

# 32<sup>ème</sup> Journée Scientifique - 32<sup>nd</sup> Scientific Day

Résumés des communications – Presentation abstracts

9 juin/June 2022

Paris le 9 juin 2022

Bonjour à tous

Si la majorité d'entre vous suivra la journée scientifique d'Epicentre en ligne, nous serons nombreux cette année à nous retrouver, enfin, en chair et en os, dans l'espace Niemeyer.

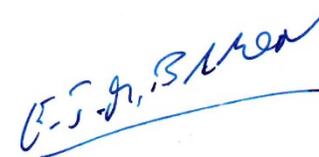
Le programme de la journée, dans la continuité des précédents, témoigne de la capacité d'Epicentre à mener des travaux dans des contextes variés, à assurer tant la conception d'un protocole que la responsabilité et la conduite opérationnelle, pratique, d'une étude.

Cette diversité des sujets et des contextes s'illustre parfaitement dans les sessions de la matinée. La première session portera sur la résistance aux antibiotiques avec la mise en évidence de souches bactériennes résistantes aux antimicrobiens dans la bande de Gaza et au Yémen et l'évaluation d'un laboratoire simplifié de bactériologie dont nous accompagnons le développement. Puis au cours de la session suivante nous présenterons des résultats d'efficacité et d'innocuité d'une dose fractionnée du vaccin contre la fièvre jaune chez les personnes séropositives au VIH et chez les enfants, d'un nouveau traitement de la maladie du sommeil développé par la Drugs for Neglected Diseases initiative ainsi que de pharmacovigilance sur les vaccins contre la Covid au Niger.

En fin de matinée nous reviendrons sur la prévention du paludisme, dont les méthodes se renforcent. Après la présentation de nos résultats sur la distribution de masse de médicaments antipaludiques en Ituri et la chimioprévention saisonnière au Tchad, une table ronde fera le point sur les différents outils de prévention, leur place et leurs limites dans l'arsenal de réponse tant des autorités que des acteurs de l'action humanitaire.

Epicentre est chaque année engagée aux côtés de MSF dans la réponse aux épidémies. L'après-midi y est consacrée en deux temps. Sur les épidémies récurrentes que sont rougeole et choléra, ou sur l'hépatite E, les communications traiteront des indicateurs et des modes opératoires de la riposte. Puis sur la Covid-19, nous irons au-delà des seuls résultats quantitatifs pour aborder des aspects souvent sous-estimés lorsque l'on parle de l'impact de cette maladie. Au cours de cette session, il sera question de la couverture vaccinale des populations précaires, de l'impact de la pandémie dans les Ehpad en France, mais aussi sur les programmes de soins aux malades du sida au Malawi et en Ouganda, et enfin de la mortalité en population en RDC, Côte d'Ivoire et Cameroun. Plus largement avec certains de nos collègues d'institutions africaines de recherche, nous échangerons sur les questions de l'impact, de la riposte et des priorités sanitaires sur lesquelles ils nous éclaireront par leurs analyses et perspectives.

Je vous souhaite une très belle journée,



Emmanuel Baron  
Directeur Général, Epicentre

Paris, June 9, 2022

Hello everyone

While most of you will be following the Epicentre Scientific Day online, this year many of us will be meeting up in the flesh at last, in the Niemeyer space.

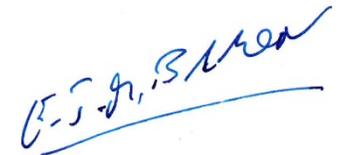
The day's programme, in line with previous ones, bears witness to Epicentre's ability to carry out work in a variety of contexts, to ensure both the design of a protocol and the responsibility and operational, practical conduct of a study.

This diversity of topics and contexts is best illustrated in the morning sessions. The first session will focus on antibiotic resistance with the identification of antimicrobial resistant bacterial strains in the Gaza Strip and Yemen and the evaluation of a simplified bacteriology laboratory whose development we are accompanying. In the following session we will present efficacy and safety results of a fractional dose of yellow fever vaccine in HIV-positive individuals and children, a new treatment for sleeping sickness developed by the Drugs for Neglected Diseases initiative and pharmacovigilance results on Covid vaccines in Niger.

At the end of the morning, we will return to malaria prevention, whose methods are being strengthened. After the presentation of our results on the mass distribution of anti-malarial drugs in Ituri and seasonal chemoprevention in Chad, a round table will review the different prevention tools, their place and their limits in the range of response of both the authorities and humanitarian actors.

Each year Epicentre is involved with MSF in the response to epidemics. The afternoon is devoted to this in two parts. On recurrent outbreaks such as measles and cholera, or on hepatitis E, the presentations will deal with indicators and operating methods of the response. Then, on Covid-19, we will go beyond quantitative results to address aspects that are often underestimated when we talk about the impact of this disease. During this session, we will discuss the vaccination coverage of vulnerable populations, the impact of the pandemic in Ehpard in France, as well as AIDS care programmes in Malawi and Uganda, and finally population-based mortality in the DRC, Côte d'Ivoire and Cameroon. More broadly, with some of our colleagues from African research institutions, we will exchange on the issues of impact, response and health priorities on which they will enlighten us with their analyses and perspectives.

I wish you a very nice day,



Emmanuel Baron  
Managing Director, Epicentre

# 32ème Journée Scientifique - 9 juin 2022

## 8h30 - Accueil et Café

## 9h00 - Introduction générale - Emmanuel Baron & Yap Boum II

### 9h15 - Session antibio résistance

**Modérateur : Manica Balasegaram, GARDP, Suisse**

- Intégration d'un laboratoire de bactériologie tout-en-un (Mini-Lab) dans un hôpital MSF : évaluation à Carnot, RCA. [Céline Langendorf](#)
- Les profils de résistance aux antibiotiques observés dans un hôpital de traumatologie aiguë à Aden, au Yémen, de 2018 à juin 2021. [Rami Malaeb & Yousef Nagwan](#)
- Traitement des cas d'ostéomyélite post-traumatique dans le contexte de conflit de Gaza : une étude de cohorte rétrospective. [Rasha Aqel](#).

