

31^{ème} JOURNÉE SCIENTIFIQUE

st SCIENTIFIC DAY

Résumés des communications
Presentation abstracts

epicentre 
ÉPIDÉMIOLOGIE • EPIDEMIOLOGY



10 juin / 10 June 2021

Paris, 10 juin 2021

Bonjour à tous,

L'année écoulée a été pour tous un défi personnel, collectif et professionnel. L'équipe d'Epicentre a saisi dans le désordre engendré par la pandémie une occasion de mettre en avant sa réactivité et son savoir-faire. Au-delà des analyses qui y seront présentées, la première session de cette journée illustre la complémentarité de notre travail avec celui des équipes soignantes de MSF, en d'autres termes l'apport de l'épidémiologie de terrain au plus près du travail de ces équipes.

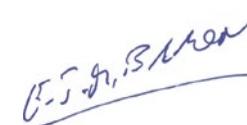
Mais si la pandémie nous a occupé nous avons su garder notre cap sur d'autres sujets. Les deux sessions suivantes sur le cancer et le diagnostic en attestent. La COVID a impacté très fort certains pays, toutefois d'autres semblent à ce jour avoir encore peu souffert de ses effets sur le plan sanitaire. D'ailleurs la Journée Scientifitique est l'occasion de présenter les premiers résultats des études de séroprévalence en cours dans plusieurs pays d'Afrique pour évaluer l'intensité réelle de la circulation du virus. La situation reste fragile, mais les outils développés ainsi que les enquêtes en cours faciliteront notre réaction si celle-ci s'avère nécessaire.

Alors que les outils technologiques prennent de plus en plus de place, nous vous proposons sous forme de stands virtuels de faire le point sur les « Innovations numériques en matière de santé ». A travers des expériences concrètes, nous vous invitons à découvrir comment l'association du soin et de l'épidémiologie dessine déjà les pratiques de demain.

Les patients victimes de maladies ou de situations négligées, trop souvent éloignées des priorités dites internationales, ne le sont pas des travaux d'Epicentre, comme le démontre la session suivante au cours de laquelle nous avons souhaité mettre en avant les victimes de morsures de serpents, les personnes atteintes d'Ulcère de Buruli et, dans le cadre d'une grande étude internationale, les femmes qui souffrent des complications d'avortement.

Enfin, arme de choix dans le cadre de la prévention, nous montrerons par des travaux et des savoirs issus de nos expériences diverses comment les vaccins peuvent être utilisés dans le cadre des réponses en situation d'urgence.

Je vous souhaite une très belle journée,



Emmanuel Baron
Directeur Général, Epicentre

Paris, June 10, 2021

Hello everyone,

This past year has been a personal, collective and professional challenge for all of us. The Epicentre team has seized the opportunity to underscore its responsiveness and expertise in the disorder caused by the pandemic. Beyond the analyses that will be presented, the first session of this day illustrates the complementarity of our work with that of MSF's health care teams, in other words the contribution of field epidemiology to the work of these teams.

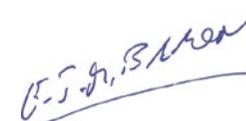
But if the pandemic kept us busy, we were able stay the course on other subjects. The two following sessions on cancer and on diagnosis attest to this. COVID has had a strong impact on some countries, but others still seem to have suffered little from its effects on health. Moreover, the Scientific Day is an opportunity to present the first results of seroprevalence studies underway in several African countries to assess the real intensity of the virus' circulation. The situation remains fragile, but the tools developed and the surveys underway will facilitate our response if necessary.

While technological tools are becoming more and more important, we propose to take stock of "Digital innovations in health" by participating in virtual stands. Through concrete experiences, we invite you to discover how the association of care and epidemiology is already shaping the practices of tomorrow.

Patients suffering from neglected diseases or situations, too often far from the so-called international priorities, are not from Epicentre's studies, as demonstrated by the following session in which we wanted to highlight snake bite victims, people with Buruli Ulcer and, as part of a large international study, women suffering from abortion complications.

Finally, as a weapon of choice in the context of prevention, we will show through work and knowledge from our various experiences how vaccines can be used in emergency responses.

I wish you a very nice day,



Emmanuel Baron
Managing Director, Epicentre

31^{ème} Journée Scientifique - 10 juin 2021

9h00 Accueil et introduction générale - Yap Boum II

9h10 Session 1 : COVID-19

Modérateur : Mathieu Bichet, MSF, France

- Caractéristiques épidémiologiques et médicales chez les patients durant les interventions de MSF. (Anaïs Broban) +
- Focus sur l'Afghanistan et le Yémen. (Flavio Finger & Amna Haider) +
- Description clinique et devenir des patients admis dans le centre de traitement COVID-19 de MSF. (Elisabeth Poulet) +
- Résultats préliminaires des enquêtes de séroprévalence de SARS-COV-2 et de mortalité rétrospective dans des pays à faible revenu (Kenya, RDC, Yémen, Mali, Niger). (Etienne Gignoux) +

10h25 Pause

10h45 Session 2 : Cancer

Modérateur : Christopher Mambula, MSF, France

- Le cancer, un nouveau défi pour MSF : l'exemple du projet oncologie au Mali. (Claire Rieux, Marie-Hortense Koudika) +
- Amélioration de la prise en charge du sarcome de Kaposi avec la doxorubicine liposomale. (Matthew Coldiron) +
- Prévention du cancer du col de l'utérus au Malawi : couverture vaccinale HPV et dépistage précoce. (Sibylle Gerstl & Robin Nesbitt) +

12h00 Session 3 : Le point sur des projets

Modérateur : Anne-Laure Page, OMS, Suisse

- Le FujiLAM, un nouveau test urinaire pour la détection de la tuberculose : performance diagnostique et facilité d'utilisation. (Helena Huerga, Chenai Mathabire Rücker & Pascale Lissouba) +
- Pratiques et défis liés à l'usage des antibiotiques en pédiatrie au Niger et en Ouganda. (Céline Langendorf) +

