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Résumés des communications – Presentation abstracts

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epicentre
ÉPIDÉMIOLOGIE • EPIDEMIOLOGY

MEDECINS SANS FRONTIERES

Paris le 8 juin 2023

Bonjour à tous

Cette année pour notre journée Scientifique, nous nous retrouverons soit à l'Espace 104 à Paris, soit en ligne, pour partager et échanger autour de nos derniers résultats d'enquêtes et d'études. J'espère que cette journée vous convaincra une nouvelle fois de notre dynamisme et de nos capacités à transformer les problématiques auxquelles font face les équipes médicales de MSF en questions de recherche afin d'adapter les pratiques aux contextes.

Ainsi au cours de la première session sur la nutrition, nous nous interrogerons sur les critères d'identification des enfants sévèrement malnutris au regard du risque de décès, mais aussi aux raisons du rebond de mortalité observé dans le district de Koutiala au Mali par rapport aux enquêtes des années précédentes. Nos études veulent questionner les pratiques et en intégrer de nouvelles, ce qui sera illustré par l'étude sur la stimulation psychosociale adaptée au contexte malien.
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La suite de la matinée sera consacrée à la réponse aux épidémies où Epicentre apporte son expertise spécifique à MSF pour définir les approches les plus pertinentes afin de limiter l'apparition et l'ampleur des épidémies de rougeole, ou évaluer la transmission du choléra et l'impact de la vaccination dans les zones endémiques. L'évaluation de l'efficacité et de la sécurité du vaccin contre l'hépatite E administrée pour la 1ère fois en situation épidémique sera également abordée en attendant les conclusions définitives quant à son innocuité chez les femmes enceintes. L'année 2022 a été marquée par une succession d'épidémies de choléra dans de nombreux pays, l'occasion de faire le point sur la situation actuelle et les raisons de cette multiplication. Enfin nous tenterons de tirer les leçons de l'épidémie d'Ebola survenue en Ouganda.

Il sera ensuite question de résistance aux antipaludéens avec les résultats préliminaires d'un essai sur les trithérapies à base d'artémisinine comme nouvelle possibilité thérapeutique, et aux antibiotiques chez les patients hospitalisés avec une infection bactérienne invasive à un stade avancé de l'infection à VIH à Kinshasa. Sur la fièvre de Lassa, nous vous invitons à découvrir comment se prépare un essai vaccinal avec l'apport de l'épidémiologie pour réunir les données nécessaires à la mise sur pied d'un tel essai, autre facette de notre activité.

La tuberculose et les enjeux autour de son diagnostic feront l'objet de la dernière session. Nous nous pencherons sur les possibilités de décentraliser le diagnostic des enfants au niveau du district en Ouganda, puis sur les nouvelles techniques d'imagerie et leur apport dans le sud-est Asiatique, y compris les aspects qualitatifs, de compréhension et d'acceptabilité par les patients.

En conclusion de cette journée, nous aborderons un sujet connexe mais ô combien essentiel : la décarbonation de nos activités. S'il est aujourd'hui bien établi que les activités de recherche et de soins de santé contribuent significativement au changement climatique et que leur émission de gaz à effet de serre doit être réduite, reste à savoir comment y parvenir. En parallèle de la réflexion entamée au sein d'Epicentre, nous avons souhaité ouvrir le débat avec d'autres experts et explorer la façon et les moyens d'intégrer cet impératif dans les programmes de soins et les projets de recherche.

Je vous souhaite une très belle journée

Emmanuel Baron
Directeur Général, Epicentre

Paris, June 8, 2023

Hello everyone

This year, for our Scientific Day, we will meet either at Espace 104 in Paris or online to share and discuss our latest survey and study results. I hope this day will once again convince you of our dynamism and ability to transform the problems faced by MSF's medical teams into research questions so that we can adapt our practices to the context.

In the first session on nutrition, we will look at the criteria for identifying severely malnourished children in terms of the risk of death and the reasons for the rebound in mortality observed in the Koutiala district of Mali compared with surveys conducted in previous years. Our studies aim to question existing practices and integrate new ones, as illustrated by the study on psychosocial stimulation adapted to the Malian context.

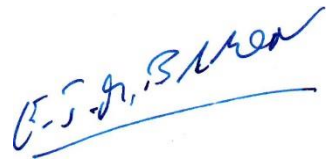
The year 2022 was marked by a succession of cholera epidemics in many countries, providing an opportunity to take stock of the current situation and the reasons for this increase. The rest of the morning will be devoted to epidemic response, with Epicentre providing MSF with its specific expertise in defining the most appropriate approaches for limiting the onset and scale of measles epidemics or assessing cholera transmission and the impact of vaccination in endemic areas. Assessment of the efficacy and safety of the hepatitis E vaccine administered for the 1ère first time in an epidemic situation will also be addressed, pending definitive conclusions on its safety in pregnant women. Finally, we look at the lessons learned from the Ebola epidemic in Uganda.