## 10h10 - Session générale

**Modérateur : Alain Alsalhani, Access Campaign, MSF, France**

- Immunogénicité des doses fractionnées du vaccin contre la fièvre jaune chez les enfants et les adultes VIH+. [Maria Namulwana](#)
- Fexinidazole chez les patients atteints de la trypanosomiase humaine africaine (THA) causée par le parasite *Trypanosoma brucei* (T.b.) *Rhodesiense*. [Elisabeth Baudin](#)
- Suivi de pharmacovigilance des vaccins COVID-19 au Niger. [Abdoul-Moumouni Issa-Soumana](#)

## 11h05 – Pause café

## 11h30 – Session paludisme

**Modératrice : Myriam Hens, MSF International, Belgique**

- Distribution de masse de médicament : un outil pour la réduction rapide de la morbidité et la mortalité liées au paludisme dans les contextes d'urgence. [Lise Grout](#)
- Incidence du paludisme, avec ou sans Chimio-prévention du Paludisme Saisonnier (CPS) à Moïssala, Tchad 2014-2021. [Jessica Sayyad Hilario & Arielle Calmejane](#)

## 12h05 - Table ronde : Et demain, quelle(s) piste(s) pour prévenir le paludisme ?

Présentation d'introduction à la table ronde :

- Des évidences et des nouvelles recommandations pour les outils de prévention du paludisme. [Matthew Coldiron](#)

Table ronde avec :

- Umberto Dalessandro, Medical Research Council Unit, Gambie
- Alassane Dicko, MRTC-Université de Bamako, Mali
- Saschveen Singh, MSF, France

## 13h00 – Déjeuner sur place

## 14h00 – Session épidémie

**Modératrice : Daniela Garone, MSF International, Belgique**

- Développement et validation d'un système simple d'alerte pour renforcer le contrôle de la rougeole en République Démocratique du Congo. [Catherine Eisenhauer & Birgit Nikolay](#)
- Identification des zones pour des activités de vaccination préventive pendant les épidémies de rougeole en République Démocratique du Congo. [Catherine Eisenhauer](#)
- CATI - Interventions Ciblées dans la Zone des cas pour contenir le choléra. [Flavio Finger](#)
- La première campagne de vaccination de masse réactive contre l'hépatite E, Bentiu, Sud-Soudan. [Robin Nesbitt](#)

## 15h10 - Session COVID-19

### 15h10 - PARTIE 1

**Modérateur: Pierre Lombrail, Université de Paris 13, France**

#### COVID-19 | FRANCE

- Précarité et Vaccination COVID-19 (PREVAC): facteurs explicatifs de la couverture vaccinale chez les personnes en situation de grande précarité en France. [Charline Vincent](#)
- La deuxième vague de COVID-19 dans les EHPAD : Une étude mixte en régions PACA Occitanie. [Thomas Roederer](#)

## 15h50 - Pause café

### 16h5 - PARTIE 2

**Modérateur: Salha Issoufou, MSF WACA, Côte d'Ivoire**

#### COVID-19 | AFRIQUE

- Impact de la Covid-19 sur la prise en charge du VIH au Malawi et en Ouganda. [Jihane Ben-Farhat](#)
- Mortalité rétrospective durant la pandémie et Séroprévalence COVID dans trois contextes africains : au Cameroun et dans les villes d'Abidjan et de Lubumbashi. [Erica Simons](#)

### 16h55 - PARTIE 3

**Table ronde : COVID-19 en Afrique : quel impact, quelles réponses, quelles priorités ?**

**Modérateur: Salha Issoufou, MSF WACA, Côte d'Ivoire**

- John Amuasi, Kwame Nkrumah University of Science and Technology, Ghana
- Juliet Nabyonga-Orem, OMS, Zimbabwe
- Helen Rees, WITS RHI, Université du Witwatersrand, Afrique du Sud

## 17h45 - Conclusions. Yap Boum & Emmanuel Baron

## 18h00 - Pot de clôture sur place



# 32nd Scientific Day - 9 June 2022

**8:30 - Welcome and coffee**

**9:00 - Introductory remarks. Emmanuel Baron & Yap Boum II**

**9:15 - Session: antibiotic resistance**

**Moderator: Manica Balasegaram, GARDP, Switzerland**

- Integration of an all-in-one bacteriology laboratory (Mini-Lab) in MSF hospital: evaluation in Carnot, CAR. [Céline Langendorf](#)
- The antibiotic resistance patterns shown in an acute trauma hospital in Aden, Yemen from 2018 – June 2021. [Rami Malaeb & Yousef Nagwan](#)
- Treating post-trauma osteomyelitis cases in the conflict setting of Gaza: a retrospective cohort study. [Rasha Aqel](#)

**10:10 - General Session**

**Moderator: Alain Alsalhani, Access Campaign, MSF, France**

- Immunogenicity of fractional dose Yellow Fever vaccine in children and HIV+ adults. [Maria Namulwana](#)
- Fexinidazole in patients with Human African Trypanosomiasis (HAT) due to Trypanosoma Brucei (T.b.) Rhodesiense. [Elisabeth Baudin](#)
- Pharmacovigilance monitoring of COVID-19 vaccines in Niger. [Abdoul-Moumouni Issa-Soumana](#)

**11:05 - Coffee break**

**11:30 - Session: malaria**

**Moderator: Myriam Henkens, Médecins Sans Frontières**

- Mass drug administration as a tool for rapid reduction of malaria morbidity and mortality in emergency settings. [Lise Grout](#)
- Incidence with or without SMC in Moissala Chad 2014-2021. [Jessica Sayyad Hilario & Arielle Calmejjane](#)

**12:05 - Round table: How will we prevent malaria in the future?**

Introductory presentation to the round table:

- Evidence and new recommendations for malaria prevention tools: an introduction. [Matthew Coldiron](#)

Round table with:

- Umberto Dalessandro, Medical Research Council Unit, The Gambia
- Alassane Dicko, MRTC-University of Bamako, Mali
- Saschveen Singh, MSF, France

**13:00 – Lunch on site**

**14:00 - Session: Epidemic**

**Moderator: Daniela Garone, MSF International, Switzerland**

- Development and validation of a simple outbreak alert system to improve measles control in the Democratic Republic of the Congo. [Catherine Eisenhauer & Birgit Nikolay](#)
- Identifying zones for preemptive vaccination activity during measles epidemics in the Democratic Republic of the Congo. [Catherine Eisenhauer](#)
- CATI - Case Area Targeted Interventions for cholera response. [Flavio Finger](#)
- The first reactive mass vaccination campaign against Hepatitis E in Bentiu, South Sudan. [Robin Nesbitt](#)

