CONTRIBUTORS

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INTRODUCTION

Dear Colleagues, Dear Friends,

You want to keep track of what has been achieved in 2019? This is the place! And yes, it is once again impressive. This introduction cannot do justice to all our projects and I encourage you to read the Year in Review, from the Central African Republic to Yemen, from safe abortion care to trauma care, and then to dive deep into the different chapters. Thanks to all of you, who every day, work hard to deliver high-impact medical interventions to meet the health needs and demands of the most vulnerable. This is who we are, this is our identity, this is what connects us all.

We are now in summer 2020 and a lot has happened. COVID-19 has seriously challenged us and continues to do so. What will be the consequences following such a massive disruption of our human societies? What do we need to prepare ourselves for? Do we have to adapt our operational model? Can we anticipate increasing health needs in the wake of the pandemic? What are the opportunities? Is our emergency response capacity strong enough from a structural and financial perspective?

And, maybe more importantly, what will change now that we have acknowledged the existence of structural racism in MSF? It is a turning point and it is for the better. What actions will we take and how will this change the way we care for patients? How will we redefine the role of national and international staff?

The field recentralisation is an existing initiative giving autonomy within a framework to project teams. Can it live up to expectations of empowering the field, of giving more space to national staff in decision-making positions? Will it improve our relevance, our coherence, our connection to the community and our efficiency?

Mid-July, the OCB group sent an important message to the Full-Excom: “Towards a Networked OC.” Our operational centre will progressively develop into a global network of operational hubs and support units located closer to operations. This will facilitate the recruitment of people based on their knowledge, their expertise and their ability to contribute through this strategic and supportive network.

Following the successful implementation of Sherlog in the LOG department, we launched a pilot community of practice for health promotion. Investment in this new approach has been boosted during the pandemic to dynamically share recommendations on COVID-19 with all our staff. This will bring changes to the role of medical advisor, allowing staff from different projects to help each other.

For health promotion there is another major development coming in the form of digital HP, using social media to reach out to specific communities and individuals on a wide scale.

Thanks to fantastic resilience and extraordinary digital connectedness we have been able to continue to work through our newfound love of virtual meetings. But our reserves are growing thin and the need to see each other and work with the teams in the field is deeply felt. Being mindful of our resources and our environmental footprint we are looking at new ways to meet these needs.

Having all this in mind, I hope you will be inspired by this report, and look forward to the opening of new projects and rethinking around existing ones.

I want to thank all those who participated in the elaboration of this document, writing our history and ensuring sound decisions for our future.

Fare well, wherever your humanitarian compass takes you,

Sebastian Spencer
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EXECUTIVE SUMMARY

In 2019, Médecins Sans Frontières – Operational Centre Brussels (MSF OCB) ran 109 projects in 38 countries. Overall, 2,214,084 outpatient department (OPD) consultations were performed, of which 890,669 were for children under the age of five. There were 207,363 admissions to in-patient Departments (IPD); 41,893 patients were children (1-59 months) and 9,656 were neonates.

While continuing the response to the Ebola Virus Disease outbreak in the Democratic Republic of the Congo (DRC) and providing assistance to asylum seekers in and around Europe, some major responses for OCB in 2019 included: i) initiating the emergency response to the cyclones in Malawi and Mozambique; ii) responding to the floods in South Sudan; iii) continuing the Mocha trauma project in Yemen and iv) organising vaccination campaigns in the DRC during the biggest measles epidemic in its history. Geographically, activities in sub-Saharan Africa remained at the core of MSF OCB interventions (Figure).

In 2019

- 846,860 doses of vaccines were given
- 311,545 cases of confirmed malaria were treated
- 75,740 deliveries performed; 6,267 of these by C-section
- 62,203 individual mental health sessions were conducted
- 17,696 surgical interventions were undertaken
- 6804 victims of sexual violence accessed care
- 1551 cases of drug-resistant tuberculosis were diagnosed and treated

FIGURE Global OCB sections and missions, 2019
LIST OF ABBREVIATIONS

ABR: Antibiotic Resistance
ACT: Artemisinin-based Combination Therapies
AIDS: Acquired Immune Deficiency Syndrome
ALSO: Advanced Life Support in Obstetrics
AMoCo: Abortion-related Mortality and Mortality in Fragile and Conflict-affected settings
AMR: Antimicrobial Resistance
ANC: Antenatal Care
ART: Anti-Retroviral Treatment
ARV: Antiretroviral
AS: Antibiotic Stewardship
ATFC: Ambulatory Therapeutic Feeding Centre
BASIC-DHS: Basic Assessment and Support in Intensive Care for Developing Healthcare Systems
BGC: Bacille Calmette Guérin (TB vaccination)
BEmONC: Basic Emergency Obstetric and Neonatal Care
bOPV: Bivalent Oral Polio Vaccine
BSU: Biomedical Service Unit
CAR: Central African Republic
CATI: Case-Category Targeted Interventions
CDC: Centers for Disease Control and Prevention
CeEmONC: Comprehensive Emergency Obstetric and Newborn Care
CHW: Community Health Worker
CNCD: Chronic Non-Communicable Disease
CPAP: Continuous Positive Airflow Pressure
CPOC: Comprehensive Post-Operative Care
CPT: Cognitive Processing Therapy
CrAg: Cryptosporidial Antigen
CS: Caesarean Sections
CSW: Commercial Sex Worker
CTC: Cholera Treatment Centre
DAA: Direct-Acting Antivirals
DBS: Dry Blood Spot
DDD: Daily Defined Dose
DHIS2: District Health Information Software 2
DOC: Direct Obstetric Complications
DoE: Declaration of Equivalence
DRC: Democratic Republic of the Congo
DRTB: Drug-Resistant Tuberculosis
DST: Drug Susceptibility Testing
DSTB: Drug-Sensitive Tuberculosis
ED: Emergency Department
EML: Essential Medicines List
EmOC: Emergency Obstetric Care
EMR: Electronic Medical Records
EPI: Extended Programme on Immunisation
EPREP: Emergency Preparedness
EGAS: External Quality-Control System
ER: Emergency Room
ERB: Ethics Review Board
ESBL: Extended Spectrum Beta Lactamase
EU: European Union
E-Unit: Emergency Unit
EVD: Ebola Virus Disease
FLMT: First Line Medical Training
FP: Family Planning
FPR: Family Protection Ration
GAM: Global Acute Malnutrition
GDP: Good Distribution Practice
GIS: Geographic Information System
GPP: Good Pharmacy Practice
GTFC: Global Task Force for Cholera Control
Gyn-Ob: Gynaecology/Obstetrics
HBV: Hepatitis B Virus
HC: Health Centre
HCV: Hepatitis C Virus
HH: Household
HIV: Human Immunodeficiency Virus
HMTT: Hospital Management Team Training
HP: Health Promotion
HPV: Human Papilloma Virus
HQ: Head Quarters
HR: Human Resources
HSP: Histidine Rich Protein
ICCM: Integrated Community Case Management
ICRC: International Committee of the Red Cross
ICT: Information and Communication Technologies
ICU: Intensive Care Unit
IDP: Internally Displaced People
IPC: Infection Prevention and Control
IPD: In-Patient Department
IPV: Inactivated Polio Vaccine
IT: Information and Communication Technologies
ITC: International Technical Coordination
ITFC: In-Patient Therapeutic Feeding Centre
ITM: Institute of Tropical Medicine in Antwerp
KZN: KwaZulu-Natal
LAM: Lipoarabinomannan Assay
LBW: Low Birth Weight
LEEP: Loop Electrosurgical Excision Procedure
LHW: Lay Health Worker
LLIN: Long-Lasting Insecticide Treated Nets
LOC: Level of Care
LPA: Line Probe Assay
LRIT: Lower Respiratory Tract Infection
LSHTM: London School of Hygiene and Tropical Medicine
LuxOR: Luxembourg Operational Research Unit
M&E: Monitoring and Evaluation
MAM: Medical Activity Manager
MAST: Monitoring and Surveillance Tools
MCC: Measles-Containing Vaccination
MDR: Multi-Drug Resistant
MDRO: Multi-Drug Resistant Organisms
MDR-TB: Multidrug-Resistant Tuberculosis
MENA: Middle East and Northern Africa
MH: Mental Health
mHAP: Mental Health Action Programme
MHPSS: Mental Health and Psychosocial Support
MHS: Management of Health Structures
MINOS: Medical Information Network for Operational Support
MIO: Mobile Implementation Officer
MoH: Ministry of Health
MOV: Missed Opportunities for Vaccination
MSF: Médecins Sans Frontières
MSM: Men who have Sex with Men
MTA: Material Transfer Agreement
MUAC: Middle Upper Arm Circumference
MUST: Mobile Unit Surgical Trailer
NAM: Nursing Activity Manager
NCD: Non-Communicable Disease
NDR: National Drug Regulatory Authority
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>NET</td>
<td>Narrative Exposure Therapy</td>
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<tr>
<td>NFI</td>
<td>Non-Food Item</td>
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<td>NG</td>
<td>Nasogastric Tube</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
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<tr>
<td>NICD</td>
<td>National Institute of Communicable Diseases</td>
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<tr>
<td>NIV</td>
<td>Non-Invasive Ventilation</td>
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<tr>
<td>OC</td>
<td>Operational Centre</td>
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<td>OCA</td>
<td>Operational Centre Amsterdam</td>
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<td>OCB</td>
<td>Operational Centre Brussels</td>
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<td>OCBBA</td>
<td>Operational Centre Barcelona-Athens</td>
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<td>OCG</td>
<td>Operational Centre Geneva</td>
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<td>OCP</td>
<td>Operational Centre Paris</td>
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<td>OD</td>
<td>Operating Department</td>
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<tr>
<td>OOPS</td>
<td>Online Offline Publication System</td>
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<tr>
<td>OPD</td>
<td>Out-Patient Department</td>
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<tr>
<td>OR</td>
<td>Operational Research</td>
</tr>
<tr>
<td>OT</td>
<td>Operating Theatre</td>
</tr>
<tr>
<td>PBO</td>
<td>Piperonyl Butoxide</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<tr>
<td>PCV</td>
<td>Pneumococcal vaccine</td>
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<tr>
<td>PEP</td>
<td>Post-Exposure Prophylaxis</td>
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<tr>
<td>PFA</td>
<td>Psychological First Aid</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>pLDH</td>
<td>Parasite Lactate Dehydrogenase</td>
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<tr>
<td>PLHIV</td>
<td>People Living with HIV</td>
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<tr>
<td>PMR</td>
<td>Project Medical Referent</td>
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<tr>
<td>PMTCT</td>
<td>Prevention of Mother-to-Child Transmission</td>
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<tr>
<td>PNC</td>
<td>Postnatal Care</td>
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<tr>
<td>POC</td>
<td>Point of Care</td>
</tr>
<tr>
<td>PPD</td>
<td>Preparation for Primary Departure</td>
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<tr>
<td>PPS</td>
<td>Point Prevalence Survey</td>
</tr>
<tr>
<td>PrEP</td>
<td>Pre-Exposure Prophylaxis</td>
</tr>
<tr>
<td>PSP</td>
<td>Populations in Precarious Situations</td>
</tr>
<tr>
<td>PTSD</td>
<td>Post-Traumatic Stress Disorder</td>
</tr>
<tr>
<td>PUC</td>
<td>Pool d’Urgence Congo</td>
</tr>
<tr>
<td>PWUD</td>
<td>People Who Use Drugs</td>
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<tr>
<td>RAU</td>
<td>Rapid Assessment Unit</td>
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<tr>
<td>RDT</td>
<td>Rapid Diagnostic Test</td>
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<tr>
<td>REMIT</td>
<td>Research Impact Monitoring Tool</td>
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<tr>
<td>RPR</td>
<td>Rapid Plasma Reagin</td>
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<tr>
<td>RTI</td>
<td>Respiratory Tract Infection</td>
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<tr>
<td>RUTF</td>
<td>Ready-to-Use Therapeutic Food</td>
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<tr>
<td>SAC</td>
<td>Safe Abortion Care</td>
</tr>
<tr>
<td>SAM</td>
<td>Severe Acute Malnutrition</td>
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<tr>
<td>SAMU</td>
<td>Southern Africa Medical Unit</td>
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<tr>
<td>SAR</td>
<td>Search and Rescue</td>
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<tr>
<td>SATS</td>
<td>South African Triage System</td>
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<tr>
<td>SEU</td>
<td>Stockholm Evaluation Unit</td>
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<tr>
<td>SGBV</td>
<td>Sexual and Gender-Based Violence</td>
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<tr>
<td>SHU</td>
<td>Staff Health Unit</td>
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<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
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<tr>
<td>SORT-IT</td>
<td>Structured Operational Research and Training Initiative</td>
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<tr>
<td>SRH</td>
<td>Sexual and Reproductive Health</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually Transmitted Infection</td>
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<tr>
<td>SV</td>
<td>Sexual Violence</td>
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<tr>
<td>SVR12</td>
<td>Sustained Virologic Response at 12 weeks after treatment completion</td>
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<tr>
<td>TAT</td>
<td>Turnaround Time</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
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<td>TB-LAM</td>
<td>TB-Lipoarabinomannan</td>
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<td>TBP</td>
<td>Transmission-Based Precautions</td>
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<td>TFC</td>
<td>Therapeutic Feeding Centre</td>
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<td>ToP</td>
<td>Termination of Pregnancy</td>
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<tr>
<td>ToT</td>
<td>Training of Trainers</td>
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<tr>
<td>UNAIDS</td>
<td>Joint United Nations Programme on HIV/AIDS</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>URTI</td>
<td>Upper Respiratory Tract Infection</td>
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<tr>
<td>VC</td>
<td>Vector Control</td>
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<tr>
<td>VCS</td>
<td>Vaccination Coverage Survey</td>
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<tr>
<td>VIAC</td>
<td>Visual Inspection Acetic Acid and Cervicography</td>
</tr>
<tr>
<td>VL</td>
<td>Viral Load</td>
</tr>
<tr>
<td>VoT</td>
<td>Victims of Torture</td>
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<tr>
<td>VPD</td>
<td>Vaccine-Preventable Disease</td>
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<tr>
<td>WASH</td>
<td>Water, Sanitation and Hygiene</td>
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<tr>
<td>WFP</td>
<td>World Food Programme</td>
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<td>WG</td>
<td>Working Group</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>YF</td>
<td>Yellow Fever</td>
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Throughout 2019, Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) continued to provide primary and specialised medical care to those who needed it, assist those impacted by natural disasters, famine and protracted conflicts, provide assistance to refugees and asylum seekers in and around Europe and more. The year 2019 was also one of epidemics, including measles across Africa, chickenpox in Bangladesh, and yellow fever and cholera in Nigeria, among many others. With the re-establishment of the Pool d’Urgence Congo (PUC), MSF was able to organise and conduct vaccination campaigns in the Democratic Republic of the Congo (DRC) during the biggest measles epidemic in its history, as well as continue its response to the Ebola Virus Disease outbreak.

In March and April, the flooding from Cyclones Idai and Kenneth caused widespread damage and deaths in several countries in southern Africa, in particular Mozambique, Malawi and Zimbabwe, displacing thousands of people and devastating communities. The cyclones destroyed health centres and hospitals and made access to healthcare exceptionally difficult. To respond to the healthcare needs, OCB supported an oral cholera vaccine campaign and installed, managed and rehabilitated Water, Sanitation and Hygiene (WASH) infrastructure. OCB also conducted WASH and emergency medicine activities following the floods in South Sudan.

A major effort in 2019 went into creating partnerships within the wider MSF movement. Not only were preventative and person-centred measures reinforced, but it was perhaps even more important to ensure that MSF evaluated its operational settings through a climate lens and to make sure that MSF positioned itself on the health challenges that the climate crisis and environmental degradation present.

Furthermore, OCB closed the Tabarre trauma hospital in Haiti and handed it over to Operational Centre Paris (OCP), but opened a new critical care unit in Bangassou, Central African Republic (CAR), continued the Mocha trauma project in Yemen following a handover from OCP, and opened the Kenema Paediatric Hospital in Sierra Leone and a paediatric inpatient department in Niono, Mali. OCB also continued to provide surgical care in the Comprehensive Post-Operative Care (CPOC) project in Iraq and in the Al-Awda Hospital in Gaza.

With the ever-growing volume and complexity of hospital-based activities and surgical interventions, antibiotic resistance (ABR) is a serious threat to global public health and a priority in the global health agenda. A multidisciplinary approach is necessary to implement the recommended three pillars of infection prevention and control, antibiotic stewardship and bacteriological diagnostics. Thus, to improve the quality of MSF medical care, health promotion, monitoring, surveillance and analysis activities, operational research, vaccination and environmental health were added to the ABR Task Force, broadening the overall approach for tackling ABR in MSF projects.

This year, a new research framework was developed and initiated by LuxOR and SAMU in order to better structure OCB’s operational research efforts and to assure that they are responding to the priorities of MSF, feasible and adequately resourced. Researchers are assigned designated domains such as sexual and reproductive health, paediatrics, or antibiotic resistance, thus helping to streamline the support provided by LuxOR and SAMU and ensuring awareness of research issues in those domains. In addition, for the first time in the history of the Structured Operational Research Training Initiative (SORT-IT), LuxOR piloted a dedicated course on facilitating evidence-based policy change, practice improvements, and public advocacy, working to close gaps between research and policy.

Tuberculosis (TB), the main infectious killer worldwide, remains high on the MSF agenda. The TB epidemic is not slowing down and continues to be a major cause of death, especially among vulnerable populations such as children and People Living with HIV/AIDS. Additional priorities for MSF therefore include Advanced HIV Disease, neglected...
contexts (such as West and Central Africa, conflict and emergency settings), and neglected populations. New infections and deaths remain high, and a dramatic reduction in HIV funding is threatening to reverse existing gains.

With the push at the intersectional level for nutrition to be recognised as the transversal topic that it is, OCB continued to promote nutrition as an integral part of a more holistic approach to child health and to be included with other paediatric services, vaccinations, environmental health activities and mental health support. Mental health, HIV/TB, sexual and reproductive health (SRH), nutrition and health promotion (HP) activities continued to be integrated into comprehensive packages of care.

The year 2019 also saw an impressive increase in Safe Abortion Care as OCB started to explore new models of care provision and made efforts to expand the profile of providers. Family planning consultations almost doubled, with a wide variety of methods being offered.

Attention to improving and standardising the quality of care in OCB projects continued in 2019: standard operational procedures, guidelines and protocols were revised and streamlined, and the value and service afforded by interdisciplinary platforms was realised in multiple areas. New referents, coordinators, mobile implementation officers and field coaches were 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.

**CHALLENGES AND PROSPECTS**

Even before the emergence of a novel coronavirus and the development of a global pandemic, 2020 was expected to be a busy year for MSF OCB, with the continuation and expansion of the Indoor Residual Spraying (IRS) campaign to tackle malaria in Burundi and the planned opening of a new trauma centre in Kunduz, Afghanistan, among other projects.

The COVID-19 pandemic poses unprecedented challenges to the humanitarian sector and will require rapidly adapting models of medical care around the world. The pandemic leaves no region, no country, no population untouched, and will have a significant impact on all of OCB’s activities this year.

At the time of writing, for example, the pandemic had reached high TB and HIV burden countries, already impacting access to care and especially affecting TB and HIV patients. It is essential to ensure continuity of services despite the challenges created by COVID-19, and this is an area where teams are allocating significant effort. Protecting new and existing patients from interruption of care and from the disastrous consequences of the COVID-19 pandemic on health systems will likely remain the priority throughout 2020.

Despite much of the uncertainty surrounding COVID-19, MSF’s activities will be based upon the essential pillars of disease-outbreak responsiveness. However, part of that will depend on the ability to provide effective care for patients that are critically ill. Innovative ways will need to be explored to meet these needs, especially in low-resource contexts. The investment required is significant but must be proportional to the overall needs of the populations served.

Indeed, LuxOR is already supporting epidemiologists and medical coordinators in the field to develop and implement surveillance tools and strategies. Drawing on its experience in responding to epidemics and managing emergencies, MSF is expanding its activities in response to the pandemic in Belgium, Italy and elsewhere in Europe, supporting hospitals and assisting groups that are particularly vulnerable to COVID-19 infections, such as the elderly, migrants and the homeless.

But the needs stretch beyond Europe and much further afield. In 2020, MSF OCB is committed to continuing to run its regular medical programmes while addressing the challenges caused by the COVID-19 pandemic and providing medical care to those who need it the most.

In conclusion, in the face of this global pandemic, OCB’s presence in challenging and complex settings and the increased importance on integrated models of care highlight the need for innovative models of care delivery, guided and supported by a diversity of operational research.
1. OVERVIEW

Antimicrobial resistance (AMR), and more specifically antibiotic resistance (ABR), is a serious threat to global public health and a priority in the global health agenda. Since 2015, the multidisciplinary Médecins Sans Frontières (MSF) ABR Task Force has been working on an agenda for tackling this issue. ABR activities are transversal in nature, and a multidisciplinary approach is necessary to successfully implement the recommended three pillars of infection prevention and control (IPC), antibiotic stewardship and bacteriological diagnostics in order to improve the quality of our medical care. Between 2018 and 2019, health promotion (HP), monitoring, surveillance and analysis activities, operational research (OR), vaccination and environmental health (EH) were added to the ABR Task Force, broadening the overall approach for tackling ABR in our projects. Despite the planned ambition to tackle ABR in outpatient departments in 2019, we struggled to move our activities outside hospitals’ inpatient departments.
2. MAIN PROGRAMME ACTIVITIES

2.1. ABR MONITORING TOOLS

Tools for monitoring the quality and quantity of antibiotic prescriptions (Chart review and feedback, Point Prevalence Survey (PPS), Daily Defined Dose (DDD)) and for microbiological surveillance (WHONET) were rolled out in some projects in 2019:

- **Chart review and feedback**: Mosul (Iraq); Gaza (Palestinian Territory); Bar Elias (Lebanon)
- **WHONET**: Mosul (Iraq); Kinshasa (Democratic Republic of Congo (DRC))
- **Point Prevalence Survey**: Masisi (DRC)
- **DDD**: Kinshasa (DRC)

The **Chart review and feedback** tool is a standardised questionnaire used to review patients’ antibiotic prescriptions and the accuracy of monitoring for antibiotic-associated adverse events in a quick and standardised way. The tool gives users an idea of the quality and appropriateness of their antibiotic prescriptions and permits feedback to prescribers on the basis of available antibiotic treatment guidelines or culture results, if available.

**WHONET** is a free Windows-based database software developed for the management and analysis of microbiology laboratory data with a special focus on the analysis of antimicrobial susceptibility test results. This information can be used for forecasting antibiotic needs and ordering; for defining the logistical and human resources (HR) needs for implementing correct contact precautions; and for advocacy.

The **Point Prevalence Survey (PPS)** consists of a standard comprehensive questionnaire for inpatients who are taking an active antibiotic prescription at 8:00 am on a designated day. It gives a snapshot of the prevalence of patients receiving any antibiotic in that hospital unit, the “quality” of antibiotic prescription (choice, dose, duration and route) as well as the indication for the prescription. The appropriateness of the prescription is judged on the basis of available antibiotic treatment guidelines. Ideally, the exercise should be repeated twice a year.

The **Defined Daily Dose (DDD)** tool calculates the average maintenance dose per day for an antibiotic’s main indication in adults and can be used to monitor trends of antibiotic consumption over time. The exercise ideally should be repeated twice a year.

2.2. INFECTION PREVENTION AND CONTROL

IPC represents practical solutions designed to prevent infections transmitted in hospital settings. MSF focuses on three main pillars to achieve optimal IPC in our contexts: hand hygiene, cleaning and disinfection and transmission-based precautions (TBP). The main element of preventing healthcare-associated infections (HAI) is the utilisation of monitoring tools and the implementation of surveillance bundles.

2.3. ANTIBIOTIC STEWARDSHIP

Antibiotic stewardship (AS) refers to a set of coordinated interventions to monitor and promote the best use of antibiotic medications to optimise clinical outcomes, minimise unintended consequences of antibiotic use, such as resistance, toxicity, and adverse effects, and decrease unnecessary costs. In 2019, AS programmes, with different degrees of complexity, were running in Mosul (Iraq), Gaza (Occupied Palestinian Territories), Bar Elias (Lebanon), Bujumbura (Burundi), Masisi and Kinshasa (DRC), Khost (Afghanistan) and Bangui (Central African Republic (CAR)).

2.4. MICROBIOLOGY

Mosul, Iraq

In Mosul, data collection on culture results from intraoperative samples has been ongoing since the beginning of the project. An interim analysis of the results in 2019 showed a very high prevalence of resistance to both Gram-positive and Gram-negative bacteria isolated in patients with post trauma chronic skin, soft tissue and bone infections (Figure 1).
Kinshasa, DRC

In February 2019, the CHK project in Kinshasa introduced blood cultures as part of routine care for patients with advanced HIV disease for the diagnosis of invasive bacterial infections. Early results showed alarming rates of antibiotic resistance for both nosocomial and community-acquired infections. The most worrying finding was that the majority of organisms isolated in patients with community-acquired sepsis were resistant to all common first-line antibiotics, including ceftriaxone, the first line antibiotic used in most MSF hospitals in sub-Saharan Africa.

Additionally, the team uncovered a high number of HAIs with multi-drug resistant organisms (MDRO), including methicillin-resistant *Staphylococcus aureus* (MRSA) and extended-spectrum betalactamase (ESBL) producing Gram-negative bacteria. A WHONET database was introduced for data collection of culture results in late 2019: an interim analysis of 2019 results is summarised in the graphs below (Figures 2 and 3).

**FIGURE 1** Percentage of organisms isolated from patients in Mosul, Iraq, that are multi-drug resistant (MDR) during 2019

<table>
<thead>
<tr>
<th>Organism</th>
<th>% of organisms isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Gram negative</td>
<td>20</td>
</tr>
<tr>
<td><em>Klebsiella pneumoniae</em></td>
<td>80</td>
</tr>
<tr>
<td><em>Proteus mirabilis</em></td>
<td>50</td>
</tr>
<tr>
<td><em>Enterobacter cloacae</em></td>
<td>70</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>40</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>30</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>90</td>
</tr>
</tbody>
</table>

**MRSA**: Methicillin-resistant *Staphylococcus aureus*. **ESBL**: extended spectrum beta-lactamase. **PARC**: *Pseudomonas aeruginosa* resistant to carbapenems. **CRE**: Carbapenem-resistant Enterobacteriaceae.

**FIGURE 2** Number and type of organisms isolated from blood cultures taken from patients at CHK during 2019 (Total: 219. One Candida spp. was isolated).

<table>
<thead>
<tr>
<th>Organism</th>
<th># Organisms isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Salmonella enterica</em></td>
<td>10</td>
</tr>
<tr>
<td><em>Staphylococcus haemolyticus</em></td>
<td>60</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>20</td>
</tr>
<tr>
<td><em>Staphylococcus hominis</em></td>
<td>30</td>
</tr>
<tr>
<td><em>Staphylococcus epidermidis</em></td>
<td>10</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>20</td>
</tr>
<tr>
<td><em>Klebsiella pneumoniae</em></td>
<td>10</td>
</tr>
<tr>
<td><em>Salmonella enteritidis</em></td>
<td>5</td>
</tr>
<tr>
<td><em>Enterococcus faecium</em></td>
<td>5</td>
</tr>
<tr>
<td>Other Gram negative</td>
<td>5</td>
</tr>
<tr>
<td>Other Gram positive</td>
<td>5</td>
</tr>
</tbody>
</table>
2.5. OPERATIONAL RESEARCH

There were several operational research projects ongoing in 2019:

- **Haiti**: Prevalence of antibiotic resistance among patients admitted to the Médecins Sans Frontières Acute Trauma Hospital in Tabarre, Port-au-Prince, Haiti: analysis of six years of microbiological data.

- **Iraq**: The challenge of antibiotic resistance in the post war phase in Mosul, Iraq: an analysis of data from the Médecins Sans Frontières (MSF) supported comprehensive post-operative care (CPOC) hospital.

- **Burundi**: Successful implementation of a surgical site infection (SSI) surveillance system in a limited-resource setting.

Throughout 2019 there were several presentations given by MSF staff that tackled the topic of ABR:

- **European Congress for Clinical Microbiology and Infectious Diseases [ECCMID] 2019**, Oral Presentation: Successful implementation of a surgical site infection (SSI) surveillance system in a limited-resource setting. Tremblay, N., Williams, A., Nyonzima, F., and Ngongo AB.


2.6. ABR CIRCLE

Established in August 2018, in 2019 the ABR circle focused on the finalisation of the ABR Operational Research agenda and developed an ABR Operational Centre Brussels (OCB) briefing paper.
3. OTHER ACTIVITIES

- New, targeted antibiotic treatment guidelines were rolled out in Mosul (Iraq) and Gaza (Palestinian Territories).
- A World Antibiotic Awareness Week (WAAW) communications campaign was developed in Lebanon in November 2019.
- A Med Talk on Microbiology and Antibiotic Resistance was held on 17th December 2019.
- HP rapid assessments on ABR conducted in Masisi (DRC) and Beirut (Lebanon).
- The HP team in Lebanon developed an ABR flipchart for the Middle East context.

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- Importance of working in a multidisciplinary team in the field with IPC and Antibiotic Stewardship committees who follow up on the implementation of their action plans while discussing and disseminating the results of monitoring tools.
- Active participation in intersectional discussions: IPC working group, Antibiotic Stewardship contact group and laboratory working group. The intersectional approach to microbiology is a crucial component to develop strategies, protocols and procedures. It is also essential for sharing human resources as the microbiologist profile is new for the laboratory department in the field.
- Access to bacteriology in Kinshasa uncovered serious bacterial sepsis as a frequent cause of morbidity and mortality among patients who were HIV-positive, associated with high rates of antibiotic resistance.
- Implementing a microbiology laboratory takes time, effort and resources (human and financial); projects are becoming more aware of the investment required.
- In contexts where security constraints are challenging, it is necessary to train the national staff to assure continuity of activities.
- Challenges:
  - having enough trained and qualified staff in all ABR-related domains
  - budget constraints and security concerns
  - supply delays/shortages
  - Gaps in HQ positions (IPC, ABR and Microbiology Referents)

4.2. PROSPECTS FOR 2020

- Invest in training on IPC and antibiotic stewardship, together with the MSF Academy.
- Deploy expert antibiotic stewardship profiles in the field to train and coach local staff.
- Improve access to microbiological laboratory services as part of the holistic approach to HIV-TB patients and for surgical and non-surgical interventions for acute and chronic trauma-related injuries, through investing in MSF-run microbiology laboratories.
- Improve data collection of laboratory results; implement WHONET in all projects with access to microbiology laboratories.
- Plan for an ABR Structured Operational Research and Training Initiative (SORT-IT) course in 2020.
CRITICAL CARE

6 critical care beds for trauma
8 critical care beds for paediatrics
1439 critical care admissions
9.6% Overall mortality

KEY FACTS IN 2019

• A new basic critical care unit opened in Bangassou, Central African Republic in March 2019 with 15 beds (8 paediatric, 7 adult)

• Short training courses in critical care were held for 20 doctors and 20 nurses providing care for patients with advanced HIV disease in Conakry, Guinea

• Short training courses in critical care were provided for 20 doctors and 11 nurses working in the emergency department and intensive care unit (ICU) at Imam Ali Hospital in Baghdad.

1. OVERVIEW

Critical illness may complicate acute illness or injury in all contexts where Médecins Sans Frontières (MSF) works and critical care should be provided in all our hospital projects, regardless of the context or the resources available. Operational Centre Brussels’s (OCB) advanced critical care unit in Tabarre, Haiti closed in 2018. However, in 2019 a 15-bed unit was opened in Bangassou, Central African Republic (CAR) providing basic critical care for adult and paediatric patients with medical, surgical and obstetric conditions. The level of care in CAR is more basic than in Haiti, determined principally by the skill-sets of the national clinical staff. However, the service it provides to the local population is no less important. The decision to open a critical care unit in Bangassou reinforces the principle that critical care is relevant to all of our clinical projects and that this care is more effective when it is centralised in a dedicated ward with an identified team of medical and nursing staff.

However, in reality, the majority of care for critically ill patients in MSF projects occurs without designated critical care units, in emergency departments, obstetric units and general wards. The quality of care in these services can be improved by the provision of training for the clinical staff and to this end, MSF’s intersectional programme of critical care training continued in 2019. Short courses in basic critical care were provided for medical and nursing staff in OCB projects in Guinea and Iraq.
2. MAIN PROGRAMME ACTIVITIES

2.1 CRITICAL CARE UNITS

OCB’s project in Bujumbura, Burundi continues to provide acute care and rehabilitation for victims of trauma and the six-bed critical care unit is a central part of that service. The levels of violent trauma have decreased since the project first opened in 2015 and the workload has changed from being primarily management of war injuries to those caused by road traffic and domestic accidents. The majority of admissions to the intensive care unit (ICU) are for clinical monitoring and observation, rather than organ dysfunction, but an overall mortality rate of 7.2% reflects the number of patients admitted with severe head injuries (Figure 1).

The critical care unit in Bangassou opened in March 2019. It has a high workload and patient turnover, with the majority of admissions being children under five years (Figure 2). The most common reason for admission in this age group is severe malaria, but there is also an increasing prevalence of severe malnutrition associated with the deteriorating security conditions in the wider area.

2.2 CRITICAL CARE TRAINING

MSF has developed an intersectional programme of critical care training, based on short courses for medical and nursing staff. The BASIC DHS Courses (Basic Assessment and Support of Seriously Ill Patients in Developing Healthcare Systems) were developed in collaboration with the University of Hong Kong and are delivered in the field by teams of critical care referents and expatriates. During 2019, the courses were provided for the clinical staff working in OCB’s project for patients with advanced HIV disease in Conakry, Guinea. This was the first stage of an initiative to improve the level of care for critically ill patients in all of our HIV/TB projects; it will be continuing in 2020.

BASIC DHS Courses were also delivered for clinical staff working in the emergency department and intensive care unit of Imam Ali Hospital in Baghdad, Iraq, as part of a programme of support that MSF provided for the hospital.

3. LOOKING BACK AND AHEAD

3.1. LESSONS LEARNED IN 2019

The opening of a critical care unit in Bangassou, CAR was an important step forward for the project and improved the hospital’s ability to provide an enhanced level of clinical monitoring and treatment for the sickest patients across all age-groups. Unfortunately, it coincided with a reduction in the level of support and supervision that MSF was able to provide in other clinical services, for security reasons, which had
a negative impact on quality of care in some cases. The lesson to be learned is that continuity of care is vital and critical care can only be really effective as part of a fully functioning care pathway.

### 3.2. PROSPECTS FOR 2020

We were expecting 2020 to be a busy year for critical care, even before the emergence of a novel coronavirus (COVID-19) in China led to the development of the global pandemic.

The planned opening of a new trauma centre in Kunduz, Afghanistan in late 2019 was postponed until the summer of 2020 and may be further delayed by the pandemic. However, work is continuing to develop training packages for doctors and nurses who will staff the critical care unit and associated services based upon the BASIC DHS Courses. To this end, modular versions of the course are being developed to allow the material to be taught by individual expatriates during clinical postings. This is to compensate for limits on the total number of expatriates that can be present in the project at one time, due to security issues. It will be interesting to see whether a modular course, delivered alongside clinical activities, will be associated with improved understanding and application of the course material.

The BASIC DHS Courses will also be provided for the medical and nursing staff working in our HIV project in Kinshasa, Democratic Republic of the Congo (DRC) as part of wider efforts to improve critical care management across our HIV/TB projects.

The COVID-19 pandemic poses unprecedented challenges to the humanitarian sector. MSF’s activities will be based upon the essential pillars of disease-outbreak responsiveness, but part of that will depend on the ability to provide effective care for patients that are critically ill. Large numbers of patients will require supplementary oxygen and some will require high concentrations of oxygen and additional respiratory support. MSF will have to explore innovative ways to meet these needs, using the low-pressure oxygen sources that we rely on in low-resource contexts. The investment required is significant, but must be proportional to the overall needs of the populations we serve.
EMERGENCY MEDICINE

KEY FACTS IN 2019

- Emergency medicine involves the management of a broad spectrum of acute illness and injury in all age groups.
- Emergency medicine was provided in 22 field projects comprising 42 emergency departments in health facilities across 16 countries, of which six were new locations in 2019.
- Specialised emergency medicine activities within field projects included a focus on trauma, cardiac care, pediatrics, ambulance care, HIV, malaria, and snake bites.
- The majority of emergency care was provided by local staff colleagues.
- The OCB Trauma Care Working Group was established to give advice on the Strategic Orientations and Operational Prospects 2020-2023.

1. OVERVIEW

Emergency medicine involves the management of a broad spectrum of acute illness and injury - trauma, infectious diseases, exacerbations of non-communicable diseases, and obstetrical conditions - in all age groups. In Médecins Sans Frontières (MSF) Emergency Departments (EDs), we provide care for children and adults with acute and often undifferentiated medical or surgical problems, frequently before complete clinical or diagnostic information is available. Health emergencies can occur anywhere, regardless of resource limitations and irrespective of geography, regional, or cultural context, insecurity, or socioeconomic status, and they may be more prevalent in humanitarian crises. Emergency and critical care involves identification and continued observation, assessment, and treatment required to manage critical illness. Essential emergency and critical care is “the care that all critically ill patients should receive in all hospitals in the world”\(^1\).

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2. MAIN PROGRAMME ACTIVITIES

2.1. EMERGENCY DEPARTMENTS AND TRIAGE SYSTEMS

An Emergency Department (ED) is a patient care area that serves as the first point of contact for patients seeking emergency care within a health facility. Patients present without prior appointments and due to the unplanned nature of patient attendance, the ED provides care for a broad spectrum of acute illnesses and injuries. MSF Operational Centre Brussels (OCB) emergency medicine activities were either within a MSF-managed facility or in support of a local Ministry of Health (MoH) hospital. In 2019, emergency medicine was provided in 22 field projects comprising 42 emergency departments in health facilities (some projects managed more than one ED) and in two ambulance activities across 16 countries (Figure 1). In 2019, six new projects with emergency medicine activities began (Kibuye, Burundi; Bamenda, Cameroon; Baringo County, Kenya; South Sudan Flood intervention; Kenema, Sierra Leone; Donetsk, Ukraine). Three projects were handed over to the local MoH (Kabul, Afghanistan; Bili, Democratic Republic of Congo; Sadr City, Iraq), and one project was handed over to MSF Operational Centre Paris (OCP) (Tabarre, Haiti).

In 2019, more than 70 doctors, 150 nurses, 45 clinical officers/other clinical staff provided patient care in MSF OCB EDs worldwide. The vast majority of this care was provided by our local/national staff colleagues; only 12 doctors and six nurses were international field staff.

Triage is an essential organisational step to identify critically ill patients with life-threatening conditions. A triage system provides the backbone for essential emergency and critical care within the ED. In 2019, MSF OCB used the South African Triage Scale (SATS) for general EDs, and Emergency Triage Assessment and Treatment (ETAT) for paediatric EDs as the routine triage system. During 2019, SATS was being used in 13 projects and ETAT in three projects (Figure 2).
The high acuity proportion – percentage of triage category Red (emergency/immediate) and Orange (very urgent) cases – is a surrogate marker of proportion of critically ill patients. It is an important ED indicator for the general level of acuity of patients presenting there, the urgency for clinical interventions, and the intensity of resource use. In EDs with an elevated proportion of high acuity, a greater proportion of patients are hospitalised. The overall proportion of high acuity was 29% among all ED visits worldwide.

2.2 EMERGENCY DEPARTMENT PRESENTATIONS AND OUTCOMES

Complete data for ED morbidities and outcomes was only available for 18 projects (all sites excluding Iraq and Mozambique). There were a total of 348,010 ED visits worldwide, of which 26% were for children less than 15 years old. Twenty-four percent of ED visits were due to trauma (2% violent trauma and 22% accidental trauma), 2% non-trauma surgical emergencies, 0.3% obstetrical emergencies, and 74% medical emergencies (Figure 3).

Worldwide, 79.9% of ED patients were discharged, 17.4% were admitted to the hospital, 2% were referred to another health facility, 0.3% died, and 0.5% left against medical advice (Figure 4).

2.3 SPECIALISED EMERGENCY MEDICINE ACTIVITIES

In certain projects, MSF OCB had a special focus on a specific medical condition within its emergency medicine activities related to the medical context and needs of the region. MSF’s work in humanitarian settings provides a unique opportunity to offer specialised emergency care for local populations regardless of an ongoing humanitarian crisis. For instance, MSF OCB has trauma centres in Burundi and Cameroon, a Cardiac Care Unit within an ED in Pakistan, and provides fibrinolysis therapy for acute ST-elevation myocardial infarction (STEMI) in Iraq and Pakistan. Others focus on paediatric emergency care in DRC, Guinea, and Sierra Leone and offer a HIV-focused rapid assessment unit within the ED in Mozambique. There is an ED with a special focus on malaria in DRC; ambulance care activities in Cameroon and Ukraine; and a snake bite intervention in Kenya.

3. LOOKING BACK AND AHEAD

3.1. LESSONS LEARNED IN 2019

- Establishing a triage system goes beyond just prioritising patients and provides the backbone for emergency care by managing patient flow, resources, and staffing models. Implementing a triage system will provide integration of the principles of essential emergency and critical care along the patient care continuum.
Medical activities that do not integrate patient care into a continuum from ED entry, to hospitalisation, to hospital discharge can overwhelm ED resources and staff. This continues to be a challenge for our field teams and should be anticipated with proper planning before implementation of a new emergency care activity.

Local clinical staff providing emergency care have different professional backgrounds, knowledge and skills. Focusing on training and clinical mentoring continues to be challenging due to the limited international staff who have these capabilities. Clinical mentoring is an important part of routine clinical operations but a challenge due to the high turnover of field staff and variability of supervision.

3.2. PROSPECTS FOR 2020

- Improve the quality of care for critically ill patients by incorporating medical activities that integrate the patient care continuum from ED entry to the intensive care unit (ICU) to hospital discharge.

- Promote that essential emergency and critical care is “the care that all critically ill patients should receive in all hospitals in the world”. Emergency and critical care is identification and continued observation, assessment, and treatment required to manage critical illness.

- Focus on clinical mentoring as part of routine clinical operations and encourage training for clinical staff via MSF-endorsed training programmes for trauma care, mass casualty incident training, and the BASIC Low Resources course.

- Implement the new Interagency-Integrated Triage Tool that has been jointly developed by the World Health Organization, International Committee of the Red Cross, and all Operational Centres of MSF.


- Integrate the intersectional Trauma Response Policy into emergency care activities and develop an intersectional Trauma Care Framework/Strategic paper.

Medical staff from the Bwiza-Jabe hospital in Burundi provides first aid to a wounded patient. © Evrard Ngendakumana

ENVIRONMENTAL HEALTH

KEY FACTS IN 2019

• The reframing of the domain of “Water and Sanitation” (WatSan), or “Water, Sanitation, and Hygiene” (WASH) into Environmental Health (EH), which is a branch of Public Health, has been mainstreamed.

• An intersectional Climate, Environment and Health Action Plan was drafted and presented to the MedOps meeting in Amsterdam and to the International office leading to a Médecins Sans Frontières (MSF) position on the health challenges of global climate change and environmental degradation.

• The collaboration with the London School of Hygiene and Tropical Medicine (LSHTM) on operational research on cholera control was successfully completed.