We will then look at resistance to antimalarial drugs, with the preliminary results of a trial on artemisinin-based triple therapy as a new therapeutic option, and to antibiotics in patients hospitalised with an invasive bacterial infection at an advanced stage of HIV infection in Kinshasa. On the subject of Lassa fever, we invite you to find out how a vaccine trial is prepared, using epidemiology to gather the data needed to set up such a trial - another facet of our work.

Tuberculosis and the issues surrounding its diagnosis will be the subject of the final session. We will look at the possibilities of decentralising the diagnosis of children to the district level in Uganda and then at the new imaging techniques and their contribution in South-East Asia, including the qualitative aspects, understanding and acceptability to patients.

To conclude the day, we will address a related but vital issue: decarbonising our activities. While it is now well established that research and healthcare activities significantly contribute to climate change and that their greenhouse gas emissions must be reduced, the question remains about how this can be achieved. In parallel with the discussions within Epicentre, we wanted to open up the debate with other experts and explore the ways and means of integrating this imperative into healthcare programmes and research projects.

I wish you a very nice day



Emmanuel Baron
Managing Director, Epicentre

Session: Nutrition

Moderator: Oumar Samake, AMEDD NGO

- Erica Simons
- Martin Yakum
- Claire Bossard & Aissatou Diallo

Hospital mortality by severe acute malnutrition diagnostic category among children aged 6-59 months, Katsina, Nigeria

Erica Simons, Epicentre, France

Background

Katsina state, in the northwest of Nigeria, has a precarious nutrition situation. Médecins Sans Frontières has been present in Katsina since 2021 after an influx of nutrition patients from Niger. According to 2006 WHO standards, severe acute malnutrition (SAM) is defined as weight-for-height z-score (WHZ) <-3 and/or mid upper arm circumference (MUAC) <115 and/or presence of nutritional oedema. Nutrition survey results show low concordance between WHZ and MUAC measurements in the Katsina population. The Katsina project primarily uses MUAC and oedema as admission critieria in ambulatory facilities and all three critieria in the inpatient facilities.

Methods

Using routine programmatic data collected prospectively, we evaluated hospital mortality among children aged 6-59 months admitted in 2022. Case-fatality rates (CFR) and relative risks (RR) were calculated by SAM diagnostic category and stratified by age group and stunting status.

Results

We included 12,756 children. Compared to children admitted by MUAC alone, children admitted by WHZ alone had 2.2 times the risk of death and children admitted with Kwashiorkor and low WHZ more than 6 times the risk. Children 24-59 months with marasmus were at a higher risk of death than children 6-23 months old. The CFR was similar among children with and without severe stunting.

Conclusion

Children hospitalized with a combination of Kwashiorkor and low WHZ are at very high risk of death compared to other SAM diagnostic categories in the Katsina project. Our results suggest that children with low WHZ at admission are at higher risk of dying and need special considerations.

We observed high mortality among children admitted with low WHZ in the Katsina cohort, suggesting that considerations should be made for this group of children.

The Challenges of Reducing Child Mortality at the District Level: the case of Koutiala, Mali

Martin Ndinakie Yakum, Epicentre, Sénégal

Background

MSF set up a medical and nutrition project in July 2009, to reduce infant and child mortality. Between 2010 and 2016, 7 multi-indicator cross-sectional surveys was conducted in Koutiala and the finding showed a reducing trend in under five mortality and fairly constant prevalence of acute malnutrition. By 2019, MSF expanded the intervention to cover almost all the rural health areas of the district. We conducted a survey to have some baseline health information.

Methods

It was a cross-sectional community-based survey using a two-stage cluster sampling method. Clusters were selected randomly with probability proportionate to size and households selected by spatial random sampling. Under five mortality rate was estimated for a recall period of 380 days (July 14, 2021 – July 28, 2022) and the prevalence of acute malnutrition estimated in children 6-59 months based on lower limp oedema, mid upper arm circumference (MUAC), and weight/height ratio.

Results

A total of 2320 households and 2982 children aged 0 to 59 months enrolled. Under five mortality rate was 0.54 deaths/10,000/day [95% CI: 0.38 - 0.70] and this was higher in remote health areas compared to Koutiala city. The major cause of deaths was malaria (36.84%). Approx. 65% of deaths occurred either at home or at the community health center. Among children with at least one episode of ill-health in two weeks preceding data collection, Higher proportion used primary health facilities and lower proportion used secondary health facilities in comparison with Koutiala city where the reverse was observed. Prevalence of acute malnutrition was 11.45% and it was evenly distributed across the district.

