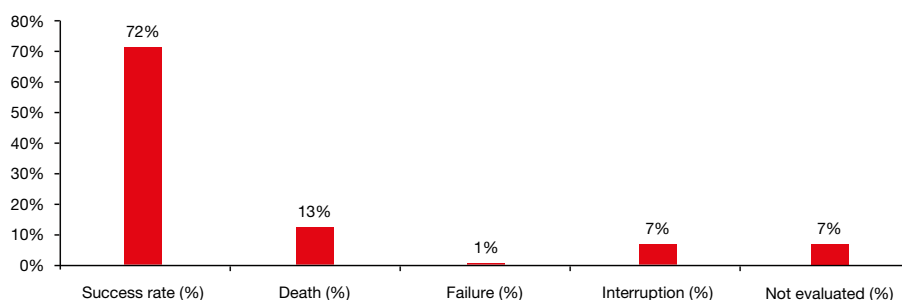
Another innovative case finding strategy was implemented in Malawi, at the prison project, where intensified screening at entry and exit into the prison, together with periodic TB mass screening with Chest X-Ray, led to significant increases in case detection among inmates.

3.2.2. TB Treatment and Outcomes

TB treatment outcomes for patients with DSTB were reported from 10 projects for 3,442 new TB cases detected and started on treatment in 2016. The average treatment success rate for DSTB cases was 72% (Figure 9), moderately better than the one achieved last year (69%). The average mortality rate remained quite high at 13%, mainly due to late access to treatment for patients with advanced HIV; this is a challenge faced in many of our African projects particularly in Kinshasa, where TB/HIV co-infected patients are often referred late, and among severely ill patients presenting at MSF IPD facilities. For the first time in the past year, a moderate reduction in mortality was observed among hospitalised patients. Several projects did not report any TB outcomes, the main reason being that TB patients, once diagnosed, were referred to the respective National TB Programme for management without any further MSF support or involvement.

In 2017, 1,634 patients with multidrug-resistant tuberculosis (MDR-TB) were detected and enrolled on DRTB treatment in 10 OCB projects (Figure 8). Despite the closure of activities in the Dnepropetrovsk project in Ukraine, the overall case detection numbers doubled compared to 2016, and this was attributable to the ongoing activities in the project in Mumbai, run in collaboration with the MoH, where the burden of disease is massive, and challenges in accessing effective treatment remain. The vast majority of patients detected in Mumbai presented with complex resistance profiles and are in need of new drugs for TB, not yet easily accessible through the public system.

Large cohorts were also reported from the Eshowe project in KZN, South Africa, although MSF contribution to DRTB case detection here was small and data reflect more the MoH efforts (Table 1). The cohort

Figure 8: Tuberculosis case detection in OCB projects, 2017**Figure 9: Outcomes for new DSTB patients registered in 2016***

* Outcomes analysed refer to the previous cohort of patients started on treatment in 2016

of Khayelitsha (South Africa) remained stable with little less than 200 patients detected and enrolled on treatment.

Outcomes of DRTB treatment were reported by Khayelitsha, Eshowe (KZN), Mumbai (MSF clinic) and Kinshasa: for DRTB treatment lasting two years (Table 2), outcomes refer to cohorts started on treatment in 2015. Treatment success rates for the cohorts of Khayelitsha, where co-infection with HIV is very high, and Mumbai, where mainly pre-XDRTB and extensively drug resistant tuberculosis (XDRTB) patients are enrolled, was respectively 44% and 57%, very similar to the previous year. A 62% treatment success rate was reported by the project in Kwazulu-Natal, although data refer mainly to patients treated by the MoH, with minor MSF support. Outcomes from Ukraine, Dnepropetrovsk, were not reported as the project has closed, and the same for the cohort of East Ward in Mumbai, where activities had not yet started in 2015. Improved outcomes are expected for future cohorts, thanks to the introduction of new drugs and a shorter course regimen.

In 2017, OCB continued to push the use of Bedaquiline and Delamanid, two new and effective DRTB drugs for which access remains globally challenging, and paved the way for implementation of injectable-free regimens (Table 3).

In India and South Africa, MSF teams supported the treatment of more than 230 patients with Delamanid and more than 470 with Bedaquiline, including patients from the most vulnerable populations, such as children, for whom criteria for use are still restricted. For patients with very limited treatment options, MSF teams continued to provide treatment with the combination of the two new drugs, despite lack of international recommendations. A total of 108 patients received Delamanid and Bedaquiline in combination, this representing one of the biggest cohorts in the world (Table 2). Important challenges remain, especially in India, where National authorities considerably limit access to these new drugs for patients in need.

Despite these small numbers, results from OCB supported projects on the use of new drugs were presented at several international conferences during 2017, and MSF commitment in scaling up and advocating for use of these life-saving drugs remains strong.

An injectable-free regimen for DRTB remains a priority. In Khayelitsha, preparation of the site for the roll out of the End-TB clinical trial was finalized at the end of 2017 and enrolments will start during the first quarter of 2018. In the meantime, the project will push for the introduction of an injectable-free short course regimen for vulnerable populations (children/adolescents and patients with advanced HIV) and new pilot projects will

Table 1: Number of DRTB cases detected per project in 2017

Country	Project	No. DRTB detected
DRC	Kinshasa	19
Guinea	Conakry	35
India	Mumbai	1,064
	Chhattisgarh	1
Malawi	Nsanje	2
Mozambique	Tete	1
South Africa	Khayelitsha	188
	Kwazulu-Natal	278
Ukraine	Dnepro	44
Zimbabwe	Mwenezi	2

Table 2: DRTB Outcomes for the 2015 cohort from Mumbai, India, Khayelitsha and Eshowe, SA and Kinshasa, DRC*

	Khayelitsha	KZN	Mumbai	Kinshasa
Treatment Success	44	62	57	80
Failure	1	4	13	13
Lost-to-follow-up	20	17	4	0
Dead	14	16	26	7
Not evaluated	18	1	0	0
Still on treatment	3	1	0	0

* Outcomes analysed refer to the 2015 cohorts

be opened in Baghdad, Iraq and Zhytomir, Ukraine where injectable-free regimens with new drugs will be rolled out under operational research.

3.3. HEPATITIS C

In 2017, three OCB projects implemented HCV diagnostic and treatment programs: Karachi (Pakistan), Meerut (India) and Kibera (Kenya). Karachi and Meerut are both urban settings where Hepatitis C affects the general population with iatrogenic transmission as the principal driver of the epidemic. In both settings, MSF teams implement simplified protocols for HCV diagnostic and treatment: in Meerut this is provided under the tertiary level district hospital; in Karachi HCV treatment delivery is decentralized and provided close to the affected community, with most of the support services integrated within the primary care facility. In both Karachi and Meerut, treatment is offered to patients who have chronic hepatitis C (CHC) and advanced

liver disease. In Kibera, the OCB team collaborates with a Médecins du Monde project which provides drug harm reduction services to people who inject drugs (PWID). Kibera offers HCV treatment to all PWID with CHC, regardless of liver disease stage, which has an HCV transmission reduction benefit.

All three OCB projects in 2017 enrolled 2,934 patients. Of these, 2,024 patients were initiated on treatment with DAA and 990 patients completed follow-up. Treatment outcomes varied across projects. Among those who completed the treatment regimen and returned 12 weeks after treatment completion to measure virologic response, more than 95% achieved HCV eradication. However, among those who initiated treatment, high rates of lost to follow up were observed in Kibera and Karachi; about half of those who were lost to follow-up, completed the treatment regimen but failed to show up for virologic testing to measure treatment response.

Table 3: Cumulative number of patients started on Delamanid, Bedaquiline or a Combination, December 2017

		Mumbai	Khayelitsha	KZN
Delamanid	Total Patients	107	120	3
	<18 years old	12	9	3
	>24 weeks	61	36	0
Bedaquiline	Total Patients	77	282	115
	<18 years old	5	11	1
	>24 weeks	50	97	0
Delamanid-Bedaquiline Combination	Total Patients	62	43	3

4. MONITORING AND EVALUATION AND OPERATIONAL RESEARCH

M&E support, provided mostly via a partnership with the University of Cape Town/CIDER unit was extended: ongoing adaptation of monitoring tools to new operational priorities (advanced disease, MCH, Prep etc.) moved towards integrated HIV/TB cohort monitoring tools, a new version of TIER.Net software (version 1.11) integrating new modules

for MCH/PMTCT, DRTB (long regimen) and options for personalised cohort quarterly reports.

Ongoing UCT/SAMU field support was provided in countries where Tier.net is used in MSF programmes: Malawi, Zimbabwe, Mozambique and Guinea, while in DRC and South Africa as national software country-wide. A specific M&E data management course for MSF staff working in these pro-

jects was organised in December 2017 in collaboration with UCT/CIDER.

2017 also saw a high number of OR activities across all projects, details of which are available in the operational research section. Findings were published and presented at a number of international conferences assuring wide visibility of MSF HIV/TB activities and strongly influencing the development of new WHO guidelines.

PROSPECTS FOR 2018

In 2018, MSF will face ever more critical decisions and priority settings than previous years. Activities will include:

- A focus on HIV advanced disease and mortality reduction within a classical clinical role of early detection of treatment failures and specific approaches for treatment re-initiation of patients after treatment interruption
- Developing special management tools and guidelines, extending the agenda of differentiated service delivery models from stable patients to advanced disease patients
- Ensuring improved access to minimal quality HIV/TB care in low coverage settings and emergency contexts, and striking a balance between addressing HIV incidence and mortality reduction coverage around the “90-90-90” strategy in regions with very low coverage
- Primary prevention and PrEP in specific groups with extremely high HIV incidence
- Treating TB, including DRTB, with simplified DRTB regimens, injectable-free short course regimens, and scaling up access to new drugs
- New TB prevention strategies with access to shorter treatments for latent TB infection
- Treatment of co-morbidities including new regimens HCV, Hepatitis B, HPV, and early detection and management
- Improving access to HCV treatment for hard-to-reach populations

INFECTION PREVENTION AND CONTROL

1. OVERVIEW

People should not get sick while seeking health care. However, millions of people globally are affected every year by Healthcare Associated Infections (HAIs). A HAI is an infection that is acquired by a patient while receiving care in a hospital or other health facility and that was not present or incubating on admission.¹

The World Health Organization (WHO) describes Infection Prevention and Control (IPC) as a practical, evidence-based approach aimed at preventing patients and health workers from being harmed by HAIs, which are often avoidable. IPC is crucial to ensure patient safety and quality of care, and it is relevant to every health worker and patient, at every health care interaction.¹

In an era where Antimicrobial Resistance (AMR) is becoming a global threat, and considering that hospitals are hotbeds for AMR, IPC is ever more crucial. While the severity of illness of hospitalized patients in MSF projects is increasing, and the use of invasive devices is expanding, there is a higher risk for HAIs, often caused by AMR pathogens. Hospitals also act as referral sites for difficult-to-treat infections. As such, the need to avoid cross-transmission within and between health care facilities is paramount.

The IPC unit works in close collaboration with the AMR task force and several technical referents in the Medical Department (Infectious diseases, diagnostics, paediatrics, surgery, nursing care, sexual and reproductive health, pharmacy and medical equipment) to ensure the integration of IPC measures in all relevant guidelines, protocols and tools within MSF-OCB.

Implementation strategies to improve IPC are multimodal and include the following components: i) system change: availability of the appropriate infrastructure (including WASH) and supplies to enable and enhance good IPC practices. Basic structural requirements include organizational aspects, hospital-built environment (infrastructure and hospital design), material and equipment and ancillary services; ii) training; iii) monitoring and feedback.

To provide some insight into MSF-OCB IPC interventions and needs in 2017: there were 28 facilities with Inpatient Departments (IPD); 11 projects offering surgical care and responsible for 24,155 surgical interventions (5017 Caesarean Sections; 1006 orthopaedic implants for closed fractures); 36,523 children under five were admitted to IPD (excluding ITFC); and 7,417 exits from in-patient neonatal services; 117 patients required invasive mechanical ventilation in an intensive care unit (ICU).

2. PROGRAMME ACTIVITIES

2.1. DIRECT SUPPORT TO THE FIELD

In 2017, the IPC Mobile Implementation Officer (MIO) conducted field visits in Central African Republic (CAR), Guinea, Burundi, Pakistan, Democratic Republic of Congo (DRC) and Haiti. The main objectives of the visits were to: i) support outbreak responses; ii) tailor on-the-job training for the IPC supervisors; iii) conduct situation analyses for IPC implementation, design an action plan accordingly and initiate implementation of activities with the field teams.

The IPC team participated in a workshop in Haiti to better understand the problems facing the hospital, define a strategy for improving the quality of care in the hospital, and establish a multidisciplinary action plan.

2.2. IPC AND AMR

In March 2017, an outbreak of *Klebsiella pneumoniae* Extended-Spectrum Beta Lactamase (ESBL-KP) was reported at the neonatal unit of the MSF-supported maternity in Bangui, CAR. IPC interventions focused on strengthening standard precautions (hand hygiene, cleaning and disinfection of the unit's environment, and reprocessing of reus-

able medical equipment); implementation of water-free care for new-born hygiene, reorganization, and infection prevention in care. Hospital admission criteria were also revised and bed capacity reduced.

The focus of MSF's AMR activities is hospitals. The minimum package combines IPC and structured Antibiotic Stewardship (AS) interventions; and the full package includes the latter plus access to bacteriology as well. Strengthening IPC interventions was done in several hospitals such as Ahmad Shah Babah in Afghanistan, Tabarre in Haiti, and all hospitals supported by the IPC MIO.

¹ WHO/HIS/SDS/2016.10. Health care without avoidable infections. The critical role of infection prevention and control. <http://apps.who.int/iris/bitstream/10665/246235/1/WHO-HIS-SDS-2016.10-eng.pdf>

2.3. TRAININGS

In 2017, IPC training was conducted for a range of MSF personnel: surgeons, anaesthesiologists, emergency doctors, medical equipment managers, and other medical staff. Tailored on-the-job training was also provided during the field visits of the IPC MIO.

2.4. OTHER ACTIVITIES

The IPC unit contributed to the plan and design of several new hospitals: Kenema Hospital, Kunduz Hospital and Port-au-Piment Patio. Specific support was provided to the Sterilization Department in Tabarre, Haiti where a new autoclave, ultrasonic bath, wa-

ter gun and air gun have been introduced to improve the quality of the sterilization process. We were also involved in the revision of the MSF Ebola guidelines.

3. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- There is a need for standardized tools and guidelines among the different MSF sections.
- Training of the IPC Supervisor remains challenging as there is lack of clarity around the role and responsibilities of this position.
- There are difficulties around having a dedicated IPC budget allotted to the field mission for the implementation of good IPC practices.
- Monitoring hand hygiene compliance and performing surgical site infection surveillance remains challenging in all projects.

PROSPECTS FOR 2018

- Stepwise IPC Approach (SIPCA) and policy implementation: this policy is still in the validation process. We propose to focus on three pillars in IPC:
 - Hand hygiene
 - Cleaning/disinfection of the environment and equipment
 - Transmission based precautions: such as contact precautions and isolation
- We will create bundles of care for the prevention of surgical site infections and catheter related bloodstream infections.
- We will opt for a stepwise IPC improvement approach, and strategies tailored to the local context.
- We will push for all projects to have the appropriate infrastructure (including WASH) and supplies in place for enabling and enhancing good IPC practices.
- Create a pool of IPC professionals: The IPC team is actively recruiting IPC professionals at the hospital level so to increase compliance with correct IPC practices.
- Sterilization: update the existing basics and the new challenges that present in context in middle income countries through the use of autoclave and automatic washer disinfectant.
- Define minimal IPC requirements for the insertion of internal fixation in orthopaedics.
- Outbreak preparedness: develop ways to respond in a structured and systematic way to hospital outbreaks of multi-drug resistant organisms. The latter is a relatively new area for MSF-OCB, as the final confirmation of the outbreak is based on having access to a bacteriology laboratory; specific expertise on the topic needs to be developed in MSF-OCB over time.

INTENSIVE CARE

1. OVERVIEW

Undoubtedly, intensive care units (ICUs) improve the ability of medical teams to take care of severely ill patients. In the presence of skilled personnel and continuity of care, it is possible to recognize the critically ill patient, detect signs of organ failure and prevent death with timely interventions.

During 2017, Intensive Care was offered in specific units in three projects: two of them dealing mainly with trauma: Tabarre (Haiti) and Bujumbura (Burundi); the third providing general hospital care in Bili (DRC). All intensive care units (ICU) provided care at various levels (within MSF, level of care (LOC) 0 is the most basic care, and level 3 the most complex).

2. PROGRAMME ACTIVITIES

A total of 1,862 patients were admitted to the three ICUs during 2017. Despite contextual limitations, the quality of care provided in the units was maintained at a level deemed acceptable by international standards.

2.1. TABARRE, HAITI

At the beginning of the year, the ICU in Tabarre had 11 beds; this was reduced to six beds (two beds LOC 1 and four beds LOC 2) in October 2017 following a decrease in bed numbers across the hospital. Overall, the unit received 551 admissions, with the majority of cases (n=500, 86%) arriving from the operating theatre (OT). Cases of violent trauma (particularly abdominal trauma) and accidental trauma made up a large part of the caseload (180 and 211 cases respectively). The majority of cases admitted to the unit were for observation (424, 73%). The overall bed occupancy rate in 2017 was 81%, with the average length of stay being 6.2 days. The mortality rate was 12%.

2.2. BUJUMBURA, BURUNDI

The ICU in Bujumbura had eight beds at the start of the year, but this was reduced to six beds (four beds LOC 0 and two beds LOC 1) in October to improve the conditions of care. A total of 397 patients were admitted to the ICU, the majority coming from the Emergency Department and 26% from the OT. Violent trauma accounted for approximately 20% of admissions, the remainder of cases being due to accidental trauma. Fifteen per cent of patients were admitted with altered mental states. The bed occupancy rate was 59% and the average length of stay was 3.7 days (this relatively short length of stay may be due to the absence of an observation room in the Emergency Department; as such patients were sometimes admitted to the

ICU for a short period of observation rather than for critical care). The ICU mortality rate was 13%.

2.3. BILI, DEMOCRATIC REPUBLIC OF CONGO

OCB support to the Ministry of Health (MoH)-run General Referral Hospital of Bili began in February 2015 following a large influx of refugees from DRC's war torn neighbour, the Central African Republic (CAR). Important logistical measures were taken to improve the existing infrastructure of the hospital, and health care was offered for local and refugee populations. In 2017, following an evaluation of the project, a decision was made to focus MSF support on the treatment of malaria; the handover of other activities was completed by the end of June 2017.

At the beginning of 2017, the ICU comprised six beds; this was increased to nine beds, all at LOC 0. A total of 914 patients were admitted to the ICU during the year. The majority of these were malaria-related cases requiring close observation. The average length of ICU stay was 14.7 days, the bed occupancy rate was 91%, and 85% of patients were transferred to other wards following their ICU stay. The mortality rate was 7%.

3. HUMAN RESOURCES AND TRAINING

In the countries where MSF has set up ICUs, not only is intensive care not part of the national medical curriculum, but levels of education and skill-sets among ICU medical staff differ widely. The main challenge relates to the skills of local doctors. Doctors (and nurses) require specific knowledge, specific mind-sets, specific skills related to the physiology of the critically-ill patient, specific clinical management strategies, and knowledge of life-saving procedures. While in Bujumbura

and Bili the local staff were general practitioners, in Tabarre they were anaesthesiologists. Against this backdrop, international doctors and nurses specialized in intensive care have had to be recruited to the field, and training in intensive care has been tailored to the specific knowledge base, skills and experience of each group of ICU staff. During 2017, specialized expatriate support was provided through ongoing training - both scheduled training sessions and bedside training.

This sort of specialist training, together with training through different courses (for example the BASIC-DHS for nurses and medical doctors), is the cornerstone for improving ICU human resource capacity (nursing and medical) and ultimately ICU care. And following the "do no harm" medical ethical principle, biomedical devices and techniques (e.g. mechanical ventilation) are only introduced once the staff providing critical care have been specially trained in their use; these devices and techniques are deemed ineffectual or even harmful until then.

4. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- Limitations posed by the contexts in which MSF has set up its ICUs, mean that it has not been feasible to provide certain types of care (e.g. parenteral nutrition, neurosurgery, and haemodialysis) and this has to be respected.
- A standardised training program for national staff should be planned for and undertaken before a new project sets out to include an ICU.
- Expatriate staff working in projects with ICUs should be briefed thoroughly on the project context and characteristics and provided with ongoing support from the Medical Department. Constraints around care delivery and therapeutic capacities for each specific project should be emphasised.

PROSPECTS FOR 2018

- Greater emphasis needs to be put on the implementation, follow-up and standardisation of ICUs in OCB hospitals.
- Ongoing efforts need to be made to develop and standardise guidelines for intensive care in MSF settings.
- Provision of bedside training and refresher courses needs to be ongoing, with a strong emphasis on infection control.
- The BASIC-DHS course for doctors and nurses will be reinforced during the year and the course will be run in a number of different countries.

LABORATORY

1. OVERVIEW

2017 saw the closing of some laboratory activities, offset by the opening of others.

An Antibiotic Resistance Multidisciplinary Task Force (ABR TF) composed of different Operational Centre (OC) Medical Department members (infection prevention control, laboratory, bacteriology, infectious diseases), together with Operations of different OCs and the Access campaign, was created to develop the initial road map for tackling antibiotic resistance.

Focus on a technical bacteriology dossier was ongoing to provide on-the-ground support for OCB activities in Afghanistan, Iraq and the Democratic Republic of Congo (DRC)-HIV project.

Most projects in high HIV burden areas were involved in scaling up the implementation of an advanced HIV disease diagnostic package; there were also feasibility studies ongoing to assess decentralization of this package to mobile clinics and community health centres. Engagement with manufactures took place for the request of simplified, instrument-free diagnostic tests for other diseases associated with advanced HIV, including septicaemia.

Polyvalent point-of-care (POC) devices for multi-disease testing (HIV viral load (VL), HIV Qual, Tuberculosis (TB), Human Papillomavirus (HPV), Hepatitis C virus (HCV) VL) were implemented in different settings. HIV self-testing using rapid diagnostic tests (RDTs) were implemented in a growing number of projects both as pilot research and actual implementation, mostly among key populations.

As many MSF-led HIV VL scale-up projects have been handed over to respective Ministries of Health (MoH), MSF was using the GeneXpert assay HIV Quant for priority patients where quick VL results are required, and HIV Qual for rapid diagnosis of exposed infants. There was a renewed focus on forging collaborations with British Columbia University for HIV drug resistance testing.

In other projects (e.g. India, Ukraine), TB, Hepatitis B and C (HBV and HCV) diagnostic activities were being scaled up slowly. Large strides also continued to be made in the area of POC diagnostic tests with increased task shifting of these testing services to lay workers (nurses and counsellors).

2. PROGRAMME ACTIVITIES

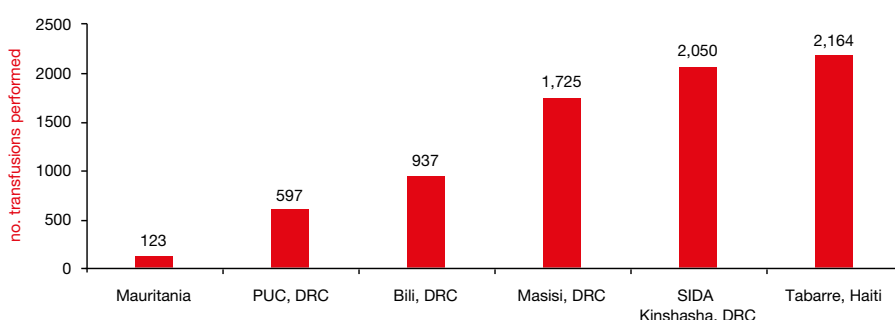
2.1. LABORATORY ACTIVITIES AT A COUNTRY AND PROJECT LEVEL

In 2017, laboratory activities were supported in 28 projects across 15 countries (Annex).

Blood transfusions were supported in 16 laboratories. In Haiti, 2,164 transfusions were performed in 2017. A total of 4,372 transfusions were performed across the four DRC projects, a substantial increase since 2016 (n=3,297 increase of 32%). Mauritania performed 123 transfusions, the majority of these (45%, n=56) being performed in maternities.

In Ukraine, the MSF Dniepro prison project (TB Lab) was closed due to complex political challenges. In India, the Mumbai project continued to focus primarily on the provision of holistic care for complicated drug-resistant TB (DR-TB) among adults and children. The DR-TB cohort comprised around 460 patients, and the HIV cohort around 200 patients. The project faced delays due to administrative and legal constraints.

Figure 1: Number of blood transfusions performed per project, OCB, 2017



The Meerut project continued to successfully scale-up HCV diagnosis and treatment using pan-genotyping direct-acting antivirals (DAA). The Beira project in Mozambique provided basic infrastructural upgrades to the Beira Central Hospital Emergency laboratory so that advanced HIV diagnostic tests could be performed. In 2017, the Beira Central Hospital had over 1,000 beds.

Historically, the Zimbabwe project has focused primarily on HIV/TB. However, in 2017, screening tests for non-communicable diseases (NCD) (e.g. HBA1C, glucose, lipid

profile) also began to be offered. The Zimbabwe project also began piloting the HPV assay on the GenXpert platform using patient-collected (self-collected) cervical samples and HIV self-testing.

In Malawi, MSF provided ongoing support for HIV/TB activities in four prisons and one laboratory in the Nsanje District Hospital - which provides care to a large HIV cohort. The MoH continued to provide VL testing at the Hospital, with MSF carrying out gap filling as needed. Intensive decentralization of the advanced HIV diagnostic package also continued.

In both South Africa and the DRC, HIV self-testing and the advanced HIV disease diagnostic package underwent extensive pilot-implementation.

With the support of IT and the E-Health unit, the Laboratory in Kinshasa piloted a Laboratory Information System (LIS) to improve the efficiency of the laboratory; the LIS will be fully implemented in 2018.

2.2. REFERENCE LABORATORIES

OCB continued to work with the Institute of Tropical Medicine (ITM) in Antwerp, Belgium, as an HIV reference laboratory. Additionally, collaborations with the National Institute of Communicable Diseases/National Health Institute (NICD/NHLS) and Global Laboratories in South Africa continued in 2017. Collaborations with a Canadian laboratory (British Columbia University) for HIV drug resistance testing are still being finalized.

3. QUALITY CONTROL

In 2017, all OCB laboratories were enrolled in the Proficiency Testing Programme of the NICD/NHLS to ensure high quality laboratory results. In Nsanje (Malawi), Kinshasa (DRC)

and Zimbabwe the laboratories were also enrolled in the Centre for Disease Control External Quality-control Systems (CDC EQAS) programmes. Additionally, some countries also received Quality Control checks through their national Proficiency Testing scheme.

The use of POC tests (e.g. HIV rapid diagnostic test, HBsAg) by lay workers, nurses or counsellors in MSF projects suffers from lack of quality control schemes to assure the reliability of results. In most cases, proficiency testing only assesses laboratories and laboratory technical activities; task-shifted rapid testing is yet not monitored and as such, development of such a quality control system is ongoing.

4. OPERATIONAL RESEARCH

Throughout 2017 there were several research projects at various stages in OCB laboratories. These included:

- GeneXpert HIV-1 Quantitative study: A laboratory validation: Harare, Zimbabwe (completed and published in PLoS One, March 2018)

- Evaluating DBS for HIV VL testing using the Abbott m2000 system: Thyolo, Malawi
- Feasibility and costing study on the use of GenXpert for polyvalent testing in a decentralized rural project; Zimbabwe (completed)
- Use of TB LAM and centrifuged urine on GenXpert MTB/Rif for diagnosis of TB compared to sputum culture: Kinshasa, DRC (cancelled due to logistics)
- Diagnostic accuracy of CD4 cell count testing on BD FACS count in a mobile van in a rural setting: Zimbabwe (data collection complete).
- Assessment of the feasibility of implementing urine TB Lipoarabinomannan (LAM) in DRC, Centre Hospitalier Kabinda (ongoing)

5. TRAINING

During 2017, three national staff technicians attended the Laboratory Workshop organised by MSF Austria, and one national staff technician attended the Laboratory Workshop organised by OCA in Nairobi, Kenya.

6. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- MSF should actively campaign for the development of a Yellow Fever RDT to reduce the burden of work on Reference Laboratories in times of outbreaks.
- The Standard Operational Procedures (SOPs) on storage and transportation of dried blood spot (DBS) samples for HIV genotyping need improvement.
- Proficiency testing for POC tests conducted by nurses and lay workers ought to be provided, as it is the responsibility of the laboratory to assure quality of the results.
- Significant challenges are still being faced in relation to the implementation of VL testing, namely reagent re-calls, machine break downs and, most recently, the Abbott calling for its DBS WHO prequalified method not to be used due to its under-performance. Therefore, there is a need for the Access campaign to lobby for countries to consider a mix of platforms.
- Significant challenges are still being faced with regards the quality of results and overall services for HIV genotyping at Global laboratories in Durban (South Africa). There is a need to quickly engage the British Columbia University laboratory in Canada.
- HIV self-testing implementation in MSF was very slow and with limited guidance on assurance of quality of the results. There is a need to be pro-active in piloting new tools that have been approved and recommended by the WHO.
- The handover of VL testing to the MoH in Maputo Mozambique is facing major challenges, and the sustainability of this project seems doubtful. MSF is now re-engaging with the Mozambique MoH and other health partners to provide mentoring and ensure sustainability.
- Management of the HIV VL liquid waste is unclear, with some sites having no reliable incinerator to effectively destroy the toxic waste.

PROSPECTS FOR 2018

- Preparation of the laboratory in Khost, Afghanistan, with a microbiology set-up for the testing of blood cultures, will start in July 2018.
- A Reference Laboratory for the identification of bacteria needs to be identified especially in the projects in Iraq and DRC.
- The MSF Technical Bacteriology Manual Commencement of Hospital Emergency laboratory services in Biera, Mozambique will continue to be edited.

- The MSF FAQ booklet for HIV Self-Testing in MSF field projects will be disseminated.
- Technical support will be provided to the MoH and partner-led Line Probe Assay (LPA) lab for DR-TB in Zimbabwe.
- Laboratory support will be given to the National Referral Laboratory at the Zhytomir Hospital for MDR-TB activities.
- Introduction of anti-TB drugs Bedaquiline and Delamanid including a nine-month short drug-resistant TB (DR-TB) regimen, at Zhytomir Regional Hospital.
- Renovation of the Zhytomir Regional Hospital Laboratory and introduction of the Line Probe Assay (LPA) for the detection of resistance to first and second line anti-TB drugs, and laboratory consumables for other tests (TSH (Thyroid stimulating hormone), HCV, HBV (Hepatitis C virus), etc).
- Use of the GeneXpert analyser will be introduced for:
 - HPV cancer screening using both self-collected and provider collected swab samples in Zimbabwe
 - A mobile laboratory to detect HIV among commercial sex workers in the corridor projects in Mozambique and Malawi
- Support and capacity building for the MoH TB laboratory activities in the Mumbai project will begin.
- Decentralization of testing for the Cryptococcal antigen (CrAg) and the TB LAM antigen will be initiated in KwaZulu-Natal, Zimbabwe, Malawi, and the DRC.

MALARIA

1. OVERVIEW

Malaria continues to be a leading cause of morbidity and mortality in MSF projects under Operational Centre Brussels (OCB), particularly in South Sudan, the Democratic Republic of Congo (DRC) and the Central African Republic (CAR).

The new MSF Intersectional Malaria Policy document underwent a long and arduous validation process by the Medical Directors during 2017, but will be ready for dissemination in 2018.

Roll out of the Parasite Lactate Dehydrogenase (pLDH) based Rapid Diagnostic Test (RDT) continued during 2017 in Nigeria and South Sudan. Implementation in DRC, Guinea and Sierra Leone was rendered difficult by the fact that pLDH is not the standard RDT used in these settings and MSF has a less influential role in supply of RDT (gap filling in case of RDT stock outs).

Efforts to strengthen case management in the community were illustrated through the implementation of an integrated community case management (iCCM) approach in Kouroussa (Conakry, Guinea) and Bili (DRC).

A malaria control project continued in Venezuela - an atypical setting for MSF both on account of it being outside of the African continent and having a high burden of *Plasmodium vivax* (80% of the malaria caseload).

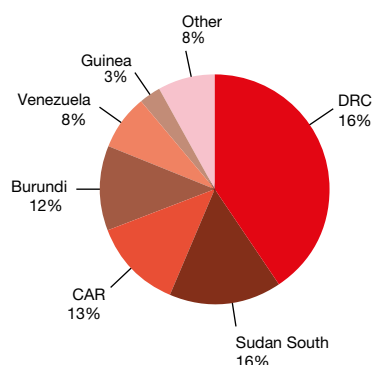
An Operational Research project in Cambodia addressing the emerging threat of artemisinin resistance was expanded geographically.

2. PROGRAMME ACTIVITIES

2.1. MALARIA CASES

In 2017, 311,601 confirmed malaria cases were treated in OCB projects, an increase of 29% compared to 2016. This increase is mainly due to new projects opening in Bolivar (Venezuela) and Bili (DRC), and the malaria outbreak in Gitega (Burundi). Four countries - DRC, South Sudan (including Blue Nile state), CAR and Burundi - contributed 81% of all the cases (Figure 1).

Figure 1: Distribution of confirmed malaria cases by country for all OCB projects, 2017



2.2. DIAGNOSTICS

A total of 630,346 RDTs were performed in OCB projects during 2017, with a 55% positivity rate overall. By project, positivity rates were highest in Bili, DRC (72%) and in Kouroussa (67%), Guinea, indicating high malaria endemicity in these settings.

2.3. CASE MANAGEMENT

The project in Bolivar, Venezuela, continues to focus on malaria case management and vector control. Illegal mining is the main economic activity in the area and the nature of this operation creates a host of breeding sites for the *Anopheles* mosquito. The mines also employ many internal migrant workers who come from non-malaria areas and who are thus susceptible to malaria. This setting is somewhat unique for MSF in view of the high proportion of *Pl. vivax* cases (80% of the malaria caseload), and also because elimination of malaria in the area is, in principle, possible; the disease had been eliminated up until the 1990's but re-emerged due to the absence of control activities and possibly because of migration.

A malaria case management project was started in Onitsha, Nigeria, to support the Ministry of Health (MoH) health structures in the area.

2.4. CASE MANAGEMENT – SEVERE MALARIA

The roll out of injectable artesunate in MSF projects, as a first-line treatment for severe malaria, was completed in 2017. However, introducing this drug as a pre-referral treatment in health centres (in projects in Guinea and Burundi for example) has been problematic due to government restrictions.

Rectal artesunate remains one of the most effective and safest pre-referral treatments for severe malaria at the peripheral healthcare level, but this drug is still under-used in a number of MSF projects. There were supply problems with pre-qualified rectal artesunate during 2017, but these have since been remedied.

2.5. COMMUNITY MANAGEMENT OF MALARIA

Efforts to strengthen case management in the community were demonstrated by the integrated community case management (iCCM) projects in Kouroussa (Conakry, Guinea) and Bili (DRC). Roll out of iCCM on a large scale remains a challenge.

Activities in the project in Bangassou - where malaria treatment had been introduced at health post level - had to be suspended due to security constraints.

2.6. OUTBREAKS

The major malaria outbreak reported in Burundi in 2016 was only officially declared an epidemic by the government in 2017, and only then did MSF receive permission to intervene. The response in Nyanzoro, Gitega Province, initially focussed on supporting primary health centres and Ntita hospital, and assuring the public that treatment was free and legitimate in quality. During 2017, a total of 36,847 confirmed malaria cases were treated in response to the outbreak. An indoor residual spraying campaign was unfortunately abandoned due to budget constraints, but two rounds of spraying are planned for 2018. Two retrospective surveys assessing mortality, access to malaria treatment, malaria prevalence and bed net coverage are also planned for 2018 to evaluate the intervention.

A malaria outbreak in Turkana, Kenya - a semi-arid area prone to malaria epidemics - was reported to MSF in July. In response to the outbreak, mobile teams were deployed, and logistical support provided to the MoH to assist in the distribution of bed nets. Due to delays in the reporting of the outbreak and delayed action, the MSF response probably had little effect. A surveillance and response plan is being prepared to prevent such delays in the future.

2.7. PREVENTION

In 2017, concerted efforts were made to implement malaria preventive tools such as long lasting insecticide treated nets (LLIN) and indoor residual spraying in the community. The new OCB malaria policy stipulates the use of LLINs impregnated with piperonyl butoxide (PBO), rather than pyrethroids, due to emerging resistance; this is a transitory measure until new bed-nets become available.