• A strong emphasis was placed on laboratory waste management (a frequently neglected topic in MSF and the wider humanitarian sector) and treatment of health facility wastewater.

• A WatSan snapshot document was developed with the working group that lists the challenges and opportunities for WatSan in MSF.

• The scope of EH was clarified in the MSF prospect 2020-23 document and in the medical department strategic policy paper.

• A new permanent GoPro position was integrated into the EH unit targeting groundwater support - closing GoPro as project status.

1. OVERVIEW

In 2019, the framing of Water and Sanitation (WatSan) or Water, Sanitation, and Hygiene (WASH) within the overarching perspective of Environmental Health (EH) continued. The process was important to highlight the complementarity of the biological and the social-environmental models of health within Médecins Sans Frontières (MSF). This reframing emphasised that a predominantly curative-focused approach to health, where most of MSF’s energy is channelled into acute patient care, cannot be the only identity for an organisation like MSF. It is essential to integrate the concept of quality care that goes
beyond pure medical actions for individual patients and includes mitigation of environmental risks with targeted and evidence-informed community interventions across the MSF movement. Next to disease prevention, targeted EH interventions are a key pillar for improving quality of care by reducing caseloads, disease severity and demand on health care resources.

This definition of Environmental Health also affirms the medicalisation of WatSan activities in MSF Operational Centre Brussels (OCB). It reflects the reality on the ground: WatSan in MSF has for years aimed to reduce infections and the spread of diseases by ensuring proper water, sanitation, and vector control measures for staff, patients and the communities in which MSF works. These activities extend beyond merely providing water to health facilities or building sanitation infrastructure for a displaced population or a health facility.

Over the years, EH teams in MSF OCB have implemented projects and activities in all major branches listed by the World Health Organization (WHO) as key components of Environmental Health:

- improved water and sanitation infrastructure
- managed appropriate water and sanitation in health-structures to avoid hospital-acquired infections and mitigate the threat posed by antimicrobial resistance (AMR)
- addressed exposure to chemical and biological agents to implement protection and decontamination measures
- involved in minimising air pollution (in tuberculosis (TB) projects)
- worked in built-up environments (such as urban slums)
- addressed consequences of intensive agriculture (build-up of pesticides in environments and pesticide resistance in public health-relevant vectors)
- worked in areas affected by floods and other natural disasters
- engaged in vector control measures to reduce the burden of major vector-borne diseases including malaria, dengue, yellow fever, zika, and plague as well as vector-borne diseases of local importance in specific areas or populations in a variety of contexts.

Efforts were made to improve the response to cholera outbreaks and the collaboration with the London School of Hygiene and Tropical Medicine (LSHTM) generated evidence for new operational approaches before, during and after a cholera outbreak that were presented to MSF during the yearly outbreak meeting. A series of papers in peer reviewed journals were published and the collaboration with the Global Task Force for Cholera Control of WHO was reinforced.

A major effort in 2019 went into creating partnerships within the wider MSF movement. We not only had to reinforce preventative and person-centred measures, but it was perhaps even more important to ensure that MSF evaluated its operational settings through a climate lens and to make sure that MSF positioned itself on the health challenges that the climate crisis and environmental degradation present. An intersectional Climate, Environment and Health (CEH) Action Plan was drafted and presented to the MedOps meeting in Amsterdam and to the International Board. It led to a statement from them and the creation of an intersectional CEH network and a CEH circle in MSF OCB.

A multidisciplinary approach that strengthens links to epidemiologists, geographic information system (GIS) officers and entomologists in a series of interventions has proven to be vital in targeting the environmental determinants of diseases in transmission hotspots and cutting transmission of infectious diseases (e.g. cholera, malaria, yellow fever).
The intersectional WatSan working group continued to serve as an expedient platform for development and dissemination of tools and guidelines, and for harmonising intersectional EH activities.

2. PROGRAMME ACTIVITIES

2.1 ACTIVITIES AT COUNTRY AND PROJECT LEVEL

All OCB projects include an EH component aimed at minimising hospital-acquired infections and optimising infection control in health structures; it also includes environmental infection prevention and control in the community when required. A systematic assessment of EH needs should be performed for all projects. EH support was provided to established missions to improve the adherence to essential WatSan requirements in the medical infrastructures. To aid this continuous effort, a uniform assessment tool is being developed. Trained personnel from the EH pool were sent to the field if the EH needs proved to be technically complex, large or time-consuming and requiring a dedicated EH resource. In 2019, 77 EH experts were deployed to support 58 posts in 21 countries.

2.2 SPECIFIC EH INTERVENTIONS AND FIELD VISITS

Some of the main EH operations in 2019 included:

- **WASH infrastructure**: Installation, management, and rehabilitation of appropriate WASH infrastructure remained a core component of EH activities. Two examples were: post Idai and Kenneth cyclones in Mozambique and post Fani cyclone in Odisha in India. For migrants in Greece, the Balkans, Italy and Egypt, the unit was involved in the installation of EH infrastructures. In Maiduguri as well as in Cross River State, WASH infrastructures were built linked to the arrival of Cameroonian refugees in Nigeria. Part of the Rohingya refugee camps in Cox’s Bazar district and the district hospital in Cox’s Bazar in Bangladesh received EH support, as did the post flood response in Maban and Pibor area in South Sudan. Community based improvement of water quality in Martissant and rehabilitation of spring catchments were supported in Port-à-Piment. In collaboration with the ZimHub project and the HQ GoPro support, a campaign of borehole diagnosis, rehabilitation or drilling was further developed in Harare (Zimbabwe) in communities prone to diarrhoeal diseases. It was complemented by water storage and distribution infrastructure and a community engagement component through a Community Health Club (CHC) approach. This package of activities was further deployed in the southern Africa region during the emergency response to cyclone Kenneth in Nsanje (Malawi) and in cholera-prone communities in Cabo Delgado (Mozambique).

- **Infection prevention and control (IPC)**: Specific EH contributions to IPC in MSF facilities were provided in Niono in Mali and in the Nsanje prison project in Malawi. TB environmental IPC and Ultraviolet Germicidal Irradiation (UVGI) lights combined with ceiling fans were installed in Zhytomyr, Ukraine, and in Nsanje in Malawi. The Lassa Viral Unit in Nigeria received specialised EH support while WASH and IPC were required for the Democratic Republic of the Congo (DRC) response and regional preparedness for Ebola (Burundi, South Sudan, Central African Republic (CAR)).

- **Hospital construction**: EH staff supported design and construction for the Abakaliki Lassa Viral Unit in Nigeria; other structures in Kunduz (Afghanistan), Kenema (Sierra Leone), Bar Elias (Lebanon) and Nyabiondo (DRC), as well as a primary health care centre in Shatila and a maternity in Hariri (Lebanon). Assessments for hospital rehabilitation were supported in Bangui (CAR) and Maiduguri (Nigeria).

- **Vector control**: Malaria prevention was high on the agenda in Kouroussa, Guinea, with a focus on supporting the nation-wide mass distribution of long-lasting insecticidal nets (LLIN), as well as in Chattisgarth, India. Insecticide resistance monitoring and characterisation was conducted in Bili, DRC to generate evidence supporting the distribution of LLINs containing the synergist piperonyl butoxide. Unfortunately, the closure of the Bili, DRC malaria project precluded the implementation of these efforts at province level in 2020. A longitudinal vector monitoring activity in collaboration with the Guinean Ministry of Health in Kouroussa, Guinea, was implemented to improve project and national authority understanding.
of malaria transmission dynamics and to improve vector control measures. An indoor residual spraying (IRS) operation in Kinyinya district, Burundi was conducted in collaboration with the Burundian Ministry of Health to protect approximately 300,000 people at-risk during a country-wide surge of malaria (cf. Malaria chapter). Malaria vector control strategies were devised for Sifontes in Bolivar State, Venezuela. Exceptional on-site entomological support was provided to a snake bite outbreak in Baringo, Kenya. Following the response to a yellow fever outbreak in Ebonyi state, Nigeria, a collaboration was set up with Nigeria’s National Arbovirus and Vectors Research Centre for an evaluation of local vector species characteristics and transmission dynamics to improve future outbreak response and risk-mitigation strategies.

- **Solid and liquid waste management**: Solutions for waste management, including Viral Load (VL) waste for HIV labs and expired drugs, were explored in several missions. In Guinea, exportation of expired drugs to France through an external partner was achieved and an incinerator was installed for VL waste management. Incinerators for hazardous waste management (virual load, expired drugs) were also installed in Kinshasa, DRC, in the intersectional waste zone in Bangui, CAR, in Zhytomyr, Ukraine and in Afghanistan. For some missions, these technical solutions came in response to waste that had accumulated over years. Bangladesh Cox’s Bazar District Hospital project also installed a semi-industrial incinerator and set up a full waste zone to improve the disastrous management of medical waste in such a big structure. An innovative wastewater management plan was implemented in the Nsanje prison project in Malawi, where wastewater was combined with the generation of biogas to cook the prisoners’ food. In Zimbabwe, a community solid waste management scheme focusing on composting, reuse and recycling was developed and complemented with an income-generation component in the Mbare slum area.

### 3. INTERNATIONAL COHERENCE

#### 3.1. DOCUMENTS AND GUIDELINES

In 2019, the EH unit, in close collaboration with the intersectional working group, was involved in the generation of a broad spectrum of documents and guidelines. They included laboratory waste management in collaboration with the lab working group and guidance on intersectional chemical threats. The EH unit finalised the follow-up study of the “Where is everyone? Responding to emergencies in the most difficult places” initiative. There was also an interagency document on the opportunities and constraints of the WASH sector and a start to develop a roadmap to reach well-defined goals for the WASH sector. Technical updates and files for the International Technical Coordination (ITC) catalogue were created in close collaboration with the International Office. The WatSan working group contributed to the Oxford Handbook of Humanitarian Medicine with two chapters on Environmental Health; it also collaborated on technical documents on malaria prevention in collaboration with the WHO Roll Back Malaria Initiative. Finally, an intersectional Environmental Health policy paper was drafted and presented to the MSF medical directors for their feedback.

#### 3.2. NEW STRATEGIES AND TOOLS

- Laboratory waste is often released into the environment through a common sink, but this practice is dangerous as the waste can contain substances that should under no circumstance be released into the environment. An MSF guideline is under development with appropriate disposal methodologies tailored to low and middle-income settings. In Malawi, these activities influenced the setup of a national advisory policy for waste management.

- EH worked towards inclusiveness of temporarily or permanently handicapped people who can make up a significant percentage of MSF’s target populations. A collaboration on training was set-up with Handicap International to make the WatSan structures more appropriate.

- MSF is involved in testing space repellents designed to keep mosquitoes out of medical infrastructures like cholera or Ebola treatment centres where the traditional approaches like bed nets and indoor residual spraying are difficult to implement.
• Hospital wastewater is often released into the environment with minimum treatment. A 2018 study documenting successful wastewater quality improvement in MSF hospitals in Haiti using water from a septic tank and a rotating biological contactor resulted in the installation of a second biological contactor in the Sierra Leone Kenema Hospital. A decentralised wastewater system including an anaerobic reactor and filter followed by aeration was developed for two hospitals in Afghanistan. In Zimbabwe, a community wastewater management scheme involving worms, sedimentation and filtration processes as well as wastewater reuse was installed, resulting in an approximately 25% reduction of water use.

• In the humanitarian world, as well as within MSF, there are few active professionals in groundwater management, which often leads to new boreholes being drilled instead of rehabilitating existing ones. This can lead to contamination of groundwater supplies through incorrect borehole design. The “Go-Pro project” (cf. Medical Activity Report 2018) evolved into continuous groundwater support from HQ. The ZimHub project in Zimbabwe is providing technical expertise on groundwater and community sanitation approaches and maintenance structures that will better maintain long-term use of the infrastructure. The technique of sanitary cement seals in borehole construction has been further developed to make it more cost effective and locally affordable. In this regard, MSF is advising on the development of a new national drilling protocol in Zimbabwe together with university and drilling company partners. MSF also invested in Electrical Resistivity Tomography (ERT) equipment to further support groundwater prospecting; ERT technicians have been trained and deployed so far in Zimbabwe and Malawi.

3.3. OPERATIONAL RESEARCH

A number of key operational research initiatives were conducted/completed in 2019:

• In collaboration with the London School of Hygiene and Tropical Medicine (LSHTM), a study was conducted in DRC on the impact of household hygiene kit distribution during cholera outbreaks. It aimed to quantify the reduction in household transmission of cholera; final results are expected in 2020.

• Building on the focus of malaria control in the Burundi mission, a multi-year research project and collaboration with the Institute of Tropical Medicine (ITM) in Antwerp is currently being developed. It will focus on the timing and combination of several malaria control measures (case management, LLIN, IRS) and developing a decision tree for guiding operations.

• Publication of “Open the tap for Maternal and Newborn care” shows the impact of water rationing (truckling vs. free-flowing water) on the quality of care.

• Publication of a process evaluation of the “Distribution of hygienic kits during a cholera outbreak in Kasai-Oriental, Democratic Republic of Congo” and publication of “Typhoid fever outbreak in the Democratic Republic of Congo: Case control and ecological study” in PLoS Neglected Tropical Diseases.

• Publication of “A scoping review of current international guidelines prevention and control of cholera with household and community water, sanitation and hygiene (WASH) interventions.” This was in response to inconsistencies in existing guidelines.

In addition, the first operational research training course dedicated to EH (WASH IT) was finalised, with the support of LuxOR in 2018. This training was focused on the WASH sector to build capacity for conducting operational research while augmenting the evidence base for various EH interventions. In 2019, three of the eight submitted papers had been published.

4. HUMAN RESOURCES & TRAINING

In 2018, the EH unit staff comprised of one member dedicated to emergency support, three members to operational support, one focal point for HR and training, one medical entomologist, one ground water specialist, one implementation expert for initial support with complicated EH works, one innovation and technical support person, and one coordinator.
The EH unit was involved in over 60 full-time days of dedicated training – including the EH module of the Populations in Precarious Situations (PSP) training and the WatSan in Emergencies training (English and French). An EH training component was also provided for training including the preparation for Primary Pre Departure (PPD) course, Management of Health Structures (MHS) course, Logistic Second Line Tactical training (SLTT), and others. A 5-day training course on new and innovative tools in vector control was implemented for the third time. A 5-day geophysical workshop was organised, as well as a 7-day borehole drilling supervision workshop. There was also EH participation in a 5-day training for setting up and packing down of the Mobile Unit Surgical Trailer (MUST2).

- A number of different design criteria and guidelines for plumbing infrastructure of hospitals have been assessed, adjusted and implemented in complex health structures.
- The collaboration between professionals in EH, Information Technology (IT) and Geographic Information Systems (GIS) on real-time monitoring and planning of an IRS campaign in Burundi (pilot in the 2018 campaign in Gitega) was further developed and operationalised in the 2019 IRS campaign in Kinyinya health district, Ruyigi Province.

### 5. LOOKING BACK AND AHEAD

#### 5.1. LESSONS LEARNED IN 2019

- There continues to be resistance in MSF to integrate the issues of climate, environment and health considerations into its footprint, its operational prioritisation process and in its advocacy as per statements of the International Board. Fortunately, there is a countermovement that is picking up speed.

- Continuation of the integration of EH into the medical department is mandatory and the recognition of EH personnel as part of the interdisciplinary team remains vital. Changing the mind-set of medical staff is crucial if the advantages of properly executed EH activities are to be better understood. EH personnel also need to better understand the challenges faced by the medical personnel.

- The effective deployment of EH officers in the field continues to require clarifications on how to implement the agreed management lines and responsibilities for the delivery of EH medical/logistic activities. It is time to overcome this seemingly eternal power struggle and come to an agreed-on implementation of the delivery model that fits the field needs as well as those of the populations we are supposed to serve.

- Lack of operational space for EH is exemplified by the relatively small proportion of EH compared to other MSF activities. For instance, there is a small proportion of basic community vector control activities when compared to the number of projects with a malaria component and there is limited involvement of MSF OCB in water and sanitation provision in the Rohingya refugee context. Further appropriation of EH activities into operations should be coupled with continued support and commitment.

- The MSF portfolio on wastewater management is exceedingly limited, resulting in dumping contaminated water into the open environment, with all the risks this entails.

- OCB has minimal EH involvement in refugee camps compared to other sections in 2018, with most of its attention on secondary health structures.

- OCB has little experience with EH activities and/or advocacy in water scarcity contexts (pollution, drought).

- OCB has minimal EH activities embedded in malnutrition projects.
5.2. PROSPECTS FOR 2020

• Come to a final clarification of the management lines and responsibilities for the medical/logistic implementation of delivery of EH and the role of the EH coordinators in the missions.

• Break down the silos and aim for a default integration of EH components into a wider view of patient care that goes beyond medical care only.

• Enlarge the Vector Control portfolio from mainly malaria to dengue, yellow fever, trachoma, diarrhoea, fly control and schistosomiasis.

• Include harmonised/standard indicators and tools for assessment, monitoring, and evaluation of EH activities in routine MSF data collection.

• Clarify the organisation of groundwater support and the Go-Pro and ZimHub interactions into meaningful guidelines to support emergency and water supply projects in communities with high burdens of infectious diseases (e.g. hotspots for recurrent cholera outbreaks).

• The MSF Medical Academy training package for EH needs to be developed and involved the Delft- based WASH MSc.

• Investigate ways to digitalise, where possible, the EH training portfolio to increase access of EH training modules in the field while ensuring quality.

• In specific contexts, operational research will be used to demonstrate the impact of EH activities on mortality/morbidity (e.g. kits in DRC) and on health economics (e.g. IRS in Burundi).

• In general, the basic expertise in key WatSan activities and vector control will be maintained, while expanding know-how on broader EH activities (such as in pollution by extractive industries).

• Further develop waste management, including laboratory waste and wastewater with adapted solutions for low and middle-income settings.

• The exponential urbanisation of the world and the looming climate crisis highlights the need to maintain WASH competence and rapidly develop a methodology for outbreak control through WatSan improvement in urban areas and slums.

• Development of better information sharing.

• There will be a need for reflection on the recentralisation process and the expected impact on EH support and activities. This concerns issues of Human Resources, continuity, standardisation, capitalisation as well as fair and relevant partition of resources. The reinforced emphasis on project level decision-making will require adapted support structures.
EPIEMIOLOGY/EPICENTRE

HIGHLIGHTS OF 2019

- Epidemiological support in the Democratic Republic of Congo (DRC) to provide an intersectional overview of the Ebola Virus Disease epidemic and response.

- Data collection completed for the studies on the HIV care cascade among sex workers (Malawi) and abortion-related complications in the Central African Republic (CAR).

- Recruitment completed for the study on the physiopathology of Kwashiorkor (Niger).

- Reinforcement of the communication between Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) and Epicentre through a series of face-to-face meetings in Brussels and Luxembourg.

1. OVERVIEW

Epicentre’s epidemiological and research studies provide Médecins Sans Frontières (MSF) with evidence to improve MSF’s interventions and medical care. The main areas covered by these studies include: research in emergencies, research designed to enhance operational strategies as well as preventive, curative, and diagnostic tools and protocols, and support to MSF programmes’ monitoring activities. Results may be used to support advocacy both in the scientific community and among local, national, and international authorities and stakeholders. Epidemiologists, statisticians, and laboratory specialists, among others, comprise the Epicentre scientific team. For more than 10 years, some Epicentre epidemiologists have been integrated into the MSF Operational Centre Brussels (OCB) Medical Department to enhance communication and facilitate the implementation of new research projects. In 2019, five Epicentre epidemiologists made up part of the MSF OCB Medical Department team: three in Brussels and two in Cape Town at the Southern African Medical Unit (SAMU).
2. RESEARCH ACTIVITIES

2.1. FIELD EPIDEMIOLOGY

During 2019, Epicentre continued providing epidemiological support for intersectional data collection and analysis for the Ebola Virus Disease (EVD) responses in the Democratic Republic of Congo (DRC) ensuring an “intersectional epidemiological coordination” position based in Goma. The data and analysis included all other actors participating in the response providing a thorough overview of the epidemic and response. This position allowed MSF/Epicentre to attend and contribute to the “analysis cell,” a technical working group together with the Ministry of Health (MoH) and the Centres for Disease Control (CDC). Additionally, an online dashboard showing the main trends of the epidemic has been put in place and kept updated.

In late 2019, as part of the response to the ongoing measles outbreak in DRC, Epicentre provided support to the intersectional data collection and analyses through an intersectional position based in Kinshasa. The primary aim was to document and analyse the measles epidemic in DRC in order to guide MSF operations and to communicate the results to national authorities.

In Haiti, the study aiming to assess the vaccine effectiveness (VE) of Euvichol, used during two vaccination campaigns in 2016-17 in the Southern Department, was interrupted because of the lack of cholera cases more than three years after vaccination in the region, limiting the possibility of assessing the VE. A manuscript on the vaccination coverage of these campaigns was accepted for publication as well as a manuscript on the measles vaccine coverage and VE surveys conducted in 2016 in Kunda, Maniema province, DRC.

In 2019, Epicentre continued providing support on request for the OCB emergency pool and medical department.

2.2. MEDICAL RESEARCH

Ebola Virus Disease

In the context of the ongoing DRC EVD outbreak, Epicentre continued (up until a security incident) to support MSF in the negotiations and implementation of the EVD treatment trial (mAb 114, Remdesivir, Zmapp, REGN-EB3, in collaboration with the NIH, WHO, INRB, and ALIMA). Epicentre also continued to support MSF as needed for the implementation of vaccination against EVD and monitored emergency use of unregistered and investigational interventions against EVD.

Vaccine-preventable diseases

The randomised non-inferiority trial to evaluate the immune response to a delayed second dose (six to 12 months compared to the standard 14-day interval) of a cholera vaccine in Conakry (Guinea) was put on hold due to budget restriction. Applications were submitted for external funding with the hope to resume the project in 2020.

Mid-2019, a case-control study to estimate the protection of one dose of the typhoid conjugated vaccine, Typhbar-TCV®, against clinical typhoid fever among inhabitants of three suburbs in Harare (Zimbabwe) was initiated after ethics clearance. The recruitment was still ongoing at the end of 2019. The study aims to measure vaccine effectiveness under real life conditions, in endemic and epidemic settings.

The results of the evaluation of the stability of measles vaccine out of the cold chain under extended controlled temperature conditions were accepted for publication. They showed that measles vaccine in the lyophilised form remains above the minimum required potency at the end of the shelf-life for up to six days at 37°C or for two days at 40°C.

**HIV**

In 2019, the report of the second HIV population-based survey conducted in the Mbongolwane and Eshowe Health Service Areas (Kwazulu-Natal, South Africa) in 2018, five years after the 2013 survey was completed and shared with partners. Among the 3286 individuals aged 15-59 years included in the 2018 survey (66% women), the HIV prevalence was 26% (95% confidence interval [CI]: 25-28), higher in women (30%) than in men (18%). Overall achievement of the 90-90-90 target was 89/94/95, with some differences between women (92/96/95) and men (83/87/93). Women were more often aware of their status than men and more often covered by antiretroviral treatment (ART) but viral load (VL) suppression was similar among women and men. A great improvement in HIV care coverage in this area was observed between 2013 and 2018. Findings were presented at the South African AIDS conference in Durban, and at several Epicentre/MSF meetings. The results of the study were also shared with the local community; a manuscript is in preparation. It will also compare the differences in the HIV epidemic and cascade of care results between 2013 and 2018. Finally, the 2018 survey gave the opportunity to assess the situation of tuberculosis (TB) diagnosis and care in the area. The findings of this survey should guide MSF and the Department of Health in defining relevant strategies.

The same year, Epicentre and OCB conducted a study aiming to evaluate HIV prevalence and the cascade of care among female sex workers working in the district of Nsanje, using a respondent-driven sampling approach. A total of 363 female sex workers were included in the study; 85 were aged between 13 and 19 years. The HIV prevalence was 52% (95%CI: 47-58) and increased with age, reaching 88% after 35 years old. Achievement of the 90-90-90 target showed a 95% awareness of HIV status, a 99.6% ART coverage (self-reported) and an 83% VL suppression. Results were shared with authorities and partners, and presented at the Epicentre Scientific Day in Paris and the International Conference on AIDS and STIs in Africa (ICASA) in Kigali.

In Mozambique, Epicentre and OCB (with MSF Operational Centre Geneva, South African laboratory partners, and the MoH) conducted a cross-sectional study from 2018 to 2019 to assess the prevalence of pre-treatment drug resistance (PDR) for both ART-naïve and pre-exposed HIV adult patients initiating ART. A follow-up phase aimed to assess the frequency of virological failure and acquired drug resistance (ADR) after at least six months of first-line ART. Results showed a good VL suppression rate (85% in Tete) and for those on a failing regimen, HIV drug resistance was the main determinant of non-suppression. Among participants with a VL>1,000 copies/ml, 96% presented resistance to any ARV molecule. PDR to efavirenz and nevirapine was observed in 31% of study participants with a VL<1,000 copies/ml in Tete. These alarming levels of PDR and ADR emphasise the need for a fast rollout of the integrase-based first line ART regimen and the need for easier access to VL monitoring and drug resistance testing. Results were presented at the MSF Operational Research Day and the Epicentre Scientific Day. A manuscript will be published in 2020.

Also in Mozambique, Epicentre continued providing technical support to manage and analyse a dataset of Pre-exposure prophylaxis (PrEP) among sex workers in Beira.

In 2019, the results of the 2018 study assessing the prevalence of major genotypic resistance mutations among ART-experienced patients hospitalised with advanced HIV at the Centre Hospitalier Kabinda (CHK), in Kinshasa (DRC; OCB) and Homa Bay (Kenya; Operational Centre Paris) were presented at the Epicentre Scientific Day and at the Conference on Retroviruses and Opportunistic Infections (CROI); an article is under preparation. In total, 305 patients (59% women) were included (median time on ART: 4.0 years in Homa Bay; 5.3 years in Kinshasa). About three quarters of the patients with a VL>1,000 copies/ml (50% overall) had dual class drug resistance, and thus had been treated with completely ineffective regimens. In-depth interviews with 30 participants revealed extreme social and financial vulnerabilities linked to the illness and to ART adherence.

Also in 2019, ethics approval was obtained for the study protocol of the OCB and Epicentre study to describe the prevalence of invasive bacterial infections, the type, and antibiotic sensitivity of associated bacteria in HIV-infected patients hospitalised in the CHK Kinshasa (DRC). Study preparation started in the field aiming for an implementation early in 2020. The study aims to include 1225 HIV-positive patients.

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5 The final report can be accessed via this link: http://bit.ly/Eshowe_HIV_Survey
6 Prevention of mother-to-child transmission, Pre- or Post-exposure prophylaxis, ART discontinuation for at least 3 months.
Finally, in 2019, two manuscripts were prepared for two population cascade of care surveys implemented previously in Gutu\(^7\) (Zimbabwe) and Nsanje (Malawi).

**Hepatitis C Virus (HCV)**

Epicentre continued to provide technical and statistical support to OCB HCV projects (Karachi in Pakistan, Meerut in India) using the HCV cohort database (HepaMUD, developed and supported by Epicentre) to monitor patients receiving a new HCV treatment.

**Termination of pregnancy**

With funding from Elrha/R2HC\(^8\) and in collaboration with IPAS\(^9\) and the Guttmacher Institute, Epicentre and OCB collected data for the AMoCo\(^10\) study in Bangui (Central African Republic) in 2019. The study aimed to assess the frequency of abortion-related morbidity and mortality in fragile and conflict-affected settings. It included four components: 1) a rapid assessment of health facilities, 2) a knowledge, attitudes and practices survey among health professionals, 3) a quantitative study among patients presenting for post-abortion care, and 4) a qualitative study among patients who experienced a near-miss event. In 2020 the focus will be on data collection in Nigeria and DRC.

**Tuberculosis**

In 2019, the manuscripts reporting results from the three TB-LAM\(^11\) feasibility studies in HIV-positive patients conducted in Malawi (MSF OCP), Mozambique (MSF OCG), and DRC (MSF OCB) were published\(^12\).

In 2019, the endTB clinical trial reached over 50% of its targeted sample size (750 total) at the end of the year. The trial aims to evaluate less toxic and more effective treatments for multidrug-resistant TB (MDR-TB) in 17 countries. It is funded by Unitaid and run in collaboration with PIH, IRD, HMS, ITM\(^13\) and MSF/Epicentre. Six MSF countries are involved, including an OCB site in Khayelitsha (South Africa). The end of enrolment is planned for 2020. Epicentre is responsible for data management and statistical analyses. A second trial for fluoroquinolone-resistant MDR-TB (endTB-Q) is expected to start in 2020.

**Nutrition**

In 2019, the recruitment for the research project to improve our understanding of the aetiology and pathophysiology of kwashiorkor using OMICS-based technologies and implemented by Epicentre in Niger (Epicentre Research Centre, Maradi), in collaboration with OCB and Ghent University (Belgium), was completed (n=180). A third of the biological samples were shipped to Belgium; laboratory analysis will be conducted in 2020.

### 3. TRAINING AND OTHER ACTIVITIES

**Training**

In 2019, Epicentre conducted two intersectional “Populations in Precarious Situations” (PSP) courses in Europe. In 2019, OCB did not send any trainees to the Responding to Epidemics (RepEpi) training organised in Paris.

**Internal and international meetings**

Members of Epicentre presented at and participated in internal (including working groups and task force) and international meetings on the different themes discussed in Sections 2.1 and 2.2.

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\(^7\) Conan N et al. Successes and gaps in the HIV cascade of care of a high HIV prevalence setting in Zimbabwe: a population-based survey (in preparation).

\(^8\) Enhancing Learning and Research for Humanitarian Assistance/Research for Health in Humanitarian Crises.

\(^9\) An international, non-governmental organisation that increases access to safe abortions and contraception.

\(^10\) Abortion-related Morbidity and mortality in Conflict-affected settings.

\(^11\) Test for the diagnosis of tuberculosis (TB) based on the detection of mycobacterial lipoarabinomannan (LAM).


\(^13\) Partners In Health, Interactive Research & Development, Harvard Medical School, Institute of Tropical Medicine.
4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- Research collaboration between OCB, SAMU, and Epicentre continued to be productive and harmonious, facilitating further ambitious research projects.

- Communication between OCB and Epicentre was enhanced by face-to-face meetings with the OCB medical, operations and finance directions. Two meetings were also organised to present Epicentre-OCB projects to the OCB medical direction in Brussels and to the LuxOR team in Luxembourg.

4.2. PROSPECTS FOR 2020

- Collaboration between MSF OCB and Epicentre promises a challenging research agenda for 2020. In addition to the ongoing studies listed above, Epicentre will support OCB to analyse the data of a prospective study conducted in 2019 in the Chichiri prison in Blantyre (Malawi) to assess the feasibility of a comprehensive TB intervention (screening and treatment) for prisoners. Also, a new MSF intersectional study\(^{14}\) to evaluate the diagnostic performance of a novel LAM test (FujiLAM) to detect TB in HIV-positive patients will be conducted in four countries including Uganda (Epicentre), Kenya (OCP), Mozambique (OCG) and South Africa (OCB).

- As in previous years, Epicentre will continue to ensure the dissemination of study results within OCB and other MSF sections, as well as in international forums, as these results are valuable for the whole MSF movement and especially for the international medical community. Epicentre will continue to discuss new research ideas with the OCB medical and operations departments.

- A regular annual meeting will take place between Epicentre and OCB to continue improving the interaction, communication, sharing of experience and collaboration. This will also ensure that Epicentre support matches the OCB strategic plans.

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14 Co-financed by MSF and the Agence Nationale de Recherche sur le SIDA et les hépatites virales (ANRS).
HEALTH PROMOTION

HIGHLIGHTS OF 2019

- 75 Operational Centre Brussels (OCB) projects in 31 missions with a health promotion (HP) component (increase of 12%), including 11 emergency intervention projects and 64 regular projects.

- 59 departures of HP expats: HP activity managers (50), HP supervisors (8), and anthropologists (1).

- 328,150 HP sessions in OCB projects’ target communities and 141,191 HP sessions in MSF-supported health facilities (of the 51 projects where data was available)

- One international HP training in Brussels, with 21 participants from various missions and representing all MSF sections

- Organisation of four mission-based HP trainings/workshops.

- Further development of digital HP experience, with 31 Digital HP interventions

1. OVERVIEW

In 2019, we have again seen an increase in the number of Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) projects/interventions with a clear Health Promotion (HP) component, compared to previous years. These projects included a wide array of contexts and medical topics in which the HP component was embedded. OCB HP teams were also involved in the implementation of several new regular projects in 2019, such as Niono (Mali), Cabo Delgado (Mozambique) and Bamenda (Cameroon).

HP tools, good practices, and lessons learned from the field continued to be documented and capitalised upon, although there remains a lot of space to increase the sharing of these experiences and lessons learned. To address this, an HP-focused digital platform that serves as a “community of practice” is planned for 2020. It will be linked to an updated and more structured HP knowledge base that will replace the HP toolkit stored on a USB key. A standard set of HP indicators has been developed to support more efficient monitoring. A template HP registry is in progress.
The sub-field of Digital Heath Promotion (DHP), which combines technical expertise with both HP and social media management, has been further developed in 2019, after the pilots in 2018. There were 31 new DHP interventions, mainly in the South African region, of which eight were more complex. We noted a growing number of requests to implement digital HP interventions from different missions.

Community Engagement (CE) has remained a core component in MSF’s HP interventions, but more commitment and ownership from MSF decision makers will be required to further establish CE as a core principle within the MSF movement. HP teams continued to play a proactive role in collecting and sharing patient and community feedback and perceptions about the services provided by MSF, but influencing operational planning was often a challenge.

Social science continued to play an important role within the field of HP. Planned rapid assessments and routine information gathering on health seeking behaviour, access constraints, perceptions, beliefs, and populations’ needs and demands are essential to determine context-adapted approaches, activities and services. We noticed there was a need to reinforce this component to provide more adapted guidance on methodology, qualitative monitoring and efficient diffusion of the findings. It remains a challenge to have the social science voice taken into account in operational decision making, despite MSF teams frequently facing contextual issues that require a deeper, qualitative analysis.

In 2019, interdisciplinary cross-collaboration between HP and other technical fields continued at field and headquarters levels.

2. TRAINING AND HUMAN RESOURCES

The following training sessions included an HP component:

• Water, Sanitation, and Hygiene (WASH) in emergencies: “Health promotion in WASH and Emergency” module
• First Line Medical Training (FLMT) - an integrated approach for community-based health care
• Health Promotion training in Brussels: ten-day training open to all MSF sections
• Four mission-based HP trainings (one week): Egypt, Haiti, Pakistan and the Democratic Republic of the Congo (DRC). Three were open to participants from other sections.

3. INTERDISCIPLINARY PLATFORMS

The following interdisciplinary platforms required HP involvement:

• Primary Health Care circle
• Migration circle
• Palliative Care circle
• Victims of Torture (VoT) circle
• Antibiotic Resistance (ABR) Taskforce
• CE discussion group

4. PRESENTATIONS AND NETWORKING

• The OCB HP referent was invited to the Behavioural Communication Strategies course, organised at the American University of Beirut by UNICEF and New York University, as a panellist member of the Ebola case study session.

• During the London MSF Scientific Days: “Using social media for patient and community engagement: MSF’s experience in Lebanon” by Jinane Saad.
• OCB HP representation in a workshop of community-based surveillance “codeathon,” organised by the Red Cross.

• Interactions with Bibliothèques Sans Frontières on digital means of information provision.

• OCB HP representation in a workshop organised by the University of Birmingham on the use of humour for Health Promotion purposes. Discussion on potential collaborations with several cliniclown organisations (Red Noses, Clowns Without Borders, etc.).

5. SOCIO-CULTURAL ASSESSMENTS

In order to gain a better understanding of socio-cultural contexts in which MSF field teams work, as well as the perceptions, beliefs, practices and behaviour related to health among our target populations, several qualitative assessments were conducted by the MSF anthropologist or HP managers, including:

• Bangladesh, Ukhiya: Qualitative Assessment among Rohingya Refugees in Cox’s Bazar by Helena Dembsky.

• DRC, Kananga: La violence sexuelle au Kasai Central : Rapport de l’enquête rapide anthropologique by Lize Van Dyck.

• DRC, Masisi: Rapid Qualitative Assessment on barriers and enablers to implementation of ABS at the HGR by Marie Louise Wright.

• Kenya, Barigno: “Can we avoid it? No we can’t! Only God can protect us from snakes” How to empower communities through prevention and first aid management of snake bite victims in Tiaty, Baringo County by Sarah Goffin.

• Lebanon: Social Marketing assessment on ABR by Stephanie Semaan.

• South Sudan, Yei: Sexual Violence in Yei town & Logo area: Communities’ representations about the survivors of sexual violence, Main actions after an assault and obstacles to care by Florence Métrailler.

• South Sudan, Yei: Traditional Birth Attendants in Yei: TBAs’ roles and practices in the communities, Representations of the maternity in Yei State Hospital, Beliefs around complicated deliveries by Florence Métrailler.

• South Sudan, Yei: Tuberculosis in Yei and Logo: Communities’ perceptions of TB by Kate Douglas and Florence Métrailler.

All of these reports are available from the HP advisor.

6. LOOKING BACK AND AHEAD

6.1. LESSONS LEARNED IN 2019

• It remains challenging to have social science and community engagement embedded in operational decision-making.

• After the pilots in 2018, the multiple DHP interventions organised in 2019 have shown promising results and the potential DHP can have for the future. It will be important to invest further in its development.

• The growing number of MSF projects with an established HP component demonstrates the recognition of its importance within our interventions, but at the same time stretches the referent’s capacity to provide adequate support to the field.
6.2. PROSPECTS FOR 2020

- A digital platform that serves as an HP “community of practices” will be developed to increase horizontal interaction between HP experts in the field and between missions. It will focus on the exchange of HP materials, experiences and lessons learned.

- Linked to the HP community of practices, an updated structured HP knowledge base will be developed. Strategic guidance papers for HP involvement in antibiotic resistance, nutrition and child health projects will be further developed, with the help of the corresponding referents. A DHP toolkit will be finalised.

- Regional HP mentors will be assigned to different regions to increase support capacity to the field.
OVERVIEW

In 2018, there were 38 million people living with HIV, 1.7 million new infections and 800,000 deaths. The HIV pandemic continues to be a global emergency and an intersectional priority for Médecins Sans Frontières (MSF). While close to 80% of people living with HIV were tested and 23 million are on antiretroviral treatment (ART), new infections and deaths remain high. A dramatic reduction in funding is threatening to reverse existing gains. In addition, progress towards global targets is much slower in a number of countries, contexts and populations. Priorities for MSF were Advanced HIV Disease (AHD), neglected contexts (West and Central Africa, conflict and emergency settings), and neglected populations (key populations, children and adolescents, pregnant women and other vulnerable groups).
While the KwaZulu-Natal (KZN) project has shown that it is possible to reduce new HIV infections and deaths with large-scale community and primary care investments, projects in less resourced settings continue to face high mortality of people with advanced HIV. This mortality results from low coverage of treatment and/or treatment failure due to treatment interruptions and/or drug resistance, such as in Kinshasa, Nsanje, Beira, Bangui and Conakry. Meanwhile, the scale-up of dolutegravir as the new first-line antiretroviral treatment is poised to be a game changer.

The reduction of vertical projects led to a dramatic reduction in HIV testing and treatment, despite an important increase in HIV testing by non-HIV projects. In 2019, MSF Operational Centre Brussels (OCB) tested fewer people for HIV, and started and cared for fewer people on ART than in any other year since 2015. Vertical projects were responsible for 80% of new HIV diagnoses; 70% of new initiations on antiretroviral treatment were in Southern and Eastern Africa.

The number of projects testing for HIV more than doubled thanks to the increase from 16 to 34 integrated projects (i.e. with some elements of HIV care in projects not focused on HIV). Despite being responsible for close to half of all HIV tests performed, of which half were in the Bangui Sexual and Reproductive Health (SRH) project, integrated projects identified relatively few people with HIV (1971, or 16%, of 11,866). This was due in part because most integrated projects were in lower prevalence settings and did not focus on people at high risk of HIV. In addition, only four integrated projects started patients on ART, resulting in low numbers initiated.

The modest increase in projects with some element of HIV care in conflict and emergency settings is encouraging; now improvements in coverage and quality of care must follow.

Neglected populations remained underserved, with small ongoing investments in children, drug users, sex workers, and men who have sex with men, along with the closure of the Malawi prison project, and a lack of new initiatives.

2. MAIN PROGRAMME ACTIVITIES

2.1. CONTINUUM OF CARE: HIV TESTING, TREATMENT, RETENTION IN CARE AND VIRAL SUPPRESSION

In 2019, MSF OCB provided HIV testing in 43 projects in 23 countries, three-quarters of which were in sub-Saharan Africa: 18 projects diagnosed more than 50 people with HIV; in 11 of these projects, MSF started people on ART (Annex 1).

Overall, 191,792 people were tested for HIV; 11,866 (6.2%) were HIV positive and 11,572 were started on ART in MSF projects. The large majority of these (10,340; 89%) were started in three vertical HIV projects: Beira, Conakry and KZN. Several projects started more people on treatment than they had tested positive because testing was done by other providers; this was most striking in Beira (1975 HIV+ and 5180 started). In projects that did not provide ART, 1462 patients were diagnosed with HIV. There was insufficient data to confirm whether they were referred and initiated elsewhere and resolution of this is a priority.

The majority of HIV testing (93%) and treatment initiation (100%) occurred in sub-Saharan Africa. There was a shift from Eastern and Southern Africa (ESA) towards West and Central Africa (WCA) for testing and numbers of HIV positive. Over 70% of people started on treatment were in ESA – mostly (93%) in Beira and KZN (Annex 3).

About 48% of testing was done in integrated projects, another 48% in vertical HIV projects, and 4% in vertical tuberculosis (TB) projects (Mumbai, Zhytomyr; Malawi prisons). However, 80% of new HIV positives were diagnosed in vertical projects, 3% in TB projects and 17% in integrated projects, where most HIV tests were done in sexual and reproductive health activities (mostly in Bangui). The highest positivity was in TB patients (Annex 4).
In 2019, the number of vertical HIV projects dropped from nine to seven while integrated projects increased from 16 to 34 (Annex 1). The number of HIV tests done in MSF projects decreased by 183,067 (Figure 1). This was due to a massive reduction in HIV testing in high prevalence, vertical HIV projects (stopped testing in Nsanje; closed Gutu & Mwenezi) that was not compensated by increased testing in low prevalence integrated projects (Figure 2). As a result, the number of people with HIV identified in vertical projects dropped from 17,359 to 9,591, while it increased from 1,089 to 1,969 in integrated projects. The number of people started on ART decreased by 44% for the same reasons (Figure 3).

The decrease in testing was mostly due to a drop in facility-based testing. Community-based testing also dropped significantly but only represented 14% of all tests performed. The overall proportion of tests that were HIV positive increased only slightly from 5% to 6%. However, the increase in low yield facility-based testing in integrated projects hid a shift towards targeted facility-based testing in vertical projects, where positivity increased from 5% to 12%, probably reflecting a change in strategy from wide-scale clinic-based testing towards a focus on advanced HIV and higher risk populations (Annex 2). Self-testing increased with over 27,000 self-tests distributed in OCB projects, mostly in KZN, Kinshasa and Mbare.