Conclusion

Under-five mortality rate in Koutiala has risen to situation in 2010. This contradicts reducing trend observed in previous surveys. High utilization of health care facilities; low utilization of secondary health care facilities; and high mortality rate at periphery put into question the referral system in place. The reasons for this increase are not known but low utilization of secondary care facility at the periphery suggests that inaccessibility to secondary care can partially explain it.

Under-five mortality rate in Koutiala has risen recently. There is need to reassess the context and referral system in place and adapt the intervention accordingly.

Stimnut: An innovative community-led research action of psychosocial stimulation intervention to improve the management of child malnutrition in Koutiala, Mali

Aissatou Diallo, Epicentre, Mali; Claire Bossard, Epicentre, South Africa

Background and aims

Early psychosocial stimulation with disadvantaged infants can lead to short- and long-term benefits in cognitive and social development. Programs with multiple components, including health, nutrition, and psychosocial stimulation have shown to be the most successful at enhancing the rehabilitation of severe acute malnourished (SAM) children. The STIMNUT study assesses the feasibility of integrating an adapted version of the 'Follow-Up of Severe Acute Malnourished children' (FUSAM) protocol developed by Action Contre la Faim into the Médecins Sans Frontières (MSF) Therapeutic Feeding Programme in Koutiala (Mali) for SAM children aged 6-23 months and their primary caregivers.

Methods

A convergent mixed methods study was implemented between July 2022 and May 2023 in two outpatient health facilities and the general hospital in Koutiala. An adaptation of the PRECEDE-PROCEED conceptual framework was used to adapt, implement and evaluate the psychosocial stimulation intervention. The study was divided into 3 successive phases: (1) a mixed methods initial assessment at community level, (2) the contextual adaptation of the FUSAM protocol through a participatory approach (PAR) and (3) an assessment of its acceptability. For this assessment, 15 individual interviews with mothers were conducted. Qualitative and quantitative data were analyzed and interpreted concurrently.

Results

During the PAR process, various stakeholders including, development workers and health professionals, parents of SAM children and traditional healers, worked together to practically adapt the intervention. They proposed for instance to include a community-level ceremony at the beginning of the intervention with traditional authorities, villages chiefs and other local stakeholders to increase its appropriation and to sensitize community members. During phase 3, a total of 149 psychosocial stimulation sessions (122 individual and 27 collective) were delivered by a team of 3 psychosocial workers to the 36 families included. The preliminary acceptability results showed that the sessions were well appreciated by the mothers. They became more acceptable as the intervention progressed because of the resulting positive changes in their children's wellbeing, in theirs and their families' relationship with their children, and in the mothers' relationships with their husbands and extended family.

Conclusion

The implementation of the adapted version of FUSAM protocol and its acceptability assessment at primary and secondary health care levels will now be used to inform the further deployment of the intervention. In particular, the results have allowed the development of a framework for the StimNut intervention to make it locally relevant and to guide its reproducibility in other contexts.

StimNut is a mixed method feasibility study on the integration of a psychosocial stimulation intervention into the standard nutritional care for SAM children aged 6-23 months In Koutiala, Mali.

Session: Outbreak I – Cholera

Moderator: Philippe Barboza, WHO

- Nana Mimbu & Flavio Finger
- Anaïs Broban
- Flavio Finger

Case-area targeted interventions to rapidly contain the spread of cholera: updates from the DRC study

Nana Mimbu, MSF, DRC; Flavio Finger, Epicentre, Switzerland

The risk of small-scale cholera outbreaks propagating rapidly and enlarging extensively remains substantial. As opposed to relying on mass, community-wide approaches, cholera control strategies could focus on proactively containing the first clusters. Case-area targeted interventions (CATI) are based on the premise that early detection can trigger a rapid, localised response in the high-risk radius around one or several case-households to reduce transmission sufficiently to extinguish the outbreak or reduce its spread. Current evidence supports a high-risk spatiotemporal zone of 100 to 250 meters around case-households for 7 days.

The CATI package delivered by Médecins Sans Frontières (MSF) incorporates key transmission-reducing interventions (including household-level water, sanitation, and hygiene measures, health promotion, active case-finding, antibiotic chemoprophylaxis, and, single-dose oral cholera vaccination (OCV)). We present the first results of an observational study designed to evaluate the CATI strategy applied by MSF. In addition to effectiveness, our study measures the feasibility, resource requirements, and process of implementing this approach.

During the study period, CATI has been implemented by 4 MSF operational sections in 118 rings in 5 different sites in the Democratic Republic of the Congo. The median number of households in each ring was 69. The median administrative vaccination coverage achieved was 89% across all sites. The median delay to CATI implementation was of 2 days from the onset of symptoms of the primary case, and the delay to vaccination was 3.5 days. The characteristics of the CATI rings varied widely across sites and between individual rings. The number of secondary cases observed in rings was generally low, no secondary case was observed in overs 75% of all rings.