12h45 Pause

14h15 Innovations numériques en matière de santé

- Apport des (nouvelles) technologies en épidémiologie. (Anton Camacho) +

14h40 Stands virtuels

- Utilisation des smartphones afin d'améliorer le dépistage et la gestion des cas de cancer du col de l'utérus à Blantyre, Malawi. (Jihane Ben-Farhat & Ramin Asgary)
- Utilisation d'une plateforme numérique d'alerte dans le cadre de la surveillance intégrée des événements hospitaliers au Niger. (Robert Nsaibirni & Bachir Assao)
- Utilisation de satellites pour estimer la mortalité. (Lorenz Wendt)
- Visualisation de données avec l'utilisation de tableaux de bord. (Paul Campbell, Yves Amevoïn & Mathilde Mousset)
- Estimation de la taille de la population en combinant images satellite et enquête de terrain : le point sur les récentes expériences. (Etienne Gignoux, Serge Balandine & Francesco Grandesso)
- Prise en charge à distance d'un soutien psychosocial et de santé mentale dans les programmes MSF pendant les périodes de confinement. (Khasan Ibragimov)

15h40 Pause

16h00 Session 4 : Patients négligés

Modératrice : Anne Bissek, Ministère de la Santé, Cameroun

- Morsures de serpent au Cameroun : évaluation de sérum antivenimeux Inoserp. (Fai Karl) +
- Validation du score clinique pour le diagnostic de l'infection à *Mycobacterium ulcerans* (Ulcère de Buruli) au Cameroun. (Rodrigue Ntone) +
- Complications d'avortement dans un hôpital de référence d'une zone affectée par des conflits en République Centrafricaine. (Estelle Pasquier) +

17h00 Session 5 : Vaccination

Modérateur : Mamady Traoré, MSF, France

- Dose fractionnée de vaccin : quand moins peut signifier plus ? (Aitana Juan Giner) +
- La vaccination Ebola : quel est le problème ? (Natalie Roberts) +
- Efficacité du vaccin conjugué contre la fièvre typhoïde, Harare, Zimbabwe. (Maria Lightowler) +

18h00 Conclusions - Emmanuel Baron

31th Scientific Day - 10 June 2021

9:00 Welcome and introductory remarks - Yap Boum II

9:10 Session 1: COVID-19

Moderator: Mathieu Bichet, MSF, France

- Epidemiological and medical characteristics of patients in MSF programs. (Anaïs Broban) +
- Focus on Afghanistan and Yemen. (Flavio Finger & Amna Haider) +
- Clinical description and outcome of patients admitted in the MSF COVID treatment center, Herat, Afghanistan. (Elisabeth Poulet) +
- Preliminary results of SARS-COV-2 seroprevalence and retrospective mortality surveys in low-income countries (Kenya, DRC, Yemen, Mali, Niger). (Etienne Gignoux) +

10:25 Break

10:45 Session 2 : Cancer

Moderator: Christopher Mambula, MSF, France

- Cancer, a new challenge for MSF: example of an oncology in project in Mali. (Claire Rieux & Marie-Hortense Koudika) +
- Improved outcomes for Kaposi sarcoma using pegylated liposomal doxorubicin. (Matthew Coldiron) +
- Cervical cancer prevention in Malawi: HPV vaccination and cervical pre-cancer screening coverage. (Sibylle Gerstl & Robin Nesbitt) +

12:00 Session 3: Update on projects

Moderator: Anne-Laure Page, WHO, Switzerland

- Diagnostic performance and feasibility of FujiLAM to detect tuberculosis. (Helena Huerga, Chenai Mathabire Rücker & Pascale Lissouba) +
- Practices and challenges related to antibiotic use in paediatrics in Niger and Uganda. (Céline Langendorf) +

12:45 Break

14:15 Digital Health Innovations

- Contribution of (new) technologies in epidemiology. (Anton Camacho) +

14:40 Open house

- Smartphone-based strategies to improve diagnostic and case management of cervical cancer screening. (Jihane Ben-Farhat & Ramin Asgary)
- Use of a digital alert-based platform in the Integrated Hospital Events Based Surveillance in Niger. (Robert Nsaibirni & Bachir Assao)
- Use of satellites to estimate mortality. (Lorenz Wendt)
- Data visualization using dashboards. (Paul Campbell, Yves Amevoine & Mathilde Mousset)
- Estimation of population size by combining satellite picture and field survey: Insight from recent experiences. (Etienne Gignoux, Serge Balandine & Francesco Grandesso)
- Delivery of remote mental health and psychosocial support in MSF programs during the lockdown. (Khasan Ibragimov)

15:40 Break

16:00 Session 4: Neglected patients

Moderator: Anne Bissek, Ministry of Health, Cameroon

- Evaluation of the Inoserp antivenom for snakebites in Cameroon. (Fai Karl) +
- Validation of a clinical score for the diagnosis of *Mycobacterium ulcerans* (Buruli Ulcer) infection in Cameroon. (Rodrigue Ntone) +
- Abortion-related complications in a referral hospital of a conflict-affected setting in Central African Republic. (Estelle Pasquier) +

17:00 Session 5 : Vaccination

Moderator: Mamady Traoré, MSF, France

- Fractional dosing of vaccines: when less could mean more. (Aitana Juan Giner) +
- Ebola vaccination: what's the problem? (Natalie Roberts) +
- Effectiveness of conjugated typhoid fever vaccine, Harare, Zimbabwe. (Maria Lightowler) +

18:00 Closing remarks - Emmanuel Baron



Session 1: COVID-19

**Moderator: Mathieu Bichet,
MSF, France**

- Anaïs BROBAN
- Flavio FINGER & Amna HAIDER
- Elisabeth POULET
- Etienne GIGNOUX

COVID-19 — Epidemiological and medical characteristics of patients in MSF programs

Anaïs Broban, Epicentre, France

Background

As of 26th of May, about 167 million COVID-19 cases and over 3.5 million deaths were reported worldwide. MSF did intervene with COVID19 projects in multiple countries with humanitarian contexts.