In Doro, South Sudan, indoor residual spraying took place in the community during 2017 and was associated with a fall in malaria incidence, relative to 2015-2016. Repeat spraying has not yet been confirmed for 2018.

Operational research investigating indoor residual spraying of houses in Bangassou, CAR, had to be suspended due to security issues.

3. OPERATIONAL RESEARCH

The research project that is ongoing in Preah Vihear, Cambodia, was further expanded during the malaria transmission season of 2016/2017 to include more villages. The project aims to better inform local malaria-elimination efforts in areas where there is partial resistance to Cambodia's first line

antimalarial drug, artemisinin. The study is investigating the effects of a strengthened system of early diagnosis and treatment of symptomatic patients, together with a strategy promoting voluntary testing and treatment of asymptomatic people at high risk of malaria (such as those working in the forest or on plantations). The study is also collecting blood samples for polymerase chain reaction (PCR) to test for molecular markers of drug resistance. Use of a new assay, Hypersensitive Rapid Diagnostic Test (HSRDT), will replace PCR and a comparative study assessing HSRDT versus PCR under field conditions, is being undertaken to measure accuracy of the HSRDT.

This active "screen and treat" strategy was expanded to include a total of five villages during the 2016/2017 malaria season, and a "permanent screening and treatment" strategy was piloted in four other villages for villagers at high risk of malaria. During 2017 (and continuing into 2018), the scope of the project was expanded to include surrounding districts - the rationale being to create a 'buffer' belt around the forest that prevents malaria transmission within the forest and ultimately leads to the elimination of *Pl. falciparum* here.

4. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- Roll out of the pLDH RDT was hampered in settings where this is not the standard test in use and where MSF works in collaboration with the MoH to oversee the gap-filling of RDTs procured through the Global Fund and the Presidential Malaria Initiative.
- In the event of a malaria outbreak, current response plans based on data reported by health structures, and using current indicator thresholds, often lead to delayed and ineffectual action (particularly in relation to vector control). In certain settings, relying on other potential alerts (such as unforeseen rainfall or flooding) might also prove useful and should be trialled.
- The diagnosis and treatment of patients with fever needs to be improved. The systematic use of antibiotics for patients with a negative RDT must be avoided, and for patients with a positive RDT or thick blood film, other causes of fever (especially life threatening conditions such as meningitis or pneumonia) must not be overlooked. This is especially important in holoendemic contexts where coinfections are common and a fever can be due to a non-malaria cause even in the presence of a positive parasitology.
- Vertical programs focussing only on malaria, or even only on under-fives, are difficult to implement particularly at the hospital level where many of the support services (such as blood transfusions) are provided for other diseases/populations too.

PROSPECTS FOR 2018

- A pan pLDH-based RDT (which has a better specificity compared to the currently used HRP2-based RDT) will be implemented in settings with high malaria transmission. Test performance under field conditions will be monitored with a validation study in Bili (DRC).
- Operational research planned in DRC will continue to focus on the issue of adherence to artemisinin-based combination therapy (ACT).
- The new MSF Intersectional Malaria Policy will be disseminated and rolled out in all projects.
- The possible termination of various programmes will need to be discussed in light of security issues (Bangassou) and threat of closure by the host government (Venezuela).
- An intervention for treating malaria at community level, health centres and in paediatric wards, initiated in Kouroussa, (Conakry, Guinea) and Bili (DRC), will be expanded.
- Surveys assessing mortality retrospectively, access to malaria treatment and malaria prevalence are planned for 2018.

MEDICAL EQUIPMENT

1. OVERVIEW

2017 was a tumultuous year with many new types of health structures being set up and technical challenges requiring solutions for OCB. Approximately 230 different machines were being used in MSF-OCB projects during the year, with over half of these being diagnostic equipment for laboratories. New European Union (EU) regulations for medical devices forced a number of MSF's suppliers to stop producing some of the standard equipment used by MSF, with many more suppliers likely to follow suit.

2. PROGRAM ACTIVITIES

2.1. TECHNICAL SUPPORT

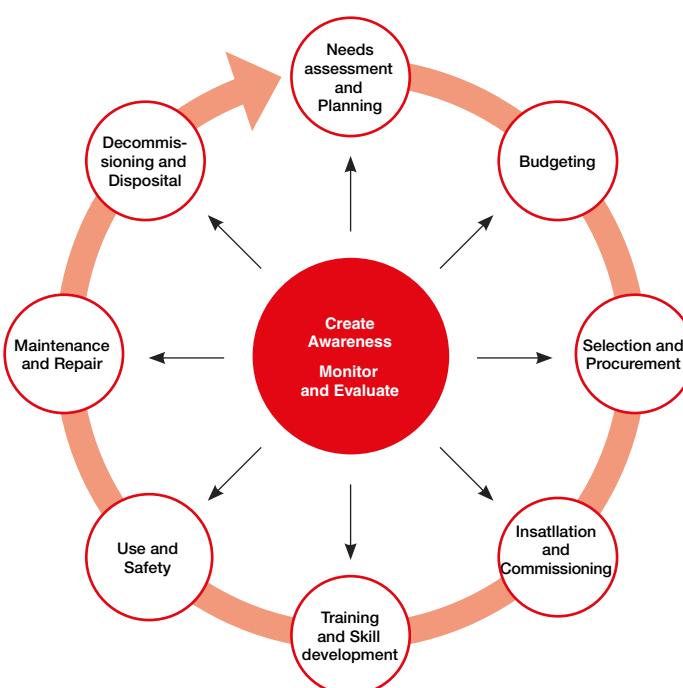
To ensure that the core principles of patient safety, continuity of medical activities, and quality assurance were upheld in relation to managing medical equipment at a field level, focus was officially shifted from basic training on maintenance and repairs, to training on all of the steps involved in managing the lifecycle of medical equipment (Figure 1).

The Logistics, Medical and Supply departments continued to work in synergy to provide projects with the information and support required for the effective and efficient use of ever more complex equipment. Nonetheless, it has become increasingly clear that a stronger stance needs to be taken in relation to limiting the complexity of technology. To mitigate the perplexity that fast changing types, brands or models of equipment introduce, several initiatives were developed during 2017:

- Electrical safety testing
- A centralized support system for first line questions
- Validation frameworks and guidance on the use of external medical services in the field
- Contingency planning tools
- New information sharing platforms

The Mobile Unit Surgical Trailer (MUST) - developed for MSF-OCB in 2017 - is a high quality mobile health structure designed for fast deployment, with European hospital-equivalent standards of sterilization and radiology equipment. The MUST units however are tremendously challenging to support due to their technological complexity and due to the unknowns around which countries they will be deployed to.

Figure 1: Steps involved in managing the lifecycle of medical equipment



2.2. FIELD VISITS

Field visits to OCB missions in Lebanon, Kenya and India were carried out by the Medical Equipment referents, and to CAR, Haiti, and the MUST production site in Germany, by the X-ray Mobile Implementation Officer (MIO). The Biomedical MIO provided technical support to missions in Burundi, DRC, Pakistan, Sierra Leone and South Sudan.

3. INTERSECTIONAL COLLABORATIONS

The Biomedical Contact Group developed greater visibility and voice in MSF through bi-annual meetings, sharing of information, intersectional division of tasks, presence in other medical Working Groups, and combining project visits. The bi-annual meetings included the Diagnostic Imaging Working Group, working to improve the use and maintenance of radiology and ultrasound equipment.

Unity between sections was facilitated by local supplier mapping and validations, intersectional development of SOPs, and increased sharing of resources and knowledge; such interaction should help to decrease overhead costs.

4. TRAINING AND HUMAN RESOURCES

Informal on-the-job training (tailored specifically to the contextual needs of the field) formed a large part of the biomedical training agenda.

Formal trainings held in 2017 included:

- Two eight-day Intersectional Biomedical Training Courses, held at the Espace Bruno Corbé (EBC) training centre in Brussels. Priority was given to National staff, but expatriates involved in hospital logistics, or those preparing for referent positions, were also accepted

- A Medical Equipment module was included in the Preparation for Primary Departure (PPD) course, the Hospital Management Team Training (HMTT), the First Line Medical training (FLMT) and the Logistics Tactical Training (TT)

Finally, an e-learning module for basic equipment was in the process of being developed by Operational Centre Paris (OCP) during

2017, with Intersectional support provided to develop it into a movement wide training platform.

An 'After Sales Service' Specialist was hired by MSF Supply to develop a clear framework for international repairs, and to initiate a project for better asset management.

The International Diagnostic Imaging Team hired a Diagnostic Imaging Advisor to focus on ultrasound technology and its applications.

Quality assurance of medical equipment at an international level was the ambitious challenge and task taken on by the Medical Equipment Quality Assurance Officer (a new member of the Intersectional Quality Assurance Team).

5. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

Hospital-based medical activities compel MSF to treat an increasing number of patients requiring highly specialised care. And yet, striking an objective balance between what is needed and what is feasible in countries that lack the support services for diagnostic and specialized care equipment, is extremely difficult, albeit critical. Clear limits need to be set around the feasible level of complexity of field-based technologies, without compromising the innovative and fast evolving nature of OCB.

The challenges linked to long delays encountered when equipment is sent to Brussels for repair, are being resolved through collaboration with MSF Supply. Regarding maintenance and calibration of large laboratory automated equipment, more autonomy has been handed over to the field to negotiate arrangements with local representatives of manufacturers, after expiry of the equipment's warranty period.

The year 2017 saw many duplications, many clean-ups, and many damage control activities. This has reinforced the need for a more proactive and movement-wide approach regarding biomedical equipment - this to ensure better and faster responses to operations in the field.

PROSPECTS FOR 2018

Contingency planning and user trainings for medical equipment will be a priority in 2018, not only taking into consideration potential risks to patients, but risks to the equipment users and medical programs too.

Efforts will be taken to make international after-sales services more structured and efficient.

In 2018, a series of supporting documents will be produced including:

- An Intersectional Medical Equipment Management Guideline
- An additional set of user and maintenance protocols for standard MSF medical equipment

MENTAL HEALTH

1. OVERVIEW

Excluding HIV/TB programmes, Operational Centre Brussels (OCB) provided Mental Health and Psycho-Social Support (MHPSS) activities in 50 projects across 24 countries during 2017. The number of emergency or short-term interventions with a MHPSS component decreased significantly (there being only three of these projects in 2017): one in the Moria Refugee Camp in Lesbos providing services to children and their parents; a conflict-related intervention in Iraq; and a project in Venezuela responding to the increased violence that was seen during the 2017 protests. Thirty-nine projects with a MHPSS component remained open at the end of 2017.

A number of projects with a MHPSS component have an important focus on migrants.

2. PROGRAMME ACTIVITIES

There were shifts in the locations of projects providing care for migrants following contextual changed models that came into play after the European Union agreement with Turkey. Our model of care, focusing on Psychological First Aid for transiting migrants, evolved into the provision of MH care for stranded migrants or to specific vulnerable subgroups. During the year, the closure of some programs for migrants (including Como/Ventimiglia (Italy), Turkey, Tunisia, and Sweden) were off-set by the opening of others (including a project in Calabria providing medical and MH care to migrants post-hospitalization; and another project in Roma with mobile clinics providing medical and MH primary care to migrants living in informal settings, out of the official reception system).

After the closure of the project in Sweden, MSF opened two new projects in Belgium in reception centres in order to reinforce preventative psychosocial activities (support groups, psycho-education sessions, occupational activities), and provide care for migrants with MH needs (including referral to second line care for severe cases). In parallel to this project, MSF began coordinating a Humanitarian Hub with different stakeholders working with migrants out of the reception system and providing multi-disciplinary services; MSF focused on providing psychological support.

An MHPSS assessment was performed on the Search and Rescue boat, cementing the need to provide MH interventions focused on Psychological First Aid and detection of severe/vulnerable cases. Several new projects linked to conflict opened during the year: one in Kanaga, Democratic Republic of Congo (DRC) providing MHPSS to victims of violence and sexual violence; one in Tshibala,

DRC, integrated into a nutrition project; and one in South Sudan to support the internally displaced population (IDP) who were victims of violence.

Finally, MSF opened a project in Nauru providing MH care, including psychiatric care, to migrants and the local Nauruan population. The objective of this project was to support the Ministry of Health to develop a decentralized community-based MH care system based on task-shifting

Below is a detailed description of the two projects with MHPSS integrated activities.

2.1. MENTAL HEALTH AND PSYCHOSOCIAL INTERVENTIONS FOR ADOLESCENTS WITHIN SEXUAL AND REPRODUCTIVE HEALTH CARE IN MARACAIBO, VENEZUELA (ZULIA STATE)

In Venezuela, all aspects of life (social, community, family, and individual) are affected by the ongoing political and economic crisis. This crisis has exacerbated the psychosocial risks already present before it, and created new ones at the same time. The national health care system is in a critical state.

In mind of this, MSF decided to open a project in Zulia state, where the community is largely indigenous (Wayú population). Within this population, education levels are low, and there are high rates of illiteracy and ethnical discrimination, not least in public health facilities. In 2016, MSF opened a sexual reproductive health (SRH) project, with integrated MHPSS activities, targeting adolescents in health facilities and communities of East and West Maracaibo Municipalities, Venezuela.

Adolescents' sexual health needs differ from adults, adolescents for one being at the beginning of their sexual and reproductive lives.

Adolescents have less access to family planning and safe abortion services, and are at higher risk of early and unwanted pregnancy, death in childbirth, serious pregnancy-related illnesses, sexually transmitted infections (STIs) and HIV/AIDS. Adolescents are also more vulnerable to the dangers of alcohol and other substance abuse. Furthermore, adolescents are often exposed to domestic violence, sexual violence, or intimate partner abuse, and are frequently abandoned by their families or partner in the event of pregnancy, leaving no support network and a lack of emotional and practical support for a single mother.

The ongoing socioeconomic crisis in Venezuela is influencing adolescents' sexual relationships. Due to the lack of consistent availability of contraceptives, there is a frequent switch between contraceptive methods, and this has heightened the rate of unplanned pregnancies.

Lack of information, health promotion and medical/psychological support for adolescents negatively affects health seeking behavior. This is a neglected issue, often unknown by health professionals who have difficulties in identifying early symptoms of ill-health in pregnant adolescents and their babies. On account of adolescent vulnerabilities, and the specific situation in Maracaibo, the main objective of the MSF project was to support health facilities to provide quality SRH and MH services to adolescents.

Following a needs assessment, the MH strategy that was implemented was designed to adapt interventions to the context, meet the needs of the adolescent population and work within the remit of available resources. MHPSS activities are adapted to the needs of adolescents, taking into account their physical, cognitive, emotional, behavioral and so-

cial development, and their cultural practices and habits (Wayús marry at an early age and the average age of a first pregnancy is between 13 and 14 years).

An “Adolescents Friendly Health Services” approach has been used in the project. Youth friendly services represent an approach which brings together three important service qualities: accessibility, acceptability and appropriateness. The World Health Organisation (WHO) recognizes that making services adolescents friendly improves generic health services in local communities and the competencies of health care providers to deal effectively with adolescents.

In the Zulia project, medical and mental health teams propose spaces, systems and processes, and activities that respect the needs and rhythm of adolescents. Special emphasis is placed on welcoming clients, and services aim to be inclusive (even of the most vulnerable), comprehensive (through the delivery of an integrated package) and effective (through MSF trained professionals).

Complementary to the curative approach, efforts to support programs of promotion and prevention at the community level have been undertaken. Training and awareness raising on mental health and sexual violence have been provided to different groups (adolescents, medical and mental health professionals, families, community leaders, teachers and other organizations) to: i) increase adolescent access to sexual and reproductive health services, ii) improve early detection of vulnerable adolescents and iii) increase quality of care provided. Group sessions for pregnant teenagers and teenage mothers have also been organised. Support groups for adolescents take place in schools, within health facilities, and through Clubs of Adolescents, and are aimed at reducing maternal morbidity and mortality, and reducing attitudes of rejection, mistreatment and negligence of newborns.

Mental Health and psychosocial interventions for adolescents in Maracaibo highlight the importance of an integrative and preventive approach in this vulnerable population. Activities implemented and aimed at different levels (beneficiaries, families, communities and health professional) have received a good level of acceptance, have had a positive impact, and access to and quality of care have improved.

2.2. MENTAL HEALTH AND PSYCHOSOCIAL INTERVENTIONS IN TRAUMA CENTER IN BUJUMBURA, BURUNDI

Against a backdrop of insecurity and instability, MSF-OCB opened a project in Arche Kigobe, Bujumbura in May 2015, focused on

the care of wounded victims of violence. The situation has remained unsettled since the elections in 2015, and in 2017 there was a major deterioration in the quality and financing of the health care system, including a decline in the availability of medicines and qualified personnel. The Arche Kigobe project provides trauma medicine services to reduce mortality and morbidity due to violence and accident-related injuries for the population of Bujumbura and the surrounding areas.

The trauma center has an emergency department, an operating theater, an Intensive Care Unit (ICU) with eight beds, an inpatient capacity of 67 beds, an out-patient department (OPD), a specialized unit for the care of victims of sexual violence, a Physiotherapy department (with referrals to Handicap International), a MH service and a Health Promotion team.

The MH service focuses on the MH difficulties of individuals and families who have suffered traumatic experiences. The team is always at the ready to intervene and respond to those wounded by new surges of violence in the community. Other forms of violence associated with trauma are also very prevalent (aggressions, gang-related aggressions, robberies, road accidents, domestic violence (mainly burns) and sexual violence). Mental health interventions aim to reduce comorbidity, psychological suffering, stress and emotional reaction during the acute response phase; they aim to prevent long-term consequences and help patients overcome the traumatic event. The MH team performs MHPSS activities through individual and family care and group support (counseling and psychoeducation groups, educational and recreational groups for hospitalised children, support groups for parents and relatives). There is a specific focus for patients who have experienced limb amputation, severe pain or burn injuries as these situations commonly lead to severe psychological suffering and adjustment difficulties.

Mental health and psychosocial interventions need to be integrated through a coordinated approach. In such a project, it is important to continue strengthening the links between Physiotherapy, the HP team and MH services during and after hospitalization, to reinforce links with families and communities and to improve continuity of care.

3. TECHNICAL GUIDANCE

Over the course of 2017, a number of activities were undertaken to develop or revise MH tools and guidelines including:

- Review of the Mental Health Psychosocial care chapter in the Ebola-Filovirus Guidelines
- Review of the Psychiatric conditions chapter in the MSF HIV/TB Clinical Guidelines

- Review of Patient Support, Education and Counselling Guidelines for children and adolescents living with HIV, and Patient Support, Education and Counselling Guidelines for adults living with HIV and/or TB
- Review of the Mental Disorders chapter in the MSF clinical guideline
- Writing of the MH chapter within the Non-Communicable Disease Clinical Guidelines
- Consolidation of the Intersectional MHPSS and SV Guidelines
- Development of a new standardised MH database
- Consolidation of MHPSS care in the Sexual Violence Guidelines
- Regular participation in different technical working groups (beginning in 2017)
 - Unaccompanied minors
 - Migrants
 - Palliative care
 - EMR (electronic medical records) for projects working with victims of torture
- Participation in meetings to improve MH access within Telemedicine Consolidation of a list of standardised MH indicators
- Development of a concept paper on new MH models and approaches (Narrative Exposure Therapy (NET), Cognitive Processing Therapy (CPT), Body Mapping) to define MSF positioning
- Assessment of technical validation for Ex-pat MH professionals
- Finalisation of an e-learning tutorial on Psychiatric Care
- Review of WHO documents “MH-Gap (Action Program Facilitator), Guide for Humanitarian Intervention Guide” and “MH-Gap (Action Program Facilitator), Operations Manual”

4. TRAINING, AND COMMUNICATIONS

4.1. TRAININGS

- Two intersectional MH training courses in The Netherlands for Field MH Activity Manager and MH supervisors (national and international staff)
- A module on psychological support to victims of sexual violence within the SRH training course in Brussels for Nurses and Midwives
- “Diagnosis and Treatment of Psychiatric Disorders” training course held in Nairobi, Kenya for General Practitioners, Clinical Officers and Psychiatric Nurses

- One-day module on integrated health, SRH and MH in urban refugee camps within the First Line Medical Training (FLMT)
- "Introduction to Mental Health in humanitarian contexts" within the Health Promotion (HP) training
- SGBV workshop in Johannesburg, South Africa

4.2. PRESENTATIONS, FORUMS AND PUBLICATIONS

- "MH and displaced populations", University of Toronto, March 2017 [Expat Psychologist]
- "MSF and Psychiatry", MSF-Denmark General Assembly, April 2017
- "A crisis of protection and safe passage: violence experienced by migrants/refugees travelling along the Western Balkan corridor to Northern Europe" – *Published in Conflict and Health*, April 2017
- "Mental Health and Trauma in Asylum Seekers Landing in Sicily in 2015: A Descriptive Study of Neglected Invisible Wounds", MSF OR Day, June 2017
- "Providing mental health care to migrants: different needs, different settings, example of Italy", session on Refugee Mental Health in Global North and Global South European Congress on Tropical Medicine and International Health in Antwerp, October 2017
- Presentation of a module on MHPSS care within emergencies at the Congress on Emergency and Disaster Medicine organized by Health Committee of St Petersburg and MSF, October 2017 [Expat Psychiatrist]
- WHO MH Gap Action Programme forum, Geneva, October 2017
- Three-day conference for the "European Network of Rehabilitation Centers for Survivors of Torture", Bucharest, November 2017

5. HUMAN RESOURCE

The number of MH expatriate positions increased (42 positions compared to 36 in 2016), and so too the number of expatriate psychologists/psychiatrists deployed (56 versus 50 in 2016). (NB. MH professionals working in European contexts (such as Italy, Belgium and Greece) are considered as National staff and are thus not counted in field deployments).

Among the expatriate staff deployed in 2017, six were psychiatrists (the number of psychiatrists in the pool of MH expatriates growing year on year). Eleven (20%) of 56 deployments were first missions which is an improvement on last year (14%). This reflects the work of the HR department to increase first-mission positions so as to ensure a renewal of the MH Expatriate pool. These efforts need to continue in 2018 in order to consolidate the pool and prevent gaps in operations. The position of Psychiatrist Consultant at Headquarter level was maintained, and a Mobile Implementer Officer will begin in 2018 to increase the quality of MHPSS activities.

6. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- A four-day workshop took place in Johannesburg, South Africa. The workshop covered sexual and gender-based violence (SGBV) from a broader perspective to include care for children and adolescent victims, intimate partner violence (IPV) and domestic violence, and sexual violence in key populations (e.g. sex workers, men having sex with men and prisoners).
- With the same objective in mind of broadening the scope of Sexual Violence, and better reaching vulnerable Groups, in 2017 the MH component of care for SGBV victims integrated new activities and approaches such as:
 - psychological group support (e.g. body mapping with teenagers, support groups for parents/care takers and psychotherapeutic groups for female victims of sexual violence)
 - improved management of child victims of sexual violence through training of staff and implementation of specific protocols; development of an approach to raise community awareness of child abuse; and reinforcement of a multi-sectorial approach including shelters, protection and legal aspects
 - improved engagement with adolescent through facility-based peer support, adolescent friendly trained staff and weekly adolescents clubs, as well as specific outreach mobilisation and health promotions targeting teenagers
 - inclusion of care for victims of domestic violence and IPV in specific projects (such as the Rustenburg project in South Africa)
- The integration of psychiatric care within the scope of the MHPSS package continued. The project in Kibera (Kenya) finalized the implementation and handover of a pilot project that integrated psychiatric care with task shifting. Some projects consolidated psychiatric care by sending national staff to psychiatric training followed by expatriate Psychiatrist supervision in the field. Projects that had a psychiatric component for the first time in 2017 were Akkar, Belgrade and Thessaloniki (with a consultant national psychiatrist) and Nauru and Ukraine (with an expatriate psychiatrist)
- By the end of 2017, all projects working with migrants, and most of those focusing on sexual violence, had a Social Worker integrated into the team, linking with existing external and social support, including legal and protection support

PROSPECTS FOR 2018

- Finalization of the International Mental Health and Psychosocial Care Guideline. MSF does not have an Intersectional Guideline that summarises the MHPSS approach and implementation of interventions; this international guideline will help to essentially consolidate the dozens of existing guidelines. A Coordinator position to develop the International MHPSS Guideline has been approved by the International Office.

- Development of projects to improve internal expertise on substance abuse. Current project proposals include the management of alcohol abuse in a MDR TB project in Zhitomir, Ukraine, and the management of substance abuse in Nairobi, Kenya. Detection and treatment are strongly linked with MH; the prevalence of MH disorders amongst substance abusers is very high. These projects should include psychiatric, psychologic and social support.
- The reinforcement of identification and treatment of severe mental disorders in NCD projects.

NURSING CARE

1. OVERVIEW

Nursing care is a core component of all MSF medical activities. As underlined in the recent Nursing Now campaign¹, “nurses and midwives make up almost half the global health workforce, are at the center of most health teams, and have a massive impact on health²”. This is perfectly represented in all MSF projects in the field in terms of the impressive number of health care workers providing nursing care (approximately 1820 national staff and 80 expatriate nursing staff positions). However, for a long time now, the level of technical support provided to them has not been adequate.

Among the nursing care workforce there are a wide range profiles from nurses who provide highly specialized care, to health care workers with informal or lower levels of education providing basic nursing care in complicated contexts.

The high volume of activities in field projects cover a wide range of specialties (orthopedics, pediatrics, Intensive Care Unit (ICU), newborn care, emergency medicine, HIV/AIDS, etc.). These highly diverse activities are provided by staff with heterogeneous educational backgrounds and this poses a challenge in relation to setting up functional health care projects.

2. PROGRAMME ACTIVITIES

2.1. NURSING CARE REFERENT

Over time, MSF has seen the evolution of larger and more technically advanced hospitals in its projects, in terms of bed capacity, volume of activities, complexity of care and higher levels of technicality. For this reason, OCB has committed to investing in adequate, sustainable and good quality nursing care; this led to the opening of a Nursing Care Referent position in the Medical Department in February 2017. The role of this position is focused on the quality and organizational aspects of nursing care.

The Nursing Care Referent is part of the Health Structure Unit and works closely with other technical referents such as the Infection Prevention Control (IPC) Referent, the End-User Pharmacy Referent, the Biomedical Referent, the Water, Sanitation & Hygiene (WASH) Referent and the Hospital Management Referent, in order to ensure coordinated and multidisciplinary technical support.

At the intersectional level, a Nursing Care Contact Group (NCCG) was initiated in 2017. This group includes all Nursing Care Advisors from the five MSF Operational Centers and aim to share expertise, produce/update MSF nursing guidelines, provide technical advice, develop tools and liaise with other MSF specialist technical working groups.

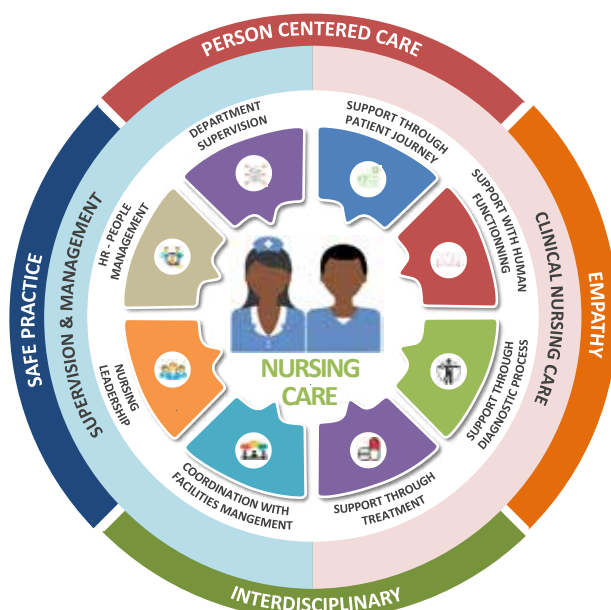
2.2. NURSING CARE FRAMEWORK

With the objective of defining what nursing care is and which competencies and skills are required for providing quality nursing care, a “Nursing Care Framework” was drafted by the NCCG. This was an important exercise as it will help to clarify the real operational role of nurses in MSF projects.

The framework makes explicit the expected standard of nursing care in MSF. It supports

nurses to develop the specialized knowledge and skills needed, and values the essence of nursing care within MSF. The essential characteristics of a competent nursing workforce can be grouped into three main categories: knowledge, skills and behavior. The basic values that lead to the development of these essential characteristics are person-centered care, safe practice, empathy and interdisciplinarity.

Figure 1: Nursing Care Framework



¹ Nursing Now campaign: raising the status of nurses. Crisp, Nigel et al. The Lancet, Volume 391, Issue 10124, 920 - 921

² Caird JRR, Kavanagh J, Sutcliffe K, et al. The socioeconomic value of nursing and midwifery: a rapid systematic review of reviews. London: EPPI Centre, Social Science Research Unit, Institute of Education, University of London, 2010

2.3. TECHNICAL SUPPORT

Technical support was provided mainly for specific nursing care issues or other related medical topics received from the field or from operations. Answers and solutions were developed at the Medical Department level, in collaboration with other relevant technical referents or within the intersectional NCCG.

Wound care

Wound care is a regular part of the package of care offered in the majority of MSF health care facilities and represents a high volume of activities. Seventeen projects reported performing 127,006 dressings in the outpatient department (OPD) and the emergency room (ER) – and this was just a small proportion of the overall wound care activities that took place (Note, data were not complete and therefore this is an underestimate). Current practices in MSF projects are often based on the experience of each individual supervisor, and wound care materials are often partly outdated; this does not thus facilitate optimal wound care.

Due to the urgent need for evidence based standardized wound care practices, revision of the “Wound Care Protocol” began in 2015 and technical contents of the protocol were validated and piloted in a surgical project during 2016. In 2017, the protocol was further adapted following feedback received from the field pilot and was deployed in another new project (Kunduz Wound Care Clin-

ic, Afghanistan). In the meantime, a learning strategy was proposed in collaboration with MSF Canada, and a project for Wound Care E-learning was approved and launched.

Vital signs chart / patient observation

Identifying and responding effectively to deteriorating patients is an essential component of providing high quality, safe care³. Patient observation including measurement of vital signs, use of vital signs charts and early identification of critically ill patients is a key nursing care process and was identified as high priority by the NCCG. The team is working to produce a reliable standard vital signs chart with an evidence-based Early Warning System adapted for all age groups, along with practical tools to help projects in all contexts implement the tools.

Intravenous (IV) care

In line with one of the priorities identified by the IPC referent in 2017 “prevention and surveillance of catheter related bloodstream infections”, the procedure for insertion and management of peripheral IV catheters for adult and children has been updated and evidence-based bundles of care have been created.

Nasogastric (NG) tubes / ENFit Connectors

In 2016, MSF decided to align with international standards in terms of feeding tube connections, and the current Luer connec-

tor systems will be replaced by the ENFit connector for NG tubes. Other types of NG tubes (with conical connections, Salem tubes) remain valid. In line with international recommendations, the procedure for inserting and managing an NG tube (including adaptation of the technique for checking its position and the improved fixation technique to reduce complications) was updated.

2.4. FIELD SUPPORT

In 2017, the Nursing Care referent conducted one field visit in Afghanistan to support the Kunduz project during the opening of the new Wound Care Clinic. During the visit, all medical staff were trained on the new wound care protocol and on related nursing care topics. Direct support was provided to the Nursing Activity Manager (NAM) to set up the clinic (organization of the pharmacy, flow of patients, data collection).

Ad-hoc support was provided to different projects with training materials and recommendations on specific nursing procedures to be implemented or adapted.

2.5. TRAINING

Nursing care was included in the first module of the First Line Medical Training (FLMT) course and was held twice during the year. In collaboration with the Pediatric Referent, basic nursing care for critically ill children was included in a simulation-based training.

3. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- Increasing interest in nursing care has significantly increased the demands from the field and also from operations.
- Lack of basic standardized tools have added to the complexity of nursing care in MSF projects and have affected the quality of care provided. This includes patient documentation (vital signs chart, medications chart, nursing notes, nursing care plan) and nursing care procedures.
- The serious lack of specific data on nursing care practices has precluded a clear overview of projects' performance and the comparison of different projects in respect to specific areas, in particular quality of care and nursing competences.

PROSPECTS FOR 2018

- Revision of nursing care procedure library and tools:
 - Standard procedures need to be revised in terms of technical content (to reflect current evidence and recommendations) and framed in a more user-friendly form for clinical use, training and supervision.
- Wound care:
 - Finalization of the Wound Care protocol (graphic editing and translation).
 - Creation of the Wound Care learning package (E-learning).
 - Identification of the deployment strategy for each different type of project.

³ S. Smith, D. Duell, B. Martin, M. Aebbersold and L. Gonzalez, “Vital Signs,” in Clinical Nursing Skills, 9th ed., Hoboken, Pearson, 2016, pp. 254-295.

- Field support:
 - Recruitment of a Nursing Care MIO to provide direct technical field support.
 - Implementation of a tool / check-list for assessing factors influencing the quality of nursing care provided in each project and to facilitate priority planning and corrective actions.
- Definition of the nurses role in management and supervision:
 - Develop the “supervision and management” part of the nursing care framework in order to define specific competencies and skills.
 - Develop tools and trainings for the “Unit Head Nurse” position in order to improve quality of care through better unit organization and supervision.
- Nursing care data / information
 - Identify key nursing care indicators to be used in the field for follow-up of activities and planning of priorities.
 - Develop nursing care dashboards for the follow-up of nursing care indicators at service level in order to enhance quality of care and nurses’ safety behavior.
- Information sharing
 - Ensure standard briefing and debriefing of nurses and key filled positions.
 - Implement a specific newsletter for nurses in the field and between missions (Nursing Pool) for sharing basic technical updates and important information.

NUTRITION

1. OVERVIEW

Although 2017 saw the opening of two emergency vertical nutrition projects, the value of such projects, versus integrated nutritional services, was a subject of reflection during the year. The bulk of Operational Centre Brussels' (OCB) nutritional activities are integrated into paediatric or adult inpatient (IPD) and outpatient (OPD) services. There have been discussions, however, with the Paediatric Advisers on how to shift our focus in all services towards a more holistic package of child health care.

Nutrition in OCB does not just stop with children; our activities are broad and dynamic in their focus: from nutritional care of prisoners in Malawi, to screening of pregnant women during Ante-natal Care (ANC), enteral feeding for post-operative patients, and nutrition for advanced HIV/AIDS patients.

There were two nutritional emergency responses in 2017: one in Borno, Nigeria, and another in Kasai, Democratic Republic of Congo (DRC). They provided valuable learning opportunities with regards what works well and what needs to be improved on in our vertical programmes.

The predominant focus in 2017 was on improving the quality of care in our nutrition services. This manifested itself in various ways, not least the revision of existing protocols; production of short guidance documents; collaboration with Human resources (HR) to pilot short-term Nutrition Coach positions; collaboration with operations to pilot short-term Nutrition Support Nurse positions; collaboration with the E-Health team to develop tablet-based applications for patient flow management in OPD nutrition services; and bed-side training by the nutrition adviser and paediatric Mobile Implementation Officer (MIO).

Efforts were made to ensure that every child in a nutrition service does not miss opportunities for vaccinations according to the new vaccination schedule. And with regards to HIV/TB – which are important underlying diseases related to malnutrition – new screening, diagnostic and treatment tools (which have been introduced in the nutrition protocols) continued to be promoted and followed-up with guidance documents.

The protocol for a study on Kwashiorkor was finalised in 2017 and received ERB approval early 2018. Recruitment for patients will start in the Operational Centre Paris (OCP) project in Niger in mid-2018. The study aims to identify the aetiology of kwashiorkor and will hopefully lead to adapted treatment plans for affected children. This is an important study since severe Kwashiorkor in children is still associated with high mortality, risk of relapse and lower response rates to nutritional treatment.

Food security assessments continued to be imbedded in nutritional surveys rather than as stand-alone assessments. New intersectional tools and input from other organisations specialised in food security took place and will carry on into 2018.

With increasing numbers of hospital projects, specifically trauma centres in OCB, there have been ongoing efforts to improve the nutritional assessment and care for every patient. These efforts did not materialise into overly impressive outcomes in 2017 and this therefore remains a priority for 2018.

2. NUTRITIONAL ACTIVITIES

2.2. NUTRITIONAL ACTIVITIES AT PROJECT AND MISSION LEVEL

In 2017, OCB supported 30,336 beneficiaries through nutritional activities (prevention and treatment) in 12 countries. Nutritional support was gradually stopped/handed-over in two countries (Pakistan, Kenya), while others saw the start of new activities (Nigeria,

Malawi, Iraq and Sierra Leone). Nutritional activities were delivered through vertical projects (including emergencies), integrated projects or as targeted programmes (Table 1, 2 and 3). Detailed project data are presented in Annex 1. A total of 377,360 individuals were screened for malnutrition in outpatient services (OPD), the Emergency Department (ED), ANC and as part of vaccination campaigns.

