BMJ Paediatrics Open

MSF Paediatric days: A step forward in operationalizing 'Humanitarian Paediatrics'

Journal:	*BMJ Paediatrics Open*
Manuscript ID	bmjpo-2021-001156
Article Type:	Review
Date Submitted by the Author:	25-Jun-2021
Complete List of Authors:	Janet, Sophie ; Medecins Sans Frontieres Russell, Neal; Medecins Sans Frontieres Morton, Nikola; Medecins Sans Frontieres Martinez, Daniel; Medecins Sans Frontieres Tamannai, Mona; Medecins Sans Frontieres Lafferty, Nadia; Medecins Sans Frontieres Ogundipe, Oluwakemi; Medecins Sans Frontieres roggeveen, harriet; Medecins Sans Frontieres Carreras, Inmaculada; Medecins Sans Frontieres Gao, Anja; Medecins Sans Frontieres Didier, Elise; Medecins Sans Frontieres Petrucci, Roberta; Medecins Sans Frontieres
Keywords:	Neonatology

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

TITLE: MSF Paediatric days: A step forward in operationalizing 'Humanitarian Paediatrics'

CORRESPONDING AUTHOR: Sophie Janet, Médecins Sans Frontières Dakar Unit, Yoff Toundounp Rya Villa N° 127, Dakar / Sénégal. Email: Sophie.janet@barcelona.msf.org

CO-AUTHORS:
Neal Russell, medical department, Médecins Sans Frontières, Amsterdam, Netherlands
Nikola Morton, medical department, Médecins Sans Frontières, Sydney, Australia
Daniel Martinez, medical department, Médecins Sans Frontières, Geneva, Switzerland
Mona Tamannai, medical department, Médecins Sans Frontières, Barcelona, Spain
Nadia Lafferty, medical department, Médecins Sans Frontières, Barcelona, Spain
Harriet Roggeveen, medical department, Médecins Sans Frontières, Amsterdam, Netherlands
Oluwakemi F. Ogundipe, medical department, Médecins Sans Frontières, Brussels, Belgium
Inmaculada Carreras, medical department, Médecins Sans Frontières, Sydney, Australia
Anja Gao, medical department, Médecins Sans Frontières, Sydney, Australia
Elise Didier, medical department, Médecins Sans Frontières, Brussels, Belgium
Roberta Petrucci, medical department, Médecins Sans Frontières, Geneva, Switzerland

KEYWORDS: Humanitarian paediatrics, Essential Newborn Care, community care, paediatric tuberculosis, antimicrobial resistance

WORD COUNT: 2021 words

REFERENCE COUNT: 17 references

KEY MESSAGES:

- One in four children worldwide are living in a humanitarian or fragile setting.
- There is a distinct lack of medical literature from humanitarian settings to provide guidance on best practice in such specific and resource-limited contexts.
- MSF Paediatric Days were born to address paediatric issues of direct humanitarian concern.
- This event unites frontline staff, policy makers and academia to exchange ideas, align efforts, inspire, and share frontline research and experiences.
- Essential newborn care, community-based models of care, paediatric tuberculosis, antimicrobial resistance and collateral damage of COVID-19 on child health were discussed on the 2021 event.
- MSF Paediatric Days is as a unique forum to advance knowledge on humanitarian paediatrics and creates opportunities for individual and collective learning.

STATEMENTS:

❖ **Funding:** This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors

❖ **Competing Interests Statement:** The authors declare no conflicts of interests

❖ **Contributorship Statement**:

- Sophie Janet: substantial contributions to the conception, drafting of manuscript, revision, final approval and submission.
- Neal Russell: substantial contributions to the conception, revision and final approval.
- Nikola Morton: substantial contributions to the conception, revision and final approval.
- Daniel Martinez: substantial contributions to the conception, revision and final approval
- Mona Tamannai: substantial contributions to the conception, revision and final approval
- Nadia Lafferty: substantial contributions to the conception, revision and final approval
- Harriet Roggeveen: substantial contributions to the conception and final approval
- Oluwakemi F. Ogundipe: substantial contributions to the conception, revision and final approval
- Inmaculada Carreras: substantial contributions to the conception and final approval
- Anja Gao: substantial contributions to the conception and final approval
- Elise Didier: substantial contributions to the conception, revision and final approval
- Roberta Petrucci: substantial contributions to the conception, revision and final approval

Around the world, one in four children are living in a country affected by conflict, political insecurity and disaster, and an unprecedented 30-34 million children are displaced from home [1]. Children are disproportionately impacted by crises and face threats of violence, hunger, disease, disability, and death. Worldwide, 56 million children under the age of 5 (half of them newborns) are projected to die between 2018 and 2030 in the absence of additional action, with the greatest proportion of this burden in humanitarian and fragile settings[2]. Tragically, with a historic reversal of progress expected due to the collateral impact of the SARS-CoV-2 pandemic, a rising gap between humanitarian needs and funding[3] and declining support for child health in many cases, the numbers of children dying is expected to increase even further[4]. In addition to increased mortality, we can expect escalating suffering, lost future potential, and increasing inequality[5–7].

Médecins Sans Frontières (MSF) is an international medical humanitarian organization specializing in humanitarian emergencies such as conflicts, natural disasters, and epidemics, acting with independence, neutrality, and impartiality. In 2019, MSF operated in 268 projects across the world providing paediatric care. Around 3.3 million children received outpatient care, more than half a million children under five years old received inpatient care (including 224,176 admitted in therapeutic feeding centres for severe malnutrition), and almost 300,000 births were supported by MSF[8].

Health care in humanitarian and fragile contexts is challenging and complex to provide, particularly for children. Health care staff are scarce, under-resourced and work well over capacity, in some of the most insecure and adverse settings. Yet they continue to provide essential and life-saving services to vulnerable populations, rarely receiving the recognition they deserve. In addition, there is a distinct lack of medical literature from humanitarian settings to provide guidance on best practices in such specific and resource-limited contexts. There is a need not only to further integrate evidence-based practices into humanitarian contexts, but also to generate evidence on what works best in such settings. We need to shine a brighter light on the experiences, challenges, failures, and successes of those working in 'humanitarian paediatrics' in order to improve care for this growing population of children in the most vulnerable circumstances. There are not many platforms or venues available to bridge the existing gaps in clinical research and medical literature applicable to paediatric and neonatal care in humanitarian and fragile settings. Therefore, in 2016, the first *MSF Paediatric Days* were born with the aim of addressing urgent paediatric issues of direct humanitarian concern. Since then, 3 more editions have taken place at 18 month intervals, successfully uniting frontline staff working in MSF and other organizations with policymakers and academia to exchange ideas, align efforts, inspire, and share pertinent research and experiences.

In April 2021, the first virtual edition of the *MSF Paediatric Days* brought together 1108 people from 95 different countries. MSF staff made up 58% of the attendees, largely frontline health workers, and the remainder came from a range of different organisations including academia, non-governmental organisations, ministries of health and other actors. The event included 5 main plenary discussions around key topics on humanitarian paediatrics, 8 virtual stands from internal MSF initiatives (MSF eCare project, Telemedicine, POCUS) and external MSF collaborating partners (OPENPediatrics, Save the Children, WHO, Laerdal & the American Academy of Paediatrics, Action Against Hunger, ALIMA and the Société Sénégalaise de

Pédiatrie) who shared content and interacted with the participants. Additionally, 49 posters (available on ResearchGate) and 21 respective video-abstracts were displayed with evidence coming directly from the hospitals and medical projects in fragile and humanitarian settings. This event provided a unique opportunity for frontline health staff working in humanitarian settings to share their experiences, challenges, and solutions, in addition to creating networking spaces for interaction and exchange of ideas. Moreover, 5 inspiring short talks referred to as "PAEDTalks" were made available, enriching the content of the event.

During this 2-day event, 5 major themes were discussed: essential newborn care, community-based models of care, paediatric tuberculosis, antimicrobial resistance in neonatal and paediatric care and the collateral damage of the SARS-CoV-2 pandemic on child health. Replays and full event content can be found on the MSF Paediatric Days webpage.

Newborns are one of the most vulnerable groups in humanitarian and fragile settings, but they have received limited focus in humanitarian action[9]. The first session entitled "**Neonates, back to basics"** illustrated the challenges that field teams face to implement, maintain, support and promote essential newborn care interventions, with a particular focus on breastfeeding. Breastfeeding has well recognised health benefits for mothers and newborns, but is even more crucial in humanitarian settings where breast milk substitutes (BMS) are particularly dangerous in the absence of adequate water, sanitation & hygiene (WaSH)[10,11]. Nevertheless, the life-saving nature of breastfeeding has often been overlooked in humanitarian settings, with lack of institutionalisation of guidance on supporting breastfeeding[12]. The session identified numerous barriers to successful breastfeeding such as false assumptions of breastfeeding being easy without need for support, contradictory messaging, and failure to maintain mothers and babies together (mother-baby dyad care) due to lack of adequate space, resources and staff knowledge and awareness. Moreover, gender inequity and female disempowerment, which are exacerbated in crises, also negatively influence breastfeeding practices in many of the contexts where MSF intervenes.