Methods

Intersectional linelisting initiative to standardize data collection was led by Epicentre, information was gathered from different data sources and analyzed weekly. Patient's profiles and characteristics in MSF were analyzed using individual data related to suspect, probable and confirmed cases, gathered for all operational centers.

Findings

Within MSF, 150 sites reported data, representing all OCs and 40 countries. Over 78,000 patients were recorded, including over 11,000 confirmed. The number of patients recorded in MSF interventions have reached peaks in two distinct periods, during June/July 2020 and April 2021. MSF COVID-19 patients were relatively young (median age 32 years), being older in Americas, Europe and Middle-East.

Over 19% of patients presented with at least one other condition, with higher proportion of patients reporting comorbidities like diabetes or hypertension in Middle-East and Europe, and more co-infections reported in Africa. About 20% of these patients were hospitalized, 14% being critical and 27% severe. Overall, the CFR was 19% and varied across continents.

Conclusion

The profile of MSF patients is globally consistent with other observations worldwide. It however varies across contexts and regions. The data collection system set up in MSF allows to monitor interventions and characteristics of patients. Nevertheless, more detailed analysis are needed at project or country level in order to best understand a specific context.

Data on patient's profiles and characteristics in MSF were gathered from intersectional initiative to standardize data collection. The profile of MSF patients is globally consistent with other observations worldwide, though it varies across contexts and regions.

COVID-19 — Focus on Yemen and Afghanistan

Amna Haider (Yemen) & Flavio Finger (Afghanistan), Epicentre, France

Yemen

The true burden of the COVID-19 pandemic in Yemen is largely underestimated. The official surveillance data is limited to the southern governorates only. The country has experienced two waves so far and until May 31 2021, the total number of confirmed cases reported was 6 746 with 1 322 associated deaths. With limited testing capacity, PCR tests are spared for suspect cases presenting with severe symptoms only. MSF has been operating several COVID-19 projects in the southern and northern parts since the beginning of the pandemic. To date, MSF France has treated 2 138 COVID-19 patients. The in-hospital mortality was 30%. This presentation provides an overview of the evolution of the pandemic in Yemen and a description of patients seen at MSF health facilities.

Afghanistan

Afghanistan is currently experiencing a third wave of COVID-19. To date (31 May 2021) a total of nearly 73 000 confirmed cases and 3 000 deaths have been reported. The PCR testing capacity remains limited, particularly outside the national capital, and the characteristics of suspected patients are poorly described. MSF has been supporting the pandemic response in Herat, the regional capital of Western Afghanistan, by running a COVID-19 triage at the Herat Regional Hospital and through case management. To date, over 31 000 patients have been received at the triage, and, if required, oriented towards appropriate care. In addition, patient data collected at the triage facility are a valuable surveillance tool since they allow to follow epidemic trends and to describe patient characteristics. Here we give an update about the current situation in Afghanistan and Herat and describe the characteristics of patients through the three epidemic waves.

In this presentation, we provide an overview of the evolution of the COVID-19 pandemic in Yemen and Afghanistan and describe the characteristics of patients seen selected MSF health facilities.

Clinical description and outcome of patients admitted in the MSF COVID-19 treatment centre, Herat, Afghanistan

Elisabeth Poulet, Epicentre, Paris

Background

On 24/02/2020, the 1st COVID-19 confirmed case of Afghanistan was reported in Herat. As part of the COVID-19 response, in support to the Afghan Ministry of Public Health, MSF set up a COVID-19 treatment centre (CTC) that admitted patients over two periods of similar duration (July-Sept. 2020 and Dec-2nd March 2021).

Methods

Routinely collected monitoring data were entered into a clinical database dedicated to COVID-19. We described sociodemographic, and clinical data including comorbidity and complications, treatment, and patients' outcome data.

Results

Overall, 517 (205 in 1st wave – 312 in 2nd wave) patients were admitted, 60% were female and median age was 60 years old. PCR COVID-19 testing was positive in 46% (213/460) of the patients. Most patients reported cough, dyspnea, and fever and 24% ageusia and 18% anosmia. Two thirds of the patients reported one or more comorbidities, mainly high blood pressure and chronic lung disease. Fifty percent of patients of the first wave and 96% of the second wave were clinically assessed as severe.

Two thirds of the patients received simple oxygen therapy. Fewer patients developed complications in the 2nd wave (3%) as compared to the 1st wave (13%). The most frequently reported complications were pneumonia, respiratory and heart failure. Most patients were discharged home in similar proportions in both waves (76% and 81%). Overall, 8 patients died in the treatment centre. Fewer patients were transferred during the 2nd wave (13% vs 7%).

Conclusion

Compared to the first wave, the number of patients admitted during the second wave increased by more than 50% and the proportion of severe patients doubled. Despite these increases, the proportion of patients discharged home was high for both periods, fewer complications were reported, and fewer patients were transferred to the intensive care unit.

Routinely collected COVID-19 monitoring data show satisfactory treatment results despite a significant increase in the number of patients and severe patients during the 2nd wave.

Preliminary results of SARS-COV-2 seroprevalence and retrospective mortality surveys in low-income countries (DRC, Kenya, Mali, Niger, Yemen)

Etienne Gignoux, Epicentre, France

Background

More than a year after the emergence of the SARS-COV-2 virus, the proportion of infected people has been little studied in low-income countries. In addition, the excess mortality caused by the pandemic remains very uncertain. Through serology surveys we wanted to assess the real proportion of infected people in the population and in particular for health workers, including MSF teams, who are particularly exposed to infections. In some cases, we have combined these with mortality surveys.