**15:10 – Session: COVID-19**

**15:10 - PART 1**

**Moderator: Pierre Lombrail, Université de Paris 13, France**

**COVID-19 | FRANCE**

- Drivers of COVID-19 vaccine uptake among homeless and precariously housed people in France: a cross-sectional population-based study (the PREVAC study). [Charline Vincent](#)
- The second wave of COVID-19 in EHPAD: A mixed study in the PACA and Occitania regions. [Thomas Roederer](#)

**15:50 - Coffee break**

**16:15 - PART 2**

**Moderator: Salha Issoufou, MSF WACA, Côte d'Ivoire**

**COVID-19 | AFRICA**

- Impact of Covid-19 on HIV care in Malawi and Uganda. [Jihane Ben-Farhat](#)
- Retrospective mortality and COVID seroprevalence during the pandemic in three African settings: in Cameroon and in the cities of Abidjan and Lubumbashi. [Erica Simons](#)

**16:55 - PART 3**

**Round table: COVID-19 in Africa: what impact, what responses, what priorities?**

**Moderator: Salha Issoufou, MSF WACA, Côte d'Ivoire**

- John Amuasi, Kwame Nkrumah University of Science and Technology, Ghana
- Juliet Nabyonga-Orem, WHO, Zimbabwe
- Helen Rees, WITS RHI, University of the Witwatersrand, South Africa

**17:45 - Conclusions. Yap Boum & Emmanuel Baron**

**18:00 - Farewell drinks on site**



## Session: Antibiotic resistance

Moderator: Manica Balasegaram, GARDP, Switzerland

- Céline Langendorf
- Rami Malaeb & Yousef Nagwan
- Rasha Aqel

# Integration of an all-in-one bacteriology laboratory (Mini-Lab) in an MSF hospital: evaluation in Carnot, CAR

Céline Langendorf, Epicentre, France

## Background

The Mini-Lab is a simplified and modular bacteriology laboratory being developed by MSF to improve access to microbiology diagnostics and antibiotic resistance surveillance in resource-limited settings. After a first pilot study in Haiti in 2020, this second evaluation aimed to assess the performance and ease-of use of the Mini-Lab integrated in the clinical routine of an MSF-supported hospital which has had no prior access to microbiology.

## Methods

The study was conducted after the implementation of the Mini-Lab in an MSF-supported hospital in Carnot, CAR, along with an antibiotic stewardship program. We included hospitalized patients with successful blood culture sampling on admission or during hospitalization, and who consented to study participation. The bacteria identified from blood culture in the Mini-Lab were shipped to a reference laboratory in Bicêtre hospital, France for identification (ID) and antibiotic susceptibility testing (AST) using reference methods. Laboratory technicians evaluated the usability of the Mini-Lab through repeated ease-of use questionnaires and competency assessment.

## Results

Between September 2021 and February 2022, we included 835 patients who had a total of 960 blood cultures. Positivity rate with pathogens was 12.5%. Over 121 pathogens identified in the Mini-Lab, 74 have been tested with reference methods so far and 68 (92.0%) gave ID results concordant with the Mini-Lab with 97.4% agreement to genus. No particular organism-antibiotic combination caused systematic errors on AST. Upon completion of the initial training, the laboratory technicians reported most of the aspects of the Mini-Lab easy to use, except for preparation and reading of ID and AST methods, which were reported to be simple after 3 months of experience. Assessment of the laboratory technicians' competencies after the initial training yielded very high scores (>90%) and 100% after 3 months.

## Conclusion

The comparison of the Mini-Lab results with the reference methods for ID and AST showed overall very good results. We did not highlight any major malfunction preventing its deployment in other resource-limited countries.

The performances of the simplified and modular bacteriology laboratory, the Mini-Lab, are overall very good. We did not highlight any major malfunctions preventing its deployment in other fields.

# The antibiotic resistance patterns shown in an acute trauma hospital in Aden, Yemen from 2018 to June 2021

Rami Malaeb, Epicentre, UAE; Yousef Nagwan, MSF, France, Yemen

## Background

Antimicrobial resistance (AMR) is a global health problem and growing at an alarming rate, resulting in a rapid deterioration of the effectiveness of antibiotics. The middle and low-income countries are currently carrying the highest burden resulting in an increased risk of death, prolonged treatment duration and unaffordable costs of antibiotic therapy. In countries like Yemen, this problem appears to be more complex due to the current war, high number of trauma patients and limited access to healthcare. In this study we aimed to describe the clinical characteristics and antimicrobial resistance patterns among patients treated at the MSF Aden Acute Trauma hospital.

## Methods

We conducted a retrospective descriptive analyses using routinely collected programme data for all patients who were admitted between 2018 and June 2021 and received antibiotic therapy for a diagnosed infection based on MSF guidelines.

## Results

The study cohort consisted of 481 trauma patients treated with antibiotics for more than 500 infections. The most common infections were soft and skin tissue infection (25%), intra-abdominal infection (20%), and osteomyelitis (20%). Secondary blood stream infections were also present in 20% of all the diagnosed infections. 65 % of these patients were infected with at least one multi-drug resistant (MDR) organism. A wide variety of 993 isolated organisms were detected mainly consisting of *Escherichia coli* (20%), *Enterococcus faecalis* (14%), *Staphylococcus aureus* (9.7%), *Pseudomonas aeruginosa* (8.6%), and *Klebsiella pneumoniae* (8.2%). The antibiotic resistance patterns for the most common antibiotics showed a high level of resistance.

## Conclusion

The findings of this study showed a very high number of MDR infections among trauma patients in Aden with worrisome drug resistance rate to the most common antibiotics. This would assist MSF in reviewing its current empiric treatment and in strengthening its antibiotic stewardship programme.

A high level of antibiotic resistance patterns were observed at the MSF Aden trauma centre highlighting the need to strengthen the antibiotic stewardship programme and evaluate the current empiric treatment provided.

# Treating post-trauma osteomyelitis cases in the conflict setting of Gaza: a retrospective cohort study

Rasha Aqel, MSF France, Palestine

## Background

Post-traumatic osteomyelitis (PTO) is a serious consequence of orthopaedic trauma often complicated with multi-drug resistant (MDR) infections, a major health issue globally and particularly in conflict settings like Gaza, Palestine. In this study we aimed to provide a description of the clinical characteristics and outcomes of PTO patients treated by MSF in our reconstructive surgery centres in Gaza, Palestine.