2.2. NUTRITIONAL EMERGENCIES

Following a dramatic deterioration in food security and health services in Borno state, Nigeria, at the end of 2016 (including a Famine Emergency Warning System (FEWS) alert of a famine in Banki), OCB opened an Ambulatory therapeutic feeding centre (ATFC) and Intensive Therapeutic Feeding Centre (ITFC) in Fori, Maiduguri in January 2017. An active outreach team for screening, monitoring and

Table 1: MSF-OCB nutrition services in 2017

Type of service	Countries and projects
Vertical projects / emergencies <i>Nutrition is the main activity</i>	Democratic Republic of Congo (Kasai) Nigeria (Borno, Maiduguri)
Integrated programmes <i>Nutrition is integrated into existing medical activities</i>	Afghanistan (Kabul); Central African Republic (Bangassou); Democratic Republic of Congo (Masisi, Bili, PUC); Guinea (Kourossa); Iraq (Hamam Al Ali); Malawi (prisons); Mauritania (Hodh El Chargui); Sierra Leone (Baama); South Sudan (Pibor, Doro)
Targeted nutritional programmes <i>Nutrition support is targeted to patients with specific nutritional needs (e.g. patients with HIV, patients post-operatively, pregnant and lactating women); or food protection rations are provided in food insecure areas</i>	Burundi (Arche); Democratic Republic of Congo (Kinshasa); Haiti (Tabarre); Nigeria (Borno, Maiduguri); South Sudan (Doro)

Table 2: OCB nutrition activities in 2017

Type of activity	Number of centres	Number of beneficiaries
ITFC	12 (total) 10 (integrated paediatric or intensive care unit hospital services)	5,343
ATFC	32	16,858
SFC plus Selective Feeding (for PLW)	ND	ND
Specific targeted nutritional support	3	875*
Family food rations	1	7,261
SAM treated by PUC (following screening during vaccination campaigns)	11 campaigns	2,034

ITFC: intensive therapeutic feeding centre; **ATFC:** ambulatory therapeutic feeding centre; **HC:** health centre; **SFC:** supplementary feeding centre; **PLW:** pregnant and lactating women; **SAM:** Severe acute malnutrition; **PUC:** Pool d'Urgences Congo; **ND:** No data.

* Likely underestimate as data only included from Malawi (prisoners project) and DRC; data missing from Burundi (Arche) and Haiti (Tabarre).

Table 3: Nutritional screening in non-nutritional services, OCB, 2017

Service/Activity	Total patients screened for malnutrition	Patients screened and categorised as SAM	GAM	Proportion of SAM (in %)
OPD/ED	290,553	11,779	27,505	3.4
ANC	56,756	Old categories used	Old categories used	Old categories used
Vaccination campaigns	30,051*	2,075	ND	6.9
Total	377,360			

GAM: Global Acute Malnutrition; **SAM:** Severe Acute Malnutrition; **OPD:** Outpatient Department; **ED:** Emergency Department; **ANC:** Antenatal Care; **ND:** No data.

* Likely to be an underestimate as this only includes data from PUC and not from any other vaccination campaigns (data on number of screenings for malnutrition were not recorded in these campaigns).

surveillance of malnutrition was also set up. A second ATFC was opened in Dala in July 2017 and handed over to Terre des Hommes in September 2017.

The bed capacity at the ITFC in Fori, increased from 50 to 100 beds during the course of the year to accommodate high admission rates. However, following stable food aid delivery in the town and surrounding camps, admissions had decreased by the end of the year. The ATFCs in Fori and Dala admitted 6,951 patients in 2017. Family Protection Rations were given out to over 7000 beneficiaries between January and July 2017.

An innovative E-Health tool "EasyNut" was developed and used in Fori's ATFC. EasyNut is an app which runs on tablets, used at each station in the ATFC. It assists in managing patient flow, record retrieval and basic clinical support functions.

Fori was also the site of another successful human resource innovative initiative. In recent years there has been a decrease in the pool of doctors with experience in nutrition and paediatrics. As such a 'Nutrition Coach' (a doctor with significant MSF nutrition experience) was sent to support and mentor a first mission doctor with no previous experience in nutrition for three months.

In Kasai, DRC, following an exploratory visit in September and the alarming results of a Epicentre mortality survey in November, that included nutritional indicators (SAM rate of 9.9% - with 67% of SAM cases having oedema - and Global acute malnutrition (GAM) rate of 14.8%), two ATFCs were opened in December 2017 (with four more openings planned for January 2018). Difficult population access and insecurity slowed the start of the ATFC activities, and by the end of 2017 there had been 172 ATFC admissions.

Nutritional activities were also initiated in two emergency projects whose initial focus was not nutrition. Hamam Al Ali, Iraq, started as an emergency project in February 2017, initially supporting primary health care activities, including an ATFC; the ATFC admitted 299 patients in its four months of being open. An ITFC with 16 beds was also opened due to significant numbers of malnourished children presenting, specifically those aged < 6 months. The ITFC admitted 44 patients (30% aged <6 months) over the first two months of it being open. Offering nutritional support in Iraq came with some challenges, not least findings the best ways to support the infant and young child feeding (IYCF) practices in this community. OCB handed over services to Action Contra la Faim (ACF) in July 2017.

The Pool d'Urgence Congo (PUC) in DRC carried out 11 measles campaigns in 2017 during which 30,051 children were screened for malnutrition. Of these, 2,079 were categorised as SAM and treated by the PUC. In total, the PUC treated 2,304 children for SAM during emergency interventions (both through inpatient and outpatient nutrition services).

2.3. NUTRITION SERVICES

The majority of OCB nutritional activities in 2017 were in projects where nutritional services are integrated with other services. This is a welcome trend, given the importance that is now being placed on integrating nutrition with other aspects of child or adult health.

In 2017, the number of beneficiaries of inpatient nutritional services almost doubled compared to 2016, largely on account of the new vertical nutrition project in Nigeria. Similarly, beneficiaries of outpatient nutritional services increased by one-third in 2017, mostly due to the project in Nigeria.

2.3.1. INPATIENT AND OUTPATIENT NUTRITIONAL SERVICES (ATFC and ITFC)

In 2017, 22,201 children received therapeutic feeding and medical treatment for SAM. Out of these, 5,343 were complicated cases which required an ITFC admission.

The average ITFC death rate across all OCB projects was 4.8% (range: 0.4% to 13%). This average is acceptable and within the current OCB indicator target of <10% (although, this target will be re-set at <5% in light of revised WHO guidelines due to be published). These mortality figures may not provide a full overview of mortality among malnourished children in our projects, however, as some of the data on deaths among malnourished children are captured not only in the ICU but also in the Paediatric IPD, and these data are not captured during the monitoring and evaluation of nutrition services.

The average stabilisation rate (the proportion of patients transferred from ITFC to ATFC to complete their treatment) in ITFCs across all OCB projects was 64%, ranging from 48% to 95%. The OCB target for stabilisation is 80%; seven projects were below this threshold and as such considerable attention needs to be devoted to improving these rates.

The most common morbidities seen among ITFC admission were 'other' followed by severe malaria (confirmed) and non-bloody diarrhoea (Figure 1). An emphasis on how data on morbidities are collected and categorised is needed.

The average cure rate in ATFCs across all OCB projects was 60%, ranging from 24% to 100%, and far below the OCB target of >80%. These results are unlikely to reflect the true quality of our outpatient services. The lowest cure rate in Iraq (Mosul) was observed after a mass movement of population away from the project area. In Nigeria, cure rates also dropped after family protection rations were stopped and huge numbers of children stopped coming to the centre.

The average defaulter rate in ATFCs across OCB projects was 24% (range: 2.5% to 75%). An outlying defaulter rate of 75% was seen in

Iraq and likely reflects population movement. There is an urgent need to reevaluate services in order to prevent defaulting and to improve defaulter tracing mechanisms.

2.3.2. TARGETED NUTRITIONAL SUPPORT SERVICES

OCB's targeted nutritional support activities continued to grow and develop in a variety of contexts. These activities were delivered through ATFC and other nutritional support to prisoners in Malawi, where high rates of HIV and TB are also observed. Trauma centres in Haiti and Burundi used either therapeutic foods (e.g. F100 milk and RUTF) or specific enteral feeding products to help improve the nutritional status of their surgical patients. Enteral feedings was also used frequently in the HIV/AIDS project in HGR Kinshasa, DRC, although there were issues with supply of the products.

2.3.3. PREVENTATIVE AND BLANKET FEEDING ACTIVITIES

Blanket feeding activities decreased in 2017 with the full handover of nutritional support in Kibera, Kenya, to the MoH and other actors and provision of less blanket feeding activities for Syrian refugees. In Nigeria, family protection rations were given out to over 7000 beneficiaries.

3. TRAINING

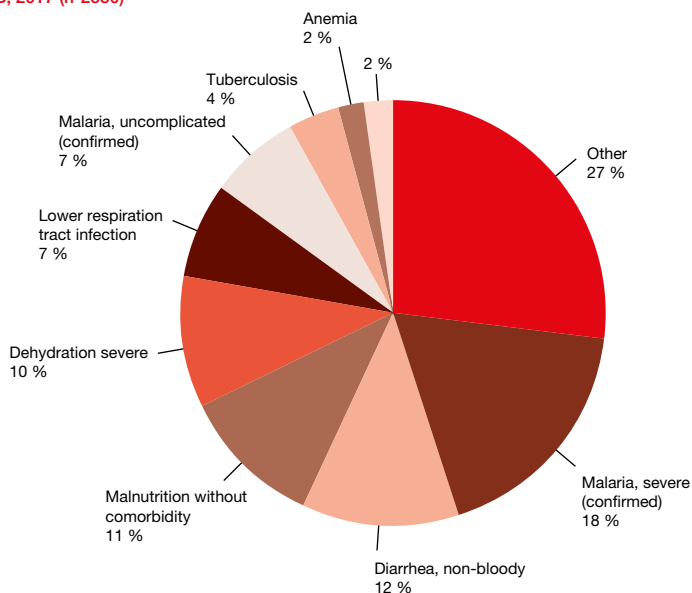
In relation to all protocols, guidelines and other tools, there is common agreement that we need to work towards developing inter-sectional training curriculum and tools. The planning of these started in 2017 and will continue into 2018 as a priority topic for the nutrition working group.

We were active with trainings in 2017 and were always looking for opportunities to train

both national and expatriate staff on the different nutritional strategies and activities. Activities included:

- Integrating modules on nutrition in existing trainings. In 2017, modules were prepared for the reproductive health course (for midwives and gynecologists), the First Line Medical Training (FLMT, for supervisors of first line medical activities), the Humanitarian Surgery in Austere Environments (HSAE) course and the health promotion training.
- There were no mono-thematic trainings on nutrition. Field demands are ever-growing and the nutrition adviser tried to meet these demands through detailed briefings of expats due to go to the field and through field visits by the nutrition adviser and paediatric MIO.
- E-learning for nutrition, which was first developed in 2011, has needed extensive revision to comply with the new protocols and guidelines developed both in paediatrics and nutrition. There will be a nutrition working group review in mid-2018 to decide whether work on this training tool should be continued or whether a new set of programmes/tools should instead be developed.
- The nutrition advisers of the different MSF sections facilitated the Populations in Precarious Situations training (PSP) in March and September 2017. Positive feedback was received and preparations were made for a new nutrition case study session in September 2018.
- External teaching was provided on demand at the Institute of Tropical Medicine (ITM) in Antwerp for the Post Graduate Certificate for Tropical Medicine and International Health. The sessions on the physio-pathology of nutrition and nutrition rehabilitation were well received. This demand for training serves also as an avenue for informal recruitment.
- The nutrition adviser of OCB became the module holder for nutrition in the Manson Unit's (MSF-UK) Global Health and Humanitarian Medicine (GHHM) course which has been developed for medical staff and allows them to subsequently take the Royal College of Physician's exam for the Diploma in Tropical Medicine and Hygiene.

Figure 1: Top 10 most frequent morbidities reported in Intensive Therapeutic Feeding Centre (ITFC), OCB, 2017 (n=2550)



4. OPERATIONAL RESEARCH AND DEVELOPMENTS

4.1. PUBLICATIONS

No studies were published in 2017.

4.2. ON-GOING STUDIES

The protocol for the joint OCB/OCF/Epicentre research project on the aetiology of Kwashiorkor, in partnership with Ghent University, was

developed and finalised. The study aims to improve the understanding of the pathogenic pathways underlying Kwashiorkor, which currently remain largely unexplained. New omics-based technologies offer the opportunity to 'go back to the drawing board' and to explore the pathophysiology of Kwashiorkor in a completely new dimension. The results of this study offer a potential opportunity to develop innovative diagnostic tools, prevention strategies and treatment for Kwashiorkor.

4.3. TOOLS AND GUIDELINES

Extensive preparatory work for the intersectional protocols, tools and guidelines took

place during the year. These will be finalized and released in 2018 after intersectional validation.

OCB will also take the lead in revising the chapter in the Paediatric Guidelines for enteral feeding of non-SAM children.

The OCB enteral feeding protocol for adults in ICU and surgical wards received very useful inputs from external nutritionists, and these will be incorporated into the new intersectional protocol for hospital and disease-specific nutrition.

A chapter on nutrition and HIV was written for the revised HIV/TB Guidelines (to be re-

leased in mid-2018), and a section on nutritional care in Ebola projects was produced for the Ebola Guidelines (due to also be released in 2018).

To respond more appropriately to frequently asked questions from the field, on topics where there is lacking evidence or validation by OCB in the current protocols, the nutrition and paediatric advisers worked together closely to produce short FAQ documents and guidance documents for the field.

5. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- Issues with protocols and guidelines: many valid questions from field teams, other advisers, external nutrition experts and within OCB nutrition, revealed short-comings with the current OCB nutrition protocols. Additionally, there has been widespread use of other sections' protocols in OCB projects, which is evidence of the need for updated, evidence-based intersectional protocols and tools.
- Pitfalls with MUAC-only programming: there has been a lot of focus in the international nutrition community regarding the benefits of MUAC-only programming, especially in emergencies. However, our project in Nigeria, which started as MUAC-only, highlighted the disadvantages of this approach. This was especially evident in the 5-10 year age group, where MUAC cut-offs are not internationally validated.
- The need for Nutrition Focal Points: technical input on specific clinical cases and also at project level, revealed the need to assign the role of Nutrition Focal Point to a member of the clinical team in a number of projects.
- Lack of medical staff with nutritional experience: the opening of two nutrition emergency projects in 2017 revealed the significant lack of medical staff with experience in nutrition, especially in emergency nutrition projects. The same has been noted in longer-term and integrated projects, and among medical team leaders.
- Capacity of the OCB nutrition team in HQ: having just one nutrition adviser in OCB was acknowledged by the Medical Department Director as being insufficient to meet the growing demands of the field. This became even more pressing when the leadership of the intersectional nutrition working group was handed to the OCB nutrition adviser.
- Monitoring and Evaluation: the patient recording system used in ITFCs in hospital-integrated services is not suitable for capturing data specific to monitoring malnourished patients, as it is designed to capture hospital-level aggregate data. Nutrition data collection and recording needs to be improved and new data collection tools developed.

PROSPECTS FOR 2018

Operations

- Ensuring the best care for critically ill malnourished patients: this is relevant to all our inpatient projects, especially in light of the high mortality rates amongst malnourished patients in almost all of our projects. This will be of the utmost importance in relation to the opening of Hangha hospital in Kenema, Sierra Leone (due to open in November 2018) which will start with 30 ITFC beds and an ICU of 16 beds.
- Shifting the focus to child health: although we continue to support interventions in nutritional crises, the importance of providing services which address child health needs through a more holistic and comprehensive package is well recognised. This is also acknowledged by the paediatric, vaccination, and WASH advisers. Further discussions and work will go into developing simple-to-implement packages of care aimed at different health facility levels as well as community services. A step towards this is participation in the newly formed Primary Health Care circle.
- Improving nutritional care for hospitalised patients: every patient in our hospitals needs good nutritional assessment and care to ensure their timely recovery and improved overall wellbeing. This is currently not widespread in our hospital projects and will be a focus for 2018 along with efforts to promote Nutrition Focal Points in all our hospital projects and ITFC Team Leaders in all our inpatient nutritional services.
- HIV testing, TB screening and vaccination: these three vital aspects of nutritional care will continue to be promoted and focused on in our

nutritional services, and for the first time there will be explicit indicators for HIV testing in ITFC and comprehensive vaccination coverage introduced into the service quality indicators for all projects.

- Nutritional Support Nurse positions: Internal advocacy will continue to encourage projects to open short contracts for a Nutritional Support Nurse (or doctor). These are 2-3 months contracts where an experienced nurse (or doctor) works in a project to support the team and improve the quality of the nutritional services with a focus on identifying and training national staff Nutrition Focal Points or ITFC Team Leaders.
- Nutrition Coaches: Internal advocacy will also continue for Nutrition Coach positions, such as piloted in Nigeria, with the goals of improving quality of care, retaining first mission doctors and increasing the pool of nutrition-experienced clinical staff.
- Leadership for the intersectional nutrition working group will be taken on by the OCB Nutrition Advisor in 2018 and as such there will be a part-time nutrition adviser support position opened temporarily for two years, to ensure appropriate nutritional support in OCB.

Guidelines and tools

The majority of new nutritional protocols and tools to be developed will be intersectional. Each section has taken a lead for different areas with priorities defined over three years. For 2018 the priority documents will be:

- Nutritional protocol for infants below six months of age: inpatient and outpatient (incorporating the new C-MAMI tool developed by a consortium of non-governmental organisations)
- Nutritional protocol for children aged six months to ten years: inpatient and outpatient
- Nutritional care for hospitalised adult patients
- Chapter in the Paediatric Guidelines: Enteral feeding for non-malnourished children
- Breastfeeding and IYCF toolkit

Data monitoring and evaluation tools:

- Harmonisation of data collection tools for nutrition across MSF sections
- Finalisation of the data monitoring form used initially in MINOS (Medical Information Network for Operational Support) and then in DHIS2 when rolled out

Trainings

- Intersectional training packages to be developed as a priority for 2018 for the nutrition working group to accompany new protocols and also for general nutrition training needs
- FLMT training: new module for September 2018 in conjunction with Health Promotion to be developed and conducted
- Reproductive health in emergencies: a module on nutrition for pregnant and lactating woman will be developed and run
- Health promotion training: a module on nutrition and health promotion will be developed
- improvements to trainings given in the GHM for the Manson Unit and at the ITM in Antwerp

Operational research

- Recruitment of patients to start mid-2018 for the Kwashiorkor research project in Maradi (Niger, OCP project)
- Proposed study on bottle-necks in ATFC patient flow by analysing EasyNut data from Fori, Nigeria

OPERATIONAL RESEARCH AND DOCUMENTATION

1. OVERVIEW

In 2017, LuxOR (Luxembourg Operational Research unit) focused on strengthening its way of working by implementing an interaction model. The model is designed to better manage the ever-increasing demand for Operational Research (OR) support within MSF and help LuxOR to streamline its workflow. It also facilitates the diversification of OR activities to include new and emerging areas of major public health importance, such as Water, Sanitation, and Hygiene (WASH), the increasing global challenge of antimicrobial resistance (AMR), and responses to infectious disease outbreaks. Continued emphasis was put on disseminating research findings through open access, and building strategies that help move evidence back into humanitarian action by changing policy and practice.

The high number of MSF-authored studies published in peer-reviewed journals is a strong indicator of the successful completion of research projects and the dissemination of key results. In 2017, 99 studies were published in open access journals covering 15 thematic areas.

With a new policy, practice and communication advisor joining the team in July, LuxOR started to work on targeted communications to publicise research findings, aimed at facilitating the uptake of operational research for policy change and improved practice.

The Structured Operational Research and Training Initiative (SORT IT) – developed by Médecins Sans Frontières (MSF) and the International Union Against Tuberculosis and Lung Diseases (The Union) in 2009 - is currently coordinated by the Special Programme for Research and Training in Tropical Diseases (TDR) hosted at the WHO. With continued support from MSF, the SORT IT initiative has, as of 2017, been scaled up to 87 countries. The SORT-IT courses bring together individuals of various backgrounds, open opportunities for networking, and place an invaluable focus on operational research capacity building. In September 2017, LuxOR launched its first thematic OR training in Luxembourg focusing on WASH projects, “the WASH IT”. Eight participants from Africa, Asia, and Europe kick-started their research projects, and will submit their papers for publication in 2018.

2. OPERATIONAL RESEARCH ACTIVITIES

There are two units supporting operational research for MSF's Operational Centre Brussels (OCB): the South African Medical Unit (SAMU) - which is primarily responsible for research related to HIV/AIDS and TB - and LuxOR which leads all other areas of research and related capacity building. This section outlines LuxOR's activities.

2.1. GROWING DEMAND FOR OPERATIONAL RESEARCH

The importance and added value of operational research is increasingly recognized in and outside of MSF, leading to an ever-higher demand for research support throughout MSF projects. To manage the workload, LuxOR's interaction model was developed further to facilitate the sharing research portfolios within the team, improve internal and external communication, and gradually move towards the creation of research domains

(such as WASH, migration, mental health, sexual and reproductive health, outbreaks and emergencies, paediatrics, surgical care, AMR and non-communicable diseases) being assigned to focal persons.

The human resource pool for operational research remained well balanced with four team members based in Brussels, four in Luxembourg and two decentralized positions in South Africa and Canada.

In 2017 alone, 10 LuxOR team members supported over 60 ongoing OR studies worldwide. The team also provided medical data support in MSF projects and conducted field visits in the Central African Republic, the Democratic Republic of the Congo (DRC), Egypt, Italy, Lebanon, Greece, Madagascar, Malawi, Mozambique, Serbia, and Sweden.

2.2. CONDUCTING AND PUBLISHING RESEARCH

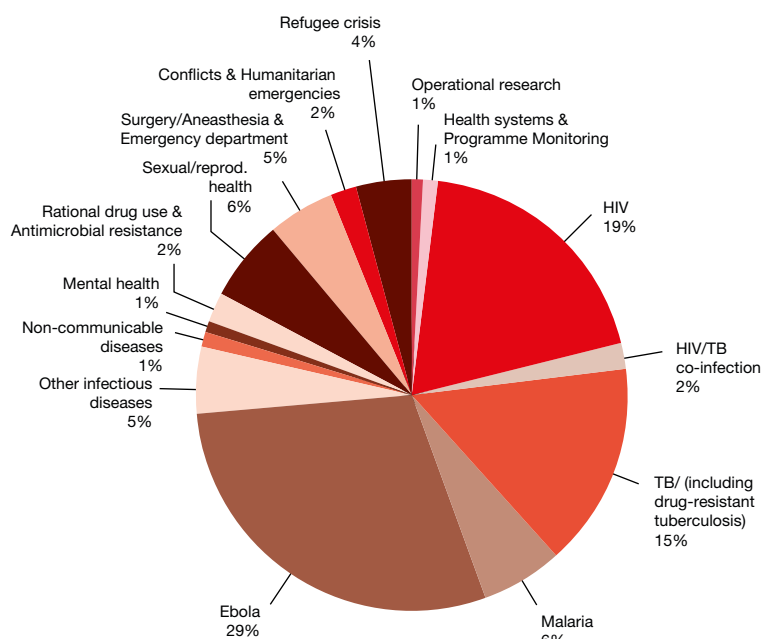
Operational research studies undertaken and published by MSF remain openly accessible

to researchers and the global humanitarian community free of charge. In 2017 alone, 99 MSF-authored studies were published covering 15 thematic areas - a reflection of the diversity of our medical activities (Figure 1).

2.3. DISSEMINATION OF OPERATIONAL RESEARCH

Dissemination of operational research was achieved in part through the Operational Research (OR) Days conducted in Brussels, India (for South Asia) and Zimbabwe (for Africa). The sixth OR Day took place in Brussels in June and featured 14 presentations and four panel discussions on the following themes: HIV/AIDS and TB, violence and trauma in humanitarian settings, and steering change in health systems. All presentations can be viewed online on the MSF Luxembourg website (<https://msf.lu/en/ORDay>). Other means of OR dissemination included LuxOR's newsletters, summaries of recent publications and handy postcards presenting snapshots of OR projects and their impact.

Figure 1: Thematic research areas of OCB related publications in 2017 (n=99)



Note: Only MSF-authored studies are included. Previous reports included all MSF supported studies

The MSF Field Research website (<http://fieldresearch.msf.org/msf/>) continued to showcase MSF-authored publications from the entire MSF movement. Since 2010, there have been over 1.2 million cumulative downloads around the world. This shows an increasing global interest in research done by MSF across the borders.

2.4. SUSTAINABLE RESEARCH CAPACITY DEVELOPMENT (SORT IT)

Training and Capacity building for Operational research (The SORT IT Program) is an output-oriented training model for OR capacity building initiated by MSF and The Union in 2009. The training is currently under the global leadership of the Special Programme for Research and Training in Tropical Diseases (TDR) hosted at the WHO. The course targets mainly MSF-colleagues, staff of international organizations and their local implementing partners, and health authorities in low and middle-income countries (LMIC). The focus is on conducting research according to individual priorities and building sustainable OR capacity.

Over the last eight years, 53 courses have been successfully completed with the enrollment of 579 participants from 87 countries. Ninety percent of participants completed the programme's milestones, and 85% of them published papers in peer-reviewed journals. Ninety five percent of first authors were from a LMIC-country and 46% were women. Sixty five percent of the published studies reported an impact on policy and/or practice.

In 2017, 11 SORT IT courses were held: eight were national courses (Pakistan, Myanmar, India, Columbia Uganda, Kenya, Zimba-

bwe, Armenia) with 111 participants enrolled.

Capitalizing on the positive outcomes of the original SORT IT courses, MSF Luxembourg and partners expanded the scope of the courses to cover other areas of major public health importance. In 2017 there were thematic and methodological adaptations to the courses to cover disease-specific and health system-related themes such as Water Sanitation and Hygiene (WASH). SORT IT has also embraced various study designs including mixed-methods and qualitative research. The use of educational technology (E-SORT IT) was piloted in Armenia. The entire course was delivered using the pre-recorded YouTube teaching materials available online: (<https://www.theunion.org/what-we-do/courses/online-and-multimedia-training/sort-it%20>)

2.5. INFLUENCE OF OR ON POLICY AND PRACTICE

Operational research findings often provide valuable evidence for understanding a health problem's cause or for improving a model of care. However, for published results to be of any impact, dedicated communication efforts and strategic programming are required to change policies and/or improve practice.

In 2017 a new Policy, Practice, and Communication Advisor was recruited to strengthen current efforts to moving research results back into humanitarian action. Dedicated policy & practice work is underway in DRC, Guinea, Pakistan, and Serbia. A short policy and practice assessment in every research protocol targeting policy change helps to plan and budget for successful research uptake at the onset of new studies, and lessons

learned will directly inform the unit's new strategy.

2.6. LEADERSHIP THROUGH OPERATIONAL RESEARCH FELLOWSHIPS

An operational research fellowship programme was initiated by LuxOR in 2011 and included 10 fellows by the end of 2017. This is a pioneering initiative within MSF aimed at boosting on-the-job research skills, encouraging the retention of human resources, facilitating sustainable leadership in OR, and providing career opportunities. MSF fellows are encouraged to support "innovation" within routine operations and contribute to critical reflection on program orientation and its impact over time.

Since 2011 the cumulative output of the 10 fellows has included 606 research projects – the likes of which have driven the MSF research agenda.

Through the support of the fellowship, and as part of improving leadership and career opportunities, one MSF fellow completed his PhD thesis in 2017 and will graduate in 2018.

2.7. COLLABORATION WITH THE POOL OF EPIDEMIOLOGISTS

The pool of field Epidemiologists in MSF increased significantly after the Ebola outbreak in West Africa between 2014 and 2016. This has emphasized the urgent need to develop structured support for MSF Epidemiologists working across the world undertaking activities such as outbreak surveys, running or supporting OR studies, and managing medical data. In 2017, the Program Officer worked closely together with the Epidemiologist Pool Manager to validate potential profiles for the Epi pool.

The first 'Epi-Week' in MSF- OCB was held in September 2017, with a total of 35 field Epidemiologists attending. During the week, issues and challenges related to monitoring and evaluation, surveillance, outbreak investigation, and ethics in OR were discussed.

3. HUMAN RESOURCES

2017 was a challenging year for the unit, with the former OR Coordinator and founder of the LuxOR unit - Rony Zachariah - leaving MSF to explore new professional horizons with the WHO. The OR Coordinator position was filled in the last quarter of 2017 on an interim basis until a new coordinator is recruited.

The OR Program Officer and the OR Mobile Implementation Officer (MIO) positions were also replaced temporarily for six and twelve months respectively. In mid fall, one of the OR Support & Documentation Officers took sabbatical leave and returned to the field as a

Medical Coordinator. This position will be filled in 2018. The Policy, Practice and Communication Advisor joined the team in June 2017.

4. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- One of the main ongoing challenges is around managing the increasing demand for OR support and the consequent increased workload for the team. A framework is in place to help team members prioritize and identify which research projects will be supported by the unit.
- In order to grow and further develop OR activities in MSF, LuxOR will have to adopt a strategic vision around what it seeks to achieve for each research study undertaken. Classifying studies according to the intended operational perspective would be an important first step that will make assessments of possible impact more rational.

PROSPECTS FOR 2018

- Ongoing efforts will be made to restructure and optimise the unit's way of working, e.g. by allocating research domains to specific research support officers.
- Focus will be placed on research projects that have direct implications for MSF's ongoing operations.
- Continued measures will be made to move the generated evidence from OR research into policy practice and/or advocacy.
- Measures will be taken to increase the unit's capacity in qualitative research by recruiting a Qualitative Research Mobile Implementation Officer to support the increasing demand for qualitative and mixed methods research studies in the field.
- Opportunities to increase OR in conflict setting will be explored.
- The Research Impact Monitoring Tool (REMIT) introduced in OCB in late 2017 will be explored and developed further during 2018.
- A framework of support will be developed for supporting Epidemiologists and other personnel in the Medical Department.
- A rational way of classifying research according to intended operational perspectives will be defined and developed.
- Continued efforts will be made to activate the MSF Luxembourg Foundation to serve as a complimentary structure to boost sustainable capacity building, build networks and facilitate humanitarian reflection based on OR evidence.

PAEDIATRIC CARE

1. OVERVIEW

Paediatric care is the care of children from birth through to adolescence. Paediatric care takes place in hospitals, health centres and in communities, and aims to improve child health through an integrated approach. This includes paediatric and new born care adapted to different contexts, nutritional programs, TB/HIV care as well as the care of children affected by NCDs. The social and mental health care needs of children and their care-takers also need to be considered. Finally, integration of immunization programs and well targeted public engineering interventions (such as water/sanitation and vector control) can impact child survival in target-populations.

Globally, more than 30% of under-five deaths occur in the first 30 days of a child's life. Improving access to essential newborn care by decentralization of essential services to peripheral health facilities, and the strengthening of "context adapted neonatal care" in hospitals, can have a significant impact on newborn survival. Efforts to integrate maternal & child health programs should be strengthened further to optimise basic neonatal health care

Efficient critical care pathways with rapid triage, and basic but good-quality paediatric emergency and critical care, have the potential to reduce and/or control paediatric hospital mortality. MSF has the opportunity to be at the forefront of context-adapted paediatric critical care in resource-poor settings by improving community-based care, health centre services and referral pathways.

By developing innovative paediatric training programs focused on the educational needs of the health professionals providing services for populations exposed to humanitarian crises, MSF can act as a catalyst in the area of medical education in such contexts.

2. PROGRAMME ACTIVITIES

2.1 UNDER-FIVE CARE

2.1.1 UNDER-FIVE OUT-PATIENT CARE

In 2017, 455,656 under-five out-patient consultations (excluding ambulatory therapeutic feeding centres (ATFC), Emergency room and Antenatal Care (ANC) consultations), were conducted in 21 Operational Centre Brussels' (OCB) projects or interventions in 12 countries. Based on the morbidity data available from MINOS, there were 360,195 under-five out-patient (OPD) consultations performed in 2017. Data were not available from Haiti, Greece, Burundi, Guinea, and Iraq.

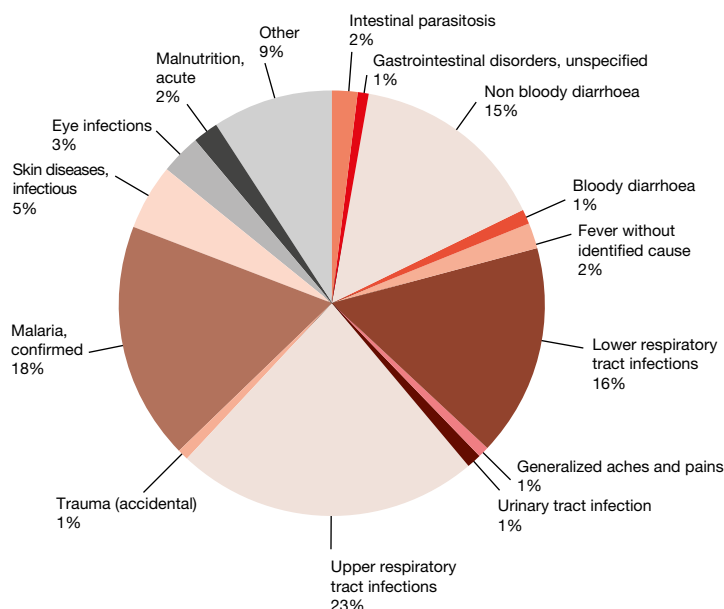
The reported morbidity pattern of children under five was similar to previous years: respiratory tract infections (RTIs) represented the majority of cases (39%), followed by cases of confirmed malaria (19%), non-bloody diarrhoea (15%), infectious skin diseases (5%), eye infections (3%), intestinal parasitosis (2%), and fever without identified cause (2%) (Figure 1).

Respiratory infections continue to be one of the main causes of morbidity and mortality in children, despite the introduction of efficient vaccines (e.g. conjugate pneumococcal

vaccination). The development of improved diagnostic and management algorithms, including oxygen-saturation, point of care biomarkers and clinical observation, can help to identify children at risk of developing critical illness and tease out those who can be safely managed as outpatients.

There were 200 suspected and confirmed TB cases reported in 2017, a doubling of cases compared to 2016, yet only attributing to 0.05% of cases treated at OPD level. Sustained effort is needed to improve the detection of TB, through systematic implementation of a symptom-based TB screening questionnaire at health center level, particularly in am-

Figure 1: Disease profile in children aged < 5 years in OCB Out-patient departments, 2016 (Data from MINOS)



bulatory therapeutic feeding centres (ATFCs). It should be noted that vertical TB/HIV project data is not included in this count, but rather reported in the HIV/TB/Hepatitis C chapter of this Medical Activity Report.

A large number of outpatients are managed in peripheral MSF-supported health facilities where critically ill children are often identified and receive pre-referral management. The support of 'CDS de reference' can further strengthen clinical networks, allowing for improved stabilization and pre-referral management of critically ill children, even in remote areas. Projects such as Bili in DRC, and Kouroussa in Guinea, are strengthening services in peripheral health facilities in order to improve the impact on child health in target populations. Innovative cooperation of logistic and clinical teams can provide cost-effective solutions to further improve basic paediatric and neonatal care in peripheral health facilities. Examples of such innovations include small scale solar systems providing electricity for oxygen supply, light and cold chain.

2.1.2 IN-PATIENT CARE FOR CHILDREN <5 YEARS

In 2017, 36,523 children under five were admitted to the in-patient services (excluding ITFCs), in 21 OCB projects in 12 countries.

Detailed data for the paediatric in-patient wards were aggregated for all projects using MINOS data tools, excluding Syria (as no mortality data were reported), and excluding ITFCs (as their data is reported in the Nutrition chapter of this report). A total of 10,272 under-five children exited from these projects. The main diagnoses for patients seeking in-patient care at OCB hospitals in 2017 were severe malaria (44%), Lower Respiratory Tract Infections (LRTI) (22%), and non-bloody diarrhoea (6%) (Figure 2). Almost 200 neonates (2% of under-five exits) received care on the general paediatric wards of three projects (Doro and Pibor in South Sudan and Bili in DRC).

There were 168 <5yo deaths reported in 2017, with an in-patient mortality rate of 1.6%. Severe malaria remained the top cause of death in under-five children (37%), highlighting the continued need to focus on the diagnosis, treatment, and prevention of malaria. In mind of the fact that 17% of the in-patient under-five deaths on paediatric wards were attributed to severe acute malnutrition (SAM), children with SAM admitted to paediatric wards are typically those in need of intensive care. A focus on critical care pathways, infection prevention and control (IPC), nursing care, diagnosis and treatment of specific morbidities (including TB and HIV) and a better understanding of the aetiology of Kwashiorkor, are essential to help reduce mortality associated with SAM.