A total of 72,194 people were on ART in OCB projects: 65,219 (90%) in OCB-supported facilities and 6,975 (10%) in direct OCB care. Of the 13,835 people started on ART between October 2017 and September 2018, 76% were retained in care, 45% had a viral load done, and 89% of those had their viral load suppressed after 12 months on treatment. These outcomes were comparable to global outcomes, highlighting retention in care as a major challenge and priority.

Behind these aggregated figures there were very different project contextual realities (Table 1). While retention in care was higher in general population projects in high prevalence settings (around 80% in Beira and KZN), and even higher in prisons (94% in Malawi), it was lower in low prevalence countries (76% in Conakry), and
much lower in neglected populations (e.g. 25% in sex workers in the Malawi corridor) and people with treatment failure, as was to be expected. Projects heavily supported by OCB, like Kinshasa, or in countries with more resources, like KZN, demonstrated that it was possible to achieve high viral load completion rates. In poorer countries with limited OCB support, the reality is very different.

### TABLE 1 Adults (> 15 years) on antiretroviral treatment: 12 month outcomes

<table>
<thead>
<tr>
<th>Initiative on ART</th>
<th>Kinshasa</th>
<th>Malawi corridor</th>
<th>Nsanje</th>
<th>Prisons</th>
<th>Beira</th>
<th>Khayelitsha</th>
<th>KZN</th>
<th>Mbare</th>
<th>Conakry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained in care</td>
<td>45%</td>
<td>25%</td>
<td>74%</td>
<td>94%</td>
<td>80%</td>
<td>46%</td>
<td>78%</td>
<td>71%</td>
<td>76%</td>
</tr>
<tr>
<td>VL completed</td>
<td>94%</td>
<td>37%</td>
<td>58%</td>
<td>92%</td>
<td>22%</td>
<td>49%</td>
<td>76%</td>
<td>32%</td>
<td>20%</td>
</tr>
<tr>
<td>VL suppressed</td>
<td>81%</td>
<td>100%</td>
<td>94%</td>
<td>97%</td>
<td>80%</td>
<td>94%</td>
<td>92%</td>
<td>87%</td>
<td>85%</td>
</tr>
</tbody>
</table>

Due to differences in target populations and contexts, project outcomes are not indicative of access to care.

### 2.2. ADVANCED HIV AND TREATMENT FAILURE

Advanced HIV disease/AIDS and treatment failure have been neglected in the HIV response and continue to cause significant mortality. In 2019, 1442 (26%) of the 5452 patients with AIDS admitted to OCB-supported hospitals died during their stay (Figure 4). An additional number would have died in the months after discharge and efforts are underway to increase our follow-up of this outcome. To prevent developing AHD and to facilitate its early identification, it is critical to implement a specific package of care at the primary health care level. New clinic-based models are being piloted in Kinshasa, Conakry, Beira, KZN, Nsanje and Khayelitsha.

Bacterial sepsis is a major contributor to mortality but remained invisible due to lack of diagnostic capacity. The introduction of blood cultures in Kinshasa uncovered very high rates of drug resistance of hospital as well as community-acquired severe bacterial infections necessitating expensive novel antibiotics. In the last quarter of 2019, a project that was focused on AHD opened in the main referral hospital in Bangui, Central African Republic (CAR).

A substantial number of patients followed at primary care and many of those hospitalised with advanced HIV failed ART, most likely because of drug resistance, and they needed to start more complex second- or third-line regimens. While third-line remains very limited and only accessible through MSF (51 out 58 patients on third-line regimens received their third-line drugs from MSF), 3907 patients were on second-line regimens, of whom 80% were in OCB-supported facilities (mostly in KZN and Conakry).

### 2.3. NEGLECTED POPULATIONS

Seven projects targeted key populations: sex workers in Beira and the Malawi corridor, men who have sex with men in Beira, prisoners in Malawi, intravenous drug users in Kiambu (Kenya), and migrants in Beithbridge, Lesvos and Italy. However, after the closure of Malawi in 2020, only one project, Beira, will continue to care for substantial numbers of key populations with HIV.

There were only 617 children <5 years and 3165 between five and 15 years on ART, representing 5% of all patients on treatment. Just 579 children <15 years were initiated on ART in 2019, the lowest number in five years. Children, and especially adolescents, are less likely to achieve viral suppression due to a number of...
reasons (Table 2), including the lack of appropriate drug formulations. The approval of the 4-in-1 fixed dose combination of lopinavir/ritonavir/abacavir/lamivudine as well as paediatric formulations of dolutegravir are expected to improve this situation in 2020.

### TABLE 2 | Children < 15 years on antiretroviral treatment: 12-month outcomes

<table>
<thead>
<tr>
<th>Initiated on ART</th>
<th>Kinshasa</th>
<th>Malawi corridor</th>
<th>Nsanje</th>
<th>Beira</th>
<th>KZN</th>
<th>Mbare</th>
<th>Conakry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained in care</td>
<td>73%</td>
<td>0</td>
<td>77%</td>
<td>83%</td>
<td>66%</td>
<td>75%</td>
<td>86%</td>
</tr>
<tr>
<td>VL completed</td>
<td>92%</td>
<td>0</td>
<td>64%</td>
<td>16%</td>
<td>91%</td>
<td>40%</td>
<td>12%</td>
</tr>
<tr>
<td>VL suppressed</td>
<td>77%</td>
<td>0</td>
<td>48%</td>
<td>32%</td>
<td>89%</td>
<td>50%</td>
<td>53%</td>
</tr>
</tbody>
</table>

### 2.4 NEGLECTED CONTEXTS

Coverage of HIV testing and treatment remains extremely low in West and Central Africa (WCA), which is why OCB has committed to increase investment in HIV in the region. There were 12 projects testing for HIV in WCA: three vertical HIV and nine integrated projects. However, 87% of the 6177 people diagnosed with HIV in the region were in vertical projects and only 173 (5%) of the 3416 patients started on treatment were in integrated projects (Masisi and Kasai). Of over 92,000 tested in 34 integrated projects, 1971 tested positive. Of these, 220 (11%) were initiated on ART by MSF. Whether the other 1751 were initiated on treatment or not is unknown; monitoring access to treatment for patients diagnosed with HIV in OCB projects is a priority.

The situation was similar for conflict and emergency settings, with even lower coverage and no patients started on treatment except in Bangui. Most projects are in WCA, with the exception of Jamtoli camp, Cabo Delgado, Beira cyclone, Zhytomyr and Mosul.

In 32 out of 43 projects testing for HIV, people with HIV were referred to other service providers for ART. To ensure responsible referral, it is important to assess whether people who were referred accessed quality care, even more so when high numbers of people are diagnosed with HIV, such as in the Bangui SRH project (441), Rustenburg (362), Kouroussa (240), Maiduguri (80), Kenema (54) and Jamtoli Camp (52). If quality of care cannot be assured in referred patients, integration of HIV care should be considered in these OCB projects.

### 3. ADVOCACY, LEARNING, DEVELOPMENT, AND RESEARCH

MSF has brought advanced HIV to the fore of the international scene and works relentlessly to improve access to and quality of care through research and advocacy. In the report “No Time to Lose,” MSF described the main challenges and achievements so far, and charted progress in policy and implementation of key diagnostics and treatments for advanced HIV. Diagnostics and medication recommended by the World Health Organization (WHO) for AHD are often absent on the ground. The OCB flucytosine clinical access programme in South Africa kick-started increased demand for and access to flucytosine for hundreds of patients and was later taken over by the Unitaid-funded Advanced HIV Access Programme. The report “From Guidelines to Reality: Accelerating access to prevention and treatment of paediatric HIV” showed the gaps in the pillars of prevention of mother-to-child transmission (PMTCT) and paediatric care from a multi-country survey.

The Southern Africa Medical Unit (SAMU) updated the intersectional HIV/TB Guide for Primary Care and the Advanced HIV/TB Guidelines for Hospital Level and a toolkit for Advanced HIV. Over 200 people attended 11 clinical, programmatic, monitoring and patient support trainings in Cape Town or in the field, and many more benefitted from on-the-job mentoring.
SAMU supported the publication of 31 scientific articles by OCB authors in 2019. Key research included studies validating a new rapid test for CD4, highlighting HIV drug resistance in patients with advanced HIV and/or failing treatment, outcomes of self-testing, antibiotic resistance, and pre-exposure prophylaxis.

### 4. LOOKING BACK AND AHEAD
#### 4.1. LESSONS LEARNED IN 2019
- Retention in care remains a major challenge and priority.
- It is necessary to invest at primary care level to decrease mortality from advanced HIV.
- Bacterial sepsis is a significant cause of mortality among patients with advanced HIV.
- Antibiotic resistance in severe bacterial infections was much higher than expected in Kinshasa and required expensive new generation antibiotics. High rates of antibiotic resistance in people with HIV are likely in many other settings.
- A decrease in vertical projects led to a massive reduction of people diagnosed with HIV and started on ART by OCB.
- Vertical projects are essential for direct access to care as well as to effect wider change.
- HIV testing – not care – has been successfully integrated into many non-HIV projects.
- There has been limited progress in reaching neglected populations: children, key populations and people in conflict and emergency settings.
- OCB continues to play an important role in improving access to care, diagnostics and treatment. In 2019, significant progress has been made for TB-Lipoarabinomannan (TB-LAM), the cryptococcal antigen test, flucytosine, liposomal amphotericin B, and paediatric antiretrovirals (ARV).
- PMTCT and paediatric HIV care remain critical gaps in many contexts.

#### 4.2. PROSPECTS FOR 2020
- The UNAIDS 90/90/90 targets will not be met in 2020.
- Advanced HIV, neglected populations and contexts remain top priorities.
- OCB will reinvest in PMTCT of HIV.
- Increased focus is needed on children, key populations and emergency/conflict settings.
- Access to HIV care in integrated projects needs enhanced attention.
- Access to antibiotic surveillance, bacteriology and novel antibiotics need to be expanded.
- New vertical HIV projects are needed as integration does not replace their function, neither in terms of access to care nor to effect wider change.
- Investments in advanced HIV at primary care will increase.
- There is a need for innovation in retention in care and treatment failure.
- Hopefully the scale up of dolutegravir will lead to improved adherence, decrease treatment failure and reduce stockouts.
INFECTION PREVENTION & CONTROL

HIGHLIGHTS OF 2019

• Provided support to projects (field visits, infection prevention and control (IPC) strategy development for specific projects).

• Helped projects to implement the new IPC policy and Stepwise Infection Prevention and Control Approach (SIPCA) and develop facility-based action plans for improvement.

• Participated in the opening activities of Kenema hospital (training, standard operating procedures (SOP) development, coaching).

• Implementation of surgical site infection (SSI) surveillance program in Arche-Trauma Centre Burundi and improvement of SSI data collection in all projects.

• IPC involvement in circles: antibiotic resistance (ABR), Essential requirements inf ix, outbreak circle (Burundi Ulcers).

• IPC intersectional working group: development of transmission based-precautions guideline and review of SIPCA assessment tool; updated the tool kit.

1. OVERVIEW

People should not get sick while seeking health care. However, millions of people globally are affected every year by healthcare associated infections (HAI). An HAI is an infection acquired by a patient while receiving care in a hospital or other health facility or in the community and that was not present or incubating on admission.

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.

In an era where antimicrobial resistance (AMR) is becoming a global threat, and considering that hospitals are hotbeds for AMR, IPC is even more crucial. Since the severity of illness of hospitalised patients in MSF projects is increasing, and the use of invasive devices is expanding, there is a higher
risk for HAI s, often caused by multidrug resistant organisms (MDRO). As such, the need to avoid 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 biomedical units) to ensure the integration of IPC strategies in all relevant guidelines, protocols and tools within Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB).

2. MAIN PROGRAMME ACTIVITIES

2.1. IPC NEEDS AND RESPONSE

To provide some insight into MSF OCB IPC interventions 2019:

- 108 projects in 2019 with 33 projects with inpatient departments (IPD), 75 projects were either outpatient department (OPD) projects, emergency projects (cholera intervention, vaccination), different supports (Water, Sanitation and Hygiene (WASH), Logistic) or projects under construction (Kabul).

- 15 projects were offering surgical care (same as in 2018) and responsible for 25,574 surgical interventions (19,520 in 2018) in which a total of 8358 surgical site infections (SSI) were reported; in 2018, data on SSI were not reported.

- 207,363 patients admitted into IPD (151,590 in 2018) with 67,544 children under five (22,771 in 2018, including 9959 neonates); 129,104 children ≥5 years and 10,715 with undefined age.

As recommended by the WHO and adopted by MSF through its new IPC Policy, we were using multimodal strategies to implement IPC programmes including the following components:

- System change to promote availability of appropriate infrastructures (including WASH) and supplies to enable and enhance good IPC practices. Basic structural requirements include organisational aspects, the hospital-built environment (infrastructure and hospital design), materials, equipment and ancillary services.
- Training
- Monitoring and feedback
- Reminders

During this year, through the IPC intersectional group, guidelines - Pillar 1: Hand Hygiene (HH), Pillar 2: Cleaning & Disinfection (CD) - and other protocols were developed and made available in the online IPC tool link to allow access from the field.

2.2. FIELD SUPPORT

In 2019, the IPC Mobile Implementation Officers (MIOs) conducted the following field visits:

- Innocent: Sierra Leone (Kenema, Nongowa project and Kenema Government hospital), Guinea-Conakry (HIV-Conakry Donka, HIV-Conakry Matam and 3H.C), Democratic Republic of the Congo (DRC) (HIV-Kinshasa, Masisi Hospital and Referral Health Centre Nyabiondo), Nigeria (Lassa Fever Abakaliki and Maiduguri, Maria Abaca Hospital, cholera treatment centre (CTC) in Bolori), Central African Republic (CAR) (SSR-Castor, SONUB and two health structures supported by MSF, Bangassou and the Bangui community hospital).

- Roula (since June 2019): Nigeria (Lassa Fever Abakaliki and Maiduguri, Mariam Abaca Hospital, Fatima ali Sharif PHCC, CTC in Bolori), Iraq (Mosul), Iraq (Mosul and Baghdad TB) and Akkar Lebanon.
The main objectives of the visits:

- Coaching of IPC supervisors/managers.
- Conduct situation analyses for IPC implementation, design action plans accordingly and initiate implementation of activities with the field teams.
- Strengthen the surveillance on SSI.
- Tailor on-the-job training for the IPC supervisors/managers.
- Follow up implementation of last visit recommendations.

The main IPC challenges from field visits:

- Some projects did not have an IPC supervisor/manager or required one.
- Lack of training for IPC supervisors/managers (all projects).
- In emergency projects and OPD/primary health care, there was no focus on IPC.
- Few operational research studies related to IPC (only Arche in Bujumbura on SSI).
- Reliable surgical site infection (SSI) surveillance programme only in Bujumbura (Arche).
- Low compliance rate on cleaning and disinfection of reusable medical equipment (when using reflexive marker).
- Low compliance to transmission-based precautions guideline (insufficient or not appropriate space, no dedicated materials for isolated patients, in some projects mixing patients with different conditions).
- Overcrowding in IPD (no respect of 1.2m distance between patients, high bed occupancy rate).
- Impossible to initiate surveillance of Catheter-associated blood stream infection (CR-BSI) with many projects not having access to microbiology service (e.g. Conakry, Masisi).

2.3. IPC AND AMR

There was an IPC-AMR strategic meeting in October with Med OPS and the AMR advisor to present the evolution of IPC and the AMR strategy’s progresses and challenges; further discussion will continue in 2020.

A MIO IPC follow-up visit to CAR was made to support the team controlling the Klebsiella outbreak (2018) where sporadic cases are still being reported.

A MIO IPC visit was made to HIV-Kinshasa where increased cases of MDRO where reported (Salmonella enterica, Staphylococcus haemolytica), Mosul and Baghdad (multidrug-resistant tuberculosis (MDR-TB)). The aim of the visit was:

- HIV-Kinshasa: to help the team identify causes of increased MDRO in the HIV-Kinshasa project and set up IPC measures to reduce mortality and morbidity.
- Mosul: to implement optimal IPC.
- Baghdad TB project: to improve the flow of the patients in the Ministry of Health (MoH) hospital where MSF is providing the support of MDR-TB treatment.

Some outcomes:

- HIV-Kinshasa: a decrease of MDRO cases (fewer positive haemocultures) was observed after several interventions, including reducing the number of IPD beds (from 56 to 43), increasing HH compliance (from 43% to 62%), rehabilitation of the external kitchen, initiation of dedicated materials for each patient with MDRO, staff sensitisation and daily follow-up of IPC practices, updating the line list and providing feedback to staff.
- Mosul: transmission-based precaution and compliance of HH was noted, and the IPC supervisor became more involved in the ABR and MDRO reports.
2.4. SIPCA SURVEY

Introduction

In March 2018, a new intersectional IPC Policy was adopted with a focus on three pillars: hand hygiene (HH), cleaning and disinfection (CD), and transmission-based precautions (TBP), with surveillance of SSI and catheter-associated bloodstream infections (CR-BSI) as priority for surveillance of HAI. To implement this new policy, a Stepwise Infection Prevention and Control Approach (SIPCA) was developed using WHO multimodal strategy. In October 2019, 30 projects were identified to conduct a follow-up survey after the first self-assessment conducted in September 2018.

Objectives

- Describe the overall level of compliance to IPC practices (in line with the IPC policy) across OCB projects, especially administrative measures: policy in place, IPC supervisor/manager, IPC committee functioning, staff training, surveillance (SSI, CR-BSI) and monitoring, staff safety/vaccination, environmental and engineering measures and personal protection equipment (PPE).
- Determine common successes, challenges and lessons learned in IPC activities across OCB projects.
- Provide broad recommendations and steps forward for IPC in OCB projects.

Method

The SIPCA survey is a self-assessment done by the project itself through the project medical referent (PMR), nursing activity manager (NAM) and/or IPC supervisor/manager. An email was sent to all Medical Coordinators (MedCo) (30 projects) containing the SIPCA guide in October 2019, with a reminder on 23 December 2019. The survey questionnaire was based on the KoBo toolbox platform, which can be accessed from the app on a smartphone device or computer.

Results

Out of 30 projects, only 11 (37%) completed the follow-up survey. In 2018, 17 out 26 facilities (65%) completed the first survey. This low response rate diminishes the generalisability of this survey to accurately reflect OCB’s overall SIPCA status in 2019. It may have been overlooked as it came during the Annual Review of Operations (ARO) period and there were some questions raised from the field on how to complete it.

However, from the 11 projects that reported:

- 90% of facilities (10/11) had an IPC supervisor/manager, with only Kenema having a certified IPC manager comparing to 71% (17/26) in 2018. Note that an IPC supervisor is required for any IPD facility (basic or full package): with 11-20 beds, a part-time IPC supervisor (50%); with 21-100 beds, a full-time IPC supervisor (100%). See section 3 below for more on IPC supervisors/managers.
- All facilities reported having an IPC committee, with 82% having an action plan, compared to 6/17 projects (35%) in 2018. Concerning distance between beds and bed occupancy rate:
  - 5/11 (45%) had less than 1m between beds (Castor, Timergara, HIV-Kinshasa, HIV-Conakry Matam and Masisi)
  - 3/11 (27%) reported having a high bed occupancy rate >90% (Doro, Kenema and Maiduguri)
  - 2/11 (18%) had more than one patient per bed (Masisi and Castor)

All these factors increase the risk for HAI transmission.

Implementation of the three IPC pillars:

- As in 2018, the strongest IPC pillars in MSF OCB projects were HH (50-74%) and CD (75%), with TBP being the weakest (61%). In 2018, the compliance to the HH pillar was 53%, CD was 36% and TBP was 31%.
- Alcohol-based hand rub (ABHR) was available at point of care in 100% of the facilities compared to 94% in 2018.
• Cleaning schedule in place in 100% of the facilities compared 94% in 2018.
• Six out 11 facilities were measuring CD compliance using fluorescent markers (55%) in 2019 against 12% (2/17) in 2018 although only 2/11 (18%) were measuring isolation compliance (50-74%) against 5/17 (30%) in 2018.

Surveillance of SSIs and catheter-associated blood stream infections (CR-BSI) remains a challenge:
• Among the five facilities that reported performing surgical activities (Castor, Masisi, Mosul, Bar Elias and Timergara), all (100%) register SSIs but only Castor measures the compliance to the SSI-Bundle with 50-74% compliance rate.
• Only Castor, Mosul and HIV-Kinshasa reported registering CR-BSI: in collaboration with the AMR taskforce, an Excel database was developed where results of cultures and antibiograms (haemocultures) were recorded but often not updated (e.g. HIV-Kinshasa).

From the 2019 SIPCA survey, 10 out of 11 facilities reported having access to a microbiology service (91%); unfortunately, this does not appear to be true. For example: Masisi, HIV-Conakry and Matam do not have access to bacteriology. The lack of access to microbiology services in some facilities is a barrier for HAI surveillance and appropriate patient management with a risk for increased antibiotic resistance (e.g. HIV-Conakry, Donka, Matam and Masisi).

3. IPC SUPERVISOR/MANAGERS

An IPC manager is a nurse, medical doctor (MD), epidemiologist or pharmacist with an IPC diploma (validated by the OC IPC advisor) and two years of professional experience in IPC in hospital settings.

An IPC supervisor is a nurse or midwife (or equivalent) with previous working experience working with MSF or other NGOs and experience in IPC in hospital settings.

From MIOs and IPC/IPC referent field visit reports, there are a number of facilities that do not have an IPC supervisor/or have one working part-time (50%) while they need one full-time, such as:
• General hospital of Masisi (225 beds): no IPC supervisor - needs one full-time.
• HIV-Kinshasa (41 beds and has a problem of MDRO): has a 50% IPC supervisor - needs one full-time.
• Iraq Basic Emergency Obstetric and Neonatal Care (BeMONC): has no IPC supervisor - needs one part-time (50%).
• Syria (16 beds with a support in surgeries): needs a part-time (50%) IPC supervisor.
• Ukraine (Zhytomyr), TB and MDRTB: needs a part-time (50%) IPC supervisor.
• Kouroussa (IPD Malaria project with 40 beds): has no IPC supervisor - needs a full-time one.

Currently OCB has IPC managers in Kenema, Lassa Fever Abakaliki, Nsanje (Malawi), Cox's Bazar (Bangladesh) and Bar Elias (Lebanon).

According to IPC MSF standards, in addition to an IPC supervisor, an IPC manager is needed if:
• A health facility has ≥ 101 beds,
• A health facility with 21-100 beds has neonatology (Advanced level 1-2), an intensive care unit (ICU), ortho surgery (Implant), burns unit,
• The facility is in an endemic area of a specific infectious disease (such as Lassa Fever); in case of (MDRO) nosocomial outbreaks,
• Or to cover several projects in the same country.

Thus, there is a need to have an IPC manager:
• In Castor (CAR): Comprehensive Emergency Obstetric and Newborn Care (CEmONC) 47 beds with MDRO, HIV-Bangui + Basic Emergency Obstetric and Neonatal Care (BEmONC) PK5 + 3 HC
• In Mosul (Iraq): reconstructive surgery (with internal fixation), 30 beds
In Kunduz (Afghanistan): Trauma care (with internal fixation)  
In DRC (MDRO HIV-Kinshasa and Masisi General Hospital with 225 beds)  
Gaza project: reconstructive surgery (with internal fixation)

4. OTHER ACTIVITIES

- Participation in pre-opening training of staff in Kenema and standard operating procedures (SOP) development  
- Provide advice to IPC supervisors/managers on different IPC aspects (Kenema, Abakaliki, Gaza, Bangladesh, Mosul, Castor, HIV-Kinshasa)  
- Briefing and debriefing of expatriates  
- Provide advice regarding construction designs for different projects for renovation/new construction (Kunduz, Kenema, Mosul, Bangladesh, Mali, Masisi)  
- Advice/validation on IPC supervisor/manager recruitment to pool managers  
- Training: First Line Medical Training (FLMT) facilitation in March 2019

5. LOOKING BACK AND AHEAD

5.1. LESSONS LEARNED IN 2019

- Absence of IPC supervisor/managers in some MSF OCB projects (Masisi, HIV-Kinshasa, Akkar Lebanon, Mosul) with surgical activities, complex patient management, problems with MDROs, etc.  
- Training of IPC supervisors/managers remains challenging.  
- Recruitment of certified trained IPC manager to cope with the request of projects/missions.  
- Few OCB hospitals conduct surveillance of SSI properly (only Arche-Burundi does so).  
- Surveillance of CR-BSI remained an issue in all MSF hospitals.  
- Gap in the IPC Unit at HQ level with delay in response to strategic/operational issues. The whole service was running with only one MIO covering the gap of the IPC referent for emergency issues and supporting projects in their usual IPC challenges related to implementation.  
- MSF adopted a pre-fab system called GAPTEK for rapid construction (e.g. Doro, Kenema) but this construction revealed many IPC-related issues, such as poor ventilation, increased temperature and numerous gaps in areas where the floor meets the wall.  
- No clear strategic decision on who must be leading, coaching and supervising staff from ancillary services as laundry, kitchen, sterilisation and the team of cleaners.  
- Poor compliance on TBP (e.g. lack of isolation room in IPD of HIV-Kinshasa, some isolation units without toilets, no dedicated materials, no isolation rooms with negative pressure for TB cases, no monitoring of compliance to TBP; TBP guideline not available).  
- The District Health Information System 2 (DHIS2) database is limited to only a few IPC indicators.  
- Low number of facilities that completed the second SIPCA survey.

5.2. PROSPECTS FOR 2020

- Continue development of IPC guidelines and protocols: bundles for SSI and CR-BSI, finalise the TBP guideline and monitoring tool through the IPC intersectional contact group.  
- Develop online or face-to-face training on the SIPCA evaluation tool for MedCos/PMR/NAM to improve their understanding of this tool.  
- Advocate and facilitate academic IPC training for IPC supervisors through the MSF Academy (Post-graduate Diploma/Master’s in Infection control at Stellenbosch University; ATB resistance at Anvers University or through LuxOR).  
- Initiate IPC Week at HQ for general training and exchange of experiences for national IPC supervisors and managers.
• Continue support to projects in implementing the new IPC Policy using WHO multimodal strategies through SIPCA (field visits and advice).
• Implementation and follow up of SSI surveillance programmes in other projects (Kabul, Masisi, Mosul, Bar Elias, Gaza, Pibor, P17 in Syria, Lower District project).
• Define the responsibilities of IPC supervisors/managers and other professionals concerning daily management of ancillary services.
• Create a pool of IPC professionals, with academic OCB requirements.
• Finalise the guideline on minimum requirements for internal fixations and ensure its implementation.
• IPC programme well implemented in all MSF-OCB projects (presence of IPC supervisor/manager, functioning IPC committee and guidelines/protocol available).
• Implement standard IPC training materials in different languages.
• Conduct the third SIPCA survey to assess improvements of IPC levels in all projects.
• Initiate IPC-related research in collaboration with LuxOR.
• Improve outbreak capacity response.

General recommendations for IPC in MSF-OCB projects

| Organisational aspects | - Recruit IPC supervisors/managers in all hospital projects as per guideline  
| - Train the IPC supervisors through MSF Academy and short training sessions (more specific IPC training which covers different aspects)  
| - Reinforce IPC committee functionality as per guideline (attendance rate, frequency of meetings, follow-up of recommendations and action plan).  
| - Avail all important guidelines and monitoring tools. |
| Built environment, material and equipment | - Respect at least 1.2m between beds in regular wards and 1.5m in isolation.  
| - Put in place dedicated space for a dirty room and sluice area in all hospitals.  
| - Bed occupation rate: level 4 (80-89%).  
| - Isolation room availability (single isolation with bathrooms) with at least one single room with negative pressure for air precautions.  
| - Adequate ventilation |
| Hand hygiene | - Reinforce the measurement of HH compliance  
| - Availability of HH control box in all projects for a proper simulation training |
| Cleaning and disinfection | - Emphasise the quality check of the dilution of detergents and disinfectants  
| - Implement the measurement of cleaning compliance with reflective surface marker (avail surface control set with UV light).  
| - Implement check for damaged surfaces and medical equipment |
| Transmission-based precautions | - Make available transmission-based precaution guidelines in English/French/ Spanish.  
| - Alert signs need to be put in place  
| - Implement measurement of isolation compliance |
| Prevention of SSI | - Implement a bundle for the prevention of SSI  
| - Measure the bundle compliance and give feedback  
| - Initiate surveillance of SSI in all facilities performing surgeries.  
| - Develop comprehensive tools (data sheet) to analyse SSI risk factors. |
| Prevention of CR-BSI | - Implement a bundle for the prevention of CR-BSI  
| - Measure the bundle compliance and give feedback  
| - Start surveillance of CR-BSI |
| Microbiology | - Provide facilities with full access to microbiology services |

At MSF’s post-operative care hospital in Mosul (Iraq), infection and prevention control (IPC) measures are implemented. One of the pillars of IPC consists in cleaning, sterilising and sanitising. Here, sterilised equipment is being prepared before being used for a surgery. © Mario Fawaz/MSF
LABORATORY SERVICES

34 laboratories active in 2019
2 new laboratories
1 laboratory closed
12 laboratories focused on HIV and TB
18 laboratories provided blood transfusion capacity

HIGHLIGHTS OF 2019

• Support provided to Lassa fever diagnostic-PCR testing – Abakaliki, Nigeria.

• Kinshasa, Democratic Republic of the Congo (DRC) – brand new laboratory building included a microbiology unit.

• Implementation of Advanced HIV disease (AHD) diagnostics remains high in the Médecins Sans Fontières (MSF) agenda, and innovations (including the recent Omega Visitect CD4 LFA) have been piloted with success.

• Challenges remain with the lack of prompt diagnostics for one of the most common AHD opportunistic infections (severe bacterial sepsis).

• The pilot implementation of Next Generation Sequencing (NGS), a technological tool that can provide information on resistance-conferring mutations across 13-anti-tuberculosis (TB) drugs within 24 hours, was successful in Mumbai, India, and the future strategy for NGS for MSF is being discussed.

• Challenges continued for the diagnosis of TB in children and pilot implementation of the use of stool samples in GeneXpert has yet to gain momentum.

• Turn-around-time for HIV viral load results in Ministry of Health laboratories continues to be long (+/-3 months in some cases in Beira, Mozambique).

1. OVERVIEW

A huge effort was made to have proper Material Transfer Agreements (MTA) signed between Médecins Sans Frontières (MSF) and external laboratories where MSF refers samples for testing (e.g. HIV genotyping, biochemistry/haematology or microbiology testing). This is an ongoing process whenever new external Laboratory sources are considered.

In 2019, there was a continued scale-up of Advanced HIV Disease (AHD) diagnostics (CD4, urine TB-Lipoarabinomannan (TB-LAM) and cryptococcal testing) in different country projects at different levels of health care service, including primary health care (PHC), outpatients/inpatients, and mobile outreach clinics. MSF’s role in diagnostics was to specifically demonstrate the feasibility of using these diagnostics even at PHC level, without the need for a laboratory.
MSF successfully presented its experiences of implementing AHD diagnostics at many meetings, conferences and even in high-impact, peer-reviewed journals. This has since resulted in many partners (Unitaid, Clinton Health Access Initiative (CHAI)) providing funds and supporting different countries to commence/scale-up implementation of AHD diagnostics.

Use of extra pulmonary samples for tuberculosis (TB) diagnosis (especially urine) in GeneXpert systems has increased across projects, and more experiences are being shared. However, non-availability of rapid diagnostic tests for drug susceptibility testing (DST) for medications used for drug-resistant tuberculosis (DRTB) treatment regimens has been a major barrier to effectively manage patients with DRTB. Next Generation Sequencing (NGS) technology is a promising tool and provides information on resistance-conferring mutations across 13 anti-TB drugs within 24 hours. This technology has been successfully been piloted by MSF in Mumbai among a patient cohort with complex resistant patterns of DRTB; this experience is being documented together with discussions for further strategic plans for NGS.

Challenges of long turnaround time (TAT) for HIV viral load (VL) results continued to be experienced as MSF handed over most of the testing services to local actors in some of the projects (e.g. Mozambique, Zimbabwe).

2. MAIN PROGRAMME ACTIVITIES

2.1. LABORATORY ACCESS

The table (Annex) presents the active laboratories either supported or run by MSF.

Of the 34 laboratories:

- 11 (32%) were strictly related to HIV and TB activities.
- Seven (21%) focused essentially on transfusion services related to malaria or maternity activities.
- 13 (38%) laboratories offered a broad panel of clinical testing for hospitals.
- Four (12%) laboratories offered specific diagnostics for more vertical activities such as Hepatitis C or non-communicable diseases (NCD).

2.2. PROJECT HIGHLIGHTS

Nigeria

MSF supported the diagnosis of Lassa fever in the Abakaliki project (Ebonyi State, Nigeria), with the help of an MSF laboratory technical expert in molecular biology. Testing to inform patient management was provided using the biochemistry point of care PICOLO-Abaxis test. MSF also reinforced biosafety by implementing a Glove box (Figure 1) in order to safely manipulate the samples.

Sierra Leone

For their Lassa fever activities in the Hanga Hospital-Kenema, MSF introduced the ReLASV® Antigen Rapid Test (Lassa Virus Nucleoprotein – Clade IV). This test was used for clinical guidance; diagnostic confirmation was performed by the Kenema General Hospital using the Polymerase Chain Reaction (PCR) method. The project also reinforced biosafety by introducing the portable Glove box with negative pressure (COY), the same model as was implemented in Nigeria.
In order to fine tune the diagnostics of sickle cell disease, MSF introduced the rapid test, Sickle SCANTM (BioMedomics/USA).

Central African Republic (CAR)

HIV and TB activities were reinforced by implementing GenXpert PCR equipment in the hospital in Bangui; HIV viral load, early infant diagnosis (EID) and tuberculosis can be done routinely.

Mozambique

After minor renovations in the “emergency laboratory” of the Beira Central Hospital and provision of equipment (PIMA CD4, Spotchem electrolytes) plus rapid tests and lab technicians, the “emergency lab” has since been operational, with impressively short turnaround times for results, especially for AHD screening.

In the primary health care site, Munhava PHC, the laboratory continued with usual activities (AHD screening, GeneXpert TB etc), and the structural damages from the 2019 cyclone Idai have been fixed. Challenges were still noted for HIV VL testing results at the government Ponta-Gea laboratory.

Zimbabwe

A government laboratory has been renovated in the border town of Beitbridge (Dulibadzimu) and a GeneXpert plus AHD diagnostics have been donated so that testing will be focused on both the migrant population, passing to/from South Africa, and the local community.

After more than six years, the Gutu project will close at end of this year. The Mutare project is ongoing with a big focus on non-communicable disease (NCD) screening and management (diabetes and hypertension) through use of point of care (POC) analysers.

Malawi

The Nsanje project has successfully managed to pilot the use of lay carders (also referred to as Lay Health Workers (LHW)) for AHD testing in more than eight PHC sites and this has greatly improved the number of patients screened for AHD in the district. The laboratory referent managed to successfully mentor and support the lay carders. This is a method that deserves to be implemented in different projects so as to increase the amount of screening for AHD.

At the Nsanje District Hospital, AHD diagnostics were introduced into the Rapid Assessment Unit (RAU), which is a section of the emergency department. This improved the time-to-results for AHD screening and subsequent time to management of patients. This method deserves to be implemented in other district and or tertiary hospitals as time-to-results for AHD is crucial. A capitilisation must be planned for lessons learnt as this project comes to an end.

HIV VL testing in the district Ministry of Health (MoH) laboratory has been sustainably continued and results have an acceptable turnaround time (TAT) of 15-to-19 days in 2019. The Nsanje project will close at the end of 2020.

India (Mumbai DR-TB)

An MSF-led Next Generation Sequencing (NGS) pilot implementation study has been completed in Mumbai at the JJ Laboratory. While many challenges were initially faced in getting optimal NGS results, after optimisation of methods and by implementing various corrective measures, more reliable results were generated in later batches. NGS’s real added-value is in routine management of DRTB patients, especially for cohorts with complex disease, as in Mumbai. Abstracts for this study have been submitted to the TB Union conference and write-up and further data analysis is ongoing, which will help to inform future strategy of NGS.

The small and efficient MSF-supported Shatabdi (MEW) laboratory continued to receive high volumes of sputum samples for testing (+/- 1000 sputum samples a month with up to 20% multi-drug resistant positivity) on the two GeneXpert platforms (16 module MSF GeneXpert plus four module MoH GeneXpert). The Biochemistry and Haematology laboratory section is also getting busier. However, there is a need to replace the current
biochemistry manual analyser (Autochem Ingenious - Arkray) with a more automated platform due to high volumes of tests, most of which (90%) were outsourced to private laboratories due to limited testing capacity in the MSF platform.

Plans are in place to pilot use of stool samples in GeneXpert for TB diagnosis in children.

**Ukraine**

The Zhytomyr project supported the MoH TB Microbiology and clinical laboratory. In parallel, MSF is building a new biosafety level three laboratory.

### 3. OTHER ACTIVITIES

#### 3.1. FIELD VISITS

Visits to field projects had varied purposes: from supporting overall diagnostic activities for critical gaps, to improving good laboratory practices and strategies, to supporting ongoing laboratory-related studies. Visits were made to Malawi, Mozambique, Democratic Republic of the Congo (DRC), Central African Republic (CAR), Lebanon and South Sudan. Field visits to Afghanistan were cancelled due to security issues.

Laboratory initiated studies included:

- “Multi-country diagnostic evaluation of the performance of Omega Visitect CD4 LFA test for Advanced HIV Disease screening” was published in *PlosOne*.
- “Multi-country experiences in the implementation of Advanced HIV disease diagnostics” was published in *The Lancet*.
- “Feasibility for the implementation of Next Generation Sequencing for DR-TB management in Mumbai, India” has just been completed and data analysis and write-up are ongoing.

#### 3.2. TRAINING

OCB participated as facilitator in MSF internal Laboratory training, open to all operational centres:

- MSF Laboratory workshop in Vienna, Austria
- MSF Laboratory workshop in Nairobi, Kenya, led by Operational Centre Amsterdam (OCA)

MSF OCB national and international laboratory specialists (four in total) attended these workshops.

#### 3.3 EXTERNAL LABORATORY ASSESSMENTS

The assessment of external microbiology laboratories was a continual process, for example, in Kabul, Afghanistan. Unfortunately, the level there was not satisfactory and MSF decided not to use it. Further discussions are happening in order to have access to satisfactory microbiology there.

### 4. LOOKING BACK AND AHEAD

#### 4.1. LESSONS LEARNED IN 2019

- The successful experience in Malawi showed that lay carders can be deployed within PHC sites to conduct screening for AHD (PIMA CD4 or Visitect, CrAg, urine TB-LAM). More efforts are needed to scale up this model to other PHCs.
- Innovations in diagnosis for severe bacterial infections are needed as many MoH laboratories have poor quality standards for blood cultures.
13. LABORATORY SERVICES

- In general, specimen transport remained a real challenge. Specifically, microbiology sample transport require temperature-controlled conditions and the specimens have a short viability before being processed: this required efficient and rapid logistics in order to have quality results.

- Haematology blood testing controls were very difficult to supply due to short shelf life (four months). A system with MSF Supply has been put in place to avoid field rupture.

- The quest for AHD diagnostics has led to the placement of AHD tools in different health care level settings, and ensuring their utilisation. The success of this initiative was shared in a publication by MSF in *The Lancet HIV*.

### 4.2. PROSPECTS FOR 2020

- Improve access to microbiology laboratory services as part of the holistic approach to HIV-TB patients as well as surgical and non-surgical interventions for acute and chronic trauma.

- Improve data collection for laboratory results by implementing WHONET in all projects with access to microbiology laboratories.

- Implement MSF OCB laboratories in Kabul (Afghanistan - intersectional), Gaza (Palestinian territories), and Kinshasa (DRC).

- Assess available microbiology laboratories in Mosul (Iraq), Conakry (Guinea), Bujumbura (Burundi), Harare (Zimbabwe) and Beira (Mozambique).

- Outsource laboratory services where possible: Ukraine, CAR (Operational Centre Paris).

- Collaborate with Unitaid’s framework to support further scaling-up of AHD diagnostics (especially the new Omega Visitect CD4 LFA) into more countries to ensure rapid decentralisation of screening activities and task shifting for testing.

- Implement use of stool samples for TB diagnosis using GeneXpert systems.

- Document lessons learned from the closure of the Nsanje Malawi project (nearly 10 years), as there is a high possibility of non-sustainability of many crucial activities currently supported by MSF. Also, the Gutu Zimbabwe project will close in 2020.

- In 2020, the COVID-19 epidemic has been spreading around the world, and has reached high TB and HIV burden countries, already impacting access to care for TB and HIV patients. We are already seeing a massive reduction in testing numbers. MSF is focussed on ensuring continuity of TB and DRTB services despite the challenges created by COVID-19, and a lot of efforts are being done in collaboration with project teams.
13. LABORATORY SERVICES

The MSF-supported laboratory services in Matam health centre, Conakry where all HIV and TB-related tests are performed include one plate-form Bio centric machine with two extractors for routine viral load testing and two GeneXpert machines. The GeneXpert machines also test for TB, drug-resistant TB and are used for Early Infant Diagnosis (EID) of newborns suspected of having HIV. © Albert Masias/MSF
LASSA FEVER

HIGHLIGHTS OF 2019

• First year anniversary of Lassa fever (LF) project in Abakaliki, Ebonyi State, Nigeria, with all planned (temporary) isolation wards open and running.

• Considerable increase in detection of LF suspected cases in Abakaliki, suggesting a better awareness of the disease.

• Virology Unit Laboratory in the Federal Teaching Hospital of Abakaliki (AE-FUTHA), Abakaliki for the first time fully autonomous in detecting LF by polymerase chain reaction (PCR).

• Launch of mental health activities for LF patients and their caretakers in Abakaliki.

• First cases admitted to the LF ward of Hanga paediatric hospital (MSF), Kenema, Sierra Leone.

1. OVERVIEW

Lassa fever (LF) is a zoonotic, acute viral illness, caused by an arenavirus, transmitted to humans by a specific type of rat. The disease is endemic in large parts of West Africa, with Nigeria and Sierra Leone being the most affected countries. The disease is estimated to cause around 100-300,000 cases and 5,000 deaths each year, though those numbers are believed to be severely underestimated, mainly due to a lack of awareness, lack of detection and lack of reporting of the disease. It is a disease that can provoke severe illness (including organ failure, mainly kidney failure); overall 20-30% of hospitalised LF patients die.

Médecins Sans Frontières (MSF) was most involved with the disease in two projects: the Hanga paediatric hospital in Kenema, Sierra Leone and the LF project in Abakaliki, Ebonyi State, Nigeria.

The Nigerian project was opened following an emergency intervention in response to a LF outbreak in the area in February-May 2018. The project focused on integrated LF care, supporting the Federal Teaching Hospital of Abakaliki (AE-FUTHA) with the first full year of the project completed in 2019. In 2018, MSF’s main priority was to increase staff and caretakers’ safety, through reinforcement of
general infection prevention and control (IPC) and water and sanitation (WASH) measures; better community awareness and detection; and more rapid isolation of suspected cases. In 2019, the focus changed to LF case detection and management, including psychosocial care for patients and their relatives. With essential LF management activities running more and more systematically centrally, the new focus was to work on better detection of LF cases in the periphery.