Method

We conducted three types of surveys: to monitor trends and detect alerts we tested the relevance of testing blood donors in Aden, Yemen and Koutiala, Mali. To estimate the proportion of infection and morbidity of health workers we conducted a survey in Maradi, Niger and Aden, Yemen. To estimate the seroprevalence in the population and mortality we have conducted a survey in Dagahaley camp in Kenya, in Lubumbashi in DRC, and we are starting a survey in Abidjan in Ivory coast and another one covering the whole Cameroon.

Results

The blood donors survey in Aden showed very low seroprevalence (2%), while high seroprevalence was found by rapid tests in Koutiala (24%) and very high prevalence based on laboratory tests (65%), these

repeated surveys did not detect any alerts.

In Yemen 8% of health staff tested positive by rapid tests and 59% by laboratory tests, in Maradi 42% of staff were positive by rapid tests and 84% by laboratory tests. The survey of the Dagahaley camp population revealed a seroprevalence of 6% by rapid tests. In Lubumbashi the seroprevalence was 16%. Mortality was higher during the pandemic period than before.

Discussion

The seroprevalence detected was higher than what was expected looking at the number of cases reported. Uncertainties remain regarding the use of rapid laboratory tests depending on the context and timing. Preliminary results suggest an impact on mortality and further analysis is underway.

Studies lead by Epicentre in low income countries show higher SARS-COV-2 seroprevalence than what was expected. Preliminary results suggest an impact on mortality.



Session 2: Cancer

Moderator: Christopher Mambula, MSF, France

- Claire RIEUX & Marie-Hortense KOUDIKA
- Matthew COLDIRON
- Sibylle GERSTL & Robin NESBITT

Cancer, a new challenge for MSF: example of an oncology in project in Mali

Claire Rieux & Marie Hortense Koudika, MSF, France

The emergence of chronic communicable diseases is a new health issue facing resource-limited countries and the medical organizations working in them. Cancer in particular has the greatest inequalities in survival and epidemiological predictions are worrying. It is estimated that by 2040, the number of new cancer cases and deaths in the poorest countries will double and more than 1.2 Million new cases are expected. In 2018, MSF OCP has decided to get involved in the fight against cancer by developing operational projects and investing in access to prevention, diagnosis and treatment.

In Mali, the oncology project, dedicated to cervical and breast cancers (representing 30% of cancers of both sexes), built in partnership with Malian colleagues and ministry of health, started at the end of 2018 with palliative care, then support for screening, histopathology laboratory and specific treatments (surgery, chemotherapy, radiotherapy). In 2020, MSF provided specific care for 542 patients (366 breast cancers and 176 cervical cancers) and performed 2828 palliative consultations and 3260 tumor wounds care.

This experience confirmed the lack of financial and geographical access to screening and care facilities leading to diagnoses at very advanced stages and the complexity of management and multidisciplinary care pathways. This type of project implies new ways of working for MSF: the development of a holistic and patient-centered approach, long-term projection and working in partnership with national actors and international experts. Research, an essential element, needs to be developed around several axes: epidemiological, therapeutic trials and the introduction and evaluation of technological tools to improve diagnosis and management such as telemedicine and artificial intelligence. Finally, the issues of access not only to treatment but also to diagnosis and prevention are one of the major added values that MSF could bring to the fight against cancer.

Cancer is one of the new challenges that MSF has decided to tackle and for which new ways of working and research are needed.

Improved outcomes for Kaposi sarcoma using pegylated liposomal doxorubicin

Matthew Coldiron, Epicentre, France

Background

Kaposi's sarcoma (KS) is an HIV-associated malignancy associated with poor outcomes. Antiretroviral therapy (ART) is the cornerstone of KS treatment, but many patients require cytotoxic chemotherapy. Traditional regimens include conventional doxorubicin, bleomycin and vincristine, which are poorly tolerated. Pegylated liposomal doxorubicin (PLD) has been standard in high-income countries but largely unavailable in sub-Saharan Africa. In 2016, PLD was introduced at a specialized outpatient center in Maputo, Mozambique.

Methods

We performed a prospective, single-arm, open-label observational study to demonstrate the feasibility, safety, and outcomes of treatment with PLD in patients with AIDS-associated KS in a low-resource setting. Chemotherapy-naïve adults were eligible; patients with Karnofsky scores <50 or contraindications to PLD were excluded. Patients received PLD on three-week cycles until meeting clinical stopping criteria. Follow-up visits monitored HIV status, KS disease, adverse events, mental health (PHQ-9) and quality of life (SF-12). Primary outcome measures included vital status and disease status at 6, 12, and 24 months after enrollment.

Results

183 patients were screened and 116 participants were enrolled. At 24 months, 23 participants (20%) had died and 15 (13%) were lost to follow-up.

Baseline CD4<100 was associated with death (HR 2.7, 95%CI [1.2-6.2], p=0.016), as was T1S1 disease compared to T1S0 disease (HR 2.7, 95%CI [1.1-6.4], p=0.023).

92 participants achieved complete or partial remission at any point (overall response rate 80%), including 15 (13%) who achieved complete remission. The most common AEs were neutropenia and anemia. Quality of life improved rapidly after beginning PLD, particularly in the physical component of the SF-12.

Conclusions

PLD was safe, well-tolerated and effective as first-line treatment of KS in Mozambique. High mortality was likely due to advanced immunosuppression at presentation, underscoring the importance of earlier screening and referral for KS. Improving supply of and access to PLD is essential for improving outcomes for KS patients.

The use of PLD as first-line chemotherapy for KS was successful. Advocacy efforts are needed to scale up access.

Cervical cancer prevention in Malawi: HPV vaccination and cervical pre-cancer screening coverage

Robin Nesbitt & Sibylle Gerstl, Epicentre, France

Background

Cervical cancer can be prevented with HPV vaccination and precancer screening. Malawi is the country with the second highest cervical cancer (CC) incidence and CC-related mortality worldwide. In 2018, the Ministry of Health and MSF set up a comprehensive CC program in Blantyre City and Chiradzulu District. Two surveys were conducted to estimate HPV vaccination coverage among 9-10-year-old schoolgirls, and CC screening coverage in women 25-49 years.