There was a common recognition of the need for breastfeeding promotion and awareness raising, including the need for professionals with expertise in breastfeeding promotion to support humanitarian responses. Ultimately, breastfeeding support needs to be recognised as an emergency humanitarian intervention. Different solutions and ideas were shared during the panel discussion to overcome some of these current challenges and to achieve this important shift in paradigm. Improving knowledge and skills on breastfeeding for health care providers is crucial, and support from lactation specialists should be made available via innovative platforms such as Telemedicine*. Engagement of all members of the community including traditional birth attendants, family (including male members) and any other key member of the community should be included in the community engagement strategy of the project.

The second session of the first day entitled **"Community-based models of care for neonatal and child health"** provided insight on the current challenges and achievements of the decentralisation of care and the important role that the community plays in the continuum of care. During the session, discussions highlighted the opportunity and importance of expanding

*Telemedicine is an MSF service that allows remote medical teams to consult with a whole network of specialist whenever confronted with complex cases.

community models of care, for both children and newborns. The roles of Community Health Workers are crucial for delivering a range of preventive and curative health services and their contribution towards reducing inequities in access to care. It was highlighted that community activities should be built upon existing capacity and avoid the implementation of parallel systems.

The integration of community models of care in emergency response is possible and most effective if the model is implemented in advance with standardised emergency preparedness (EPREP) strategies according to context to promote resilience. Field testimonies on an Integrated Community Case Management (ICCM) program in Niger and implementation of community-based nutrition programs among others reinforced the importance and the potential that community models of care have in improving access and the continuum of care in children.

On the second day of the event 3 main topics where discussed., The first session on **paediatric tuberculosis** touched upon the challenges of diagnosing tuberculosis , the specificities of paediatric tuberculosis and the role of contact tracing and preventive treatment.

Tuberculosis (TB) is a major infectious killer in MSF settings and children, especially those under 5 years of age, are at particular risk of severe forms of the disease. Paediatric Tuberculosis is a "silent disease" frequently under-diagnosed, under-treated and under-reported. Tuberculosis presents differently in children than in adults, with a higher proportion of extra-pulmonary TB. Microbiological confirmation is rarely achievable in children and is especially challenging in humanitarian settings. Therefore, emphasis on clinical diagnosis is imperative to ensure that presumptive treatment is started without delay. Treatment of paediatric tuberculosis based on clinical diagnosis alone would decrease the burden of TB in children, thereby minimising preventable deaths from the disease.

Contact tracing of tuberculosis cases in the community and subsequent Tuberculosis Preventive Treatment (TPT) is often overlooked and deprioritised in low resource settings, but this should be pursued more actively. This can now be facilitated with new shorter TPT regimens (e.g. 3HR), which have already shown promising results in terms of acceptance, efficacy, safety and adherence to treatment within MSF settings.

The second topic discussed on April 16th was **"Antimicrobial resistance and antimicrobial stewardship in neonatal and paediatric care".** Antimicrobial resistance is a reality in humanitarian settings and has been described as a silent tsunami (ref). Vulnerable groups such as newborns and malnourished children face a disproportionate burden and specific challenges. The challenges and consequences of outbreaks in neonatal units in low resource settings was highlighted, including both experience within MSF and a growing evidence based in low resource settings outside MSF[14,15]. In addition, MSF field experiences from Mali and South Sudan underlined the need of a multidisciplinary approach focusing on several transversal pillars including Infection Prevention and Control (IPC), Antibiotic stewardship and microbiology (when possible/available). Antibiotic stewardship is particularly challenging for paediatric patients in humanitarian settings, compounded by high mortality and lack of

microbiology testing, meaning severe illness is often treated with diagnostic uncertainty, leading to an overuse of antibiotics. The challenge of access to microbiology was discussed, as while we have extensive data on antimicrobial resistance in some settings, there is a current gap in global data, and the important role this plays in defining the problem. But even without access to microbiology, there is capacity to improve antibiotic stewardship and IPC, which are essential and feasible in all settings[16]. The importance of an interdisciplinary approach was discussed, ensuring involvement of all members of the team, including doctors, nurses, pharmacists and cleaners. Practical tools to support field teams to assess and monitor medical activities from an antimicrobial resistance lens are available within and outside MSF such as Point Prevalence Surveys on antibiotic use, antibiotic consumption analysis and the Stepwise IPC Approach (SIPCA tool).

The last session of the event was dedicated to the **collateral damage of the SARS-CoV-2 pandemic on child health.** Children have been disproportionally affected by the pandemic, with low mortality by COVID-19 itself, but high morbidity and mortality due to the multiple collateral effects of the health crisis. The pandemic has impacted child health through increases in poverty, loss of education, food insecurity, violence, as well as increased strain on health systems and reduction in access to health services. Preventive services like vaccination and nutrition programmes have been affected most by suspension or delay[17]. The indirect effects of the pandemic have struck most severely in resource-limited settings where increases in child mortality is a major concern, widening the gap of inequity for children. There were field testimonies from frontline health workers outlining the struggle they faced during this unprecedented time. Supporting health systems to maintain the preventive and curative services are crucial to attenuate the ongoing impact of this crisis. Flexibility to adjust health activities is key to face the challenges brought by the SARS-CoV-2 pandemic. Boosting community health care activities in MSF strategies, as an essential piece of the continuum of care, is an efficient way of assuring health access. Despite all collateral damage already caused, this past year can also be an opportunity to change our ways of thinking, activities, support models and future preparedness and responses. Now is a more important time than ever to invest in humanitarian paediatrics, to support children and uphold their rights in the most fragile contexts.

As the world continues to battle the SARS-CoV-2 pandemic, focus and funding for child health in humanitarian settings suffers while the needs escalate. The future for children in humanitarian settings hangs in the balance, and the need for platforms that raise the profile of humanitarian paediatrics is more important than ever. The MSF Paediatric Days serves as a unique forum to advance knowledge on humanitarian paediatrics and creates opportunities for individual and collective learning on this topic. We look forward to the next edition and welcome all suggestions for the next topics of the MSF Paediatric Days.

References

1. United Nations Office for the Coordination of Humanitarian Affairs. *Global Humanitarian Overview 2019*. https://reliefweb.int/sites/reliefweb.int/files/resources/GHO2019.pdf (2019).

2. UNICEF. *Levels and trends in Child Mortality Report 2018*. (2018).

3. A.Spencer, B. W.-K. &. *Reducing the Humanitarian financing gap: Review of progress since the report of the High-Level Panel on Humanitarian Financing*. (2021).

4. Roberton, T. *et al.* Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study. *Lancet Glob. Heal.* **0**, (2020).

5. Wagner, Z. *et al.* Armed conflict and child mortality in Africa: a geospatial analysis. *Lancet* **392**, 857–865 (2018).

6. Shenoda, S., Kadir, A., Pitterman, S. & Goldhagen, J. The effects of armed conflict on children. *Pediatrics* **142**, (2018).

7. Pfefferbaum, B., Jacobs, A. K., Van Horn, R. L. & Houston, J. B. Effects of Displacement in Children Exposed to Disasters. *Curr. Psychiatry Rep.* **18**, 1–5 (2016).

8. MSF Paediatric Working Group. Paediatric activities Medecins Sans Frontieres. (2019).

9. UNICEF, Save the Children, W. H. O. *Roadmap to Accelerate Progress for Every Newborn in Humanitarian Settings 2020 – 2025*. (2020).

10. Jakobsen, M. *et al.* Breastfeeding status as a predictor of mortality among refugee children in an emergency situation in Guinea-Bissau. *Trop. Med. Int. Heal.* **8**, 992–996 (2003).

11. Hipgrave, D. B., Assefa, F., Winoto, A. & Sukotjo, S. Donated breast milk substitutes and incidence of diarrhoea among infants and young children after the May 2006 earthquake in Yogyakarta and Central Java. *Public Health Nutr.* **15**, 307–315 (2011).

12. Shaker-Berbari, L., Ghattas, H., Symon, A. G. & Anderson, A. S. Infant and young child feeding in emergencies: Organisational policies and activities during the refugee crisis in Lebanon. *Matern. Child Nutr.* **14**, e12576 (2018).

13. Dodd, P. J., Yuen, C. M., Sismanidis, C., Seddon, J. A. & Jenkins, H. E. The global burden of tuberculosis mortality in children: a mathematical modelling study. *Lancet Glob. Heal.* **5**, e898–e906 (2017).

14. Okomo, U. *et al.* Investigation of sequential outbreaks of Burkholderia cepacia and multidrug-resistant extended spectrum β-lactamase producing Klebsiella species in a West African tertiary hospital neonatal unit: a retrospective genomic analysis. *The Lancet Microbe* **1**, e119–e129 (2020).

15. Lenglet, A., Faniyan, O. & Hopman, J. A Nosocomial Outbreak of Clinical Sepsis in a Neonatal Care Unit (NCU) in Port-Au-Prince Haiti, July 2014 – September 2015. *PLoS Curr.* (2018) doi:10.1371/currents.outbreaks.58723332ec0de952adefd9a9b6905932.

16. Johnson, J. *et al.* Saving neonatal lives by improving infection prevention in low-resource units: Tools are needed. *J. Glob. Health* **9**, 9–11 (2019).