Figure 2: Main exit pathologies in children < 5 years in OCB, In-patient departments, 2017

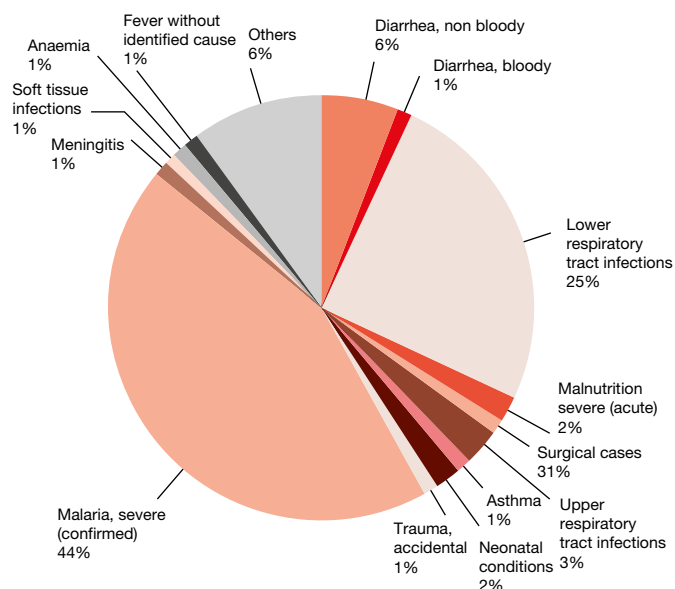
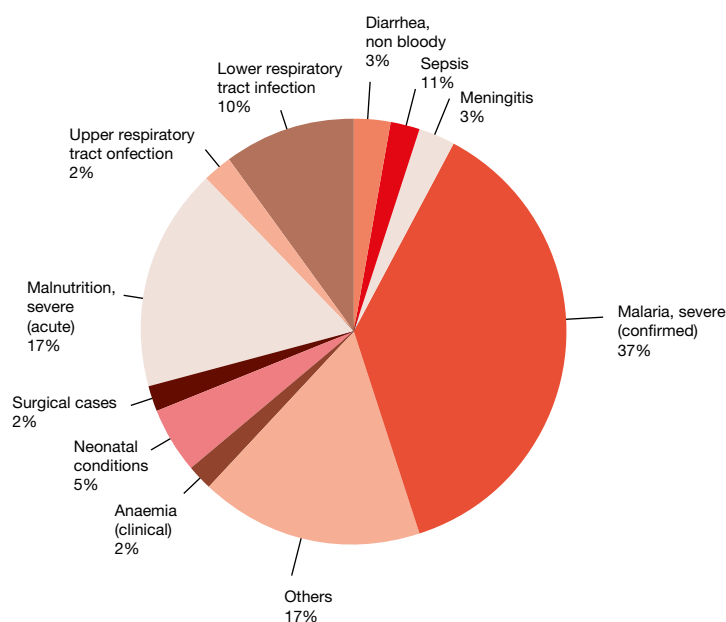


Figure 3: Main causes of mortality in children < 5 years in OCB In-patient departments, 2017



Sepsis (outside the neonatal period) accounted for 2% of in-patient deaths, a reduction compared to 2016, as the definition of sepsis outside of the neonatal period was changed to improve surveillance for this illness. In 19% of cases, the cause of death was reported as "other", with no specific diagnosis in approximately 2/3 of these cases. For the remaining 1/3, several different diagnoses contributed to small numbers of deaths. However, attribution of death to a single cause obscures the importance of multi-disease causation; in particular, the role of co-morbidity in mortality attributed to severe malaria should be investigated to improve interventions.

2.1.3 IN-PATIENT CARE FOR CHILDREN 5 TO 14 YEARS

Specific data for children aged 5 – 14 years was only available from four projects - Bassikounou in Mauritania, Bangassou in CAR, Bili and Masisi/Nyabiondo in DRC. For this age

group, there were 1,858 exits, and 41 deaths, accounting for 17% (range 13-31%) of in-patient paediatric exits and 20% (range 14-44%) of paediatric deaths in these projects.

The top three causes of morbidity in this age group were severe malaria (60%), non-bloody diarrhoea (7%), and LRTI (6%). The most common causes of in-patient mortality were severe malaria (27%), SAM (7%), non-bloody diarrhoea (7%), LRTI (5%), and meningitis (5%). In 23% of cases, the cause of death remained unattributed to a specific diagnosis.

The burden of morbidity and mortality remains significant in the 5 to 14 years age group. Expanding inpatient care to this age group is a chance to impact more substantially on the paediatric population, with limited additional investment. Integrating the care of children in this age group is an opportunity for projects to develop further expertise in adolescent care.

2.2 NEONATAL CARE

2.2.1 NEONATAL IN-PATIENT CARE

In 2017, there were 7,417 exits from in-patient neonatal services and 901 neonatal deaths, from 10 projects in six countries. In Castors (CAR), Mbera Camp (Mauritania), Timergara (Pakistan), and Masisi (DRC), approximately 18% of live births were admitted to the neonatal unit or directly referred to a tertiary level hospital. In ASB and Khost (Afghanistan), only 4% and 7% respectively were admitted or directly referred; with above 20,000 live births annually, under-detection of newborns in need of admission to neonatal services may be occurring in these two projects.

Although variable across projects, the average in-patient neonatal mortality rate was 12%, the average referral rate was 7% and the average loss-to-follow-up rate was 5%. Major contributors to in-patient neonatal morbidity and mortality are shown in figures 4 and 5. Consistent with the global literature, prematurity, perinatal asphyxia and neonatal sepsis are the three main causes of morbidity and mortality.

Outcomes were stratified by birth weight through aggregated data available from projects that implemented the individual neonatal databases (Figure 6). The defaulter rate (14%) was very high in neonates with a low birth weight (LBW) between 1000-1,500 grams. Reasons for this high defaulter rate are multi-factorial and include a need for improved communication with the caretaker throughout the hospital stay. A focus on critical care pathways, infection prevention and control (IPC), nursing care, improved diagnostics and the introduction of non-invasive respiratory support in selected projects, may help further reduce mortality, especially in the 1000-1500 g weight category. There is also an urgent need to support the field to implement palliative and end-of-life care.

For various reasons (physical space, human resources, organisation), asymptomatic newborns on antibiotic prophylaxis (due to risk factors for sepsis) are often admitted to the neonatal service. These babies could be cared for on the maternity ward, which would help reduce overcrowding of neonatal service.

An outbreak of Extended Spectrum Beta Lactamase (ESBL) resistant *Klebsiella pneumoniae* among neonates in the comprehensive emergency obstetric and neonatal care (CEmONC¹) structure in Castors, (CAR) was reported. This led to the implementation of a comprehensive response to identify and control potential sources. In parallel, approaches and processes were put in place to avoid overcrowding on the neonatal unit. One approach was to introduce an alternative testing

Figure 4: Main causes of morbidity in neonates in OCB In-patient departments, 2017

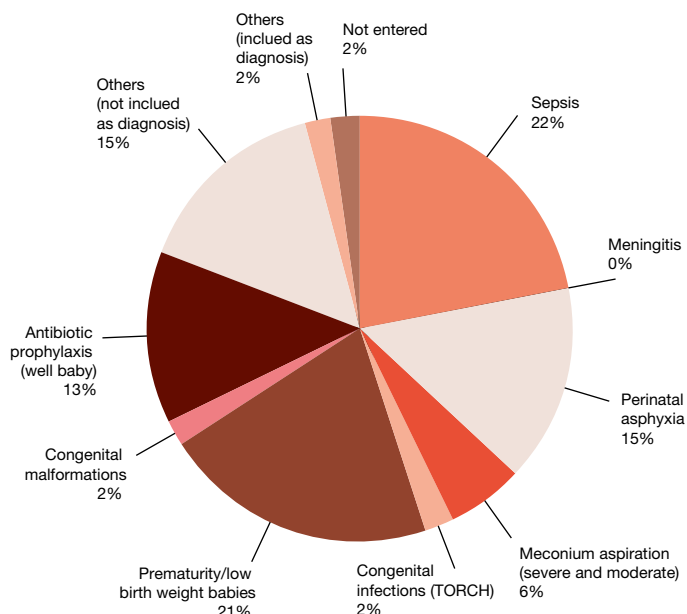


Figure 5: Main causes of mortality in neonates in OCB In-patient departments, 2017

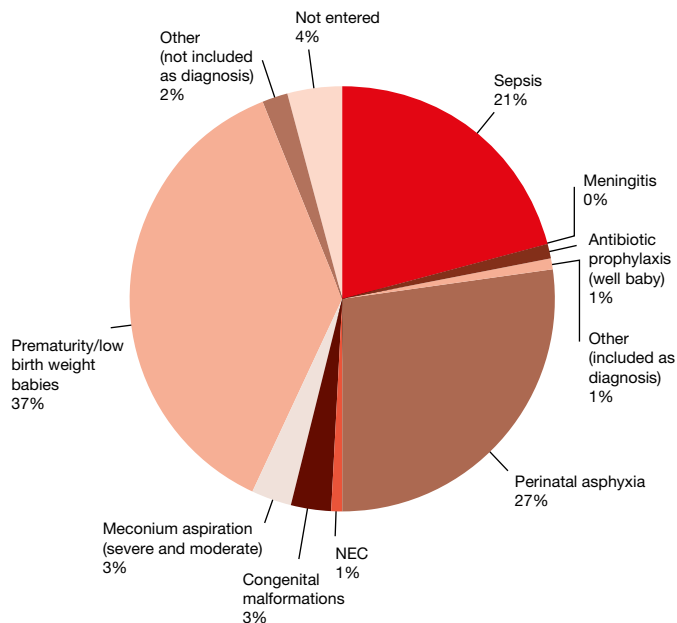
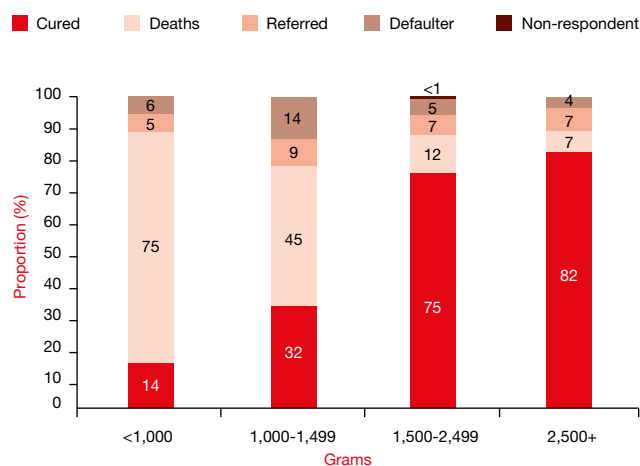


Figure 6: Neonatal in-patient outcomes stratified by birth weight (g) in OCB In-patient departments, 2017



¹ Comprehensive Emergency Obstetric and Newborn Care

algorithm for maternal syphilis, which allowed a significant reduction in unnecessary lengthy neonatal hospitalization (from 10 days to one day) for babies born to mothers with a positive SD bioline test and a non-reactive Rapid Plasma Reagin (RPR) titer.

In order to improve the impact of activities on neonatal mortality, essential newborn care in peripheral health facilities, along with referral pathways, need to be strengthened. By decentralizing essential elements of newborn care, access to these life-saving basic services

can be improved, and, all the while, heavy workloads in often congested neonatal units in MSF-supported hospitals can also be potentially reduced.

4. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- Over the past decade, a large focus has been placed on the development of neonatal units for sick and preterm neonates, a previously neglected population in MSF. Despite important advancements, current models of care also reveal their limits, with overcrowded units potentially contributing to outbreaks. It is urgent to explore decentralized models of essential neonatal care in order to maximize impact. It may be possible to be less-invasive (for example, earlier transition to oral feeding for LBW babies) while exploring use of additional technologies in pilot projects (for example, non-invasive respiratory support and bacteriology investigations). Together, these interventions may help to further reduce mortality and morbidity.
- Paediatric care goes beyond hospital care. There is a need to focus on the continuum of care from the community to the health centre to the hospital and vice versa. Opportunities to develop clinical networks should be further explored. More attention to the preventive component of paediatric projects (such as vaccination, WASH activities) is also needed.
- Investment in improved diagnostic skills and capabilities has the potential to significantly improve care and outcomes for neonatal and paediatric beneficiaries. Priorities include point of care testing, and use of blood films and bacteriology in pilot projects.
- New strategies are needed to achieve better integration of nutrition and mental health in paediatric care.
- Priorities for inpatient-care include improving patient circuits, context-adapted critical care, improving the link between neonatal services and maternity, and reviewing the impact of interventions.
- Human resources and training of staff are essential to boost quality of care.
- The E-Unit intervention for an outbreak of Diphtheria in Bangladesh at the end of 2017 highlights the importance of outbreak preparedness, and the development of pragmatic management approaches relevant for diseases prevalent in South-East Asia.
- There is a need to facilitate efforts to strengthen the quality of paediatric, neonatal and adolescent care in all types of projects, including projects not directly defined as paediatric interventions (e.g. surgical & trauma care, emergency interventions, migrant health).

PROSPECTS FOR 2018

- Introduction of non-invasive ventilation (NIV) [including bubble CPAP (continuous positive airway pressure)] in the neonatal unit in Khost, Afghanistan and focus on essential neonatal care at decentralized level. This will go hand-in-hand with a model of minimally invasive neonatal care, and decentralization of essential neonatal care at the peripheral level.
- Strengthening of clinical networks and integrated community-based interventions for example in Kouroussa, Guinea.
- Finalisation of the paediatric package for acute emergencies and further development of paediatric packages of care adapted to different contexts and levels of care.
- Development of implementation tools for palliative/end-of-life care, and for rational use of antibiotics.
- Strengthening of pragmatic approaches for diagnosis and management of common NCDs.
- Operational research projects planned for 2018 include an alternative syphilis testing algorithm in Castors (CAR), and the implementation of CPAP in Khost (Afghanistan).
- Creation of paediatric training materials in accessible, adaptable and stand-alone modules, and develop a strategy for continuing education and updates on paediatric topics for staff in the field.
- Participation in the development of Medical Academy trainings, and participation and cooperation with other OCs, national and international training institutions/initiatives, including the BASIC collaboration.
- The closing of the Mauritania mission, with the aim to handing over the Mbera health centre in Bassikounou to the Ministry of Health (MoH) or other health partner.
- Opening of the Paediatric & Maternity Hospital in Kenema, Sierra Leone, starting with a phased opening of paediatric services in the last quarter of 2018. This offers the opportunity to implement several aspects raised in this report, including:
 - Implementation of pragmatic training programs for health professionals and contribution to capacity building initiatives in Sierra Leone
 - Integration of various elements of paediatric care, including context-adapted paediatric critical care, integration of paediatric and nutritional care, neonatal care, management of children >5 years and adolescents
 - Integration of Maternal & Child Health
 - Review of possibilities to strengthen peripheral health services

PHARMACY

1. OVERVIEW

In 2017, ongoing emergencies in Syria, Nigeria and Iraq, together with increased MSF activities in countries with significant drug and medical material constraints, continued to represent major challenges to the medical supply chain. This was compounded by the complexity of the global pharmaceutical market. Support to the medical and supply teams on quality monitoring, rational medical procurement and data quality continued to improve in 2017.

Focus on compliance with Good Distribution Practices (GDP) remained a pillar of pharmaceutical quality assurance in 2017. Different departments contributed to the storage, transportation and daily management of pharmaceutical products, mindful of the fundamental impact that GDP compliance has on the quality of the therapies provided.

Based on reviews of how the Integration Policy has been implemented, there was a re-focus on Good Medical Stock Management Practices within the Medical Stock Management Policy. The latter requires that all medical stocks be integrated by default and from the start of a project, and that appropriate steps be set out to facilitate the necessary execution of the tasks and responsibilities required by the Supply chain's medical stock management process.

The first OCB Good Pharmacy Practice (GPP) policy for end-user pharmacies was validated and published during the first part of 2017. The GPP policy serves to establish a much-needed framework of quality standards and guidelines for end-user pharmacies across the broad areas of Medicine Selection, 'last mile' Distribution and Storage, Good Dispensing & Safe Medication Practices and Training & Support. Dissemination and implementation of this policy commenced in earnest during 2017 with the addition of the GPP Mobile Implementation Officer (MIO) to the Pharmacy unit.

Antibiotic resistance (ABR) has been recognised as an emerging problem in the world and has been identified as a serious problem in several MSF projects. Antibiotic misuse is an important determinant of ABR; as such, optimising appropriate antibiotic use across health services remains a key component of global and local efforts to protect antibiotic options for the future, and to curb the escalation of resistant organisms. In 2017, the Pharmacy unit started consolidating existing tools and creating others, to better monitor and promote optimal use of antibiotics in MSF health facilities, and to facilitate the implementation of Antibiotic Stewardship Programs.

2. THE MSF QUALITY ASSURANCE SCHEME

2.2. UPDATES OF THE MSF MEDICAL LIST

Each year, the typology of procured medicines - which overlaps and is published in tandem with the standardised the Clinical Guideline protocols - is updated according to new protocols, specific field needs and the WHO Essential Medicines List (EML).

In 2017, it was agreed that efforts towards safer injection practices would be ramped up across the board. This requires phasing out currently used devices and devising a plan to address price and implementation issues (including appropriate support and training).

The higher price of safety engineered devices (coupled with the fact that the risks associated with a needlestick injury are far lower in some projects compared to others because of differences in disease profile) precludes the roll out of safety engineered devices in every project. As such, criteria need to be developed to identifying those projects where introduction of these devices should be prioritised.

Safety engineered injection devices - identified for high risk contexts - were added to the Medical Catalogues and were included in the viral haemorrhagic fever/ Ebola kit. The 'classical' lancet, together with other types of lancet, were removed from the catalogue and replaced with safety lancets and blades to improve safety.

New articles aimed at improving drug dispensing and compounding practices were introduced. The choice of drugs used for Mental Health and Non-Communicable Diseases (NCDs) was updated in the catalogues. New formulations for neonatal and/or paediatric use were also introduced.

2.2. IDENTIFICATION AND VALIDATION OF DRUG SOURCES

Six new products were validated by way of a full dossier assessment (Table 1), while 48 were validated by a Declaration of Equivalence (DoE) - 41 in the form of a Stringent Regulatory Authority, five by their Product Specification Sheet and two by the WHO Prequalification Programme. There were no

new exceptional validations approved by the Medical Directors in 2017, although four previous validations were extended into 2017.

2.3. ALERTS ON QUALITY AND THE AWAKENING VOICE OF LOCAL MARKETS

Tables 2 and 3 show the number of quality related issues reported for internationally and locally procured medical items in the last seven years. The total number of complaints was similar to previous years; however the proportion of complaints regarding local purchases increased to 43% in 2017 (versus figures between 5 and 27% in previous years). The eight complaints regarding the quality of internationally purchased medicines were reported by OCB MSF Log (one complaint), OCP (two complaints), OCG (two complaints), and OCA (three complaints), (*Table 3*).

In addition, 2017 saw:

- Two batch recalls of internationally purchased products
- Three non-compliance statements issued by National Drug Regulatory Authorities (NDRAs) affecting products purchased internationally
- Two quality alerts issued by manufacturers of internationally purchased products

For products purchased locally, MSF did not receive any batch recall notifications or quality alerts by either NDRAs or manufacturers.

3. MEDICAL PROCUREMENT

3.1. ENFORCEMENT OF LEGISLATION INCREASES PROCUREMENT WORKLOADS

During 2017, evaluations of local pharmaceutical markets were conducted in 14 countries. Approval outcomes are shown in Table 4. Pharmaceutical market evaluations reflect the need for local procurement in countries where MSF either cannot import medicines or faces importation constraints. Levels of reporting for local procurement continued to increase, but remain sub-optimal in some countries. The risk/benefit evaluation of both local procurement and final approval often rely on scarce evidence and information.

Regarding medical procurement systems, 21 out of 33 missions did not explicitly follow MSF's primary procurement option - importation from MSF Supply Centers. Ten Missions relied on the local market for their medical procurement, six received part of their medicines from the public distribution flow and part from international procurement, while the remaining five faced difficult importation regulations, leading to sporadic local purchases (Figure 1). Despite regular local assessments, an increasing proportion of medicines are

Table 1: Number of drug dossiers approved (2011-2017)

Validation route	Drug dossiers approved						
	2011	2012	2013	2014	2015	2016	2017
MSF full product assessment	20	15	11	14	9	11	6
Declaration of equivalence (DoE)	-	-	11	23	26	26	48
Medical Director Waiver*	6	2	4	1	1	3	4
WHO pre-qualification	35	48	62	53	35	41	53

* Exceptional approval based on risk/ benefit analysis.

Table 2: Number of quality related communications issued by MSF Supply (2011-2017)

Quality related communications	Number of communications						
	2011	2012	2013	2014	2015	2016	2017
Quality alert	4	7	3	4	5	6	8
Batch recall	3	2	3	2	3	3	1
Total	7	9	6	6	8	9	9

Table 3: Quality related problems reported by the MSF International Office (2013-2017)

Year	Total number of quality problems reported	International Procurement source	Local Procurement source
2013	27	20	7
2014	15	11	4
2015	18	14	4
2016	19	18	1
2017	14	8*	6

Table 4: Evaluation of local pharmaceutical markets (2010-2017)

Year	Number of manufacturers approved	Number of wholesalers approved	Number of countries evaluated
2010	5	28	14
2011	6	11	9
2012	14	69	12
2013	31	66	8
2014	9	55	9
2015	7	106	14
2016	13	115	20
2017	13	127	14

purchased from local markets and MSF cannot guarantee the quality of these medicines to the same level as the ones from European procurement centres. As such, securing the supply chain through international procurement will remain a priority. Additionally, MSF continued to enforce medical accountability for local purchases through:

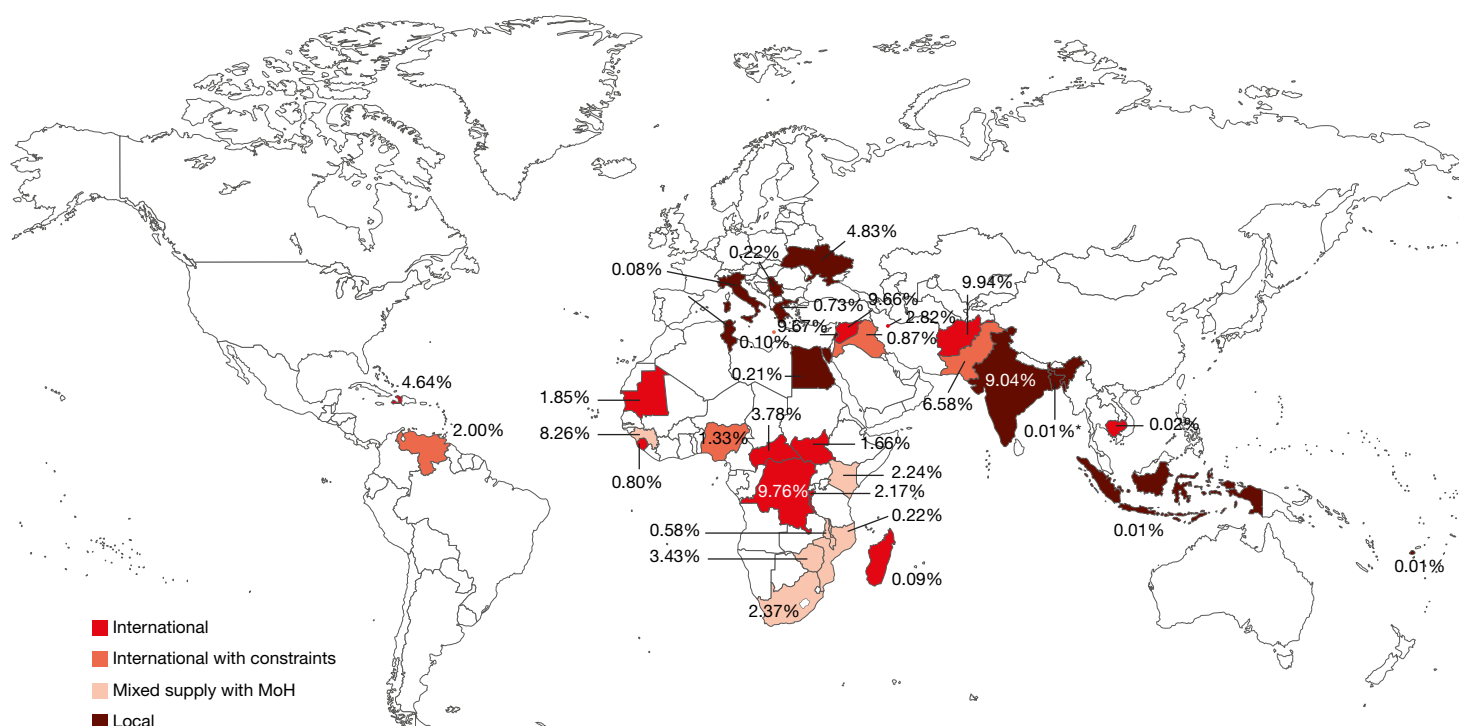
- Improved centralisation of information on local purchases
- Enhanced intersectional collaboration on local procurement (in the form of mutual procurement activities and more intersectional pharmacy positions)
- Development of methods to facilitate local procurement with higher quality assur-

ance, and monitoring quality for the shelf-life of medicines

- Integrated pharmacovigilance practices as standard in each project
- Increased capacity both to negotiate with NDRAs and to track the local regulatory environment through country pharmacists (cf. §3.3).

Among the missions that purchased medicines locally, two were in highly regulated countries (Greece and Italy), six had a database implemented (Lebanon, Egypt, India, Kenya, Iraq and Ukraine), 18 submitted validation forms for local purchase approval, and three missions purchased locally without any recommendations regarding quality (Egypt,

Figure 1: Medicine procurement typologies in OCB missions, 2017



% indicate the amount spent per country on medicines procurement as proportion of the total OCB expenditure in medicines

* Temporary local purchase, as International Procurement is permitted

Indonesia and South Africa). The validation forms for attaining approval of local purchases and donations, are available at mission level and were used by most missions. Linked to this, the Standard Operational Procedure (SOP) for Local Purchase and Donation are also available to all missions.

In 2017, some missions faced unprecedented partial importation constraints due to new regulations. However, MSF has been able to mitigate the related impact by negotiating exemptions with local authorities.

3.2. MSF EXPENDITURE

The total medical expenditure for OCB for medicines, vaccines, small medical supplies, medical equipment and kits in 2017 was 32.1M€, of which 25.4M€ were procured internationally through MSF Supply. This amount represents an increase of 6.7M€ compared to total medical expenditure in 2016 (Table 5). An additional 0.9M€ was

spent on therapeutic food, with DRC, Nigeria, South Sudan and Kurdistan accounting for 78% of this expenditure.

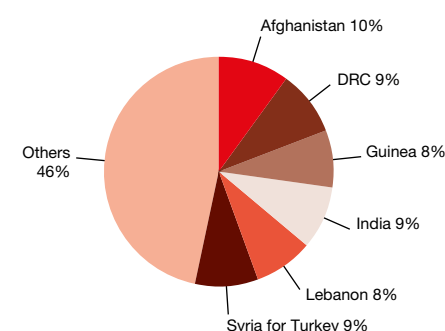
In 2017, the distribution of expenditure among missions followed the same trend as in 2016. Fifty-six percent of the total expenditure on medicines was allocated to only six of the 33 missions (Figure 2), with Afghanistan and DRC being among OCB's major operational missions.

The total MSF Supply medical turnover in 2017 (covering the above, as well as laboratory supplies and equipment, diagnostic tests and therapeutic food) was 29.8M€. Twenty-two items on the medical procurement list were responsible for 20% of this turnover (Table 6).

3.3. COLLABORATION WITH THE NDRA

The development of pharmaceutical regulations in developing countries, while in prin-

Figure 2: Top six missions in terms of medicine procurement expenditures in 2017



ciple positive, has generated importation constraints due to NDRA's enforcing regulations which previously did not apply to MSF. In addition, NDRA's in developing countries are unable to enforce international quality standards on local markets, such that local purchases come with greater quality risks (cf. §3.1). Moreover, national laboratories often lack the capacity and budget for quality control activities. Consequently, a lot of time and resources are devoted to risk/benefit analyses by MSF, resulting in stock and medicine shortages at field level.

The negotiation space at country level is usually limited. Pharmacists from HQ have specific set areas of collaboration with NDRA's during field assessments but there is a need to monitor the evolution of importation requirements, and if necessary, maintain these collaborations.

Table 5: OCB total medical expenditures 2012-2017

Medical items	OCB total medical expenditure (M€)					
	2012	2013	2014	2015	2016	2017
Medicines	12.4	15.5	13.7	22.5	14.9	18.8
Vaccines	0.6	1.0	0.7	1.1	1.6	1.5
Small medical supplies	4.0	4.9	9.6	6.8	5.2	6.9
Medical equipment	2.7	2.3	2.4	3.3	2.6	3.9
Medical kits	2.4	1.8	2.2	1.3	1.1	0.9
Total	22.1	25.5	28.6	35.0	25.4	32.1

Table 6: Top 22 items responsible for 20% of the 29.8M€ MSF Supply medical turnover in 2017

Description	Expenditure (€)
TDF 300 mg / 3TC 300 mg / EFV 600 mg, tab.	626,765.34
RUTF, peanut paste, 92 g	483,777.52
VACCINE MEASLES, 1 dose, multidose vial	444,508.63
IMMUNOGLOBULIN HUMAN ANTITETANUS, 250 IU/ml, syr.	400,250.94
MALARIA HRP-2 TEST (SD Bioline), whole blood, 1 test 05FK50	377,693.56
SOFOBUVIR, 400 mg, tab.	365,546.02
GLOVE, EXAMINATION, latex, s.u. non sterile, medium	274,193.44
ALCOHOL-BASED HAND RUB, solution, 500 ml, bot.	272,585.13
LPV 200 mg / r 50 mg, tab.	242,655.74
DELAMANID, 50 mg, tab., blister	232,483.30
TABLE, OPERATING, surgical, mechanical (Surginox ST4080AMH)	227,241.83
DACLATASVIR dihydrochloride (DCV), eq. 60 mg base, tab.	226,176.46
IMMUNOGLOBULIN HUMAN anti-D, 300µg, syringe	216,214.99
(mb GeneXpert) TEST MTB/RIF, cartridge, CGXMTB/RIF-50	213,801.89
DOXORUBICIN HCl, pegylated liposomal, 2 mg/ml, 10 ml vial	212,879.93
HEPATITIS C TEST (OraQuick HCV), ser/pl/wb, 1 test 1001-0270	200,743.30
(mb Abbott m2000) KIT REAG AMPLIFICATION, 1 test, 02G31-10	197,988.40
ARTESUNATE 60 mg, powder, vial +NaHCO ₃ 5% 1ml +NaCl 0.9% 5ml	194,730.25
COMPRESS, GAUZE, 10 cm, 12 plies, 17 threads, sterile	184,046.95
CAPREOMYCIN sulfate, eq. 1 g base, powder, vial	182,469.35
AMOXICILLIN 1g / CLAVULANIC acid 200mg, powder	172,545.91
Total	5,949,298.88

Finally, it remains imperative that the scope for importing medical items is assessed during exploratory missions and that all new project plans include medicine supply in their Memorandum of Understanding (MoU) or Host Country Agreement (HCA).

4. GOOD DISTRIBUTION PRACTICES (GDP)

The GDP guarantees that medicines are safely stored according to their stability requirements, and that their traceability is assured. This requires a multidisciplinary approach with Logistic and Supply Chain departments.

In 2017, first line support was provided for:

- A mass Measles vaccination campaign targeting 650,000 children in Guinea
- Ensuring a comprehensive pharmaceutical setup for the Search and Rescue operations in the Mediterranean Sea
- Implementation of GDP in DRC

Strategic second line support was provided for the design of consistent field pharmaceutical stock and the day-to-day implementation of minimum GDP requirements within the different missions.

HQ Cold chain breakdown management is now overseen by the GDP and the Cold Chain Referent, ensuring not only that quality

information on products is provided but that corrective and preventive actions are also properly planned with the relevant departments.

Training of field staff in GDP and Cold Chain management remained pivotal for safeguarding minimal technical awareness and ensuring continuous improvement in this field. Strategic trainings (such as the PPD, the TT, the WMC and the PCC) now include specific trainings on GDP and Cold Chain Management.

Research and development activity continued in 2017, focusing on the finalization and implementation of a remote temperature control system for active cold chain and medical warehouses. Approximately 15 missions have adopted this device to secure their cold chain, receiving prompt alerts when there is a break in the cold chain to protect products from temperature abuse.

5. MEDICAL STOCK MANAGEMENT

After failing to meet several success criteria, milestones and timing, the Implementation of Integration Policy project was reviewed at the end of 2016. Results of this review revealed that the project methodology and implementation schedules were not in line with the objectives around increasing efficiency. Global impact was not taken into account and, with that, no effect was observed in relation to reducing ruptures or losses during the medical

order process. This was largely due to lack of follow-up by the Medical Department and Supply; the focus was instead on the 'Supply' side with no parallel work on end-user units.

Instead, issues around medical stock management will be addressed by phasing-out the project-based approach and stressing the 'mandatory' dimension of medical stock integration, such that all stock are routinely integrated. The policy will be renamed the "OCB Medical Stock Management Policy", together with the elaboration of Good Medical Stock Management Practices (GMSMP) and will aim to set out appropriate steps to assist in fulfilling the responsibilities involved in the different aspects of the medical stock management process within the supply chain.

By the end of 2017, OCB had 79 medical stocks/pharmacies, with 37 integrated, nine allocated for integration in 2018, 11 not yet integrated, two with no plans for integration (due to project/mission closure), eight with questionable integration (i.e. using a combination of project stock and end-user pharmacy units) and 12 end-user pharmacy units. All pharmacies were using a computing management tool in 2017: 46% were using Unifield (36 databases pharmacies); 38% Isystock (30 pharmacies); 13% Logistix (10 databases pharmacies), and 4% (three pharmacies) were using other tools (Nodhos, Excel). Development of Isystock Version 4 will be finalized at the beginning of 2018, offering a large variety of new functions. A monthly reporting system combining reports from the different software tools used in OCB was revised to allow for better analysis.

Warehousing activities were shifted from the 'Medical Stock Management' referent to the new 'Warehousing, Transport and Custom Officer' referent, who started working in Supply in mid-2017. Collaborations between the 'Medical Stock Management' referent, the 'Warehousing, Transport and Custom Officer' Referent and the 'GDP and Cold Chain' referent will continue in 2018, with field activities supported by these referents being interlinked.

In 2017, the number of breakdowns reported from the field decreased from 104 in 2016 to 79 (Table 7). Of these breakdowns, 62% were related to active cold chain, the remaining to passive cold chain. The reduction in reported breakdowns may be related to the systematic implementation of a new remote control temperature system in field stocks (allowing storage equipment failure to be detected prior to the actual breakdown).

The number of international breakdowns reported tripled. This was not necessarily a sign of disservice but rather raised aware-

Table 7: Cold Chain Breakdowns in OCB projects (2015 -2017)

	Field Cold chain breakdowns Report to Dr. Cold Chain			International Cold chain breakdowns Claims to MSF Supply		
	2015	2016	2017	2015	2016	2017
Number of reporting missions	18	23	19	11	10	10
Number of breakdowns reported	96	104	79	48	22	73
Number of items involved in breakdown	577	455	552	NA	NA	NA
Total value of items involved in breakdown (€)	1,039,007	850,283	408,121.3	502,034	152,747	866,394.51
Total value of losses (€)	11,187	15,272	10,142.85	52	0	72.04
% of losses	1%	1.8%	2.48%	0.01%	0 %	0.008 %

ness among field teams and good communication with MSF Supply. The value of actual losses remained unchanged compared to the previous year.

6. GOOD PHARMACY PRACTICES IN END-USER PHARMACIES: THE CASE FOR BETTER USE OF MEDICINES

A key responsibility for any health organisation or program is ensuring that high-quality essential medical items are available, affordable, and used rationally. The term “Good Pharmacy Practice” implies that health professionals (such as pharmacy, nursing and medical staff) contribute to health improvement and that their activities, capabilities and existing resources are aligned to ensure that patients receive the right medicines at the right time, use them appropriately, and benefit from them.

In 2017, the first OCB GPP policy for end-user pharmacies was validated and published, along with a companion protocol to support its implementation. The aim of GPP can be defined as “efficient, safe, rational and cost-effective use of medicines...helping patients to make the best use of their medicines”. To support the GPP, a framework of quality standards and guidelines was established in the broad areas of Medicine Selection, ‘last mile’ Distribution and Storage, Good Dispensing & Safe Medication Practices and Training & Support - all focused specifically on end-user pharmacy management. A structured implementation process has also been designed to facilitate an implementation that is well organised and sustainable, with the addition of a GPP MIO to assist in delivering this package at field level. During the second part of 2017, GPP implementation visits were made to three missions (Serbia, South Sudan and Afghanistan), with more planned in 2018.

