



**LUXOR OPERATIONAL  
RESEARCH HIGHLIGHTS**

**2017 / 2018**

## A Moment in OR-time

Recurring infectious disease outbreaks and growing drug-resistance, persisting and new public health challenges in complex, protracted humanitarian crises, and a fresh emphasis on feeding evidence back into tangible policy and practice change: these are certainly challenging and exciting times for Médecins Sans Frontières' (MSF's) Operational Research Unit LuxOR.

With the Operational Research Highlights, LuxOR offers a

glimpse into its current projects and priorities. In this year's issue, the focus is on water, sanitation and hygiene, the increasing global challenge of antimicrobial resistance, and strategies to move research findings back into humanitarian action.

More information on LuxOR's work is also available at [or.msf.lu](http://or.msf.lu) and all MSF-supported studies from peer-reviewed journals are available open-access on [fieldresearch.msf.org](http://fieldresearch.msf.org).



Walter Kizito  
*Coordinator*



Veerle Hermans  
*Programme Officer*

# RESEARCH FOR HUMANITARIAN ACTION

## THE SCIENCE OF DOING BETTER

Operational research helps MSF to take an in-depth look at its programmes and operations, evaluates what is working well, and shows what needs to be improved. Based in Luxembourg, the Operational Research Unit LuxOR undertakes research projects supporting humanitarian activities all over the world.

LuxOR shares findings with the international MSF-movement and partner organizations, and advocates for evidence-based policy and practices changes with local and international stakeholders.

## RESEARCH SUPPORT ON THE GROUND

To strengthen research capacities and medical data collection and analysis, team members regularly support missions and projects. In 2017, LuxOR's field visits included the Central African Republic, the Democratic Republic of the Congo (DRC), Egypt, Italy, Lebanon, Greece, Madagascar, Malawi, Mozambique, Serbia, and Sweden. Partnering with the World Health Organization and The Union, LuxOR facilitated dedicated OR-training in Ethiopia, India, Kenya, Luxembourg, South Africa, and Sri Lanka.

## OPEN ACCESS TO INVALUABLE EVIDENCE

Operational research studies are published in peer-reviewed scientific journals, and the results remain openly available to researchers and the global humanitarian community. In 2017 alone, 99 MSF-supported studies were published covering 15 thematic areas such as HIV and tuberculosis, infectious diseases, mental health, or surgery and emergency care.

## TRANSLATING FINDINGS INTO ACTION

Study findings reveal valuable evidence to improve programmes and close gaps in the access to care throughout MSF's projects. A new policy and practice advisor joined the team in 2017, focusing on communicating key findings to MSF operations, implementing partners and policy makers at national and international levels. The first policy and practice implementation dossiers cover projects in DRC, Pakistan, Serbia, and the Mediterranean region.

# FRESH WATER FROM OLD WELLS: DIAGNOSING AND REHABILITATING BOREHOLES IN RURAL NIGER

**In Niger, MSF tested an innovative approach to providing communities with clean drinking water: instead of drilling costly new boreholes, the project examined and rehabilitated existing ones that were inactive or damaged. An operational research study helped evaluate and document the successful pilot.**

Providing sustainable sources of drinkable water is a major concern for vulnerable communities and health actors alike, and is crucial for people's nutrition and health. Regions with scarce water resources often depend on boreholes tapping into the groundwater supply. Traditionally, damaged or dysfunctional boreholes are abandoned and new ones are drilled.

## FEASIBLE AND CHEAPER REHABILITATION

In the Guidan Roudmji district of Niger, Médecins Sans Frontières tested a different approach. Employing a mobile workshop with a submersible camera, data logging probe, spectrometer, compressor, pumps and brushes, 50 boreholes were diagnosed between 2013 and 2015. Broken casings, obstructed pipes, defective pumps, or

contaminated water were identified, cleaned and repaired on site with the help of locally trained workers.

Out of 50 boreholes, 34 were in need of significant rehabilitation, and 31 (91%) could be successfully rehabilitated. The associated study showed that this approach was not only feasible for the rural settings in Niger, but also much more cost-efficient; drilling new wells is estimated at 30 USD per beneficiary, rehabilitating boreholes was possible at only 2 USD per person. As well, analysis of groundwater samples from the boreholes helped to better understand the region's groundwater supply and quality, including pockets of contamination, thereby providing valuable knowledge for future drilling initiatives.

## EXPORTING THE SUCCESSFUL PILOT

While these promising results are being published, the approach is now being used in response to recurrent cholera and typhoid outbreaks in Zimbabwe. MSF also founded the Groundwater Oriented Project (GO Pro) – a standalone operational programme for borehole rehabilitation and construction.



Clean and reliable drinking water is a scarce and precious resource in Niger. Photo: Guillem Valle/MSF

## **Focus on: Capacity Building for WASH-Research**

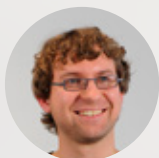
Water, Sanitation and Hygiene (WASH) are a defined goal in the 2030 Agenda for Sustainable Development. Whether in the fight against infectious diseases, ensuring adequate nutrition, offering maternal and child health services or delivering HIV/AIDS care, safe water, adequate sanitation and appropriate hygiene are essential to provide care in humanitarian settings.