17. Sidhu, S. WHO and UNICEF warn of a decline in vaccinations during COVID-19. *World Health Organization* (2020).

BMJ Paediatrics Open

MSF Paediatric days: A step forward in operationalising 'Humanitarian Paediatrics'

Journal:	*BMJ Paediatrics Open*
Manuscript ID	bmjpo-2021-001156.R1
Article Type:	Review
Date Submitted by the Author:	07-Aug-2021
Complete List of Authors:	Janet, Sophie ; Medecins Sans Frontieres Russell, Neal; Medecins Sans Frontieres Morton, Nikola; Medecins Sans Frontieres Martinez, Daniel; Medecins Sans Frontieres Tamannai, Mona; Medecins Sans Frontieres Lafferty, Nadia; Medecins Sans Frontieres roggeveen, harriet; Medecins Sans Frontieres Ogundipe, Oluwakemi; Medecins Sans Frontieres Carreras, Inmaculada; Medecins Sans Frontieres Gao, Anja; Medecins Sans Frontieres Didier, Elise; Medecins Sans Frontieres Petrucci, Roberta; Medecins Sans Frontieres
Keywords:	Neonatology

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

TITLE: MSF Paediatric days: A step forward in operationalising 'Humanitarian Paediatrics'

CORRESPONDING AUTHOR: Sophie Janet, Médecins Sans Frontières Dakar Unit, Yoff Toundounp Rya Villa N° 127, Dakar / Sénégal. Email: Sophie.janet@barcelona.msf.org

CO-AUTHORS:
Neal Russell, medical department, Médecins Sans Frontières, Amsterdam, Netherlands
Nikola Morton, medical department, Médecins Sans Frontières, Sydney, Australia
Daniel Martinez, medical department, Médecins Sans Frontières, Geneva, Switzerland
Mona Tamannai, medical department, Médecins Sans Frontières, Barcelona, Spain
Nadia Lafferty, medical department, Médecins Sans Frontières, Barcelona, Spain
Harriet Roggeveen, medical department, Médecins Sans Frontières, Amsterdam, Netherlands
Oluwakemi F. Ogundipe, medical department, Médecins Sans Frontières, Brussels, Belgium
Inmaculada Carreras, medical department, Médecins Sans Frontières, Sydney, Australia
Anja Gao, medical department, Médecins Sans Frontières, Sydney, Australia
Elise Didier, medical department, Médecins Sans Frontières, Brussels, Belgium
Roberta Petrucci, medical department, Médecins Sans Frontières, Geneva, Switzerland

KEYWORDS: Humanitarian paediatrics, Essential Newborn Care, community care, paediatric tuberculosis, antimicrobial resistance

WORD COUNT: 2021 words

REFERENCE COUNT: 17 references

KEY MESSAGES:

- One in four children worldwide are living in a humanitarian or fragile setting.
- There is a distinct lack of medical literature from humanitarian settings to provide guidance on best practice in such specific and resource-limited contexts.
- MSF Paediatric Days were born to address paediatric issues of direct humanitarian concern.
- This event unites frontline staff, policy makers and academia to exchange ideas, align efforts, inspire, and share frontline research and experiences.
- Essential newborn care, community-based models of care, paediatric tuberculosis, antimicrobial resistance and collateral damage of COVID-19 on child health were discussed at the 2021 event.
- MSF Paediatric Days is as a unique forum to advance knowledge on humanitarian paediatrics and creates opportunities for individual and collective learning.

STATEMENTS:

❖ **Funding:** This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

❖ **Competing Interests Statement:** The authors declare no conflicts of interests.

❖ **Contributorship Statement**:

- Sophie Janet: substantial contributions to the conception, drafting of manuscript, revision, final approval and submission.
- Neal Russell: substantial contributions to the conception, revision and final approval.
- Nikola Morton: substantial contributions to the conception, revision and final approval.
- Daniel Martinez: substantial contributions to the conception, revision and final approval
- Mona Tamannai: substantial contributions to the conception, revision and final approval
- Nadia Lafferty: substantial contributions to the conception, revision and final approval
- Harriet Roggeveen: substantial contributions to the conception and final approval
- Oluwakemi F. Ogundipe: substantial contributions to the conception, revision and final approval
- Inmaculada Carreras: substantial contributions to the conception and final approval
- Anja Gao: substantial contributions to the conception and final approval
- Elise Didier: substantial contributions to the conception, revision and final approval
- Roberta Petrucci: substantial contributions to the conception, revision and final approval

Around the world, one in four children is living in a country affected by conflict, political insecurity and disaster, and an unprecedented 30-34 million children are displaced from home (1). Children are disproportionately impacted by crises and face the threat of violence, hunger, disease, disability, and death. Worldwide, 56 million children under the age of five (half of them newborns) are projected to die between 2018 and 2030 in the absence of additional action, with the greatest proportion of this mortality anticipated in humanitarian and fragile settings(2). Tragically, with a historic reversal of progress expected due to the collateral impact of the SARS-CoV-2 pandemic, a rising gap between humanitarian needs and funding(3) and declining support for child health in many cases, the number of children dying is expected to increase even further(4). In addition to increased mortality, we can expect escalating suffering, lost future potential, and increasing inequality(5–7).

Médecins Sans Frontières (Doctors Without Borders/MSF) is an international medical humanitarian organisation specialising in responding to humanitarian emergencies such as conflicts, natural disasters, and epidemics, acting with independence, neutrality, and impartiality. MSF provides essential medical care to millions of children every year who would otherwise be without access to healthcare (Table 1) (8).

Table 1 MSF paediatric activities involving children under five years old in 2019 (8)

Description	Number (rounded to closest whole)
Projects providing paediatric care	270
Children receiving outpatient care	3.3 million
Children receiving inpatient care unrelated to severe malnutrition	361,000
Children admitted to therapeutic feeding centres	186,000
Births supported	300,000

Healthcare in humanitarian and fragile contexts is challenging and complex to provide, particularly for children. Healthcare staff are scarce, under-resourced and work well over capacity, in some of the most insecure and adverse settings. Yet they continue to provide essential and lifesaving services to vulnerable populations, rarely receiving the recognition they deserve. In addition, there is a distinct lack of medical literature from humanitarian settings to provide guidance on best practices in such specific and resource-limited contexts. There is a need not only to further integrate evidence-based practices into humanitarian contexts, but also to generate evidence on what works best. We need to shine a brighter light on the experiences, challenges, failures, and successes of those working in 'humanitarian paediatrics*' in order to improve care for this growing population of children in the most vulnerable circumstances.

* Humanitarian paediatrics refers to the branch of medicine that involves the care of newborns, infants, children, and adolescents in humanitarian settings. It takes elements from public and global health, paediatrics, tropical and disaster medicine. It is centred on the child and his family and integrates the specific challenges and barriers related to the humanitarian context and limited resources.

There are not many platforms or venues available to bridge the existing gaps in clinical research and medical literature applicable to paediatric and neonatal care in humanitarian and fragile settings. Therefore, in 2016, the first *MSF Paediatric Days* were born with the aim of addressing urgent paediatric issues of direct humanitarian concern. Since then, three more editions have taken place at 18-month intervals, successfully uniting frontline staff working in MSF and other organisations with policymakers and academia to exchange ideas, align efforts, inspire, and share pertinent research and experiences. This event not only aims to raise awareness and exchange experiences, but also to impact daily paediatric medical activities in humanitarian settings by promoting multidisciplinary collaboration, disseminating relevant best practices and generating specific recommendations (Figure 1).

Figure 1. The MSF Paediatric Days approach to improving paediatric care in humanitarian settings

In April 2021, the first virtual edition of the *MSF Paediatric Days* brought together 1108 people from 95 different countries. MSF staff made up 58% of the attendees, largely frontline health workers, and the remainder came from a range of different organisations including academia, non-governmental organisations, ministries of health and other actors. The event included five main plenary discussions around key topics on humanitarian paediatrics, and eight virtual stands from internal MSF initiatives (MSF eCARE: electronic Decision Support System (eDSS) for paediatric primary care, Telemedicine: online tool for MSF medical frontline staff that provides access to specialised medical advice, POCUS: point-of-care ultrasound) and external MSF collaborating partners (OPENPediatrics, Save the Children, WHO, Laerdal & the American Academy of Paediatrics, Action Against Hunger, ALIMA and the Société Sénégalaise de Pédiatrie) who shared content and interacted with the participants. Additionally, 49 posters (available on ResearchGate) and 21 video-abstracts were displayed, offering evidence directly from hospitals and medical projects in fragile and humanitarian settings. This event provided a unique opportunity for frontline health staff working in such settings to share their experiences, challenges and solutions, in addition to creating networking spaces for interaction and exchange of ideas. Moreover, five inspiring short "PAEDTalks" enriched the content of the event.

During this two-day event on April 15-16, five major themes were discussed: essential newborn care, community-based models of care, paediatric tuberculosis, antimicrobial resistance in neonatal and paediatric care, and the collateral damage of the SARS-CoV-2 pandemic on child health. Replays and full event content can be found on the MSF Paediatric Days webpage. The detailed key messages of the five sessions can be found on the supplement table.