Methods

Two cross-sectional population-based surveys were conducted in Blantyre City and Chiradzulu District. The HPV vaccination survey took place in 2020 following the second round of a national HPV vaccination campaign and included all 9- and 10-year old girls in households identified with geospatial sampling. The CC screening coverage survey was conducted in 2019 and included women aged 25-49 years.

Results

The HPV vaccination coverage survey included 1,024 9-and 10-year-old girls. School attendance was almost universal (99.5% overall). HPV vaccination dose one coverage among all eligible girls in Blantyre was 59.9% (95% CI 54.9-64.7%) and 67.6% in Chiradzulu (95% CI 62.2-72.5). Dose two coverage among 10-year-olds was lower, 29.9% (95% CI 23.2-37.5) in Blantyre and 28.2% (95% CI 21.5-35.9) in Chiradzulu. Common reasons for non-vaccination were practical (56.5% of respondents), such as being absent from school or ill on the day of vaccination.

CC screening history was obtained for 1,850 women. The percentage of women ever screened for CC was highest in Blantyre at 40.2% (95% CI 35.1-45.5), 38.9% (95% CI 32.8-45.4) in Chiradzulu with supported CC screening services, and lowest in Chiradzulu without supported CC screening services at 25.4% (95% CI 19.9-31.8). Among 623 women screened, 49.9% reported the main reason they were screened was health facility recommendation, and 98.5% would recommend CC screening to others. Overall, 95.6% of women had some knowledge about CC, but only 55.1% of participants believed themselves to be at risk.

Conclusions

HPV vaccination and CC screening have shown promising population coverage, yet there is still a long way to go to reduce the burden of CC incidence and mortality in Malawi. Engaging target populations with correct, understandable and individually relevant information, and making programs more available and accessible (e.g. multiple in-school vaccination days, and mobile CC screening clinics) may overcome demand and supply side barriers.

HPV vaccination and CC screening have shown promising coverage, yet there is still a long way to go to reduce the burden of CC incidence and mortality in Malawi.



**Session 3:
Update on projects**

**Moderator: Anne-Laure Page,
WHO, Switzerland**

- Helena HUERGA, Chenai MATHABIRE RÜCKER & Pascale LISSOUBA
- Céline LANGENDORF

Diagnostic performance and feasibility of FujiLAM to detect tuberculosis

Helena Huerga, Chenai Mathabire Rücker & Pascale Lissouba, Epicentre France

Background

The novel point-of-care urine-based FujiLAM test is promising for diagnosis of tuberculosis. We assessed the diagnostic yield of FujiLAM in HIV patients and the feasibility of using the test.

Methods

We conducted a prospective diagnostic study and a mixed-methods feasibility and acceptability study in 4 countries: Uganda, Kenya, Mozambique and South Africa. The diagnostic study included 2 groups of ambulatory HIV-positive adults: 1) with TB symptoms, 2) with advanced HIV disease and no TB symptoms. Patients received FujiLAM and AlereLAM, Xpert MTB/RIF, culture and chest X-ray. The feasibility study included test users, key informants and patients who participated through standard questionnaires, individual interviews and group discussions.

Results

We included 1117 patients in the diagnostic study: 712 with TB symptoms (Group 1) and 405 with advanced HIV disease and no TB symptoms (Group 2). TB was confirmed in 9.2% (63/685) and 4.1% (16/395) in Group 1 and 2, respectively. FujiLAM diagnostic yield among patients with confirmed TB was 63.2% and 43.8% in Group 1 and 2, respectively. FujiLAM diagnostic yield by CD4 count was: 75.0% in CD4<200, 77.8% in CD4 200-349, 31.3% in CD4≥350 (Group 1) and 46.7% in CD4<200 (Group 2).

Most of the test users (including lay health workers) found FujiLAM easy to perform. The main concern was the multiple timed steps involved. Invalid results were obtained if test cartridges were dropped or performed on blood stained or cloudy urine. Most patients viewed urine sampling positively and easier than sputum provision.

Conclusions

FujiLAM detects TB in a high proportion of the HIV patients with confirmed TB who have symptoms of TB and low CD4 counts, and in a considerable proportion of those asymptomatic. The test is easy to perform at point-of-care. Urine sampling is well accepted by patients. These results encourage the future use of the FujiLAM assay.

The novel urine-based FujiLAM is a useful and easy to use point-of-care test for TB diagnosis in HIV-positive patients. Urine sampling is well accepted.

Practices and challenges related to antibiotic use in paediatrics in Niger and Uganda

Céline Langendorf, Epicentre, Paris

Background

Antibiotic resistance (ABR) in children is responsible for high mortality, especially in low-income countries. Strengthening the rational use of antibiotics (ATBs) and improving access to quality ATB are important factors in the fight against ABR. This study described ATB use in pediatric medical settings and in select communities in Niger and Uganda in order to identify constraints and possible opportunities for improvement.

Methods

Descriptive study with mixed qualitative and quantitative methods in 4 different public health facilities in Niger and Uganda. Quantitative data were collected retrospectively from the consultation and inpatient records of all patients who consulted or were hospitalized in the study facilities on the 1st or 15th day of the month, between January and December 2019. Semi-structured interviews and focus groups were conducted among healthcare personnel and caregivers.

Results

In Niger, ceftriaxone, alone or in combination with gentamicin, accounted for approximately 60% of first-line prescriptions in referral hospitals. amoxicillin accounted for approximately 70% in peripheral structures. In Uganda, the most common ATB prescribed for in-patients was injectable ampicillin+gentamycin (26.6%), and oral amoxicillin-clavulanate (46.8%) for out-patients.

In both countries according to those interviewed, practitioners faced numerous constraints. These were principally the lack of nursing staff, unavailability of ATBs, and limited financial means of families. Self-medication was reported as a widespread practice for economic reasons. In Uganda, health care providers reported facing multiple pressures to prescribe ATBs, from caregivers as well as from drug company representatives. Caregivers interviewed reported struggling to give ATBs at home to their children and the need for adapted pediatric formulations.