The set-up of the project in Sierra Leone was rather different, providing a complementary experience in managing LF for MSF. The project in Kenema focused on paediatric care, including the care for malnourished children. As the project was situated in an area considered to be highly endemic to LF, the challenge was to provide good paediatric care in safe conditions. In a highly endemic area, the focus of the project was on knowing how to identify, temporary isolate and manage cases in a temporary isolation ward (10 beds – with four intensive care unit (ICU) beds), while maintaining regular activities.

In Nigeria, the number of LF cases was increasing each year with higher and longer peaks in peak season. By contrast, in Sierra Leone there was a steep decline in cases (5-10-fold). However, the rise in case fatality rate (CFR) in the country suggested that this decrease may be mainly a sign of a reduced detection.

2. MAIN PROGRAMME ACTIVITIES – LASSA FEVER PROJECT, ABAKALIKI, EBONYI, NIGERIA

2.1. LF CASE DETECTION – CLINICAL SCREENING AND LABORATORY CONFIRMATION TESTING

A total of 222 patients were clinically suspected to suffer from LF in AE-FUTHA in 2019, as compared to 143 in 2018. Most of those cases were, not surprisingly, detected in the first quarter of the year, corresponding to the LF season in the area. This increased number of identified suspected cases may be partially explained by better detection of the disease. Since the launch of the project a lot of effort was put into increasing awareness of the disease for health care staff, and to a lesser extent, affected communities through awareness sessions and training. To this was added in 2019 the introduction of a new screening tool, using a more sensitive case definition (as recommended by the national Centre for Disease Control (CDC)) and more organised and systematic screening. A specifically designed and staffed “triage area” was established at the hospital’s main entry point. A true increase in LF cases should not be excluded though, as this would follow the country's trend.

All LF suspected patients in AE-FUTHA benefitted from a polymerase chain reaction (PCR) test for confirmation. The turnaround time of this test improved considerably in comparison to 2018, with an increasing amount of test results available within 24 hours. The proportion of confirmed cases vs. all suspected cases was reduced by about 15%. This is a good sign for a disease that presents with very non-specific signs and symptoms, suggesting a higher tendency to test due to better awareness of the disease.

In 2019, the AE-FUTHA LF laboratory was fully autonomous since it was supported by the nation’s CDC for reagents and primers and training, serving not only Ebonyi state but other southern states, thereby increasing detection of LF throughout the south of the country. Besides molecular testing, the laboratory offered general clinical laboratory testing (biochemistry) for LF patients, in order to protect the general hospital laboratory that lacked LF bio-safety measures.

MSF provided a full-time laboratory technician on the ground to support the Virology Unit’s (VU) laboratory team, especially for bio-safety measures including the installation of correct work flows to increase the staff's safety and reduce the risks of contamination of samples. Measures facilitating safe sample collection, packaging and transport (using a specific “pick-up” system) were installed and reinforced, all contributing to a more swift and safe management of samples. The installation of a new generator permitted a more continuous power supply, permitting better sample testing and avoiding cold chain breaks.
2.2. RAPID, TEMPORARY ISOLATION OF LF SUSPECT PATIENTS

Great efforts were put into the creation and staffing of both temporary isolation wards (OB1 and OB2), permitting a rapid isolation and management of suspected cases, reducing the risk of exposure to the virus by staff working in the regular wards and providing specific LF treatment more rapidly to patients.

2.3. MEDICAL CARE FOR LF PATIENTS

In 2019, 58 patients were laboratory confirmed to suffer from LF. An additional five were treated as LF cases without a positive test result, based on clinical signs and symptoms (probable cases). Of these, 43 were admitted to the VU, where they received treatment, consisting of Ribavirin and supportive treatment/care, including dialysis as needed; this treatment is considered the standard for LF. Unfortunately, 15 patients died before laboratory results were available and before transfer to the VU for initiation of specific treatment.

As MSF took over the financial burden from patients, covering cost for treatment, hospitalisation, and food, all patients had access to care, regardless of their socioeconomic status.

Compared to the previous year, patients who were classified as “suspected LF cases” were temporarily isolated in “Observation Bays” (OBs), sampled and, if they tested positive, they were transferred to the VU more rapidly than in the past. This was thanks to many factors including a better information flow between departments and simplification of the decision path. The average length of stay in the OBs was around four days for the paediatric and Gynaecology/Obstetrics (GYN/OBS) wards and three days in the adult OBs.

The improvements in patient flow and better use of the temporary isolation areas led to a safer and less overloaded working space. Patient load never exceeded the existing bed capacity in either of the temporary isolation rooms.

The overall Case Fatality Rate for Lassa fever patients was rather high in 2019 (nearly 40%). A thorough analysis of possible causes has not been made but anecdotal evidence (reports of clinical syndromes in patients) suggested that many patients arrived in rather late stages and/or with severe forms of the disease. However, other causes, including the lack of timely initiation of treatment should be considered as well.

2.4. MENTAL HEALTH SUPPORT TO LF PATIENTS, THEIR CAREGIVERS AND SURVIVORS

Beginning in the 3rd quarter of 2019, MSF provided mental health and psychosocial support to inpatients of the LF wards, their caregivers and survivors. Acutely ill LF patients were often physically too unwell to engage in any sessions, but their caretakers and family members benefitted from mental health support during the time of admission of a loved one or following the death of a loved one.

At discharge, patients benefitted from a comprehensive assessment (using standardised tools) of their mental health status. Those assessments showed that common symptoms included intrusive thoughts, flashbacks, lack of concentration, decreased appetite, lack of energy and fatigue. These are known symptoms of haemorrhagic fever and they result in increased rates of depression, anxiety and post-traumatic stress disorder (PTSD).

Rather surprisingly, none of the 18 patients who were assessed reported being stigmatised post-discharge, although some reported not disclosing their LF diagnosis when they returned home.

Internal workshops, allowing continuous training, were provided for the mental health team. Topics included grief, anxiety, depression, and suicide risk assessment. The mental health team did, in turn, provide training to other medical staff of AE-FUTHA, focusing on communication skills and breaking bad news. The MSF team also started collaboration with both the Psychiatric and Social Work departments of AE-FUTHA, leading to possible future cooperation in the domains of counselling and advocacy.
2.5. AWARENESS AND COMMUNITY ENGAGEMENT

Health talks with patients and their relatives as well as rapid assessment methods (through focus group discussions) in the affected communities, permitted the collection of information about health seeking behaviour related to LF.

The health promotion team managed to provide health talks to all patients (those capable of receiving information) and their family members/caretakers at admission into the VU. LF patients and family members were continuously followed up by the Health Promotion (HP) team, throughout their stay in the VU, which facilitated continuous dialogue, giving room for people to raise their concerns and questions and feel more empowered.

Besides those targeted health talks, more general sensitisation sessions to both staff and patients/the community were launched at the start of the project and remained a key activity throughout the year. In 2019, close to 55,000 sessions were provided – around 30,000 in AE-FUTHA - all services – and around 25,000 within the affected communities.

The creation and introduction of “patient discharge certificates” helped to facilitate reintegration of survivors into their communities. Patients who were discharged from the VU received a discharge kit, a debriefing, as well as follow-up visits at home by a multidisciplinary team consisting of a community health staff member and mental health professional, to facilitate their reintegration in their home environment. Mediation of burials was performed for over 50 burials.

The team also provided training sessions to Ministry of Health (MoH) staff, mostly those belonging to the state’s disease surveillance teams, but as well to few other local partners. Training sessions included theory of and tools and methods used in health promotion (HP), case examples of HP activities in the context of Viral Haemorrhagic Fevers.

Mapping of community actors and contacts was continued to lay the ground for future collaborations.

2.6. INFECTION PREVENTION AND CONTROL AND ENVIRONMENTAL HEALTH ACTIVITIES

The main reasons for MSF’s project in Abakaliki were the lack of trained and skilled human resources, lack of safe procedures in a haemorrhagic fever context, lack of personal protective equipment (PPE) and general lack of awareness and/or stigma related to LF. Great efforts were put into increasing awareness, training and supervision of staff and the installation of clear bio-safety measures. They included thorough hand hygiene, correct use of PPE, and cleaning and disinfection procedures.

Compliance to those measures were continuously monitored through direct observation. Weekly and monthly IPC “audits” and feedback tools were being introduced, as was a quarterly monitoring tool, allowing the systematic detection of gaps in IPC practice.

Compliance with bio-safety measures seemed to have improved though some gaps were still observed, mainly by highly skilled staff when performing major invasive procedures. Collaboration with the hospital’s IPC committee were intensified, including the creation of a common IPC action plan and the organisation of training.

A stricter visitor/caretaker policy was slowly being implemented and the construction of a permanent caregiver area was finalised in 2019, permitting caretakers to stay in a safe environment in between their visits to isolated family members.

The water and sanitation team (WASH) reinforced the demarcation of “risk zones” in the isolation areas, further facilitating safer movement of patients, staff and materials. WASH facilities were improved for decontamination and washing of items (including drying places for reusable PPE), management of wastewater, other liquids and solid waste. The WASH team also supported state environmental health teams to perform safe burial practices and facility/building decontamination. New standard operating procedures were created for those different...
activities. Skills and experiences were shared with other WASH teams from newly affected regions in the country. Outstanding waste from the previous high season was managed according to protocol.

In 2019, seven health care workers contracted LF, two of whom were AE-FUTHU staff (with one reporting a clear incident/exposure event); this number was less than in previous years (11 in 2018). All infections occurred in the first quarter of the year, the peak season for LF. Supervision was initiated and additional awareness sessions were provided, mainly at the three entry points of the hospital, after the observed infections. Human resources were added as gaps in HR were observed, allowing a reduction in workload and safer work practices; training in IPC and safe work practices were reinforced.

3. LF MANAGEMENT OUTSIDE OF NIGERIA: HANGA HOSPITAL, KENEMA, SIERRA LEONE

In Sierra Leone, a known endemic country, few LF cases were reported until November 2019, when a (nosocomial) cluster of three cases occurred in Masanga hospital, Tonkolili including three health care workers and possibly two patients.

Around 10 days later, the MSF paediatric hospital in Hanga prepared to receive LF cases, and reported its second (confirmed) case although there was no known epidemiological link with the above cluster.

In total, Hanga hospital reported only two confirmed LF cases in its paediatric patient population. There were 42 patients temporarily admitted to the LF ward with an initial suspicion but only two were confirmed by testing performed in the neighbouring GRH of Kenema.

4. OTHER ACTIVITIES

4.1. RESEARCH AND DEVELOPMENT

A first study proposal is being reviewed: a prospective cohort-study in cooperation with AE-FUTHA, the Nigerian CDC and international research institutes, looking at the clinical and laboratory evolution of LF, by involved partners and ethics boards.

There were advancements of the LF “Blueprint” (led by the World Health Organization (WHO)), including advancements of the pre- and clinical trials with candidate Lassa virus vaccines.

5. LOOKING BACK AND AHEAD

5.1. LESSONS LEARNED IN 2019

- One of the biggest challenges in AE-FUTHA remained the high turnaround times for PCR-diagnostic testing, as well as the limited number of PCR tests per patient. This was mainly caused by a relative scarceness and high price of reagents, leading to batching of samples. High turnaround times led to delays in diagnosis and timely appropriate management. Delays also led to difficulties in the management of corpses from people deceased with suspicion of LF, greatly impacting the wellbeing of relatives. Anecdotic evidence suggested that awaiting a test result was perceived as particularly stressful by both patients and their relatives. Those who were not confirmed as positive for LF reported that their long waiting time in isolation was an unnecessary and inhumane experience. This reduced community understanding and acceptance of the management protocols. Long waiting times for testing, together with the community tendency to deny the diagnosis of LF led to difficulties in convincing families to opt for a “safe burial” without a confirmatory PCR test.

- Despite the huge efforts put into facilitating a safe working environment in different key wards of AE-FUTHA, sub-optimal compliance to the recommended bio-safety measures was still observed.
Increased understanding and trust between partners as well as closer cooperation between MSF’s IPC and WASH teams and the AE-FUTHA IPC committee may lead to further improved compliance.

- The introduction of a new (semi-structured) patient file was discussed with the AE-FUTHA management and data collection staff. There was a willingness to introduce this new patient management and data collection tool that would permit a more systematic and simplified collection of clinical data, but its introduction keeps being delayed.

- Despite financial barriers to LF care being reduced by MSF, some patients still expressed difficulties to attend follow up visits after recovery due to the financial burden of transport.

- Since a glove box provided by MSF is rather small, not all clinical laboratory testing that was initially planned for (besides the functional biochemistry testing, haematology testing was planned), could be launched. The use of a larger size glove box could solve this problem.

- Better cooperation between partners involved in providing HP for LF was needed as conflicting messages were, at times, given to the community. A comprehensive strategy for HP is available at federal but not in state level, and there are very few HP tools.

- As MSF is closely cooperating with AE-FUTHA, continuous discussions are needed in order to arrive to a common vision and interpretation of existing guidelines and standard operating procedures (SOP) on LF. Since so little evidence exists on the disease and guidance is mainly based on “expert opinion,” recommendations have a tendency to change over time. This complicates the task for AE-FUTHA’s LF management team.

**5.2. PROSPECTS FOR 2020**

- In order to overcome the still relatively long turnaround times for PCR testing, MSF is planning to support the creation of a larger (buffer) stock of reagents, hopefully leading to less hesitancy to test single samples in a timely matter.

- The planned descriptive study of LF, its clinical and laboratory evolution, will hopefully be launched before the next peak season.

- With the essential services, including the VU and the Lassa laboratory running more autonomously and smoothly, and most cases of LF occurring among staff and patients in peripheral health structures, there are plans to increase LF awareness and detection in patients from the periphery. An intervention strategy focusing on strengthening support to and referral from peripheral health structures was discussed and will probably be implemented in 2020. Another international non-governmental organisation has been identified as a potential partner to help organise a referral system and increase the coverage of sensitisation within the affected communities. Within the hospital the community medicine department has been identified as a counterpart to ensure continuous sensitisation there.

- We hope for closer cooperation among the different domains of outreach: patient pick-up, contact tracing and follow-up, data collection, analysis and sharing.
15. MALARIA

1. OVERVIEW

A total of 311,545 patients have been treated by Médecins Sans Frontières (MSF), with another 426,300 treated in projects with MSF support in Burundi (Indoor Residual Spraying (IRS) project) and Venezuela (Bolivar project).

A total of 38,171 patients have been treated as having severe, confirmed malaria. We know, however, that the case definition of severe malaria is not standardised among all projects and often reflects all hospitalised patients with malaria. As such, the real number of severe cases is probably lower.

There were 6142 confirmed cases of malaria in pregnancy that have been diagnosed and treated by MSF.

While the number may be underestimated, the low number of neonatal and congenital malaria (four in total, from Bangui and Maidiguru) indicates that this is a marginal problem.

KEY FACTS IN 2019

- Increased awareness about the potential for appropriate prevention, with growing investment in the entomological aspects of malaria.

- The continued Indoor Residual Spraying (IRS) project in Burundi confirmed the feasibility and effectiveness of large-scale interventions focusing on prevention.

- Operational Centre Brussels (OCB) continues to re-engage in vertical community case management of malaria, but the implementation of integrated community case management has been delayed.

- The project in Cambodia on the management of antimalarial multidrug resistance has been closed without the identification of another project that could maintain and further develop this experience.

- Whilst the data availability due to the roll-out of the District Health Information System (DHIS2) is a big step forward, capitalisation of specific projects and strategies, operational research and communication remained limited.
The projects with more than 10,000 confirmed malaria cases are shown in Table 1.

Several projects reported an RDT (rapid diagnostic test) positivity rate above 60% (Bili at 85%, followed by Guinea, Cameroon, Burundi, Central African Republic (CAR) and Nigeria) – indicating the need to boost investment in malaria prevention.

The number of bed nets delivered through the supply centre totalled 39,424 – this may be an underestimate as locally purchased or donated bed nets may have also been distributed.

2. MAIN PROGRAMME ACTIVITIES

2.1. PROJECTS WITH A SPECIFIC FOCUS ON MALARIA

Burundi: In September 2019, MSF, in collaboration with the Burundian National Malaria Control Programme, commenced an indoor residual spraying (IRS) operation in Kinyinya health district, Ruyigi Province, to protect approximately 300,000 persons at-risk for malaria due to a gap in effective malaria prevention measures during a country-wide surge of malaria. Support to health facilities has been intensified.

Cambodia: The project in Preah Vihear and Stung Treng provinces in Cambodia (areas characterised by resistance to artemisinin and multidrug antimalarial resistance), which had been launched in 2015 to gain experience in an area with artemisinin resistance, came to an end in 2019. The project aimed at elimination of *P. falciparum* malaria, a threat posed by the spread of the multidrug resistant strains. The project was based on several active case-finding strategies combined with intensified passive case detection, including innovative diagnostic tools (polymerase chain reaction (PCR), highly sensitive RDT). The last screening rounds among people with risk exposure yielded very few cases. In 2019, only one *P. falciparum* case was identified among the 951 screened, coming very close to elimination. This project was seen by many actors as a very relevant contribution to elimination strategies in multidrug resistance areas; the results have been widely shared in meetings, conferences and 12 publications over the course of the project. Capitalisation and preparation of further publications are ongoing. The project ended in March 2019 and its activities have been integrated into a larger project managed by the NGO Malaria Consortium, with light MSF support until the end of 2019, ensuring continuity and avoiding a resurgence of malaria. The vast majority of the remaining cases are now *P. vivax*, which is not affected by artemisinin resistance and not in the scope of the project.

Venezuela: The malaria control project in Bolivar state addressed a strong surge of malaria cases in mining communities, with around 20-30% of the cases caused by *P. falciparum*. The MSF contribution to the national programme was mainly providing commodities, with a regular supportive presence (health promotion, feedback to providers) at the diagnostic points where microscopists from the national programme diagnosed and treated malaria cases. Direct patient support in the primary care clinic has been intermittent, depending on acceptance by authorities. Insecticide-treated bed net and hammock net distributions have been organised. The nearly complete lack of commodities due to the economic and political isolation of the country paralysed malaria control efforts before MSF’s support started, leading to the strong surge. It can be reasonably assumed that MSF’s support contributed significantly to the downward trend in cases throughout 2019. Moreover, this malaria-specific intervention proved to be a meaningful way to be accepted in the country and the area.
2.2. STRATEGIES

Community Case Management: Projects in Sierra Leone, Guinea and the Democratic Republic of Congo (DRC) include community case management and malaria treatment combined with nutritional screening and/or health promotion.

The ambition formulated in 2018 to implement integrated community case management (iCCM) could not be realised, leaving Operational Centre Brussels (OCB) behind other international actors and national programmes. iCCM is the term for a standardised strategy supported by the World Health Organization (WHO), UNICEF, many national malaria control programmes and funding agencies to offer integrated management for fever cases among children from three months to five years of age, offering case management for the three “killer diseases” (malaria, diarrhoea, pneumonia) with an algorithm adapted for community health workers. Renewed attempts are foreseen in 2020.

The diagnostic approach remains mainly RDT-based. MSF gradually introduced an alternative RDT (pan Parasite Lactate Dehydrogenase (pLDH) test) in high transmission areas because of its superior specificity, given that the standard histidine-rich protein 2 (HRP2)-based test has a specificity as low as 60% in these areas. There was, however, a setback as monitoring of the performance of this RDT, including OCB’s study in 2018 in Bili, showed a deteriorating performance. Later, this proved to be due to quality degradation at the manufacturing site, leading us to return to the HRP2 test in most settings.

Pre-referral treatment for children with danger signs, from community to health care facilities, is now based on rectal artesunate. This life-saving drug has been undervalued in MSF, but validated by MSF since the end of 2017, six months after Global Fund validation. Its use and outcome remain largely undocumented and deserves more attention in 2020.

Plasmodium vivax management. Due to the projects in Chhattisgarh (India) and Bolivar State, OCB is more involved in P. vivax treatment for which there are innovative diagnostic and treatment tools on the horizon.

3. LOOKING BACK AND AHEAD

3.1. LESSONS LEARNED IN 2019

- Large-scale malaria prevention through vector control is feasible and effective, as demonstrated by the indoor residual spraying (IRS) project in Burundi.

- Despite the wide acceptance of iCCM by other actors because of its superior impact on childhood mortality compared to vertical malaria community case management, iCCM continues to meet resistance within OCB.

- Participation in the Cambodian project provided experience with multidrug resistance management, elimination strategies, community engagement and new diagnostic tools.

- Low investment by OCB in direct primary care projects limits OCB’s involvement in malaria management and control strategies, but also the opportunity for advocacy and operational research (OR).

- Experience with service delivery models and specific issues such as pre-referral management and prevention of malaria during pregnancy remain insufficiently documented, limiting opportunities for medical malaria advocacy by OCB.

3.2. PROSPECTS FOR 2020

- Further investment and support will be needed to achieve good quality of context-adapted community case management, including iCCM, as an essential strategy to ensure access and child mortality reduction.
• If the position of the medical department to re-engage in primary care is translated into projects with direct involvement in primary care, OCB can again become an actor with experience in service delivery models aiming at access to care, with a relevant advocacy component.

• Re-engage in emergencies, making use of more aggressive MSF-validated strategies, including mass drug administration in case of an unacceptably high mortality.

• Become involved in pilot or OR projects in innovative chemoprevention strategies such as post-discharge management addressing the high mortality post-hospitalisation of children with malaria and intermittent preventive treatment for infants (IPTi).

• Further rollout of bed nets with piperonyl butoxide added to the pyrethroid to overcome insecticide resistance ("PBO-nets") and closely follow-up developments regarding the new generational bed nets containing new classes of insecticides.

• In case the operational portfolio includes projects with a malaria component in areas where \textit{P. vivax} is important, OCB can engage in the piloting of innovative diagnostic and treatment tools.

• In line with operations, a new project to maintain and further develop experience with antimalarial multidrug resistance management should be identified, after the closure of the mission in Cambodia this past year and the planned closure of the Chhattisgarh project in India, which would have been the obvious option.
1. OVERVIEW

Medical technology is becoming more available in low resource settings. This reinforces the need of medical organisations to ensure quality products are used. The Biomedical Services Unit of Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) takes on this challenge together with support on local service contracts and guidance on maintenance and the use of the equipment. In order to do so, local human capacity is being built through centralised training weeks, on-site trainings and online courses.

Furthermore, a strong network with multinational manufacturers, suppliers and local distributors is being monitored and improved, leading to global service level agreements and international purchasing contracts. To ensure quality and safety in the future, MSF OCB will have to invest more efforts in asset monitoring and documenting equipment servicing.

2. MAIN PROGRAMME ACTIVITIES

2.1 LOCAL PROCUREMENT AND QUALITY ASSURANCE

The importance of having a quality framework for local procurement of medical equipment has increased significantly with a partial shift of the operational investment towards countries with a stronger regulatory network. In those countries, the availability of medical equipment and technical support is usually much greater and the market is often closed to import.
In 2019 there were 26 missions reporting their local pharmacy purchases (new entries in 2019 are underlined):

- Cell 1: Burundi, Central African Republic (CAR), Democratic Republic of the Congo (DRC), Guinea
- Cell 2: Bangladesh, Egypt, Nigeria, Balkans, Haiti
- Cell 3: Indonesia, Kenya, Sierra Leone, South Sudan
- Cell 4: Afghanistan, Pakistan, Ukraine
- Cell 5: Bolivia, Brazil, India, Mozambique, Venezuela, Zimbabwe
- Cell 6: Iraq, Lebanon, Palestine, Turkey/Syria
- Emergency Pool: none

This resulted in a total of 1523 medical device items requested (vs 943 in 2018). From these, a total of 546 medical equipment items was requested (vs 175 in 2018). These were mainly laboratory items (232) and the rest divided amongst equipment for electromechanical items (131), sterilisation (38), anaesthesia (28) and medical imaging (17).

2.2. PROCUREMENT AND QUALITY ASSURANCE

MSF Supply had a number of changes in standardised equipment requiring the strategic buyers to invest a considerable amount of time into ensuring a smooth transition:

- Replacement of the Becton Dickenson FACSCount machines with the new FACSPresto has led to a new type of “leasing contract.” This required a full backtrack of all equipment that was deployed in the field.
- Support was given to the Access Campaign and the Integrated Diagnostic Consortium on Cepheid real-time PCR equipment (GeneXpert System) for reviewing the Terms and Conditions of the supply contracts.
- A common Service Level Agreement was accepted across all supply centres of MSF for the main haematology platform used in the field.

Follow-up with suppliers at local level remains one of the biggest challenges for use of medical equipment in the field. A continuous increase in local procurement will require a resourceful and flexible approach to manage this issue. For example, around 16 Service Contracts were reviewed in 2019, some were for MSF Supply at international level but the majority were field service contracts.

2.2. TECHNICAL SUPPORT

Technical support is mainly situated in the logistics department of MSF OCB. Creating maintenance policies and writing standard operating procedures about how medical equipment should be managed is a core responsibility. Each mission is to make medical equipment documentation readily available.

A strong accent was given last year to increasing the competencies of the biomed pool of talent (dedicated biomedical MSF’ers), thereby improving the technical support in our projects.

At the beginning of 2020 we had a total of 25 technical colleagues in the field:

- 1 Regional biomedical referent (Central African Region, a first for OCB)
- 1 Mission biomedical referent
- 2 Biomedical managers
- 3 Biomedical specialists
- 2 Biomedical supervisors
- 16 Biomedical technicians

In the other MSF projects, there is no dedicated biomedical staff to manage the medical equipment.

For after-sales service, 45 requests for return of broken medical equipment through headquarters were received, compared to 40 in 2018. However, quite a lot of repairs were not counted because they occurred in the field and were handled by MSF staff or external service providers.
Equipment needing service contracts after expiration of warranties were listed for future follow-up.

Our three mobile colleagues, one of whom specialised in imaging equipment, made field visits to seven missions (Iraq, DRC, Lebanon, Venezuela, Gaza, Sierra Leone and Nigeria) and spent a total of 175 days in the field.

2.3. TRAINING

Two seven-day biomedical training courses (English/French) were set up in collaboration with all sections in Brussels at the Espace Bruno Corbé (OCB training centre). They remained the core training modality for biomedical technicians from the field, although many efforts were being made to increase the online possibilities and communities of practice.

Closer contact with local distributors has also opened up the possibility of technical training in the field. For the biomedical technicians from Afghanistan, Lebanon and Pakistan, this resulted in installation and maintenance training on FujiFilm Sonosite (M-Turbo) and BBraun (Perfusor compact) in Dubai in February 2019 and Sysmex (XP300) in Pakistan in April 2019.

3. OTHER ACTIVITIES

There was an upload of protocols for user and technical preventive maintenance as well as operator and service manuals to Sherlog. They are now available to the whole Log community and will make the basis for the community of practice.

Finally, at headquarters level, a need of formalising the multidepartment cooperation for managing the medical equipment in the field resulted in the formation of a new unit, the Biomedical Service Unit (BSU). It comprises the biomedical referents from the logistics, supply and medical departments, the three mobile implementation officers (MIOs) - two biomedical MIOs and one diagnostic imaging MIO, the medical equipment purchasers and a quality assurance specialist, all from MSF Supply.

The BSU revolves its services around six categories of activities in order to ensure quality of care, continuity of operations and cost containment:

- Policies and ways of working
- Specialised Biomed pool recruitment and development
- Technical support services to the field
- Sourcing, procurement and after-sales
- Supplier network relation
- Communication and reporting

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- Local procurement has become an unavoidable part of medical equipment management.
- Therefore, a needs assessment must be correctly conducted in order to avoid purchasing suboptimal equipment. This requires involving the right people in the loop at the right time to find the best solution to fulfill projects’ medical needs.
- International orders of spare parts are often the cause of issues and indecision in the field. A tool, the Biomed Order Helper, has been disseminated through Sherlog, and the Log Mag for project teams to define their needs for spare parts. It is also attached to the Medical Standard Lists used by the medical project teams.
4.2. PROSPECTS FOR 2020

- Asset monitoring and maintenance management tools adapted to each project type and staff abilities such as Biomed Portal, HFM (Health Facility Management) Toolkit, etc. must be coherently implemented in all projects so that the lifespan of medical equipment can increase in the field and faster technical support can be provided.

- Since the orders of spare parts continues to be an issue, the reduction of the overstocked medical equipment parts items in the various missions will be addressed.

- A knowledge base around medical technology for the COVID-19 response will be made available on Sherlog.

- The BSU will continue to support the COVID-19 response.

- All missions equipped with X-Ray equipment will be visited for quality assurance purposes by the mobile Diagnostic Imaging Officer.

Close-up of the equipment to analyse blood samples in the Ebola Treatment Centre of Mangina, Democratic Republic of the Congo. © Carl Theunis/MSF
MENTAL HEALTH & PSYCHOSOCIAL SUPPORT INTERVENTIONS

**KEY FACTS IN 2019**

- 50% increase of new mental health activities initiated in new projects.
- Large increase of mental health care for minors.
- Effectiveness, usefulness, rapid assessment and implementation of Mental Health Psychosocial Support (MHPSS) interventions were demonstrated in emergencies.
- Continued increase of psychotherapeutic and non-psychotherapeutic group sessions with communities, parents and families.
- Significant increase of MHPSS component in 29 countries.

**1. OVERVIEW**

In 2019, the portfolio of projects with a Mental Health Psychosocial Support (MHPSS) component increased to 45 projects in 29 countries (compared to 38 projects in 24 countries in 2018), including a 50% increase of new mental health (MH) activities initiated in new projects (nine in 2019, compared to six in 2018). Six emergency or short-term interventions (same as 2018) were implemented in Indonesia (post-tsunami in Labuan), Bolivia (post-election conflict/strike and violence in Cochabamba), Brazil (emergency in Minas Gerais after a dam collapse in Brumadinho), Mozambique (typhoon in Beira), Nauru (remote MH Telecounselling based in Australia), and in Nigeria (MHPSS support to refugees from Cameroon in Uyo/Cross River).

The number of individual sessions for new patients increased as new projects opened. The increase of follow-up sessions was linked to the emphasis placed on improving access to mental health care and particularly on the implementation of ongoing treatment plans for patients in existing projects. New specialised projects were opened in 2019. For example, in Kenya, the Kiambu project for people who use drugs (PWUD) required specialised human resources (HR), specific technical guidance and skills in mental health.
The sharp increase in the number of minors who benefitted from mental health care is the result of the work carried out by headquarters’ MH advisors and MH professionals in the field. The development of adapted and specific activities for minors greatly impacted the results. Particular attention was given to pregnant adolescents in Sexual and Reproductive Health (SRH) projects by offering activities targeted to their age and needs.

### 2. MAIN PROGRAMME ACTIVITIES

In 2019, there were 45 projects with MHPSS components in 29 countries (Oceania: two countries, Africa: ten, Middle East: four, Asia: four, Western Europe: four, Eastern Europe: one, Latin America and Caribbean: four), with an increase in MHPSS individual, group and community-based interventions. The diversification of MHPSS activities in different countries, contexts and cultures represents a challenge for the mental health team, needing more technical competencies and human resources.

MHPSS interventions for migrants, refugees, people in transit, and displaced populations were important in the mental health portfolio. For example, there were programmes for these groups in Bangladesh (Jamtoli), Belgium, Brazil (Roraima), Egypt, Greece (Athens and Lesvos), Italy, Serbia, South Africa (Tshwane) and South Sudan (Yei). The migratory journeys vary from person to person; they may have experienced traumatic events before departure, during travel, and after arrival. For these people, mental health interventions focus on access to care and treatment of patients with mental disorders in partnership with other actors and organisations. In migrant projects, innovative MH group sessions were developed to foster resilience, autonomy, cooperation, independence, competence, and self-regulation.

The large increase in mental health care for children and adolescents was due to the strong efforts of the team to improve their access to MH care and psychosocial support.

For the first time in Operational Centre Brussels (OCB), MH Telecounselling was implemented for refugees and asylum seekers on Nauru after Médecins Sans Frontières (MSF) was forced to leave in October 2018. Telecounselling has been demonstrated to be an efficient, effective option for providing mental health support in areas with major access barriers if all measures for data protection and patient privacy are ensured.

In order to improve the holistic approach to health care and the integration of mental health into MSF projects, collaboration with other departments was strengthened by cross-presentation in specific training sessions such as: First Line Medical Training (FLMT), health promotion (HP), sexual violence (SV) in the SRH course, the “Strategic management module” in the Project Operational Management and Project Medical Management Training Course. There was participation of advisors from the OCB nutrition, SRH and Staff Health Unit (SHU) sections in mental health training held in Brussels in November 2019. Furthermore, work with the legal unit was reinforced with shared training sessions, facilitating technical guidance and support for the field's questions.

### 2.1 GROUP ACTIVITIES AND COMMUNITY BASED-INTERVENTIONS

2019 saw an increase in the implementation of group activities in emergencies and conflict contexts (South Sudan-Yei Equatorial project for Internally Displaced Persons; the Masisi project, Democratic Republic of the Congo (DRC)), in camp settings (Jamtoli, Bangladesh), in maternity and newborn projects (Timergara, Pakistan), in trauma projects (Burundi Arche project in Bujumbura); and in a migration project (Lesvos, Greece). During the year, there was a focus on improving the quality of group interventions; to better monitor them, increased communication and specific training were implemented in the projects.

In Brazil, on the border with Venezuela in the Roraima project, a multidisciplinary team of psychologists and health promoters led group sessions for children (3-12 years old) and their caretakers called “El arte de cuidar” (“The art of caring”). Research shows that migrant and refugee families can suffer from major psychological disorders that can destabilise the relationships and hierarchies established in nuclear and extended families, resulting in an increased risk of violence between intimate partners with negative effects on children. The main objective of these group sessions was to promote personal resources among children, so that they had more tools to face the risks they encountered in the host country. The sessions generated positive attitudes in children.
through art, promoting creativity and values such as authenticity, self-confidence and self-esteem. Ten sessions were offered on themes such as family, self-esteem, feeling of belonging/xenophobia and prevention of sexual abuse. The participation of all family members was a powerful approach for preventive family mental health interventions (as prevention of family violence).

2.2 PSYCHIATRIC CARE

The integration of psychiatric care within MHPSS packages continued with the recruitment of more expatriate and national psychiatrists. More Mental Health Gap Action Programme (mhGAP) training has been developed (Nairobi, South Sudan) for general practitioners and clinical officers to ensure continuity of psychiatric care for patients suffering from depression, anxiety disorder, Post-Traumatic Stress Disorder (PTSD) and psychosis following psychiatric consultation.

In 2019, psychiatric care and support were integrated into the non-communicable diseases (NCD) project in Embu, Kenya, as there is evidence of a strong connection between mental illness and NCDs. A collaborative care approach restructured the roles of health care providers towards team-based management of chronic and complex medical conditions. Tasks were shifted, and patients were shared with specialists who supported primary care providers to routinely identify patients who needed care. They assessed risk factors, educated patients about their illnesses, risk factors, and treatment, intervened with a combination of brief evidence-based pharmacological and psychosocial treatments, taught self-management skills, monitored patients’ progress and adherence to treatment, and followed up over the long term. To ensure continuity and improve quality of psychiatric care, mental health protocols were written by the MH team in the field and have been validated and reviewed annually to ensure clarity, accuracy, and thoroughness.

The specialisation of MSF projects in recent years (victims of torture (VoT), drug abuse, unaccompanied minors, severe MH disorders) requires adequate HR, both in numbers and technical skills. This was a challenge faced by the opening of the new specialised project for PWUD in Kiambu in Kenya, as it required specific technical guidance for psychiatric care.

2.3 MHPSS INTERVENTIONS IN EMERGENCIES

MSF MHPSS interventions are increasingly recognised and demanded by health authorities of host countries. In Brazil, the Ministry of Health specifically requested MSF mental health activities in January 2019 for the collapsed dam disaster in Brumadinho.

Early mental health interventions help to limit long-term mental health deterioration and strengthen the coping resources of individuals and communities. Efforts were made to strengthen cooperation between families and communities to support patients, focusing on prevention and building resilience (e.g. in Indonesia during the post-tsunami intervention).

The MHPSS interventions for emergencies were mainly provision of training and capacity building: Psychological First Aid; psychoeducation for groups; identification, screening and management of MH reactions and disorders with a large number of people; how to perform group and individual interventions in emergency settings; and how to work and encourage communities to continue cultural activities that promote resilience. MHPSS interventions were performed by MH professionals (psychologists, psychiatrists), health and frontline workers working in the private or public sectors, non-governmental organisations (NGOs), civil society, key community resources/leaders (schoolteachers, community leaders, etc.) and volunteers. Guidance on the coordination of the MH response (flow of services, access, networking, links) was also key in emergency settings.

Individual sessions in emergencies were mainly provided for people presenting with significant emotional instability who needed a psychological assessment by MH professionals or MH services. MHPSS materials and tools have been capitalised and shared between the different emergency interventions in 2019.
2.4 MHPSS INTERVENTIONS FOR VICTIMS OF SEXUAL AND INTIMATE PARTNER VIOLENCE

Situations of conflict, post-conflict and displacement exacerbate existing sexual violence (SV) and intimate partner violence (IPV) due to the breakdown of families, communities, law and order, increased impunity and decreased access to economic resources. SV is considered as a critical incident with one of the highest potentials to harm another human being, violating their privacy, identity and wreaking havoc in all areas of their life. SV has physical, psychological and social consequences for victims; it also has an impact on their children and their families. The MHPSS team provided care and psychosocial support for these victims. The older the psychotrauma, the more difficult it is to treat and the more it becomes co-morbid with other psychopathological or psychosomatic disorders (e.g. Kasaï project/Kananga in DRC/post-conflict situation). Knowledge of the significance of this trauma by MH workers is essential in order to recognise symptoms and offer appropriate care.

In 2019, we increased awareness and training activities for different levels of trauma and regarding access to care for male victims of SV. Over the year, a number of projects faced a sudden influx of SV cases and requested guidance on how to deal with the increased numbers (e.g. Masisi project in DRC). Identifying the most vulnerable people required a rapid assessment of the situation regarding where and how to deploy resources. Group sessions for sexual violence victims were facilitated in projects for adults, adolescents and specific vulnerable groups (e.g. Kasaï project/Kananga in DRC, Maadi project in Egypt, Rustenburg project in South Africa). As a result of this experience, a guidance document will be written by SRH and MH Advisors to help the field manage a sudden influx of SV victims in the future.

3. OTHER ACTIVITIES

• Presentation in a VoT Workshop in Brussels: “MSF OCB's path in acquiring expertise in VoT care and building an interdisciplinary approach" by an MH advisor on the acquired expertise and lessons learned by the teamwork and interdisciplinary practice in OCB (Athens, Greece, Cairo, Egypt and Rome, Italy).

• Technical input was provided at a number of international forums, including the Inter-Agency Standing Committee (IASC) and the World Health Organization’s (WHO) mhGAP Forum. Supporting the development of guidance resources, the MH Advisors collaborated on different documents (e.g. WHO mhGAP Toolkit, mhGAP-HIG training, IASC Guidelines on Inclusion of Persons with Disabilities in Humanitarian Action, IASC MHPSS in Emergencies, and the Monitoring and Evaluation Framework).

• Presentations were made at public conferences by national and international MH staff on relevant topics such as: Egypt - “Sexual violence and its impact on mental health, what about men and boys? - 10th international conference on Forensic Medicine and Science; Greece - “The impact of migration on mental health”; in Egypt, research was presented in a conference on “Post-traumatic stress disorder with psychotic symptoms among asylum seekers attending the mental health clinic of MSF in Lesvos, Greece.”

• Presentations were made on “MHPSS in emergency situations” in Antwerp at the Institute of Tropical Medicine (ITM) and on “Trauma and Mental health” for the Masters in Humanitarian Surgery in Austere Environments.

• Field visits were performed in Kenya, Bangladesh, Italy, Greece, Venezuela, Brazil and Egypt.

• Three intersectional training programmes on MH and psychiatric disorders were carried out and specific training or workshops (sexual violence, torture, trauma, MHPSS in emergencies) were provided throughout the year.

• A big effort was made by HR to maintain an adequate ratio of first missions. A collaborative effort between HR and MH advisors improved the number of international MH professionals with the skills and work experience needed for the projects and to improve the retention of MH professionals.
4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- Early MH interventions help limit long-term consequences, MH deterioration and strengthens the coping resources of individuals and communities.

- MH professionals need to improve their legal knowledge around data protection procedures.

- Capitalisation and lessons learned in the projects are needed to ensure continuity of care, and sharing professional experiences in other contexts will improve MHPSS expertise in MSF.

- The increased emphasis on preventive MH interventions has highlighted the need to make multidisciplinary work better understood and known.

- There is a need to strengthen the quality of data collection in order to improve the analysis of MH outcomes.

- The MH working group, with good technical collaboration, facilitated the production of several intersectional documents. For example, the new MH guidelines ensure more exchanges and coordinated actions for the field and other operating centres. More specific training on trauma, clinical supervision, sexual violence and IPV, VoT, psychiatric care, group sessions, counselling to children and adolescents is required.

- Need to improve interventions in pain management as an integrative medical/MH approach.

- Need to continue to reinforce community-based interventions.

4.2. PROSPECTS FOR 2020

- Improve MH data collection in projects.

- Improve analysis of MH outcomes in projects using validated scales to measure changes of MH conditions of patients.

- Develop prospective research, elaborated at the beginning of a project, to allow better analysis and stronger advocacy.

- Finalise and publicise new MHPSS intersectional guidelines to improve MH quality of care and increase MH professionals’ skills.

- Review MH Intersectional training.

- Consolidate psychiatric care and increase the task shifting model in contexts where there are no mental health specialists.

- Ensure MH clinical supervision is done properly in all projects with a MHPSS component.

- Continue enhancing cooperation with other departments accessing transversal knowledge and skills as well as capitalising on lessons learned from missions at all levels.

- Capitalise on lessons learned, particularly regarding group sessions.

- Facilitate access to updated MH documentation, tools and material.

- Reinforce innovative approaches, development of models of care and interventions.
MIGRATION & HEALTH

43,188 mental health consultations performed in dedicated migration projects

100% of all dedicated migration projects offered mental health care

70% of all dedicated migration projects offered social worker services

HIGHLIGHTS OF 2019

• Migration projects were geographically diverse (Europe/Mediterranean region, Pacific region, sub-Saharan Africa, South America), and tended to become more flexible/adaptable over the course of 2019.

• Medical activities for migration and care for victims of torture (VoT) and other forms of ill-treatment were supported through the respective circles in the medical department.

• The Migration & Health Circle performed a short assessment on the main challenges and lessons learned in migration programmes, and adapted its activities and outputs in line with the identified gaps.

• Knowledge on VoT care in Médecins Sans Frontières (MSF) settings has been generated and further evaluation and capitalisation is ongoing, but implementation of VoT care in non-vertical settings remains poor.

1. OVERVIEW

This chapter provides an overview of the programme activities and main medical support activities related to migration and forced displacement. It also documents the ongoing developments in the context of care for victims of torture (VoT) and other forms of ill-treatment, considering that almost all VoT activities of Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) are performed in migration contexts. The MSF OCB migration portfolio remained geographically highly diverse, and a trend towards more flexible and adaptable programmes was observed. Medical support to migration activities as well as to VoT care activities was provided through a circle within the medical department (cf. §3.), bringing together a multidisciplinary panel of experts from different departments and units to develop and disseminate new guidelines and support tools for the migration missions.
2. MAIN PROGRAMME ACTIVITIES

2.1. MIGRATION - GENERAL

The diversification of migration and health activities beyond the European/Mediterranean region, which was already observed in 2018, continued throughout 2019. In particular, migration activities in sub-Saharan Africa and in South America expanded.