Newborns are one of the most vulnerable groups in humanitarian and fragile settings, but they have received limited focus in humanitarian action(9). The first session entitled "Neonates - back to basics" illustrated the challenges that field teams face to implement, maintain, support and promote essential newborn care, with a focus on breastfeeding. Breastfeeding has well recognised health benefits for mothers and newborns, but is even more crucial in humanitarian settings where breast milk substitutes are particularly dangerous in the absence of adequate water, sanitation & hygiene(10,11). Nevertheless, the lifesaving nature of breastfeeding has often been overlooked in humanitarian settings, with a lack of institutionalised guidance on supporting breastfeeding(12). The session identified numerous barriers to successful

breastfeeding, such as false assumptions of breastfeeding being easy without need for support, contradictory messaging, and failure to maintain mothers and babies together (mother-baby dyad care) due to lack of adequate space, resources and staff knowledge and awareness. Moreover, gender inequity and female disempowerment, which are exacerbated in crises, also negatively influence breastfeeding practices in many of the contexts where MSF intervenes.

There was a common recognition of the need for breastfeeding promotion and awareness raising among health staff, mothers and communities, including the need for professionals with expertise in breastfeeding promotion to support humanitarian responses. Ultimately, breastfeeding support needs to be recognised as an emergency humanitarian intervention. Different solutions and ideas were shared during the panel discussion to overcome some of these current challenges and to achieve this important shift in paradigm. Improving knowledge and skills on breastfeeding for healthcare providers is crucial, and support from lactation specialist should be made available via innovative platforms such as telemedicine[†]. Engagement of all members of the community including traditional birth attendants, family (including male members) and any other key member of the community should be included in the community engagement strategy of the project.

The second session of the first day entitled **"Community-based models of care for neonatal and child health"** provided insight on the current challenges and achievements of the decentralisation of care, and the important role that the community plays in the continuum of care. During the session, discussions highlighted the opportunity and importance of expanding community models of care, for both children and newborns. Community health workers are crucial for delivering a range of preventive and curative health services, and for reducing inequities in access to care. It was highlighted that community activities should be built upon existing capacity, to avoid the implementation of parallel systems.

The integration of community-based models of care in emergency response is possible and most effective if the model is implemented in advance with standardised emergency preparedness strategies according to context, to promote resilience. Field testimonies from an Integrated Community Case Management program in Niger and community-based nutrition programs among others reinforced the importance, and the potential, that community models of care have in improving access and the continuum of care in children.

On the second day, three main topics where discussed. The first session, **"Paediatric tuberculosis",** touched upon the challenges of diagnosing tuberculosis (TB), the specificities of paediatric TB, and the role of contact tracing and preventive treatment.

TB is a major infectious killer in MSF settings and children, especially those under five years of age, are at particular risk of severe forms of the disease. Paediatric TB is a "silent disease" frequently under-diagnosed, under-treated and under-reported. TB presents differently in children than in adults, with a higher proportion of extra-pulmonary TB. Microbiological

[†] Telemedicine is an MSF service that allows remote medical teams to consult with a whole network of specialist whenever confronted with complex cases.

confirmation is rarely achievable in children and is especially challenging in humanitarian settings. Therefore, emphasis on clinical diagnosis is imperative to ensure that presumptive treatment is started without delay. Treatment of paediatric TB based on clinical diagnosis alone would decrease TB morbidity in children thereby minimising preventable deaths from the disease.

Contact tracing of tuberculosis cases in the community and subsequent Tuberculosis Preventive Treatment (TPT) is often overlooked and deprioritised in low resource settings, but this should be pursued more actively. This can now be facilitated with new, shorter TPT regimens, which have already shown promising results in terms of acceptance, efficacy, safety and adherence to treatment within MSF settings.

The second topic discussed on April 16th was **"Antimicrobial resistance and antimicrobial stewardship in neonatal and paediatric care".** Antimicrobial resistance is a reality in humanitarian settings(13)(14) and has been described as a silent tsunami. Vulnerable groups such as newborns and malnourished children face a disproportionate burden and specific challenges. The challenges and consequences of outbreaks in neonatal units in low resource settings was highlighted, including both experience within MSF and growing evidence based in low resource settings outside MSF(15)(16). In addition, MSF field experiences from Mali and South Sudan underlined the need for a multidisciplinary approach focusing on several transversal pillars including Infection Prevention and Control (IPC), antibiotic stewardship and microbiology (when possible or available). Antibiotic stewardship is particularly challenging for paediatric patients in humanitarian settings. The combination of high mortality and a lack of microbiology testing meansthat severe illness is often treated with diagnostic uncertainty, leading to an overuse of antibiotics. The challenge of access to microbiology was discussed, including the important role that understanding of local antimicrobial resistance patterns plays in stewardship practices. While extensive data on antimicrobial resistance exists in some settings, there is a complete lack of data in many parts of the world.But even without access to microbiology, there is capacity to improve antibiotic stewardship and IPC, which are essential and feasible in all settings(17). The importance of an interdisciplinary approach was discussed, ensuring involvement of all members of the team, including doctors, nurses, pharmacists and cleaners. Practical tools to support field teams to assess and monitor medical activities from an antimicrobial resistance lens are available within and outside MSF, such as Point Prevalence Surveys on antibiotic use, antibiotic consumption analysis and the Stepwise IPC Approach.

The last session of the event was dedicated to the **"Collateral damage of COVID-19 on child health".** Children have been disproportionally affected by the pandemic, with low mortality due to COVID-19 itself, but high morbidity and mortality due to the multiple collateral effects of the health crisis. The pandemic has impacted child health through increases in poverty, loss of education, food insecurity and violence, as well as greater strains on health systems and a reduction in access to health services. Preventive services like vaccination and nutrition programmes have been mostly suspended or delayed(18). The indirect effects of the pandemic have been most severe in resource-limited settings where increased child mortality is a major concern, widening the gap of inequity for children. There were field testimonies from frontline health workers outlining the struggle they faced during this unprecedented time. Supporting health systems to maintain preventive and curative services are crucial to attenuate the ongoing

impact. Flexibility to adjust health activities is key to face the challenges brought by the SARS-CoV-2 pandemic. Boosting community healthcare activities within MSF strategies, as an essential part of the continuum of care, is an efficient way of assuring healthcare access. Despite the collateral damage already caused, this past year can also be an opportunity to change our ways of thinking, activities, support models and future preparedness and responses. More than ever, now is a crucial time to invest in humanitarian paediatrics, to support children and uphold their rights in the most fragile contexts.

As the world continues to battle the SARS-CoV-2 pandemic, focus and funding for child health in humanitarian settings suffers while children's needs escalate. The future for children in humanitarian settings hangs in the balance, and platforms that raise the profile of humanitarian paediatrics are vital to ensure that these children are not overlooked and remain a priority among funders, decision-makers and stakeholders. The MSF Paediatric Days serve as a unique forum to advance knowledge on humanitarian paediatrics, and to create opportunities for individual and collective learning on this topic. We look forward to the next edition and welcome all suggestions for the next topics of the MSF Paediatric Days.

References

1. United Nations Office for the Coordination of Humanitarian Affairs. Global Humanitarian Overview 2019 [Internet]. 2019. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/GHO2019.pdf
2. UNICEF. Levels and trends in Child Mortality Report 2018. 2018.
3. A.Spencer BW-K&. Reducing the Humanitarian financing gap: Review of progress since the report of the High-Level Panel on Humanitarian Financing. 2021.
4. Roberton T, Carter ED, Chou VB, Stegmuller AR, Jackson BD, Tam Y, et al. Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study. Lancet Glob Heal. 2020 May;0(0).
5. Wagner Z, Heft-Neal S, Bhutta ZA, Black RE, Burke M, Bendavid E. Armed conflict and child mortality in Africa: a geospatial analysis. Lancet [Internet]. 2018;392(10150):857–65. Available from: http://dx.doi.org/10.1016/S0140-6736(18)31437-5
6. Shenoda S, Kadir A, Pitterman S, Goldhagen J. The effects of armed conflict on children. Pediatrics. 2018;142(6).
7. Pfefferbaum B, Jacobs AK, Van Horn RL, Houston JB. Effects of Displacement in Children Exposed to Disasters. Curr Psychiatry Rep. 2016;18(8):1–5.
8. MSF Paediatric Working Group. Paediatric activities Medecins Sans Frontieres. 2019.
9. UNICEF, Save the Children WHO. Roadmap to Accelerate Progress for Every Newborn in Humanitarian Settings 2020 – 2025. 2020.
10. Jakobsen M, Sodemann M, Nylén G, Balé C, Nielsen J, Lisse I, et al. Breastfeeding status as a predictor of mortality among refugee children in an emergency situation in Guinea-

Bissau. Trop Med Int Heal. 2003;8(11):992–6.

11. Hipgrave DB, Assefa F, Winoto A, Sukotjo S. Donated breast milk substitutes and incidence of diarrhoea among infants and young children after the May 2006 earthquake in Yogyakarta and Central Java. Public Health Nutr. 03/23. 2011;15(2):307–15.

12. Shaker-Berbari L, Ghattas H, Symon AG, Anderson AS. Infant and young child feeding in emergencies: Organisational policies and activities during the refugee crisis in Lebanon. Matern Child Nutr. 2018 Jul;14(3):e12576.

13. Kanapathipillai R, Malou N, Hopman J, Bowman C, Yousef N, Michel J, et al. Antibiotic resistance in conflict settings: lessons learned in the Middle East. JAC-Antimicrobial Resist. 2019;1(1):2–4.