Under the umbrella of the ‘International Office’, and as part of the Med² program (aiming for better management of medical items starting with the patient), an investment proposition for the Medical Standard List

(MSL) Project was developed and approved by the five Operational Centers. This project will develop a dynamic tool - using Unidata as its platform - to provide support for the creation, validation and maintenance of the MSL (based on local clinical needs and level of care).

6.1 ANTIBIOTIC STEWARDSHIP

Antibiotic misuse is an important fuelling factor for antibiotic resistance. Optimising antibiotic use across health services thus remains a key component of global and local efforts to protect antibiotic options for the future and to curb the escalation of resistant organisms

A road map for antibiotic resistance, based on a three pillar-approach comprising infection prevention and control (IPC), antibiotic stewardship (AS) and access to bacteriology diagnostic & surveillance activities, was developed by a multidisciplinary taskforce including Pharmacy.

Through a set of coordinated interventions (an AS program), the optimal use of antibiotics can be monitored and promoted. The goal of the AS program is threefold, namely to i) optimize clinical outcomes, ii) minimize unintended consequences of antibiotic use such as resistance, toxicity and adverse effects, and iii) decrease unnecessary costs. In 2017, mapping and identification of the tools and resources required for field implementation of AS activities was carried out.

While pharmacy can (and should) play an increasingly important role in antibiotic optimisation, and be a vital component of AS activities, individual professional backgrounds and the experiences of pharmacists, role-based limitations, interprofessional dynamics and organisational/resource constraints in hospitals, can hamper the ability of Pharmacy to influence antibiotic prescribing. The potential role of MSF field Pharmacists in antibiotic optimisation and current capacity to influence antibiotic decision-making was discussed, as well as training needs to gather more clinically experienced pharmacists.

7. HUMAN RESOURCES

7.1. PHARMA UNIT

During 2017, the GPP MIO joined the Pharmacy unit, focusing on the implementation of the GPP Policy for end-user pharmacies, as well as coaching field Pharmacists. A ‘GPP and Cold Chain’ referent was also transferred to the Medical department.

7.2. FIELD PHARMACY POSITIONS

During 2017, there were a total of 73 full-time Pharmacy positions across OCB missions (a 4% increase from 2016), of which 66 (90%) were qualified Pharmacists (the same for 2016). This included emergency positions in Haiti, Iraq and Nigeria, as well as two temporary support/coaching positions. The coverage of expatriate positions across all OCB missions in 2017 was 97% for Mission Pharmacy Manager, and 93% for other Pharmacy positions. This equates to 51 expatriate departures to cover 29 expatriate positions (compared with 52 departures to cover 31 expatriate positions during 2016). Of the 51 expatriate departures in 2017, 26% were first-time missions.

7.3. PHARMACY TRAINING

During 2017, full intersectional Pharmacy trainings included the Pharmacy and Medical Stock Management course and the advanced Pharmacy Week (this year hosted by OCG). Pharmacy modules were included in various transversal trainings such as the First Line Medical Training, Basic Logistics Course, Hospital Management Team Training, Project Coordinator Course and the first mission Preparation for Departure course (supply and pharmacy profiles).

8. PROSPECTS FOR 2018

- A number of documents will be developed or finalised in 2018, including:
 - GDP Guidelines
 - An on-line system for more effective cold chain breakdown management
 - Updated SOP for Local Purchases
 - Good Medical Stock Management Practices
 - Medical Stock Management Policy
- Completion and implementation of the new stock management package tool (developed to run in medical projects from the start).
- Unifield will continue to be rolled out in 2018. Clear deployment and communication channels must be established to allow the field to apply SOPs, particularly for reporting in Unifield.
- Version 4 of Isystock will be installed to replace Version 2.
- Many field visits will be undertaken by the GPP referent and the GPP MIO to bring the end-user pharmacy GPP package to the field. The GPP toolbox and training package will also continue to be developed with new support materials, to meet field needs.
- Stronger emphasis will be placed on quality assurance of medical devices (particularly in relation to local purchases) in order to ensure optimal quality for beneficiaries.
- A common methodology for collecting and reporting data on antibiotic use will be put forward to allow for monitoring of trends in antibiotic use over time, to facilitate the design of hospital interventions aimed at promoting prudent use of antibiotics, and to allow assessment of the effectiveness of AS interventions.
- Pilot and full surveys to monitor patterns of antibiotic prescribing will be conducted in 2018. Feeding back surveillance information to prescribers will be an essential component of the antibiotic use surveillance framework - this to promote local antibiotic stewardship activity (aimed at improving prescribing habits so that the evolution, spread and persistence of resistant organisms are minimised).
- The Med² MSL Project will enter its second phase with discussions on scope, team and governance, processes around MSL, and consultative process of the tool's development. A six month development timeline is foreseen, with delivery of a viable product by the end of 2018.

SEXUAL AND REPRODUCTIVE HEALTH

1. OVERVIEW

The volume of Sexual and Reproductive Health (SRH) activities increased in 2017, despite the total number of projects providing Emergency Obstetric Care (EmOC) decreasing. The number of deliveries and caesarean sections (CS) performed increased by 8 and 7% respectively, with Antenatal Care consultations (ANC) increasing by 38%, Post-Natal Care (PNC) by 6% and Family Planning (FP) consultations by 12%.

As last year the SRH report highlighted different quality indicators in relation to maternal and obstetric care as: Malaria and Syphilis screening coverage rates, direct obstetrical complications and maternal mortality. Provision of Safe Abortion Care (SAC) has been promoted at field level and various platforms resulting in a four-fold increase in Termination of Pregnancy (ToP) activities and 28% increase of abortions presenting to MSF services and requiring post abortion care. Services which provide care to victims of sexual violence experienced a 41% increase in caseload compared to 2016. This year's analysis emphasized on the proportion of male victims presenting to our SV services and different strategies to engage male SV victims have been explored, such as the integration of SV into Mental Health services and the provision of care for non-violence related matters such as HIV testing and STI management. The total number of Sexually Transmitted Infections (STI) reported increased due to improved diagnosis and recording. The Gutu project in Zimbabwe screened 4,691 women for cervical cancer, with an approx. 30% HIV positivity rate.

In keeping with last year, Operational Centre Brussels (MSF-OCB) was not involved in any obstetric fistula repair activities. It is hoped that in 2018 the relevance and need for new obstetric fistula projects and campaigns will be a subject that Operations willingly embraces.

2. PROGRAM ACTIVITIES

2.1. ANTENATAL CARE (ANC)

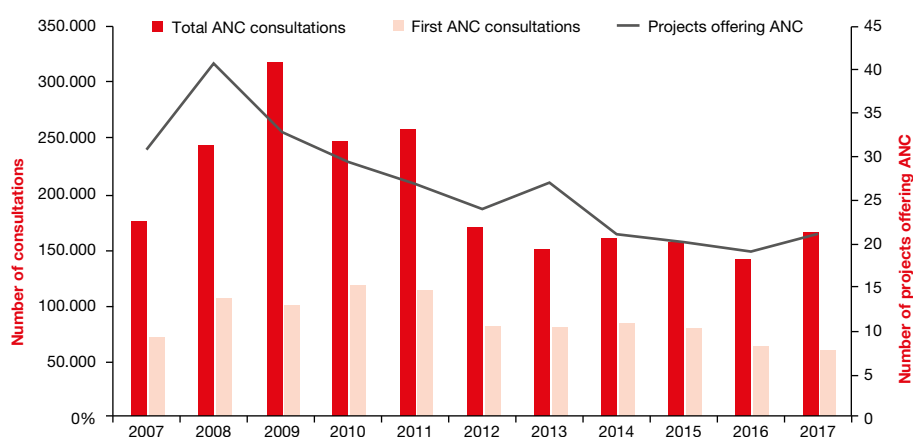
There were 21 projects offering ANC during 2017 (including one new project in Alexandria (Egypt)); seven of these projects closed during the year. Despite these closures, the total number of ANC consultations performed increased from 140,782 in 2016 to 166,089 in 2017 (18% increase), (Figure 1). Projects which saw an increase in ANC consultations included Shatila (Lebanon), Kabul (Afghanistan), Karachi (Pakistan), Pibor (South Sudan), Bassikounou (Mauritania) and Chhattisgarh (India). The Shatila project performed 34,479 ANC consultations in 2017, the most by any one project. The Kabul project also performed a large number of consultations (n = 20,490).

2.1.1. Malaria Screening and Treatment

Nine of the 21 ANC projects reported Malaria ANC screening data, with excellent screening coverages (56-100%).

Projects in Doro (South Sudan), Bili (DRC), Bangassou (CAR) and Chhattisgarh reported the highest screening coverages (>90%). In some regions of Pakistan, malaria preva-

Figure 1: Number of ANC consultations, first ANC visits and number of ANC projects 2007-2017



lence is low and therefore systematic malaria screening is not implemented during ANC, with only suspected cases being tested. The Masisi project in DRC is the only project which reported a slight decrease in malaria screening coverage (from 68% in 2016 to 56% in 2017).

Bangassou reported the highest malaria positivity rate (46%), followed by Karachi (19%), Bili (16%) and Chhattisgarh (13%). The malaria positivity rate in Doro fell to 11% in 2017, from 20% in 2016. There is no clear explana-

tion why there was a decrease reported, and further investigation is required.

2.1.2. Syphilis Screening

Of the 11 projects which reported syphilis screening data, the majority (n=10) reported high screening coverages (>90%). Some projects (Bili, Bajaur, Yei and Chhattisgarh) reported screening coverages above 100%; this is probably explained by data errors such as patients being screened twice or results of Syphilis screening at delivery being included in the data. Syphilis positivity rates varied be-

tween projects (<1 – 8%) mirroring the trend seen in 2016. Projects which reported high positivity rates included Bassikounou (8%), Yei (7%) and Bangassou (5%).

2.2. OBSTETRICS

The number of projects performing deliveries increased from 17 projects in 2016 to 18 in 2017. The closure of four projects in 2016 (Kibera (Kenya), Bikengue (DRC), Gogrial and Bor (South Sudan)), was offset by the opening of four new maternity services during 2017 in Bajaur (Pakistan), Gorama Mende (Sierra Leone), Gbaya Ndongbia (CAR) and Port-à-Piment (Haiti), and Martissant (Haiti) reporting delivery data this year. All of the 18 projects performing deliveries offered basic emergency obstetric and neonatal care (BEmONC) activities and 10 offered comprehensive emergency obstetric and neonatal care (CEmONC) services.

There were 81,801 deliveries performed in the 18 projects, 95% (n=77,871) of which occurred in 10 projects alone (Table 1). These same 10 projects accounted for 99% of the C-sections performed in 2017 (Table 1). As in previous years, the Afghanistan mission saw the largest number of deliveries in 2017 (n=48,834; 56% of all deliveries in OCB maternities).

Most projects saw an increase in the number of deliveries performed; projects where this was not the case included Bangassou (due to insecurity and a reduction in activities) and Doro. Obstetric activities performed by Syrian hospitals (long distance support) and the Maracaibo project in Venezuela are not included in the total number of deliveries because OCB provided no direct hands-on support. These two projects reported 40,684 deliveries in 2017.

The Castor project (CAR) saw a 20% increase in deliveries performed, from 6,967 in 2016 to 8,392 in 2017. The original Castor maternity unit was not designed to admit the current volume of deliveries, and as such the mission is exploring the idea of decentralising care or constructing a new CEmONC facility.

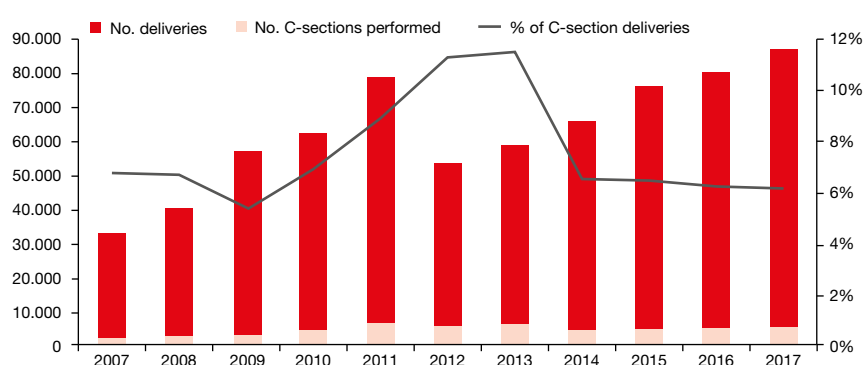
The workload in Khost, Afghanistan, also continued to increase in 2017, with on average 1,898 deliveries a month. This puts strain on human resources (both expatriate and national) and on availability of space in the delivery room, inpatient facilities and neonatology. Additionally, MSF began supporting five BEMONCs in the Khost district, reporting a doubling of deliveries and referrals to Khost in 2017. The number of expatriate gynaecology positions increased to three, with an additional outreach midwife position also being added (increasing the number of expatriate midwife positions to five). Considering the situation at the onset of the project five years ago, the Khost project has become

Table 1: Top 10 OCB projects performing deliveries in 2017

Project	Country	Total number of deliveries (instrumental - vaginal - C-Section)	Number of C-sections performed n (%)
Khost	Afghanistan	22,856	525 (2.3)
Kabul - ASB	Afghanistan	20,978	508 (2.4)
Timergara	Pakistan	10,160	1,596 (16)
Castor	CAR	8,392	933 (11)
Masisi	DRC	4,898	1,172 (24)
Shatila	Lebanon	3,181	N/A
Bassikounou	Mauritania	2,217	123 (5.5)
Doro	Sudan South	1,944	N/A
Karachi	Pakistan	1,631	N/A
Bangassou	CAR	1,614	103 (6.3)

N/A: not available – these facilities do not offer caesarean section

Figure 2: Trend in number of deliveries and caesarean sections performed, 2007-2017



a beautiful example of what is feasible in rural Afghanistan in terms of reducing of maternal and neonatal mortality.

2.2.1. Maternal Outcomes

In 2017, 73 maternal deaths were reported by 14 projects. The highest number of deaths in 2017 were reported from Castors (26), Timergara (11), Khost and Masisi (each reported 10 maternal deaths).

Projects offering obstetric care are recommended to conduct a verbal analysis after each maternal death. Some missions, such as Afghanistan and Pakistan, send their maternal death review forms to the SRH unit and feedback is then relayed back to the field teams. In 2017, the Castor project conducted a 2014-2017 maternal mortality analysis, finding that one out of three maternal deaths were linked to abortion-related complications. A visit from the HQ Gynaecologists advisor to Khost concluded that the vast majority of maternal death cases arrive already moribund and die just a few hours after arrival, despite correct management.

When a maternity facility (BE/CEmONC) presents a high proportion of direct obstetrical complications (DOC) out of the total deliveries, it indicates that patients with severe obstetrical morbidities are reaching the facility.

This year the highest proportion of DOC cases was reported by the following projects: Bili (31%), Castor (30%), Bajaur (27%), Timergara (21%) and Shatila (19%). Troublingly, the Bili project shut down their SRH activities at the end of 2017, despite having the highest percentage of DOCs; this is likely therefore to negatively affect accessibility to safe delivery care in the area. Unfortunately, the Bajaur project in a conflict and difficult-to-reach area in Pakistan also closed at the end of 2017 due to operational challenges.

2.2.2. Neonatal Outcomes

High stillborn rates were observed in Timergara (9%), Bili (6%), Khost and Bangassou (both 4%). Nine other projects reported a stillborn rate between one and four percent. Further analysis is required to ascertain if these intra-partum deaths occurred before or during admission at MSF facilities, as intra-partum deaths occurring during admission can be an indicator of poor case management.

The Timergara project in Pakistan continued to be challenged with the unregulated use of oxytocin, which can lead to severe birth asphyxia. The project launched an advocacy strategy with the objective to raise awareness on the medical risks associated with the misuse of oxytocin (based on research

findings from the MSF study on the misuse of labour-inducing drugs in Timergara).

The Paediatric chapter of this report covers the activities related to neonates and newborns.

2.3. POSTNATAL CARE (PNC)

A total of 36,083 PNC consultations were performed across 20 projects in 2017 (Figure 2). Whilst three projects stopped their PNC activities (Kibera in Kenya, Bikengue in DRC and Gogrial in South Sudan), eight projects began reporting PNC activities (Castor and Bangassou in CAR, Gorama Mende in Sierra Leone, Bajaur in Pakistan, Yei in South Sudan, Khayelitsha in South Africa, Qunnaya in Syria and Maracaibo in Venezuela).

Masisi reported the highest number of PNC consultations (n= 9,832), followed by Shatila in Lebanon (n = 7,693). Projects that reported an increase in PNC activities included Kabul, Doro, Chhattisgarh (India), and Lesbos (Greece). The Khayelitsha project for HIV-positive mothers and their babies, the Qunaya project in Syria, and the Maracaibo Adolescent care project in Venezuela, reported PNC activities for the first time in 2017.

2.4. ABORTION CARE

2.4.1. Safe Abortion Care

Termination of pregnancy (ToP) should be available on request in all MSF projects where it is relevant and feasible. In 2017, 16 projects provided ToP services; no projects however report these activities as a unique SRH care component.

There was a four-fold increase in the number of ToPs performed in 2017 (n = 2,431), with 14% of these provided in the second trimester. Castor project (CAR) had the largest case load other projects with an important volume are: Rustenburg and Shatila. During 2017, the youngest female requesting ToP was 12 years old, whilst the oldest was 44 years of age. Adolescents between 10 and 19 years of age represented the majority of registered requests; in Zimbabwe 78% of requestees were adolescents.

Whilst most ToPs were performed within the project, 511 cases were referred either to public or private hospitals, or to Marie Stopes International. This is a significant change compared to last year, when 66% of ToP cases were referred.

Over the past two years, concerted efforts have been made to collect ToP data in a more systematic way. And yet, data are frequently incomplete or adapted or replaced over time, making it difficult to compile complete, and therefore accurate, data. There are also issues around capturing requests for ToP services, as often not all requests for

care are followed up with a ToP. This indicator – a measure of demand - was introduced to measure impact and missed opportunities.

DRC, CAR, South Sudan, Mozambique and South Africa missions see a high proportion of ToP requests undergoing an actual ToP, but this proportion is much lower in both Shatila in Lebanon (60%) and Mbera in Zimbabwe (48%). For 2nd trimester abortions, this ToP demand to ToP performed ratio is, expectably, lower. In order to improve the interpretation of the indicator ToP provision over demand the missions will need to map miss opportunities, define flaws in provision of care and document limitations as ToP demands above 22 weeks.

Overall no ToP related mortality was reported. With the exception of DRC reporting incomplete abortions and ectopic pregnancy no other abortion related complications were reported. Overall, rates of contraceptive uptake post-ToP were high when compared to post-maternity contraceptive uptake. However, in some projects like Pibor (38% uptake), Gbaya Dombia (44% uptake) and Kananga (50% uptake) there is room for improvement. Meanwhile, the Shatila project – with the third highest case load - reported no information regarding contraceptive uptake post-ToP. As the provision of contraception post-ToP is important, a wide range of contraceptive methods need to be offered to try to optimise uptake. This requires the upscale of capacity and quality care, as well as counselling of staff to improve their understanding around why women reject contraception post-ToP.

2.4.2. Post Abortion Care

Over the course of 2017, 14 projects presented post abortion care data, a total of 8,195 abortion cases presented to our services of which 85% (n=6,928) presented without complication, 15% (n=1267) presented with severe complications (haemorrhage, infection and trauma). Some projects reported high rates of severe abortion complications: Masisi (26%), Pibor (24%), Castor,

Bili (both 22%) and Karachi (19%). This illustrates as well the need of provision of safe abortion care.

2.5. FAMILY PLANNING

There were 66,520 Family Planning (FP) consultations performed in 2017, up 12% from 59,356 in 2016 (Figure 2). There were six projects reporting FP data for the first time in 2017 – Yei (South Sudan), Rustenburg, Maracaibo and Manica (Mozambique), Gorama Mende and Mbare (Zimbabwe); the Kibera project closed in 2017. The Kabul mission (two projects) reported the highest number of FP consultations (n=10,729) whilst the Malawi corridor project experienced a three-fold increase in FP consultations (from 671 in 2016 to 2,881 in 2017).

2.6. SEXUALLY TRANSMITTED INFECTIONS (STI)

Treatment for Sexually Transmitted Infections (STIs) is offered at different points of care during in-patient and outpatient care. STI cases are highly likely to be underreported as they are not captured as an IPD exit diagnosis category. Compared to 2016, the total number of STI cases reported increased from 8,672 to 24,804 (Figure 2).

There are several factors that explain this increase. First, some vertical HIV/PMTCT projects started reporting STI data. Second, the Masisi project began reporting STI data, with a five-fold increase in cases from 1,400 in 2016 to 7,686 in 2017. The largest proportion of STI cases were reported from the outpatient department (OPD), highlighting the importance of health service data (in many projects STI cases are not reported, which contributes to under reporting of STI data). Across several projects, actions were taken in 2017 to improve data encoding and STI screening services.

2.7. PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV (PMTCT)

PMTCT-related indicators have been vastly simplified and now include: number of preg-

Figure 2: Number of consultations for Post-Natal Care, Family Planning and Sexually Transmitted Infections, 2007-2017

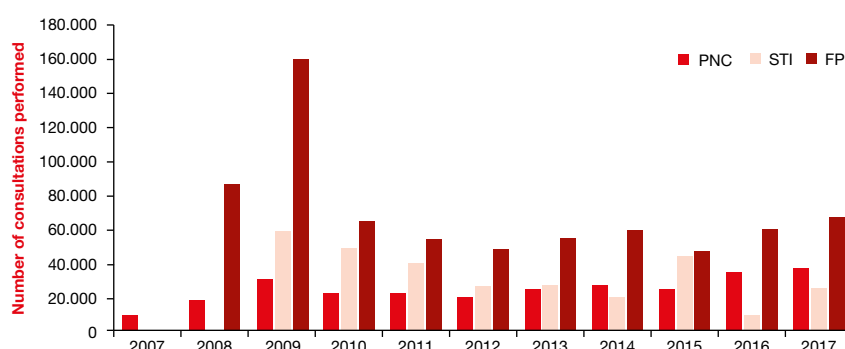
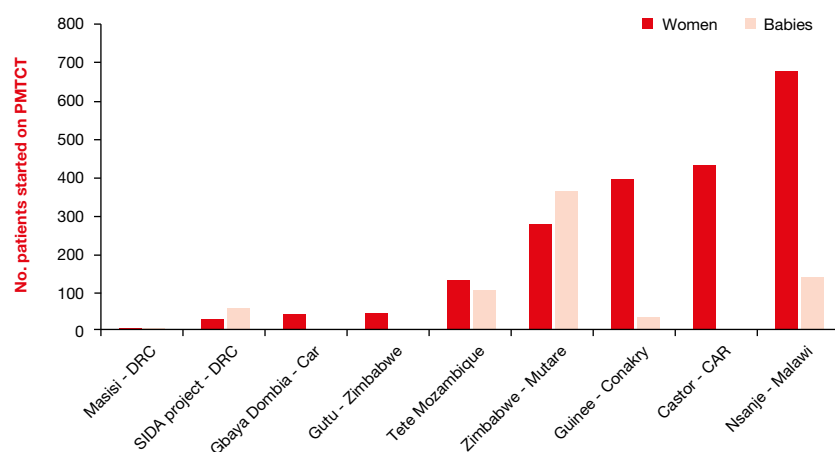


Figure 3: Number of patients beginning treatment for PMTCT by project, 2017

Note: two babies also began PMTCT in Bassikounou, Mauritania in 2017

nant women started on ART and number of new-born HIV-exposed babies started on ART. Data for these two indicators for OCB projects are summarised in Figure 3.

2.8. OBSTETRIC FISTULA

Since 2015, when the vertical project in Gitega, Burundi, closed, there has been a dramatic decrease in obstetric fistula care activities by OCB, and no fistula campaigns taking place. Some projects refer fistula patients to partner organisations. In 2017, two projects reported referral data: Masisi referred 51 patients to Heal Africa in Goma (29 new and 22 old cases) and Khost referred one patient. Patients were referred by other projects too, although data on these referrals are not available. The SRH unit continued to advocate on various platforms (MedCo week, B&O etc.) for OCB to support fistula repair – the likes of which has a major impact on women's lives.

As reported last year, various strategies to increase obstetric fistula repair activities have been proposed but few were pro-actively implemented during 2017. Missions where fistula repair campaigns could be undertaken need to be identified and fistula cases need to be registered at project level. This however relies on there being operational interest in obstetric fistula. It is hoped that in 2018 the relevance and need for new obstetric fistula projects and campaigns will be a subject that Operations willingly embraces.

2.9. CERVICAL CANCER

The OCB project in Gutu, Zimbabwe (the project started in 2015 with offering screening in four clinics and added two in 2016) managed to screen 4691 women in 2017 with the VIAC method (Visual Inspection Acetic Acid and Cervicography), 1408 of the women screened in 2017 were HIV positive (29.8%).

During 2017, the Gutu clinic screened a total of 4,691 women, using the VIAC method (Visual Inspection Acetic Acid and Cervicography). Of the women screened, approx.

30% were HIV positive. Abnormal findings were more likely in HIV positive women (10% in HIV+ women compared to 6% in HIV- women). HIV positive women were also more likely to have more extensive lesions (28% versus 13% in HIV- women). Screening rates for cervical cancer among women receiving ART in clinics where MSF is physically present remain high (65%), however, as MSF is only present in six of the 29 clinics in the area, women often do not travel to other sites for screening.

There were several challenges faced by the project, including:

- Limited access to the Loop Electrosurgical Excision Procedure (LEEP): less than half of the women who required a LEEP sought treatment in Harare
- Limited access to treatment for invasive cancers due to radiotherapy system failures (55 invasive cancers were diagnosed in 2017).
- Regular breakdowns of the camera and cryogun

The year 2017 also saw a number of successes, with more than 90% of the women screened receiving cryotherapy in one visit, and one Doctor being trained to perform LEEP treatment. There are plans for LEEP treatment to be offered in Gutu from March 2018.

Plans for the Gutu project also include a Human Papillomavirus (HPV) vaccination campaign (in conjunction with the MoH) targeting 9 -14 year-old females, together with hand-over to the MoH of one of the six clinics where MSF-supported screening currently occurs.

2.10. SEXUAL VIOLENCE

Care for victims of sexual violence (SV) was offered to 4,912 victims in 24 projects, with the majority of these consultations (92%, n= 4,506) taking place in seven projects: Mbare

(Zimbabwe), Maadi (Egypt), Kananga (DRC), Masisi (DRC), Lesvos (Greece), Rustenburg (South Africa) and Castors (CAR). The Kananga project opened in 2017. Projects which reported providing SV care during 2017 for the first time included Arche (Burundi), Maracaibo (Venezuela), Gbaya Ndombia (RCA), Tunisie South Coast (Tunisia), Port-à-Piment (Haiti), Balkans North Belgrade (Serbia), Pibor and Yei (Sudan South), Tete (Mozambique), the Prison project (Malawi), and the 'Migrants on the move' project in Italy.

Across all projects, the majority of victims seeking care were female. It is important to highlight however, that men and boys also experience sexual violence and male victims also accessed our services (29% in Lesvos, 16% in Maadi, 7% in Mbare, 2.5% in Masisi, 10.5% in Rustenburg and 1% in Kananga). In the past, MSF SV programs were mainly integrated in maternal and child health (MCH) care, which potentially impacted male health-seeking behaviour. Different strategies to engage male SV victims have been explored, such as the integration of SV into Mental Health services and the provision of care for non-violence related matters such as HIV testing and STI management.

The majority of victims reported their assault as rape, although some projects also saw cases of non-violence and non-sexual violence (cases in which there had been consensual sex with a minor; cases of non-sexual intimate partner violence; cases of non-sexual domestic violence; and other non-sexual violence cases such as burst condoms and males seeking STI treatment). This highlights the diversity of SRH needs emerging in SV projects and the importance of adopting a holistic approach when dealing with these needs.

In order to prevent STIs, HIV and pregnancy, it is important that a survivor seeks care less than 72 hours after the assault. The proportion of survivors seeking care within 72 hours differed across projects: Masisi (83%), Rustenburg (56%), Mbare (45%) Maadi (26%) and Kananga (7%). In Kananga, this very low percentage may have been because the community was unaware of the need to seek urgent care after an assault (security issues hampering sensitisation activities). In the Maadi and Lesvos projects, a high percentage of victims sought care one month, one year or even more than one year after the assault. Both projects see migrants exposed to SV who may have not had access to an SV clinic during the migration route and/or process.

All projects reported high uptakes of HIV post-exposure prophylaxis (PEP); in Mbare, Lesvos, Kananga, Rustenburg all of the PEP eligible patients started treatment, in Maadi PEP uptake was 92% (n=233) and in Masisi

it was 98% (n=336). In all projects (Lesvos, Rustenburg, Mbare, Masisi and Kananga) more than 90% of eligible survivors received STI care. Of the 24 projects offering SV care, 87% (n=21) also offered mental health care.

A high proportion of survivors returned for their first and second follow-up visits, however loss-to-follow-up increased significantly for subsequent visits.

3. TRAINING

Several SRH trainings were run during 2017, including:

- The SRH course – which was run twice in 2017 – once in English and once in French (OCP)
- The Advanced Life Support in Obstetrics (ALSO) provider and instructor courses - run twice (OCA & OCBA) in Denmark and once in Dubai
- Several decentralized ALSO courses led by OCB:
 - 1 course in Lebanon
 - 3 courses in Pakistan with intersectional participants
 - 2 courses in CAR, one intersectional and one for OCB participants only
 - Courses were cancelled in Afghanistan due to a lack of instructors
- Several MSF staff participated in the RAISE course organized by Marie Stopes Kenya, which focused on ToP, post-abortion care, and family planning methods. This is a three-week course with hands-on supervision within various Marie Stopes clinics.
- SRH modules were included in several other OCB trainings, including Prepara-

tion for Primary Departure (PPD), First Line Medical Training (FLMT) and Health Promotion training.

- A tailored intersectional Sexual Violence workshop was organised for all MSF sections in Johannesburg, South Africa. The workshop covered sexual and gender-based violence (SGBV) and adolescents, intimate partner violence (IPV), and SV in key populations (Men and Children). The aim of this workshop was to share experiences between projects, create a better understanding of SV within populations, receive input from external specialists for topics on which MSF has limited experience, and to brainstorm on how MSF can provide adapted services for these patients.
- An Exploring Values and Attitudes (EVA) workshop was organised for HQ staff to explore, question, and affirm their values and attitudes about abortion, in order to try to gather support for the provision of safe abortion care.

4. COMMUNICATIONS, DEVELOPMENTS AND FIELD VISITS

4.1. COMMUNICATIONS ON VARIOUS PLATFORMS

- Presentation of “Ethical aspects of including pregnant women in Ebola clinical trials” at the American Society of Tropical Medicine & Hygiene (ASTMH) conference and at the European Congress on Tropical Medicine and International Health (ECT-MIH) in Antwerp.
- Presentation of “Too many barriers: how can sexual violence programmes improve access and care for male victims?” at the

Sexual Violence Research Initiative conference in Rio, Brazil and at the MSF Scientific Day in London

- Presentation of “Impact of injudicious use of oxytocin among women in labour in Pakistan” at the OCB Operational Research (OR) Day
- Poster on “Care requirements for clients who presented after rape or after consensual sex as a minor at the clinic in Harare, Zimbabwe, from 2011 to 2014” presented at the MSF Scientific Day in London
- Poster on “Safe care for termination of pregnancy on request, 2017 - OCB evolution” presented during B&O

4.2. NEW DEVELOPMENTS

- Revision and finalisation of the Advanced Life Support in Obstetrics (ALSO) training tools
- Revision of the International Cervical Cancer Policy and Safe Abortion Care (SAC) Task Force tools and documents
- Development of the Adolescent SRH Care Guidance paper and the Second Trimester Abortion protocol
- Further updates of the MINOS SRH indicators and reports

4.3. FIELD VISITS

The SRH Advisor and Advisor support conducted field visits to Burundi, CAR and Indonesia, providing support for SV care, implementation of SAC services and assessment of SRH needs. The Midwife MIO provided support to the field, ran EVA workshops and implemented SRH-related activities in South Africa, DRC, South Sudan and Haiti. Meanwhile the Gynaecologist referent visited Afghanistan twice and South Sudan once during 2017 to provide support and gap filling.

5. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- The direct and important impact that PNC has on reducing neonatal mortality must continue to be stressed among Field and Coordination teams.
- The MIO midwife contract was extended to respond to the continuous demand for MIO support visits following successful feedback in 2016 and 2017. Overall, the team of Midwives Referents (support and MIO) together with the Gynaecology Referent, provides a good ‘mix’ of competencies and availabilities for visits to respond to operational questions and needs.
- Dissemination of the SAC movie and abortion leaflet, coupled with ongoing support to different missions on this matter has been successful and should be continued.
- The first SGBV workshop organised in South Africa and decentralized ALSO trainings were a great success, but significant time is required for their planning and organisation.
- Close collaboration with the Operational Department, especially pre-ARO, is needed to provide opportunities and better understanding of field needs.
- In collaboration with the Paediatric and Nutrition Advisors, the user manual, protocol and implementation tools for piloting the electronic breast pump were developed.

PROSPECTS FOR 2018

- Improving data collection for Integrated PMTCT activities, Obstetrics and ToP activities, along with launching the revised SV and obstetrical individual database.
- Exploring different options for more community involvement for SRH service implementation.
- Assessing opportunities for the opening of a new fistula surgery project and/or campaign.
- Finalising and disseminating the Adolescent SRH Guidance paper.
- Providing midwife MIO support to the Malawi, Mozambique, Rustenburg and Zimbabwe mission for the implementation of SAC and FP activities.
- Planning field visits by the SRH and Gynaecologist Advisor (including trips to Bolivia, Zimbabwe, DRC, CAR, Greece, Afghanistan, Pakistan and Sierra Leone).
- Promoting the SGBV field trainings, and Training of Trainers (ToT) SV training with the field during annual planning of operations.
- Organising various EVA workshops and Trainer of Trainer (ToT) courses for HQ and the field (DRC, CAR, Malawi, Mozambique, Zimbabwe are already planned).
- Planning the implementation of a study validating the use of the GeneXpert analyser for detection of HPV and the self-swabbing technique, in Gutu, Zimbabwe, along with a HPV vaccination study of 15-26 year old HIV-positive adolescents.
- Piloting the electronic breast pump in the field, in collaboration with the Paediatric and Nutrition advisors.
- Working in collaboration with LuxOR to investigate Male SV and post and safe abortion care.
- Based on last year experiences a clear ToP and contraceptive implementation or follow up package needs to be completed. This package can be communicated with the field in advance, in order to prepare the SRH MIO and/or advisors visit and to optimize field and HQ objectives.

SURGICAL CARE

1. OVERVIEW

MSF-OCB's Surgical Policy describes surgical care as the “*provision of quality surgery and anaesthesia*”. In order to reduce mortality, morbidity and disability, surgical care is considered an integral part of comprehensive medical care. Although surgery is commonly viewed as a costly and high demanding activity, surgical care provided in low-resource district hospitals has proven to be cost-effective, just like other selected primary health interventions. In projects run by Médecins Sans Frontières Operational Centre Brussels (MSF-OCB), access to quality surgical and anaesthetic care is ensured, in keeping with MSF's core values.

In 2017, mirroring the trends of previous years, surgical care in OCB projects consisted mainly of lifesaving and essential surgery, requiring low technology, that was performed mainly in district hospitals. OCB also continued its operational strategy of supporting maternal health through obstetric surgery (e.g. in Khost, Afghanistan) and developing trauma-related surgery (e.g. in Bujumbura, Burundi). Post-operative surgical and rehabilitation care was also provided to victims of armed conflicts (e.g. in Al-Hamdaniya, Iraq) and outpatient wound care was offered in Kunduz, Afghanistan. Finally, support continued to be provided to health staff working in Syria.

2. PROGRAMME ACTIVITIES

2.1. SURGICAL ACTIVITIES AT COUNTRY AND PROJECT LEVEL

By the end of 2017, there were 11 projects offering surgical care. Over the course of the year, three projects offering surgical care were opened and closed following specific operational strategies: Kananga in DRC and also Al-Hamdaniya and Hamam Al-Alil in Iraq. A wound care outpatient clinic was opened in Kunduz, Afghanistan. Two projects were handed over to the local authorities: Bili in DRC and Bor in South Sudan.