Preliminary results show that rapidly implementing CATI with vaccination to contain cholera cases is feasible and that the coverage of the different interventions is satisfactory. A more detailed analysis of effectiveness, coverage and resource needs is underway.

Case-Area Targeted Interventions aim to rapidly deliver a package of public health interventions to people living in the high-risk areas surrounding reported cholera cases. Here we present the first results of an observational study designed to evaluate the feasibility and effectiveness of CATI implemented in the DRC by MSF.

Assessing cholera transmission in endemic areas following mass preventive OCV campaigns in DRC

Anaïs Broban, Epicentre, France

Context

In the context of cholera resurgence, the Oral Cholera Vaccine (OCV) constitutes an important control strategy, including in endemic areas. Preventive OCV campaigns are now increasingly used; cholera transmission and the impact of OCV in such zones need to be better understood.

Methods

This is a multi-study project underway in two sites in the Democratic Republic of the Congo: Goma (urban) and Bukama (rural). The project includes data collection at the suspect patient level (clinical surveillance), community level (vaccination coverage surveys and serial seroprevalence surveys), and household level (follow-up over time of positive patients and their household members). Preliminary clinical surveillance and vaccination coverage results are presented, as data collection is still ongoing.

Results

In Goma, vaccine coverage two years after last vaccination is lower than expected at 49.5% in the targeted zones. Over 8000 suspect cases were included in clinical surveillance in Goma, with cases reported across most of the city.

In Bukama, high levels of vaccination coverage were reported through a community approach survey, with most areas reporting 80 to 90% coverage. Close to 1000 cases were reported, and while an epidemic was ongoing at the time of vaccination, notification levels have remained low and stable ever since.

In Goma, drinking surface or tank-delivered water appeared to be a risk factor for cholera infection, while in Bukama, the associated risk was the public distribution system.

Conclusion

The study sites present different pictures in terms of their OCV campaigns as well as their cholera surveillance profile and transmission. Preliminary results offer elements to guide the implementation of vaccination campaigns. In Goma, for instance, patchy vaccination targets and population movements may have diluted coverage. Early findings illustrate risk factors for cholera transmission, providing operational insights to enhance control strategies. Future results will incorporate other types of data and help design efficient vaccination strategies.

This project aims to evaluate cholera transmission and the impact of OCV in endemic zones. Preliminary results offer elements to guide cholera control and vaccination strategies.

Epidemiological situation of cholera in 2023

Flavio Finger, Epicentre, Switzerland

The years 2022 and 2023 have been marked by a number of cholera outbreaks affecting populations around the world. Hundreds of thousands of cholera cases and thousands of deaths have been reported. Outbreaks have spread across country boarders and affected areas that haven't seen cholera in recent years. The WHO assesses the current global level cholera risk as very high. Here we examine the current epidemiological dynamics of cholera and compare it to historical data from the last decades. We find that the current situation is not unprecedented but nevertheless very concerning, and that cholera mortality has been and remains unacceptably high. We then analyze drivers of the current outbreak dynamics.

Through a series of examples, we illustrate that the main communality of outbreaks is a vulnerable population with lack of access to safe water and sanitation and a lack of access to care. Acute crises, such as conflict, displacement, instability, economic crises and extreme weather events contribute to the general vulnerability of the population. In 2022/23, many such events have been linked to ongoing cholera outbreaks. We conclude that current cholera outbreaks should be attributed to these known risk factors, and that often cited causes such as COVID-fatigue or climate change, whereas not directly causing outbreaks, can increase the population's general vulnerability.

Recent years have been marked by a number of cholera outbreaks affecting populations around the world. We examine the current epidemiological dynamics of cholera and compare it to historical data from the last decades. We further analyze drivers of the current cholera outbreak dynamics.

Session: Outbreaks II

Moderator: Christopher Mambula, Cell Manager MSF-OCP

- Robin Nesbitt
- Denis Ardiet
- Birgit Nikolay

Safety of hepatitis E vaccination in pregnancy following the first mass reactive vaccination campaign in Bentiu, South Sudan

Robin Nesbitt, Epicentre, France

Background

Hepatitis E causes high mortality among pregnant women with case fatality risks of 10-25%, and adverse fetal outcomes. Hecolin® is a safe and efficacious vaccine against Hepatitis E, but there is an evidence gap on its safety in pregnant women. In 2015 the WHO recommended its use in response to outbreaks, including vaccinating pregnant women. The first mass reactive vaccination campaign against Hepatitis E was conducted in Bentiu including pregnant women and achieved high administrative vaccination coverage. We aimed to document pregnancy outcomes in a cohort of vaccinated and non-vaccinated pregnant women.