## Methods

This is a retrospective cohort study using routinely collected clinical data on patients with PTO admitted to the reconstructive surgery centres supported by MSF in Gaza, between 01-December-2018 and 15-September-2021 and followed-up till 31-January-2022.

## Results

202 patients with 275 PTO episodes, primarily to gunshot wounds resulting from the conflict in Gaza were included. Among all episodes, 43% (118/275) were polymicrobial, with 437 organisms isolated in total. The most common isolated pathogens were *Staphylococcus aureus* (157/437, 36%), *Staphylococcus epidermidis* (71/437, 16%) and *Pseudomonas aeruginosa* (45/437, 10%). 33% (146/437) of the isolates were MDR; the most prevalent being Methicillin-resistant *Staphylococcus aureus* [MRSA, (97/146, 66%)] and extended spectrum beta-lactamase [ESBL, (24/146, 16%)]. 77 (38%) of PTO patients had  $\geq 1$  recurrent infection during their follow-up. The odds of developing an MDR infection with a polymicrobial episode were almost twice higher than with a monomicrobial episode [OR 2.39 (95% CI 1.36 - 4.24), p-value=0.03]. Patients admitted within 1 year from their injury were almost 80% less likely to develop an MDR infection versus those admitted  $\geq 4$  years from their injury [OR 0.17 (95% CI (0.03 - 0.73), p-value=0.031].

## Conclusion

The study results highlighted the level of complexity of PTO cases seen in Gaza with a high risk of recurrent infections. This provides an evidence-based data to guide the existing MSF treatment guidelines.

Treating Post-traumatic Osteomyelitis cases in Gaza is complex and is presented with high MDR infections and risk of recurrent infections.

## Session: General

Moderator: Alain Alsalhani, Access Campaign, MSF, France

- Maria Namulwana
- Elisabeth Baudin
- Abdoul-Moumouni Issa-Soumana

# Immunogenicity of fractional dose Yellow Fever vaccine in children and HIV+ adults

Maria Louise Namulwana, Epicentre, Uganda

## Background

Current supply shortages constrain vaccination activities and particularly outbreak response. We showed that fractional doses of all 4 WHO-prequalified yellow fever vaccines were non-inferior to the standard dose in inducing seroconversion 28 days after vaccination in an adult population with no major safety concerns. Following this, we assessed the immunogenicity and safety of fractional doses compared with standard doses of the WHO-prequalified Chumakov Institute of Poliomyelitis and Viral Encephalitis yellow fever vaccine in children and HIV positive adults.

## Methods

The children sub-study was conducted at Epicentre Mbarara, Uganda and the HIV sub-study was conducted at KEMRI, Kilifi, Kenya. Children aged 9 months - 5 years or HIV positive adults without contraindications for vaccination were randomly assigned to standard or fractional dose (1/5<sup>th</sup>) at each site. Investigators, participants, and laboratory personnel were blinded to group allocation. Participants were followed up at day 10, day 28 and 1 year post-vaccination. The primary outcome was non-inferiority in seroconversion (-10% margin) 28 days post-vaccination measured by PRNT<sub>50</sub>.

## Findings

A total of 433 children and 303 HIV+ adults were assessed and 420 and 250 recruited respectively and randomized to standard dose or to fractional dose. At 28 days post-vaccination, >95% of participants in each study group seroconverted and fractional doses met the non-inferiority criterion. The absolute difference in seroconversion in the per-protocol population between fractional and standard dose groups was -2.42 (95%CI: -4.82, 0.7) in children and -2.56 (95%CI: -6.92 to 1.79) in HIV+ adults. There was no observed difference in occurrence of adverse events and serious adverse events in both arms.

## Conclusion

The fractional dose met the non-inferiority criterion in children 9 months – 5 years and non-immunocompromised HIV+ adults. These results will support extending the current WHO recommendation for fractional dosing in the event of a shortage for children and HIV+ adults.

Although YF vaccine is highly effective, the current supply shortages constrain vaccination activities, and particularly outbreak response. These results will support extending the current WHO recommendation for fractional dosing in the event of a shortage for children and HIV+ adults.

# Fexinidazole in patients with Human African Trypanosomiasis (HAT) due to *Trypanosoma Brucei (T.b.) rhodesiense*

Elisabeth Baudin, Epicentre, Paris, France

## Background

Fexinidazole, the first all-oral drug for sleeping sickness is indicated since 2019 as first-line treatment for HAT caused by *T.b. gambiense* (g-HAT), the most common form of the disease. The *T.b. rhodesiense* (r-HAT) is less frequent, and progresses more rapidly than g-HAT, and often causes death within weeks if not treated. The only treatment available for early stage disease (stage 1), suramin is less toxic but difficult to administer, requiring five intravenous injections one week apart each. For late stage disease (stage 2), the only treatment is melarsoprol, a highly toxic arsenic-based drug with 5-10% lethality. An alternative is urgently needed.

## Methods

To determine whether fexinidazole could be used for the treatment of r-HAT, we are conducting a multicentre, open label clinical trial to evaluate the efficacy and safety of fexinidazole in patients with r-HAT in Malawi and Uganda. Patients were hospitalized during the 10 days of treatment and are followed at 1 month, 9 weeks, 6 and 12 months after hospital discharge. Patients with all stages of the disease were recruited up to the target of 34 stage-2 evaluable patients at the end of the hospitalization. The primary outcome is r-HAT or treatment related fatality at the end of the hospitalization in stage-2 patients.

## Results

A total of 45 patients were enrolled in the study between September 2019 and November 2021, 10 patients in stage 1 and 35 patients in stage 2, 43 in Malawi and 2 in Uganda. One stage-2 patient died during the treatment period, but the death was not related to r-HAT or Fexinidazole. An overall clinical improvement is observed within the five first day of treatment, with the reduction of the most frequent HAT symptoms.

## Conclusion

The follow-up of the patients is still on going, but preliminary results are promising to propose fexinidazole to r-HAT patients as a safe and efficacious treatment in a near future.

Fexinidazole is the first all oral drug for the most common form of sleeping sickness caused by *T.b. gambiense*. Clinical data are needed to assess its use in the less common form caused by *T.b. rhodesiense*.