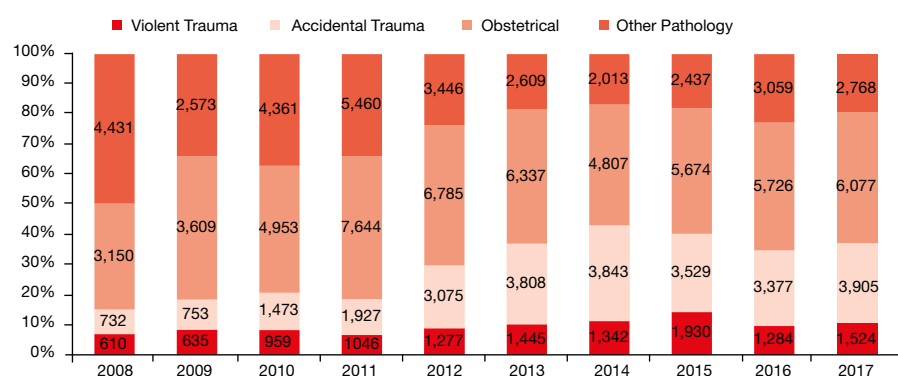
Similar to previous years, surgical activities varied by project, with some mainly offering emergency surgical care (e.g. Masisi, DRC); some dedicated to obstetric surgery (e.g. Khost, Afghanistan) and some dedicated to specific pathologies or conditions (e.g. trauma care in Tabarre, Haiti). Here we only report on the projects with direct MSF involvement in surgical activities (Annex 1). Al-Hamdaniya was a post-operative centre and the wound care clinic in Kunduz did not perform major surgical interventions; therefore they were not included in the data reported here on surgical interventions performed.

The data reported here forward are compiled from 15 projects.

2.2. SURGICAL ACTIVITIES BY INDICATION

During 2017, there were 14,274 primary interventions (new cases) - reflecting a 5% increase

Figure 1: Indications for surgery expressed in proportions, 2008-2017



compared to the previous year (n=13,446). The number of primary interventions also corresponds to the number of patients (new cases) who benefited from surgical care.

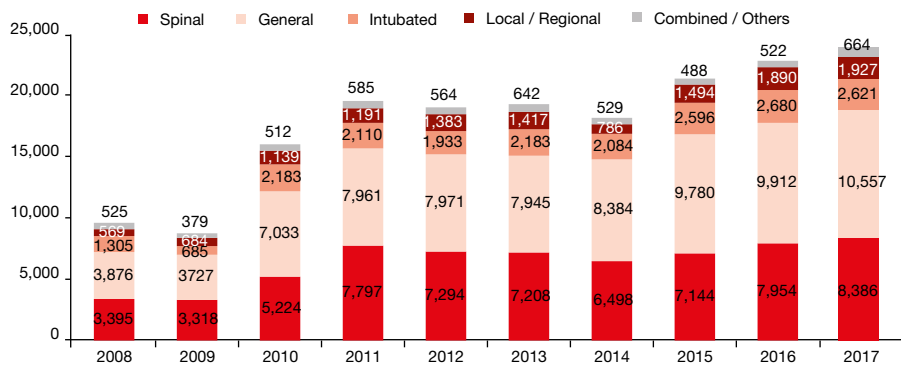
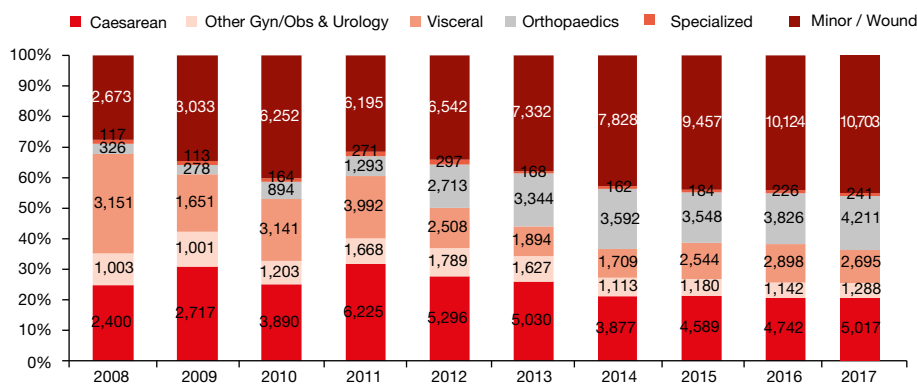
The proportions of different surgical indications have not changed significantly in the last four years (Figure 1). However, in 2017, accidental trauma as a surgical indication showed a slight increase of 2.5% in absolute numbers and proportional share of all indicators. Obstetrical causes also increased by 6% in absolute numbers and proportional share of all indicators remained similar to 2016 (43%). On the other hand, other pathologies decreased by 10% in absolute numbers and 3% in proportional share of all indicators.

2.3. PERFORMED ANAESTHESIA

During 2017, MSF-OCB provided anaesthesia during 24,155 interventions - an in-

crease of approximately 5% compared to the previous year (2016, n=22,958) (Figure 2). The total number of anaesthetics given corresponds with the total number of entries into the Operating Department (OD) - which is higher than the number of primary interventions as some are re-interventions. The increased number of OD entries correlates with the increased number of new cases. The small increase is a reflection of MSF-OCB's operational strategies, and the absence of emergencies/natural disasters requiring high volumes of surgical activity.

No major proportional differences were observed in the type of anaesthesia given in 2017 compared to 2016. In projects providing trauma care, the proportion of regional anaesthesia relatively increased in 2017 (1.7%) compared to 2016 (0.9%).

Figure 2: Types of anaesthesia expressed in absolute numbers, 2008-2017**Figure 3: Surgical procedures expressed in proportions, 2008-2017**

2.4. SURGICAL PROCEDURES BY TYPE

During 2017, 27,861 surgical procedures were performed. This number exceeded the number of OD entries / anaesthetics given because multiple surgical procedures can be performed under the same anaesthetic procedure (during the same intervention). Number of surgical procedures is an important indicator as it gives an idea of the work done by the surgical team and allows appropriate monitoring of the use of material resources in the project.

As described in previous reports, not all projects were able to record more than one procedure per intervention. And thus, in order to present a systematic and unbiased analysis, only the primary ("type 1") procedures are reported here (n=24,155) (Figure 3).

The proportion of different surgical procedures (including CS) remained similar to the two previous years.

2.5. EMERGENT SURGERY

Emergent surgery is defined as urgent (life-saving and acute emergencies) or delayed (with a wait of no more than a few days without significant morbidity) cases, as opposed to elective surgery.

In MSF, certain planned procedures are considered essential and address conditions amenable to a proven surgical treatment.

The condition in question may not affect the patient's health or life immediately but may result in suffering, handicap and/or disability. Surgical activities can thus be classified into three degrees of urgency: urgent, delayed and planned elective. As urgent versus delayed surgery is a relatively subjective classification, the two are grouped together under the umbrella 'emergent surgery'; this allows for more objective comparisons across different projects.

In 2017, 23,609 emergent cases were reported, representing 98% of all surgeries – a similar trend to the previous year (97%). The analysis of emergent versus planned elective cases is important for programmatic planning. This information, together with information on the type of surgical cases, assists in human resource planning (type and number of specialists) and influences the type of infrastructure, and the medical equipment and supplies that are needed. Additionally, it can help guide operational strategies; for example, if a surgical programme in a conflict area sees many non-trauma and non-emergent cases, it may be that it is located too far from the active conflict.

2.6. ORDER OF THE INTERVENTIONS

Surgical interventions can be performed as first/primary interventions, planned re-interventions, or unplanned re-interventions. Knowing this about the intervention is important, as some projects may have a large

volume of planned re-interventions, indirectly reflecting the type of patients they are managing (e.g. wounded, burn victims). Unplanned re-interventions can be a quality indicator as they represent post-operative complications of the original surgical procedure, and may be linked to professional performance (inadequate experience or skills), lack of medical materials and supply, unavailability of a post-operative recovery room, or lack of nursing follow-up of the patient in the hospitalisation ward.

In 2017, 59% of the interventions were primary interventions, mirroring the trend seen in the previous year. Those interventions requiring re-intervention are often trauma related surgeries, with trauma cases often requiring several re-interventions during the treatment period.

2.7. INTRA-OPERATIVE MORTALITY

Out of the 24,155 OD entries, 51 intra-operative deaths were reported. This represents an overall mortality rate of 0.2% which is the same as for the previous year. Intra-operative deaths are defined as any death occurring between the induction of anaesthesia and the patient's discharge from the recovery room. While mortality rates are reported per project, data should not be compared across programmes since intra-operative mortality is affected by the patient condition, emergency status, indication for surgery, etc., and is thus conditioned by the project objectives as well as the quality of care. Data can however be compared within projects over time to assess changes in their performance.

3. HUMAN RESOURCES AND TRAINING

Training is an important core activity in MSF and particularly for specialists in surgery/orthopaedics, anaesthesia/reanimation, gynaecology/obstetrics, and emergency/intensive care. Specialist doctors such as surgeons and anaesthesiologists are scarce and those who are willing to operate in resource-limited settings are even more so. The different training schemes targeted different types of specialists, taking into consideration their skills and knowledge, and the expected skills and knowledge in relation to the operational strategies and needs. The trainings included:

- Training of expatriate surgeons in developing specific skills.
- Trauma and orthopaedic surgery: during the OCB MSF GAS weeks (Hong Kong and Frascati, Italy) and in OCA MSF Germany Surgical Workshop (Düsseldorf, Germany).
- War surgery: International Committee of the Red Cross seminar (Geneva, Switzerland).

- Training of national medical doctors performing surgery in developing specific skills.
 - Basic orthopaedic surgery: during the OCA MSF Germany Surgical Workshop (Dusseldorf, Germany), through bedside training with expatriate general surgeons.
 - Advanced orthopaedic surgery: in OCB trauma centres through bedside training with expatriate orthopaedic surgeons.
 - General surgery: bedside training with expatriate general surgeons.
 - Advanced general surgery: in OCB trauma centres through bedside training with expatriate subspecialized surgeons (e.g. vascular, paediatric).

- Obstetric surgery: bedside training with expatriate gynaeco-obstetricians.
- Management: during the OCB MSF GAS weeks (Hong Kong and Frascati, Italy) and during the OCB Hospital Management Team Training (HMTT).
- Training of nurses in anaesthesia management.
 - OCB MSF GAS weeks (Hong Kong and Frascati, Italy).
 - Bedside training with expatriate anaesthesiologists.
- Specific training cycles.
 - Specialized orthopaedic care and general surgery in Tabarre, Haiti: This is a joint venture with the Haitian University,

and consists of rotations of Haitian residents in orthopaedics and general surgery in Tabarre hospital.

- Advanced Life Support in Obstetrics (ALSO) offered in several projects.
- Basic Assessment and Support in Intensive Care for Developing Healthcare Systems (BASIC-DHS) offered in several projects.
- Primary Trauma Care (PTC) offered in several projects.

4. OPERATIONAL RESEARCH

During 2017, the SAGE unit published six peer-reviewed articles in scientific journals (see Annex Operational research & Documentation).

5. LOOKING BACK AND AHEAD

LESSONS LEARNED IN 2017

- There was important collaboration between the medical and Operational Department in the planning and set-up of new projects, and in the reorientation of operational strategies.
- Good data (statistics) were obtained in surgical care in compliance with OD databases and development of the hospitalisation one. However, almost all available indicators are quantitative and few are qualitative outcome indicators. This hampers proper insight into surgical processes. Moreover, appropriate data collection tools in large hospitals were still under development.
- The lack of HQ briefings of some GAS specialists, resulting in some staff not being completely prepared for the challenges of the mission, came with difficult consequences.
- The high turnover of specialists posed a risk to the quality of surgical care.
- Some expatriates working in MSF field settings lacked technical skills, which in some cases was coupled with a lack of management and training skills.
- Satisfactory follow-up of surgical care activities was assured across all projects. Good communication was maintained between projects, missions and headquarters.

PROSPECTS FOR 2018

- Improve the skills of expatriate and local specialists: orthopaedic surgeons in performing external and internal fixation; general surgeons in neuro-thoracic, vascular and plastic surgery.
- Set up appropriate orthopaedic conservative treatment including state of the art plaster usage by general practitioners and/or general surgeons in hospitals run or assisted by MSF.
- Initiate new orthopaedic, anaesthesia and general surgery techniques and programmes, and refresh knowledge and skills. Also ensure proper distant follow-up by using telemedicine, including tele-education, tele-monitoring and tele-mentoring.
- Monitor the quality of surgical care through postoperative site infection databases.
- Follow up the curriculum of all levels of national staff specialists when possible and available.
- Ensure consistent and routine monitoring of activities like surgery/anaesthesia through good quality indicators.
- Strengthen the response in cases of mass disaster through good coordination between all actors including, emergency medicine doctors, anaesthetists, orthopaedic surgeons, other surgeons, nurses and logisticians.
- Continue publication of operational research studies.
- Continue to foster good collaboration within OCB and other sections, as well as with other external platforms.

TORTURE¹

AND OTHER FORMS OF ILL-TREATMENT

1. INTRODUCTION

Providing care and support for survivors of torture and all other forms of inhuman or degrading treatment, is a relatively new and growing field of expertise for Médecins Sans Frontières (MSF), born out of the inception of three torture rehabilitation care clinics set up by Operational Centre Brussels (OCB) along the Mediterranean migration routes in 2013.

MSF-OCB has adopted the terms ‘torture’ and other terms of ill-treatment (‘cruel or inhuman treatment’; ‘humiliating or degrading treatment’) as defined by the ICRC², as these seem to best reflect what MSF’s beneficiaries have experienced either in their countries of origin or transit countries.

To address the complex anthropological, sociological and political nature of torture, MSF has adapted its health and social care approach to take into account the various languages, beliefs and practices of its beneficiaries. Torture and other forms of ill-treatment can have severe and long-standing physical and psychological consequences for individuals, and MSF believes that it has an important role in addressing these.

2. PROGRAM ACTIVITIES

2.1. PROGRAMME SETUP

MSF-OCB currently has three vertical outpatient clinics providing torture rehabilitation. These clinics offer a comprehensive package of care through multidisciplinary teams composed of psychologists, medical doctors, cultural mediators, physiotherapists, social workers and intercultural mediators. Victims of torture (VoT) are either referred to the centres by institutions or other actors who have been made aware of MSF’s services, or they self-refer. Patients first undergo a needs assessment to determine if they meet the admission criteria for the clinic. Following this, an individual treatment plan is formulated. Although the majority of consultations are individual, there is an ever growing need for joint speciality consultations, and for group mental health and physiotherapy sessions. Legal advisors are often present in the clinics, through partnership agreements with organizations specialized in legal support for these refugees, asylum seekers and migrants.

While interpreted and practiced in different ways by each VoT clinic, a multi-disciplinary approach is the common cornerstone of MSF’s VoT programmes, and remains the

most important object of comparison and exchange between projects.

After five years of working in vertical VoT programs, MSF-OCB has come to understand that:

- It is not possible to develop a universal model of intervention, since each intervention is conditioned by and dependent on contextual factors (for example the country’s specific legislation, access to health care and resources present in the civil societies of the countries where the programs run)
- No identification tools for VoT exist
- No standardised protocols have been adopted across VoT clinics
- Effective guidelines still need to be developed
- Torture can be both physical and psychological in nature. Whilst many methods of torture do not leave physical marks, the absence of physical evidence does not preclude an instance of torture. As such, it is extremely important to document thoroughly and precisely, both physical and psychological scars, and to produce a de-

tailed medical and psychological certification.

- Four levels of care for VoT can be defined as follows:

- Assistance
- Treatment of health consequences
- Functional recovery
- Rehabilitation

Many factors affect the provision of VoT care and its outcomes, including context and patient length of stay (effective treatment and rehabilitation often require medium to long term input). In these contexts, MSF must therefore try to tailor its interventions to a patient’s specific needs, particularly against the backdrop of a patient wanting to continue their migration journey. This requires flexibility of protocols, and high levels of competency among practitioners.

2.2. PROGRAMME ACTIVITIES

During 2017, the three MSF clinics saw 1,296 new VoT cases – individuals of 38 different nationalities (25 African, 12 Asian, and 1 South American). Of these, 693 had suffered torture in their home-countries, 435

¹ As a matter of simplicity in this text we always use the word torture, even though the target population in our projects are victims of torture and other forms of ill-treatment

² “Torture consists of severe pain or suffering, whether physical or mental, inflicted for such purposes as obtaining information or a confession, exerting pressure, intimidation or humiliation.
Cruel or inhuman (synonymous terms) treatment consists of acts which cause serious pain or suffering, whether physical or mental, or which constitute a serious outrage upon individual dignity. Unlike torture, these acts do not need to be committed for a specific purpose.
Humiliating or degrading (synonymous terms) treatment consists of acts which cause real and serious humiliation or a serious outrage upon human dignity, and whose intensity is such that any reasonable person would feel outraged.
Ill-treatment is not a legal term, but it covers all the above-mentioned acts.”
The definitions used by the ICRC are available at <https://www.icrc.org/en/document/torture-and-other-forms-ill-treatment-definitions-used-icrc>

during transit, and for the remaining 168 cases, information on place of torture was unknown (Figure 1). The proportion of males (52%) and females (48%) was similar, and most individuals (over 80%) were between 19 and 45 years of age; 10% were under 18 years of age (Figure 2). A total of 16,812 individual consultations took place across the four disciplines (medical care, mental health care, physiotherapy and social support), (Figure 3).

In addition to the 1,296 VoT cases seen in MSF's three vertical programs, 275 VoT cases were reported from the MSF project in Lesbos (Greece) and 11 cases from the project in Bujumbura (Burundi). In Lesbos, the MSF project provides support for migrants stranded on the island and attempting to continue their journey while under the threat of refoulement; while the MSF project in Bujumbura is a surgical program that, amongst other surgical care, provides trauma care for individuals who have suffered either accidental or violent trauma (including trauma in the form of torture).

Figure 1: Place of torture among individuals seeking treatment at MSF-OCB VoT clinics, 2017

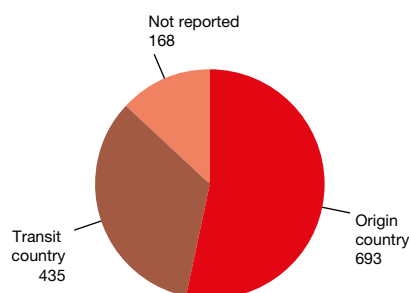


Figure 2: Age distribution of individuals seeking treatment at MSF-OCB VoT clinics, 2017

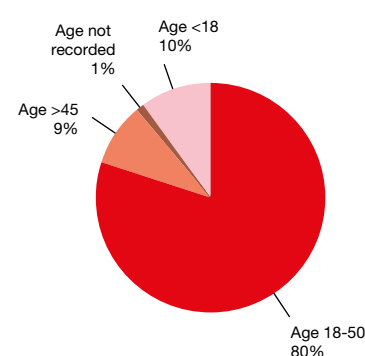
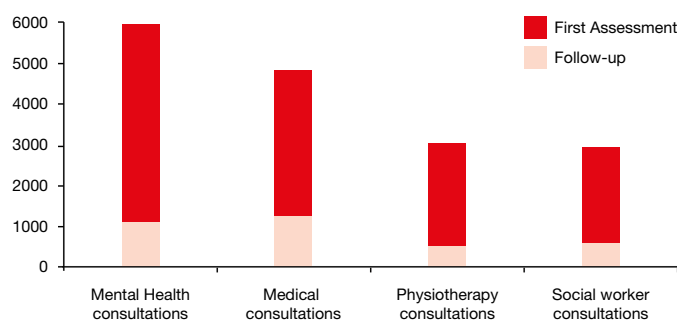


Figure 3: Individual consultations by type at MSF-OCB VoT clinics, 2017



3. LOOKING BACK AND AHEAD

CHALLENGES IN 2017

- An evaluation of the effectiveness and quality of VoT care provided by MSF was undertaken in 2016, and the outcomes of this evaluation are being reflected upon
- Defining the target population for torture care, together with admission and exclusion criteria, has been a challenging process, sometimes yielding contradictory conclusions. Nevertheless, MSF's 'learning by doing' approach has been necessary and conducive to developing expertise and skill in the area of torture care.
- The effects of torture on health and well-being are diverse and complex, and in each area of support provided by MSF (medical care, social support etc.) specific outcome measures have been identified through which to assess the impact of the related interventions. Different teams however must evaluate whether this approach risks fragmenting the overall provision of treatment with ill effect.
- Effective data protection (to safeguard patient identities and their treatment) has improved, facilitated by the development of an electronic medical record (EMR) system. EMRs also facilitate data management, sharing of information within the multidisciplinary team, and internal and external referrals and follow-ups.

PROSPECTS FOR 2018

Awareness on torture is extremely limited within and outside of MSF; therefore it is crucial to raise the awareness amongst medical societies and humanitarian actors. There is a persistent need to contribute to the development and sharing of knowledge about VoT care processes and outcomes. This commitment requires the constant effort to avoid focusing on the medical aspects surrounding VoT care and thereby neglecting of social and political implications.

Although written guidelines on VoT care may prevent contextual adaptation of VoT activities, development of these guidelines is a priority for MSF-OCB to meet the apparent needs coming from inside and outside of specific MSF migrant projects. There are also operational discussions regarding the introduction of VoT activities along other migration routes (aside the Mediterranean), together with non-migratory contexts, and as part of transversal interventions (hospitals, outpatient services).

In 2018, MSF will complete a capitalization exercise on its experiences of providing VoT care, along with the development of operational research plans. Operational research in this field needs to explore the diversity and complexity of the interdisciplinary approach, with an aim to developing valid tools for monitoring patient outcomes and evaluating the impact of VoT programmes.

VACCINATION

1. OVERVIEW

During 2017, more than 2.4 vaccine million doses were provided to beneficiaries with the direct support of Médecins Sans Frontières-Operational Centre Brussels (MSF-OCB). Two thirds of these doses were given through mass vaccination campaigns: in response to measles epidemics in Guinea (1) and DRC (11) and to a cholera epidemic in Mozambique. Routine vaccination represented the majority of the rest of the vaccination activities. Three small catch-up multi-antigen preventive vaccination campaigns were organized in South Sudan, but none of the foreseen major ones could be organized (Masisi and Mauritania) primarily for security reasons. OCB provided support for the second dose of cholera vaccination (ensuring long-term protection) in three communes of South Haiti, six months after the first dose had been given in response to an outbreak.

The increasing trend seen in doses of anti-pneumococcus vaccines used between 2015 and 2016 continued into 2017. The use of rotavirus vaccines is slowly starting in countries that have introduced it in their Expanded Programme of Immunization (EPI). The plan to implement Human Papilloma Virus (HPV) vaccination in the project in Zimbabwe has faced huge challenges due to vaccine supply. This issue is being followed closely by the Access Campaign and hopefully will be resolved in 2018. Several new guidelines that included guidance on vaccinations were developed in 2017 and will soon be disseminated.

2. PROGRAMME ACTIVITIES

Out of the 53 projects with multi-disciplinary medical services developed by OCB in 2016, 27 (51%) of them reported vaccination activities. A total of 2,443,418 doses of vaccine were administered with the concurrence of MSF in these projects. This represents a small 2.3% increase compared to 2016.

This year, two thirds (68%) of the vaccine doses were given during mass reactive vaccination campaigns, while 3% of them were given during catch-up campaigns. Last year about half of the doses were given through preventive vaccination campaigns, but a total of 1.7 million doses were given through campaigns during both years.

More than a quarter (28%) of the doses were given through routine vaccination activities and 90% of them targeted children <5 years old. Two percent of doses were in the name of post-exposure prophylaxis.

The budget to supply vaccines and vaccine products to all OCB missions could not be estimated in 2017. Note, that with the exception of the measles mass vaccination campaign in Conakry, Guinea, all vaccines used in mass campaigns, and the vast majority of vaccines used in routine vaccination activities by MSF, are currently supplied through other procurement systems in place such as the Ministry of Health (MoH) / United Nations Children's Fund (UNICEF), International Co-

Table 1: Distribution of doses administered by type of activity, 2017

	Doses	%
Total doses routine vaccination	675,146	31%
Total doses in response to epidemics	1,650,056	65%
Total doses catch-up campaigns	65,694	3%
Total doses post-exposure prophylaxis*	52,522	1%
Total doses administered	2,443,418	

* Immunoglobulin doses for tetanus and rabies are part of the post-exposure prophylaxis protocols

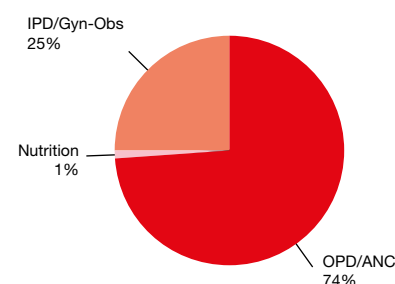
ordination Group on vaccine provision (ICG) and the Global Task Force for Cholera Control (GTFCC). An overview of the doses administered over the course of 2017 is provided in Table 1.

2.1. ROUTINE VACCINATION

A total of 675,146 routine vaccinations were administered in OCB projects over the course of 2017 (Figure 1), representing a 10% increase compared to 2016 (n=613,547 doses). As in the previous two years, almost three quarters of these doses (74%) were reportedly given in the Out-patient Department (OPD) (n- 436,757) and in Antenatal Care (ANC) (n- 65,954), while the remaining quarter of the routine doses were given through the In-patient Department (IPD) and Gynaecology/Obstetric wards (n- 168,174) and through nutrition programmes (n- 4,028). The vaccination policy in nutrition programmes was reviewed in 2017. Indicators

and recording tools were adapted accordingly. Implementation of this new policy is starting to have a positive trend in terms of programme reporting.

Figure 1: Distribution of routine vaccinations in OCB programmes, 2017 (n=675,146)



Similar to 2016, only 10% of the vaccine doses routinely administered to children less than five years of age (608,959 doses) were given to children above 11 months of age. This demonstrated that efforts to implement

catch-up vaccination activities for children who have missed vaccinations through the EPI in MSF-supported projects still need to be reinforced.

Polio vaccine represented a third (32%) of the doses administered routinely to children under five in 2017 (Figure 2). About one fifth (18%) of the doses given combined five antigens in one vaccine, i.e. Diphtheria, Tetanus, Pertussis, Hepatitis B and *Haemophilus influenzae* b (DTP-HepB-Hib), while Bacille Calmette-Guérin (BCG) accounted for another 14% of the doses distributed. Measles containing vaccines and single Hepatitis B vaccines represented 9% and 11% respectively. This distribution has been stable over the last few years. Since April 2015, at least one dose of Inactivated Polio Vaccine (IPV) was given in all EPI. A total of 7,363 doses of IPV (1%) were given to children in 2017, compared to 4,225 doses in 2016. This is still likely to increase over the next few years as the policy is being implemented and better followed.

Pneumococcal vaccines (PCV) doses given routinely to children under five years of age increased from 11% of the total doses in 2015 to 13% in 2016. This proportion was slightly lower in 2017 (12%), although the total number of doses given (n=75,151) increased by 7.5%. Thanks to the Access campaign which managed to secure availability of PCV at a fair price for humanitarian contexts, this trend is expected to continue as teams get used to the new procedure to request this vaccine (humanitarian mechanism).

In 2017, vaccination of new-borns (oral polio vaccine (OPV) and Hepatitis B) represented 22.5% of the doses administered routinely to children <5 years of age. According to the reporting, 90,687 children were born in MSF OCB-supported structures in 2017. A total of 60,441 doses of Hepatitis B and 76,769 OPV birth doses were recorded over

Table 2: Post-exposure prophylaxis vaccines in OCB projects, 2017 (n=52,522)

Type of victims	Vaccine	Doses (n)	%
Wounded	Tetanus	35366	67,3%
	Tetanus Ig	8400	16,0%
SGBV	Tetanus	2290	4,4%
	Hepatitis B	2735	5,2%
Suspected bites	Rabies	3730	7,1%
	Rabies Ig	1	0,0%

SGBV: Sexual and Gender-Based Violence

the same period. In several big maternities supported by MSF, the polio vaccine cannot be given by the MSF teams and children are referred to the national vaccination services upon discharge. In such contexts, ensuring that all children are referred to MoH services to receive their birth vaccines is of primary importance.

In 2017, 71% of the 66,187 doses of tetanus vaccines delivered to women of reproductive age were administered to pregnant women. Of these doses, 47% were recorded as a first dose, and 6% were recorded as the fifth (and last) dose.

2.2. POST-EXPOSURE PROPHYLAXIS

Over the year, 52,522 doses of vaccines and vaccine products were used for Post-Exposure Prophylaxis (PEP) in MSF-OCB projects (Table 2).

As in 2016, the overwhelming majority of Rabies vaccinations reported in 2017 were recorded in a single project in Pakistan. This suggests that this fatal disease in unvaccinated persons still remains underestimated and ineffectively managed in many of our programmes in other countries. Likewise, almost 90% of the Tetanus immunoglobulins used in the field were reported in Haiti alone. Knowing that Tetanus immunoglobulins are 100 times more expensive than the Tetanus vaccine, MSF should ensure that a risk evalu-

ation of wounds is performed appropriately and that immunoglobulins are used according to protocol and reported properly.

2.3. EVALUATION OF MISSED OPPORTUNITIES FOR VACCINATION (MOV)

To our knowledge, only two evaluations of missed vaccinations opportunities were conducted in South Sudan and in Masisi, DRC in 2017. Unfortunately, the results of these studies were not exploitable because of lack of consistency in the methods used.

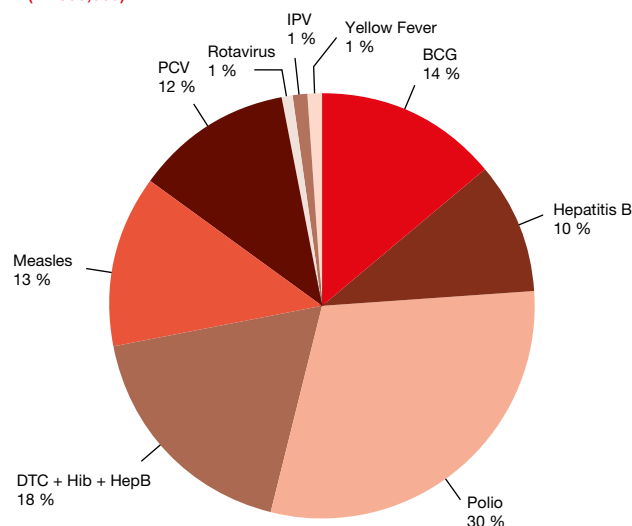
2.4. MASS VACCINATION CAMPAIGNS

In 2017, OCB organized three catch-up multi-antigens mass vaccination campaigns in South Sudan (Doro, Bunj and Blue Nile project). A total of 24,818 doses of vaccines were given. In Doro and Bunj, introduction of the PCV vaccination was combined with two rounds of a catch-up campaign.

OCB got also involved in the organisation of a cholera vaccination campaign in three communes in Southern Haiti. This campaign provided the second dose of Oral Cholera Vaccine (OCV) to 40,876 people over one year of age, six months after the first OCV dose had been provided in response to a cholera outbreak (following the hurricane Matthew). A study on the vaccine effectiveness of this two-dose vaccination is being negotiated with the authorities.

In 2017, OCB organized twelve mass reactive vaccination campaigns in response to measles epidemics. Eleven of them were organized by the Pool d'Urgence Congo (PUC) in DRC and covered 702,846 children from six months to 14 years of age. The other reactive measles vaccination campaign was carried out in the five communes of Conakry, (Guinea) for children six months to nine years of age and covered 649,612 children. The last mass reactive vaccination campaign was organized in Tete, Mozambique in response to a cholera outbreak. This one-dose cholera vaccination was carried out in collaboration with Operational Centre Geneva (OCG).

Figure 2: Distribution of antigens administered to children <5 years old during routine vaccination in OCB programmes, 2017 (n= 608,959)



2.5. VACCINATION COVERAGE SURVEYS

Vaccination coverage surveys were organised after 11 out of the 13 mass reactive vaccination campaigns (see Annex). One in DRC could not be performed for security reasons and no post-intervention survey was planned in Mozambique. All surveys performed after reactive measles vaccination campaigns showed one-dose vaccination coverages above 97%.

Vaccination coverage surveys were also performed after two of the catch-up vaccination campaigns in South Sudan, after the OCV2 in Haiti and during an assessment in Kasai.

3. FIELD VISITS

Field support visits were undertaken by the vaccination Referents to Mauritania (preparation of a MAG in Bassikounou), India (support to RI in Chattisgarh), Lebanon (start of integrated RI in Akkar) and Haiti (support to immunization in Martissant and PàPim), and by the Vaccination Mobile Implementation Officer (MIO) to DRC (preparation of a MAG later aborted), South Sudan (preparation of the MAG campaign), Lebanon (start of the

Routine immunization "RI" activities in Akkar), and Nigeria (support to integrated RI in the nutrition programme in Maiduguri)

4. DEVELOPMENTS AND INNOVATION

- A protocol on assessment of wounds for tetanus was jointly written by the Vaccination Referent and the Nursing Care Referent.
- A capitalisation report on the multi-antigens vaccination campaigns organized in 2016-2017 by four MSF OCs was jointly written and will be presented by Operational Centre Paris (OCP) to the CAR authorities early 2018.
- Participation in the development of HIV clinical guidelines including a chapter on vaccination of People Living with HIV (PLHIV).
- The study about "Out of cold chain use of measles vaccine" was finalized and a report is being developed.
- Access to Diphtheria anti-toxin monitoring and documentation of its use was worked on, in order to monitor safety and effectiveness of its use in Bangladesh.

- Development of a vaccination policy for staff.

5. TRAININGS/CONFERENCES/ MEETINGS

- OCB vaccination Advisors provided support for the Populations in Precarious Situations (PSP) and Response to Epidemics international courses (2). Vaccination modules were also taught during the OCB Health Promotion training (1), the First Line Medical Trainings (2) and in the Basic Logistics Course (BLoC).
- The advisors participated in the Preparedness to Epidemics (intersection meeting), Cholera meetings (2), the Vaccination Working Group (VWG) meetings (3) and the Epidemiologists Week.
- Vaccination Advisors were also present at the INSERM (Institut National de la Santé et de la Recherche Médicale) meeting in Paris, the April Strategic Advisory Group (SAGE) meeting in Geneva, the European congress on Tropical Medicine and international health in Antwerp and the Outbreak Intervention Symposium in Quebec.

6. LOOKING BACK AND AHEAD

CHALLENGES AND ACHIEVEMENTS IN 2017

- The position of International Vaccination Focal Point in DRC was left vacant at the beginning of the year for medical reasons and could not be filled for the rest of the year despite the demanding and time consuming administrative recruitment process.
- The Vaccination MIO position was filled in February and several missions benefited from visits by the new MIO (DRC, South Sudan, Lebanon and Nigeria). The MIO followed a WHO course on missed vaccination opportunities in Zimbabwe, but no opportunities presented in the year to put this new knowledge into practice in the field.
- Discussions on systematic Ethics Review Board (ERB) exemption for standard vaccination coverage surveys began, but no final conclusions have yet been reached.
- Collecting data not encoded into MINOS (Medical Information Network for Operational Support) for the writing of this report was extremely tedious and long-term solutions need to be found to solve this issue in the coming years.
- Revisions of indicators for vaccination in nutritional programs and adaptation of recording tools was achieved.
- Revision of the Cholera scenario for the PUC interventions, including the use of OCV, was completed.

PROSPECTS FOR 2018

- Continue to provide close support to the field through a MIO position and regular field visits from the advisors.
- Prepare and participate in the teaching of a specifically designed course for the PUC (measles, cholera and multi-antigens vaccination).
- Finalize a tool box for implementation and evaluation of routine vaccination activities, and distribute and promote it.
- Disseminate newly developed tools and documents (wound evaluation protocol, guidelines PLHIV, DAT protocol, etc.).
- Promote (internally) the use of the framework for decision making on preventive vaccinations in emergencies.
- Finalize the tool JennerX, pilot-test it in the field and promote its use in MSF.
- Improve the reporting of immunoglobulin use in all missions to increase MSF's accountability towards these very expensive but very effective products.

- Support the launch of an HPV vaccination campaign for school-aged girls in Zimbabwe and in an HIV+ cohort in Gutu. A study will be conducted in order to explore the feasibility and acceptability of the HPV vaccination in HIV positive women.
- Explore further the opportunity to integrate vaccination into clinical follow-up of HIV+ patients in HIV projects.
- Lobby internally for the wider use of cholera vaccine “by default” in response to epidemics or in preventive vaccinations during emergencies and document the experience.
- Develop closer collaboration with the Water, Sanitation and Hygiene (WASH) unit to develop a targeted approach that integrates WASH interventions and OCV in outbreak responses.
- Work on documenting and disseminating the results of several studies: “coup de poing” strategy, Missed Opportunities for Vaccination; measles vaccine effectiveness in DRC; introduction of PCV in Doro (South Sudan) and evolution of lower respiratory tract infection (LRTI) over time.
- Launch several studies: low vaccination coverages in urban settings in Conakry, Guinea (with support from the Luxembourg Operational Research Unit, LuxOR), cholera vaccine effectiveness in Port-à-Piment, Haiti (with support from Epicentre), immune response to a delayed second dose of OCV in Martissant, Haiti (Epicentre support), evolution of typhoid fever over time in Zimbabwe (Epidemiology MIO).