In the European/Mediterranean region, a higher level of flexibility was introduced to cope with the rapidly shifting needs. The Moria camp in Lesvos continued to see an expansion of its population, well beyond its capacity of 3,000 (reaching 17,000 by December), with only intermittent and limited attempts of decongestion by the authorities. MSF OCB teams continually needed to adjust activities to cope with the increasing congestion and its consequences. That included paediatric care and mental health support in Moria camp, environmental health support in and around Moria camp, as well as more comprehensive multidisciplinary care for patients with severe mental health conditions in Mytilini clinic. In the Northern Balkans (Serbia and Bosnia, integrated with Greece into a single Northern Balkans mission in 2019), a mobile approach was implemented, mainly addressing the needs of asylum seekers living outside reception structures. The strategy included provision of primary health care, support against poor environmental conditions (including a harsh winter), as well as care for survivors of violence, such as border violence by the authorities. The Italy mission saw the closure of the longer-term project offering rehabilitation for VoT and other forms of ill-treatment, in lieu of shorter, more punctual interventions that included provision of psychological first aid (PFA) following shipwrecks and other traumatic incidents. In Belgium, the project offering psychosocial support in the asylum centres was closed following its full capitalisation, while the ongoing collaboration with various civil society actors was continued as a project. This project was a constellation within which MSF OCB provides mental health support to undocumented individuals.

In the Pacific region, MSF OCB continued to attempt to provide support to the population of asylum seekers and refugees in containment on Nauru, following the expulsion of MSF from the island in 2018. A project offering telemedicine was developed, but was blocked in the late stages by the Nauruan authorities. Pressure was kept on the Australian authorities, through public reports on the MSF activities on Nauru, as well as direct testimony in the Australian Senate, to reduce harmful migration policies. Despite this pressure from MSF and others, the so-called “Medevac Bill” allowing medical evacuation of asylum seekers and refugees from containment in Nauru and Manus was repealed in late 2019.

In sub-Saharan Africa, two large new initiatives concerning migration and health were launched. In South Africa, the “Tshwane Migrant Project” was started in July, offering primary health care services, mental health care, referrals for secondary or specialised care, social and legal orientation services, and free amenities in a hub area to improve general wellbeing. Further in South Africa, punctual assessments and support interventions were performed in response to outbreaks of xenophobic violence in KwaZuluNatal and Gauteng. In Cameroon, MSF OCB took over the management of an MSF Operational Centre Barcelona-Athens (OCBA) project responding to the Northwest Anglophone crisis. This represented an important expansion of the MSF OCB activities for displaced populations in the region, and activities focusing on a decentralised model of care, ambulance referral system, and support to hospitals for trauma care were further developed. Previously, the project had only focussed on refugees from Cameroon arriving in Cross River State in Nigeria.

Finally, in South America, a series of exploration missions were held in March in relation to displaced populations from Venezuela. Medical projects were implemented within Venezuela, focusing on malaria activities, primary healthcare, and environmental support; and for displaced populations in Brazil, mainly focusing on outpatient care, sexual and reproductive health, and sexual violence care.

2.2. MIGRATION - VoT PROGRAMMES

MSF OCB continued its “learning by doing” endeavour in the field of VoT through three fully vertical projects (Southern Europe/Middle East) and one project embedded in a mental health clinic (Lesvos), offering rehabilitation care through a multidisciplinary approach. The experience generated in these specialised projects was used to implement support activities, focusing on functional recovery and/or stabilisation, rather than
full rehabilitation, for VoT in other projects, including Cameroon (Northwest Anglophone crisis), Serbia, and Zimbabwe (Beitbridge). An overall number of 17,495 consultations for VoT were conducted across the services comprising multidisciplinary care (mental health care, medical care, physiotherapy, and socio-legal support); this represented an important reduction of 36% compared to 2018, likely as a consequence of the activities of the Rome VoT project winding down in 2019. Out of the total number of VoT consultations, only 1.2% were conducted outside the vertical projects, suggesting the continuing difficulty to integrate VoT care into non-specialised settings. To address this issue, an evaluation by the Stockholm Evaluation Unit was launched in 2019, focusing on the effectiveness of the approaches and practices in the VoT projects, as well as their transferability to non-vertical MSF projects in other contexts.

MSF OCB VoT projects gained visibility by organising the “Pathways to Recovery” conference in Athens in June, exploring the rights and needs of VoT as a subset of the broader asylum seeker population in Europe, and by engaging directly with the United Nations Convention Against Torture through a report on the conditions for VoT in Greece. The Athens VoT project also continued to innovate, by fostering the “Experts by Experience” group of patient-advocates; this independent entity has taken the role of (co-)defining and (co-)managing the VoT advocacy agenda of the Athens clinic.

3. CIRCLE ACTIVITIES

3.1. MIGRATION AND HEALTH CIRCLE

The Migration and Health Circle, initiated in 2018, expanded its roles with increased representation from field staff, the Operations Department, the Analysis Department/Forced Migration Team, and other actors working within the MSF OCB constellation on the topic of migration (such as MSF Italy, BrAMU, and LuxOR). Following the objectives set by the circle in 2018, the following issues were developed:

• A short assessment was conducted among MSF OCB missions with a migration component on their main operational challenges and lessons learned. The main bottlenecks identified included those related to operational setup of migration projects: lack of assessment tools, or a framework to define operational objectives and strategies; to difficulty in providing care in short transit settings, and/or in settings with poor/harmful reception and containment conditions; and to human resources (lack of training on legal issues, demotivation due to a perceived minimal impact).

• In response to the above, the definition of a package of medical activities (and their priority level) was to be offered in settings of short transit.

• In collaboration with the staff health unit, definition of a briefing package and refining of the health policy for staff members joining a migration project.

• Definition of standardised indicators, integrated into the overall indicator library of MSF OCB under oversight of the Ariadne unit.

Ongoing activities of the circle include:

• Compiling a set of tools (including assessment tools, training packages, packages of care) for use in migration contexts.

• Compiling a set of data instruments (databases, data forms, indicator calculators) for use in migration contexts – linked to the defined packages of care.

• Exploring specific innovations such as travel medicine kits for distribution to individuals with onward travel plans that may expose them to specific risks.

• A formalised research agenda among the different research stakeholders (LuxOR, BrAMU, MSF Italy) in the context of migration.
3.2. VO T CIRCLE

2019 saw the launch of the “VoT Circle,” coordinated by the technical referent for VoT and bringing together technical referents involved in the various services offered in a VoT programme including intercultural mediation, data management, and research. Activities of the VoT referent with the support of the VoT circle included:

- Developing a draft of a “pocket guide” for VoT care, aimed at providing a better understanding of the characteristics and limits of VoT care in the context of humanitarian medicine, and providing guidance for the setup of VoT services in new contexts. Due to ongoing uncertainty on the final end-users of the pocket guide, as well as changes in human resources within the circle, the pocket guide was not finalised over the course of 2019.

- Organised a workshop on the lessons learned of the MSF activities in VoT.

- Exploring learning and development options for staff involved in VoT care in collaboration with MSF Denmark.

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- Flexibility and agility of projects in migration contexts are essential; operational reorientations to reflect this were implemented, but more and better tools to support such reorientations are urgently needed.

- The main challenges in migration projects were associated with:
  - Operational setup - lack of assessment tools, a framework to define operational objectives and strategies;
  - Models of care in migration - the difficulty of providing care in short transit settings, and/or in settings with poor/harmful reception and containment conditions;
  - Human resources - lack of training on legal issues, demotivation due to a perceived minimal impact.

- Evaluation and capitalisation of the MSF OCB VoT activities have been performed, and many practical lessons have been learned. However, they have not yet translated into wider implementation of elements of VoT care into non-VoT projects.

4.2. PROSPECTS FOR 2020

- Maintaining the diverse, non-European-only nature of the MSF OCB migration activities.

- Dissemination of the prioritised package of care in short transit settings, including direct field support where necessary.

- Further development of tools: assessment tools, training packages, defined packages of care, for use in migration contexts.

- Compiling data instruments: databases, data forms, indicator calculators for use in migration contexts in line with the above.

- Compiling a formalised research agenda among the different research stakeholders (LuxOR, BrAMU, MSF Italy) in the context of migration and VoT.
NON-COMMUNICABLE DISEASES

17,137 consultations for diabetes
19,866 consultations for hypertension

KEY FACTS OF 2019

• Insulin management package for low resource settings was implemented in Kenya and Zimbabwe.

• There is a need for standardised and streamlined non-communicable disease (NCD) management within both integrated projects and hospital settings.

• Advocacy is required to gain improved access to affordable insulin and supplies.

• There is a need to improve standardised monitoring and evaluation of NCD activities across the Operational Centre Brussels (OCB) portfolio.

• An intersectional NCD Technical Working Group and development of NCD guidelines were formed.

1. OVERVIEW

This is the second year that data on non-communicable disease (NCD) activities have been reported in the Medical Activity Report. We continued to work on developing standardised monitoring and evaluation of NCD indicators that will be included within the routine reporting of Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) activities. As such, NCD consultations across the OCB portfolio remained underreported. The primary NCD-specific projects were located in Lebanon, Kenya and Zimbabwe. In 2019, a major focus was on improving diabetes care, especially for those requiring insulin. Simplified insulin initiation and management protocols were developed and implemented in both Kenya and Zimbabwe. Limited access to affordable and easily administered insulin products remained a significant challenge globally and the work in these projects highlighted the need for further advocacy.
2. MAIN PROGRAMME ACTIVITIES

In 2019, there was further maturation of the three primary NCD projects and significant progress in their adaptations in care delivery. Routine data reporting on standardised NCD indicators continued to be a challenge utilising the District Health Information Software 2 (DHIS-2) database tool in both Lebanon and Kenya. Hence, activity reports from Lebanon and Kenya remained limited. However, data reporting (using EpiData) from Zimbabwe was robust. We are working closely with the eHealth department to finalise an NCD update to the DHIS-2 database that will allow for more accurate reporting across all projects. These NCD indicators have been harmonised through the intersectional NCD Technical Working Group in 2019, with the goal of being able to report on NCD activities, across all projects and sections going forward.

2.1. VERTICAL NCD PROJECTS

The Embu project in Kenya completed its second year (of five projected) in 2019 and made significant progress across multiple domains including: a mentorship model, insulin initiation/management for diabetes, further adaptation of treatment algorithms for hypertension, asthma and epilepsy. In 2019, the project enrolled its 3600th patient, of whom 14% were newly diagnosed with an NCD. Hypertension remains the most common NCD, but approximately 75% have diabetes as a co-morbidity. Almost 25% of those with diabetes required insulin to manage. Embu performed a total of 16,457 NCD-related consultations during 2019.

In 2019, Zimbabwe faced the dual challenges of Cyclone Idai and worsening economic instability and inflation, making healthcare access/delivery exceptionally difficult for its population. Nevertheless, MSF-supported NCD care in both Mutare and Chipinge districts made significant progress. Like Kenya, Zimbabwe has enrolled almost 3500 NCD patients. Simplified protocols for basic insulin initiation and management were implemented in close collaboration with the Ministry of Health. This allowed for those who were failing to meet diabetic quality of care targets to add insulin to their oral hypoglycemic medications. In 2019, approximately 70% of diabetic patients being managed by MSF in Zimbabwe achieved their HbA1c goal, while over 50% of hypertension patients achieved their blood pressure targets.

In Lebanon, OCB was focused on providing primary care to Syrian refugees in the area of Beirut since 2013. This population has a heavy NCD burden, leading to a significant amount of effort concentrated on improving their outcomes, particularly for diabetes. MSF continued to document the challenges faced by this highly vulnerable population and to streamline improved quality of care for those with NCDs.

2.2. NCD ACTIVITIES IN OTHER/INTEGRATED PROJECTS

Integrated projects were defined as those performing NCD consultations, but not identifying these activities as a major focus and without cohort follow-up.

2.3. OUTPATIENT NCD CONSULTATIONS

Review of the reported NCD-related consultations across the OCB portfolio demonstrated that this patient population received disease-specific care in projects not dedicated to NCDs. This highlights the need to continue to push for increased horizontal integration of NCD care, guidance and monitoring in many MSF projects, particularly those with emergency responses.

2.4. INPATIENT NCD CONSULTATIONS

There remained limited to no reporting on inpatient consultations for patients with NCDs. As with outpatient care, many of our inpatients suffered from co-morbid NCDs and associated complications. This lack of data remained a significant challenge and should be a focus as monitoring and evaluation moves forward in a standardised fashion.
3. LOOKING BACK AND AHEAD

3.1. LESSONS LEARNED IN 2019

• There needs to be additional support provided for data collection and reporting across the NCD projects, especially in Kenya and Lebanon.

• Enhanced intersectional collaboration and reporting for NCD care guidance, project management and advocacy was realised.

• It is possible to design/implement simplified insulin initiation and management protocols which lead to improved outcomes for those in very low resource settings.

• There remains a strong need for development of inpatient NCD-specific treatment protocols to standardise care across a diverse range of integrated OCB projects.

3.2. PROSPECTS FOR 2020

• Finalise the intersectional NCD guidelines and a three-year strategic plan.

• Move towards handing over the NCD project in Zimbabwe.

• Finalise the DHIS-2 upgrade for NCD variables and reporting.

• Continue advocacy for those with diabetes who require insulin for improved access to standardised care and free medication.

• Further research output from Kenya, Zimbabwe and Lebanon, focusing upon: treatment outcomes including challenges/successes, specific insights from implementation of the new diabetes protocols with insulin, and the prevalence of chronic kidney disease and its impact on NCD care management.
NURSING CARE

235,000 wound dressings were performed

Wound Care Protocol fully deployed in 11 projects, including Negative Pressure Wound Therapy (NPWT) in two projects.

Two nurse-led wound care clinics were established using the new Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) Wound Care Protocol.

Two sessions of the Paediatric Emergencies Hospital Care (PEHC) training took place; the nursing component was facilitated by the nursing care mobile implementation officer (MIO).

KEY FACTS IN 2019

• Nursing care has a central role in the 2020-2023 Strategic Orientation on quality of care.

• Direct field support: three projects – referent, seven projects – mobile implementation officer (MIO), three projects – wound care nurse.

• Webinars with field teams: two on the MSF Wound Care Protocol, one on vital signs monitoring sheets and the audit tool.

• Online learning for the MSF Wound Care Protocol available on TEMBO.

• Update Online Offline Publication System (OOPS) Nursing Care page, including new tools, templates, documents and guidelines

1. OVERVIEW

During 2019 in all Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) missions, more than 2.9 million general outpatient department (OPD) consultations were performed, 348,010 patients attended an emergency department (ED) and approximately 207,000 patients were admitted to an inpatient department (IPD). In addition, 17,696 surgical interventions were performed.

Behind this massive number of patients and procedures, nursing care remained the front and the centre of patient care. It was present throughout the whole journey of each patient in care: from first contact with the health system in the community, to a primary health care (PHC) service, to an emergency department, being admitted into a health care facility to discharge and follow-up. Nurses had a central role in the care for patients, at the clinical care level as well as at supervision and management levels, throughout the continuum from primary health care (including community level), to secondary, and tertiary health care.

Nursing is a crucial part of the “Quality of Care” orientation, one of the 10 medical principles that have been defined as the most important to guide MSF OCB operations for the period 2020-2023. To improve the quality of care provided to our patients, we supported huge numbers of MSF nurses and nursing care providers, both with direct and indirect support.
2. MAIN PROGRAMME ACTIVITIES

2.1. MSF MANUAL OF NURSING CARE PROCEDURES

The Manual of Nursing Care Procedures project was started at the end of 2018 and ran for all of 2019 until all new nursing procedures were ready for final validation by the Nursing Care Working Group and the intersectional medical director platform.

A final number of 25 new nursing care procedures were developed with a very robust process which included peer review by MSF field nurses. These new procedures cover all ranges of age (neonates, children and adults) and are designed using a standard template to assure all the information needed for execution, training and supervision is available. Each step is complemented with its rationale, all relevant additional information and recommendations.

Once validation is completed, all documents will be available on the Nursing Care Working Group SharePoint page and in the OCB Online Offline Publication System (OOPS) portal. The MSF Manual of Nursing Procedures will be complemented by a Library of Nursing Care Resources, a collection of related tools (standard operating procedures, supervision tools, working aids, charts, etc.), and all training materials for the implementation of the procedures. There will also be resources for the update and follow-up of nurses’ capacities during training or continuous development activities.

2.2. WOUND CARE

During 2019, 33 projects reported performing over 235,000 dressings in OPD, ED, and other locations.

Over the year, the field implementation of the OCB Wound Care Protocol has been implemented in 11 projects, including Negative Pressure Wound Therapy (NPWT) in two sites: Haiti (Tabarre, Martissant), Afghanistan (Kunduz), Iraq (Mosul), Burundi (Kigobe), Gaza, Democratic Republic of Congo (DRC) (Kinshasa, Masisi, Nyabidoro), Lebanon (Bar Elias) and Sierra Leone (Kenema).

Kunduz and Bar Elias developed a model of nurse-led wound care clinics where nurses have the central role in the clinical management of wounds, becoming directly in charge of assessing the patient at first contact and establishing the care pathway (dressings, referral for medical consultations, interdisciplinary discussions, patient support). This implementation often needed direct support through field visits (mobile implementation officer (MIO), wound care nurse, referent). In addition, additional tools such as an e-learning module and webinars were developed and successfully offered to the field to facilitate this process.

Supplementary guides on wound care in neonates, severely malnourished children and under-fives with large wounds and wound care in case of skin grafts and donor sites are now available.

To complete the clinical support for field management of complicated wounds, a teledermatology service was initiated. A multidisciplinary team of wound care experts, including nurses, physicians, surgeons, infectious diseases specialists, mental health and nutrition advisers has been made available for consultation.

2.3. TECHNICAL SUPPORT AND KNOWLEDGE MANAGEMENT

In 2019, the development of supportive documents and tools continued. The Neonatal Nursing Care Handbook was finalised and additional patient documentation templates and charts for nursing care activities were developed, including specific user guides.

Efforts were made to reach all relevant nursing care providers and project managers with nursing information and tools:

- Update of the OOPS Nursing Care page with all available nursing care related documents and tools
- Webinars on vital signs charting, an auditing tool, and the Wound Care Protocol
- Nursing Care Newsletter
- Direct field support whenever the need was raised or during field visits.
The translation of documents and tools into French remained a big challenge as resources were lacking and the process could be time-consuming.

For direct field support in 2019, three visits were undertaken by the nursing care referent (Kenema, Gaza, Burundi), seven by the nursing care MIO (twice to Nsanje, Yei, Pibor, Maban, Maiduguri, Bangassou) and three by an expert wound care nurse (Kinshasa, Masisi, Nyabindo) with the specific responsibility of implementing the Wound Care Protocol.

Additionally, remote technical support was provided for specific nursing care issues and other related medical requests received from the field and from operations.

The nursing care MIO, in collaboration with the paediatric referent, gave two sessions of the Paediatric Emergencies Hospital Care (PEHC) training (one in Brussels HQ and one in Maiduguri, Nigeria).

3. NURSING CARE IN MSF OCB

Launched during the 2018 medical debate at the OCB General Assembly (“Nursing Care: Who Cares?”) and underlined in 2019 in the newest Strategic Orientations and the in-house MedTalk “There is no curing without caring,” nursing’s importance has been emphasised in all MSF projects. However, with the limited amount of human resources, one referent, and one MIO coping with nursing care in each MSF project and more than 1500 nurses in the field, it is very challenging to address the large number of requests for support.

In addition, the Nursing Care Contact Group became a working group, giving nursing care a stronger voice within MSF. The coordination between the different nursing care stakeholders in HQ (referent, MSF Academy for HealthCare, Hospital Management Unit, pool manager, career manager) is gradually improving and needs to be further reinforced in 2020.

The World Health Organization (WHO) has declared 2020 as the International Year of Nurses and Midwives and it will be an excellent opportunity to assess where we are, define priorities and continue improving the status and quality of nursing care within MSF.

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- Recommendations following field visits are generally well-received and acted upon, but close supervision is needed to ensure follow through.

- Nurses in the field do not always understand their role, often because it is not clearly defined by the project management. Lack of clinical supervision (time, skills) and the need for support are the main issues that need attention.

- The resources and efforts required to implement changes in nursing care processes in the field by supervisors (national and expat) are very often underestimated, and this affects their sustainability over time.

- Implementation of standard indicators for measuring nursing quality of care and implementation of the Wound Care Protocol need to be reinforced.

- It will still take time to continue increasing the communication and collaboration between all HQ nursing stakeholders.

- Because all operational centres work with different pool management databases, it is impossible to have a comprehensive overview of the complete pool of nurses, their specialities and availability.

- Translation of newly developed protocols, documents and tools into French is challenging due to lack of resources.
4.2. PROSPECTS FOR 2020

• 2020 is the International Year of the Nurse and Midwife. Several intersectional activities will be organised to celebrate nurses and midwives. It will be a good moment for to assess the state of nursing care within MSF and propose structural changes to align ourselves with the external changes ongoing at the international level. The release of the first-ever “State of the World’s Nursing” report promoted by the WHO and the International Council of Nurses (ICN) will also allow us to identify internal strengths and weaknesses to better adapt our action and advocacy at mission level.

• Plan to present MSF experiences with the development and implementation of a wound care protocol at the European Wound Management Association (EWMA) Conference.

• Launch of the first part of the MSF Manual of Nursing Care Procedures and Library of Nursing Care Resources.

• Development of medical standard lists for nursing care activities to facilitate the composition of international orders.

• Create a briefing package for OCB nurses to better prepare them for their role and responsibilities within MSF and to follow up on field project information from expat nurses with the Nursing Care End of Mission Survey.

• Continuously focus on improving knowledge management and supporting field implementation of evidence-based recommendations and tools using different communication strategies, including webinars, videos, and newsletters.

• Further promote the use of the Nursing Care Assessment Tool for measuring the quality of the nursing care provided to patients and creating more realistic and context-adapted improvement plans.

• Contribute to the nursing care part of one Paediatric Emergency Hospital Care training and one Neonatal Hospital Care training.

• Increase collaboration with the Southern African Medical Unit with enhanced focus on the essential role of nursing care in their projects and trainings.

• Find resources to help with the translation of documents and tools into French. Update the French OOPS Nursing Care page.

• Further elaborate the possibilities of operational research on nursing care topics (e.g. analysis of the wound care database for Kunduz) in collaboration with LuxOR.

• Develop a career path for nurses, with clear criteria to grow from Nursing Team Supervisor to Nursing Activity Manager (NAM) to Project Medical Referent (PMR), and opportunities for those who would like to stay in a clinical position.
MSF MEDICAL DEPARTMENT OCB – MEDICAL ACTIVITY REPORT 2019

21. NUTRITION

NUTRITION

8781 acutely malnourished children admitted in our Inpatient Therapeutic Feeding Centres (ITFC)
Mortality rates in ITFCs improved from 2018
Stabilisation rates in ITFCs improved from 2018

12,380 acutely malnourished children admitted in our Ambulatory Therapeutic Feeding Centres (ATFC)
Defaulter rates in ATFCs greatly improved from 2018

372,695 beneficiaries screened for acute malnutrition in Operational Centre Brussels (OCB) projects

KEY FACTS IN 2019

• Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) cared for acutely malnourished children in 11 Inpatient Therapeutic Feeding Centres (ITFC) and 42 Ambulatory Therapeutic Feeding Centres (ATFC) in nine different countries.

• 21,161 beneficiaries were treated for acute malnutrition: 8781 in our ITFCs and 12,380 in our ATFCs.

• 372,695 beneficiaries were screened for their nutritional status in our OCB projects including in outpatient and emergency departments, antenatal clinics, maternity services, postnatal clinics, vaccination campaigns and inpatient departments.

• Although cure rates in our ATFCs were below the OCB target of >80% in 2019, there has been an improvement in defaulter rates since last year.

• Stabilisation rates and mortality rates in the ITFCs improved from last year.

• Less successful were HIV and tuberculosis (TB) screening in our nutrition programmes and the proportion of patients exiting with up-to-date vaccination status, all of which need to be addressed in 2020.

1. OVERVIEW

With the push at the intersectional level for nutrition to be recognised as the transversal topic that it is, Operational Centre Brussels (OCB) endeavoured to contribute operationally and with new protocols and tools. The success of these efforts has been rather inconsistent, however, and varied from project to project.

We continued to push for nutrition to be seen as an integral part of a more holistic approach to child health in OCB and to be included with other paediatric services, vaccinations, environmental health activities and mental health support. We have worked in close collaboration with our colleagues from these specialities in the medical department and in operations to give coordinated guidance and have taken part in a number of trainings such as for Sexual and Reproductive Health, Mental Health and
Health Promotion to make sure this integrated approach is promoted to as many Médecins Sans
Frontières (MSF) staff as possible.

The bulk of MSF OCB nutritional care still remains focused on inpatient and outpatient treatment of
malnourished children where, in 2019, we have seen a number of improvements in many of the key
indicators, which is encouraging.

There was a lot of attention put into the opening of Kenema Hospital in Sierra Leone (March 2019). It
started with 30 Inpatient Therapeutic Feeding Centres (ITFC) beds and a 12 bed Intensive Care Unit
(ICU) that also admits malnourished patients. OCB nutrition was a key contributor to the design and
implementation of the pre-hospital training in the beginning of the year with the MSF Academy and
with extended field trips later in the year.

2. MAIN PROGRAMME ACTIVITIES

2.1. SET-UP AND LOCATION OF NUTRITION SERVICES

<table>
<thead>
<tr>
<th>Type of service</th>
<th>Countries and projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical projects / emergencies</td>
<td>Nigeria (Borno, Maiduguri)</td>
</tr>
<tr>
<td>Nutrition is the main activity</td>
<td></td>
</tr>
<tr>
<td>Integrated programmes</td>
<td>Afghanistan (Kabul); Central African Republic (Bangassou);</td>
</tr>
<tr>
<td>Nutrition is integrated into</td>
<td>Democratic Republic of Congo (Masisi, Bili, PUC); Guinea (Kouroussa); Malawi (Prisons);</td>
</tr>
<tr>
<td>existing medical activities</td>
<td>Sierra Leone (Kenema, Nongowa, Goroma Mende); South Sudan (Pibor, Doro, BNS),</td>
</tr>
<tr>
<td></td>
<td>Venezuela (Anzoategui)</td>
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<tr>
<td>Targeted nutritional support</td>
<td>Burundi (Arche); Democratic Republic of Congo (CHK, Kinshasa);</td>
</tr>
<tr>
<td>Nutrition support is targeted to</td>
<td>Haiti (Tabarre); Iraq (Mosul), Lebanon (Bar Elias) South Sudan (Doro), Guinea (HIV</td>
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<td>patients with specific</td>
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<tr>
<td>nutritional needs (e.g. patients</td>
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<tr>
<td>with HIV, post-operative</td>
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<tr>
<td>patients, pregnant and lactating</td>
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<tr>
<td>women); or food protection</td>
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<tr>
<td>rations are provided in food</td>
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</tr>
<tr>
<td>insecure areas</td>
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</table>

2.2. NUTRITION ACTIVITIES AND BENEFICIARIES TREATED

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Number of centres</th>
<th>Number of admissions</th>
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<tbody>
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<td>ITFC</td>
<td>11 (total) 10</td>
<td>8781</td>
</tr>
<tr>
<td>(integrated paediatric or</td>
<td>integrated pedi</td>
<td></td>
</tr>
<tr>
<td>intensive care unit hospital</td>
<td>atric or intensive</td>
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<tr>
<td>services)</td>
<td>care unit hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>services)</td>
<td></td>
</tr>
<tr>
<td>ATFC</td>
<td>42</td>
<td>12,380</td>
</tr>
<tr>
<td>Supplementary Feeding Centre</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(SFC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Targeted nutritional support</td>
<td>7</td>
<td>ND</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>21,161</td>
</tr>
</tbody>
</table>

ITFC: inpatient therapeutic feeding centre; ATFC: ambulatory therapeutic feeding centre; ND: No data.

In 2019, 21,161 children received nutritional treatment for acute malnutrition in OCB projects, a decrease
of more than 7000 from 2018.

This decrease was mainly due to fewer patients seen in Ambulatory Therapeutic Feeding Centres (ATFC)
resulting from the closure of nutrition activities in Kasai, Democratic Republic of the Congo (DRC), in Kabul,
Afghanistan and in the prison projects in Malawi as well as the handover of the ATFC in Doro (Maban) to the
International Medical Corps (IMC) in May 2019. There was an increase in ITFC admissions, likely due to projects
scaling up in their activities, such as in Kenema Hospital (Sierra Leone), Kourossa (Guinea) and Maiduguri (Nigeria). Unfortunately, this increase could also have been due to a lack of outpatient services for nutrition leading to uncomplicated cases deteriorating and needing inpatient care; this was anecdotally reported in Masisi (DRC) and in Kenema Hospital (Sierra Leone).

All rates quoted below are very context and data-quality dependent; but it is worth examining our averages across OCB to compare year by year. Data per project can be found in the Nutrition Annex.

For 2019 new indicators of ‘proportion of patients knowing their HIV status’ and ‘proportion of patients knowing their TB status’ were added for both ITFC and ATFC. Unfortunately, no data was available for these indicators for this report; as these indicators become part of normal programme and monitoring activities, we expect data will become available in coming years.

Table 3 summarises the averages for the main indicators in both ITFCs and ATFCs.

**TABLE 3**

<table>
<thead>
<tr>
<th>Nutritional screening</th>
<th>ATFC</th>
<th>ITFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total patients screened</td>
<td>Total admissions</td>
<td>% cured</td>
</tr>
<tr>
<td>OCB average 2019</td>
<td>372,695</td>
<td>12,380</td>
</tr>
</tbody>
</table>

* LAMA = Left against medical advice – this is the preferred term for inpatient settings as opposed to defaulter, which is used for outpatient settings.

**ITFC**

The average **stabilisation rate** (the proportion of patients transferred from ITFC to ATFC to complete their treatment) in ITFCs for all OCB projects was 85.8% (ranging from 68.5% to 98.7%). This was above the OCB target for stabilisation of 80% and an improvement from last year (77%), with only three projects below the target.

The average ITFC **mortality rate** across all OCB projects was 5.3% (range: 0% to 12.6%). This average was just over the OCB acceptable target of 5% and an improvement from 2018 (6.2%), although approximately half of all ITFCs still have a mortality rate greater than 5%. These mortality figures may not provide a full picture of mortality among malnourished children in our projects since deaths in the ICU were captured in other databases. Work is ongoing to capture this data better.

The average **Left Against Medical Advice (LAMA) rate** for OCB ITFCs was 1.9% (ranging from 0%-5.0%), well below the OCB target of <5%. This is an indicator of the quality of care in our ITFCs and especially the communication skills of our clinical and health promotion staff.

**Average length of stay** was only reported by six projects, but the average was seven days (range 4.8-9.9). This is below the predicted average of 12 days. Although we encourage quicker turnaround in ITFCs, with the introduction of Ready-to-Use Therapeutic Food (RUTF) in the transition phase and patients continuing to follow up in ATFCs, we need to investigate whether we are discharging too quickly.

The most common 10 **morbidities** leading to ITFC admission are shown in Figure 1. Diarrhoea, severe malaria, and pneumonia remain the important morbidities, as expected in most of our contexts and reported globally. Although there was a slight improvement from last year on the percent of ‘other diagnosis’ reported, this figure remains around 20%, meaning that either the list of morbidities is not comprehensive enough or they are not being recorded correctly; further work from both HQ and the field is required. Another area that should be investigated is the 10% of admissions due to a failed appetite test (no other diagnosis) to ensure that other diagnoses are not being missed (especially HIV and TB).
ATFC

12,380 admission consultations and 26,304 follow-up consultations were carried out in ATFCs across OCB in 2019.

The average cure rate in ATFCs across all OCB projects was 75.4%, ranging from 61.0% (Maban) to 88.5% (Goroma, Mende). The low cure rate in Maban was thought to be due to a very mobile population and frequent interruptions to service delivery due to security issues in Blue Nile State (BNS). This average is below the OCB target of >80% and down from 2018 (79.0%). It is likely due to closure of some ATFCs and other projects with very mobile patient populations or security issues leading to difficulty accessing the services for patients and staff. On a positive note, half of projects who provided data did have cure rates over 80%.

The average defaulter rate in ATFCs across OCB projects was 9.1% (range: 0% to 26.7%). The OCB target is <15% so our projects are doing relatively well in this aspect and it is an improvement from 2018 (23%). Indeed, the outlier of 26.7% was in Maban; it is likely to including BNS data for a very mobile population which can often lead to high defaulting rates.

The average deterioration rate (referral from ATFC to ITFC) was 4.0% (ranging from 0%-19.6%). There is currently no OCB target for this – data over the next few years will be used to establish a target. All projects except one had deterioration rates below 5%. Masisi in DRC was the outlier with a rate of almost 20%. However, this was caused by well documented by security issues; patients could access the ATFC and often deteriorated at home and then were referred to the ITFC as soon as they presented back to the ATFC.

Only two projects reported average length of stay and only one reported on the proportion of patients exiting the ATFC having received a measles containing vaccine (MCV); these two metrics need to be strengthened in our data collection.

For the six projects that reported data, we still saw that the vast majority of our ATFC patients were admitted with Severe Acute Malnutrition (94%), with only 1.2% admitted with Moderate Acute Malnutrition and 4.8% admitted for another nutritional complication.

Finally, over 400 patients were seen in a temporary ATFC set up in the Kenema Hospital project, although no clear data on outcomes was available.

Nutritional Screening

The total number of beneficiaries screened in OCB projects decreased substantially in 2019 from the 2018 figures (417,735 to 372,695); however, we do have better visibility on where this screening is occurring this year from improved data collection systems.

Table 3 shows that we screened fewer than one-third of children <5 years in our outpatient departments (OPD) and just over one-third of children <5 years in our emergency departments (ED). The OCB target for screening

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1. This admission category is most often used for infants less than six months with a feeding problem related to themselves or their mothers, but can also include children above six months with congenital abnormalities interfering with feeding.
Adding indicators for nutritional screening in maternity and post-natal care is new for 2019, so we see rates are very low, at 0.005% and 12% respectively. We now have a baseline to see how efforts to support our services to screen more women in these services will impact on these figures next year. Nutritional screening in antenatal clinics has long been an indicator but with less than half of pregnant women being screened in this service, we see we still have a lot of work to do.

**TABLE 4  Nutritional screening, OCB, 2019**

<table>
<thead>
<tr>
<th>Service/Activity</th>
<th>Total beneficiaries screened for nutritional status</th>
<th>Total beneficiaries seen in the service</th>
<th>% of target beneficiaries screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPD (all age groups)</td>
<td>260,814</td>
<td>890,669</td>
<td>28%</td>
</tr>
<tr>
<td>OPD &lt;5y</td>
<td>247,385</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED (all age groups)</td>
<td>41,582</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED &lt;5y</td>
<td>21,152</td>
<td>62,866</td>
<td>34%</td>
</tr>
<tr>
<td>ANC (pregnant women)</td>
<td>60,862</td>
<td>131,694</td>
<td>46%</td>
</tr>
<tr>
<td>Maternity</td>
<td>4</td>
<td>75,740*</td>
<td>0.005%</td>
</tr>
<tr>
<td>PNC</td>
<td>4845</td>
<td>40,618</td>
<td>12%</td>
</tr>
<tr>
<td>Paediatric IPD</td>
<td>2371</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General IPD</td>
<td>946</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccination campaigns</td>
<td>1271</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>372,695</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OPD:** outpatient department; **ED:** emergency department; **ANC:** Antenatal care; **PNC:** Post-natal care; **IPD:** inpatient department

* This is the number of deliveries and so does not include all the women admitted to maternity for other reasons

Boxes shaded in grey are blank because there are no current OCB targets for screening in these services

### 2.3. TARGETED NUTRITIONAL SUPPORT SERVICES

OCB’s targeted nutritional support activities continued to grow in 2019, but in a disorganised and erratic way. For example, most of the projects did not report any targeted nutritional support activities in their data, even though they were known to have ordered therapeutic foods and had asked for support on nutritional care for a number of cases (especially for HIV, TB, and post-operative patients). Work is ongoing at the intersectional level to develop clearer protocols and tools that we hope will help formalise this nutritional care and subsequently the monitoring of these activities.

### 2.4. FOOD SECURITY ASSESSMENTS

These assessments have been carried out on an ad hoc basis and always as part of a rapid nutritional assessment or nutritional survey. We continued to work at an intersectional level on the transition to the concept of nutritional security assessments and how to best equip our teams to analyse their context; this will be a priority for 2020.

### 3. OTHER ACTIVITIES

OCB Nutrition continued to contribute to training at the intersectional level such as for Populations in Precarious Situations (PSP), Sexual and Reproductive Health (SRH), Health Promotion (HP) and Mental Health (MH) courses. Support was given to MSF partner sections such as for the Global Health and Humanitarian Medicine diploma run by MSF London (UK and India) and externally to the Tropical Medicine and International Health diploma at the Institute of Tropical Medicine (ITM) in Antwerp.
Recruitment for the joint OCP-OCB-Epicentre kwashiorkor study in Niger finished in November 2019 and some samples were sent to Belgium for analysis; however, strikes in the Niamey airport have meant this process has been delayed.

OCB applied for and won a grant to initiate play therapy activities in Kenema Hospital. A play therapist will be recruited and will develop a programme which could be rolled out in all OCB projects where children are treated, using Kenema as the pilot. Unfortunately, recruitment and starting activities were delayed until 2020 due to operational and Human Resources constraints.

### 4. LOOKING BACK AND AHEAD

#### 4.1. LESSONS LEARNED IN 2019

- Areas which need specific attention in our OCB Nutrition programmes:
  - Recognition of the need for and implementation of an integrated and holistic patient-centred approach in the management of malnourished children.
  - Improving the skill set/experience/knowledge base for malnutrition management for both international and national staff.
  - Lack of follow-up and implementation of ITFC nutrition protocols.
  - Screening and diagnosis of HIV and TB.
  - Assessing and completing the vaccination series of patients.

- Handover of MSF ATFCs to other organisations when we still have an ITFC in the area, or supporting Ministry of Health (MoH) ATFCs, is still proving to be challenging for patient follow-up, continuity of care, differences in treatment protocols and admission criteria and experiencing Ready-to-use-therapeutic food (RUTF) and medical supplies stock outs.

- Linkages between MSF nutrition programmes and national/NGO HIV/TB programmes has proven to be a challenge in a number of our projects due to different criteria for diagnosis and shortages of drugs. This has meant that there have been dangerous delays in our patients accessing treatment which have actually led to death in a few cases.

- One of the most vulnerable population groups in our nutrition programmes are infants less than six months. These continue to be a group which is poorly managed, particularly in ITFCs but also in the ATFC setup. This is primarily due inadequate protocols and training, especially regarding the promotion and support of breastfeeding.

- Identifying, recognising and acknowledging a nutrition crisis in contexts where we work has been extremely challenging for both national and international staff. This could be due to lack of experience or lack of adequate nutrition security surveillance, assessment, and analysis tools.

- Nutrition care is not yet recognised as a transversal topic in most OCB projects. This lack of nutritional care has clearly been identified in variety of our projects, including in prisons, HIV/TB projects, surgical projects, measles interventions, etc. This is likely due to a lack of adequate protocols and training, but also a lack of understanding of the relevance and importance of nutritional care in our ‘traditional’ MSF contexts where the focus is on emergency care with less attention to holistic care.

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2 With fewer large nutrition projects than in the years prior to 2016, we have lost the large pool of experienced staff that we once had (especially at the international level).
4.2. PROSPECTS FOR 2020

- With the rollout of the new intersectional ITFC protocol for 6-59 months, and complementary field training package (with e-learning currently in development), we hope that this will facilitate improvement in the management of malnutrition at the project level. The new intersectional ATFC protocol will also be rolled out later in 2020.

- The medical department is setting up an integrated multidisciplinary (paediatrics, mental health, vaccination, HP) strategy for the inpatient management of malnourished children which would include theoretical training, onsite training, implementation packages and Monitoring and Evaluation (M&E) systems.

- OCB is part of the special interest group of the management of at-risk mothers and infants (MAMI) initiative and will contribute to Version 3 of the MAMI tool. We hope to feed into improved protocols and tools for managing infants less than six months in our ITFCs and ATFCs. Part of this effort will include increased efforts to support and promote breastfeeding, which is part of a wider initiative at the intersectional level in collaboration with the Reproductive Health-Sexual Violence (RH-SV) and paediatric working groups.

- OCB is a key contributor to the development of intersectional clinical nutrition protocols (the first of their kind in MSF), with the intention of piloting some of the protocols in at least one OCB project in 2020, likely to be an HIV/TB project to begin with.

- Considerable effort will be put into implementing a nutrition security surveillance system in selected projects using newly designed tools and with close support from HQ.

- The new monitoring package will be rolled out in 2020 with additional indicators for HIV and TB screening and vaccination activities to improve our performance in these areas and better understand the barriers.

Kadijatu, 20 months old, in the Nutritional Centre of MSF Kenema Hospital. She was admitted with severe acute malnutrition and pneumonia. © Vincenzo Livieri
HIGHLIGHTS IN 2019

- The Luxembourg Operational Research Unit (LuxOR) and the Southern African Medical Unit (SAMU) developed and initiated a new research framework within the Medical Department.
- 77 MSF-supported studies were published, covering 13 thematic areas.
- 66 studies are ongoing.
- Four dedicated Structured Operational Research Trainings (SORT-ITs) were organised by LuxOR: MIGRATE-IT (writing module), Sexual and Reproductive Health, research uptake and Policy and Practice and qualitative research in South Africa. A total of 42 participants.
- Dedicated research training on antibiotic resistance (ABR) was held in Kenya, Nepal and Uganda and a dedicated position on ABR was established in Beirut.

1. OVERVIEW

The Luxembourg Operational Research Unit (LuxOR) and the Southern African Medical Unit (SAMU) coordinate and conduct research projects in close collaboration with field teams, operational cells, and international partners as part of the Operational Centre Brussels (OCB) Medical Department.

Operational research (OR) has become increasingly integral to Médecins Sans Frontières (MSF) activities, providing findings that impact MSF projects, the populations they serve and often, global health policy.

This year a new research framework was developed and initiated, in order to better structure OCB’s operational research projects to assure that they are responding to the priorities of MSF operations, are feasible and adequately resourced.

During 2019, 77 studies were published by OCB covering 13 thematic areas, with over 100 ongoing projects.
Dedicated Structured Operational Research Training sessions (SORT-ITs) were organised in Luxembourg on Migrant and Sexual and Reproductive Health, Research Uptake and Policy and Practice and qualitative research. There were 42 participants in total.

Partnering with the Special Programme for Research and Training in Tropical Diseases (TDR) of the World Health Organization (WHO) and The Union, LuxOR team members supported dedicated research training on antibiotic resistance (ABR) in Kenya, Nepal and Uganda. Support was also given to a general thematic SORT-IT in Sri Lanka.

2. MAIN PROGRAMME ACTIVITIES

2.1. OPERATIONAL RESEARCH ACTIVITIES

There are two main units supporting OR for MSF’s Operational Centre Brussels (OCB): the Southern African Medical Unit (SAMU), which is primarily responsible for research related to HIV/AIDS and tuberculosis (TB), and LuxOR, which leads all other areas of research and related capacity building.