# Pharmacovigilance monitoring of COVID-19 vaccines in Niger

Abdoul-Moumouni Issa-Soumana, Epicentre, Niger

## Background

Between April 2021 and March 2022, a total of 2,180,972 people in Niger received a first dose of COVID-19 vaccine and 1,545,630 people were considered fully vaccinated (i.e. 15% of the eligible population). Vaccines available were Sinopharm, AstraZeneca, Janssen and Pfizer with all persons aged 18 and above eligible for vaccination with prioritization depending upon supply. From May 2021, the Ministry of Health (MoH) in collaboration with the WHO and Epicentre implemented activities to rapidly detect adverse events following immunization (AEFI).

## Methodology

Active pharmacovigilance monitoring was conducted at 3 sites (United Nations Dispensary in Niamey, Hospital District Niamey I and an urban health clinic in Maradi). Any adult presenting for primary vaccination and consenting to participate was eligible for inclusion. At enrollment, information on vaccine administered, demographic data, and medical history were collected. Reactogenicity data (i.e. local and systemic reactions) were collected through the remote completion of a questionnaire every day for one week. Any other AEFI were collected through monthly calls up to 4 months after 1 dose and 2 months after 2 doses. Data were entered into a secured REDCap database with summary information transmitted weekly to the MoH and WHO.

## Results

As of February 2022, 1229 individuals were included with 55% receiving a dose of the Janssen vaccine (n=678), 44% the two doses of AstraZeneca (n=540) and the remainder receiving Pfizer or Sinopharm. Reactogenicity was poorly documented during the week following vaccination, with 7% (n=91) of participants fully answering questionnaires. A total of 782 AEFIs including 7 serious events were documented through monthly calls. All adverse events were resolved except one (erythema multiform). The main AEs reported were fever (25%), headache (21%) and fatigue (16%).

## Conclusion

This is the first implementation of active pharmacovigilance follow-up in Niger. Follow-up of vaccinees has provided important information on safety to the MoH.

Pharmacovigilance: The implementation of this activity at vaccination sites and the collection of data is an important step to ensure the safety of the population of Niger.

## Session: Malaria

Moderator: Myriam Henkens, MSF International, Switzerland

- Lise Grout
- Jessica Sayyad Hilario & Arielle Calmejane

# Mass drug administration as a tool for rapid reduction of malaria morbidity and mortality in emergency settings

Lise Grout, Epicentre, Switzerland

WHO recommends mass drug administration (MDA) for malaria in complex emergencies. Angumu health zone in Ituri (DRC) is a highly malaria-endemic area with an overburdened health system and hosting internally displaced persons (IDP). Three MDA rounds were implemented with high coverage from September 2020 to January 2021 by Ministry of public health and MSF in 4 health areas. We compare reported mortality and morbidity in locations where MDA has been performed and locations where it has not.

A first cross-sectional population-based retrospective mortality survey was conducted in March 2021. Two-stage cluster sampling was used in villages; all IDP sites were surveyed with systematic random sampling.

Data was collected for 2554 households and 15470 individuals, whom 721 died in the 18-month recall period. The U5MR decreased in the locations where MDA had been implemented from 2.32[1.48-3.16] deaths/10,000 people/day before the MDA to 1.10[0.5-1.71] after, whereas it remained stable from 2.74 [2.08-3.40] to 2.67 [1.84-3.50] in the same time periods in other locations. The U5MR and malaria-specific mortality was significantly higher in non-MDA locations after MDA was implemented (aRR=2.17[1.36-3.49] and 2.60[1.56-4.33] respectively for all-cause and malaria-specific mortality among children <5 years). Morbidity appeared lower in MDA locations 2.5 months after last round: reported malaria-specific morbidity was 14.7%[11-18] and 25.0%[19-31] in villages and IDP sites where MDA had been implemented, while it was 30.4%[27-33] and 49.3%[45-54] in other villages and IDP sites.

The observed sharp decrease of under-5 mortality and morbidity confirms that MDA has the potential to become an important malaria-control tool in emergency settings. Based on these results, new MDA rounds, along with Indoor residual spraying campaigns, are planned in the health zone in 2022. A set of surveys will be conducted before, during and after these to confirm the effect observed in 2021 and evaluate its duration.

Mass drug administration could be used as an important malaria-control tool in emergency settings, allowing sharp reduction of malaria-related mortality in highly malaria-endemic areas.

# Incidence of Malaria, with or without Seasonal Malaria Chemoprevention (SMC) in Moïssala, Chad 2014-2021

Jessica Sayyad Hilario, Epicentre, France; Arielle Calmejane, MSF, France

## Context

SMC has been implemented in Moïssala District southern Chad since 2013 by MSF in collaboration with the national and local health authorities to prevent malaria in young children. The south of Chad however is considered ineligible for SMC according to National guidelines, for this reason the National Malaria Control Programme (NMCP) did not authorise SMC in 2019. In 2020, following MSF negotiations, the NMCP temporarily authorized reimplementing of SMC in Moïssala District, conditional on the obtainment of further evidence of its efficacy. For rollout, different distribution strategies were used (number of days, door-to-door, fixed sites) and in 2021, delivery rounds increased from 4 to 5.

The objective of this analysis is to describe evolution of malaria cases over time and compare against predictions of cases for the years with or without SMC (2019-2021).

## Methods

We looked at trends in malaria incidence over the period 2014-2021 using data from MSF programmes and the NMCP. Malaria cases were defined as children under 5 years who received an antimalarial treatment at health centres. We modelled the trends using generalized additive models over 5-year time spans and predicted the incidence for the subsequent year. The effect of SMC was measured as the percentage difference between observed and predicted values during the years with and without SMC.

## Results

During first years of SMC distribution, malaria has a clear and stable seasonal pattern, however incidence, still rose at the beginning and end of each malaria season irrespective of distribution strategies.

In 2019 following non SMC distribution, there was an increase in incidence by 109% compared to the predicted incidence modelled from years with SMC distribution (2014-2018).

Following SMC re-introduction (2020-2021), the incidence was clearly lower than in 2019, however not as low as during 2014-2018.

Hospitalizations to the malaria unit followed a similar incidence pattern.

## Conclusion

SMC has allowed reduction of malaria cases and hospitalizations, but questions remain what the best strategy is for maximising the effect of SMC during the malaria transmission period.

Incidence of malaria with or without SMC in Chad has showed important difference but SMC distribution strategies could be adjusted to reduce the impact of yearly peak.