Methods

An exhaustive pregnancy census was conducted after the second vaccination round from 16 May to 30 June 2022 to recruit women who were pregnant between 1 January 2022 and the interview date. Women were recontacted a minimum of 28 days after expected delivery to assess pregnancy outcome. Categorization of the cohort according to timing of potential vaccine exposure in pregnancy and regression models to evaluate the association between at least one dose in pregnancy and pregnancy outcomes is ongoing.

Results

Of 20,674 women of childbearing age who consented for interview, 3,458 (16.7%) reported being pregnant since 1 January 2022. Women were a mean of 25.5 years old, had a median of 2 previous pregnancies (0-11), and 21 (0.6%) reported experiencing jaundice during their current pregnancy. Overall, 2723 (78.7%) women received at least one dose of Hecolin®. Access to delivery care was high, with 90% of women delivering in a health facility; 357 (10.3%) women reported a complication during delivery and 16 (0.5%) reported a caesarean section. According to interview, 3233 (93.5%) women had a livebirth, and 225 (6.9%) had a pregnancy loss, including 57 (1.6%) reported stillbirths, translating to a stillbirth rate of 17.6/1000 pregnancies, compared to the national estimate of 25.8/1000 pregnancies.

Conclusion

It was feasible to implement an observational study on the safety of vaccination in pregnancy alongside the first deployment of Hecolin® in a humanitarian emergency setting. Access to delivery care is reflected in the lower than national average rate of stillbirth in the camp. Results are expected to narrow the evidence gap on the safety of this vaccine in pregnancy.

A cohort study on the safety of vaccination in pregnancy was implemented alongside the first deployment of Hecolin® in a humanitarian emergency setting. Preliminary results show overall high coverage with at least one dose and access to delivery care among women in the cohort.

Description of the 2022 Ebola outbreak in Uganda

Denis Ardiet, Epicentre, France

Context

Sudan Virus (SUDV) is one of the five filoviruses of the genus *Ebolavirus*. In September 2022, an outbreak of SUDV was declared in Uganda, a country that has experienced several Ebola outbreaks over the past two decades.

Methods

Using the line list of cases from the Ministry of Health, we aimed to describe the timeline and geographic spread of SUDV cases during the 2022 outbreak, their demographic features, and case fatality rates, in relation to contextual elements and the operational response.

Results

Three aspects of this outbreak are highlighted and discussed: 1. Population mobility and the geographic spread of SUDV cases, 2. A superspreading event in a small rural town, and 3. The difficulty of early detection of Ebola virus disease (EVD), especially in children.
Based on these observations, we raise some operational questions and suggest possible interventions to better cope with the challenges experienced by the healthcare system during Ebola outbreak responses.

Conclusion

Prior to, during, and after Ebola outbreaks, continuing efforts are needed to improve preparedness of the healthcare system for better outbreak control and quality of care.

Although rapidly controlled, the 2022 SUDV outbreak revealed both successful approaches and remaining challenges that should inform ongoing preparedness efforts for future epidemics.

Lessons learned from the measles outbreak response project in the Katanga Region, DRC 2021/22

Birgit Nikolay, Epicentre, France

Background

To respond to measles epidemics more efficiently, MSF implemented a risk-targeted measles outbreak response project in the Katanga region in the Democratic Republic of the Congo. Here we capitalize on two of the epidemiological activities that took place before and during a large-scale epidemic in 2021/22: (i) the identification of high-risk health zones (HZ) for preventive activities and enhanced surveillance, and (ii) the prioritization of alerts for interventions.

Methods

To evaluate the selection of high-risk HZ in 2021/22, as well as potential alternative selection approaches, we compared outbreak sizes by risk category based on national surveillance data and evaluated preventive vaccination activities in 9 selected high-risk HZ. We further evaluated the alert scoring algorithm by comparing outbreak sizes by alert score and assessed final operational decisions guided by the score.

Results

Although, the initial selection of high-risk HZ in 2021 allowed the identification of HZ with large epidemics, choosing all HZ with coverage below 40% seems to be the most efficient approach. While a third (3/9) of HZ with preventive vaccination experienced a large epidemic, the proportion was 90% (9/10) among high-risk HZ without preventive/early vaccination. Regarding the evaluation of the alert scoring algorithm, the median size of epidemics and the risk of large epidemics increased with an increasing alert score. Median epidemic durations were shorter in HZ with MSF interventions than in HZ with non-MSF vaccination campaigns or HZ without any vaccination campaigns.

Conclusion

Selecting HZ with low vaccination coverage may be a simple efficient alternative to the current model-based strategy to identify high-risk HZ. The targeted implementing of preventive vaccination probably averted large epidemics in 6 of the 9 vaccinated HZ. The alert scoring algorithm allowed efficient operational decision making during the epidemic in 2021/22, resulting in shorter epidemics in HZ with MSF interventions.

A risk-targeted approach including preventive vaccination, enhanced surveillance, and reactive interventions allowed to limit the occurrence and scale of measles epidemics in several health zones in the Katanga region in 2021/22.