This year a new research framework was developed and initiated by LuxOR and SAMU, in consultation with the Medical Department, in order to better structure OCB’s operational research efforts and to assure that they are responding to the priorities of MSF, feasible and adequately resourced. Before engaging in a research project, strategic questions need to be answered. Will the research be conducted in an ethical and scientifically sound manner? Is there sufficient operational space? Are the human resources available and adequately trained? Are the financial resources allocated? The framework is a five-step process to assure that the key stakeholders, both in the field and at headquarters, are involved. They must agree that the results of the research are important for MSF operations and/or have broader operational/policy implications. This is to avoid poorly planned or under-resourced studies of limited value to MSF. The steps are:

- Stage 1 – Research Idea: Identifying a relevant operational research question
- Stage 2 – Concept Note: Assessing OR criteria and operational impact, identifying key OR objective
- Stage 3 – Protocol Development
- Stage 4 – OR Implementation
- Stage 5 – Dissemination of OR findings, Policy and Practice Change.

This research framework process was started in 2019 after extensive discussions with key stakeholders and will be further developed in 2020.

LuxOR staff have been organised so that each one covers designated research domains such as sexual and reproductive health, paediatrics, or antibiotic resistance, etc. This helps streamline the support provided by LuxOR staff and ensures that they are aware of research issues in those domains.

To strengthen research capacities and medical data collection and analysis, OR team members regularly support missions and projects. In 2019, OR field visits included Belgium, Cambodia, Cameroon, the Democratic Republic of the Congo (DRC), Egypt, Guinea, Iraq, Lebanon, Malawi, Mozambique, Nigeria, South Africa and Zimbabwe.

Operational research studies are published in peer-reviewed scientific journals, and the results remain openly available to researchers and the global humanitarian community. MSF has a policy of publishing in open access journals to ensure this access; it also maintains the MSF Field Research website that contains all MSF-authored articles published in peer-reviewed journals available free of charge. In 2019, 77 OCB-supported studies were published, covering 13 thematic areas such as HIV and tuberculosis, infectious diseases, mental health, and surgery and emergency care (Figure 1). In addition, there were 66 ongoing studies worldwide.
OR study findings reveal valuable evidence to improve programmes and close gaps in care throughout MSF’s projects. The OR team is working to make sure its research findings are translated into action, sharing key findings with operations and partners, planning for uptake, and measuring impact. For example, based on OR studies, MSF established a training series for health workers and advocacy activities on the correct use of labour-inducing drugs in Pakistan; set up a regional scale-up of an innovative environmental health toolkit in Malawi, Mozambique, and Zimbabwe; and improved functional assessments and rehabilitation activities for trauma patients in Burundi, Cameroon, and Gaza.

In 2019, LuxOR also continued to support the recruitment of field epidemiologists for OCB by validating their profiles, as well as briefing and debriefing epidemiologists departing on and returning from missions.

2.2. CAPACITY BUILDING – OR TRAINING

The Structured Operational Research Training Initiative (SORT-IT) is an output-oriented advanced training model for OR capacity building initiated by MSF and the International Union Against Tuberculosis and Lung Diseases (The Union) in 2009. The training was adopted and is now validated by the global leadership of the Special Programme for Research and Training in Tropical Diseases (TDR) hosted by the WHO.

The training combines mentorship by experienced researchers with a hands-on “learning-by-doing” approach. It targets MSF colleagues, staff of international organisations and their local implementing partners, as well as representatives of health authorities in low and middle-income countries (LMIC). The focus is on building sustainable OR capacity.

In the SORT-IT courses organised directly by LuxOR, we had 42 participants in six course modules, with thematic course modules on sexual and reproductive health, migrant health and qualitative research.

For the first time in the history of SORT-IT, LuxOR piloted a dedicated course on facilitating evidence-based policy change, practice improvements, and public advocacy. This was, in effect, a Module 4 of the SORT-IT series and is under further development. In December 2019, eight operational researchers from South Africa, Malawi, DRC, Ukraine, and Belgium gathered in Luxembourg to develop detailed stakeholder analyses, evidence briefs, and engagement strategies. With continuing support from the facilitation team, participants then returned to their projects to validate and implement their strategy towards closing research to policy gaps.
3. HUMAN RESOURCES

The team at headquarters is currently composed of an OCB OR Coordinator/LuxOR Director, one programme officer, two qualitative researchers, four OR advisors, one policy, practice, and communications advisor, one medical editor, one medical data manager and other ad hoc positions, all of whom have programme, research, and publication skills.

In 2019 a new OR Coordinator, Jo Robays, was chosen to lead the team. He is an epidemiologist with extensive research and MSF experience, as well as time spent with the MSF Ethics Review Board. He was welcomed in his new role. During this year, the programme officer was replaced for six months; one qualitative researcher, based in South Africa left to explore new (research) horizons and one of the Luxembourg-based OR focal points was welcomed back from a two-year mission as medical coordinator in Lebanon.

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED

• The introduction of the research framework and research domains assigned to focal persons helped to streamline the workload, to increase familiarity with literature related to each domain and improve internal and external communication.

• OR has become increasingly integral to MSF activities, providing findings that impact MSF projects, the populations they serve and often, global health policy. There has been an increasing demand for support from a limited number of staff, leading to work overload and delays in implementation of support; choices need to be made on what to support.

• There is a need to reinforce the awareness of ethics and data protection issues in our research projects; and to enhance our capacity to interact with the MSF Ethics Review Board in a timely and constructive way.

• Thematic SORT-IT courses continued to be successful in providing field-based evidence and building research expertise in certain domains. Challenges are faced, however, with the tendency towards more complex and demanding designs, such as mixed methods and prospective studies.

• Challenges were ongoing in the uptake of the Research Impact Monitoring Tool (REMIT), an MSF-wide research management and impact tool.

• There is need to develop a structured framework of support for MSF epidemiologists, a crucial resource in making OR feasible in the field.

• Continued efforts are being made to explore the possibilities of a collaboration with the Luxembourg Foundation. Possible areas are PhD trajectories, funding of SORT-IT courses and other capacity building initiatives.

4.2. PROSPECTS FOR 2020

• The OR framework, which is currently being piloted, will be evaluated, modified and refined taking into account elements such as user friendliness, added value and additional administrative burden.

• There is a need to establish an OCB research agenda derived with input from different medical and operational stakeholders, finding a balance between being inclusive and efficient in setting real priorities.

• Continued measures will be taken to translate research evidence into policy, practice, and/or public advocacy.
• Efforts to develop new tools and methods for capacity building, as well as new types of training, will continue.

• Further development of REMIT, introduced in OCB in late 2017, will be explored.

• An OR advisor for antibiotic resistance has been recruited and took up office in Beirut, Lebanon, in order to reinforce research in this important domain.

• LuxOR will continue to provide tutors for the TDR SORT-IT courses. A thematic SORT-IT course on antibiotic resistance is planned in Beirut; there will also be a general SORT-IT, focusing on MSF and Ministry of Health staff associated with MSF projects.

• A framework of support will be developed for supporting OR field positions, epidemiologists, and other personnel in the Medical Department.

Damien, whose right lower leg and foot had to be amputated, is completing one of the new exercises of the Activity Independence Measure for Patients after Trauma (AIM-T). As part of an operational research project, Humanity & Inclusion (HI), MSF, and the Karolinska Institutet are piloting a new physiotherapy assessment tool to help patients regain independence in their daily lives.

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PAEDIATRIC CARE

1,119,272 children (aged 0-15) seen in general outpatient departments, excluding Ambulatory Therapeutic Feeding Centre (ATFC) consultations

29,277 children exited our inpatient departments, excluding Inpatient Therapeutic Feeding Centre (ITFC) exits

9,656 neonates exited our neonatal wards

<10% overall neonatal mortality <10% for the first time since 2012

20% Children aged 5 to <15 years accounted for 20% of the paediatric patients seen in outpatient clinical consultations and 15% of the patients exiting inpatient departments

KEY FACTS IN 2019

• A total of 22 projects in 14 countries provided inpatient department (IPD) care to paediatric patients, and 41 projects (including emergency interventions) in 21 countries provided outpatient department (OPD) care to children.

• Neonatal inpatient care was provided in 10 projects in six countries.

• 23% of IPD care and 44% of OPD care for children was provided in specialised projects including surgical projects and vertical projects: HIV, TB, malaria, intravenous drug users (IVDU), adolescent and non-communicable diseases (NCD), outbreak responses (cholera, yellow fever and measles) and special interventions (typhoon, snake bite).

• Where inpatient care occurred for children aged 0 to <15 in 2019:

  - Total number of patients treated increased by 21% in neonatal projects and by 8% in paediatric IPDs compared to 2018.
  - IPDs accounted for 61% of exits and 35% of mortalities.
  - Inpatient therapeutic feeding centres (ITFC) accounted for 19% of exits and 24% of mortalities.
  - Neonatal wards accounted for 20% of exits and 41% of mortalities.

1. OVERVIEW

In Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) projects, paediatric patients are those aged 0 to <15 years of age. In 2019, care to paediatric patients was provided in many different outpatient settings including general and paediatric outpatient departments (OPD), mobile clinics, targeted outpatient treatment programmes such as Ambulatory Therapeutic Feeding Centres (ATFC), surgical, HIV, non-communicable diseases (NCD) and malaria clinics. They were also cared
for inpatient settings such as neonatal wards, inpatient paediatric wards, Inpatient Therapeutic Feeding Centres (ITFC), surgical wards and Ebola and Lassa treatment centres. In 2019, we saw many epidemics involving children including yellow fever, cholera and the ongoing measles epidemic. Children were also included in MSF OCB vaccination campaigns, malnutrition screenings, and mental health services.

2. MAIN PROGRAMME ACTIVITIES

2.1. INPATIENT PAEDIATRIC CARE

A total of 37,936 children were admitted to paediatric inpatient departments (IPD) in 2019. If children admitted during short-term interventions (such as for epidemics or natural disasters) are excluded, 30,626 children were admitted, and 29,227 children exited paediatric IPDs in 2019. Children aged 5 to <15 accounted for 15% of children admitted, but this is an underestimation as only 59% of the 22 IPDs reported the number of children admitted in this age group. Paediatric IPD admissions in sub-Saharan Africa accounted for a much larger percentage of paediatric admissions in 2019 (84%) than in 2018 (69%). This is due to the opening of two paediatric IPDs (Kenema, Sierra Leone, and Niono, Mali) in sub-Saharan Africa, several outbreaks requiring IPD activity, and a reduction of activity in some larger projects outside of Africa (e.g. the closing of the hospital in Ahmat Shah Baba, Afghanistan). The largest paediatric IPDs (where MSF provides direct care to patients) in 2019 were Kouroussa, Guinea and Masisi/Nyabiondo, Democratic Republic of the Congo (DRC).

Paediatric IPD morbidities are detailed in Figure 1. As in previous years, severe malaria was the leading cause of morbidity (48%) and mortality (44%) among children. The only significant paediatric IPD activity outside of sub-Saharan Africa in 2019 was in Syria. In this project, non-bloody diarrhoea (30%) and surgical cases (24%) accounted for most of the morbidities seen with very few mortalities reported overall. “Other” diagnoses represent patients who had diseases that were either unspecified or not included in OCB projects’ standard morbidity list and accounted for 17% of morbidity.

*Other: Diseases either unspecified or not included in a project’s standard morbidity list
LRTI: lower respiratory tract infection, SAM: severe acute malnutrition
The overall mortality rate across all paediatric IPDs was 2.4%, up from 1.5% in 2018. The three projects with mortality above the target maximum threshold of 5% (excluding paediatric HIV IPDs) were the two new projects started in 2019 (Kenema and Niono) and the Pool D’Urgence Congo (PUC) IPD response to the measles outbreak (see Annex for mortality rates per project).

In 2019, the Kenema paediatric hospital opened and implemented the standard paediatric monitoring recommended for all projects. Notable trends from analysis of their data that could inform care in similar settings in sub-Saharan Africa are summarised in the Annex.

2.2. OUTPATIENT PAEDIATRIC CARE

Children were seen for outpatient care in 41 projects across 21 countries. A total of 1,119,272 children were seen in outpatient departments (OPD). Across all projects, 76% had aggregated data by age (compared to 48% in 2018), and among these projects, 20% of children seen in OPD were aged 5 to <15. There were 17 OPDs (accounting for 44% of paediatric OPD patients) that provided specialised care to paediatric patients in 2019. Among these, four projects provided surgical and post-operative care; two were HIV/TB projects; seven were in outpatient services linked to interventions; three were specialised clinics caring for non-communicable diseases (NCD) and intravenous drug users (IVDU); and one was an adolescent project. Where morbidity data was accessible, the main morbidities seen in OPD were upper respiratory tract infections (URTI) (30%), malaria (22%), diarrhoea (13%), lower respiratory tract infections (LRTI) (7%), and skin diseases (9%). In contexts without endemic malaria, URTIs (44%) were the most common morbidity, with diarrhoea (13%), skin diseases (11%) and LRTIs (5%) following in frequency.

2.3. NEONATAL CARE

In 2019, 9656 neonates exited our newborn units in 10 projects in six countries. Of all livebirths occurring at MSF maternities, 14% were admitted to newborn units, with a low of 4.1% seen in Ahmat Shah Baba (prior to closing in March 2019) and the highest seen in Doro, South Sudan (23%). Notably, Pibor (South Sudan) and Khosh (Afghanistan) admitted less than 10% of babies born in their maternity wards, indicating that the profile of deliveries in those sites was more like that of a Basic Emergency Obstetric and Newborn Centre (BEmONC) or, less likely, that babies who needed special neonatal care based on maternal or birth risk factors were missed.

The principal diagnoses of newborns discharged from neonatal inpatient services are detailed in Figure 2. They included prematurity (17%), birth asphyxia (15%), sepsis (10%), transient tachypnoea of the newborn (TTN) (7%) and risk of sepsis (7%). Other neonatal diseases accounted for 22% of morbidities and were either unspecified or not on the standard morbidity list. Respiratory conditions for which continuous positive airway pressure ventilation (CPAP) would be effective (respiratory distress syndrome, meconium aspiration syndrome, apnoea of prematurity, TTN) accounted for 17% of the morbidities in newborn units. CPAP was successfully installed in Khosh (Afghanistan) in late 2018. For analysis of the patterns in CPAP use in this project, see the Annex.

The overall mortality rate decreased from 13% in 2018 to 8.5% in 2019 within all neonatal projects except Bangassou, Central African Republic (CAR) and Ahmat Shah Baba, showing decreases in mortality rates (see Annex for breakdown by project). This is the first time in the last five years that a mortality rate <10% has been observed in our newborn units. Bangassou and Pibor continue to have mortality rates above the acceptable threshold of 15%, which could be due to Human Resources (HR) constraints and service disruptions, especially for Pibor in 2019. Leaving against medical advice (LAMA) and referral rates were 2.2% and 5% respectively. LAMA rates showed a marked decrease between 2018 (5%) and 2019 (2.2%). Birth asphyxia (35%), prematurity (33%) and sepsis (11%) continue to be the three major causes of mortality in newborns, though the proportion of deaths due to prematurity has markedly decreased from 2018 (44%). Main causes of neonatal mortality are shown in Figure 2.

2019 marked the first full year of an established antibiotic stewardship and microbiology surveillance programme in a neonatal unit in Bangui, CAR. See Annex for details.
The four biggest projects: Timergara (Pakistan) (23%), Khost (Afghanistan) (22%), Bangui (CAR) (20%) and Masisi (DRC) (7%) accounted for 72% of neonatal inpatient care. These projects collected data in a standard individual neonatal database. The following information on outcomes stratified by weight and neonatal care provision is generated from this database:

- Annual bed occupancy rate (BOR) ranged between 111% and 130% in three projects. Masisi was the only project with a BOR below the target of 80% at 66%.

- Mortality decreased across all weight groups when compared to 2018.

- Across all weight groups, favourable outcomes (discharged or transferred) in very low birth weight (VLBW) newborns (1000g – 1499g) showed good improvement between 2018 (33%) and 2019 (41%). The project with the lowest overall mortality rate (Bangui, CAR) had the biggest increase in favourable outcomes in VLBW newborns in 2019 (65%) as compared to 2018 (43%).
• Of babies exiting the newborn units, 88% were low birthweight (1500g-2499g) or normal birthweight newborns (>2500g). Babies in these weight categories accounted for 57% of the neonatal mortality reported in these units.

3. OTHER ACTIVITIES

In 2019, child health was picked as one of the priorities for the OCB medical department strategy for 2020 to 2023. The translation of this into medical care in OCB projects should be a key focus in 2020 with tangible increases in resources and coordination of child health activities in both MSF guidance and medical operations.

Openings and closings: Three projects with paediatric IPD and OPD activities were opened in 2019 in Kenema (Sierra Leone), Niono (Mali) and Bamenda (Cameroon). One paediatric project in Kabul (Afghanistan) closed in 2019.

Training:

• In 2019, two training sessions, both in paediatric emergency hospital care (PEHC), were successfully carried out: one in Brussels and one in the nutrition project in Maiduguri, Nigeria.

• Support was provided to paediatric and neonatal components for the biannual training for midwives, the Institute of Tropical Medicine’s yearly diploma in tropical medicine, and for the First Line Medical Training course.

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

Neonatal care:

• Targeted and coordinated HR planning to strengthen neonatal nursing care, and timely paediatrician support to neonatal projects seemed to be the key factors contributing to improvement in neonatal outcomes even without significant improvement in complexity of care (e.g. Bangui, CAR).

• Space remains a limiting factor in neonatal service provision with expected improvements anticipated for Bangui, CAR but not for other projects in 2020.

• CPAP was implemented successfully in Khost. An analysis of its use in 2019 showed that 18% of babies in the newborn unit were placed on CPAP (ideal use would range from 5-10%). Further analysis (see Annex) suggested that CPAP use could be optimised, and adverse events associated with CPAP better monitored. Lessons learned from this implementation will be useful for introducing CPAP in other neonatal projects in the future.

Paediatric care:

• OPD:
  - Paediatric OPD care is not only provided in the traditional primary health care setting. The lack of common standards for basic levels of care and morbidities captured means the care is often variable across projects.
  - Institution of standard programmes (e.g. Integrated Management of Childhood Illness (IMCI), eCARE, etc.), especially for children <5 years of age and linking OPD activities to hospital and community health activities remains a challenge in many of our projects.
• **IPD:**
  - Inpatient care for measles and new paediatric projects needs better support to optimise care and reduce unnecessary morbidity and mortality.
  - Protocols and guidelines for higher levels of care need to be developed as projects increase their level of care or open at higher levels.

• **Other**
  - 2019 was a year of epidemics, including measles across Africa, chickenpox in Bangladesh, and yellow fever and cholera in Nigeria, among many others. These epidemics show that our guidance and support for these illnesses need updating and support to the field must be more coordinated to appropriately tackle these epidemics.

### 4.2. PROSPECTS FOR 2020

**Overall direction:**
- Finalise child health intersectional toolbox.
- Elaborate on child health concept and associated packages of care for all the sites where MSF provides clinical care.
- Finalise the adolescent guidance document.
- Collect and curate paediatric guidance on epidemic support for different diseases and make these available to the field in the child health toolbox.

**Paediatric**

• **OPD**
  - Introduce eCARE in one to two projects and support other projects with implementing other standardised programmes, such as integrated community case management (ICCM) and integrated management of childhood illnesses (IMCI).

• **IPD**
  - Improve support for children with or at risk for disabilities through pilot in Kenema and potential Transformational Investment Capacity (TIC) collaboration.
  - Continue PEHC training courses where pertinent; conduct regional French and English versions.
  - Capitalise on training materials from Kenema to support other paediatric inpatient departments.

**Neonatal**

• Extend coordinated nursing and medical HR support to all neonatal projects whenever feasible, with a specific goal to train and have a pool of nurses and doctors who can support neonatal projects.

• Optimise space and HR in the planning before (re)opening of projects with planned renovations or openings in 2020 (Bangui, CAR; Maiduguri, Nigeria; and Kenema, Sierra Leone).

• Prioritise provision of adequate bed space in existing newborn units.

• Introduce CPAP in other neonatal projects (e.g. Bangui) in 2021

• Ramp up neonatal training in key projects; regional training for key French countries (e.g. CAR and DRC); and provide structured support for the opening of neonatal activities in two projects: Maiduguri and Kenema.

• Provide focused support to neonatal projects with continued challenges: Pibor and Bangassou
PHARMACY UNIT

HIGHLIGHTS OF 2019

• Support to medical and supply teams continued to improve in 2019, although further clarifications regarding roles and responsibilities between pharma and supply remain to optimise the work.

• A dynamic tool to provide support in creating, maintaining and validating Medical Standards Lists, is ready to be piloted in the field.

• Collaborated closely with the Supply Chain and Logistic Departments to maintain a holistic approach for quality assurance for transportation and storage of medical products.

• Unifield deployment and medical stock integration process under the Supply Department were continued in 2019.

• Field visits for support of Good Pharmacy Practices, Pharmacy Analysis and Coaching were conducted with four missions, and evaluations of local pharmaceutical markets were performed intersectionally in 11 countries.

1. OVERVIEW

The year 2019 was marked by emergency responses to the Democratic Republic of the Congo (DRC -Ebola), Mozambique (Cyclone Idai) and South Sudan (flooding), with good collaboration between the Pharma Unit and E-pool. Ongoing support on quality assurance of medical products was provided to all OCB missions, with attention to importation constraints seen in Nigeria, Pakistan, Bangladesh, Bolivia, Turkey, Venezuela, Mozambique, Iraq and Palestine, Lebanon, Brazil and Ukraine. Support to the medical and supply teams on quality monitoring, rational medical procurement, and data quality continued to improve in 2019.

The quality of medication therapy can be optimised by improving the organisational structures through which medication therapy is provided. Medical Standard Lists are a key element in such strategic medicines management. Additionally, their application in related processes for purchase ordering and stock management allow streamlining supply. A tool to support missions better in creating,
maintaining and validating Medical Standard Lists, containing template lists for different medical activities, is ready to be piloted in the field.

The Pharma Network also recognises the need to improve the safety and effectiveness of medication use. Both clinical pharmacy and pharmaceutical care are focused on these goals. They are closely related concepts and are being explored within Médecins Sans Frontières (MSF) to become structured activities in patient care.

The close collaboration with the Supply Chain and Logistics Departments remained a fundamental feature to maintain a holistic approach for quality assurance in the transportation and storage of medical products. In order to strengthen this collaboration, the “Pharmaceutical Logistics” Technical Family has been created within the Logistics Department, integrated into the Logistic Support Unit.

The Pharmaceutical Logistics Technical Family, unique in Operational Centre Brussels (OCB), includes all the technical aspects aimed at ensuring that medical products are transported and stored in a way that they remain effective and safe throughout the journey from manufacturers to patients. As well as ensuring the quality of the medical products, this support is aimed at reducing potential economic losses due to improper storage and transportation.

In 2019, the focus continued to be on Unifield deployment and the medical stock integration process under the Supply Department. Special attention was given to start medical stock management of new projects under a proper human resources (HR) set-up with proper communication between all parties. Emphasis was also provided on data quality analysis and continuous improvement in Unifield.

This was also a year of forging ahead to implement Good Pharmacy Practice (GPP) at end-user pharmacy level in OCB projects. Implementation visits were made to four countries, with strong and continuing communication of the GPP message to the field through a variety of platforms including countless briefings and training sessions.

2. MAIN PHARMACY ACTIVITIES
2.1. THE MSF QUALITY ASSURANCE SCHEME
2.1.1. IDENTIFICATION AND VALIDATION OF DRUG SOURCES

TABLE 1

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MSF full product assessment*</td>
<td>15</td>
<td>11</td>
<td>14</td>
<td>9</td>
<td>11</td>
<td>6</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Declaration of equivalence (DoE)</td>
<td>-</td>
<td>11</td>
<td>23</td>
<td>26</td>
<td>26</td>
<td>48</td>
<td>48</td>
<td>59</td>
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<td>Medical Director Waiver**</td>
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<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>WHO pre-qualification</td>
<td>48</td>
<td>62</td>
<td>53</td>
<td>35</td>
<td>41</td>
<td>53</td>
<td>48</td>
<td>60</td>
</tr>
</tbody>
</table>

* In addition, three variations were assessed.
** Exceptional approval based on risk/benefit analysis. There have been no new approvals, and four have been extended.

- Thirteen product dossiers were monitored, as part of the MSF Quality Assurance Scheme.
- Three spontaneous variations were submitted by the manufacturer and assessed.
- MSF International conducted four Good Manufacturing Practice (GMP) audits of manufacturers and five GMP technical visits, for a wide range of medicines.
2.1.2. Alerts on quality and batch recalls

Reports on quality are followed by OCB Supply Centre, MSF Supply, and by the MSF International Office.

- Number of claims received by MSF Supply in 2019: 130
- Six batch recalls in 2019

| TABLE 2 | Number of quality-related communications issued by MSF Supply (2012-2019) |
|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Quality alert | 7 | 3 | 4 | 5 | 6 | 8 | 3 | 2 |
| Batch recall | 2 | 3 | 2 | 3 | 3 | 1 | 0 | 6 |
| Total | 9 | 6 | 6 | 8 | 9 | 9 | 3 | 8 |

| TABLE 3 | Quality-related problems reported by the MSF International Office (2013-2019) |
|-----------------|------------------|------------------|------------------|------------------|
| 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 |
| 2018 | 15 | 10 | 5 |
| 2019 | 70 | 57 | 13 |

* For drugs = 25 quality-related problems in total (23 for International Procurement and 2 for Local Procurement) / For Medical Devices = 45 quality related problems in total (34 for International Procurement and 11 for Local Procurement).

2.2. MEDICAL PROCUREMENT

2.2.1. MSF EXPENDITURE

The total medical expenditure for OCB for medicines, vaccines, small medical supplies, medical equipment and kits in 2018 was 31.6M€, of which 25.4M€ were procured through MSF Supply. This amount represents approximately 3.2M€ more than in 2018 (Table 4).

| TABLE 4 | OCB Total Medical Expenditures 2013-2018 |
|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Medicines | 15.5 | 13.7 | 22.5 | 14.9 | 18.8 | 14.8 | 17.5 |
| Vaccines | 1.0 | 0.7 | 1.1 | 1.6 | 1.5 | 1.2 | 1.0 |
| Therapeutic food | - | - | - | 0.9 | 0.8 | 0.9 | 0.8 |
| Small medical supplies | 4.9 | 9.6 | 6.8 | 5.2 | 6.9 | 6.5 | 7.3 |
| Medical equipment | 2.3 | 2.4 | 3.3 | 2.6 | 3.9 | 4.2 | 4.0 |
| Medical kits | 1.8 | 2.2 | 1.3 | 1.1 | 0.9 | 0.8 | 1.0 |
| Total | 25.5 | 28.6 | 35.0 | 25.4 | 32.1 | 28.4 | 31.6 |
Expenditure on medicines: five missions out of 36 represented approximately 48% of the total value (Figure 1).

Twenty-two (22) items on the medical procurement list were responsible for 20% of the total medical expenditure of MSF OCB Supply (27.9 M€).

Among others, these 22 items included seven anti-infective medicines (three antivirals, one cytotoxic antibacterial, two antimalarials and one antimycobacterial), four diagnostic tests (malaria, tuberculosis (TB), HIV and glucose strips), two immunoglobulins, measles vaccines and therapeutic food. Alcohol-based hand rub solution, examination gloves and gauze compresses, a contraceptive implant, point-of-care ultrasound, ferrous/folic acid tablets and mifepristone were also part of the top 22 items.

**TABLE 5** Top 22 items responsible for 20% of the 27.9M€ MSF Supply medical turnover for OCB in 2019

<table>
<thead>
<tr>
<th>Description</th>
<th>Expenditure (€)</th>
<th>% of Tot turnover (27.9M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELAMANID, 50 mg, tab., blister</td>
<td>638,898</td>
<td>2.3%</td>
</tr>
<tr>
<td>(mb GeneXpert) TEST MTB/RIF, cartridge, CGXMTB/RIF-50</td>
<td>526,982</td>
<td>1.9%</td>
</tr>
<tr>
<td>ALCOHOL-BASED HAND RUB, solution, 500 ml, bot.</td>
<td>498,773</td>
<td>1.8%</td>
</tr>
<tr>
<td>RUTF, peanut paste, 92 g</td>
<td>426,143</td>
<td>1.5%</td>
</tr>
<tr>
<td>GLOVE, EXAMINATION, latex, s.u. non sterile, medium</td>
<td>293,282</td>
<td>1.1%</td>
</tr>
<tr>
<td>MALARIA HRP-2 TEST (SD Bioline), whole blood, 1 test 05FK50</td>
<td>267,856</td>
<td>1.0%</td>
</tr>
<tr>
<td>PRIMAQUINE diphosphate, eq. 15 mg base, tab.</td>
<td>233,805</td>
<td>0.8%</td>
</tr>
<tr>
<td>IMMUNOGLOBULIN HUMAN ANTITETANUS, 250 IU/ml, syr.</td>
<td>221,249</td>
<td>0.8%</td>
</tr>
<tr>
<td>HIV 1 + 2 TEST (Determine), ser/pl/wb, 1 test 7D2343</td>
<td>215,728</td>
<td>0.8%</td>
</tr>
<tr>
<td>SOFOSBUVIR, 400 mg, tab.</td>
<td>205,446</td>
<td>0.7%</td>
</tr>
<tr>
<td>VACCINE - MEASLES, 1 dose, multidose vial</td>
<td>203,717</td>
<td>0.7%</td>
</tr>
<tr>
<td>FERROUS salt eq. 60 mg iron/FOLIC acid 0.4 mg, tab.</td>
<td>201,735</td>
<td>0.7%</td>
</tr>
<tr>
<td>TDF 300mg/3TC 300mg / DTG 50mg, tab.</td>
<td>201,172</td>
<td>0.7%</td>
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<tr>
<td>(glucometer Nova StatStrip) STRIP 42214</td>
<td>193,283</td>
<td>0.7%</td>
</tr>
<tr>
<td>ARTESUNATE 60 mg, powder, vial +NaHCO3 5% 1ml +NaCl 0.9% 5ml</td>
<td>190,893</td>
<td>0.7%</td>
</tr>
<tr>
<td>ATV 300 mg/r 100 mg, tab.</td>
<td>184,652</td>
<td>0.7%</td>
</tr>
<tr>
<td>DOXORUBICIN HCl, pegylated liposomal, 2 mg/ml, 10 ml vial</td>
<td>184,378</td>
<td>0.7%</td>
</tr>
<tr>
<td>MIFEPRISTONE, 200 mg, tab.</td>
<td>175,370</td>
<td>0.6%</td>
</tr>
<tr>
<td>LEVONORGESTREL implant 2 x 75 mg (Jadelle) + trocar</td>
<td>173,112</td>
<td>0.6%</td>
</tr>
<tr>
<td>ULTRASOUND (Sonosite M-Turbo) + TRANSDUCER C60x</td>
<td>167,667</td>
<td>0.6%</td>
</tr>
<tr>
<td>COMPRESS, GAUZE, 10 cm, 12 plies, 17 threads, sterile</td>
<td>166,236</td>
<td>0.6%</td>
</tr>
<tr>
<td>IMMUNOGLOBULIN HUMAN anti-D, 300µg, syringe</td>
<td>165,616</td>
<td>0.6%</td>
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</tbody>
</table>

2.2.2. LOCAL PHARMACEUTICAL MARKETS

During 2019, evaluations of local pharmaceutical markets were conducted in 11 countries. Approval outcomes are shown in Table 6. Pharmaceutical market evaluations reflected 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 remained sub-optimal in some countries. The risk/benefit evaluation of both local procurement and final approval often rely on scarce evidence and information.

### TABLE 6 Evaluation of local pharmaceutical markets (2010-2018)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of manufacturers approved</th>
<th>Number of wholesalers approved</th>
<th>Number of countries evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>5</td>
<td>28</td>
<td>14</td>
</tr>
<tr>
<td>2011</td>
<td>6</td>
<td>11</td>
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<tr>
<td>2012</td>
<td>14</td>
<td>69</td>
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<tr>
<td>2013</td>
<td>31</td>
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<td>2014</td>
<td>9</td>
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<td>2017</td>
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<td>2018</td>
<td>9</td>
<td>119</td>
<td>14</td>
</tr>
<tr>
<td>2019</td>
<td>14</td>
<td>71</td>
<td>11</td>
</tr>
</tbody>
</table>

Regarding medical procurement systems, 23 out of 36 missions did not follow 100% MSF's primary procurement option - importation from MSF Supply Centres. Nine missions relied solely on the local market for their medical procurement; six received some of their medicines from the public distribution flow and the remainder from international procurement. The remaining eight missions faced difficult importation regulations, leading to sporadic local purchases (Figure 2).

Among the missions that purchased medicines locally, three were in highly regulated countries (Belgium, Greece and Italy), twelve had a database implemented (Lebanon, Egypt, India, Kenya, Serbia, Indonesia, Nigeria, Pakistan, Turkey, Brazil, Palestine and Ukraine), 21 submitted validation forms for local purchase approval, and three missions purchased locally without any recommendations regarding quality (South Africa, Mali and Haiti).

### FIGURE 2 Medicine procurement typologies in OCB missions, 2019

% indicate the amount spent per country on medicines procurement as proportion of the total OCB expenditure in medicines.
2.2.3. COUNTRY REGULATIONS AND IMPORTATION CHALLENGES

MSF is confronted with constant changes in country pharmaceutical policies and regulations, which have a direct effect on operations. The tightening up of individual country importation regulations does not necessarily mean an increase in the stringency of the National Drug Authority; sometimes it is motivated by the economic pressure from local companies. In addition to the usual countries with importation challenges such as Pakistan, Ukraine, Turkey (for Syria) and Nigeria, Iraq and Brazil joined the list in 2019 and posed the main challenges for OCB.

Supplier constraints such as embargoes or those linked to product registration in destination countries remain an increasing concern at Supply Centre level. The need to respect the local legal requirements for importation under humanitarian exemptions must continue. However, these challenges significantly affected the timely delivery of supplies to the field.

2.3. GOOD DISTRIBUTION PRACTICES (GDP) AND COLD CHAIN

The compliance to good distribution practices is nowadays perceived by medical, supply chain, and logistic staff as a fundamental prerequisite for the quality of the therapies provided to patients. Main axes for 2019 have been training, field visits (Greece, Kenya and Mozambique), second line support, research and development and interdepartmental communication.

Support for cold-chain setups and strategies has been provided during interventions, such as for the multiantigen campaign vaccinations in Greece (Lesvos, Moria clinic), the emergency cholera vaccination in Mozambique (Beira) and the national measles response in DRC (through the PUR, Pool d’Urgence Rougeole). Support for the implementation of good distribution practices has been provided to the KSU (Kenya Supply Unit), and for overall pharmaceutical logistics, as in the setup for the MUST2 (Mobile Unit Surgical Trailer). Second line support was provided to finalise the design of medical stocks and warehouses at project or coordination level in Sierra Leone (Freetown, Kenema), Afghanistan (Kunduz), Central African Republic (CAR, Bangui) and Guinea (Conakry).

Support for cold chain breakdown follow-up was guaranteed through “Dr Cold Chain.” It provides feedback on field cold chain breakdowns and ensures support for corrective and preventive measures, promoting the communication between the different departments involved. In 2019, it provided feedback for about 150 cold chain breakdowns coming from 22 different missions.

Specific support has also been provided for the implementation of the first MSF refrigerated truck for the regular, safe, controlled temperature transportation of medical products in Sierra Leone.

2.4. MEDICAL STOCK MANAGEMENT

- Six additional medical stocks were integrated within the year bringing the total to 53 and representing 79% coverage. Three new OCB projects were started in an integrated way from their opening. For 2020, 10 stocks are awaiting integration of which five were coming from handovers to other sections. Unifield (UF) is the major management tool utilised in central and project stocks bringing the coverage to 87.5% (63 out 72 stocks). By the end of 2020, all remaining medical stocks should be operating with Unifield.

- Rules in Unifield were not matching the reality for the follow-up by batch number and expiry dates. The consequence was that several items could not be followed by expiry date in the system and could not be corrected in 2019. A parallel follow-up tool in an Excel file was developed for that purpose. Finally, a technical corrective solution was found and will be available in the Unifield release at the beginning of 2020.

- A draft paper on “OCB Medical Stock Management Policy” was written by the Supply Department to be shared with the Medical Department for completion.

- Final correction bugs version of Isystock 4 was available end of 2019. Its deployment is to be planned during 2020.
• Under the request of the HR department, competencies of the different warehouse staff position were reviewed.

2.5. GOOD PHARMACY PRACTICES (GPP) IN END-USER PHARMACIES

2019 was a challenging year for OCB with regards to GPP, due to one GPP referent being seconded to the International Office to act as the International Coordinator for Quality Assurance of Medical Devices & In Vitro Diagnostics medical devices (IVDs) over a period of roughly six months. Fortunately, the GPP Mobile Implementation Officer (MIO) was able to provide support as a referent during this time; however, this unavoidably resulted in a reduced number of field visits during 2019.

In addition to this, the Mobile Implementation Officer Local Market Assessment (MIO LMA) left her position during Q4 2019 and was not replaced, resulting in the need to reshuffle responsibilities within the pharmacy unit regarding Quality Assurance (QA) and GPP, resulting in the GPP referent taking on many new responsibilities and challenges related to QA.

Despite these significant challenges, a combined GPP/MIO LMA visit was able made to India to support the Mumbai project, as well as a GPP support visit to Gaza in Palestine, both during Q1. A long-term pharmacy analysis visit was made in CAR during Q2 and a coaching and support visit to the Egypt mission during Q3.

Collaboration with the Patient Documentation Circle continued during 2019, seeing the rollout of the first package of patient documentation including the new standardised format for the inpatient medication and fluids charts, which begun to be used in several missions.

2.6. CLINICAL PHARMACY, PHARMACEUTICAL CARE AND THE QUALITY OF MEDICATION THERAPY

Clinical Pharmacy and Pharmaceutical Care are much-discussed topics among pharmacists globally and within MSF. These are concepts about the need to improve the quality of patient care through provision of safe, efficient, rational (optimal) and cost-effective use of medicines and medical supplies. Although both concepts have a similar goal – to optimise medicine use – the goal is achieved differently by emphasising different aspects of practice.

Therefore, in 2019, the Pharma Network started to develop a description of both concepts to ensure a better understanding and their integration into the scope of practice within MSF. The overall goal of standardisation of terminology around these concepts is to support the development of a common framework for various types of interventions. This framework should optimise the quality of medication use; to exchange information and experiences on current existing initiatives between different MSF sections and settings; and ultimately to facilitate implementation into practice.

3. OTHER ACTIVITIES

3.1. PHARMA UNIT

Not all referents and MIO positions in the Pharma Unit were maintained for 2019. The LMA MIO was closed due to budget reductions, while the operational needs continued to grow. In 2020, the MIO Hospital Pharmacist will become part of the Pharma and Hospital Management Units, focusing on the vertical implementation of pharmacy management practices in selected OCB Hospitals.

3.2. FIELD PHARMACY POSITIONS

During 2019, there was a total of 97 full time field pharmacy positions across OCB missions (14% more than 2018), of which 91 were held by qualified pharmacists (94%, or 2% higher than for 2018). These included an emergency position in Beira, Mozambique, to provide support after Cyclone Idai, and two different emergency
positions in Yemen - one to support the cholera outbreak, and another in Mocha Hospital. Three temporary support/coaching positions were included. The coverage of expatriate posts across all OCB missions in 2019 was 92% for Mission Pharmacy Managers and 87% for other pharmacy positions - around 6% lower for each compared with 2018, demonstrating some of the challenges of finding the right pharmacy profiles to cover some positions. During 2019 there were 42 expatriate departures to cover 35 positions of which four were opportunity posts (compared to 36 departures to cover 30 positions during 2018). Of the expatriate departures in 2019, only seven (16.7%) were first mission – unfortunately a significant drop, due to an overall loss in first-mission positions.

3.3. TRAINING

The annual pharmacy training sessions continued to be conducted in 2019 with a very strong following. They consisted of full intersectional training such as the Pharmacy and Medical Stock Management (PMSM) course and the more advanced Pharmacy Training (this year hosted by OCB in Brussels). As well, pharmacy modules were included as a component of many more transversal training sessions such as the First Line Medical Training (FLMT), Basic Logistics Course (BLoC), Hospital Management Team Training (HMMT), Supply Management Training (SMT), and the first mission Preparation for Departure (PPD) (supply and pharmacy profiles). Pharmacy modules were also included in new training such as the Project Medical Management Training (PMMT).

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- There has been good uptake and understanding of the GPP policy at field level, and this responsibility has now become a regular part of the Mission Pharmacist duties in OCB.

- 2019 continued the trend of a strong uptake from the field of following procedures for quality assurance for both drugs and medical devices – notably lacking were the number of requests for NFOS items (therapeutic food) which may be a local purchase (LP)/donation “blindspot.”

- Activities inside the European Union present many challenges and increasing pharmaceutical regulations there are making more demands for compliance from MSF Procurement Centres.

- Individual country constraints on pharmaceutical importation coupled with increasing suppliers’ constraints reported by the Supply Centres remain a growing challenge for MSF operations.

- The deployment of field pharmacists is not just a matter of quality assurance and pharmaceutical regulations compliance but also a method to guarantee the effective deployment of financial resources and to avoid losses.

- A proper ordering and forecasting tool for medical products is still lacking. Financial resources to ensure strategic planning alignment with project objectives and required medicines are needed for the year ahead.

- There is a lack of a clear recognised framework to implement a clinical pharmacy practice model that would enable pharmacists to assume different functions and responsibilities effectively.

- A holistic approach is required, involving different stakeholders to tackle process and system incoherencies related to purchase ordering and stock management.

- There needs to be some clarification of the roles and responsibilities between supply and pharma teams and the scope of actions of everyone.
4.2. PROSPECTS FOR 2020

- Reinforce the interdepartmental (Medical, Supply Chain, and Logistics) collaboration and communication on pharmaceutical related issues.

- Continue collaboration with the International Office and other sections on harmonisation of pharmacy-related policies.

- Provide ongoing field support for local market assessments.

- As the Pharma Unit will be one person less in 2020, due to the reduction of one MIO position, the unit will need to restructure and reorganise in order to continue to support the field in the best possible way.

- The aim is to perform more field visits with a focus on a more general strategic analysis of pharmacy in the mission, with a broader scope than just GPP.

- Finalise the first MSF guidelines for Good Distribution Practices.

- Continue integration process and Unifield deployment with appropriate training and follow-up.

- Finish the paper on “Medical Stock Management Policy” including clear definitions on roles and responsibilities and action scope of everyone.

- Deploy Isystock version 4 in medical stocks and pharmacies not covered by Unifield.

- Update Unifield to allow follow-up by batch number and expiry date.

- Implement the Medical Standard List tool in OCB missions globally; incorporate and/or align the tool functionalities with related systems and processes in the area of purchase ordering and stock management (such as MSF Supply Portal, Unifield, Isystock).

- Start a Forecasting Support Project, aiming to improve forecast processes and performance for medical staff in the field, supporting more accurate quantification of medical needs.

- Develop a hospital pharmacy management guideline with a focus on pharmaceutical care.

- Finalise a guideline and appropriate tools for Drug and Therapeutics Committees (DTCs) and deployment of medication committees (DTCs, Antimicrobial Stewardship Committees) to reinforce multidisciplinary collaboration within the hospital team.