## Session: Malaria

### Round Table: How will we prevent malaria in the future?

Moderator: Myriam Henkens, MSF International, Switzerland

- Matthew Coldiron, Epicentre, New-York
- Umberto Dalessandro, Medical Research Council Unit, The Gambia
- Alassane Dicko, MRTC- University of Bamako
- Saschveen Singh, MSF

# Evidence and new recommendations for malaria prevention tools

Matthew Coldiron, Epicentre, USA

The early 2000s saw great advances in malaria control worldwide, in part due to scale up of proven preventive strategies such as insecticide-treated bednets and a variety of chemoprevention measures. In 2015, that progress began to stall, and in 2020, according to WHO, there was a marked increase in the number of malaria cases and deaths, larger than any seen in the last two decades: over 241 million cases of malaria and 626 000 deaths, including 479 000 deaths among African children under 5 years old.

In this troubling context, there have been many recent advances and changes regarding malaria prevention, which will be detailed in the introduction to this roundtable.

- The largest headline came in 2021, with a recommendation to use the RTS,S vaccine, the first malaria vaccine to be approved for broad use in African contexts. This modestly effective vaccine will be expensive but could have a major impact if access issues could be overcome and the vaccine used effectively at scale.
- New WHO guidelines for a variety of chemoprevention strategies are expected soon. Strategies like Seasonal Malaria Chemoprevention (SMC) may see their eligibility criteria broadened, and Mass Drug Administration may be given a more prominent place in the malaria toolbox. Older proven strategies, like Intermittent Preventive Treatment (IPT) among pregnant women and IPT among infants may be re-branded, and re-emphasized in an effort to improve uptake.

- Pyrethroid insecticides are standard in impregnated bednets. Mosquito resistance to pyrethroid insecticides is increasing, which might eventually warrant the roll-out of next-generation pyrethroid-PBO bednets, which are more expensive and less durable.

Malaria prevention is at a critical juncture. We will discuss these scientific, public health, and strategic considerations in-depth with an expert panel.

## Session: Epidemic

Moderator: Daniela Garone, MSF International, Switzerland

- Catherine Eisenhauer & Birgit Nikolay
- Flavio Finger
- Robin Nesbitt

# Development and validation of a simple outbreak alert system to improve measles control in the Democratic Republic of the Congo

Catherine Eisenhauer; Birgit Nikolay, Epicentre, France

## Background

Measles remains a substantial infectious disease burden in the Democratic Republic of the Congo (DRC) and the country faces annual epidemics. While outbreak alert systems can offset the severity of these epidemics by minimising response delays, there is currently limited consensus on which system to use and how it should be implemented. Here we propose and evaluate a simple alert system composed of two thresholds : the weekly and triweekly number of suspected cases.

## Methods

A large number of potential threshold combinations were considered and several indicators were used to assess performance, including the risk of an alert being false and the proportion of outbreak cases that the system is expected to capture. Performance outcomes were evaluated using historical surveillance data from 2015 to 2020. The variability of performance over time was also assessed.

## Results

In total, 20 threshold combinations were considered, including 8 possible weekly thresholds and 7 possible triweekly thresholds. Among these, two combinations were selected as the most performant. The first and more sensitive system combined a weekly threshold of 10 cases with a triweekly threshold of 15 and the second combined 20 with 35. While the highly sensitive system captured 10% more cases (85% of all cases compared to 76%), it also experienced a 25% higher risk of false alert (68% compared to 43%). While absolute outcomes for both systems were somewhat variable over time, their relative performance remained consistent.

## Conclusion

This analysis presents a simple and evidence based alert system to improve response times for measles outbreaks in DRC. By relying only on suspected cases and basic calculations, it can be implemented easily and is not subject to the delays associated with lab confirmation. Ongoing work is being done to evaluate whether the thresholds proposed here can be reapplied in other contexts.

Alert systems can offset the severity of measles outbreaks by reducing response delays. Here we propose and evaluate a deliberately simple possible system for DRC.



# Identifying zones for preemptive vaccination activity during measles epidemics in the Democratic Republic of the Congo

Catherine Eisenhauer; Epicentre, France

## Background

In 2019, the Democratic Republic of the Congo (DRC) faced its largest measles epidemic in decades. The epidemic saw over 380,000 cases and over 7,000 deaths—both of which are likely underestimated. Current trends suggest that DRC may be going into yet another measles epidemic of massive scale. In hopes of offsetting this as much as possible, multiple MSF sections are working in collaboration with Epicentre to identify health zones for preemptive vaccination and mobilisation.

## Methods

A simple scoring system was developed to identify health zones at imminent risk of outbreak. Three key goals were considered. First, to identify zones with a high underlying risk of outbreak. Second, to determine which of these potential outbreaks would happen soonest. Third, to evaluate which outbreaks were likely to be the worst in terms of number of cases and deaths. Potential indicators for each goal were evaluated and included as relevant.

## Results

The final system allocates points based on three indicators : population based vaccine coverage, time elapsed since the zone's last large outbreak, and physical proximity to suspected active outbreaks. The first two indicators are metrics of underlying outbreak risk and remain fixed over time. The third points to zones where this risk is more immediate and is an indicator that will change with the epidemic. Ultimately no reliable indicators were identified to determine epidemic scale and this goal was dropped from the final scoring system.

## Conclusion

Rapid mobilization is critical if we are to minimize the scale and reach of the coming measles epidemic in DRC. If like in 2019 we focus predominantly only on health zones already in outbreak, we may find ourselves once again chasing peaks that have already passed. Scoring systems like the one proposed here provide a valuable complement by informing strategies focused on prepositioning and preemptive vaccination.

We provide a simple system to inform prepositioning and preemptive vaccination activities during the ongoing measles epidemic in DRC.

# CATI - Case Area Targeted Interventions for cholera response – an observational study

Flavio Finger, Epicentre, Switzerland

Cholera outbreaks in fragile settings are prone to rapid expansion. Case-area targeted interventions (CATI) have been proposed as a rapid and efficient response strategy to halt or substantially reduce the size of small outbreaks. CATI aims to deliver synergistic interventions (e.g., water, sanitation, and hygiene interventions, vaccination, and antibiotic chemoprophylaxis) to households in a 100–250 meter 'ring' around primary outbreak cases. CATI have been implemented previously, but so far complete evaluation of the effectiveness of

CATI including vaccination has been done. Epicentre is studying CATI implementations done by Médecins Sans Frontières (MSF) in several countries using an observational study designed to adapt to a changing operational context. The primary outcome is cholera incidence in each CATI ring. We will report on the study design, setup and preliminary results from the Democratic Republic of the Congo (DRC), as well as on operational aspects of CATI.