Yet WASH issues often remain understudied in their relation to health care. To close the gap, LuxOR launched its first thematic operational research training focusing on WASH topics. Eight participants from Africa, Asia, and Europe kick-started their research projects in September 2017 in Luxembourg, and will submit their papers for publication in 2018.

“

Water, Sanitation and Hygiene are integral parts of any medical activity. In fact, almost all of MSF's medical assistance in humanitarian settings builds on clean water supply and appropriate sanitation and hygiene standards. Our studies are emphasizing and strengthening this link between WASH and health challenges.

”



**Rafael Van den Bergh**  
*Researcher with LuxOR*

# WHEN ANTIBIOTICS STOP WORKING: RESPONDING TO A *KLEBSIELLA* OUTBREAK IN BANGUI

In March 2017, MSF's Castor maternity clinic in the Central African Republic raised the alarm of a suspected outbreak of *Klebsiella pneumoniae* among neonates. With the first-line antibiotics not working against the resistant bacteria, LuxOR's Julita Gil Cuesta rushed to Bangui to help contain the outbreak and trace how it spread in the maternity.

*Klebsiella pneumoniae* is a known culprit causing local outbreaks in hospitals in both high and low-resource settings. Left untreated, the bacteria pose a severe health risk for patients with mortality rates of up to 76% reported in humanitarian contexts. In Bangui, 19 newborn babies tested positive for *Klebsiella* in March 2017, and four died.

## BETTER USE OF ANTIBIOTICS, RIGOROUS HYGIENE STANDARDS

The bacterium causing the outbreak was identified as ESBL *Klebsiella*, which proved resistant to routine antibiotics. Therefore, the infected newborn babies could not be treated with the right medication at first, and an emergency order of second-line antibiotics was required.

The team investigating the outbreak also carefully examined hygiene standards and clinical management in Bangui. As the MSF clinic is the only one offering comprehensive maternal and child care free of charge in the vicinity, the maternity is often overcrowded. The team found newborns' beds had to be shared by up to three babies at the hospital's peak times, increasing the risk of spreading infection.

The analysis then revealed a significantly higher likelihood of a *Klebsiella* infection in babies that had to be resuscitated after birth. Meticulous disinfection of resuscitation equipment like oxygen concentrators was immediately implemented for better infection prevention and control.

## ON THE TRAIL OF *KLEBSIELLA*

With these measures in place, the outbreak was contained and no further cases of *Klebsiella* were reported in April and May. A second research mission in early 2018 looked at the possible risks of mothers and community members bringing resistant bacteria like *Klebsiella* into the clinic, and how to avoid future outbreaks.



An MSF nurse shows a new mother how to feed a premature baby in the neonatal ward in Bangui. Photo: Borja Ruiz Rodriguez/MSF

## Focus on: AMR

Antimicrobial Resistance (AMR) is a rapidly growing concern for global health, food security, and the development agenda. Infections like pneumonia, tuberculosis or salmonellosis are increasingly difficult to treat as antibiotics and other medications lose their effectiveness. While AMR occurs as a natural progression of microbes over time, the wide-spread overuse of antibiotics in human medicine and agriculture is known to accelerate the process.

Ever more cases of AMR are reported around the world, in high-resource settings as well as

in developing countries. In humanitarian settings with limited access or only basic medication available, treatment is often more complex and requires an immediate emergency response making management of AMR more challenging.

At MSF's Brussels Operational Centre, an AMR-expert group is currently specializing on investigating and fighting the risks of AMR across MSF projects, and several ongoing LuxOR-studies promise new insights to tackle the global health challenge.

“

Due to antibiotic resistance, second-line antibiotics were used to fight the Klebsiella outbreak in the Central African Republic. Unfortunately, they are merely a temporary measure against an ever growing number of resistant microbes. We need to better understand the magnitude of antimicrobial resistance in low-income countries, and we need to pay attention to improving the way we prescribe antibiotics.

”



**Julita Gil Cuesta**  
*Researcher with LuxOR*

# ACTING ON THE EVIDENCE: FACILITATING THE CORRECT USE OF OXYTOCIN IN PAKISTAN

**In 2015, a study at the Timergara District Headquarter Hospital in Pakistan revealed the severe health risks associated with the misuse of labour-inducing drugs like oxytocin. Now, a dedicated policy, practice and advocacy strategy is moving the findings into practice.**

The hormone oxytocin is widely used to prevent uterine bleeding after birth. It can also be administered to induce or accelerate complicated cases of labour. In such cases, the drug should only be administered by trained health professionals in a hospital, where mothers and their newborn children can be monitored closely.

## **RISKS OF INDUCING LABOUR**

Despite existing regulations, oxytocin is widely available in Pakistan. Lady health visitors, community midwives and traditional birth attendants use the drug outside the guidelines to treat or accelerate both obstructed and normal labour, often upon request by in-laws or community members. Operational research in 2015 clearly showed the correlation of this misuse with specific maternal and neonatal health complications: women with obstructed or prolonged labour receiving unregulated oxytocin were over three times as likely to suffer uterine rupture,

and for neonates the misuse led to a significantly higher risk of severe birth asphyxia and for stillbirth. Overall, in the MSF-supported hospital in Timergara there were approximately two cases a day involving misused oxytocin.