Conclusions

In Niger and Uganda, the lack of health care personnel, the unstable availability of essential ATBs, limited financial means and self-medication lead health care professionals to adapt ATB prescriptions. Limiting the spread of ABR will necessitate multiple different interventions and development of laboratory capacities.

In Niger and Uganda, the lack of health care personnel, the unstable availability of essential ATBs, limited financial means and self-medication lead health care professionals to adapt ATB prescriptions.



**Digital health
innovations
& Open house**

- **Anton CAMACHO**
- Jihane Ben-Farhat & Ramin Asgary
- Robert Nsaibirni & Bachir Assao
- Lorenz Wendt
- Paul Campbell, Yves Amevoin & Mathilde Mousset
- Etienne Gignoux, Serge Balandine & Francesco Grandesso
- Khasan Ibragimov

Contribution of (new) technologies in epidemiology

Anton Camacho, Epicentre, France

New technologies play an integral, growing, and evolving role in supporting field epidemiology and research activities at Epicentre and the COVID-19 pandemic has only accelerated their use. This presentation will introduce three examples of projects using new technologies. The added value of the technologies as well as their limitations, challenges and lessons learned during their implementation will be discussed. More details will then be provided in the parallel sessions.

The first example is SMS Afia Yetu (“Our health”) a Smartphone application developed to support people affected by HIV/AIDS by allowing discussions and continuous monitoring by MSF medical teams. This patient-centered application is currently piloted in Goma, DRC, with the aim of becoming a routine operational tool for MSF.

Second, recent applications of satellite image processing in humanitarian contexts will be presented. In particular, machine learning algorithms trained to identify specific objects on satellite images are a promising alternative to classical field surveys for estimating population size and mortality rates in hard-to-reach populations.

Finally, a discussion on how Epicentre’s Data Science team has opened new opportunities for more efficient workflows during field investigations. These include online interactive dashboards, which are transforming the way field teams approach data collection, management and sharing in the response to an outbreak.



Session 4: Neglected patients

**Moderator: Anne Bissek, Ministry
of Health, Cameroon**

- Fai KARL
- Rodrigue NTONE
- Estelle PASQUIER

Evaluation of the Inoserp antivenom for snakebites in Cameroon

Fai Karl, Epicentre, Cameroon

Background

While 2.5 million envenomings and 130,000 deaths occur globally due to snakebites, with 1 million envenomings and 30,000 deaths in sub-Saharan Africa, the accessibility of antivenom for treatment of snakebites remain limited. The Inoserp® Pan-Africa antivenom is being used in many African countries including Cameroon but there is few data on its efficacy or tolerance in those settings. We therefore aim to evaluate the tolerance and efficacy of the Inoserp® Pan-Africa antivenom (AVS) in Cameroon.

Methods

We performed a Phase IV clinical trial and included participants 5 years and above with snakebites in 14 healthcare centers across 6 of the 10 regions of Cameroon. Participants with envenomation were treated with Inoserp AVS and followed-up for 3 days in the hospital and 15 more days at home. The main study endpoints were complete follow-up to day 15, occurrence of adverse events, including disability or death.

Results

Between October 15, 2019 and April 30, 2021, we included 427 participants with snakebites. *Echis ocellatus* (43.3%) was the most incriminated. Most frequent signs at admission were pain and edema with 90.9% (388/427) and 75.2% (321/427) respectively.

We administered AVS to 81.3% (347/427) of patients with an average dose of 2 doses of AVS. Coagulation disorders was present in 50.4% (215/427) of the participants. We reported 12 deaths (2.7%); none were imputed to the administration of AVS. According to preliminary analysis necessitating confirmation, we observed at least one mild or moderate adverse event in 75 of 347 patients (21.6%), including tachypnea, tachycardia and bradycardia.

Conclusions

Snakebites are still an important neglected problem. Treatment with the Inoserp® Pan-Africa AVS appeared to be well tolerated in the Cameroonian patients and ongoing analysis will help to better assess its effectiveness.

Snakebites are neglected and their management is most at times inappropriate. We found the Inoserp® Pan-Africa antivenom to be well tolerated in the Cameroonian population.

Validation of a clinical score for the diagnosis of *Mycobacterium ulcerans* (Buruli Ulcer) infection in Cameroon

Rodrigue Ntone, Epicentre, Cameroon

Context

Early diagnosis of Buruli Ulcer (BU) improves its management and limits any sequelae. However, access to PCR diagnostics remains limited. This study aimed to validate a clinical diagnostic score (CDS) and assess its acceptability by patients and caregivers.

Methods

We included patients with chronic wounds in Akonolinga, Ayos and Bankim. For each participant, nurses and doctors separately completed the CDSCDS composed of 11 parameters and the PCR was carried out at the Pasteur Center in Cameroon. We performed focus group discussions and individual interviews to assess the acceptability of CDS by patients and caregivers, and the psychological status of patients (MINI and QSCPGS tests).

Results

Between January 2018 to October 2019, 340 CDSs were administered. Among the patients, 139 (38.2%) had positive PCRs and 225 (61.8%) negative PCRs. The average age was 26.5 years (1-85 years) and 35.9% were women. CDS achieved sensitivity and specificity of 69.3% (60.5% - 77.2% CI) and 94.1% (89.7% - 97.0% CI) respectively compared to PCR. The positive (PPV) and negative predictive values were 88.9% (81.0% - 94.3% CI) and 81.8% (75.9% - 86.7% CI), respectively.

The correlation coefficient between Doctors and Nurses was 0.8955.

We observed a high acceptability of CDS in patients and caregivers. Among the patients, 36% (N = 73) suffered from depression, 25% suicidal urges and 75% (N = 55) felt stigmatized and / or discriminated against

Conclusions

The UB CDS detects more than 70% (PPV) of UB patients confirmed by PCR (WHO recommendation). The good performance of nurses and the high acceptability of the CDS make it a major tool for decentralized management of UB, thus limiting the sequelae and its psychological impact.