WATER, HYGIENE AND SANITATION (WASH)

1. OVERVIEW

In 2017, reinforcement of the operational prospects showed a clear commitment of MSF to increasing the activities and role of Water, Hygiene and Sanitation (WASH) in the field. The crucial role played by WASH expertise during the 2014 Ebola Virus (EBV) outbreak in West Africa triggered a new found impetus to reinvigorated WASH activities and the scope of these activities. The “Where is everyone” review in 2015 examining the humanitarian aid system response to displacement of populations, also reinforced a will to salvage WASH activities in the MSF movement.

The global threat posed by increasing Antimicrobial Resistance (AMR) underscores the importance of appropriately implementing essential WASH requirements in MSF-supported health structures to avoid hospital acquired infections. Non-compliance to these requirements was assessed in all missions in order to create a safer environment for patients and MSF staff.

Prevention is key to improving the quality of curative care by reducing caseloads and the demand on health care resources, and targeted WASH interventions in the community are one way to achieve this. During emergencies, MSF is starting to find a better balance between curative care and preventive WASH activities.

Efforts were made to respond to the rapid surge in acute emergencies. One major challenge was finding appropriate actors to handover expensive WASH activities to. Planning an exit-oriented strategy in which appropriate actors are identified for handover must thus happen at the beginning. This requires the use of new WASH technologies and new ways of intervening in order to facilitate the handover process e.g. the use of hand pumps instead of expensive water trucks.

Strengthening links with epidemiologists and Geographic Information System (GIS) Officers has proved to be vital in targeting the environmental determinants of diseases in transmission hotspots and cutting transmission of infectious diseases (e.g. Cholera, EBV).

Rural projects in Burundi and the Democratic Republic of Congo (DRC), and urban WASH pilot projects in Haiti and Zimbabwe, were launched in 2017. These required increased proximity with populations, and integration of appropriate WASH and Vector Control (VC) tools into the daily lives of the population at risk, to guarantee disease prevention. As the world’s urban population grows, MSF needs additional and adapted tools, together with experience, to implement its mandate in these complex urban contexts. The experience in Monrovia, Liberia, during the Ebola Virus Disease (EVD) outbreak, clearly revealed that MSF, like all other humanitarian actors, only find themselves, at best, halfway on this steep learning curve.

At a hands-on level, focus was directed towards improving the implementation of good WASH practices in all MSF-supported infrastructures; providing “by default” WASH interventions in emergencies; and implementing several rural and urban pilot projects. These projects were in contexts where there are recurrent health threats or where operational research, innovation and advocacy opportunities exist. To respond to these activities with enough capacity, the pool of WASH human resources was reinforced in the field as well as at headquarters.

The intersectional WASH working group continued to serve as an expedient platform for development and dissemination of tools and guidelines, and for harmonising intersectional WASH activities.

2. PROGRAMME ACTIVITIES

2.1 ACTIVITIES AT COUNTRY AND PROJECT LEVEL

All Operational Centre Brussels’ (OCB) projects include a WASH component to

minimise hospital-acquired infections and optimise infection control. A systematic assessment of WASH needs is performed for all projects. WASH support was provided to established missions to ensure that essential WASH requirements in the medical infrastructures were being upheld. Trained per-

sonnel from the WASH pool were sent to the field if the WASH needs proved to be technically complex or too large and time demanding for field staff to manage. WASH needs in large emergency interventions were mainly addressed by specialised staff with technical support from HQ. In 2017, 56 WASH

experts supported projects in the following countries: Central African Republic (CAR) (4), Serbia (2), Burundi (1), Sudan (8), DRC (7), Mozambique (4), Iraq (5), Venezuela (3), Italy (1), Guinea (2), Nigeria (3), Mauritania (1), Afghanistan (1), Zimbabwe (2), Sierra Leone (3), Haiti (1), Turkey (1), Ukraine (1), Madagascar (2), Pakistan (1), Bangladesh (2), and Greece (1). The WASH unit also participated in many international and MSF internal and external meetings.

2.2 SPECIFIC WASH INTERVENTIONS AND FIELD VISITS

Some of the main global WASH operations included:

- In Bangladesh: The Cox's Bazar district hospital with 500 bed capacity represents an important WASH investment, together with MSF's involvement in the Rohingya refugee camps. There are still major WASH needs in the camps and a worsening situation is expected with the onset of the next rainy season, the monsoon, and the risk of landslides.
- In DRC: Work was undertaken in relation to the spring catchments and construction of the water supply network in Masisi to ensure a water supply for the population and the hospital in Nyabiondo. Malaria routine monitoring activities based on health, climate and entomological data, continued to feed the development of targeted VC activities in Masisi & Bili. In Masisi, an outbreak response was required by Pool d'Urgence Congo (PUC) for cholera, typhoid fever, yellow fever and EBV. Waste management of Viral Load (VL) tests for HIV will be handled by the installation of Inciner8 for waste destruction in Kinshasa. In collaboration with The London School of Hygiene & Tropical Medicine (LSHTM) an operational research study was ongoing to evaluate the impact of Hygiene kit distribution during cholera outbreaks.
- In Burundi: A large scale Indoor Residual Spraying (IRS) campaign took place in Gitega as part of malaria prevention. Two additional IRS campaigns are planned in 2018 in Ryansoro district with a target population of 160,000 persons.
- In CAR: Important WASH activities had to be put on hold due to the deteriorating security situation.
- In Nigeria: The WASH activities focused on supporting the slum context of Okpoko and the deployment of an arbovirus antibody scanning protocol in Primary Health Care (PHC) in Okpoko. This was combined with an entomological investigation protocol. The development of malaria and arbovirus VC activities is foreseen for 2018.

- In Haiti: The cholera prevention activities in Martissant were guided by epidemiological mapping of cases and focused on household water treatment. A VC project with entomological monitoring of *Aedes* and *Culex* mosquitoes will be controlled with the use of an innovative In2care "auto-dissemination" approach. In Port-à-Piment, important community-based water projects were ongoing.
- In Sierra Leone: the focus was on the design and construction of a new hospital called Kenema hospital, the likes of which is an important WASH component.
- In Sudan: The malaria burden in Doro camp and Bunj host population has been catastrophic; however, an innovative VC project had an important impact on malaria transmission (transmission rates have fallen significantly for the first time in four years), and this must be capitalised on. WASH support was also required for the construction of the Gaptex project in Doro.
- In Lebanon: WASH support was provided for the construction of the Bar Elias hospital (24 beds), the PHC in Shatila camp in Beirut and rehabilitation of a new maternity in Hariri.
- In Afghanistan: WASH support was provided to maintain the essential requirements in health structures in Khost, Ahmad-sha-Baba, Lashkargah (OCA), Khandahar (OCA) and Dasht-e-Barshi (OCP). Support was also provided for the design and construction of the new Kunduz hospital to resolve issues like *Pseudomonas* transmission in the hospital, and badly drilled boreholes.
- In Ukraine: Specific support was provided in the Dnepro project namely towards TB infection prevention and control (IPC) activities using UVGI lights combined with ceiling fans.
- In Zimbabwe (Harare): The population is at risk of water-related disease outbreaks such as typhoid fever and cholera. WASH interventions were integrated into the diagnosis and rehabilitation of existing boreholes, and detailed mapping of the hydrogeological situation in order to identify potential sources of groundwater contamination. A research study will investigate the correlation between the recurrence of water-borne diseases and possible transmission hotspots.
- In Malawi: Specific activities focused on E-prep (cholera, floods, typhoid) and WASH activities for the prison in Nsanje. This also included the Corridor project for TB infection control and defining solutions for the viral load issue. The same VL waste management issue was also problematic in Tete and Beira projects, in Mozambique.

- In Syria: WASH efforts were required for the safe treatment of victims of chemical weapons.
- In Pakistan: The Timergara and Karachi projects required WASH support, specifically in relation to a Leishmaniasis outbreak that MSF was responding to with support from the LSHTM.
- In Venezuela: An MSF mission opened in Sifontes, Bolivar with a project focused mainly on malaria. WASH was involved in identifying the target population and devising an implementation strategy for VC-based activities.
- A regional WASH position was created to address medical waste management particularly around correct management of VL, expired drugs and hazardous waste in Malawi, Zimbabwe and Mozambique. This will include an in-depth investigation of high-temperature incineration for hazardous waste.

3. INTERNATIONAL COHERENCE

The intersectional working group on WASH has been active since 2007 and aims to improve the intersectional coherence on WASH issues. Over the course of 2017, activities of the WASH working group included:

- Systematic updates of the WASH working group space on Tukul, including technical documents, digital maps, and presentations and minutes of the four meetings
- Revision of an intersectional draft policy paper to ensure better cohesion on WASH between different sections
- A six-day workshop on new tools for Vector Control in Entebbe, Uganda, that was open to medical and WASH profiles in MSF. This in addition to support to four days of WASH training on the PSP
- Input support for the new updated and accepted malaria policy paper
- Input support for the "The Evolution of Emergency WASH in Humanitarian Action" in the GAP Analysis series (OCBA)

3.1. DOCUMENTS AND GUIDELINES

The WASH unit, in close collaboration with the intersectional working group, was involved in the generation of a broad spectrum of documents and guidelines such as:

- The "Cholera guideline": this was updated and is now available as a final draft in French and English.
- A follow-up to the "Where is everyone – responding to emergencies in the most difficult places" study: this was continued in 2017, ready for presentation to the Medical Directors, relevant Logistic Direc-

tors, and medical operations in 2018. This study focuses on “A review of MSF’s water and sanitation approach in the context of the wider humanitarian aid system” and examines the place of WASH in MSF and its place in the wider humanitarian arena.

- Technical updates and files added to the International Technical Coordination (ITC) catalogue in close collaboration with the international office.
- The update of a chemical warfare guideline (given the use of chemical weapons in Syria): this focused on the provision of treatment for victims of chemical warfare, and was verified by the Centers for Disease Control and Prevention (CDC).
- The integration of lessons learned on incineration and shipping into an existing manual: Increasingly complicated molecules are required in the field for diagnostic testing. Hazardous waste such as complex cyanide residues of laboratory tests are manipulated and released into the environment without considering the (long-term) risks for staff, patients, caretakers and the community. A regional expert was deployed to develop appropriate solutions and the lessons learnt from this exercise were integrated into an existing manual.

3.2. STRATEGIES AND TOOLS

- Support was provided for the development of the WASH component of the Mobile Unit Surgical Trailer (MUST).
- A gender and menstrual hygiene needs assessment and implementation tool was developed, validated and tested in different contexts.
- Waste water is released into the environment with minimum treatment, because it is considered expensive. In 2017, a study was finalised comparing the waste water quality improvement in three MSF hospitals in Haiti using water from a septic tank, an up-flow clarifier and a rotating biological contactor.
- Tapping correctly into the ground water supply requires skill and experience. In the humanitarian world, as well as within MSF, there are few active professionals in the area of groundwater development. This often leads to new boreholes being drilled instead of broken ones being rehabilitated, and contamination of groundwater supplies by the incorrect design of new boreholes. The choice and availability of the correct tools, expertise and equipment are not always available when required. MSF has started the “GO Pro project” to build up a small team of groundwater specialists providing support and training sessions to field operations and WASH referents.

- In Haiti: A new “auto-dissemination” approach was tried out, which is a completely novel concept for fighting Aedes mosquito in urban areas.

3.3. OPERATIONAL RESEARCH

In close collaboration with the Operational Research Unit (LuxOR) and others, the WASH working group was behind a number of operational research initiatives in 2017:

- A manuscript was published by OCB in the Pan African Medical Journal on “Localised transmission hotspots of a typhoid fever outbreak in the Democratic Republic of Congo”.
- A manuscript was published by OCA in the BMC Public Health on “Using lot quality assurance sampling to assess access to water, sanitation and hygiene services in a refugee camp setting in South Sudan: a feasibility study”.

3.4. COMMUNICATION

MSF experience in WASH activities was actively shared on multiple platforms through scientific presentations and discussions including:

- Humanitarian Innovation Fund meeting in London
- Interagency Emergency humanitarian VC platform launched in Basel with support of UNICEF, Mentor, MSF and RBM
- A presentation during the Malaria Innovative meeting in Madrid
- An interagency meeting hosted by OCB to discuss ways forward with the WASH sector, attended by Operational Directors of several agencies and donors
- Participation in an interagency discussion in Windsor with Donor agencies on the operational research priorities in the WASH sector with the support of LuxOR
- Meetings in Barcelona and Madrid and Basel during which the WASH working group was updated on innovations in VC
- A workshop in Barcelona on the TIC initiative on Gene Drive and malaria VC
- Participation in the WHO global cholera task force meeting in Geneva
- Participation in a two-day strategical meeting in Washington on Hazardous waste

4. HUMAN RESOURCES & TRAINING

To support the surge in WASH activities that 2017 saw, experienced WASH Coordinators were assigned more frequently to relevant countries. The WASH unit was reinforced to respond to emergencies that arose and to deal with the expected increase in recruit-

ment and training as a result of the increased investment in WASH. An experienced entomologist toured MSF projects in order to provide technical expertise on disease risk mitigation through VC. A WASH person was also assigned to work in the newly created health structure Unit in the Medical Department. HQ-based WASH support was provided to the Logistical Department in the development of multiple secondary health structures’ rapid deployment solutions. In collaboration with the LuxOR unit, an agreement was signed between the WASH unit and the LSHTM to reinforce the evidence base impact of WASH activities on the health of populations.

The WASH unit was involved in over 55 full-time days of dedicated trainings – including the WASH module of the Populations in Precarious Situations (PSP) training, the WASH in Emergencies training (English and French), the Response to Epidemics (REPEPI) course and the Water, Engineering and Development Centre course. A WASH training component was also provided for trainings such as the preparation for Primary Departure (PPD) course, Management of Health Structures (MHS) course, Basic Logistics Course (BLoC), and other trainings (TLB, LTT, MMC, PMC).

In collaboration with the LuxOR unit, the first operational research training course designated to WASH (WASH-IT) was undertaken. This training was open to the WASH sector at large, to augment the evidence base impact of the various WASH interventions out there. WASH-IT mirrors the Structured Operational Research (SORT-IT) course which aims to increase OR capacity building, and consists of three six-day modules spread out over nine to 12 months. The aim of this initiative is to help participants develop the practical skills for conducting and publishing operational research.

A five-day training on the new and innovative tools in VC was implemented for the second time. Intensive WASH trainings were also provided to field missions to strengthen WASH knowledge and practices of national staff in key positions.

In addition, the WASH unit also provided external training to a number of Public Health Master students in international centres such as the Liverpool School of Public Health, the Institute for Tropical Medicine in Antwerp (two complete new modules), Bioforce WASH. The WASH unit also contributed during the Pharma week in Geneva.

LESSONS LEARNED IN 2017

- Further integration of WASH into the Medical Department is mandatory and the recognition of WASH personnel as part of the medical team remains vital. Changing the mind-set of medical staff is crucial if the advantages of properly executed WASH activities are to be better understood. WASH personnel also need to better understanding the challenges faced by the medical personnel.
- The unclear management lines and responsibilities for the “med/log delivery” WASH medical/logistic activities posed a significant obstacle for efficient deployment of WASH in the field, and placed the new WASH Coordinators under enormous pressure in some contexts. It was however important to assign WASH Coordinators to the field to boost WASH activities in terms of the technologies being used and for community-based prevention programmes.
- It was vital to boost WASH support to operations including first line or strategic advisors (e.g. developing pilot WASH projects and WASH responses to emergencies) and the implementation of sophisticated technologies (e.g. VC, infection control in *Klebsiella* outbreaks in health structures, ground water exploitation, correct management of VL, expired drugs and hazardous medical waste)
- There is an urgent need to lobby for a more diverse package of activities and diversify away from just a secondary health structure focus.
- It is important to avoid ambitious OR projects in contexts where “force majeure” or a security situation are a threat. Furthermore, follow-up is needed for OR initiatives if manuscripts are to be published in peer reviewed journals and research results translated into policy and practice. This can be improved through further collaboration with academic institutes, and through close collaboration with LuxOR.
- The intersectional working group continued to demonstrate its worth and has managed to harmonise the WASH activities of the different sections.
- The need for an intersectional WASH Policy Paper is recognised and has been requested for by the Medical Directors.

PROSPECTS FOR 2018

- Collaborate effectively with the restructuration of the Medical Department and enable key-medical decision makers to assume greater management responsibility for WASH. A clear internal and external advocacy campaign needs to be developed with an aim to establishing WASH firmly within the medical framework.
- Clarify the management lines and responsibilities for the med/log delivery of WASH. Streamlining the set-up will also contribute greatly to re-establishing harmony with the Logistics Department and optimising collaboration with the Operational Department.
- Additional WASH operational targets and process indicators need to be defined within the MSF movement, in order to visualise the degree of diversity in the operational package of OCB.
- Maintain second-line technical support to enable proper infection control in health structures and provide support to install proper WASH infrastructure in secondary hospitals (e.g. develop appropriate waste water treatment in MSF hospitals).
- Maintain well defined VC activities. Further develop the GO Pro project to ensure an appropriate water supply in MSF health structures and extend the emergency strategy with increased focus on WASH (e.g. GO Pro).
- Extend WASH activities for water supply projects for communities with high burdens of infectious diseases (e.g. hotspots for recurrent cholera outbreaks).
- Finalise the third module of the WASH-IT course in collaboration with LuxOR, in order to capitalise on MSF's WASH experiences, and further explore the evidence base in the WASH sector.
- Establish a WASH vision in the context of climate change - the elephant in MSF's 'operations space' that might define potable water as the currency of future generations.

OCB MEDICAL ACTIVITY

ANNEX OF TABLES AND DATA

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SECTION 07:

EMERGENCY MEDECINE

TABLE 1: Emergency Department (ED) patient demographics, morbidities and outcomes, ED quality indicators, SATS classifications and high acuity proportions by project, 2017

	Chardara	Kabul	Bujum-bura	Bang-assou	Bili	Masisi	Nya-biondo	Babila	Cissela	Douako
Patients	3,130	68,939	15,866	22,525	6,555	10,177	6,989	1,267	1,045	1,205
Patients <5 y/o (%)	8.5	34	9.6	43.2	59.2	42.2	46.7	93.4	71	95
Patients ≥ 5 y/o (%)	91.5	66	90.4	56.8	40.8	57.8	53.3	6.6	29	5
SATS classification										
Red (%)	10.2	4.5	2.8	12.5	---	20.9	19.3	---	---	---
Orange (%)	26	24.8	11.9	24.9	---	54.6	12.9	---	---	---
Yellow (%)	40	60.9	46.3	51.5	---	21.6	11.5	---	---	---
Green (%)	23.8	9.7	38.9	11.1	---	2.8	53.3	---	---	---
Non code (%)	0	0	0	0	---	0	3.1	---	---	---
Blue / Black (n) (dead on arrival)	13	75	38	7	---	12	0	---	---	---
Outcomes										
Discharged (%)	99.9	93.9	74.6	73.6	48.6	40.1	75.7	97.6	96.7	97.5
Hospitalised (%)	0.1	2	12.6	18	51.4	59.7	24.3	0	0	0
Referred (%)	0	1.8	11.2	7.6	0	0	0	2.4	3.3	2.4
Died (%)	0	0	0.2	0.1	0	0.2	0	0	0	0.1
Defaulted (%)	0	2.2	1.4	0.7	0	0	0	0	0	0
Quality										
High Acuity Proportion (%)	36.2	29.4	14.7	37.4	---	75.6	32.2	---	---	---
ED indicators										
Under-triage (%)	0	---	11.6	---	---	---	---	---	---	---
Over-triage (%)	99.7	---	34.7	---	---	---	---	---	---	---
Morbidity										
Violent trauma (%)	52.2	1.3	7.8	1.6	0.2	3.8	0	0	0	0
Accidental trauma (%)	47.8	22.3	88.8	7.1	2.5	10.3	2.6	0	0	0
Surgical (%)	0	2.1	2.1	3.8	5.3	4.1	0.6	0	0	0
Obstetrical (%)	0	0	0	0	0	0	0	0	0	0
Medical (%)	0	74.3	1.4	87.5	91.9	81.8	96.7	99.8	100	100

SATS: South African Triage Scale; y/o: years old; ED: emergency department

	Kiniero	Komola-Koura	Kou-roussa	Martis-sant	Tabarre	Hamam Al-Alil	Bassi-kounou	Bajaur	Karachi	Timur-gara	Doro	Pibor	Qunnaya
	583	579	1,635	49,348	12,828	3,899	8,437	7,988	23,123	42,287	8,358	2,982	12,224
	91.4	87.2	89.9	13.3	7.5	15	33	51.5	30.3	24.8	47.1	47.5	14.3
	8.6	12.8	10.1	86.7	92.5	85	67	48.5	69.7	75.2	52.9	52.5	85.7
	---	---	---	2.8	5.1	15.5	5.0	2.6	5.5	19.4	---	---	---
	---	---	---	21.9	24.7	0	27.1	42.4	9.8	74.2	---	---	---
	---	---	---	46	52.2	61.3	60.4	50.3	82.8	6.3	---	---	---
	---	---	---	29.1	18	22.3	7.3	4.7	0	0.1	---	---	---
	---	---	---	0.2	0	0.9	0.3	0	1.9	0	---	---	---
	---	---	---	66	3	74	24	8	0	614	---	---	---
	97.4	94.1	1.2	93.7	76.8	48.1	81.7	98.9	99.4	63.6	86.8	77.0	89.5
	0	0	97.5	1.1	21.5	18.2	18	0	0	28.6	12	22.8	9
	2.6	5.7	0.4	4.6	0.6	32.8	0	1.0	0.4	3.2	1.2	0.1	0
	0	0.2	0.8	0.1	0.2	0.5	0.3	0	0.1	1.6	0	0	0
	0	0	0.1	0.5	0.9	0.4	0	0	0.2	3.1	0	0	1.4
	---	---	---	24.7	29.8	15.5	32.1	45	15.4	93.6	---	---	---
	---	---	---	1.1	3.3	25.2	---	---	---	20.3	---	---	---
	---	---	---	75.6	49	6.2	---	---	---	62.1	---	---	---
	0	0	0	9.2	12.8	53.9	0	0.3	0	2.9	4.4	7.3	2.8
	0	0	0.2	60.2	81.2	9.8	13.2	6.8	18	13.6	12.5	6.2	53.6
	0	0	0	2.8	3	1.1	2.9	0.1	0	3.9	2.5	2.6	0
	0	0	0	1	0.1	0.8	0	0	0	1.6	0	0	0
	100	100	99.8	26.7	3	32.7	83.9	92.8	82	77.9	80.6	83.9	43.6

SECTION 12:

HEALTH PROMOTION AND SOCIO-ANTHROPOLOGY

TABLE 1: MSF - OCB interventions for migrants with health promotion (HP) activities, 2017

(Most projects under cell 2 dedicated for migration, except the destination countries still under the E-Unit)

Country	Migration in 2017	Type of HP activities	2018
Destination Countries	Belgium: Poelkappel & Charleroi	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - Identification of good practices inside the reception centres: work on good governance practices and community approaches - Mapping of the different actors including the civil society 	<ul style="list-style-type: none"> - Poelkappel will close in April - Charleroi: new HP position - Plan a field visit
	Brussels' Hub	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - Assessment of mental health perception among the migrants - Support the different actors of the HUB with cultural awareness 	<ul style="list-style-type: none"> - HP position will be close in 2018
	Sweden – Götene	<ul style="list-style-type: none"> - Health education sessions on mental health - Documenting the model of care developed in the project as part of the closure of the project 	<ul style="list-style-type: none"> - Closed
Greece	Lesbos	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity in the camps - Provision of information (geography, itinerary, border situations, regulations, etc.) - Health and Hygiene Promotion with a focus on sexual violence and severe mental health disorder - Psychological First Aid support 	<ul style="list-style-type: none"> - Paediatric activities will be extended: HP position to re-open for short term (for training national staff)
	Thessaloniki	<ul style="list-style-type: none"> - Provision of information (geography, itinerary, border situations, regulations, etc.) - Assess the perception of mental health and the services satisfaction - Inform about the closing of the project 	<ul style="list-style-type: none"> - Closed
Serbia	North Balkans	<ul style="list-style-type: none"> - Hygiene promotion related to primary health care - Psychological First Aid support - Frame a strategy to approach unaccompanied minors 	<ul style="list-style-type: none"> - HP manager position will be open for short term: develop an HP strategy
Turkey	Hatay	<ul style="list-style-type: none"> - Unformal needs assessment - Health education sessions on TB, nutrition, hygiene and rational use of drugs - Distribution of food 	<ul style="list-style-type: none"> - Closed

TABLE 2: MSF - OCB emergency interventions with health promotion (HP) activities, 2017

Country	Emergency in 2017	Type of HP activities	2018
Bangladesh	Cox Bazar-Diphtheria	<ul style="list-style-type: none"> - Health education sessions on diphtheria in the health structure - Assessment of patient's perception of hospital, treatment, MSF and the disease in general (diphtheria) 	<ul style="list-style-type: none"> - New position of HP Manager
Iraq	Hammam Al-Alil (HAA) – Hamdanya -East Mosul (Al-Shifa hospital)	<ul style="list-style-type: none"> - Lots of strategy changes and unclear need for HP - HP for the PHCC in HAA - Assessment and training HP team in Hamdanya - Develop an HP strategy for Al-Shifa hospital 	<ul style="list-style-type: none"> - It will become a regular mission, one HP Manager to support two projects
Guinea	Conakry-Vaccination	<ul style="list-style-type: none"> - Social mobilization for measles vaccination - Community based awareness campaign 	<ul style="list-style-type: none"> - Closed
Madagascar	Ambalavao-Plague	<ul style="list-style-type: none"> - Capacity building on HP for local actors - Qualitative data collection to better understand the needs. 	<ul style="list-style-type: none"> - Closed
	Tamatave-Plague	<ul style="list-style-type: none"> - HP activities to address the rumours in the community on plague 	<ul style="list-style-type: none"> - Closed
Mozambique	Tete & Nampula-Cholera	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - Community based awareness campaign on cholera prevention - Social mobilization for oral cholera vaccination campaign 	<ul style="list-style-type: none"> - Closed
DRC	Likati-Ebola	<ul style="list-style-type: none"> - Training of key community people (e.g. leaders, RECO) - Awareness campaign on Ebola: definition of the disease, transmission and prevention 	<ul style="list-style-type: none"> - Closed

TABLE 3: MSF - OCB projects with health promotion (HP) activities, 2017

Country	Project	Key activities in 2017
Afghanistan	Helmand (OCA)	<ul style="list-style-type: none"> - Health education on all relevant medical topics in the different services of the hospital and support to the mobile clinic - Improve acceptance and perception of MSF
	Kabul- ASB	<ul style="list-style-type: none"> - Health education on all relevant medical topics in the different services of the Ahmad Shah Baba Hospital (maternal health, nutrition, triage, blood donation, etc.) - Awareness raising on primary health care (including EPI) and preventive messages within the mobile clinics - Support the development of the exit strategy in close collaboration with the Communication department
	Khost	<ul style="list-style-type: none"> - Health education on maternal and child health care with a special focus on breastfeeding, ANC, PNC and Kangaroo mother care - Community engagement to support the decentralization process (decentralize normal deliveries to MoH health centres) - Conduct short qualitative assessment on the use of radio
	Kandahar (OCA)	<ul style="list-style-type: none"> - Health education and patient support for TB patients: development of literacy classes
	Dasht-e-Barchi (DeB) (OCP)	<ul style="list-style-type: none"> - Health education on maternal and child health care with a special focus on breastfeeding, ANC & PNC
	Kunduz	<ul style="list-style-type: none"> - Support the reopening of a project: mapping of the actors in the community
Bolivia	El Alto	<ul style="list-style-type: none"> - Anthropological assessment on the barriers, cultural factors and access to SRH services in El Alto
Burundi	Arche	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - Personal and environmental hygiene promotion - Social support to vulnerable patients - HP activities in the hospital to support all relevant medical topics (e.g. maternal health, malaria)
	Ntita	<ul style="list-style-type: none"> - Full HP package on malaria (including vector control activities) in all health structures and the community - Support to the decentralized approach - Support to the blood donation campaign
Cambodia	Preah Vihear	<ul style="list-style-type: none"> - Full HP package on malaria to support for passive and active malaria detection
DRC	Masisi	<ul style="list-style-type: none"> - Health education on all relevant medical topics in the hospital, the two health centres and the mobile clinic - Specific focus on family planning and ToP
	Kananga	<ul style="list-style-type: none"> - Promotion of SGBV services and MSF identity - Health education on SGBV in the hospital and mobile clinic with a specific focus on stigmatization - Socio-cultural assessment of the context in Tshibala - Support to the opening of the nutrition programme in Tshibala
	Bili	<ul style="list-style-type: none"> - HP package on malaria for children under five. - HP strategy to support the community based approach
	Kinshasa PUC	<ul style="list-style-type: none"> - Support the assessments and interventions related to relevant health topics all over DRC
	Kinshasa Coordination	<ul style="list-style-type: none"> - Technical support to all projects in DRC
Egypt	Maadi- VoT project	<ul style="list-style-type: none"> - HP team mobilised on the "task force" - HP strategy on standby
	Alexandria	<ul style="list-style-type: none"> - Health & hygiene promotion for the detained refugees - Socio-cultural assessment of the context
Guinea	Kouroussa	<ul style="list-style-type: none"> - HP package on malaria for children under five. - HP strategy to support the community based approach
Haiti	Martissant	<ul style="list-style-type: none"> - HP strategy to support the vector control program in the community with a specific focus on cholera and entomology - Health surveillance in the community with the "agents de santé communautaires polyvalents" - Health education activities in the health centre with a specific focus on the emergency criteria of admission - Various socio-cultural assessment of the context e.g. family planning, treatment of drinking water, health seeking behaviours
	Port à piment	<ul style="list-style-type: none"> - HP activities in the health centre and the community to support all relevant medical topics with a focus on maternal health and sexual violence
	Tabarre	<ul style="list-style-type: none"> - HP strategy to support the phase before project closure
India	Chhattisgarh	<ul style="list-style-type: none"> - HP activities supporting all the medical activities in the different health facilities and catchment areas e.g. PHC, malaria, nutrition, tuberculosis, maternal health
Indonesia	Banten	<ul style="list-style-type: none"> - Assessment on the sexual and reproductive health education program for adolescent and collaboration on developing the project strategy
Kenya	Embu	<ul style="list-style-type: none"> - HP activities with a specific focus on individual health education on NCD
Lebanon	Akkar	<ul style="list-style-type: none"> - HP strategy on NCD, mental health, vaccination and paediatrics - Various socio-cultural assessment of the context e.g. perception of vaccination
	Shatila camp	<ul style="list-style-type: none"> - HP support for refugees in Shatila refugee camp: hygiene promotion sessions in PHC, health therapeutic education session for diabetes and epilepsy, mapping & community networking
	Ein el helwa camp	<ul style="list-style-type: none"> - HP activities to support the care of NCD at home

Mauritania	Bassikounou	<ul style="list-style-type: none"> - Promotion of MSF services in camps and among the local population - Health education inside the health facilities on PHC, ANC, PNC, nutrition, family planning, WASH, vaccinations, cholera, malaria - Health surveillance (e.g. mortality, pregnancy, nutrition screening) and raising health awareness in the camps
Nauru	Nauru	<ul style="list-style-type: none"> - Assessment on mental health perception, general socio-cultural context and mapping of the actors
Nigeria	Maiduguri	<ul style="list-style-type: none"> - Health education activities in the therapeutic health centre (individual and collective) - Health surveillance in the community - Follow up of patients in the community
	Onitsha	<ul style="list-style-type: none"> - Promotion of the malaria service available at MoH level - Health education on malaria in the slum of Okpoko - Support the WASH component - Mapping of the different actors
Pakistan	Timurgara	<ul style="list-style-type: none"> - HP activities in the hospital to support all relevant medical topics (e.g. hygiene, maternal health, diabetes) - Specific focus on the use & overuse of oxytocin and the neonatal unit
	Karachi	<ul style="list-style-type: none"> - HP activities in the community: promotion of the services and health awareness on hepatitis C and seasonal diseases - HP activities in the clinic to support all relevant medical topics: PHC, maternal health care, information on MSF - Awareness Event International Days in collaboration with the Communication Department
	Bajaur	<ul style="list-style-type: none"> - Health education sessions in the health facility on relevant topics (e.g. maternal health, hygiene, PHC) - HP strategy to engage with the community through radio and stakeholders mapping and meeting
Sierra Leone	Goramba Mende Wandor	<ul style="list-style-type: none"> - Promotion of services and MSF identity - Health education activities in the health facilities on relevant medical topics - HP in the community in close collaboration with MoH Community Health Workers
CAR	Bangui	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - Health education on relevant medical topics (e.g. malaria, measles, SRH, nutrition) in the hospital, health posts and the community, with a specific focus on maternal health, sexual violence, family planning & ToP - HP strategy to support the Klebsiella epidemic
	Bangassou	<ul style="list-style-type: none"> - Health education activities in the hospital, health center, health posts and the community on malaria, hygiene, SRH and blood donation - Development and implementation of the community based strategy with a specific focus on vector control, access to water and health surveillance
South Africa	Rustenburg (SGBV)	<ul style="list-style-type: none"> - HP strategy including a full social marketing plan - Health education in schools in close collaboration with the MoH - Transfer of knowledge and skills through training to local community leaders, CBOs, and DoH
Venezuela	Maracaibo	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - HP strategy on SRH focusing adolescents with engagement of the community
	Bolivar	<ul style="list-style-type: none"> - Promotion of MSF services & MSF identity - HP strategy on malaria, including WASH activities
Zimbabwe	Mbare (SGBV)	<ul style="list-style-type: none"> - HP strategy for SGBV with a specific focus on adolescents - Support the decentralization of SV services to other polyclinics in the city

ANC: Antenatal Care; **CAR:** Central African Republic; **DRC:** Democratic Republic of Congo; **DoH:** Department of Health; **ATFC:** Ambulatory Therapeutic Feeding Centre; **EPI:** Extended Programme on Immunisation; **HP:** Health Promotion; **MoH:** Ministry of Health; **NCD:** Non-Communicable Diseases; **PHC:** Primary health Care; **PNC-** Postnatal Care; **PUC:** Pool d'Urgence Congo; **OCA:** Operational Centre Amsterdam; **OCP:** Operational Centre Paris; **SGBV:** Sexual and Gender-Based Violence; **SRH:** Sexual and Reproductive Health; **SV:** Sexual Violence; **TB:** Tuberculosis; **ToP:** Termination of Pregnancy; **VoT:** Victims of Torture; **WASH:** Water, Hygiene and Sanitation

SECTION 15:

INTENSIVE CARE

TABLE 1: Characteristics and clinical outcomes of patients admitted to OCB ICUs, 2017

	Tabarre, Haiti n (%)	Bujumbura, Burundi n (%)	Bili, DRC n (%)
Total number of admissions	582 (100)	429 (100)	914 (100)
New cases	551 (95)	397 (92)	ND
Readmissions	31 (5)	32 (8)	ND
Patient age (years)	551 (100)	397 (100)	
< 5	23 (4)	52 (13)	
5-14	49 (9)	44 (11)	ND
15+	479 (87)	301 (76)	
Morbidity (new cases)	551 (100)	397 (100)	914 (100)
Violent trauma	180 (33)	83 (21)	0 (0)
Accidental trauma	211 (38)	313 (79)	17 (2)
Obstetrical	4 (1)	0 (0)	0 (0)
Other surgical	156 (28)	1 (<1)	35 (4)
Medical (without malaria)	0 (0)	0 (0)	443 (48)
Malaria	0 (0)	0 (0)	417 (46)
Reason for ICU admission	582 (100)	429 (100)	
Acute respiratory failure	29 (5)	42 (10)	
Hemodynamically unstable	122 (21)	84 (20)	
Altered mental status	7 (1)	68 (16)	ND
Metabolic alterations	0 (0)	20 (5)	
Observation and monitoring	424 (73)	208 (48)	
Other reasons	0 (0)	7 (1)	
Referring department	582 (100)	429 (100)	
Emergency	34 (6)	261 (61)	
Operating theatre	500 (86)	112 (26)	ND
In-patient	48 (8)	56 (13)	
Outcomes	588 (100)	432 (100)	912 (100)
Discharged	20 (3)	24 (6)	36 (4)
Transferred	490 (83)	327 (76)	771 (85)
Referred	4 (<1)	23 (5)	0 (0)
Died	72 (12)	58 (13)	61 (7)
Defaulted	2 (<1)	0 (0)	44 (5)