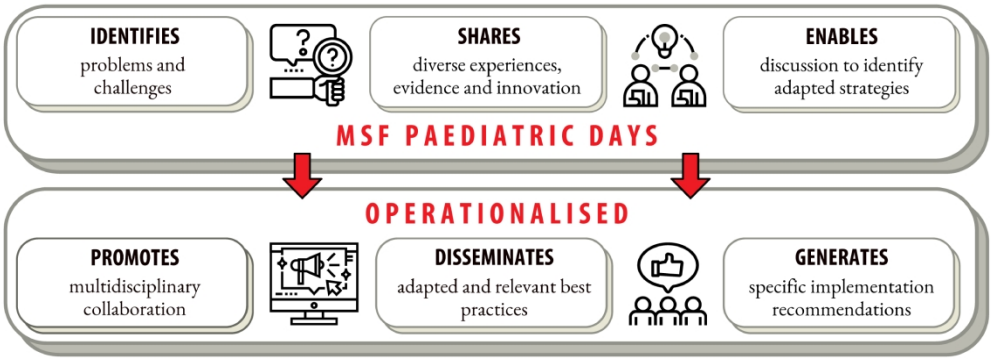
14. Langendorf C, Le Hello S, Moumouni A, Gouali M, Mamaty AA, Grais RF, et al. Enteric bacterial pathogens in children with diarrhea in niger: Diversity and antimicrobial resistance. PLoS One. 2015;10(3):1–18.

15. Okomo U, Senghore M, Darboe S, Bojang E, Zaman SMA, Hossain MJ, et al. Investigation of sequential outbreaks of Burkholderia cepacia and multidrug-resistant extended spectrum β-lactamase producing Klebsiella species in a West African tertiary hospital neonatal unit: a retrospective genomic analysis. The Lancet Microbe [Internet]. 2020;1(3):e119–29. Available from: http://dx.doi.org/10.1016/S2666-5247(20)30061-6

16. Lenglet A, Faniyan O, Hopman J. A Nosocomial Outbreak of Clinical Sepsis in a Neonatal Care Unit (NCU) in Port-Au-Prince Haiti, July 2014 – September 2015. PLoS Curr. 2018;(July 2014).

17. Johnson J, Akinboyo IC, Curless MS, Milstone AM, Coffin SE, Steeb DR. Saving neonatal lives by improving infection prevention in low-resource units: Tools are needed. J Glob Health. 2019;9(1):9–11.

18. Sidhu S. WHO and UNICEF warn of a decline in vaccinations during COVID-19. World Health Organization. 2020;


IDENTIFIES
problems and challenges
SHARES
diverse experiences, evidence and innovation
ENABLES
discussion to identify adapted strategies
MSF PAEDIATRIC DAYS
OPERATIONALISED
PROMOTES
multidisciplinary collaboration
DISSEMINATES
adapted and relevant best practices
GENERATES
specific implementation recommendations

BMJ Paediatrics Open

MSF Paediatric days: A step forward in operationalising 'Humanitarian Paediatrics'

Journal:	*BMJ Paediatrics Open*
Manuscript ID	bmjpo-2021-001156.R2
Article Type:	Review
Date Submitted by the Author:	29-Aug-2021
Complete List of Authors:	Janet, Sophie ; Medecins Sans Frontieres Russell, Neal; Medecins Sans Frontieres Morton, Nikola; Medecins Sans Frontieres Martinez, Daniel; Medecins Sans Frontieres Tamannai, Mona; Medecins Sans Frontieres Lafferty, Nadia; Medecins Sans Frontieres roggeveen, harriet; Medecins Sans Frontieres Ogundipe, Oluwakemi; Medecins Sans Frontieres Carreras, Inmaculada; Medecins Sans Frontieres Gao, Anja; Medecins Sans Frontieres Didier, Elise; Medecins Sans Frontieres Petrucci, Roberta; Medecins Sans Frontieres
Keywords:	Neonatology

I, the Submitting Author has the right to grant and does grant on behalf of all authors of the Work (as defined in the below author licence), an exclusive licence and/or a non-exclusive licence for contributions from authors who are: i) UK Crown employees; ii) where BMJ has agreed a CC-BY licence shall apply, and/or iii) in accordance with the terms applicable for US Federal Government officers or employees acting as part of their official duties; on a worldwide, perpetual, irrevocable, royalty-free basis to BMJ Publishing Group Ltd ("BMJ") its licensees and where the relevant Journal is co-owned by BMJ to the co-owners of the Journal, to publish the Work in this journal and any other BMJ products and to exploit all rights, as set out in our licence.

The Submitting Author accepts and understands that any supply made under these terms is made by BMJ to the Submitting Author unless you are acting as an employee on behalf of your employer or a postgraduate student of an affiliated institution which is paying any applicable article publishing charge ("APC") for Open Access articles. Where the Submitting Author wishes to make the Work available on an Open Access basis (and intends to pay the relevant APC), the terms of reuse of such Open Access shall be governed by a Creative Commons licence – details of these licences and which Creative Commons licence will apply to this Work are set out in our licence referred to above.

Other than as permitted in any relevant BMJ Author's Self Archiving Policies, I confirm this Work has not been accepted for publication elsewhere, is not being considered for publication elsewhere and does not duplicate material already published. I confirm all authors consent to publication of this Work and authorise the granting of this licence.

TITLE: MSF Paediatric days: A step forward in operationalising 'Humanitarian Paediatrics'

CORRESPONDING AUTHOR: Sophie Janet, Médecins Sans Frontières Dakar Unit, Yoff Toundounp Rya Villa N° 127, Dakar / Sénégal. Email: Sophie.janet@barcelona.msf.org

CO-AUTHORS:
Neal Russell, medical department, Médecins Sans Frontières, Amsterdam, Netherlands
Nikola Morton, medical department, Médecins Sans Frontières, Sydney, Australia
Daniel Martinez, medical department, Médecins Sans Frontières, Geneva, Switzerland
Mona Tamannai, medical department, Médecins Sans Frontières, Barcelona, Spain
Nadia Lafferty, medical department, Médecins Sans Frontières, Barcelona, Spain
Harriet Roggeveen, medical department, Médecins Sans Frontières, Amsterdam, Netherlands
Oluwakemi F. Ogundipe, medical department, Médecins Sans Frontières, Brussels, Belgium
Inmaculada Carreras, medical department, Médecins Sans Frontières, Sydney, Australia
Anja Gao, medical department, Médecins Sans Frontières, Sydney, Australia
Elise Didier, medical department, Médecins Sans Frontières, Brussels, Belgium
Roberta Petrucci, medical department, Médecins Sans Frontières, Geneva, Switzerland

KEYWORDS: Humanitarian paediatrics, Essential Newborn Care, community care, paediatric tuberculosis, antimicrobial resistance

WORD COUNT: 2021 words

REFERENCE COUNT: 17 references

KEY MESSAGES:

- One in four children worldwide are living in a humanitarian or fragile setting.
- There is a distinct lack of medical literature from humanitarian settings to provide guidance on best practice in such specific and resource-limited contexts.
- MSF Paediatric Days were born to address paediatric issues of direct humanitarian concern.
- This event unites frontline staff, policy makers and academia to exchange ideas, align efforts, inspire, and share frontline research and experiences.
- Essential newborn care, community-based models of care, paediatric tuberculosis, antimicrobial resistance and collateral damage of COVID-19 on child health were discussed at the 2021 event.
- MSF Paediatric Days is as a unique forum to advance knowledge on humanitarian paediatrics and creates opportunities for individual and collective learning.

STATEMENTS:

❖ **Funding:** This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

❖ **Competing Interests Statement:** The authors declare no conflicts of interests.

❖ **Contributorship Statement**:

- Sophie Janet: substantial contributions to the conception, drafting of manuscript, revision, final approval and submission.
- Neal Russell: substantial contributions to the conception, revision and final approval.
- Nikola Morton: substantial contributions to the conception, revision and final approval.
- Daniel Martinez: substantial contributions to the conception, revision and final approval
- Mona Tamannai: substantial contributions to the conception, revision and final approval
- Nadia Lafferty: substantial contributions to the conception, revision and final approval
- Harriet Roggeveen: substantial contributions to the conception and final approval
- Oluwakemi F. Ogundipe: substantial contributions to the conception, revision and final approval
- Inmaculada Carreras: substantial contributions to the conception and final approval
- Anja Gao: substantial contributions to the conception and final approval
- Elise Didier: substantial contributions to the conception, revision and final approval
- Roberta Petrucci: substantial contributions to the conception, revision and final approval

Around the world, one in four children is living in a country affected by conflict, political insecurity and disaster, and an unprecedented 30-34 million children are displaced from home (1). Children are disproportionately impacted by crises and face the threat of violence, hunger, disease, disability, and death. Worldwide, 56 million children under the age of five (half of them newborns) are projected to die between 2018 and 2030 in the absence of additional action, with the greatest proportion of this mortality anticipated in humanitarian and fragile settings(2). Tragically, with a historic reversal of progress expected due to the collateral impact of the SARS-CoV-2 pandemic, a rising gap between humanitarian needs and funding(3) and declining support for child health in many cases, the number of children dying is expected to increase even further(4). In addition to increased mortality, we can expect escalating suffering, lost future potential, and increasing inequality(5–7).