- Develop a hospital pharmacy training package for pharmacists and hospital managers.
SEXYAL REPRODUCTIVE HEALTH AND SEXUAL VIOLENCE CARE

KEY FACTS IN 2019

- An impressive (80%) increase in Safe Abortion Care from 7507 to 13,469 cases. Operational Centre Brussels (OCB) started to explore new models of care provision and made efforts to expand the profile of providers.

- Family planning consultations almost doubled (from 92,621 to 175,548) and in most projects a wide variety of methods was being offered.

- With the handover of the second-largest maternity in OCB (Afghanistan), obstetric activities were reduced by 16%. However, most projects reported an important increase in activities.

- 90% of sexual violence (SV) consultations took place in only four of the 22 projects providing that care. Projects with a greater SV focus saw higher proportions of male victims (up to 31%).

- HIV-exposed babies were identified and recorded in only four of the projects where there is a maternity component.

1. OVERVIEW

The volume of Sexual and Reproductive Health (SRH) activities increased in 2019, despite a decrease in the total number of projects providing Emergency Obstetric Care (EmOC). The number of deliveries and Caesarean sections (CS) performed decreased by 16% and 13% respectively. Family Planning (FP) consultations doubled, Post Natal Care consultations (PNC) increased by 2% but Antenatal Care consultations (ANC) decreased by 3%. The total number of projects providing Safe Abortion Care (SAC) increased by 21% and the total number of abortions increased by 80%. This overall response met the objective of 8000 cases for 2019. Services that provided care to victims of Sexual Violence (SV) experienced a slight decrease (<1%) with 6804 SV victims treated, the majority (90%) of which took place in four projects. A total of 8453 women were screened for cervical cancer in two projects. In the Beira project, 24% of the women living with HIV were screened, and tested positive for (pre)cancer lesions.
2. MAIN PROGRAMME ACTIVITIES

2.1. ANTENATAL CARE

In 2019, the total number of projects offering ANC increased from 20 to 22 projects while the total number of ANC consultations decreased by 3% (135,338 in 2018 to 131,694 in 2019). There were eight new projects: P17 & 13 (Syria), Nongowa MCH (Sierra Leone), Basic Emergency Obstetric and Neonatal Care (BEmONC) Mosul (Iraq), Flood Intervention (South Sudan), Cross River State (Nigeria), Roraima (Brazil) and Chibabava (Mozambique). During the last five years the total number of projects offering ANC care remained quite stable, between 19-22.

2.2. OBSTETRICS

Volume of activities

A total of 20 projects offered delivery care in 2019, with 14 facilities providing the BEmONC package and 12 providing Comprehensive Emergency Obstetric and Newborn Care (CEmONC). For 2019 we observed a 16% reduction in the overall number of deliveries (75,740), a trend that was reflected in a decrease in CS by almost 13% (from 7166 to 6267). This decrease was expected and linked to the handover of Operational Centre Brussels’s (OCB) second-biggest maternity (Ahmed Shah Baba in Kabul, Afghanistan) in March 2019 to the Ministry of Health (Figure 1).

Maternal and Neonatal outcomes

A total of 58 maternal deaths were reported from nine projects, compared to 51 cases last year. Most projects reported maternal mortality figures similar to the previous year or slightly higher (+1 or +2). SSR Bangui in CAR, on the contrary, reported six fewer cases (26 vs 32). Nine projects reported no maternal deaths. Apart from the P17 Syria support project, all these maternities are BEmONCs and refer their complicated cases to second-level facilities. The DOC (direct obstetric complication) crude mortality rate reported by all projects, an indicator of quality of care, was <1%, which is within the international target range. Direct obstetric causes contributed to 69% of the overall maternal mortality which is close the global figure of 73%.

Timergara, Pakistan (6.2%), Khost, Afghanistan (3.2%) and SSR Bangui, Central African Republic (CAR) (3.5%) remain the projects with the highest stillbirth rates and these have remained the same over the past few years. In addition, the Jamtoli project, which managed to reach more women for delivery care, noted an important stillbirth rate of 4.2%. All other projects reported between 1 and 2% stillbirths, with the exceptions of Masisi, Port-à-Piment and Bangassou (between 2 and 3%).
2.3. POSTNATAL CARE

Both the total number of projects (18) providing PNC care and total number of consultations (40,618) remained almost the same, which is less than a 2% increase (Figure 2).

Even though the ASB project in Afghanistan was handed over, the total number of consultations remained stable. An impressive increase was observed in the South Beirut project with an almost doubling of consultations to 14,418; it was the biggest provider. Also, Port-à-Piment increased PNC activities by 46%, and Masisi by 13%. The largest newcomer was the Bangladesh Jamtoli project (5th) with 2436 consultations.

![Figure 2: Total number of postnatal care consultations and number of projects offering (2007-2019)](image)

2.4. ABORTION CARE

Safe abortion care

Volume of activities

There was a modest increase in the total number of projects providing SAC from 19 to 23, but an impressive (80%) increase in abortions performed (from 7507 to 13,469). The abortions provided by Médecins Sans Frontières (MSF) counted for 96% of the total, with 4% through referral. This performance appeared to meet the prospects of 8000 for 2019. However, if we remove the SRH Bangui, CAR project, that reached this target in its own (8023), OCB otherwise did not reach its target with only 5446 cases, despite yearly increases in the majority of projects (Table 1). Nevertheless, meeting targets that seemed unrealistic four years ago reflects impressive achievements.

SAC providers and methods

There has been more discussion regarding increased involvement of national staff in SAC provision. This was especially true in projects with high volumes where the activity is not sustainable when relying on expats or

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Total SAC cases</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>CAR</td>
<td>SSR Bangui</td>
<td>91</td>
</tr>
<tr>
<td>South Africa</td>
<td>Rustenberg</td>
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<tr>
<td>Haiti</td>
<td>Port-à-Piment</td>
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<tr>
<td>Lebanon</td>
<td>South Beirut</td>
<td>307</td>
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<tr>
<td>Bangladesh</td>
<td>Jamtoli</td>
<td>-</td>
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<tr>
<td>DRC</td>
<td>Masisi</td>
<td>9</td>
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<tr>
<td>DRC</td>
<td>Kasai</td>
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<td>Zimbabwe</td>
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<td>Greece</td>
<td>Lesvos</td>
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<td>Sierra Leone</td>
<td>Gorama Mende Wandor</td>
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when the expat presence is not always assured (e.g. Yei in South Sudan). Furthermore, a discrete set-up is still important to aim for, and by including expatriate staff, the activity can become more visible. Expanding the role of national staff in providing SAC has an important potential for increasing capacity of service. A MedOp statement from October 2019 supported this approach: “Moving forward, MSF will be more inclusive and respect the autonomy of national staff to decide for themselves and make informed choices on the scope of their practice.”

In 2019 most SAC was provided by MSF teams. However, the models differed by project with seven projects provided by MSF only, eight through referral only; and eight where both strategies were combined. An analysis of these models of care was undertaken as a Structured Operational Research and Training Initiative (SORT-IT) research project by the Mobile Implementation Officer (MIO) midwife and is expected to be finalised in 2020. Furthermore, OCB is exploring possible collaboration with other organisations to expand models towards self-managed abortion. Self-managed abortion is a safe alternative for women and girls, giving them more autonomy and pushing healthcare providers to re-think their role towards women and their health.

Most abortions took place in the first trimester, but 8% were beyond 13 weeks. In some projects, almost all women in need of abortion beyond 13 weeks received care. Systematic provision by MSF teams was assured in the Democratic Republic of the Congo (DRC) projects, Doro in South Sudan and the Gorama Mende Wador project in Sierra Leone. However, for some projects, the response to this need could not be offered in a systematic way; for instance, Port-à-Piment, Haiti and Mozambique provided the care to half of the women in need, while Jamtoli, Bangladesh and SSR Bangui, CAR could only respond to 24% and 1% of women.

Almost all SAC was provided through medical abortion except in Rustenburg, where over half were performed by aspiration. In collaboration with “How to use the abortion pill,” the SAC Taskforce developed an open access medication abortion online course for humanitarian workers (https://www.howtouseabortionpill.org/online-courses/medical-abortion-humanitarian-aid-workers/).

SAC outcome and contraceptives

Overall, projects reported lower complication rates compared to the previous year: Last year, most projects’ complications ranged between 7 and 9%; in 2019, five out of the nine reporting projects had <3%. Higher rates were reported in Kasai (8%), Maban (8%), SSR Bangui (9%) and Maadi (10%). The proportion of women experiencing a complication (which includes a failed abortion/continuation of the pregnancy) needs to be interpreted with caution, as there is both over and underreporting.

Although the provision of contraceptive options is part of SAC provision, an important number of projects reported between 90 to 99% of women starting a method of contraception on the day of the abortion. This is of concern as there may be an element of coercion in this practice. MSF aims to allow a free and informed choice for women to start or to decline contraception. Some logframes include the objective of 100% contraceptive acceptance rate post SAC. This practice needs attention and discussion as it may not be in line with MSF’s principles. Respectful discussions with staff (national and expat) regarding values and reservations regarding non-acceptance of a contraceptive method post-SAC will need to take place. There is no ideal proportion; any target might be associated with some coercion. The goal should be to provide quality information and counselling with a person-centred approach.

Post-abortion care

There were small differences of post abortion care compared to 2018. In 2019, 20 projects provided PAC (all maternity projects) and the total number of women treated increased only slightly by 7.6% (7930).

2.5. CONTRACEPTIVES

There was a continuous increase in family planning activities in OCB. In 2019 an impressive 175,548 consultations were held (Figure 3), almost double compared to 2018 and 2017.
The SSRH Bangui, CAR project reported 101,056 FP consultations, almost quadrupling the number from last year. In 2019, they represented more than 50% of all FP consultations in OCB, the highest ever reported in one country.

2.6. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV (PMTCT)

In 2019, HIV testing and counseling was offered in a total of 11 projects with ANC (Jamtoli Camp, Masisi, Maadi Cairo, Lesvos, Port-a-Piment, Chhattisgarh, Banten, GMW, Nongowa MCH, Maban/Doro/Yei) and in six projects with maternity care (Jamtoli Camp, Bangassou, Grand Bangui SRH, Masisi, Cabo Delgado, Maban/Doro).

A total of 11,585 pregnant women were tested for HIV in projects reporting HIV data at ANC, which led to the identification of 119 women with new HIV infection (HIV positivity: 1%). The number of women tested ranged from one in Cairo and two in Masisi to 2093-3667 in GMW, Port-à-Piment and Jamtoli camp, respectively (HIV-positive rate of 1-1.7%). At the level of maternities, a total of 26,975 women were tested, with 407 new HIV-positive results (HIV positivity: 1.5%). The number of women tested in maternities ranged from 10 in Maban/Doro and Masisi (HIV positivity: 1%) to 2312 and 2433 in Bangassou and Jamtoli camp, respectively (HIV positivity: 0.8-1%). Grand Bangui tested 22,203 women in the maternity with an HIV-positive rate of 1.6%.

No HIV testing was recorded during post-natal care activities.

HIV-exposed babies were only identified and recorded in four of the projects where there is a maternity component with integrated HIV testing and counseling integrated (Bangassou, Castor Bangui, Masisi and Cabo Delgado). In addition, Conakry and Nsanje support management of HIV exposed babies and support PMTCT; however, given some limitations on annual reporting data, those two projects are not included here. Data on HIV-exposed babies identified and initiated on prophylaxis in 2019 is presented in Figure 4.

PMTCT and reduction in HIV mother to child transmission targets have not yet been achieved. For MSF, PMTCT integration into projects should be strengthened, taking into account the contexts and PMTCT coverage.
2.7. CERVICAL CANCER

The OCB project in Gutu, Zimbabwe, screened 5785 women in 2019 with the VIAC method (Visual Inspection Acetic Acid and Cervicography), a decrease of 13% in comparison to 2018. Thirty-two percent (1848 women) were HIV positive. The project currently performs screening in six of the 29 rural clinics where antiretroviral treatment is offered.

Screening activities were mainly aimed at women between 25 and 50 years. Precancerous lesions were diagnosed in 192 women (3.3% of all women screened). Of those screened, 47 had findings suspicious of cancer; they were referred for biopsy, surgery, or radiotherapy. From March 2018, the Gutu project has been offering Loop Electrosurgical Excision Procedure (LEEP) in one of its clinics. LEEP was performed for 15 patients and 132 women were treated for precancerous lesions with cryotherapy in 2019. The teams participated again in the human papillomavirus (HPV) vaccination campaign of the Zimbabwean Ministry of Health (MoH) for girls nine and 10 years old and vaccinated 13,423 girls with Cervarix.

In Mozambique (Beira project), six of the 10 Primary Healthcare Units in the Beira area screened and treated precancerous lesions, supported by MSF. Cervical cancer screening was performed on 2668 women, both in key populations (sex workers) and the general population. Among them, a total of 834 HIV-positive females (31%) were screened and 200 (24%) HIV-positive women tested positive for cervical cancer/pre-cancer. The screening-positivity rate in the HIV-negative population was much lower (49/1834 patients = 2.7%).

2.8. SEXUAL VIOLENCE

Care for victims of Sexual Violence (SV) was offered to 6804 patients in 22 projects. The number of projects reporting SV data increased from 13 in 2018 to 22 in 2019, although the total of SV victims treated decreased slightly (from 6865 in 2018 to 6804 in 2019). As in previous years, most of the consultations (90% - 6161) took place in four projects: Kananga, Maadi, Rustenburg and Masisi. The Mbare project closed in 2019; it was one of the vertical SV projects that cared for more than 1000 victims annually.

Overall, most SV victims accessing care were females (93% - 6172). The highest proportion of male victims accessing SV care was seen in the Lesvos project in Greece, at 31% (20), demonstrating the high exposure of male migrants to SV and the importance of assuring that they can access care. Other projects that consulted a large proportion of male victims were: Maadi (14% - 191), Rustenburg (7% - 35) and Kananga (5% - 63) projects. Most SV victims presenting for care were adults (20-45 years old) (55% - 3767) and adolescents (10-20 years old) (24% - 664); some were older than 45 years (15% - 1052) and some were younger (5-10 years old).
old) (3% - 194). Most very young children (<5 years old) consulted in the Rustenburg (6% - 33) and Anzoategui projects (14% - 20). The projects with the highest proportion of older patients (>45 years old) were Rustenburg (27% - 853) and Masisi (10% - 116).

For SV patients, to prevent STIs, HIV and pregnancy, survivors should present ≤ 72-120h after an assault. In 2019 the Masisi project cared for the largest proportion of survivors (78% - 889) arriving ≤ 72h, followed by 61% (739) in Maadi and 78% (45) in Bamenda, a new project. In some projects the majority of victims presented late for care: Anzoategui (98% - 155), Kananga (87% - 2715), Shatila (75% - 12), Jamtoli Camp (67% - 10) and Yei (64% - 9). This may be due to ongoing conflicts or new startups of project SV activities.

3. OTHER ACTIVITIES

3.1. DEVELOPMENT AND INNOVATIONS

• Input on Reproductive Health (RH) and SV vision for the OCB Medical Strategy Report and OCB operational prospects (2020-2022).

• OCB’s SAC and contraceptive progress was presented during a MedOps meeting; an action plan was developed and shared with operations for further concrete planning.

• Revision of the SRH indicators, patient files and registers in support of the deployment of the District Health Information Software 2 (DHIS2) data collection system was continued.

• The SAC line list was revised and implemented.

• Input to the 2019 version of the MSF Obstetric and Newborn Care Guideline, the medication abortion online training, midwifery care chapters developed by the MSF Academy for Healthcare.

3.2. TRAINING

• Organisation by OCB of the two-week International SRH course, with new modules on adolescent SRH and stigmatisation of sex workers.

• The Advanced Life Support Obstetrics (ALSO) course: one central course in Denmark, and three decentralised courses in OCB projects.

• Support to the Egypt mission with three different SV courses.

• SRH modules were included in several other OCB trainings: Primary Departure course, First Line Medical training and Health Promotion training.

• Other training initiatives were supported for SRH related topics: the Tropical Medicine and Master of Public Health (MPH) courses at the Institute of Tropical Medicine in Antwerp (ITM), the antibiotic resistance course, a specific course for gynaecologists, courses in St Pierre in Brussels and the MSF course in Dusseldorf.

3.3. CONFERENCES AND PUBLICATIONS

• Presentation: sexual violence response in humanitarian contexts, Université Libre de Bruxelles

• Webinar: “How to ensure access to Reproductive Health Services in a protracted crisis. The MSF experience in South Beirut,” Global Health Institute, Beirut.

• WHO meetings and collaboration: maternal health in crises, Ebola and pregnancy guidelines, maternal mortality surveillance in humanitarian settings.

• Poster presentation: Survey on maternal access to care and child mortality in Sierra Leone, MSF Scientific and Paediatric Days.
4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

- For 2019, the SRH MIO was to support a series of projects, mainly for SAC implementation for a total of 52 weeks. As this was too ambitious for one person, short-term midwife positions were planned to respond to SRH needs in Malawi, South Africa, Mozambique and Zimbabwe. Unfortunately, due to budget restrictions, fewer midwife positions were opened, and more MIO visits were requested instead. This situation contributed to reducing the opportunity for the MIO to coach midwives and build SAC capacity in this pool.

- The different professional and task profiles in the SRH team were felt to be positive in providing a balanced mix of skills to respond to MedOps needs. The proposed one extra part-time staff person to focus on the development of some missing gaps was not in place for more than five months in 2019, so those objectives were transferred to 2020. To realize the full potential of this extra position, continuity in the team will be needed.

- The close collaboration with the operations department at various moments of the project cycle regarding strategy was appreciated. Examples were: explo and input to copro (e.g. Maidiguri); re-orientation and adaptation of project strategies (e.g. Bagnassou, Bangui SSR, El Alto, Kananga); various copros (e.g. Venezuela, Bangladesh) during round table and ARO discussions.

- The AMoCo study in particular and the six SORT-IT studies co-mentored by the advisers required a fair amount of support and time. Justifying this commitment was the pre-requisite of having relevant operational research (OR) questions that would be useful operationally.

- The decentralised ALSO training sessions were a success. Nevertheless, the organisation of the courses requires a lot of attention and dedicated time from the SRH referent since the learning unit was not involved.

4.2. PROSPECTS FOR 2020

Aims and ambitions

For 2020-2022, increasing contraceptive and SAC provision remain the main ambitions. To make this happen, MSF must address SAC needs in those projects that do not have maternity or SRH activities or where there is no expat midwife on the team. A team with people from different departments (a circle) will be set up to work on these ambitions.

In relation to SAC specifically: be more inclusive and respect the autonomy of national staff regarding the scope of their practice; pilot models where self-managed abortion is at the centre; support projects to develop a systematic response to SAC needs beyond 13 weeks; organise activities to improve the quality of contraceptive counselling.
Through field visits and distance support, obstetric service provision in the following projects will be prioritised: Khost, Masisi, Kenema, Gorama Mende Wandor, and the Nigeria Lassa Fever project. Investment in providing quality care will be continued and stimulated by initiatives from field teams. The SRH team plans to develop the component of respectful maternity care further as this has been increasingly requested for the training packages.

Practical guidance for field teams will be developed to provide more concrete support to SV questions and situations encountered in the projects. Screening tools can be a help to assist teams and (male) survivors to provide and receive care. Intimate partner violence care demands a response beyond medical care and a multiple specialty team needs to be further developed.

Worldwide, mortality linked to cervical cancer is higher than maternal mortality with 90% of deaths in middle and low-income countries. With the planned handover of the Gutu project in Zimbabwe, OCB will no longer have a cervical cancer project. We will continue to lobby with operations to increase cervical cancer activities in OCB. Within the SRH working group, cervical cancer was selected as the topic to be put in the spotlight for International Women’s Day in 2020.

Training and presentations:

- SRH sessions in the Preparation for first departure training, First line medical training, and the Hospital management team training.
- ALSO instructor course in Denmark and ALSO provider training in projects.
- Support for the Safe Abortion Care implementation workshops
- Teaching sessions during the Gynecologist, Anaesthetist, Surgeon (GAS) week, in the Master’s in Humanitarian Surgery and ITM.

Research and data management:

- Continuation of collaboration with Ariadne team regarding the District Health Information Software system: SV (only remaining topic).
- Representation of OCB in the international AMoCo study team and support to DRC mission and study team for the data collection period.
- Continue co-mentoring six SORT-IT related research projects.
- HPV vaccination and HPV screening studies in Zimbabwe – continuation.

A woman talks to a nurse during a reproductive health consultation in the village of Bir Jary, on the Iraq-Syrian border, in September 2019. © Emilienne Malfatto
SURGICAL ACTIVITIES

KEY FACTS IN 2019

• Violent trauma was the cause of 9% of all surgical interventions and accidental trauma accounted for 25% of all surgical interventions.

• The proportion of violence-related trauma in 2019 was less than in 2018 (9% vs 11%).

• There was a 6.9% decrease in the number of Caesarean sections compared to 2018 (4,769 vs 5,122), and a decrease in the percentage of Caesarean sections compared to all surgical interventions (27% vs 42%).

• The total number of surgical interventions decreased by 10% compared to 2018 (17,696 vs 19,520).

• Of all surgical interventions, 4% of cases were less than five years old, 41% were between five and 15 years and 55% were more than 15 years old.

1. OVERVIEW

By the end of 2019, Médecins Sans Frontières (MSF) offered surgical care in 16 projects in 12 countries: Kabul, Khost, Bujumbura, Bangassou, Castor, Kananga, Masisi, Nyabiondo, Tabarre, East Mosul, Bar Elias, Timergara, Al-Awda and Pibor. Over the year, two projects were closed: Bassikounou, Mauritania and Tabarre, Haiti; the latter was handed over/shared with Operational Centre Paris (OCP). Two projects offering surgical care were opened in Bamenda, Cameroon – one with direct surgical support and the other with indirect surgical support. We also offered indirect surgical support to a project in Syria. This report deals with directly supported surgical projects; when Syrian data is included, it is indicated. Directly supported surgical projects have direct MSF supervision while indirectly supported projects are supported from a distance (e.g. Syria).

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1 Number of new cases (primary) and treated patients
2 Number of admissions to the operating room, and number of anaesthetic procedures
3 Violent trauma resulting in a surgical intervention (new cases)
4 Percentage of Caesarean sections using total number of new cases as denominator
5 Number of projects that were active during the year
2. MAIN PROGRAMME ACTIVITIES

2.1. SURGICAL PROCEDURES BY PRIMARY INTERVENTION VERSUS REINTERVENTION, AND BY AGE GROUP

During 2019, there were 11,005 new cases, a decrease of approximately 10% in comparison to the previous year (2018 = 12,268). Figure 1 shows indications for surgery based on primary intervention versus repeat intervention in Operational Centre Brussels (OCB) projects in 2019 (directly supported surgery projects only).

The majority of patients who underwent surgical intervention were more than 15 years old (55%). Patients less than five years old represented 4% of interventions (Figure 2).

2.2. SURGICAL PROCEDURES BY CAUSE, TYPE OF SURGICAL INTERVENTION AND URGENCY

Trauma violence caused 9% of surgical interventions (n=1520), a decrease in percentage, but not in numbers, compared to 2018 (11%, n=1345). Obstetrics and gynaecology accounted for 50% of surgical interventions (Figure 3).

Abdominal surgery accounted for 8% of surgical interventions (n=1467), orthopaedic surgery for 18.8% of interventions (n=2862), and specialised surgery for 2.4% of interventions (n=445) (Figure 4).

The majority of surgical interventions, 46% (n=8142), were urgent, 24% (n=4289) were delayed and 29% (n=5193) were planned (Figure 5).
2.3. SURGICAL INTERVENTIONS BASED ON THE TYPE OF ANAESTHESIA AND INTRA-OPERATIVE MORTALITY

The majority of anaesthesia provided for surgical interventions was spinal at 40.9%, while general anaesthesia without intubation represented 35.6%. General anaesthesia - intubated/laryngeal mask - was provided for 10% of all surgical interventions; nerve blocks were provided for 2% (Figure 6).

Intraoperative mortality, by project, 2014-2019

Of the 17,696 admissions to the operating department from the 16 projects providing direct surgical activities, 22 intra-operative deaths were reported. This represents an overall mortality rate of 0.12%, a decrease compared to the previous year (0.3%). Intra-operative deaths are defined as any death occurring between the induction of anaesthesia and discharge from the recovery room. While mortality rates are reported per project, data cannot be compared across programmes since intra-operative mortality is associated with patient condition, emergency status, indication for surgery, context, and project objectives as well as quality of care. Data can, however, be compared within projects over time to assess changes in their performance (Table 1).
2.4. ORTHOPAEDIC PROCEDURES

Orthopaedic care includes all of the following: conservative treatment (casting, traction), basic external fixation for fracture stabilisation, advanced external fixation for complex fractures, internal fixation and reconstructive surgery. Conservative treatment and basic external fixation are performed by general practitioners and/or general surgeons with orthopaedic skills and/or traumatology experience. Internal fixation, reconstructive surgery and advanced external fixation (external fixation plus osteotomies, bone grafts, muscular and fasciocutaneous flaps) are usually performed by orthopaedic and plastic surgeons in dedicated trauma centres and tertiary hospitals.

During 2019, OCB ran four projects where orthopaedic surgery care was the main activity. Tables 2 and 3 provide comparisons on the orthopaedic procedures performed in 2019 and 2018.

**TABLE 2** Comparison of procedures for hospitals performing orthopaedic surgery, OCB (2019 and 2018)

<table>
<thead>
<tr>
<th>Project</th>
<th>Arche</th>
<th>Tabarre (Haiti)</th>
<th>Iraq CPOC</th>
<th>Gaza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>1875</td>
<td>1984</td>
<td>1046</td>
<td>552</td>
</tr>
<tr>
<td>Total procedures</td>
<td>4221</td>
<td>4487</td>
<td>3645</td>
<td>653</td>
</tr>
<tr>
<td>Accidents</td>
<td>1749</td>
<td>1858</td>
<td>622</td>
<td>362</td>
</tr>
<tr>
<td>Accidents %</td>
<td>93%</td>
<td>94%</td>
<td>59%</td>
<td>66%</td>
</tr>
<tr>
<td>Violent</td>
<td>126</td>
<td>126</td>
<td>422</td>
<td>188</td>
</tr>
<tr>
<td>Violent %</td>
<td>7%</td>
<td>6%</td>
<td>40%</td>
<td>34%</td>
</tr>
<tr>
<td>Non-trauma</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Non-trauma %</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Amputation</td>
<td>25</td>
<td>20</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>Amputation (%)</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Curettage Osteomyelitis</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Curettage Osteomyelitis (%)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>External fixation</td>
<td>221</td>
<td>224</td>
<td>464</td>
<td>32</td>
</tr>
</tbody>
</table>
• Two long-running projects (acute trauma-oriented with a high volume of activities) were in Bujumbura, Clinique de l’Arche (Burundi) and Tabarre (Haiti). During 2019, the number of orthopaedic procedures decreased for the two projects, both in absolute numbers (Arche Clinic (n=1515), Haiti (n=192)) and in the percentage of the total number of orthopaedic procedures. During the same time, the percentage of minor wounds increased.

- Bujumbura, Clinique de l’Arche is a 75-bed trauma centre fully run by MSF, located in a rented private polyclinic with the infrastructure of general private medicine. It went through several renovations. Initially meant for treating violent trauma, it shifted towards accidental trauma in a context of a volatile socio-political environment. Although the total number of patients operated on at l’Arche increased by 6% between 2018 (1875) and 2019 (1984), the volume of patients injured by violent trauma (126) stayed stable whereas accidental trauma patients increased by 13% between 2018 (1749) and 2019 (1984). The number of all orthopaedic procedures decreased by 14% between 2018 (1748) and 2019 (1164). There was a 5% increase in procedures for minor wounds between 2018 (2386) and 2019 (2497). During 2019, the project decided to start decentralise patients triaged green.

- Haiti Tabarre Hospital is another trauma centre fully run by MSF, located in a structure owned by MSF. Bed capacity decreased from 121 to 50 beds between 2017 and 2019. It was originally opened in 2012 in the aftermath of the 2010 earthquake. Until April 2019, trauma surgeries included life and limb-saving and advanced orthopaedic surgery.

Closing the Haiti project was a complex activity conducted during 2019. Surgery patients presenting with complex cases, mainly complications of fractures, were transferred to Martissant for outpatient department (OPD) care and physiotherapy and to Dikini, Haiti Adventist Hospital, for surgery follow-up. Management and logistics were handed over to OCP and/or Ministry of Health (MoH) structures. Of the 31 patients presenting with complex fractures, including cases of non-union, mal-union with or without osteomyelitis, all were operated on during March and April 2019, prior to official project closing. These cases were recorded under multiple procedures for one patient. The project was reopened under joint OCP and OCB management in October 2019 after a three-month closure from June to September 2019. The new project stopped internal fixation and focused on open fractures that were limb-threatening. The overall volume of patients decreased by 53% between 2018 (n=1046) and 2019 (n=552).
Two low-volume projects were begun in 2018: orthopaedic reconstructive surgery in the Iraq/East Mosul/Comprehensive Post-Operative Care (CPOC) Project and the Palestine/Gaza/Al-Awda Hospital. Although both underwent renovations for upgrading the number and quality of operating theatres, the total number of procedures and orthopaedic procedures increased between mid-2018 and 2019. The number of patients admitted to Al-Awda/Gaza decreased between 2018 (276) and 2019 (191) as the number of demonstrators wounded by gunshot decreased and patient distribution among Gaza hospitals was regulated by the MoH. Interestingly, the number of orthopaedic procedures increased whereas the number of minor wounds management decreased. This may be related to better planning of operations and a move towards more specialised light reconstructive surgery.

### TABLE 3 Comparison of orthopaedic procedures for hospitals performing orthopaedic surgery, OCB (2019 and 2018)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amputation (%)</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>2%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Curettage Osteomyelitis (%)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>External fixation (%)</td>
<td>5%</td>
<td>5%</td>
<td>13%</td>
<td>5%</td>
<td>7%</td>
<td>6%</td>
<td>14%</td>
<td>26%</td>
</tr>
<tr>
<td>Internal fixation (%)</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other orthopaedic (%)</td>
<td>2%</td>
<td>2%</td>
<td>4%</td>
<td>5%</td>
<td>1%</td>
<td>2%</td>
<td>5%</td>
<td>50%</td>
</tr>
<tr>
<td>Reduction (%)</td>
<td>30%</td>
<td>26%</td>
<td>4%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Orthopaedic removal %</td>
<td>3%</td>
<td>0%</td>
<td>9%</td>
<td>10%</td>
<td>3%</td>
<td>12%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Other specialised surgery (%)</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
<td>1%</td>
<td>21%</td>
<td>8%</td>
<td>6%</td>
<td>10%</td>
</tr>
<tr>
<td>Minor wound (%)</td>
<td>57%</td>
<td>64%</td>
<td>43%</td>
<td>58%</td>
<td>66%</td>
<td>69%</td>
<td>70%</td>
<td>15%</td>
</tr>
<tr>
<td>Abdominal (%)</td>
<td>2%</td>
<td>2%</td>
<td>12%</td>
<td>7%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>101%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Across the four orthopaedic projects, except for Al-Awda/Gaza, we saw an increase of minor wound management related to accidental injuries and a decrease of orthopaedic procedures. These changes can be explained by the relative lull of unrest in the catchment areas, the change of admission criteria and the orthopaedic capacity level of the hospital. It is worth noting also that osteomyelitis curettage is generally under reported as it is often improperly registered as “other orthopaedic surgery” (Figure 8).

### FIGURE 8 Comparison of hospitals performing orthopaedic surgery, OCB, 2019
3. OTHER ACTIVITIES

Field visit support was undertaken in the following projects: Bujumbura, Burundi, Bangassou and Bangui, Central African Republic (CAR), Masisi and North Kivu, Democratic Republic of the Congo (DRC), Bamenda, Cameroon, Mosul, Iraq, and Gaza, Palestine.

Training was conducted with the First Line Medical Training and the MSF Surgical Workshop in Dusseldorf, Germany. The first international interuniversity course of the Master’s in Humanitarian Surgery in Austere Environments finished with 24 students at the Catholic University, Louvain (UCL). A second course of 24 students is to begin at the end of 2020. Several meetings were held with the Surgical Working Group and the Critical Care Working Group. Several intersectional guidelines and protocols were approved and several research papers were published in peer reviewed scientific journals.

4. LOOKING BACK AND AHEAD

4.1. LESSONS LEARNED IN 2019

• Each of the technical referents is now focused on their field of interest.

• Not all projects were able to follow up on surgical infections; those projects that were successful were in Ahmad Shah Baba and Khost in Afghanistan, l’Arche hospital in Bujumbura, Castor in CAR, Masisi and Nyabiondo in DRC, Bar Elias in Lebanon and Timergara in Pakistan. Several projects were unable to follow up on the surgical site infection risk index: Khost, Bujumbura, Castor, Kananga, Masisi, Nyabiondo, Bar Elias, Gaza and Pibor. Thus, comparison of surgical site infections cannot be made between projects, but there can be comparison of infection rates by year within the same project.

• The disparity between field needs and the surgical skills of our present specialists continues to grow. Both Surgical and Critical Care Working Groups support the start of a teaching hospital for surgery within MSF.

• More quality indicators are needed for surgery projects in order to assess whether we are performing our activities with quality.

• Briefing of specialists is more frequently performed by videoconference over a distance instead of at headquarters. More tools are being adapted to facilitate this, but its success depends on the willingness of specialists to access tools from a distance.

4.2. PROSPECTS FOR 2020

• Continue to develop curriculums for teaching in each specialty adapted to the context and necessary skills needed by each project.

• Support training for national staff before opening trauma projects – Primary Trauma Care, Triage, Multiple Casualty Incident, Point of care ultrasound, war surgery, damage control surgery.

• Continue to monitor, assess, evaluate and give feedback on quality of surgical projects following the Donabedian principles – structure, process and outcome – to the field and to operations.

• Continue to provide training to specialists to help them prepare for their actual role in the field through the Surgery Week, the Dusseldorf practical surgery training in MSF and the Master’s in Humanitarian Surgery in Austere Environments.

• Strengthen and disseminate knowledge of surgical protocols and guidelines through field visits, briefings and trainings within MSF and outside of MSF, giving greater access to MSF websites containing the latest protocols and guidelines.
• Improve the quality of surgical care by continuous monitoring and feedback of surgical site infections through the post-operative site infection database.

• Continue to publish operational research studies in order to professionalise the work of MSF and help to improve surgical programmes within MSF.

• Strengthen the response for multiple disasters through good coordination between all actors, including emergency medicine doctors, anaesthetists, orthopaedic surgeons, other surgeons, nurses and logisticians. Strengthen our trauma surgery response by focusing on a systems-based approach.

• Continue to foster good collaboration within OCB and other sections, as well as with other external platforms.

MSF staff in the operating theatre of a hospital in Jabalia, Gaza, as they perform surgery on a patient shot by the Israeli army during protests in August 2019. © Jacob Burns/MSF
TUBERCULOSIS

6184 tuberculosis (TB) patients were started on treatment

4633 drug-sensitive TB (DSTB) cases

1551 drug-resistant TB cases

57% Average success rate of DSTB treatment was 57%

KEY FACTS IN 2019

• Tuberculosis (TB), the main infectious killer worldwide, remains high in the MSF agenda.

• There were renewed efforts in prevention strategies and a successful experience in the Malawi Prison Project with TB Preventive Treatment.

• Drug-Resistant TB - the battle against injectable-based regimens has been won, but our projects in India, South Africa and Ukraine keep fighting for more.

• The first Southern Africa Regional TB Workshop took place in Johannesburg, with representatives from eight countries.

• Late TB diagnosis and treatment in HIV is a major ongoing challenge in the Western, Central and Southern Africa regions, where projects strive for innovation.

• Children are no longer the neglected ones!

1. OVERVIEW

In 2019, tuberculosis (TB) represented, once again, the main infectious disease killer globally. With an estimated 10 million cases and 1.5 million deaths, the TB epidemic is not slowing down and continues to be a major cause of death, especially among the most vulnerable populations such as children, People Living with HIV/AIDS (PLHIV) and other key populations.

TB heavily affects communities and feeds on a vicious circle of poverty and disease, which is hard to break without the appropriate political will, funding, and innovative and rapid interventions. Faced with the devastating impact of TB, Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB) renewed its commitment to the fight against TB in both its drug-sensitive (DS) and drug-resistant (DR) forms. Paediatric TB/DRTB, new TB Preventive Treatment (TPT) and innovative diagnostic tools, such as genome sequencing, represented areas of growing attention. Interventions aiming to impact both transmission and mortality remained a core element of OCB work, especially among those most at risk: populations living in urban slums or conflict settings, prisoners, refugees, and PLHIV.
Strong advocacy accompanied all activities. Major policy changes to which MSF contributed included: new recommendations for broader use of the TB-Lipoarabinomannan (TB-LAM) antigen test and oral and shorter DRTB treatment regimens; the latter has been a major battle over the last decade. Despite countries’ declarations to move toward oral regimens by March 2020, the route from policy to implementation is slow and the vast majority of DRTB patients will likely have to wait before being spared toxic injections. In addition, there is still a strong need to find better treatments. Our projects try to address this through operational research in South Africa, India and Ukraine.

TB integration in complex settings, such as Western and Central Africa or South Sudan, remains challenging, despite being recognised as a priority at all levels. Efforts in this direction must continue.

2. MAIN PROGRAMME ACTIVITIES

Vertical TB/DRTB and HIV/TB projects are run in India, Iraq, Malawi, Mozambique, South Africa, Ukraine, Zimbabwe, Democratic Republic of the Congo (DRC) and Guinea, while integrated activities are implemented in Afghanistan, Central African Republic (CAR), DRC, Haiti, India, Nigeria and South Sudan.

2.1. TB CASE DETECTION AND CASE FINDING STRATEGIES

For 2019, TB case detection data were reported from 13 OCB projects. A total of 6184 TB patients were started on treatment during the year (Figure 1); out of these, 4633 were drug-sensitive and 1551 were drug-resistant. In sub-Saharan Africa, the biggest cohorts were observed in Nsanje (Malawi), Kinshasa (DRC), and Eshowe (South Africa) and were mostly represented by patients with Advanced HIV Disease (AHD), often arriving to care in extremely poor condition. In these contexts, early TB diagnosis and treatment initiation makes the difference between life and death. Here, MSF pushed for innovative case finding approaches and context-adapted use of new and existing tools, including chest X-rays, TB-LAM and the new Fuji-LAM antibody tests. The other biggest cohort was in Mumbai, where MSF provided TB/DRTB care to a very vulnerable population, the vast majority of whom lived in slums.

In India, as well as in South Africa, growing efforts were put into diagnosis, treatment and advocacy for paediatric DRTB care. Challenges in diagnosis of TB in children across the globe are well-known and have long represented an excuse to neglect the needs of this population. In line with the operational prospects and the new OCB medical strategy, more attention has been given to paediatric TB. A total of 625 children less than 15 years old were diagnosed and started on treatment across all projects, particularly in nutritional activities in sub-Saharan African countries, where TB represents a major cause of morbidity and mortality.

**FIGURE 1** Tuberculosis case detection in OCB projects, 2019
2.2. TB OUTCOMES

DSTB treatment outcomes were reported by eight projects for 3827 cases that were started on treatment in 2018. The average success rate was 57% (Figure 2), significantly lower than the previous year (70% in 2018). Reasons for this drop can be found in the characteristics of the cohorts, mainly represented by patients with advanced HIV in Kinshasa and Kwazulu-Natal (KZN) as well as by problems with data collection.

The overall increase in mortality rate to 18% in 2019 (from 10.5% in 2018) represents a difficult reality accept, considering the huge efforts by project teams to provide effective and timely holistic care for the sickest patients. In Kinshasa, where the entire TB cohort had advanced HIV disease, most TB patients were diagnosed at hospital level and mortality rates reached a new peak of 32% in 2019. Unfortunately, in contexts where access to HIV testing, antiretroviral treatment (ART) and TB detection tools are not available, as in most of Western and Central Africa (WCA), as well as in South Sudan, the teams on the ground will continue to deal with patients arriving late to MSF care and face very high mortality rates. The variable quality of reporting can also explain the lower rates of successful outcomes. An example is KZN, where the proportion of patients with unknown outcomes was 33%, likely reflecting problems in monitoring and reporting at the Ministry of Health (MoH) level.

2.3. DRTB ENROLMENTS, OUTCOMES AND NEW REGIMENS

Drug-resistant TB remains a key area of work. In 2019, OCB maintained a critical mass of activities, aiming to provide direct patient-centred care while developing new treatment models and using results to advocate, at all levels, for better access to DRTB diagnostics and treatment.

The major projects with a vertical focus on DRTB were Mumbai (India), Khayelitsha and KZN (South Africa) and Zhytomyr (Ukraine): more than 1500 patients were enrolled on treatment in collaboration with MoHs. Enrolments for 2019 and treatment outcomes of the 2017 cohorts are shown in Figures 3 and 4 (DRTB outcomes reported two years after treatment initiation).

With a cohort of almost 1000 DRTB patients, activities in Mumbai continued to target a very vulnerable population in the district of M East Ward, where more than 800,000 people live in poverty. Key activities in 2019 included: the pilot use of next generation genome sequencing (NGS) for DRTB diagnosis, expected to become the future gold standard; special focus on the paediatric population, strongly advocating for use of oral regimens and access to paediatric formulations; and stronger links with community and civil society organisations. In South Africa, the projects of Khayelitsha and Eshowe continued to lead the way in TB/DRTB through innovative interventions. In both projects, the number of enrolments remained stable compared to previous years, and activities focused on building more evidence concerning new drugs, Delamanid and Bedaquiline, in pregnant women, children/adolescents and PLHIV, as well as on patient-centred interventions for patients with addictions (Khayelitsha) and on decentralised care in Eshowe.
In the Zhytomyr project, Ukraine, the main goals were achieved in 2019, with 166 patients enrolled into care, most of whom received a new, shorter, modified oral regimen under operational research conditions.

For the first time, the project in Beira reported a small cohort of DRTB enrolments, as involvement in DRTB grew.

Overall outcomes remain relatively poor (Figure 4), with success rates between 51% and 61% across the different projects, only slightly better than the globally reported success rate of 54% (World Health Organization (WHO) Global Report 2019). Despite appearing unsatisfactory, these results are an improvement compared to last year: the success rate in Khayelitsha increased from 44% to 51.5%, and from 45% to 56% in Mumbai. Unfortunately, rates of those lost to follow-up remain high across all contexts, as does mortality, especially among PLHIV.

![Cohorts of DRTB enrolments, 2019 - Number of DRTB patients started on treatment in 2019](image)

![DRTB treatment outcomes for patients enrolled in 2017](image)
Although not reporting data for 2019, the DRTB project in Baghdad, which had a slow start in 2018 due to the complexity of the context and political dynamics, achieved important results toward the end of the year. MSF’s proposed activities finally received approval from the authorities and implementation was started for case finding through GeneXpert as well as the introduction of new drugs.

Implementation of regimens including the new drugs, Bedaquiline and Delamanid, in programmatic and research settings remained at the centre of MSF field and advocacy activities, contributing to several achievements. These included the new 2019 WHO policy for a short oral regimen, broader use of the new drugs in children and pregnant women, and reduction of access and/or registration barriers in India, Ukraine and Iraq.