The Clinical Diagnostic Score is an effective tool that can be easily used by health personnel for the adequate management of BU in rural areas.

Abortion-related Complications in a referral hospital of a conflict-affected setting in Central African Republic

Estelle Pasquier, Epicentre, France

Background

Abortion-related complications are a major cause of maternal mortality. However, research about abortion is limited in fragile/conflict-affected settings. Our study describes the severity of abortion-related complications in one MSF-supported referral hospital of Bangui in the Central African Republic.

Methods

We utilized a similar methodology as the adapted World Health Organization (WHO) near-miss approach used in the WHO multi-country study on abortion (WHO-MCS-A), conducting a prospective medical record review of women presenting with abortion-related complications over a three-month period. We used descriptive analysis and categorized severity in four hierarchical mutually exclusive categories.

Results

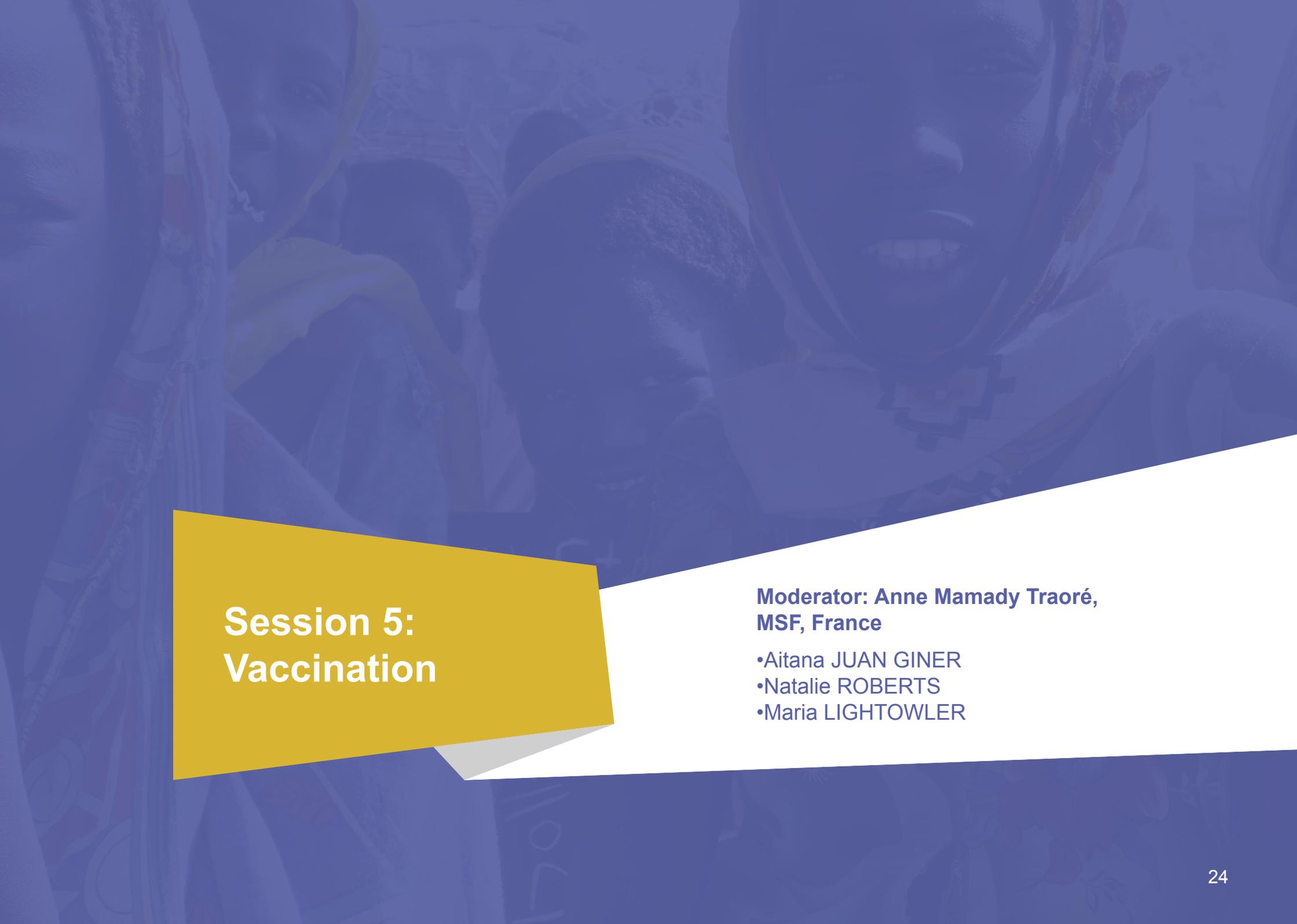
548 women were included. Abortion-related complications represented 19,9% [95%CI:18,5-21,5] of all gynaecological admissions. 3,8%[95%CI:2,4-5,8] of women had severe maternal outcomes (SMO), i.e., near-miss and deaths, 46,9%[95%CI:42,7-51,2] had potentially-life-threatening (PLTC), 17%[95%CI:13,9-20,4] had moderate and 32,3%[95%CI:28,4-36,4] had mild complications. 31% of women were in the second trimester of pregnancy and 39% reported inducing their abortions.

The facility-based abortion-related mortality index was 9,5%. Most patients had a manual vacuum aspiration procedure to treat their complications (69%) and received contraception counselling (99%). When indicated, transfusion was provided to 83% (25/30) and antibiotics to 81% (117/145) of patients. But 30% (35/115) received antibiotics when not indicated and only 8% (12/147) had their tetanus immunization status adequately managed when needed.