Médecins Sans Frontières (Doctors Without Borders/MSF) is an international medical humanitarian organisation specialising in responding to humanitarian emergencies such as conflicts, natural disasters, and epidemics, acting with independence, neutrality, and impartiality. MSF provides essential medical care to millions of children every year who would otherwise be without access to healthcare (see table 1 below). (8)

Table 1 MSF paediatric activities involving children under five years old in 2019(8)

Description	Number (rounded to closest whole)
Projects providing paediatric care	270
Children receiving outpatient care	3.3 million
Children receiving inpatient care unrelated to severe malnutrition	361,000
Children admitted to therapeutic feeding centres	186,000
Births supported	300,000

Healthcare in humanitarian and fragile contexts is challenging and complex to provide, particularly for children. Healthcare staff are scarce, under-resourced and work well over capacity, in some of the most insecure and adverse settings. Yet they continue to provide essential and lifesaving services to vulnerable populations, rarely receiving the recognition they deserve. In addition, there is a distinct lack of medical literature from humanitarian settings to provide guidance on best practices in such specific and resource-limited contexts. There is a need not only to further integrate evidence-based practices into humanitarian contexts, but also to generate evidence on what works best. We need to shine a brighter light on the experiences, challenges, failures, and successes of those working in "humanitarian paediatrics" (box 1) in order to improve care for this growing population of children in the most vulnerable circumstances.

Box 1. Humanitarian paediatrics refers to the branch of medicine that involves the care of newborns, infants, children, and adolescents in humanitarian settings. It takes elements from public and global health, paediatrics, tropical and disaster medicine. It is centred on the child

and his family and integrates the specific challenges and barriers related to the humanitarian context and limited resources.

There are not many platforms or venues available to bridge the existing gaps in clinical research and medical literature applicable to paediatric and neonatal care in humanitarian and fragile settings. Therefore, in 2016, the first *MSF Paediatric Days* were born with the aim of addressing urgent paediatric issues of direct humanitarian concern. Since then, three more editions have taken place at 18-month intervals, successfully uniting frontline staff working in MSF and other organisations with policymakers and academia to exchange ideas, align efforts, inspire, and share pertinent research and experiences. This event not only aims to raise awareness and exchange experiences, but also to impact daily paediatric medical activities in humanitarian settings by promoting multidisciplinary collaboration, disseminating relevant best practices and generating specific recommendations (Figure 1).

Figure 1. The MSF Paediatric Days approach to improving paediatric care in humanitarian settings

In April 2021, the first virtual edition of the *MSF Paediatric Days* brought together 1108 people from 95 different countries. MSF staff made up 58% of the attendees, largely frontline health workers, and the remainder came from a range of different organisations including academia, non-governmental organisations, ministries of health and other actors. The event included five main plenary discussions around key topics on humanitarian paediatrics, and eight virtual stands from internal MSF initiatives (MSF eCARE: electronic Decision Support System (eDSS) for paediatric primary care, Telemedicine: online tool for MSF medical frontline staff that provides access to specialised medical advice, POCUS: point-of-care ultrasound) and external MSF collaborating partners (OPENPediatrics, Save the Children, WHO, Laerdal & the American Academy of Paediatrics, Action Against Hunger, ALIMA and the Société Sénégalaise de Pédiatrie) who shared content and interacted with the participants. Additionally, 49 posters (available on ResearchGate) and 21 video-abstracts were displayed, offering evidence directly from hospitals and medical projects in fragile and humanitarian settings. This event provided a unique opportunity for frontline health staff working in such settings to share their experiences, challenges and solutions, in addition to creating networking spaces for interaction and exchange of ideas. Moreover, five inspiring short "PAEDTalks" enriched the content of the event.

During this two-day event on April 15-16, five major themes were discussed: essential newborn care, community-based models of care, paediatric tuberculosis, antimicrobial resistance in neonatal and paediatric care, and the collateral damage of the SARS-CoV-2 pandemic on child health. Replays and full event content can be found on the MSF Paediatric Days webpage.

Newborn care: back to basics

Newborns are one of the most vulnerable groups in humanitarian and fragile settings, but they have received limited focus in humanitarian action(9). The first session entitled "Neonates - back to basics" illustrated the challenges that field teams face to implement, maintain, support and promote essential newborn care, with a focus on breastfeeding. Breastfeeding has well recognised health benefits for mothers and newborns, but is even more crucial in humanitarian settings where breast milk substitutes are particularly dangerous in the absence of adequate

water, sanitation & hygiene(10,11). Nevertheless, the lifesaving nature of breastfeeding has often been overlooked in humanitarian settings, with a lack of institutionalised guidance on supporting breastfeeding(12). The session identified numerous barriers to successful breastfeeding, such as false assumptions of breastfeeding being easy without need for support, contradictory messaging, and failure to maintain mothers and babies together (mother-baby dyad care) due to lack of adequate space, resources and staff knowledge and awareness. Moreover, gender inequity and female disempowerment, which are exacerbated in crises, also negatively influence breastfeeding practices in many of the contexts where MSF intervenes.

There was a common recognition of the need for breastfeeding promotion and awareness raising among health staff, mothers and communities, including the need for professionals with expertise in breastfeeding promotion to support humanitarian responses. Ultimately, breastfeeding support needs to be recognised as an emergency humanitarian intervention. Different solutions and ideas were shared during the panel discussion to overcome some of these current challenges and to achieve this important shift in paradigm. Improving knowledge and skills on breastfeeding for healthcare providers is crucial, and support from lactation specialist should be made available via innovative platforms such as telemedicine. Engagement of all members of the community including traditional birth attendants, family (including male members) and any other key member of the community should be included in the community engagement strategy of the project. Key messages of this session can be found in table 2.

Table 2. Newborn care: back to basics

Key messages	Why is it important?	Current challenges	Recommendations
Breastfeeding (BF) is an intervention that saves lives, improves health and development of newborns, as well as maternal well-being. BF should be universally and practically achieved with dedicated support in all MSF contexts.	Newborn mortality and morbidities remain high across MSF projects. Essential evidence-based interventions shown to decrease newborn mortality such as exclusive and early breastfeeding should be supported and scaled-up to saves lives across MSF. Breastfeeding is natural, instinctive, ready-made and vastly available. However, many women face different challenges to establish and sustain BF. To overcome those challenges a coordinated and multidisciplinary support should be available for every woman and their baby.	- BF is believed to be intuitive and easy for women. This is globally recognised as a harmful assumption. - Essential, evidence-based aspects of BF, such as to starting within the first hour of life and exclusive BF for 6 months, are not always considered. - BF is not always recognized as an intervention and therefore there are no allocated resources for breastfeeding support. - Suboptimal training and preparation lead to varying and even contradictory messages given to the mother and family within MSF projects.	**Field:** - Consider BF as an intervention to reduce newborn mortality and allocate space, time and resources in planning for it. - Promote BF and essential newborn care champions or focal points - Support and promote early and exclusive breastfeeding, including where it seems not easy for newborn or mother - Promote multidisciplinary (midwife, nutritionist, nurses, doctors, logistician) work to support BF, increase awareness and discuss responsibilities and division of tasks **Operations:** - Include essential newborn care interventions (such as BF and KMC) into the main/strategic interventions to decrease neonatal mortality at project level and coordinate resources to support it. - Promote partnership with other actors involved in essential newborn care, especially at local level. **HQ:** - Ensure BF policies and guidance are available and harmonised across MSF - Support and encourage access to lactation consultants in telemedicine or other platforms to support field teams

			- Ensure that training on essential newborn care including breastfeeding are available in different languages for frontline staff.
A family centred approach, which includes an understanding of the community and the context, is needed to ensure successful breastfeeding	To effectively support mothers, we need to understand the barriers and enablers related to a specific context The mother-baby dyad is at the centre of the process, but all the family and community need to participate, support, encourage.	- There is often little understanding about how BF is perceived in different contexts and what are the barriers and enablers in different settings, including the influence of other family members	**Field:** - Include families, caretakers, community health workers in understanding the local influences to support the promotion of BF. **Operations:** - Essential newborn care (including BF understanding and support) should be factored into community level programmes. **Research:** - If BF levels low or poorly understood, consider anthropological studies in different contexts on barriers and enablers for breastfeeding. Include male views.

Community-based models of care

The second session of the first day entitled **"Community-based models of care for neonatal and child health"** provided insight on the current challenges and achievements of the decentralisation of care, and the important role that the community plays in the continuum of care. During the session, discussions highlighted the opportunity and importance of expanding community models of care, for both children and newborns. Community health workers are crucial for delivering a range of preventive and curative health services, and for reducing inequities in access to care. It was highlighted that community activities should be built upon existing capacity, to avoid the implementation of parallel systems.

The integration of community-based models of care in emergency response is possible and most effective if the model is implemented in advance with standardised emergency preparedness strategies according to context, to promote resilience. Field testimonies from an Integrated Community Case Management program in Niger and community-based nutrition programs among others reinforced the importance, and the potential, that community models of care have in improving access and the continuum of care in children. See key messages of this session in table 3.