## **FROM RESEARCH TO ACTION**

Backed by the study findings, MSF has since 2017 started to develop and implement a dedicated action plan. Together with the local authorities, the mission is working to inform communities in the Khyber Pakhtunkhwa region about the risks and correct use of oxytocin with targeted health promotion activities. A supporting communication campaign is planned to run simultaneously via radio channels and social media.

In the Timergara hospital, training for health workers based in the MSF-supported hospital and regional clinics is being piloted. A half-day workshop will cover the study findings, handling of regular and complicated labour, and the correct use of labour-inducing drugs. Several follow-up analyses with local research partners are also underway to better understand the motivation for misusing oxytocin, and to map out the drug's complex regulatory and economic environment.



The newborn unit in the MSF supported District Headquarter Hospital in Timergara. Photo: Nasir Ghafoor/MSF

## Focus on: Policy & Practice

Operational research findings often hold valuable evidence to understand the root causes of global health challenges or to improve models of care. Yet even published results rarely translate into impact automatically; to change policies or improve practice, dedicated communication efforts and strategic programming are necessary.

With a new Policy, Practice, and Communication Advisor

on the team since 2017, LuxOR is putting special emphasis on moving research results into humanitarian action. A short policy and practice assessment in every research protocol helps to plan and budget for successful uptake of research results at the onset of new studies.

Current policy & practice dossiers include projects in DRC, Guinea, Pakistan, and Serbia, and the Mediterranean.

“

Policy and practice implementation for operational research requires strong strategic communication. It means advocating research results to decision makers or implementers on the ground in a clear way, translating findings into simple language and sharing them with the public or local communities, and advertising research work and capacity building efforts with MSF missions and ours partners.

”



**Samuel Sieber**  
*Advisor with LuxOR*

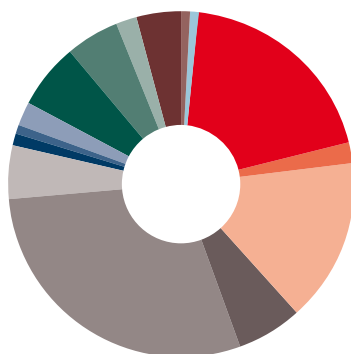
# MSF OPERATIONAL RESEARCH: KEY NUMBERS AND EVENTS

MSF Operational Centre Brussels supported

**99** studies, reviews, and viewpoints published in peer reviewed journals

## THEMATIC RESEARCH AREAS

- 1 Operational Research
- 1 Health Systems & Programme Monitoring
- 19 HIV
- 2 HIV/Tuberculosis Co-infection
- 15 Tuberculosis (including drug-resistant tuberculosis)
- 6 Malaria
- 29 Ebola
- 5 Other Infectious Diseases
- 1 Non-Communicable Diseases
- 1 Mental Health
- 2 Rational Drug Use & Antimicrobial Resistance
- 6 Sexual and Reproductive Health
- 5 Surgery, Anaesthesia & Emergency Department
- 2 Conflicts & Humanitarian Emergencies
- 4 Refugee Crisis





LuxOR researcher Julita Gil interviewing a nurse at a health centre in Ambalavao District in Madagascar during her support mission. Photo: MSF

10 LuxOR team members supporting  
over 60 ongoing studies worldwide



Participants at the SORT IT course in Addis Abeba, Ethiopia.  
Photo: Samuel Sieber/MSF

49 participants in 5

LuxOR supported research trainings held in 2017 in Ethiopia, India, Kenya, Luxembourg, South Africa, and Sri Lanka.

## **SHARING FINDINGS WITH THE SCIENTIFIC COMMUNITY**



LuxOR's Guido Benedetti discussing his study at the European Congress on Tropical Medicine and International Health.  
Photo: Rafael Van den Bergh/MSF

## **COMMUNICATING OPERATIONAL RESEARCH TO PARTNERS AND THE PUBLIC**



The new operational research snapshots explain LuxOR projects on a handy postcard.  
Photo: Christophe Hebbing/MSF

## **BUILDING OPERATIONAL RESEARCH CAPACITY WITH SORT-IT**



Participants at the first thematic Structured Operational Research Courses (SORT IT) course in Luxembourg.  
Photo: Samuel Sieber/MSF

## **OPERATIONAL RESEARCH DAY**



Panel at the annual OR Day in Brussels in June 2017 featuring presentations, debates, and live streaming to the world.  
Photo: Christophe Hebbing/MSF



**CONTACT**



**or.msf.lu**

**fieldresearch.msf.org**

TVA LU 15491030 - R.C.S. Luxembourg F4090

Front Cover Photo: MSF helped improve access to water and hygiene conditions in the IDP camp in the city of Bama, Nigeria.  
Photo: Benoit Finck/MSF

Back Cover Photo: Several studies in DRC recommend different approaches to vaccinating against measles in local outbreaks.  
Photo: Candida Lobes/MSF