# The first reactive mass vaccination campaign against Hepatitis E in Bentiu, South Sudan

Robin Nesbitt, Epicentre, France

## Background

Hepatitis E (HEV) is likely the most common cause of acute viral hepatitis and jaundice worldwide. The virus causes high mortality among pregnant women with case fatality risks of 10-25%, and adverse fetal outcomes. A safe and efficacious 3-dose recombinant vaccine (Hecolin®) has been licensed in China since 2011 and considered for use during outbreaks by the WHO since 2015.

South Sudan has reported confirmed Hepatitis E cases for over a decade, with protracted outbreaks occurring in camps of displaced people. Bentiu IDP camp in Unity State hosts over 100,000 people displaced from conflict and flooding. A large outbreak of hepatitis E occurred in 2015, and despite numerous interventions, cases and deaths continue. In response, the MoH and MSF planned the first mass reactive vaccination campaign of the Hecolin® vaccine.

## Methods

The first round of vaccination started on 22 March 2022 and second round on 19 April 2022. The target population was 26,686 individuals aged 16-40 years residing in Bentiu IDP camp. Operational research alongside the vaccination campaign, including clinical surveillance at MSF Bentiu hospital, a case-control study, and a pregnancy cohort, is ongoing to document feasibility, safety and two-dose vaccine effectiveness.

## Results

Using a combination of fixed and mobile sites, 49,903 doses were administered during the two rounds of vaccination. Based on administrative population counts, coverage in the first round was 91% and second round was 95%.

Clinical surveillance documented 288 suspect hepatitis E cases and 2 deaths from 21 March – 15 May, 2022. Among them, 61.5% of cases and both deaths were children less than 16 years, ineligible for vaccination. HEV IgM RDT positivity overall was 41.6%; 74.6% of RDT confirmed cases had elevated ALT ( $\geq 2.5$ -times ULN) and 29.7% of suspect cases testing negative.

## Conclusion

The deployment of Hecolin® in a humanitarian emergency setting achieved high administrative vaccination coverage. This experience and the anticipated research results could allow for broader use of the vaccine in the fight against epidemics caused by hepatitis E virus.

The first mass reactive vaccination campaign against Hepatitis E was conducted in Bentiu IDP camp, South Sudan with high administrative vaccination coverage. Most cases in Bentiu are ineligible for vaccination due to age limitations of the vaccine.

## Session: COVID-19 - France

Moderator: Pierre Lombrail, Université de Paris 13, France

- Charline Vincent
- Thomas Roederer

# Drivers of COVID-19 vaccine uptake among homeless and precariously housed people in France: a cross-sectional population-based study (the PREVAC study)

Charline Vincent, Epicentre, France

## Context

People experiencing recurrent homelessness (PEH) or precariously housed have been overexposed to SARS-CoV2 with high morbidity and attack rates. While most guidelines prioritize the vaccination of PEH, implementation is usually challenging. Objectives of our survey were to estimate COVID-19 vaccination coverage and its drivers in PEH.

## Methods

We carried out a cross-sectional stratified survey using a two-stage cluster sampling design. Between November 15 and December 22, 2021, 227 sites were surveyed in the Ile-de-France region (IDF) and Marseille and divided into 3 strata. We interviewed 3,691 participants in their preferred language.

## Results

Three-quarters of surveyed individuals (76.2% ; 95%CI 74.3-78.1) received at least one dose of COVID-19 vaccine in 2021. It was highest (85.6%; 95%CI 83.0-88.2) among housed individuals, followed by those accommodated (75.4%; 95%CI 73.0-77.8) and lowest in the streets (42.0%; 95%CI 34.3-49.7). Vaccine uptake was thus lower in all strata compared to French population at the end of 2021 (91% in France). Public vaccination centers were the place of preference in all strata. Reasons for vaccination were mostly related to protection (personal, of vulnerable people, overall) while roughly a quarter of participants felt compelled to be vaccinated (to get the vaccine certificate, travel, or work). Reasons for non-vaccination were more refusals than physical/practical obstacles, with around 10% of participants without any intention to get vaccinated.

Multivariate analysis highlighted the following vaccine uptake drivers: age, administrative status, source of meals, food distribution attendance, source of COVID-19 information, onsite vaccination activity and medical coverage were associated with higher vaccine uptake. Negative opinions on COVID-19 vaccines, fear of the vaccine, living with his/her family, and having no need for vaccine certificate were associated with lower vaccine uptake.

## Conclusion

Access to COVID-19 vaccine is low for an overexposed population. Reinforcing comprehensive and inclusive social care for these people, relying on trustworthy third parties with personal ties to them, and extended use of “outreach” strategies appear to be key levers for improving vaccine coverage.

People experiencing recurrent homelessness are less vaccinated than the general population. It seems essential to strengthen their social support and to rely on trusted third parties and outreach activities.

# The second wave of COVID-19 in EHPAD: A mixed-methods study in the PACA and Occitania regions

Thomas Roederer, Epicentre, France

## Background

French nursing homes were deeply affected by the first wave of the COVID-19 pandemic, with 38% of all residents infected and 5% dying. Yet, little was done to prepare these facilities for the second pandemic wave, and subsequent outbreak response strategies largely duplicated what had been done in the spring of 2020, regardless of the unique needs of the care home environment.

## Methods

A cross-sectional, mixed-methods study using retrospective, quantitative data from residents of 14 nursing homes between November 2020 and mid-January 2021. Four facilities were purposively selected as qualitative study sites for additional in-person, in-depth interviews in January and February 2021.

## Results

The average attack rate in the 14 participating nursing facilities was 39% among staff and 61% among residents. One-fifth (20) of infected residents ultimately died from COVID-19 and its complications. Failure-to-Thrive-Syndrome (FTTS) was diagnosed in 23% of COVID-positive residents. Those at highest risk of death were men (HR=1.78; IC95: 1.18 – 2.70;  $p=0.006$ ) with FTTS (HR=4.04; IC95: 1.93 – 8.48;  $p<0.001$ ) in facilities with delayed implementation of universal FFP2 masking policies (HR=1.05; IC95: 1.02 – 1.07;  $p<0.001$ ). The lowest mortality was found in residents of facilities with a partial (HR=0.30; IC95: 0.18 – 0.51;  $p<0.001$ ) or full-time physician on staff (HR=0.20; IC95: 0.08 – 0.53;  $p=0.001$ ). Significant themes emerging from qualitative analysis centered on (i) the structural, chronic neglect of nursing homes, (ii) the negative effects of the top-down, bureaucratic nature of COVID-19 crisis response, and (iii) the counterproductive effects of lockdowns on both residents and staff.