Session: General

Moderator: Sabo Haoua Seini, CERMES

- Ibrahim Ngoumboute
- Céline Langendorf
- Anton Camacho

Efficacy and safety of Triple ACTs compared to conventional ACTs for the treatment of uncomplicated malaria: preliminary results of the DeTACT trial in Niger

Ibrahim Ngoumboute, Epicentre Research Center, Niger

Introduction

Artemisinin-based combination therapies (ACTs) have made a major contribution to substantial reductions in malaria morbidity and mortality worldwide over the past decade. However, future benefits are threatened by the recent emergence of resistance to artemisinin and related drugs in Asia and Africa. This study aims to evaluate alternative treatments using combinations of existing drugs.

Methodology

Multicenter, partially blinded, randomized, controlled, non-inferiority trial comparing the efficacy, tolerability and safety of artemisinin-based triple therapies (artemether-lumefantrine+amodiaquine, artesunate-mefloquine+piperaquine) and ACTs (artemether-lumefantrine+placebo, artesunate-mefloquine+placebo) conducted in Maradi, Niger. 432 participants aged 6 months to 12 years with acute, uncomplicated P. falciparum monoinfection were randomized into 4 arms, hospitalized for 72 hours and followed as outpatients for 9 weeks. Blood analyses of efficacy, safety, pharmacokinetics, pharmacodynamics and electrocardiograms were performed.

Preliminary results

A better post-treatment prophylactic effect with TACT than with CTA. No differences in fever disappearance and parasite clearance between CTA and TACT. More vomiting recorded with TACT. Liver and kidney parameters comparable between arms. No cardiac safety issues noted. No signs of artemisinin resistance were found at the Niger study site. Further results are awaited on PCR-corrected efficacy, pharmacokinetics, pharmacodynamics, and those of the other study sites.

Conclusion

The loss of efficacy of first-line ACTs compromises malaria control and elimination efforts. A major concern for Africa, which bears most of the global malaria burden. Different response strategies need to be explored.

Upcoming results of PCR-corrected efficacy, the other pharmacokinetic analyses and results from other sites are likely to provide further evidence of the efficacy of TACTs in adressing artemisinin resistance.

Invasive bacterial infections in patients with advanced HIV disease in Kinshasa: prevalence, antibiotic resistance and treatment

Céline Langendorf, Epicentre, France

Background

Patients with advanced HIV disease (AHD), defined as WHO clinical stage 3 or 4 and/or CD4<200, have a high risk of death. One common cause of death is invasive bacterial infection (IBI, i.e., septicemia or meningitis). The global increase of antibiotic resistance threatens current treatments against bacterial infections. This study aims to describe the burden of IBI among patients with AHD to guide empirical treatment protocols.

Methods

This is a prospective, descriptive study implemented at Kabinda General Hospital in Kinshasa, Democratic Republic of Congo (DRC). All patients with AHD and a blood or cerebrospinal fluid (CSF) culture collected because of: 1) fever/hypothermia and/or signs of shock, on admission or during hospitalization, and/or 2) previous exposure to care (<30 days), were eligible to participate. Clinical and bacteriological data were collected. An IBI was defined as a positive blood or CSF culture, and then categorized as: 1) community-acquired or healthcare-associated, if occurring ≤48 hours since hospitalization, and contingent on previous exposure to care (<30 days), or 2) hospital-acquired, if occurring >48 hours after hospitalization.

Results

From August 2021 to July 2022, we included 997 patients, corresponding to 1198 hospitalizations with ≥1 blood and/or CSF culture. The proportions of community-acquired, healthcare-associated, and hospital-acquired IBI among hospitalizations were 5.9% (71/1198), 9.2% (110/1198), and 3.5% (42/1198), respectively. The main bacterial agents responsible for community-acquired and healthcare-associated IBI were non-Typhi Salmonella followed by Gram-positive Cocci, while *K. pneumoniae* was most common in hospital-acquired IBI. The levels of antibiotic susceptibility among Enterobacterales were similar between community-acquired and healthcare-associated IBI, with low susceptibility to ceftriaxone and ciprofloxacin, but high susceptibility to carbapenems and azithromycin.

Conclusion

We confirmed alarming levels of antibiotic resistance among patients with ADH in the DRC. Discussions are ongoing to translate results into practice, in particular to target broad spectrum empirical antibiotics.

Invasive bacterial infections among hospitalized patients with advanced HIV in Kinshasa showed high levels of antibiotic resistance regardless of their recent, previous exposure to care.