Conclusions

This is the first study conducted using the WHO-MCS-A approach in a conflict-affected setting. Our data shows greater severity of abortion-related complications in this facility compared with African facilities of the WHO-MCS-A study from stable settings (2,4%[95%CI:2,1-2,6] of SMO and 7%[95%CI:6,6-7,4] of PLTC). Quality of care was high, accounting for the low mortality index compared to other facilities in Africa, though antibiotic management and tetanus prevention could be improved. The results highlight the need for greater access to quality contraception, safe abortion care, and postabortion care in this conflict affected setting.

Abortion-related complications are severe in this Bangui referral hospital. Greater access to quality contraception, safe abortion care and postabortion care are urgently needed in this conflict-affected setting.



Session 5: Vaccination

**Moderator: Anne Mamady Traoré,
MSF, France**

- Aitana JUAN GINER
- Natalie ROBERTS
- Maria LIGHTOWLER

Fractional dosing of vaccines: when less could mean more

Aïtana Juan Giner, Epicentre, France

Fractional dosing of vaccines is considered a dose sparing solution for situations of vaccine shortages. Lower doses of vaccines, typically as 1/5th of the standard dose, are at present used for vaccines such as rabies, inactivated polio and yellow fever vaccines. However, the immunogenicity and safety of fractional doses compared to full dose need to be established before this strategy can be used. Since 2016, Epicentre has been working on assessing fractional doses of yellow fever vaccines. The aim of these studies is to provide the needed evidence to recommend fractional dosing of YF vaccines for outbreak response, when there are insufficient standard doses to protect the population at risk.

A non-inferiority trial assessing the non-inferiority of fractional doses of the four WHO-prequalified yellow fever vaccines in a general adult population, children and HIV+ adults has been recently completed in Uganda and Kenya. To complement these, a study looking at the non-inferiority of lower doses of the yellow fever vaccine manufactured by Institut Pasteur Dakar is currently ongoing. Several factors have been considered in the design of these studies to ensure that the results are sufficient for policy and practice change. These include the fraction to be studied, the study design and goal, evaluation of vaccine protection- and practical aspects related to the administration of the vaccine.

This presentation provides an overview of fractional dosing and discusses opportunities and barriers for other vaccines.

Ebola vaccination: what's the Problem?

Natalie Roberts, MSF, France

In late 2013 an outbreak of Ebola Virus Disease (EVD) began in Guinea and spread to neighboring Liberia and Sierra Leone. Over 2,5 years the outbreak resulted in more than 28,000 cases, and more than 11,000 deaths. The *Ebola Ça Suffit!* rVSV-ZEBOV vaccine trial began in Guinea in 2015, at the tail end of the West African epidemic. A ring vaccination study design was used in the aim of obtaining rapid, high-quality effectiveness data and addressing ethical concerns about the use of placebos during an outbreak. The trial concluded that rVSV-ZEBOV offers substantial protection against EVD. The vaccine is now named Ervebo and approved by the FDA, EMA and prequalified by the WHO, but the original study design has continued to determine how the vaccine is deployed. Since the results of *Ebola Ça Suffit!* were published, more than 300,000 doses of rVSV-ZEBOV have been administered via a reactive ring vaccination strategy, mainly in Eastern DRC in response to an epidemic declared in August 2018.

Although ring vaccination may help to control the transmission of EVD, it seems far from the ideal strategy, as indicated by the fact that the outbreak in Eastern DRC continued for nearly two years despite vaccination starting quickly after the declaration of the epidemic. There are both logistical and social challenges to effective real-life implementation of the ring strategy.

Testing new strategies of vaccination will be necessary to better protect at-risk populations and to better prevent and control outbreaks. This should include the routine vaccination outside epidemic periods of all healthcare, frontline workers and other high-risk population groups in areas that have recurrent epidemics or endemic EVD. During outbreaks, targeted geographic or population-based reactive vaccination campaigns are likely to be more successful than the current ring strategy. We should also return to the initial hypothesis that a range of vaccines with different specificities is probably necessary. Today there are two different vaccines against EVD with different profiles.

This presentation provides an overview of current Ebola vaccination strategies, their challenges and the way forward.

Effectiveness of conjugated typhoid fever vaccine in Harare, Zimbabwe

Maria Lightowler, Epicentre, France

Background

Zimbabwe has suffered regular outbreaks of typhoid fever, with most of the reported cases concentrated in Harare, the capital city of the country. Typhoid fever might have become endemic in Harare with many cases reported annually since 2010. Many suburbs of Harare notify cases and since October 2017, the incidence has substantially increased.

Objectives

The main objective was to estimate the vaccination effectiveness of the typhoid conjugate vaccine (TCV) used as a part of the large mass vaccination campaign in response to the Typhoid fever regular outbreaks in Harare and conducted in March 2019.

Methods

A case-control study, using 2 sets of controls (facility matched controls and community matched controls) in 3 urban suburbs of Harare known for being prone to typhoid fever outbreaks and targeted by the TCV vaccination campaign.

Participants

Of the 502 suspected cases enrolled in 4 health facility sites in Harare from July 2019 to March 2020, 148 laboratory-confirmed typhoid fever cases and 153 controls confirmed negative were identified. 105 (47 between 6 months to 15 years old) confirmed cases were age

sex and residence place 1:1 matched with 105 facility-based controls matched. 96 confirmed cases were 1:5 age sex and immediate neighbour matched with 229 community controls.

Results

In the primary analysis, the adjusted VE estimation for one dose of TCV was 75.2% (95% CI, 0.6 to 93.8) when confirmed typhoid fever cases were matched with facility controls and 81.0% (95% CI, 46.5 to 92.9) when matched with community controls.

Conclusions

This study confirms that one vaccine dose of TCV can be an effective tool to control Typhoid fever in the population between 6 month and 15 years old and provides information on an African setting after the first mass vaccination campaign in the continent providing information under real life conditions.



Epicentre, 14-34 avenue Jean Jaurès - 75019 Paris

Tél : 01 40 21 55 55

JS-EPICENTRE@epicentre.msf.org

www.epicentre.msf.org