Table 3. Community-based models of care in paediatrics

Key messages	Why is it important?	Current challenges	Recommendations
Community models of care are effective in delivering a range of preventive, promotive and curative health services for children and	In humanitarian and fragile settings when access to health facilities is limited , care at community level can bridge important health	- Community activities s uffer from lack of anchorage with the existing health system and tend to be	**Field:** - Community models of care should be rooted in understanding of the context, social realities and values of the communities we are working with and designed in a participatory manner.

neonates, and they can contribute to reducing inequities in access to care.	gaps for mothers, newborns and children. The community-based activities are an essential part of the health system, contributing to build skills and confidence to empower people with knowledge, tools and understanding referral needs.	implemented as a parallel system - Monitoring and evaluation (M&E) of the service delivered are hampered by the lack of clear and simple core indicators - Community health workers are given more and more responsibilities, their skills and workload not always match.	- Simplified core indicators of implementation, quality of care and utilization of services, should be implemented to allow M&E, along with qualitative data to understand important barriers and enablers - Involve communities in M&E of programs, at a minimum through assuring context appropriate feedback mechanisms are in place. - Ensure realistic workload of the Community Health Workers (CHW) and enhance their motivation through social recognition of their work, an appropriate reward system, regular supervision, feedback, exchanges, sense of belonging to a larger network. **Operations:** - Community activities should be built upon existing capacity, avoiding the implementation of a parallel system. **HQ**: - Provide a framework for assessing / training CHWs and a catalogue of relevant expectations of CHW dependant on achievable and most relevant competencies.
Community models of care in emergency response are most effective if the model is implemented in advance with contextual emergency preparedness (EPREP) strategies.	Empowering the community in delivering health care increases resilience during crises when access to the health facilities maybe further limited.	- Planning and preparation are essential to deliver effective emergency response, but there is still little investment in EPREP at community level	**Field/operations:** - integrate paediatric and neonatal community activities in the EPREP strategy. **HQ:** - Further simplify tools, M&E indicators and a framework for prioritisation for community activities during emergency response

Paediatric Tuberculosis

On the second day, three main topics where discussed. The first session, **"Paediatric tuberculosis",** touched upon the challenges of diagnosing tuberculosis (TB) , the specificities of paediatric TB, and the role of contact tracing and preventive treatment.

TB is a major infectious killer in MSF settings and children, especially those under five years of age, are at particular risk of severe forms of the disease. Paediatric TB is a "silent disease" frequently under-diagnosed, under-treated and under-reported. TB presents differently in children than in adults, with a higher proportion of extra-pulmonary TB. Microbiological confirmation is rarely achievable in children and is especially challenging in humanitarian settings. Therefore, emphasis on clinical diagnosis is imperative to ensure that presumptive treatment is started without delay. Treatment of paediatric TB based on clinical diagnosis alone would decrease TB morbidity in children thereby minimising preventable deaths from the disease.

Contact tracing of tuberculosis cases in the community and subsequent Tuberculosis Preventive Treatment (TPT) is often overlooked and deprioritised in low resource settings, but this should be pursued more actively. This can now be facilitated with new, shorter TPT regimens, which have already shown promising results in terms of acceptance, efficacy, safety and adherence to treatment within MSF settings. See key messages of the session in table 4.

Table 4. Paediatric Tuberculosis

Key messages	Why is it important?	Current challenges	Recommendations
Underdiagnosis and undertreatment of paediatric TB lead to preventable deaths. Microbiological confirmation is rarely available in children, therefore at present, a clinical diagnosis should be used to start presumptive treatment without delay.	TB remains a major, unrecognised killer in children. MSF has a possibility to make a difference now, by increasing the knowledge of field teams who meet children or their caretakers. Presumptive and empiric TB treatment is safe, well tolerated and effective. Starting treatment based on clinical suspicion (not microbiology confirmation) will bridge the gap of underdiagnosis and undertreatment of TB in children in MSF projects.	- Paediatric Tuberculosis is a "silent disease" frequently under-diagnosed, under-treated and under-reported - MSF staff are not always familiar with the different clinical presentations of TB in children and there is a gap in capacity building on this topic. - Confirmatory TB diagnosis is often hard to access in and can be difficult in children. - Delays of starting treatment based on a microbiological diagnosis, perpetuate TB under-treatment in children who may die, through these unnecessary delays.	**Field**: - Know the local burden of paediatric TB. - Support medical field teams on how to recognise TB in children as part of their daily work. - While caring for adults with TB, consider the children exposed. - Treat TB based on clinical suspicion. **Operations:** - Integrate TB activities in paediatric care. - Monitor program data and investigate if under diagnoses is suspected depending on the local prevalence of TB. - Promote capacity building and facilitate access to learning opportunities on paediatric TB including the online free course. **HQ/research**: - Advocate for the integration of TB in all paediatric projects. - Provide support and guidance on clinical algorithm for the diagnosis and treatment of TB in paediatric projects.
Tracing the contacts of patients with tuberculosis with the offer of Tuberculosis Preventive Treatment (TPT) should be pursued as an effective strategy to save lives in MSF projects	Contact tracing of TB patients is an effective way to identify those who have active TB but also those who maybe harbouring latent (sleeping) TB. More lives can be save by improving access to timely treatment or TPT. New shorter drug regimens for TPT are showing promising results on acceptance, effectivity, safety and adherence to treatment.	- Contact tracing requires resources, which is often a barrier to its roll out in communities, especially if it is in addition to other community activities. - Standard TPT strategy Is currently well established, but shorten regimens that show promising results have not been fully validated for MSF programs	**Field** - **C**ontact tracing should be performed whenever a TB case is identified. - Assure systematic follow up of children under TPT in the community **Operations:** - Innovate and pilot TPT programs in settings where the need is clear and share experiences with the whole MSF movement to improve future efforts. - Seek partnership for TPT with community and other non-governmental organisations to reduce the resource burden and optimize program reach. **HQ/Working groups:** - Determine where TPT will be most beneficial to reduce paediatric TB burden and implement and learn from those MSF sites.

Antimicrobial resistance and antimicrobial stewardship in neonatal and paediatric care

The second topic discussed on April 16th was **"Antimicrobial resistance and antimicrobial stewardship in neonatal and paediatric care".** Antimicrobial resistance is a reality in humanitarian settings(13),(14) and has been described as a silent tsunami. Vulnerable groups such as newborns and malnourished children face a disproportionate burden and specific challenges. The challenges and consequences of outbreaks in neonatal units in low resource settings was highlighted, including both experience within MSF and growing evidence based in low resource settings outside MSF(15),(16). In addition, MSF field experiences from Mali and South Sudan underlined the need for a multidisciplinary approach focusing on several transversal pillars including Infection Prevention and Control (IPC), antibiotic stewardship and microbiology (when possible or available). Antibiotic stewardship is particularly challenging for paediatric patients in humanitarian settings. The combination of high mortality and a lack of microbiology testing meansthat severe illness is often treated with diagnostic uncertainty, leading to an overuse of antibiotics. The challenge of access to microbiology was discussed, including the important role that understanding of local antimicrobial resistance patterns plays in stewardship practices. While extensive data on antimicrobial resistance exists in some settings, there is a complete lack of data in many parts of the world.But even without access to microbiology, there is capacity to improve antibiotic stewardship and IPC, which are essential and feasible in all settings(17). The importance of an interdisciplinary approach was discussed, ensuring involvement of all members of the team, including doctors, nurses, pharmacists and cleaners. Practical tools to support field teams to assess and monitor medical activities from an antimicrobial resistance lens are available within and outside MSF, such as Point Prevalence Surveys on antibiotic use, antibiotic consumption analysis and the Stepwise IPC Approach. Key messages for this session can be found in table 5

Table 5. Antimicrobial resistance and antimicrobial stewardship in neonatal and paediatric care

Key messages	Why is it important?	Current challenges	Recommendations
Patients, and especially newborns and children are harmed by and even die because of antimicrobial resistance (AMR) in MSF projects. The problem is escalating in front of us like an invisible tsunami, with limited visibility on its burden and consequences. It is critical for MSF to systematically implement the available tools to reduce AMR, especially where microbiology is not available: Infection prevention and control (IPC), and antibiotic stewardship	Antimicrobial resistance (AMR) is a reality in humanitarian settings and newborn and children are particularly exposed. Multidrug resistant bacterial sepsis particularly affects the most fragile patients, as shown by the increase in the reports of outbreaks in neonatal units in low resource settings. IPC and antibiotic stewardship are crucial and effective strategies against AMR, particularly in contexts where microbiology is unavailable.	- There is lack of awareness on the Increasing paediatric and neonatal morbidity and mortality because of AMR in humanitarian settings. - There is a false perception that AMR does not affect low-resource settings and limited available data to accurately define the extent of the problem. - Misconception that without microbiology, it is not possible to tackle AMR.	**Field:** - Strengthen awareness and training on IPC interventions, and scale up use of IPC quality improvement tools. - Create multidisciplinary AMR project committee including all the relevant health workers (nurses, doctors, pharmacists, IPC focal points, cleaners), and identify focal points and champions - Scale up use of audits of antimicrobial use **Operations:** - Integrate AMR and antibiotic stewardship as part of quality improvement initiatives. - Formalise AMR and IPC focal point roles in job descriptions - Increase access to microbiological tools available to the field, including exploring partnerships with national and regional laboratories. **Research/HQ:**

		- There are gaps on access to microbiological tools.	- Adapt IPC assessment tools to address specific challenges in neonatal and paediatric care. - Update guidelines in accordance with evidence on AMR in different infection syndromes - Explore alternative metrics/indicators for antibiotic use in children to guide antibiotic stewardship.