Interim results of the multi-site incidence study of Lassa fever in West Africa

Anton Camacho, Epicentre, France

Background

Lassa fever (LF), a haemorrhagic illness caused by the Lassa fever virus (LASV), is endemic in West Africa causing an estimated 300 000 to 500 000 cases and 5 000 fatalities every year. Due to its pandemic potential, LF has been placed on the WHO's list of priority pathogens in order to speed up the development of a safe and effective vaccine. However, the design of successful vaccine trials depends on the true prevalence and incidence rates of LF, which are unknown as infections are often asymptomatic and clinical presentations are varied. The aim of the Enable Lassa research programme is to estimate the incidences of LASV infection and LF disease in five West African countries.

Methods

We conducted a prospective cohort study in Benin, Guinea, Liberia, Nigeria (three sites), and Sierra Leone from 2020 to 2023, with 24 months of follow-up. Each site assessed the incidence of LASV infection, LF disease, or both. When both incidences are assessed the LASV cohort (n = 1 000 per site) was drawn from the LF cohort (n = 5 000 per site). During recruitment participants completed questionnaires on household composition, socioeconomic status, demographic characteristics, and LF history, and blood samples were collected to determine IgG LASV serostatus. LF disease cohort participants were contacted biweekly to identify acute febrile cases, from whom blood samples were drawn to test for active LASV infection using RT-PCR. LASV infection cohort participants were asked for a blood sample every six months to assess LASV IgG serostatus.

Results

Interim results were obtained in October 2022 using partial data. We focus here on the Nigeria-Edo cohort with a follow-up period of 22 months and 3 serological time-points available (T0, T6, T12). We found a baseline seroprevalence of 43% (95% CI: 42% - 45%), an incidence rate of LASV infection of 13% (10% - 16%) and an incidence rate of LF disease of 0.2% (0.1% - 0.3%). These results suggest that LASV infection is common, but LF disease is rare in hotspot communities. Furthermore, our results suggest that pre-exposure to LASV may temporarily reduce the risk of LF disease. Finally, we found evidence that children may be at greater risk of LF disease than adults due to lower pre-exposure.

Conclusion

This is the first epidemiological study to measure the incidence of LF disease and LASV infection in West Africa. The estimates will serve as a basis for the design of future vaccine efficacy trials. The interim results, although limited due to partial data, already suggest that a large sample of several tens of thousands of participants will be required and that children should be included, provided that the candidate vaccine is safe and immunogenic in this group.

Incidence of Lassa fever is needed to inform vaccine trials. Preliminary results show frequent infections but rare disease, suggesting the need for large vaccine trials.

Session: Tuberculosis

Moderator: Bern-Thomas Nyang'wa, MSF-OCA

- Naome Natukunda
- Maria Lightowler
- Trisha Angelie F. Thadhani & Emelie Yonally Phillips

Impact of decentralisation of childhood TB diagnosis to district hospitals and primary health centers; Example from Uganda

Naome Natukunda, Epicentre Research Center, Uganda

Background

Childhood tuberculosis is underdiagnosed at low-level healthcare settings because of poor access to specimen collection, rapid molecular testing, clinical evaluation and chest radiography. Decentralizing childhood tuberculosis diagnosis at district hospital (DH) and primary health centre (PHC) levels could improve case detection.

Methods

TB-Speed decentralisation is an operational research using a pre-post intervention cross-sectional design in 12 DHs and 47 PHCs of 12 districts in Cambodia, Cameroon, Côte d'Ivoire, Mozambique, Sierra Leone and Uganda. The intervention included a comprehensive childhood tuberculosis diagnosis package consisting of systematic tuberculosis screening for all under-15-year-old sick children, clinical evaluation, Xpert Ultra-testing on one nasopharyngeal aspirate (NPA) and stool samples, and chest radiography for children with presumptive tuberculosis, using either PHC-focused or DH-focused decentralization approaches. We collected aggregated and individual data for children whose parents consented. We present the comparison of the proportion of tuberculosis case detected pre-intervention from August 2018 to Nov 2019 versus post-intervention from March 2020 to September 2021, overall and by decentralization approach, and the uptake and acceptability of the diagnostic package in Uganda.

Findings

In Uganda, 52233 and 46035 children attended care pre-intervention versus post-intervention respectively. 26/52233 (0.05%) and 42/46035 (0.09%) children were diagnosed with tuberculosis pre-intervention and post-intervention respectively, p-value=0.114. In DH-focused district, it was 10/24208 (0.04%) and 23/17914 (0.1%) pre-intervention and post-intervention respectively, and 16/28025 (0.06%) and 19/28121 (0.1%) for PHC-districts, respectively. The uptake of TB screening was 43104/46035 (93.6%) overall, among the 732 enrolled children 724/ and 532 had a valid Ultra result using NPA and stool, respectively. Health care workers overall experienced decentralized childhood TB diagnostic as acceptable, with NPA and stool sample collection feasible both at DH and PHC.

Conclusion

Decentralizing innovative childhood tuberculosis diagnosis can increase tuberculosis case detection with limited impact when using the PHC decentralization approach.