DRC: Democratic Republic of Congo; ICU, Intensive Care Unit; ND: No Data

SECTION 16:

LABORATORY

TABLE 1: OCB laboratory activities, 2017

Country	Project	Number of laboratories	Project characteristics				Status
			HIV & TB	Transfusions (only)	Hospital (transfusions included)	Other	
Democratic Republic of Congo	Billi	1			X		New
	Kinshasa	1	X				Ongoing
	Masisi	1			X		Ongoing
	Kananga	1		X			Ongoing
Burundi	Bujumbura	1			X		Ongoing
	Gitega	1		X			Ongoing
Mauritania	Bassikounou	1			X		Ongoing
Central African Republic	Bangassou	1			X		Stand by
	Bangui/maternity	1		X		ANC	Ongoing
Kenya	Embu	1	X			NCD	Ongoing
Guinea	Conakry	1	X				Ongoing
	Kouroussa	1		X			Ongoing
South Sudan	Pibor	1			X		Ongoing
	Doro	1		X			Ongoing
Nigeria	Maiduguri	1			X		New
Haiti	Port-au-Prince	1			X	Microbiology (referred)	Ongoing
Ukraine	Dnepropetrovsk	1	X			MDR-TB	New
Zimbabwe	Birch B.	1	X				Closed
	Gutu	1	X				Ongoing
	Harare/ NMRL	1	X				Ongoing
	Mutare	1	X				Ongoing
Malawi	Nsanje	1	X				Ongoing
Mozambique	Maputo	1	X				Ongoing
	Tete	1	X				Ongoing
Afghanistan	Kabul	1			X		Ongoing
	Khost	1		X			Ongoing
Pakistan	Timurgara	1		X			Ongoing
	Karachi	1				Hepatitis C	Ongoing
Total active laboratories		28	11	7	9	4	

ANC: Antenatal care; HIV: Human Immunodeficiency Virus; MDR-TB: Multidrug Resistant Tuberculosis; NCD: Non Communicable Diseases; TB: Tuberculosis

SECTION 19:

MENTAL HEALTH

TABLE 1: OCB mental health (MH) activities in emergency/short term interventions, 2017

Countries	Project	Type of activities	Number of individual sessions ¹	Number of new patients in individual sessions	Number of group sessions ¹	Number of participants in group sessions
Greece	Lesbos-Moria	In Moria refugee camp: Focus activities on children and their parents : psycho education on parenting skills, psycho therapeutic groups and MH care for SV and severe cases	ND (data will be available in 2018 as started end of the year)			
Iraq	(opened end of Dec.)	MHPS support integrated in MSF hospital: Trauma unit + ITFC + paediatric ward and in PHCC (PHC + ATFC). Opened in June 2017 and closed end of July 2017	189	NA	155	NA
Venezuela	Merida / Barquisimeto / San Cristobal	Violence emergency "Response to increased trends of violence during protests" 2017 Centro de Salud Camiula in Merida Trainings (PFA) and capacity building to psychologists	692	513	73	586

¹ Excluding Voluntary Counseling and Testing - and adherence counseling**TABLE 2:** Mental health (MH) activities integrated into OCB medical projects, 2017

Countries	Project	Type of activities	Number of individual sessions ¹	Number of new patients in individual sessions	Number of group sessions ¹	Number of participants in group sessions
New Mental Health Activities						
Belgium	Zone Poelkapelle in Roeselare / Lichtervelde	Mental Health and Psychosocial Support for Asylum Seekers: screening, psychosocial support, PFA, psychoeducation, Focus group discussions, MH promotion, cultural briefing and recreational activities	385	135	53	448
	Zone Jumet and Morlanwel/ Charleroi					
	Brussels	Humanitarian Hub - Psychological and psychiatric care for (trans)migrants in Brussels North station	140	75	NA	NA
DRC	Kananga	Psychosocial support for victims of violence and victims of sexual violence (conflict context / EPREP)	1239	692	531	8959
	Tshibala	Mental health activities and psychosocial support (ATFC, ITFC)	ND	ND	ND	ND
Haiti	Port-à-Piment	Psychological support for Health Center (OPD and IPD) patient's: counselling, psychoeducation for victims of sexual violence	1809	1400	1000	ND
Italy	Calabria-Sicily	MHPS support integrated in post hospitalization for migrants	174	19	NA	NA
	Roma-informal settings (opened end of Nov.)	MHPS support integrated in PHC mobile clinics in informal settings for migrants outside of the official reception system	52	35	4	20
	SAR (search and rescue boat)	Assessment of MHPSS need in MSF SAR boat	ND	ND	ND	ND
Lebanon	Ain Al Hilweh	Psychological support integrated to NCD-home based care	160	37	NA	NA
Serbia	Subotica	PFA and group support sessions integrated in mobile clinics for migrants transiting	772	554	cf data Belgrade	cf data Belgrade
South Sudan	Yei Equatoria	Violence IDP: psychological support, PFA	731	ND	NA	NA

Ongoing MH activities						
Burundi	Bujumbura	Psychological support integrated in MSF Trauma centre and to victims of SV	1089	1174	133	874
DRC	Masisi	Psychological support to victims of violence, including SV, integration of psychological support in the different medical departments (HGR, health posts and mobile clinics)	3166	1327	410	6257
Greece	Athens - Rehabilitation VOT in Athens	Care for VoT (mainly migrants) - including psychological and psychiatric care	1142	71	51	ND
	Lesbos	MHPSS including psychiatric care for migrants in the camp/community, with a specific focus on victims of violence and SV	7501	641	NA	NA
Haiti	Tabarre	Psychological support and external referrals for specialized care in the MSF trauma centre	1921	841	193	3795
India	Mumbai	Psychological and psychiatric support for MDR-TB / 3rd line HIV patients	ND	ND	ND	ND
Italy	Roma	Care for migrant VoT - including psychological and psychiatric care + specific intervention for unaccompanied minors in SPRAR (specific reception centers for vulnerable migrants)	895	56	NA	NA
	Sicily	PFA / crisis intervention project for the survivors of shipwrecks /critical incidents in the main landing ports and Reception Centers of Sicily, Calabria, Puglia and Lampedusa island individual and group sessions	21 emergency interventions (of few days each)			
		Screening and psychological support for asylum seekers in CAS (centre for reception and First Aid) / technical support for national psychologists and social workers in CAS - Opening of a transcultural clinic for specialized care	1232	302	116	503
Lebanon	Beirut	OPD and women health center Psychological support in Shatila camp in PHC (NCD and paediatry) + in maternity + ANC/PNC for Syrian refugees/vulnerable Lebanese	3177	922	374	1726
	Burj El Barjne	Mental health for Syrian refugees (integration to home based care for elderly NCD patients, SRH + individual, family and group psychological sessions) for refugees/vulnerable Lebanese in the camp				
	Akkar	MHPSS for Syrian migrants in MSF clinic, MoH health centers and in the community	2531	591	297	4848
Malawi	Blantyre	Psychiatric care for inmates in the prisons of Maula and Chichiri	ND	24	131	ND
Mauretania	Mbera	MHPSS included psychiatric care care for refugees from Mali in a refugee camps	721	124	NA	NA
Pakistan	Timergara	Psychological support integrated into the MSF medical services (postoperative care, emergency room, OPD and mother and child health)	4406	3833	158	1576
	Karachi	Mental Health care integrated in PHC and Patient support integrated into an OPD /Hepatitis C project in Machar Colonyan in an urban slum	1382	951	236	2961
CAR	Bangui-Castor	Psychological support to SV and beneficiaries who need psychological support and many victims of violence	1620	1094	NA	NA
	Grand Bangui	Gbaya Dombia (SRH) Psychological support to SV and beneficiaries who need psychological support and many victims of violence	138	110	NA	NA
	Bangassou	Psychological support integrated into the medical activities of a hospital	ND	ND	ND	ND
Serbia	Belgrade	MHPSS, included psychiatric care, integrated in PHC clinic	772	554	381 (include subotica)	1308 (include Subotica)
South Africa	Rustenburg	Mental health support to survivors of SGBV (including intimate partner violence and domestic violence) for victims living in mine area	1144	694	24	169
South Sudan	Doro	MH support to refugees from Blue Nile state (group and individual sessions) in MSF health facilities and in the community, with particular focus on the beneficiaries of nutritional activities	2257	1229	799	Group session Clinic = 29246 Group session Community = 3199
Venezuela	Maracaibo	Psychological support for pregnant adolescents from communities SV awareness and care to victims Education on SRH / Friendly adolescents services /spaces	863	557	182	1465
Zimbabwe	Mbare	Psychosocial care for victims of SV	2207	1356	ND	ND

Project closures						
Kenya	Kibera (closed in March)	Intergration of psychiatric and psychological care within PHC activities	ND	ND	NA	NA
Italy	Como and Ventimillia	MHPSS for migrants transiting closed	452	270	97	958
Greece	Thessaloniki	MHPSS for migrants in and outside	1661	230	54	193
CAR	Bangui-Mpoko (closed in Jan.)	Psychosocial and psychological support for displaced people in refugee camp	NA	NA	NA	NA
Sweden	Gotene	Mental health for asylum seekers in Gotene	653	179	169	1841
Tunisia	Sfax-Zarzis	MHPSS for migrants transiting through Tunisia	786	285	NA	NA
Turkey	Hatay province (closed in March)	Psychosocial services to Syrian refugee population in Hatay province	208	79	49	261
Ukraine	Dnepropetrovsk	Psychological and psychiatric support of MDR-TB/HIV patients in prison closed	NA	NA	NA	NA

¹ Excluding Voluntary Counseling and Testing - and adherence counseling

ANC: Antenatal care; **CAR:** Central African Republic; **DRC:** Democratic Republic of Congo; **MHPS:** Mental Health PsychoSocial; **MH:** Mental Health; **ND:** No Data Available; **NA:** Not applicable; **OPD:** Outpatient Department; **ID:** Inpatient Department; **MoH:** Ministry of Health; **SV:** Sexual Violence; **PHC:** Primary Health Care; **TB:** Tuberculosis; **MDR-TB:** Multidrug Resistance Tuberculosis; **PFA:** Psychological First Aid; **PNC:** Postnatal care; **SRH:** Sexual and Reproductive Health; **SW:** Social Worker; **VoT:** Victims of Torture

SECTION 21:

NUTRITION

TABLE 1: MSF OCB nutritional services by project, 2017

		ATFC				ITFC			Remarks (calculations are at exit)
Country	Project	Total patients	% cured	% defaulted	% deteriorated (ATFC to ITFC)	Total patients	% stabilised (ITFC to ATFC)	% died	
Vertical Programmes / Emergencies									
DRC	Kasai	172	70	17	0	NA	NA	NA	ATFC started Dec 2017. ITFC started in Feb 2018
Iraq	Hammam-Al-Alil	299	24	75	6	35	50	6	E-Unit project
Nigeria	Borno (Maiduguri)	6,597	50	33	5	2,031	69	6	High defaulter rate likely due to stopping FPR in July 2017
Integrated Programmes									
Afghanistan	Kabul	445	76	11	0.9	218	88	0.4	
CAR	Bangassou					25	69	13	Project informed there were no ATFCs activities.
DRC	Nord Kivu (Masisi, Nyabiondo)	3,022	91	9	6	1,904	62	6	
	Bili	282	79	17	12	360	92	3	
	PUC	2,034	ND	ND	ND	ND	ND	ND	SAM patients treated ad hoc by PUC for a maximum of 6 weeks
Guinea	Kouroussa	253	53	31	0.2	220	66	5	
Mauritania	Hodh El Chargui (Bassikounou, Mbera)	588	89	3	ND	176	69	5	
Malawi	Prisons	219	87	2	ND				No ITFC activities
Sierra Leone	Gorama Mende Wandor	53	100	0	ND				
	Blue Nile State	20	100	ND	NA				No ITFC activities
South Sudan	Pibor, Gumuruk, Lekongole	1,758	61	32	ND	114	48	7	ATFC numbers from Gumuruk and Lekongole, as ATFC in Pibor run by another actor
	Maban (Doro)	1,250	84	10	2	420	92	3	
Specific Targeted Nutritional Support									
Burundi	Arche					ND			
DRC	Kinshasa (HIV)					501			Not an ITFC but treatment given on an inpatient ward
Malawi	Prisons	373							Not an ATFC, patients given nutritional support in an outpatient service
Haiti	Tabare Hospital					5			This figure is likely to be a huge underestimate, but data not available
Family Food Ration									
Nigeria	Borno (Maiduguri)	7,261							FFR given to families of children in ATFC

ATFC: Ambulatory Therapeutic Feeding Centre; CAR: Central African Republic; FFR: Family Food Ration; DRC: Democratic Republic of Congo; ITFC: Intensive Therapeutic Feeding Centre; MoH: Ministry of Health; ND: no data; NA: not applicable; PUC: Pool d'Urgence Congo

SECTION 22:

OPERATIONAL RESEARCH & DOCUMENTATION

List of OCB-Related Scientific Publications, 2017

A. OPERATIONAL RESEARCH

1. **Viewpoint:** Tripathy JP, Bhatnagar A, Shewade HD, Kumar AMV, Zachariah R, et al. (2017) Ten tips to improve the visibility and dissemination of research for policy makers and practitioners. *Public Health Action* 7: 10-14.

B. HEALTH SYSTEMS & PROGRAMME MONITORING

2. **Original Research:** Davies MA, Tsondai P, Tiffin N, Eley B, Rabie H, et al. (2017) Where do HIV-infected adolescents go after transfer? - Tracking transition/transfer of HIV-infected adolescents using linkage of cohort data to a health information system platform. *J Int AIDS Soc* 20: 21668.

C. HIV

3. **Review:** Zachariah R, Takarinda K, Harries AD (2017) *AIDS Review. Africa Health*: 31-32.
4. **State of the art:** Stinson K, Goemaere E, Coetzee D, van Cutsem G, Hilderbrand K, et al. (2017) Cohort Profile: The Khayelitsha antiretroviral programme, Cape Town, South Africa. *Int J Epidemiol* 46: e21.
5. **Original Research:** Bekolo CE, Diallo A, Phillips M, Yuma JD, Di Stefano L, et al. (2017) Six-monthly appointment spacing for clinical visits as a model for retention in HIV Care in Conakry-Guinea: a cohort study. *BMC Infect Dis* 17: 766.
6. **Original Research:** Bekolo CE, Soumah MM, Tientore OW, Diallo A, Yuma JD, et al. (2017) Assessing the outcomes of HIV-infected persons receiving treatment for Kaposi sarcoma in Conakry-Guinea. *BMC Cancer* 17: 806.
7. **Original Research:** Blaizot S, Huerga H, Riche B, Ellman T, Shroufi A, et al. (2017) Combined interventions to reduce HIV incidence in KwaZulu-Natal: a modelling study. *BMC Infect Dis* 17: 522.
8. **Original Research:** Brennan AT, Davies MA, Bor J, Wandeler G, Stinson K, et al. (2017) Has the phasing out of stavudine in accordance with changes in WHO guidelines led to a decrease in single-drug substitutions in first-line antiretroviral therapy for HIV in sub-Saharan Africa? *Aids* 31: 147-157.
9. **Original Research:** Chimoyi L, Kamndaya M, Venables E, von Knorring N, Stadler J, et al. (2017) Using surrogate vaccines to assess feasibility and acceptability of future HIV vaccine trials in men: a randomised trial in inner-city Johannesburg, South Africa. *BMC Public Health* 17: 524.
10. **Original Research:** De Waal R, Cohen K, Fox MP, Stinson K, Maartens G, et al. (2017) Changes in estimated glomerular filtration rate over time in South African HIV-1-infected patients receiving tenofovir: a retrospective cohort study. *J Int AIDS Soc* 20: 21317.

11. **Original Research:** Decroo T, Telfer B, Does CD, White RA, Santos ND, et al. (2017) Effect of Community ART Groups on retention-in-care among patients on ART in Tete Province, Mozambique: a cohort study. *BMJ Open* 7: e016800.

12. **Original Research:** Fortuin-de Smidt M, de Waal R, Cohen K, Technau KG, Stinson K, et al. (2017) First-line antiretroviral drug discontinuations in children. *PLoS One* 12: e0169762.

13. **Original Research:** Huerga H, Shiferie F, Grebe E, Giuliani R, Farhat JB, et al. (2017) A comparison of self-report and antiretroviral detection to inform estimates of antiretroviral therapy coverage, viral load suppression and HIV incidence in KwaZulu-Natal, South Africa. *BMC Infect Dis* 17: 653.

14. **Original Research:** Huerga H, Venables E, Ben-Farhat J, van Cutsem G, Ellman T, et al. (2017) Higher risk sexual behaviour is associated with unawareness of HIV-positivity and lack of viral suppression - implications for Treatment as Prevention. *Sci Rep* 7: 16117.

15. **Original Research:** Kaplan SR, Oosthuizen C, Stinson K, Little F, Euvrard J, et al. (2017) Contemporary disengagement from antiretroviral therapy in Khayelitsha, South Africa: A cohort study. *PLoS Med* 14: e1002407.

16. **Original Research:** Pellecchia U, Baert S, Nundwe S, Bwanali A, Zamadenga B, et al. (2017) "We are part of a family". Benefits and limitations of community ART groups (CAGs) in Thyolo, Malawi: a qualitative study. *J Int AIDS Soc* 20: 21374.

17. **Original Research:** Rick F, Niyibizi AA, Shroufi A, Onami K, Steele SJ, et al. (2017) Cryptococcal antigen screening by lay cadres using a rapid test at the point of care: A feasibility study in rural Lesotho. *PLoS One* 12: e0183656.

18. **Original Research:** Stern E, Colvin C, Gxabagxaba N, Schutz C, Burton R, et al. (2017) Conceptions of agency and constraint for HIV-positive patients and healthcare workers to support long-term engagement with antiretroviral therapy care in Khayelitsha, South Africa. *Afr J AIDS Res* 16: 19-29.

19. **Original Research:** Swannet S, Decroo T, de Castro S, Rose C, Giuliani R, et al. (2017) Journey towards universal viral load monitoring in Maputo, Mozambique: many gaps, but encouraging signs. *Int Health* 9: 206-214. **(SORT-IT course participant)**

20. **Original Research:** Tsondai PR, Wilkinson LS, Grimsrud A, Mdlalo PT, Ullauri A, et al. (2017) High rates of retention and viral suppression in the scale-up of antiretroviral therapy adherence clubs in Cape Town, South Africa. *J Int AIDS Soc* 20: 21649.

21. **Original Research:** Kyaw KKY, Oo MM, Kyaw NTT, Phyo KH, Aung TK, et al. (2017) Low mother-to-child HIV transmission rate but high loss-to-follow-up among mothers and babies in Mandalay, Myanmar; a cohort study. *PLoS One* 12: e0184426. **(SORT-IT course participant)**

D. HIV/TUBERCULOSIS CO-INFECTION

22. **Original Research:** Fenner L, Atkinson A, Boule A, Fox MP, Prozesky H, et al. (2017) HIV viral load as an independent risk factor for tuberculosis in South Africa: collaborative analysis of cohort studies. *J Int AIDS Soc* 20: 21327.

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E. TUBERCULOSIS (INCLUDING DRUG-RESISTANT TUBERCULOSIS)

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 33. **Original Research:** Han WW, Saw S, Isaakidis P, Khogali M, Reid A, et al. (2017) Different challenges, different approaches and related expenditures of community-based tuberculosis activities by international non-governmental organizations in Myanmar. *Infect Dis Poverty* 6: 59. **(SORT-IT course participant)**
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- F. MALARIA**
39. **Viewpoint – comment on 40:** Hsiang MS, Ranadive N, Chitundu S, Ntshalintshali N, Greenhouse B (2017) Reply to Rossi et al. *Clin Infect Dis* 65: 1770-1771.
 40. **Original Research:** Rossi G, De Smet M, Khim N, Kindermans JM, Menard D (2017) Performance of Rapid Diagnostic Testing in Patients with Suspected Malaria in Cambodia, a Low-Endemicity Country Aiming for Malaria Elimination. *Clin Infect Dis* 65: 1769-1770.
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- G. EBOLA**
45. **Review:** Fitzpatrick G, Decroo T, Draguez B, Crestani R, Ronsse A, et al. (2017) Operational Research during the Ebola Emergency. *Emerg Infect Dis* 23: 1057-1062.
 46. **State of the art:** Sprecher A, Van Herp M, Rollin PE (2017) Clinical Management of Ebola Virus Disease Patients in Low-Resource Settings. *Curr Top Microbiol Immunol* 411: 93-113.
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 48. **Viewpoint:** Caluwaerts S (2017) Nubia's mother: being pregnant in the time of experimental vaccines and therapeutics for Ebola. *Reprod Health* 14: 157.
 49. **Viewpoint:** Carazo Perez S, Folkesson E, Anglaret X, Beavogui AH, Berbain E, et al. (2017) Challenges in preparing and implementing a clinical trial at field level in an Ebola emergency: A case study in Guinea, West Africa. *PLoS Negl Trop Dis* 11: e0005545.
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 52. **Viewpoint – comment on 50:** Rosenke K, Adjemian J, Munster VJ, Strong JE, Sprecher A, et al. (2017) Reply to Colebunders. *Clin Infect Dis* 64: 232.
 53. **Viewpoint:** Venables E, Pellecchia U (2017) Engaging Anthropology in an Ebola Outbreak: Case Studies from West Africa. *Anthropology in Action* 24: 1-8.
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 64. **Original Research:** Camara BS, Delamou A, Diro E, Beavogui AH, El Ayadi AM, et al. (2017) Effect of the 2014/2015 Ebola outbreak on reproductive health services in a rural district of Guinea: an ecological study. *Trans R Soc Trop Med Hyg* 111: 22-29. **(SORT-IT course participant)**
 65. **Original Research:** Camara BS, Delamou AM, Diro E, El Ayadi A, Beavogui AH, et al. (2017) Influence of the 2014-2015 Ebola outbreak on the vaccination of children in a rural district of Guinea. *Public Health Action* 7: 161-167. **(SORT-IT course participant)**
 66. **Original Research:** Dunbar NK, Richards EE, Woldeyohannes D, Van den Bergh R, Wilkinson E, et al. (2017) Knockdown and recovery of malaria diagnosis and treatment in Liberia during and after the 2014 Ebola outbreak. *Public Health Action* 7: S76-S81. **(SORT-IT course participant)**
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H. OTHER INFECTIOUS DISEASES

74. **Original Research:** Ali E, Van den Bergh R, D'Hondt R, Kuma-Kuma D, Weggheleire A, et al. (2017) Localised transmission hotspots of a typhoid fever outbreak in the Democratic Republic of Congo. *Pan Afr Med J* 28: 179.

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76. **Original Research:** Aderie EM, Diro E, Zachariah R, da Fonseca MS, Abongomera C, et al. (2017) Does timing of antiretroviral treatment influence treatment outcomes of visceral leishmaniasis in Northwest Ethiopia? *Trans R Soc Trop Med Hyg* 111: 107-116. (SORT-IT course participant)

77. **Original Research:** Biritwum NK, Yikpotey P, Marfo BK, Odoom S, Mensah EO, et al. (2016) Persistent 'hotspots' of lymphatic filariasis microfilaraemia despite 14 years of mass drug administration in Ghana. *Trans R Soc Trop Med Hyg* 110: 690-695. (SORT-IT course participant)

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I. NON-COMMUNICABLE DISEASES

79. **Original Research:** Pelzom D, Isaakidis P, Oo MM, Gurung MS, Yangchen P (2017) Alarming prevalence and clustering of modifiable noncommunicable disease risk factors among adults in Bhutan: a nationwide cross-sectional community survey. *BMC Public Health* 17: 975. (SORT-IT course participant)

J. MENTAL HEALTH

80. **Original Research:** Nyirandagijimana B, Edwards JK, Venables E, Ali E, Rusangwa C, et al. (2017) Closing the gap: decentralising mental health care to primary care centres in one rural district of Rwanda. *Public Health Action* 7: 231-236. (SORT-IT course participant)

K. RATIONAL DRUG USE & ANTIMICROBIAL RESISTANCE

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L. SEXUAL AND REPRODUCTIVE HEALTH

83. **Original Research:** De Plecker E, Zachariah R, Kumar AM, Trelles M, Caluwaerts S, et al. (2017) Emergency obstetric care in a rural district of Burundi: What are the surgical needs? *PLoS One* 12: e0170882. (SORT-IT course participant)

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85. **Original Research:** Harrison RE, Pearson L, Vere M, Chonzi P, Hove BT, et al. (2017) Care requirements for clients who present after rape and clients who presented after consensual sex as a minor at a clinic in Harare, Zimbabwe, from 2011 to 2014. *PLoS One* 12: e0184634.

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87. **Original Research:** Verma H, Sagili KD, Zachariah R, Aggarwal A, Dongre A, et al. (2017) Do incentivised community workers in informal settlements influence maternal and infant health in urban India? *Public Health Action* 7: 61-66. (SORT-IT course participant)

88. **Original Research:** Yasobant S, Shewade HD, Vora KS, Annerstedt KS, Isaakidis P, et al. (2017) Effect of previous utilization and out-of-pocket expenditure on subsequent utilization of a state led public-private partnership scheme "Chiranjeevi Yojana" to promote facility births in Gujarat, India. *BMC Health Serv Res* 17: 302. (SORT-IT course participant)

M. SURGERY, ANAESTHESIA & EMERGENCY DEPARTMENT

89. **Review:** Trelles Centurion M, Van Den Bergh R, Gray H (2017) Anesthesia Provision in Disasters and Armed Conflicts. *Curr Anesthesiol Rep* 7: 1-7.

90. **Original Research:** Dalwai M, Valles P, Twomey M, Nzomukunda Y, Jonjo P, et al. (2017) Is the South African Triage Scale valid for use in Afghanistan, Haiti and Sierra Leone? *BMJ Glob Health* 2: e000160.

91. **Original Research:** Forrester JD, Forrester JA, Basimounye JP, Tahir MZ, Trelles M, et al. (2017) Sex disparities among persons receiving operative care during armed conflicts. *Surgery* 162: 366-376.

92. **Original Research:** Hemat H, Shah S, Isaakidis P, Das M, Kyaw NT, et al. (2017) Before the bombing: High burden of traumatic injuries in Kunduz Trauma Center, Kunduz, Afghanistan. *PLoS One* 12: e0165270. (SORT-IT course participant)

93. **Original Research:** Massaut J, Valles P, Ghismonde A, Jacques CJ, Louis LP, et al. (2017) The modified south African triage scale system for mortality prediction in resource-constrained emergency surgical centers: a retrospective cohort study. *BMC Health Serv Res* 17: 594.

N. CONFLICTS & HUMANITARIAN EMERGENCIES

94. **Original Research:** Correa G, Das M, Kovelamudi R, Jaladi N, Pignon C, et al. (2017) High burden of malaria and anemia among tribal pregnant women in a chronic conflict corridor in India. *Confl Health* 11: 10.

95. **Original Research:** van Berlaer G, Staes T, Danschutter D, Ackermans R, Zannini S, et al. (2017) Disaster preparedness and response improvement: comparison of the 2010 Haiti earthquake-related diagnoses with baseline medical data. *Eur J Emerg Med* 24: 382-388.

O. REFUGEE CRISIS

96. **Viewpoint:** Zamatto F, Argenziano S, Arsenijevic J, Ponthieu A, Bertotto M, et al. (2017) Migrants caught between tides and politics in the Mediterranean: an imperative for search and rescue at sea? *BMJ Glob Health* 2: e000450.

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98. **Original Research:** Arsenijevic J, Schillberg E, Ponthieu A, Malvisi L, Ahmed WAE, et al. (2017) A crisis of protection and safe passage: violence experienced by migrants/refugees travelling along the Western Balkan corridor to Northern Europe. *Confl Health* 11: 6.

99. **Original Research:** Crepet A, Rita F, Reid A, Van den Boogaard W, Deiana P, et al. (2017) Mental health and trauma in asylum seekers landing in Sicily in 2015: a descriptive study of neglected invisible wounds. *Confl Health* 11: 1. (SORT-IT course participant)

SECTION 26:

SURGICAL CARE

TABLE 1: Overview of OCB surgical activities per project, 2017

Mission		AFG	AFG	BDI	CAR	CAR	DRC
Project		Kabul	Khost	Bujumbura	Bangassou	Castors	Bili
Patients (1)	number	1,159	982	1,524	701	1,238	290
Cases (2)	number	1,176	998	4,053	1,195	1,358	342
Procedures (3)	number	1,185	1,194	4,477	1,220	1,369	361
Mean Age (4)	years	25	32	23	28	25	33
Female (4)	%	76.6	100.0	25.3	44.1	100.0	49.7
All trauma (4)	%	1.9	0.0	100.0	37.4	0.1	12.8
Violent trauma (4)	%	1.2	0.0	9.3	22.4	0.0	4.8
Caesarean section (4)	%	43.8	53.5	0.0	14.7	75.4	15.2
Post-op infection (4) (6)	%	0.4	0.7	2.2	ND	1.0	ND
Primary interventions (5)	%	98.6	98.4	37.6	58.7	91.2	84.8
Emergent cases (5)	%	98.0	86.5	100.0	94.6	100.0	67.3
Minor / wound surgery (5)	%	4.3	0.1	69.7	66.0	9.5	42.1
Spinal anaesthesia (5)	%	81.5	78.8	18.4	21.4	73.1	37.4
Spinal procedure / C-section (6)	%	96.5	89.5	NA	85.4	89.1	77.3
Intra-operative mortality (5)	%	0.1	0.4	0.2	0.4	0.2	0.0
Occupancy rate per OR	minutes/day/OR	271	90	306	77	114	111

(*): Indirect activities

(1): reflects the number of new cases

(2):- reflects the number of entrances to Operation Theatre as the number of anaesthesias

(3): reflects the number of performed surgical procedures

(4): denominator is the number of patients

(5): denominator is the number of cases

(6): to consider with attention because a lot of biases are present

(7): there are considered the spinal and combined techniques

ND: not data available

NA: not applicable indicator

AFG: Afghanistan; BDI: Burundi; CAR: Central African Republic; DRC: Democratic Republic of Congo; HTI: Haiti;

IRQ: Iraq; MRT: Mauritania; PAK: Pakistan; SSD: South Sudan

DRC	DRC	DRC	HTI	IRQ	MRT	PAK	SSD	SSD	Total
Kananga	Masisi	Nyabiondo	Tabarre	Hamam Al-Alii	Bassikounou	Timurgara	Bor	Pibor	
308	2,270	253	2,777	396	403	1,818	33	122	14,274
1,204	3,912	253	6,539	667	408	1,856	35	159	24,155
1,242	4,095	253	8,971	836	412	2,024	36	159	27,834
28	26	23	28	25	25	32	36	20	
33.4	73.7	81.0	26.1	26.5	65.5	100.0	36.4	45.1	
61.7	19.2	13.0	86.2	95.2	23.3	0.3	24.3	39.3	
26.0	7.9	6.3	20.2	84.1	0.5	0.1	15.2	13.9	
0.0	46.3	48.2	0.0	0.0	30.5	87.8	9.1	9.0	
ND	1.5	ND	4.4	ND	ND	0.6	ND	ND	
25.6	58.0	100.0	42.5	59.4	98.8	98.0	94.3	76.7	
100.0	95.2	100.0	100.0	99.9	97.5	100.0	80.0	96.2	
79.0	58.4	44.7	41.6	69.4	19.1	0.2	31.4	88.1	
13.0	30.2	40.3	22.3	2.1	45.1	79.4	54.3	4.4	
NA	92.9	89.3	NA	NA	95.1	87.8	100.0	63.6	
0.1	0.2	0.0	0.2	1.8	0.0	0.3	0.0	0.0	
203	291	32	360	147	57	288	50	22	

SECTION 28:

VACCINATION

TABLE 1: Results of vaccination coverage surveys post-vaccination, MSF-OCB, 2017

Project/country	Antigen	Date
Alunguli, Maniema, DRC	Measles post reactive vaccination campaign	22-23/3
Kailo, Maniema, DRC	Measles post reactive vaccination campaign	25-28/3
Samba, Maniema, DRC	Measles post reactive vaccination campaign	24-26/4
Kibombo, Maniema, DRC	Measles post reactive vaccination campaign	28-29/4
Lubao, Lomami, DRC	Measles post reactive vaccination campaign	23-26/6
Lowa, Tshopo, DRC	Measles post reactive vaccination campaign	12-31/8
Punia, Maniema, DRC	Measles post reactive vaccination campaign	22-29/11
Obotoke, Maniema, DRC	Measles post reactive vaccination campaign	22-29/11
Kamana, Lomami, DRC	Measles post reactive vaccination campaign	ongoing
Tshofa, Lomami, DRC	Measles post reactive vaccination campaign	ongoing
Tshibala&Kalomba, Kasai, DRC	Measles during assessment	8-20/11
Port à Piment, Haiti		
Coteaux, Haiti	Cholera 2 doses (6-months apart)	16/6-1/7
Chardonnières, Haiti		
Doro camp, Maban, South Sudan	Multi-antigens VCS post catch-up campaign	7-12/9
Bunj, Maban, South Sudan	Multi-antigens VCS post catch-up campaign	30/11-5/12
Conakry, Guinea (5 communes)	Measles post reactive vaccination campaign	27/4-3/5

DRC: Democratic Republic of Congo; VCS: Vaccination Coverage Survey; MCV, Measles Containing Vaccination; CI: Confidence Interval; OCV: Oral Cholera Vaccine; BCG, Bacillus Calmette–Guérin; IPV: Inactivated Polio Vaccine; PCV: Pneumococcal Conjugate Vaccine

* Vaccination coverage estimates include previous vaccinations (not only target reached by the campaign)

Target population	Coverage [95% CI]
6m - 5Y	MCV1 98.3% [97.2-99.4] - MCV2 83.6% [79.0-88.1]
6m - 5Y	MCV1 98.9% [97.6-100] - MCV2 76.1% [65.6-86.6]
6m - 5Y	MCV1 99.3% [98.6-100] - MCV2 92.2% [86.8-97.6]
6m - 5Y	MCV1 97.9% [96.5-99.3] - MCV2 86,7% [80.4-93.0]
6m - 5Y	MCV1 99.9% [99.6-100]
6m - 5Y	MCV1 98.1% [96.6-99.5] - MCV2 69.8% [59.3-80.2]
6m - 5Y	MCV1 99.0% - MCV2 70.9%
6m - 5Y	MCV1 98.2% - MCV2 84.7%
6m - 5Y	MCV1 97.1% - MCV2 %
6m - 5Y	MCV1 99.6% - MCV2 %
6m - 5Y	MCV1 88.4% [83.2-92.2]
5-14Y	MCV1 87.3% [82.1-91.2]
>1Y	OCV2 82.3% [79,0-85.2]
	OCV2 82.6% [78,1-86.4]
	OCV2 80.7% [76.8-84.1]
<2Y	Fully vaccinated 12-23M 65% [57.8-72.1]
	BCG in <1Y 98.7% [97.4 - 100.0] BCG in 1-2Y 98.4% [98.4 - 99.9]
	Polio oral (4 doses) in <1Y 56.1% [48.2 - 64.0] in 1-2Y 82.1% [76.2 - 88.0]
	IPV in <1Y 65,0% [57.8 - 72.3] in 1-2Y 82,5% [76,4 - 88,6]
	Pentavalent (3 doses) in <1Y 59.1% [51.3 - 66.8] in 1-2 Y 89.0% [84.7 - 93.3]
	PCV (2 doses) in <1Y 58.1% [50.6 - 65.6] in 1-2Y 82.3% [76.9 - 87.7]
	Measles in 9-23M 86.9% [82.9 - 90.9]
<2Y	Fully vaccinated 12-23M 70.8% [65.6 – 76.0%]
	BCG in <1Y 94.8% [91.5 – 98.1] in 1-2Y 94.8% [91.8 – 97.8]
	Polio oral (4 doses) in <1Y 56.7% [49.7 – 63.7] in 1-2Y 82.2% [77.5 – 86.9]
	IPV in <1Y 63.2% [56.2 – 70.2] in 1-2Y 83.0% [78.7 – 87.4]
	Pentavalent (3 doses) in <1Y 58.0% [51.3 – 64.7] in 1-2Y 85.5% [81.2 – 89.9]
	PCV (2 doses) in <1Y 69.7% [62.9 – 76.5] in 1-2Y 87.8% [83.6 – 92.0]
	Measles in 9-23M 83.9% [79.8 – 87.9]
6m - 9Y	MCV 95.1% [94.1-96.1]



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