## Conclusion

Despite high resident mortality during the first pandemic wave, French nursing homes were ill-prepared for the second, with risk factors (especially staffing, lack of medical support, isolation/quarantine policy etc) that affected case fatality and residents' and caregivers' overall well-being and mental health.

Future debates about a pandemic response in nursing homes should consider factors like the social needs of residents or understaffing and should refine general health policies and prevention measures.

## Session: COVID-19 - Afrique

Moderator: Salha Issoufou, MSF WACA, Côte d'Ivoire

- Jihane Ben-Farhat
- Erica Simons

# Impact of Covid-19 on HIV care in Malawi and Uganda

Jihane Ben-Farhat, Epicentre, France

## Introduction

The COVID-19 pandemic and the measures taken to limit its spread have severely disrupted health systems and medical care. People living with HIV (PLHIV) suffer from high levels of comorbidities and stigma, and often faced challenges in access to care prior to the pandemic. The aim of this study was to explore the extent to which the pandemic and the public health measures have affected medical care for PLHIV. The study took place in two different contexts in terms of care and experience of the pandemic where MSF operates, in Arua (Uganda) and Chiradzulu (Malawi).

## Methods

We conducted a multicentric mixed-methods study . The quantitative component explored patients' retention in care and viral suppression using programmatic data routinely collected from January 2018 to April 2021 . The qualitative study investigated patient perspectives and perceptions of the impact of Covid-19 and the public health and social measures on their lives and ability to manage their health, and on HIV care. The interviews with patients were conducted from January to June 2021.

## Results

From 2020 to 2021, we observed a 15% decrease in active cohort among adults on any regimen and a 17% decrease among children and adolescents in Arua. During the same period in Chiradzulu, the first- and second-line cohorts decreased in size (10% drop and 12% drop, respectively). In addition, we observed a reduction in ART initiations and in clinical consultations at the start of pandemic (50% and 68% in Arua and 34% and 60% in Chiradzulu, respectively) and a gradual decrease in viral load coverage. In Uganda, the lockdown affected patients' and caregivers'

livelihoods, education, access to food and psychosocial wellbeing negatively, which at times affected their ability to manage HIV condition at home and to adhere. Adolescents lost support, experienced increasing HIV stigma, and started to provide for themselves. In Malawi, patients and caregivers emphasized the impact of the pandemic and public health measures on livelihoods and food security and noted the reduction or absence of MSF social support activities during this time. Also, the fear of COVID at health facilities and the confusion and lack of communication about regarding day-to-day changes in activities was disturbing to both patients and staff.

## Conclusion

The COVID-19 epidemic and public health measures had an important negative impact on HIV care in the health facilities and in the community in Arua and Chiradzulu. To ensure a conducive environment for patients' access to essential HIV care and treatment during potential future outbreaks requires continued collaboration with the national authorities and advocacy for more non-violent and less authoritarian ways of implementing restrictions. In addition, innovative public health information campaigns about COVID-19 and care services, to reduce fear of disease and to dispel rumours and misinformation are recommended.

COVID-19 has severely disrupted access to health systems and treatment. The measures put in place to limit the spread of the epidemic have altered people's bearings. How has the pandemic in Arua and Chiradzulu affected PLHIV, who already suffer from higher levels of mental health problems, comorbidities and stigma?



# Retrospective mortality and COVID seroprevalence during the pandemic in three African settings: in Cameroon and in the cities of Abidjan and Lubumbashi

Erica Simons, Epicentre, France

## Background

Seroprevalence and mortality estimates are necessary to understand the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) context and to guide public health decisions. Using representative samples of the general population, we evaluated retrospective mortality and seroprevalence of anti-SARS-CoV-2 antibodies more than 1 year after the first confirmed COVID cases in Cameroon, Abidjan (Côte d'Ivoire) and Lubumbashi (Democratic Republic of the Congo).

## Methods

The studies included retrospective mortality surveys using two-stage cluster sampling methodology for random selection of households based on random geo-points and nested anti-SARS-CoV-2 antibody prevalence surveys. The surveys took place in April-May (Lubumbashi), July-August (Cameroon) and July-November (Abidjan) 2021. Crude mortality rates were stratified between baseline and follow-up (pandemic) periods and further investigated by age group and individual COVID waves. In select households, participants were tested for anti-SARS-CoV-2 antibodies by rapid serologic testing (RST) and laboratory-based testing. Seroprevalence was estimated overall and excluding participants who self-reported vaccination.

## Results

In two (Cameroon and Lubumbashi) of three settings, mortality rates increased significantly during the pandemic period overall and across several age groups, including older populations. In Abidjan, an increase was observed during the third wave. Overall, 15.7% (43.2%), 11.3% (18.3%) and 35.6% (79.4%) individuals tested positive by RST (laboratory-based testing) in Lubumbashi, Cameroon, and Abidjan, respectively. Among those unvaccinated, 9.5% (16.9%) and 28.3% (77.8%)

individuals tested positive by RST (laboratory-based testing) in Cameroon and Abidjan, respectively. Seroprevalence estimates generally increased with age, regardless of vaccination status.

## Conclusion

Seroprevalence estimates were tens (Cameroon and Abidjan) to hundreds (Lubumbashi) of times higher than attack rates reported by the respective surveillance systems. A significant increase in mortality was observed in some settings during the pandemic period. While overall mortality rates were below emergency thresholds, older populations were among the most affected. In certain settings, targeted vaccination strategies may be appropriate.

In three African contexts, we describe varying degrees of circulation of the virus and settings with increased mortality since the start of the pandemic.



## Session: COVID-19 Africa

### Round Table: COVID-19 in Africa: what impact, what responses, what priorities?

Moderator: Salha Issoufou, MSF WACA, Côte d'Ivoire

- John Amuasi, ARNTD, Ghana
- Juliet Nabyonga-Orem, WHO
- Helen Rees, WITS RHI, University of the Witwatersrand, South Africa



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