Collateral damage of COVID-19 on child health

The last session of the event was dedicated to the **"Collateral damage of COVID-19 on child health".** Children have been disproportionally affected by the pandemic, with low mortality due to COVID-19 itself, but high morbidity and mortality due to the multiple collateral effects of the health crisis. The pandemic has impacted child health through increases in poverty, loss of education, food insecurity and violence, as well as greater strains on health systems and a reduction in access to health services. Preventive services like vaccination and nutrition programmes have been mostly suspended or delayed(18). The indirect effects of the pandemic have been most severe in resource-limited settings where increased child mortality is a major concern, widening the gap of inequity for children. There were field testimonies from frontline health workers outlining the struggle they faced during this unprecedented time. Supporting health systems to maintain preventive and curative services are crucial to attenuate the ongoing impact. Flexibility to adjust health activities is key to face the challenges brought by the SARS-CoV-2 pandemic. Boosting community healthcare activities within MSF strategies, as an essential part of the continuum of care, is an efficient way of assuring healthcare access. Find in table 6 the key messages of this session.

Despite the collateral damage already caused, this past year can also be an opportunity to change our ways of thinking, activities, support models and future preparedness and responses. More than ever, now is an crucial time to invest in humanitarian paediatrics, to support children and uphold their rights in the most fragile contexts.

Table 6. Collateral damage of COVID-19 on child health

Key messages	Why is it important?	Current challenges	Recommendations
Children have disproportionally been affected by the COVID-19 pandemic, with low direct mortality, but high morbidity and- mortality due to the multiple collateral effects of the health crisis This unprecedented crisis offers an opportunity to change our ways of thinking, deploy and maintain our activities, rethink support models and define future preparedness and responses.	The pandemic has impacted child health through increases in poverty, loss of education, food insecurity, violence as well as increased strain on health systems and reduction in access to health services. These collateral effects of the pandemic have been most striking in resource-limited settings where increases in child	- The focus on the direct impact of COVID-19 has had a huge and overlooked negative impact on children through the reduction and suspension of essential health care services. - The risk of weakening essential services continues through resurgence of the pandemic. There is a potential extra burden related to vaccination	**Field** - Adapt and innovate to maintain routine services, such as continuum of nutritional screening and vaccination - Witness, document and report collateral effects of the pandemic on children, real time and in retrospect. **Operations** - Maintain the preventive and curative paediatric regular services to limit an increase in child morbidity and

	mortality is a major concern. Preventive services like vaccination and nutrition programmes have been affected most by suspension or delay. The tremendous detrimental effects of the pandemic on child health are still unfolding and our concern as MSF should be high.	programmes in poorly resourced health systems, where healthcare workers and resources will be repurposed to deliver those vaccines at the expense of critical childhood services.	mortality. - Boost the community health care activities in MSF strategies, as an essential piece of the continuum of care and as an efficient way of assuring health access. - Be flexible and innovative in order to adjust our health care activities according to the situation and to provide proper technical medical support to the field teams. **HQ** - Consider COVID-19 pandemic as a transformative opportunity to develop new approaches and implement new and practical tools needed in the field reality. - Advocate at national and international level for the continuity of routine preventive and curative paediatric and neonatal activities in this pandemic.

Conclusions

As the world continues to battle the SARS-CoV-2 pandemic, focus and funding for child health in humanitarian settings suffers while children's needs escalate. The future for children in humanitarian settings hangs in the balance, and platforms that raise the profile of humanitarian paediatrics are vital to ensure that these children are not overlooked and remain a priority among funders, decision-makers and stakeholders. The MSF Paediatric Days serve as a unique forum to advance knowledge on humanitarian paediatrics, and to create opportunities for individual and collective learning on this topic. We look forward to the next edition and welcome all suggestions for the next topics of the MSF Paediatric Days.

References

1. United Nations Office for the Coordination of Humanitarian Affairs. Global Humanitarian Overview 2019 [Internet]. 2019. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/GHO2019.pdf

2. UNICEF. Levels and trends in Child Mortality Report 2018. 2018.

3. A.Spencer BW-K&. Reducing the Humanitarian financing gap: Review of progress since the report of the High-Level Panel on Humanitarian Financing. 2021.

4. Roberton T, Carter ED, Chou VB, Stegmuller AR, Jackson BD, Tam Y, et al. Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study. Lancet Glob

Heal. 2020 May;0(0).

5. Wagner Z, Heft-Neal S, Bhutta ZA, Black RE, Burke M, Bendavid E. Armed conflict and child mortality in Africa: a geospatial analysis. Lancet [Internet]. 2018;392(10150):857–65. Available from: http://dx.doi.org/10.1016/S0140-6736(18)31437-5

6. Shenoda S, Kadir A, Pitterman S, Goldhagen J. The effects of armed conflict on children. Pediatrics. 2018;142(6).

7. Pfefferbaum B, Jacobs AK, Van Horn RL, Houston JB. Effects of Displacement in Children Exposed to Disasters. Curr Psychiatry Rep. 2016;18(8):1–5.

8. MSF Paediatric Working Group. Paediatric activities Medecins Sans Frontieres. 2019.

9. UNICEF, Save the Children WHO. Roadmap to Accelerate Progress for Every Newborn in Humanitarian Settings 2020 – 2025. 2020.

10. Jakobsen M, Sodemann M, Nylén G, Balé C, Nielsen J, Lisse I, et al. Breastfeeding status as a predictor of mortality among refugee children in an emergency situation in Guinea-Bissau. Trop Med Int Heal. 2003;8(11):992–6.

11. Hipgrave DB, Assefa F, Winoto A, Sukotjo S. Donated breast milk substitutes and incidence of diarrhoea among infants and young children after the May 2006 earthquake in Yogyakarta and Central Java. Public Health Nutr. 03/23. 2011;15(2):307–15.

12. Shaker-Berbari L, Ghattas H, Symon AG, Anderson AS. Infant and young child feeding in emergencies: Organisational policies and activities during the refugee crisis in Lebanon. Matern Child Nutr. 2018 Jul;14(3):e12576.

13. Kanapathipillai R, Malou N, Hopman J, Bowman C, Yousef N, Michel J, et al. Antibiotic resistance in conflict settings: lessons learned in the Middle East. JAC-Antimicrobial Resist. 2019;1(1):2–4.

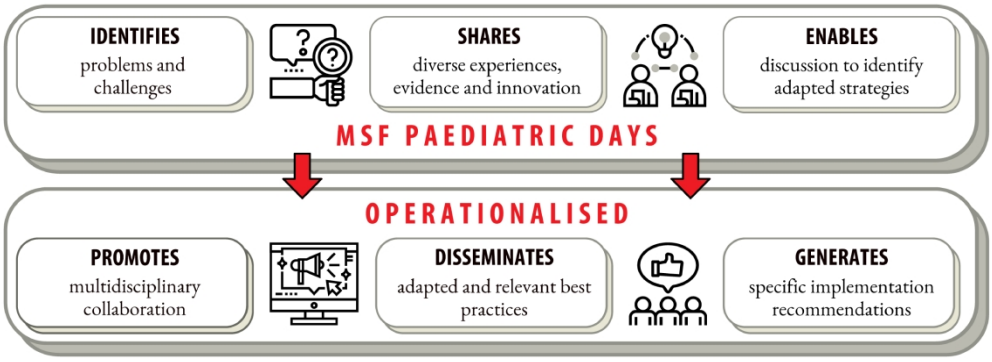
14. Langendorf C, Le Hello S, Moumouni A, Gouali M, Mamaty AA, Grais RF, et al. Enteric bacterial pathogens in children with diarrhea in niger: Diversity and antimicrobial resistance. PLoS One. 2015;10(3):1–18.

15. Okomo U, Senghore M, Darboe S, Bojang E, Zaman SMA, Hossain MJ, et al. Investigation of sequential outbreaks of Burkholderia cepacia and multidrug-resistant extended spectrum β-lactamase producing Klebsiella species in a West African tertiary hospital neonatal unit: a retrospective genomic analysis. The Lancet Microbe [Internet]. 2020;1(3):e119–29. Available from: http://dx.doi.org/10.1016/S2666-5247(20)30061-6

16. Lenglet A, Faniyan O, Hopman J. A Nosocomial Outbreak of Clinical Sepsis in a Neonatal Care Unit (NCU) in Port-Au-Prince Haiti, July 2014 – September 2015. PLoS Curr. 2018;(July 2014).

17. Johnson J, Akinboyo IC, Curless MS, Milstone AM, Coffin SE, Steeb DR. Saving neonatal lives by improving infection prevention in low-resource units: Tools are needed. J Glob Health. 2019;9(1):9–11.

18. Sidhu S. WHO and UNICEF warn of a decline in vaccinations during COVID-19. World Health Organization. 2020;


IDENTIFIES
problems and challenges
SHARES
diverse experiences, evidence and innovation
ENABLES
discussion to identify adapted strategies
MSF PAEDIATRIC DAYS
OPERATIONALISED
PROMOTES
multidisciplinary collaboration
DISSEMINATES
adapted and relevant best practices
GENERATES
specific implementation recommendations