Although decentralizing childhood TB diagnosis is acceptable, overcoming feasibility issues may improve the effective implementation and scale-up of such interventions at low levels of care.

How new imaging techniques help diagnosing TB? Ultrasound compared to chest X-ray to diagnose TB in PNG

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Background

Papua New Guinea (PNG) is a high tuberculosis (TB) burden country. Early diagnosis is crucial for TB control and access to chest X-ray is lacking in many peripheral settings. Médecins Sans Frontières (MSF) provides diagnosis and treatment to TB patients in Port Moresby, the capital city in collaboration with the Ministry of Health.

Objectives

The primary objective of this study is to assess the performance of lung ultrasound for TB diagnosis in patients with presumptive pulmonary TB. We compared lung ultrasound findings associated with TB to radiological findings on chest X-ray.

Methods

Prospective diagnostic study which included patients above 10 years attending MSF TB clinic between May 2022 to May 2023. Those reporting cough for at least two weeks were considered as presumptive pulmonary TB. All patients enrolled underwent a clinical consultation, GeneXpert in sputum, chest X-ray and lung ultrasound. Patients were categorised as confirmed TB, unconfirmed TB or not TB. For the estimation of the sensitivity and specificity of the imaging tools, confirmed TB and not TB were used as reference standard.

Results

Among 496 patients included, 55% were male, median age was 30 [Interquartile range 23-42] years, 42% were initiated on TB treatment, in total, 152 (31%) had confirmed TB, 55 (11%) unconfirmed TB and 289 (58%) not TB. Among 208 patients with both chest Xray and lung ultrasound, reviewed by an expert, the ultrasound had a sensitivity of 92% (95%CI: 87-96), and a specificity of 40% (95%CI: 34-47). The sensitivity and specificity of the chest x ray were 92% (95%CI: 88- 96) and 67% (95%CI: 60-73), respectively. The kappa coefficient for the agreement between the two imaging methods was 0.37 (95%CI: 0.25-0.49). Of 112 patients with suggestive TB by chest X-ray, 100 (89%) had findings of TB in the ultrasound.

Conclusion

Lung ultrasound for pulmonary TB diagnosis had a comparable sensitivity to chest X-ray, however specificity was very limited and lower than chest X-ray. Agreement between the two imaging tools was low. However, lung ultrasound detected TB in most of the chest X-rays suggestive of TB.

Lung ultrasound can be a potential tool for TB diagnosis when chest X-ray is not available. Next steps in the study are to look at possible combination of findings with better specificity and maintained sensitivity.

Implementation and feasibility of digital chest X-ray coupled to computer-aided detection (CAD) in active TB case finding in Tondo (Manila), Philippines

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Background

The World Health Organization recommends the use of computer-aided detection (CAD) in conjunction with chest X-rays (CXR) for tuberculosis (TB) screening and triaging in individuals aged 15 and above. This study assessed the feasibility of implementing CAD for TB active case finding (ACF) in Tondo, Manila, Philippines, including a crucial calibration process to determine the appropriate threshold for referring individuals for TB confirmatory testing.

Methods

We conducted a prospective description of programmatic activities, TB ACF of individuals aged 15 years and above using CAD, and a mixed-methods feasibility and acceptability study in the catchment area of four health centres in Tondo. The calibration process employed an informal mixed methods approach to define, and reactively adjust, a threshold based on the Xpert MTB/Rif positivity rate, Xpert capacity, radiologists' sensitivity and user acceptability. Patients with a CAD score above the defined threshold were directed for sputum collection and Xpert testing.

Results

The initial threshold, set at 25, resulted in a 35% referral rate for Xpert testing, which was subsequently increased to 28 (34% referral) to align with Xpert system capacity. 4,853 patients were included, with 13% testing positive on the symptom screening. The Xpert positivity rate was 5% among individuals screened, 13% among individuals tested, and 15% among individuals with a CAD score of 28 or higher. Users found CAD4TB® both feasible and acceptable, provided there were dedicated human resources with technical capacity for CAD implementation and the project design accounted for CAD limitations. The use of CAD increased screening capacity and supported decision-making.

Conclusion

The ACF conducted in Tondo revealed a remarkably high positivity rate among the screened individuals. CAD enables the rapid screening of patients in the community with reduced turnaround times. If the implementation accounts for the limitations identified, CAD can be a powerful tool for TB screening.

CAD4TB® implementation in Tondo, Manila, was assessed for TB screening feasibility. Promising results indicate increased capacity and support for decision-making, emphasizing potential as a powerful tool

Round Table: Decarbonizing research and care, why and how

Moderator: Climate Action Accelerator

- Souleymane Brah, Hôpital National Amirou Boubacar Diallo Niamey
- Emmanuel Baron, Epicentre
- Laurie Marrauld, Ecole des Hautes Etudes en Santé Publique (EHESP)
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