The journey to find short and safe oral regimens for DRTB continues, and OCB remains committed to operational research and participation in multi-centric clinical trials, such as the endTB and Q trial in South Africa and India.

2.4. TB PREVENTIVE THERAPY (TPT) AND LATENT TB INFECTION

For the first time, in 2019, MSF introduced 3HP, a combination treatment of Isoniazid and Rifapentine administered once a week for three months as a new TB Preventive Treatment (TPT) strategy for Latent TB Infection. 3HP was rolled out under operational research conditions in Chichiri Prison, Malawi. By the end of Q3 2019, more than 600 HIV-negative TST-positive inmates had received 3HP as part of a more comprehensive package of care for TB and HIV screening, detection and treatment. During the same pilot, more than 300 HIV-positive inmates received TPT with the fixed-dose combination of isoniazid-cotrimoxazole and vitamin B6 (INH-CTX-B6, known as QTIB). Final results will be available in 2020, but it was the first time that a limited-resource setting used 3HP outside of trial conditions, showing that a life-saving intervention such as TPT is feasible in difficult contexts. The QTIB combination was also used in 2019 in Conakry and Kinshasa in PLHIV.

3. LOOKING BACK AND AHEAD

3.1. LESSONS LEARNED IN 2019

- The successful experience in Malawi prisons shows that TPT can be implemented in complex contexts and populations. More efforts are needed to scale up TPT everywhere.

- Late TB diagnosis and the resulting high mortality among admitted patients remained a huge problem, especially in high HIV burden countries. Innovations in diagnostics and treatment are needed, as well as advocacy and communication on the devastating impact of TB.

- The battle for all-oral regimens in DRTB has been won, but there are far too many gaps in the field of DRTB treatment. The situation in India, which still faces huge challenges regarding access to new drugs, is an example of how policy can be far removed from practice.

3.2. PROSPECTS FOR 2020

At the time of writing this report, the COVID-19 pandemic was spreading around the world, and had reached high TB and HIV burden countries, already impacting access to care for TB and HIV patients. In such situations, it is imperative to ensure continuity of TB and DRTB services despite the challenges created by COVID-19, and this is an area where project teams are allocating significant effort.

Protecting new and existing TB/DRTB patients from interruption of their care and from the disastrous consequences of the COVID-19 pandemic on health systems will likely remain the priority across 2020 in the field of TB/DRTB. The pandemic may also hasten decentralisation and task-shifting to reduce health centre visits.
Whenever the global situation will allow focusing again on new or previously identified priorities, these will include:

- Development of ‘differentiated service delivery’ models with strong patient and community support for vulnerable populations, such as:
  - TB/DRTB care in prisons in Rio de Janeiro, where evidence shows that up to 10% of inmates may have active TB.
  - Migrants and mobile/displaced and conflict populations in a variety of contexts such as South Sudan, South Africa, Zimbabwe (Beitbridge), Europe and the Middle East and Northern Africa (MENA) region.
  - Children and the malnourished, with integration of TB care into Inpatient Therapeutic Feeding Centres (ITFC)/Ambulatory Therapeutic Feeding Centres (ATFC) (South Sudan, Nigeria).
  - PLHIV populations and patients with AHD to reduce morbidity/mortality across projects.
  - Diabetic patients, pregnant women. Increased knowledge about the higher risk of morbidity and mortality in these populations oblige us to look more carefully into how to promote care and build evidence.

- Latent TB, infection prevention and control with new and shorter rifapentine-based treatments (3HP, 1HP); renewed efforts in provision of Isoniazid (IPT) and the fixed drug combination of CTX-INH-B6 for PLHIV (e.g. Kinshasa, Conakry, Beira). The time has come to try to pilot DRTB prophylaxis in one or two projects (e.g. children in Mumbai and/or South Africa).

- Drug sensitivity/DRTB diagnosis and case finding. Pay more attention to community case finding strategies across settings to reduce late diagnosis while improving facility-based detection, especially among PLHIV and malnourished children (inpatient departments/outpatient departments in Guinea, Mozambique, DRC, South Sudan, CAR, South Africa, Nigeria). New tools, such as genome sequencing and Fuji-Lam, to be piloted in South Africa.

- DS/DRTB treatment. Modified oral regimens, possible new strategies for DSTB treatment and access to paediatric formulations (South Africa, India) remain a priority. The MSF endTB trial, ongoing in South Africa, and Q trial will likely start in India in 2020.

- Other ambitions include the development of an intersectional regional approach for TB/DRTB in the MENA region.
VACCINATION

846,860 doses of vaccines given (25% reduction from 2018)
27% of doses given in reactive vaccination campaigns (all measles)
28,529 doses (4%) given in four preventive vaccination campaigns
14% of children <5 years old receiving routine vaccinations were above one year of age
Rabies vaccine use only reported in Pakistan

KEY FACTS IN 2019

• Nine reactive vaccination campaigns were organised in the Democratic Republic of the Congo (DRC) during the biggest measles epidemic in its history.
• Opportunistic multi-antigen catch-up vaccination through the existing health facilities was piloted for responding to a moderate measles outbreak in Conakry (Guinea).
• MSF was prevented from vaccinating in response to epidemics of vaccine-preventable diseases in Burundi, DRC, Nigeria and Mozambique.
• After years of negotiations, vaccination was integrated into the malaria project in Bolivar (Venezuela) as first phase of yellow fever response.
• Development of a preventive vaccination package for migrant populations was started.

1. OVERVIEW

Over the course of 2019, 846,860 doses of vaccines were provided to beneficiaries with the support of Médecins Sans Frontières (MSF) Operational Centre Brussels (OCB). The decreasing trend, already observed in 2018 (54% less), seems to be continuing with an additional 25% reduction in total doses given in 2019. The closure of several primary health care programmes (Mberra, Ahmad Shah Baba, Maban) and of Tabarre hospital in 2019 can partially explain this trend, but with a few exceptions, the decrease was also observed in the remaining programmes.

As in 2018, two-thirds (64%) of vaccine doses were given through routine vaccination activities, while 27% were given during reactive vaccination campaigns to respond to measles epidemics. Preventive vaccination campaigns represented only 4% of the doses and the remaining 5% were used in post-exposure prophylaxis (PEP).
2. MAIN PROGRAMME ACTIVITIES

2.1. ROUTINE VACCINATION

A total of 544,933 routine vaccinations were administered in OCB projects over the course of 2019 (Figure 1), representing a 24% decrease compared to 2018. The majority (90%) of the doses were reportedly given in outpatient or inpatient departments (OPD/IPD) (n=491,232), while 10% were reported in antenatal care/gynaecology departments (ANC/GYN) (n=53,701).

Eighty-seven percent of doses routinely administered were given to children <5 years (475,447 doses); among them, 67,671 doses (14%) were given to children older than one year. Although this distribution remains stable, it represents a net decrease of 14,000 doses given to children aged 12 and 59 months compared to 2018.

Around 3% of the doses (15,785) were given to children older than five years, showing that vaccination activities are feasible, even for older children. Catch-up vaccination of children out of the Expanded Programme for Immunization (EPI) target group (>1 year) needs to be pushed further in our missions, as it represents one of the strongest added values of MSF in routine vaccination.

The distribution of vaccines is similar to that of previous years (Figure 2). Oral polio (OPV) represented one-third (32%) of the total doses given, Pentavalent vaccine combining Diphtheria, Tetanus, Pertussis, Hepatitis B, and Haemophilus influenzae b (DTP-HepB-Hib) represented about one-fifth (18%) of doses given, while Bacille Calmette-Guerin (BCG) and Hepatitis B (HepB) vaccines accounted for 14% each. Measles-containing vaccines only represented 9% but pneumococcal vaccine (PCV) reached 7% of the doses. The inactivated polio vaccine (IPV), and yellow fever vaccine represented 5% and 3% respectively. Note that not a single dose of rotavirus vaccine has been distributed in 2019.

The distribution of vaccines routinely given to older children (>5 years) shows that two-thirds of the vaccine doses were against measles and polio (33% and 34% respectively), while another 11% were the pentavalent vaccine and 22% Hepatitis B only.

More than a quarter (26%) of the routine doses given to children <5 years in 2019 were for newborn vaccination (OPV and HepB birth doses). According to field reports, 75,659 children were born in OCB-supported structures in 2019. A total of 56,501 doses of Hepatitis B (0.7 dose/newborn) and 66,471 OPV (0.9 dose/newborn) were recorded over the same period. These ratios were identical to 2018 ratios.

In 2019, 48% of the 53,701 doses of tetanus vaccine delivered to women were given to women of reproductive age (but not pregnant), showing a positive trend in the integration of women as a target group for routine vaccination programmes. Out of the doses administered to pregnant women, 32% were recorded as first dose, and 8% were recorded as the fifth (and last) dose.
2.2. POST-EXPOSURE PROPHYLAXIS

In 2019, 41,551 doses of vaccines and vaccine products were used for Post-Exposure Prophylaxis (PEP) in OCB projects (Table 2), representing a 40% decrease compared to 2018 (68,142 doses). This decrease was mostly seen in tetanus vaccines and immunoglobulins for the wounded. The closure of the Tabarre trauma hospital partly explained this decrease, but we suspect a larger problem of under-reporting from emergency and surgical missions.

All doses of rabies immunoglobulins and vaccines were reportedly given in Pakistan. The proper management of animal bites at risk of rabies remains a concern for all other projects. Likewise, 99% of tetanus immunoglobulins were reported by the Haiti mission alone. Haiti decreased its consumption of immunoglobulins by half compared to 2018 (closure of Tabarre trauma hospital), but since the quantities of tetanus vaccine and immunoglobulins used remained roughly equivalent, we suspected that the protocol for wound assessment produced in 2018 was not well followed.

2.3. MASS VACCINATION CAMPAIGNS

In 2018, OCB organised four small catch-up, preventive, multi-antigen vaccination campaigns in the Central African Republic (CAR) (Pombolo), Guinea (Matoto), Lebanon (Beirut) and Greece (Lesvos). A total of 28,529 vaccine doses were given preventively, which is only 1/8 of those in 2018.

OCB organised twelve reactive vaccination campaigns, all of them against measles, for a total of 231,672 doses. Nine of the campaigns were done in the Democratic Republic of the Congo (DRC) (Yahisuli, Kamwesha, Ndekesha, Kungu, Kwamouth, Bolobo, Nioki, Bagata and Koshibanga), while the country was facing the biggest measles epidemic of its history. One campaign was organised in Guinea, Conakry (Matoto) where a novel approach of opportunistic multi-antigen catch-up vaccination through the existing health facilities was implemented in response to the outbreak. Two smaller campaigns were organised in South Sudan (Pibor and Doro).

2.4. EVALUATIONS AND SURVEYS

To our knowledge, none of the missions evaluated their missed vaccination opportunities in 2019.

Eight vaccination coverage surveys were performed by MSF in DRC (after each measles reactive campaign, with the exception of Ndekesha). One measles and a baseline multi-antigen vaccination coverage survey were performed in Guinea (Kouroussa), following the measles response of 2018. All results are presented in the Annex.

3. FIELD VISITS, DEVELOPMENTS AND INNOVATION, TRAININGS/CONFERENCES/MEETINGS

In 2019, field support visits were undertaken by the vaccination referents to Guinea (response to measles outbreak) and in Zimbabwe (support to Human Papilloma Virus and Typhoid Conjugate Vaccine studies and to vaccination activities). Our mobile implementation officer (MIO) went to Mozambique (Beira) to support the oral cholera vaccine (OCV) response post-Cyclone Idai and to DRC (Kinshasa and Basankusu) to support the newly set up Pool d’Urgence Congo (PUC) for training and coaching.
In 2019, the vaccination team facilitated sessions in two First Line Medical Trainings (FLMT), one Population in Precarious Situations (PSP) training and in one Health Promotion (HP) training. The advisors also participated in three Vaccination Working Group meetings, the Outbreak Preparedness Day and the Medical Coordination Week, where results of the multi-antigen campaign in Mauritania were presented.

The team participated in the Migration circle, the Primary Health Care circle, the IMIM (Integrated Management of Inpatient Malnourished children) circle, the Outbreak circle and in the revision of the PUC scenarios.

The vaccination team attended several conferences: St Valentin Vaccine Symposium (Brussels), Strategic Advisory Group of Experts (SAGE, Geneva) and the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE, Stockholm) where the results of the qualitative study launched by LuxOR in Guinea were presented. The team also presented the first Med-Talk ("The shots that save the world").

Two studies were started in Zimbabwe. The study on implementation of Human Papillomavirus (HPV) vaccination among HIV-positive adolescent girls and young women in Gutu will stop enrolling patients in January 2020, while the ongoing study on the effectiveness of typhoid conjugate vaccine (TCV) in Harare will end in 2020. A third study on the appropriate interval between two doses of OCV was approved in Guinea but could not be started in 2019 due to lack of financing and political unrest in the country.

Several articles submitted to journals for publication in 2018 are still under revision: Coup de Poing in DRC, stability of measles vaccine under Extended Controlled Temperature Conditions and Vaccine Effectiveness in DRC. One article on cholera vaccination coverage in Haiti and one qualitative study about reasons for sub-optimal vaccination coverage after mass vaccination campaigns in an urban setting in Guinea were published in peer-reviewed journals.

### 4. LOOKING BACK AND AHEAD

#### 4.1. LESSONS LEARNED IN 2019

- OCB operations were prevented from organising measles, cholera or yellow fever reactive vaccination campaigns in Burundi (Bujumbura), Nigeria (Borno and Ebony State) and in two places in DRC (Kwilu and Basankusu provinces). In most of these places, our intervention was limited to case management. The highly politicised contexts and financial aspects of the response to epidemics seemed to increasingly negatively affect the capacity of MSF to respond to epidemics.

- Several cholera interventions (Burundi, Cameroon, Bangladesh, DRC) organised by OCB failed to include the use of Oral Cholera Vaccine. The message on systematic use of OCV in response to cholera epidemics still needs to be reinforced within OCB.

- The development of a preventive package for migrant populations is ongoing, but preventive strategies have already been discussed at field level and are being piloted in specific contexts (Zimbabwe and South Africa).

- At the end of 2019, after years of negotiations, vaccination was integrated into the malaria project in Bolivar (Venezuela) as the first phase of the yellow fever response strategy. Increasing efforts to seek vaccination opportunities in contexts at high risk of vaccine-preventable diseases (VPD) should continue in 2020.

- A polio paper explaining the worldwide polio situation and guiding the field to react appropriately has been written and disseminated to all missions. It seems to have raised awareness about the issue.

- A second importation of 500,000 doses of measles vaccines was granted to MSF in DRC and negotiations for the importation of cholera vaccine have started, which would open doors for improving our reactivity in outbreak response.
• The humanitarian mechanism to access to PCV at affordable cost was successfully employed four times in 2019: CAR (Pombolo), Greece (Lesvos initial and follow-up requests) and Syria.

• With the support of the LuxOR team, a document about the short and long-term immunological effects of measles has been developed and shared to advocate for measles vaccination as a tool to reduce direct and indirect measles mortality. Another documentation of Missed Opportunities for Vaccination (MOV) evaluations in OCB projects is well under way. Publication of the findings is foreseen in 2020.

4.2. PROSPECTS FOR 2020

• OCB should engage in an international analysis of the measles situation in Africa and its implications for MSF’s own strategy.

• Documentation of MSF measles interventions (epidemiological situation/operational choices/cost and results) in Guinea will be undertaken to define lessons learned and inform operations for future interventions.

• A new programme focusing on strong support for integrated routine vaccination will be designed and started in DRC.

• The use of OCV in response to cholera epidemics by OCB will be promoted at every opportunity and a study on the feasibility of Case-Area Targeted Interventions (CATI) including OCV will be organised.

• Promote the organisation of multi-antigen preventive vaccination campaigns or enhanced catch-up vaccination activities in countries where routine vaccination is weak, or where activities have been reduced.

• Promote the implementation of vaccination as part of the preventive package in migrant projects and document it.

• Support the evaluation of missed vaccination opportunities in all projects with a primary or secondary health care component, and support implementation of changes to optimise the system.

• Keep working on the integration of routine catch-up vaccination up to five years by default in all projects reaching children 0-5 years of age.

• Further explore the opportunity to integrate HPV vaccination into clinical follow-up of HIV+ women in HIV projects.

• Seek opportunities to document the use and uptake of Hepatitis B (HBV) vaccine in vulnerable populations (HIV+, men having sex with men, sex workers).

• Ensure follow-up of several studies on vaccination: OCV in Guinea, HPV and TCV in Zimbabwe and implementation of measles in Extended Controlled Temperature Chain (ECTC) in DRC.

• Reinforce appropriate use of vaccine and vaccine products for PEP by all missions.
# OCB MEDICAL ACTIVITY ANNEX OF TABLES AND DATA

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<td>160</td>
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</table>
**HIV**

**ANNEX 1** OCB PROJECTS TESTING FOR HIV, BY REGION (vertical HIV projects underlined)

**Eastern and Southern Africa (ESA):** Kenya (Kiambu), Malawi (corridor, Nsanje, prisons), Mozambique (Beira, Chibababava, Cabo Delgado, Cyclone emergency), South Africa (Khayelitsha, Eshowe, Rustenburg), Zimbabwe (Beithbridge, Mbare)

**West and Central Africa (WCA):** Cameroon (North West Anglophone), Central African Republic (Bangassou, Bangui HIV & SRH), Democratic Republic of Congo (Kasai, Masisi and Kinshasa), Guinea (Kouroussa, Conakry), Nigeria (Maiduguri, Cross River State), Sierra Leone (GMW, Kenema, Nongowa), South Sudan (Maban/Doro, Pibor, Yei)

**Middle East and North Africa (MENA):** Egypt (Cairo), Iraq (Mosul), Lebanon (Beirut),

**Asia:** Bangladesh (Jamtoli camp), India (Mumbai, Uttar Pradesh, Chattisgarh), Indonesia (Banten), Pakistan (Karachi)

**Europe:** Greece (Lesvos), Italy (rural migrants), Ukraine (Zhytomyr)

**Caribbean:** Haiti (Tabarre, Port-à-Piment)

**ANNEX 2** HIV Testing in OCB projects, by year and result, 2016-2019: Facility vs. Community
### ANNEX 3 HIV testing and positivity in vertical HIV and integrated projects, 2019

#### HIV tests and positivity in vertical HIV projects, 2019

<table>
<thead>
<tr>
<th>Project</th>
<th>Total persons tested (facility + community)</th>
<th>Total persons tested negative (facility + community)</th>
<th>Positivity (facility + community)</th>
</tr>
</thead>
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<tr>
<td>Bengui HIV TB</td>
<td>5,000</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>AIDS Kinshasa</td>
<td>442</td>
<td>24%</td>
<td>76%</td>
</tr>
<tr>
<td>Corridor/ cross border</td>
<td>1,975</td>
<td>8.1%</td>
<td>91.9%</td>
</tr>
<tr>
<td>Corridor/ cross border (Beira)</td>
<td>2,542</td>
<td>10.7%</td>
<td>89.3%</td>
</tr>
<tr>
<td>AIDSA Khayelitsha</td>
<td>30,029</td>
<td>25,613</td>
<td>18.2%</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>3,282</td>
<td>7,271</td>
<td>30.6%</td>
</tr>
<tr>
<td>AIDSA Conakry</td>
<td>4,490</td>
<td>115</td>
<td>24%</td>
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</tbody>
</table>

### ANNEX 4 HIV testing and positivity in integrated projects, by activity, 2019

#### ANNEX 4 HIV testing and positivity in integrated projects, by activity, 2019

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total persons tested (facility + community)</th>
<th>Total persons tested negative (facility + community)</th>
<th>Positivity (facility + community)</th>
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<td>Hepatitis C</td>
<td>2,672</td>
<td>14</td>
<td>96%</td>
</tr>
<tr>
<td>Family planning</td>
<td>0.6%</td>
<td>99.4%</td>
<td>0%</td>
</tr>
<tr>
<td>Antenatal Care</td>
<td>11.5%</td>
<td>88.5%</td>
<td>0%</td>
</tr>
<tr>
<td>Out patient department (general)</td>
<td>6%</td>
<td>94%</td>
<td>0%</td>
</tr>
<tr>
<td>Out patient department (pediatric)</td>
<td>6%</td>
<td>94%</td>
<td>0%</td>
</tr>
<tr>
<td>Maternity</td>
<td>10.7%</td>
<td>89.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Victims of torture</td>
<td>15%</td>
<td>85%</td>
<td>0%</td>
</tr>
<tr>
<td>TB</td>
<td>20.6%</td>
<td>79.4%</td>
<td>0%</td>
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<tr>
<td>Sexual violence</td>
<td>4.7%</td>
<td>95.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Inpatient department (surgery)</td>
<td>2%</td>
<td>98%</td>
<td>0%</td>
</tr>
<tr>
<td>Intensive therapeutic feeding centre</td>
<td>2%</td>
<td>98%</td>
<td>0%</td>
</tr>
<tr>
<td>Neonatology</td>
<td>2%</td>
<td>98%</td>
<td>0%</td>
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</table>

### HIV ANNEX
### Table 1: Active laboratories either supported or run by MSF

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>No. of Labs</th>
<th>HIV &amp; TB Transfusions (only)</th>
<th>Hospital (transfusions included)</th>
<th>Other</th>
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<tr>
<td>DRC</td>
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<td>1</td>
<td>1</td>
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<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Masisi</td>
<td>1</td>
<td>1</td>
<td>ANC</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Kasai Kananga</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Burundi</td>
<td>Bujumbura</td>
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</tr>
<tr>
<td></td>
<td>Kinlunya</td>
<td>1</td>
<td></td>
<td>Malaria</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>CAR</td>
<td>Bangassou</td>
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<td>1</td>
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<tr>
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<td>Bangui</td>
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<tr>
<td>Kenya</td>
<td>Embu</td>
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<tr>
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<td>Haiti</td>
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<td>(+MDR)</td>
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<td>1</td>
<td>1</td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
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<td>1 Haematology, biochem, microbiob</td>
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<td></td>
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<tr>
<td></td>
<td>Beira hosp Emergency lab</td>
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</tr>
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<tr>
<td>Bangladesh</td>
<td>Cox's Bazar</td>
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</tr>
</tbody>
</table>
# NUTRITION

## TABLE 1 OCB Nutritional Services by Project, 2019

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>ATFC</th>
<th>ITFC</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vertical Programmes / Emergencies</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nigeria</td>
<td>Borno (Maiduguri)</td>
<td>4285</td>
<td>82.3</td>
<td>12.0</td>
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<tr>
<td><strong>Integrated Programmes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afghanistan</td>
<td>Kabul</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAR</td>
<td>Bangassou</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRC</td>
<td>Nord Kivu (Masisi, Nyabiondo)</td>
<td>3882</td>
<td>71.2</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>Bili</td>
<td>1265</td>
<td>86.2</td>
<td>0</td>
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<tr>
<td></td>
<td>PUC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Guinea</td>
<td>Kouroussa</td>
<td>977</td>
<td>65.8</td>
<td>10.2</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>Kenema hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gorama Mende Wandor</td>
<td>718</td>
<td>88.5</td>
<td>1.7</td>
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<tr>
<td>South Sudan</td>
<td>Pibor, Gumuruk, Lekongole</td>
<td>638</td>
<td>81.5</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td>Maban (Doro) (including Blue Nile State)</td>
<td>305</td>
<td>61</td>
<td>26.7</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Anzoategui</td>
<td>254</td>
<td>66.7</td>
<td>0</td>
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<tr>
<td><strong>AVERAGES</strong></td>
<td>ALL PROJECTS</td>
<td>13,237</td>
<td>75.4</td>
<td>9.1</td>
</tr>
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</table>

**Remarks (calculations are at exit)**

- It seems 20 patients admitted in 2019 and all still present at the end of 2019.
- No ATFC activities.
- Defaulter and deteriorated data are likely to be unreliable. Project closed November 2019.
- No ATFC activities.
- Ad hoc ATFC activities but data unreliable and incomplete.
- These are MoH OTPs being supported by MSF. Quality of this data may be questionable.
- ATFC numbers from Gumuruk and Lekongole, as ATFC in Pibor run by another actor.
- Data includes BNS data which is likely to explain the poorer performance than last year, especially the high defaulter rate.
- Very few patients and 3 out of the 9 were disqualified from the service.
- Data removed for Flood Intervention (Pibor) and Nongowa MCH due to unreliability of data and small total numbers.
### Targeted Nutritional Support

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
<th>Treatment Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>Arche</td>
<td>ND</td>
<td>Ad hoc nutritional support and therapeutic foods given</td>
</tr>
<tr>
<td>DRC</td>
<td>Kinshasa (HIV)</td>
<td>ND</td>
<td>Not an ITFC but treatment given on an inpatient ward</td>
</tr>
<tr>
<td>Guinea</td>
<td>Conakry (HIV)</td>
<td>ND</td>
<td></td>
</tr>
</tbody>
</table>

**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
OPERATIONAL RESEARCH & DOCUMENTATION

OCB-RELATED SCIENTIFIC PUBLICATIONS, 2019

TUBERCULOSIS


OTHER INFECTIOUS DISEASES


SEXUAL AND REPRODUCTIVE HEALTH


SURGERY, ANAESTHESIA, & EMERGENCY DEPARTMENT


### Malaria


### HIV


**NON-COMMUNICABLE DISEASES**


MIGRATION


HIV/TB CO-INFECTION


NUTRITION


EBOLA


**PAEDIATRICS**


**WASH**


FIGURE 1  % Mortality in MSF Paediatric Inpatient Departments, 2019

Goal threshold for mortality

FIGURE 2  Rates of mortality and LAMA in MSF Neonatal Projects, 2019

Mortality >15% indicates need for improvement of services

Acceptable threshold for LAMA

% Mortality
LAMA
KENEMA IPD DATA

Kenema hospital currently admits malnourished and non-malnourished children under five years old. The following summary is mainly for patients admitted to the general paediatric IPD with some comparisons to the patients admitted to the ITFC. The hospital opened in March 2019.

Since March, 1612 children were admitted to the paediatric IPD, 97% of whom were <5. In the IPD, 65% of patients were positive for malaria during their hospital stay, which indicates that malaria is implicated even if it is not the primary morbidity in the clinical presentation of paediatric patients. Severe malaria (61%) was also the most common diagnosis followed by pneumonia (14%) and other diagnoses (15%). Notably, no patients were reported to have TB in 2019 which is more likely due to under-diagnosis rather than absence of TB in the community. TB diagnosis in children is technically notoriously difficult. Among the patients in the IPD, 6.8% were found to be HIV positive (higher than the positivity rate of 4.6% for all children; malnourished and non-malnourished), which is higher than expected, especially outside the ITFC. Vaccine-preventable diseases such as pertussis, measles and tetanus were either <1% or not seen in IPD patients. This is in line with the higher vaccination rate (69%) reported among admitted children. Ideally, the IPD should also provide catch-up vaccines so that this indicator is 100% and should be a goal for operations in 2020.

In terms of outcomes, 91% were discharged, the mortality rate was 5.6%, 3.4% of patients were referred out (most often to the district hospital), and the LAMA rate was 0.3%. Diseases with notable case fatality rates (CFR > 5%) were non-bloody diarrhoea with severe dehydration > sepsis > fever without identified cause > bronchiolitis > pneumonia > meningitis. This indicates that surveillance and management of these cases could be optimised.

In terms of service utilisation, the average bed occupancy rate since opening has been 112%, which indicates that the number of IPD beds was not sufficient (and indeed, the IPD opening was planned for a later stage). Among all non-malnourished children admitted, 35% required intensive care unit (ICU) admission at some time during their hospital stay (only 14% of ITFC patients were admitted to the ICU) and 18% received a blood transfusion. This should inform planning for expansion of IPD beds as a proportional increase in ICU bed occupancy may also be anticipated. Of all deaths, 89% happened in the ICU, which indicates a good system of identifying patients who needed critical care. In the ICU, 80% of the patients came directly from the emergency room (ER), indicating that most patients were critical at the time of admission, 7.9% were from the paediatric IPD, 10% were transferred in from ITFC and 1.7% from isolation. The majority (92%) of ICU admissions were also new admissions, indicating that very few patients needed to be readmitted to the ICU. Among ICU patients, 79% required oxygen and 32% received transfusions. This should inform the allocation of oxygen and other respiratory support and transfusion services to the ICU, especially in planning for expansion. For patients who were successfully stabilised in the ICU, 52% were transferred to the IPD, 20% to ITFC, 2.6% to isolation and 2% to the district hospital. The ICU mortality rate was 16% (threshold < 20%).

CPAP USAGE IN THE NEWBORN UNIT IN KHOST, AFGHANISTAN

CPAP was implemented in the newborn unit in Khost, Afghanistan at the end of 2018; thus, last year was the first full year of CPAP use in the project. In 2019, 371 (18%) of 2088 patients that exited the newborn unit were placed on CPAP. In other settings (other MSF projects), the proportion of newborns requiring CPAP ranges from 5-10% in typical usage. The proportion of patients with a bad outcome (died, discharged not cured or LAMA) who were placed on CPAP was 43% and the mortality rate of patients placed on CPAP was 33%. This reflects the severity of the respiratory distress necessitating CPAP but may also point to some futility in CPAP use (i.e. CPAP being used for patients as a last measure or for conditions for which it is not indicated, such as congenital anomalies or perinatal asphyxia).

CPAP use in newborns is typically indicated for premature newborns and those with diagnoses of transient tachypnoea of the newborn, apnoea of prematurity, respiratory distress syndrome, meconium aspiration syndrome and pneumonia. It has limited to no utility in perinatal asphyxia. Therefore, the percentage of newborns with low and very low birth weight (<2500g), as well as the evaluation of the exit diagnoses of
newborns will help understand the appropriateness of CPAP use in this project. Of the 371 patients, 48% had a birth weight less than 2500g and 46% of the newborns had a diagnosis for which CPAP was clearly indicated. These two metrics show that CPAP use needs to be optimised further so that use can be targeted for patients and conditions for which it is clearly beneficial.

The project did not have a method to monitor CPAP-related adverse events and outcomes, which misses out on determining whether CPAP is being used safely and correctly. A CPAP database has been developed and will be deployed in the project in 2020 to better capture this aspect of CPAP use and assure we are optimising the benefits while minimising the harm.

**BLOOD CULTURE SURVEILLANCE, BANGUI, CAR**

In 2017, a Klebsiella pneumonia outbreak occurred in the newborn unit in Castors, Bangui. Since then, blood cultures have been done routinely for surveillance purposes in the project to detect potential new nosocomial infections and outbreaks of Klebsiella or other extended spectrum beta lactamase (ESBL) bacteria. A protocol for diagnosis and treatment of neonatal sepsis, recommendations for transition to 2nd and 3rd line therapies for sepsis, as well as when to obtain blood cultures have been in place and updated regularly since the 2017 outbreak. In 2019, a database captured key indicators and culture results for the newborns. Samples drawn in the newborn unit were sent to Institut Pasteur, which reported species and sensitivity for positive cultures. Specific challenges with this laboratory included delayed results and some discrepancies in the species identified when compared to other labs.

In 2019, 108 newborns had blood cultures drawn due to suspected persistent sepsis. From these, 28% (30) of the cultures were positive. In September 2019, there was a spike in the frequency (eight cases) of positive cultures and in the proportion of positive culture samples that were ESBL positive (100%). This prompted a review and reinforcement of the IPC practices and reinforcement of monitoring and adherence to the clinical protocols in the newborn unit. Of the 30 positive cultures 73% (22) were ESBL positive and the specific bacteria isolated were Klebsiella pneumoniae (43%) >> Klebsiella oxytoca and Escherichia coli > Enterobacter cloacae and Staphylococcus non-auraeus. All ESBL isolates were sensitive to meropenem. The mortality rate among patients with positive blood cultures was 40% while the mortality rate for patients with negative blood cultures was 15%. Of the 30 patients with positive cultures, eight were started on meropenem and one was started on amikacin (per the sepsis protocol). The mortality for all patients placed on 3rd line therapy (either meropenem, chloramphenicol or amikacin, or a combination of these) was 25%.

These analyses show that in this context persistent neonatal sepsis occurred in up to 6% of newborns. Among this population, transition to 2nd and 3rd line therapies and drawing of cultures can be done in a systematic way. Unlike in other settings, ESBL bacteria are important pathogens contributing to morbidity and mortality from neonatal sepsis. In the future when the turnaround time for the culture results is quicker, the results may be used to direct individual patient care, but currently this surveillance system is helpful in detecting potential outbreaks in newborn units to trigger timely interventions to further reduce morbidity and mortality associated with nosocomial infection with ESBL bacteria and other pathogens.
### TABLE 4 | Comparison of main indicators from 2008-2019

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Patients</strong></td>
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<td>7570</td>
<td>11746</td>
<td>16077</td>
<td>14199</td>
<td>12005</td>
<td>13570</td>
<td>13446</td>
<td>14274</td>
<td>12269</td>
<td>11005</td>
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<td><strong>Interventions</strong></td>
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<td>8793</td>
<td>15544</td>
<td>19644</td>
<td>19145</td>
<td>18281</td>
<td>21502</td>
<td>22958</td>
<td>24155</td>
<td>19520</td>
<td>17696</td>
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<td><strong>Violent trauma</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>610</td>
<td>635</td>
<td>959</td>
<td>1046</td>
<td>1277</td>
<td>1445</td>
<td>1342</td>
<td>1930</td>
<td>1284</td>
<td>1524</td>
<td>1345</td>
<td>1520</td>
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<tr>
<td></td>
<td>(7%)</td>
<td>(8%)</td>
<td>(8%)</td>
<td>(7%)</td>
<td>(7%)</td>
<td>(11%)</td>
<td>(13%)</td>
<td>(13%)</td>
<td>(13%)</td>
<td>(11%)</td>
<td>(13%)</td>
<td>(13%)</td>
</tr>
<tr>
<td></td>
<td>-9%</td>
<td>-10%</td>
<td>-11%</td>
<td>-14%</td>
<td>-10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>-11%</td>
</tr>
<tr>
<td><strong>Caesarean sections</strong></td>
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<td>2717</td>
<td>3890</td>
<td>6225</td>
<td>5296</td>
<td>5030</td>
<td>3877</td>
<td>4589</td>
<td>4742</td>
<td>5017</td>
<td>5122</td>
<td>4769</td>
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<tr>
<td></td>
<td>(27%)</td>
<td>(36%)</td>
<td>(33%)</td>
<td>(39%)</td>
<td>(35%)</td>
<td>(35%)</td>
<td>(35%)</td>
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<td>(42%)</td>
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<tr>
<td></td>
<td>-36%</td>
<td>-35%</td>
<td>-32%</td>
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<td>-35%</td>
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<td>-6.9%</td>
</tr>
<tr>
<td><strong>Number of projects</strong></td>
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<td>16</td>
<td>19</td>
<td>21</td>
<td>19</td>
<td>18</td>
<td>15</td>
<td>16</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>16</td>
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23. PAEDIATRIC CARE ANNEX
## TABLE 5  Summary of main indicators by project for 2019

<table>
<thead>
<tr>
<th>Mission</th>
<th>AFG</th>
<th>AFG</th>
<th>BDI</th>
<th>CAF</th>
<th>CAF</th>
<th>COD</th>
<th>COD</th>
<th>HTI</th>
<th>IRQ</th>
<th>LBN</th>
<th>PSE</th>
<th>PAK</th>
<th>SSD</th>
<th>CAM</th>
<th>SYR</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>No.</td>
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<td>926</td>
<td>1984</td>
<td>757</td>
<td>1369</td>
<td>34</td>
<td>1800</td>
<td>251</td>
<td>174</td>
<td>200</td>
<td>980</td>
<td>191</td>
<td>2082</td>
<td>127</td>
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<tr>
<td>Interventions</td>
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<td>943</td>
<td>4082</td>
<td>1584</td>
<td>1426</td>
<td>185</td>
<td>3064</td>
<td>252</td>
<td>552</td>
<td>575</td>
<td>1029</td>
<td>749</td>
<td>2092</td>
<td>148</td>
</tr>
<tr>
<td>All trauma</td>
<td>%</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>21.4</td>
<td>0</td>
<td>88</td>
<td>24</td>
<td>14</td>
<td>99.6</td>
<td>92.5</td>
<td>0.92</td>
<td>100</td>
<td>0.14</td>
<td>37</td>
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<tr>
<td>Violent trauma</td>
<td>%</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>82</td>
<td>12</td>
<td>4</td>
<td>63</td>
<td>34</td>
<td>0.1</td>
<td>100</td>
<td>0</td>
<td>23</td>
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<tr>
<td>Caesarean section</td>
<td>%</td>
<td>25.5</td>
<td>68.9</td>
<td>0</td>
<td>78.7</td>
<td>75.4</td>
<td>0</td>
<td>24</td>
<td>51.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>85.2</td>
<td>13.5</td>
<td>0</td>
</tr>
<tr>
<td>Post-op infection</td>
<td>%</td>
<td>4.3</td>
<td>0.97</td>
<td>14</td>
<td>NA</td>
<td>2.5</td>
<td>NA</td>
<td>7.9</td>
<td>NA</td>
<td>0.2</td>
<td>NA</td>
<td>0.53</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Primary interventions</td>
<td>%</td>
<td>100</td>
<td>98.2</td>
<td>48.6</td>
<td>47.8</td>
<td>96</td>
<td>18.4</td>
<td>58.7</td>
<td>99.6</td>
<td>31.5</td>
<td>34.8</td>
<td>95.2</td>
<td>25.5</td>
<td>99.5</td>
<td>85.8</td>
</tr>
<tr>
<td>Emergent cases</td>
<td>%</td>
<td>97.5</td>
<td>95.33</td>
<td>37.7</td>
<td>27</td>
<td>98.8</td>
<td>3.2</td>
<td>34.2</td>
<td>71</td>
<td>14.7</td>
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<td>0.77</td>
<td>99.6</td>
<td>74.3</td>
<td>24</td>
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<tr>
<td>Minor/wound surgery</td>
<td>%</td>
<td>1.8</td>
<td>0</td>
<td>63</td>
<td>0</td>
<td>4</td>
<td>80</td>
<td>54</td>
<td>40</td>
<td>58.5</td>
<td>69</td>
<td>20</td>
<td>14</td>
<td>0</td>
<td>74</td>
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<tr>
<td>Spinal anaesthesia</td>
<td>%</td>
<td>85.1</td>
<td>86.7</td>
<td>22.4</td>
<td>2.4</td>
<td>76.2</td>
<td>9.19</td>
<td>31.3</td>
<td>38</td>
<td>26.5</td>
<td>21</td>
<td>76</td>
<td>28</td>
<td>87.8</td>
<td>16</td>
</tr>
<tr>
<td>Spinal procedure/C-section</td>
<td>%</td>
<td>97.6</td>
<td>96.9</td>
<td>NA</td>
<td>NA</td>
<td>89.3</td>
<td>NA</td>
<td>93.1</td>
<td>71.9</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>92.5</td>
<td>75</td>
</tr>
<tr>
<td>Intra-operative mortality</td>
<td>%</td>
<td>0.6</td>
<td>0.2</td>
<td>0.05</td>
<td>0</td>
<td>0.35</td>
<td>0</td>
<td>0.06</td>
<td>1.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.14</td>
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</table>
## Vaccination

<table>
<thead>
<tr>
<th>Country/Project</th>
<th>Antigen</th>
<th>Date</th>
<th>Target pop (ex &lt;5y)</th>
<th>Vaccinated</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea, Kouroussa</td>
<td>Multi-Ag</td>
<td>February 2019</td>
<td>6m-5y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRC, Yahisuli (Tshopo)</td>
<td>Measles</td>
<td>April 2019</td>
<td>6m-5y</td>
<td>20,538</td>
<td>97.9%</td>
</tr>
<tr>
<td>DRC, Kamwesha (Kasai)</td>
<td>Measles</td>
<td>May 2019</td>
<td>6m-5y</td>
<td>102,056</td>
<td>96.1%</td>
</tr>
<tr>
<td>DRC, Ndekesha (Kasai central)</td>
<td>Measles</td>
<td>June 2019</td>
<td>6m-5y</td>
<td>17,372</td>
<td>Administrative coverage 122%</td>
</tr>
<tr>
<td>DRC, Kungu (Sud Ubangi)</td>
<td>Measles</td>
<td>July 2019</td>
<td>6m-5y</td>
<td>15,045</td>
<td>95.7%</td>
</tr>
<tr>
<td>DRC, Kwamouth (Mai Ndombe)</td>
<td>Measles</td>
<td>July 2019</td>
<td>6m-5y</td>
<td>7,063</td>
<td>87.7%</td>
</tr>
<tr>
<td>DRC, Bolobo (Mai Ndome)</td>
<td>Measles</td>
<td>August 2019</td>
<td>6m-5y</td>
<td>5,641</td>
<td>94.5%</td>
</tr>
<tr>
<td>DRC, Nioki (Mai Ndombe)</td>
<td>Measles</td>
<td>August 2019</td>
<td>6m-5y</td>
<td>7,800</td>
<td>94.5%</td>
</tr>
<tr>
<td>DRC, Bagata (Kwilu)</td>
<td>Measles</td>
<td>September 2019</td>
<td>6m-5y</td>
<td>13,045</td>
<td>97%</td>
</tr>
<tr>
<td>DRC, Koshibanda (Kwilu)</td>
<td>Measles</td>
<td>September 2019</td>
<td>6m-9y</td>
<td>16,294</td>
<td>98.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country/Project</th>
<th>Antigen</th>
<th>Date</th>
<th>Target pop (ex &lt;5y)</th>
<th>Vaccinated</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea, Kouroussa</td>
<td>Multi-Ag</td>
<td>February 2019</td>
<td>6m-5y</td>
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<tr>
<td>DRC, Yahisuli (Tshopo)</td>
<td>Measles</td>
<td>April 2019</td>
<td>6m-5y</td>
<td>20,538</td>
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<tr>
<td>DRC, Kamwesha (Kasai)</td>
<td>Measles</td>
<td>May 2019</td>
<td>6m-5y</td>
<td>102,056</td>
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<tr>
<td>DRC, Ndekesha (Kasai central)</td>
<td>Measles</td>
<td>June 2019</td>
<td>6m-5y</td>
<td>17,372</td>
<td>Administrative coverage 122%</td>
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<tr>
<td>DRC, Kungu (Sud Ubangi)</td>
<td>Measles</td>
<td>July 2019</td>
<td>6m-5y</td>
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<td>95.7%</td>
</tr>
<tr>
<td>DRC, Kwamouth (Mai Ndombe)</td>
<td>Measles</td>
<td>July 2019</td>
<td>6m-5y</td>
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<tr>
<td>DRC, Bolobo (Mai Ndome)</td>
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</tr>
<tr>
<td>DRC, Nioki (Mai Ndombe)</td>
<td>Measles</td>
<td>August 2019</td>
<td>6m-5y</td>
<td>7,800</td>
<td>94.5%</td>
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<tr>
<td>DRC, Bagata (Kwilu)</td>
<td>Measles</td>
<td>September 2019</td>
<td>6m-5y</td>
<td>13,045</td>
<td>97%</td>
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<tr>
<td>DRC, Koshibanda (Kwilu)</td>
<td>Measles</td>
<td>September 2019</td>
<td>6m-9y</td>
<td>16,294</td>
<td>98.7%</td>
</tr>
</tbody>
</table>