

Vingt-et-unième Journée Scientifique

Twenty first Scientific Day

16 juin 2011 - 16th June 2011

Résumés des communications
Abstracts of the presentations

epicentre
ÉPIDÉMIOLOGIE • EPIDEMIOLOGY



40 ANS
D'INDÉPENDANCE



Paris, le 16 juin 2011

Chers Collègues et amis

Dans l'histoire de MSF, l'épidémiologie a pu être déterminante pour mener des projets de soins et tester des hypothèses dans un environnement de travail fort de nombreuses contraintes. Les savoir-faire ont ainsi pu évoluer dans les domaines des maladies infectieuses ou de la malnutrition, que ce soit au lit du malade ou dans la conception de programmes à large échelle.

Un exemple emblématique a été l'allègement des schémas diagnostiques et thérapeutiques. Aujourd'hui, les travaux de la première session rapportent les résultats d'études sur le diagnostic de la tuberculose, le traitement du paludisme ou de la co-infection tuberculose et VIH.

D'autres données, recueillies en dehors des structures de soins, permettent de soutenir l'action publique et les réponses programmatiques, notamment en cas d'épidémie. La résurgence de maladies connues mais anciennes (poliomyélite, coqueluche, rougeole) montre que si leur poids a considérablement diminué, les succès sont fragiles. Sans un engagement collectif d'ordre politique (financement, mise en œuvre des programmes de contrôle) et scientifique (développement de vaccins plus adaptés), l'avenir est sombre. La deuxième session illustre cette situation. Car les prises en charge massives, précoces et rapides, rendues possibles grâce à des moyens médicaux adaptés, impactent la mortalité infantile. Des programmes à grande échelle ciblant spécifiquement les jeunes enfants ont montré des résultats encourageants au Niger et au Mali. Ils seront présentés dans la troisième session.

Nous débiterons l'après-midi par le thème de l'épidémie de choléra en Haïti. Les données d'activité des équipes soignantes de MSF seront présentées ainsi que les résultats d'études qui ont estimé morbidité et mortalité – en parallèle des données de surveillance – ainsi que l'importance relative des principaux modes de transmission.

Ces présentations seront suivies d'une table ronde sur la réapparition de cette maladie dans les suites du tremblement de terre alors que de nombreuses organisations internationales étaient présentes. Comment expliquer ce phénomène ? Que dire de la réponse apportée ? Des représentants du Ministère de la santé haïtien, de l'OMS et de MSF apporteront leur point de vue.

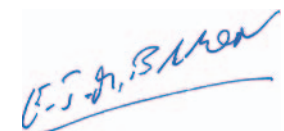
Dans un tout autre domaine, celui de la souffrance psychique, les données épidémiologiques permettent d'apprécier la magnitude d'un phénomène de santé et contribuent ainsi à agir. Deux contextes distincts sont abordés dans la dernière session : l'Afrique sub-saharienne où le poids de la dépression, probablement une des maladies les plus fréquentes au monde, demeure difficile à mesurer ; le Liban, où nous avons estimé la prévalence des troubles psychiques dans un camp de réfugiés.

MSF fête ses 40 ans et l'équipe d'Epicentre s'associe à cette célébration. L'histoire des deux entités est naturellement et intimement liée. Permettant d'appréhender les enjeux, de définir une politique ou de soutenir des positions, la recherche et les études de terrain donnent du sens à l'action. Je souhaite que cette journée puisse à nouveau le démontrer.

Un espace de débat est prévu à l'issue de chaque session. Une traduction simultanée français/anglais sera assurée en permanence.

Nous comptons sur votre participation active au cours des discussions et vous souhaitons une Journée Scientifique agréable et enrichissante.

Amicalement,



Emmanuel Baron
Directeur Général, Epicentre

Paris, 16 June 2011

Dear friends and colleagues

Over the course of MSF's history, epidemiology has often been a decisive factor in conducting treatment programs and testing hypotheses in constraint-laden work environments. It has furthered our expertise in the fields of infectious disease and malnutrition, both at the point of care and in large-scale program design¹.

An emblematic example of this has been the simplification of diagnostic and therapeutic decision trees. In today's first session we'll see the results from studies on TB diagnosis, malaria or TB-HIV coinfection.

Other data, gathered outside of health care facilities, help support public action and programmatic responses – in epidemics, in particular. The resurgence of well-known but old diseases (polio, pertussis, and measles) shows that while their toll has declined substantially, these successes are fragile. Without a shared commitment, both politically (for funding and implementation of control programs) and scientifically (for development of more appropriate vaccines), the future is grim. The second session illustrates this situation.

Because early, rapid, mass treatment programs – made possible by specially-adapted medical methods – do have an impact on infant mortality. Large-scale programs specifically targeting young children have shown encouraging results in Niger and Mali. These will be presented in the third session.

We'll start off the afternoon with the cholera epidemic in Haiti. Activity data for MSF medical teams will be presented, as will the results of studies estimating morbidity and mortality – in parallel with surveillance data – and the relative importance of the main transmission modes.

These presentations will be followed by a round table on the reappearance of this disease in the aftermath the earthquake, at a time when numerous international organizations were on the ground. How can this phenomenon be explained? What can be said about the response? Representatives of the Haitian Ministry of Health, the WHO and MSF will offer their perspectives.

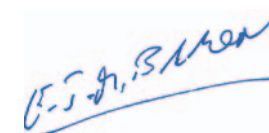
In the completely different realm of mental suffering, the epidemiological data show the magnitude of this health phenomenon, and thus help us act. In the final session, we'll look at two separate contexts: sub-Saharan Africa, where the toll from depression – probably one of the world's most common diseases – remains difficult to measure; and Lebanon, where we assessed the prevalence of mental disorders in a refugee camp.

MSF is celebrating its 40th anniversary, and the Epicentre team is joining the celebration. The history of the two entities is naturally and intimately linked. By helping to elucidate issues, define policy, and support positions, research and field studies give meaning to action. I hope this day will demonstrate that once again.

There will be time for discussion at the end of each session. A simultaneous French-English interpretation will be available throughout the day.

We look forward to your participation in the discussions and sincerely hope you will enjoy this Scientific Day.

Best wishes,



Emmanuel Baron
Executive Director, Epicentre

¹ *Medical Innovation in Humanitarian Situations: The Work of Médecins Sans Frontières. L'Harmattan*

Journée Scientifique Epicentre/Médecins Sans Frontières - Jeudi 16 juin 2011

8h45 Accueil et café

9h30 Introduction générale

9h45 Session 1

Avancées diagnostiques et thérapeutiques : VIH, paludisme et tuberculose

Modérateur : Dr Piero Olliaro, Organisation Mondiale de la Santé, Genève, Suisse

- Traitement antirétroviral à base de névirapine versus efavirenz chez des patients co-infectés tuberculose-VIH : réponse virologique à 48 semaines. (Maryline Bonnet)
- Artesunate versus quinine dans le traitement du paludisme sévère de l'enfant. (Juliet Mwanga)
- Atteindre 500 cellules CD4 / μ l est associé à une meilleure survie après neuf mois sous ARV chez des patients d'Afrique sub-saharienne. (David Maman)
- Diagnostic de la tuberculose par culture rapide chez les patients frottis-négatifs : impact dans des contextes de prévalence élevée du VIH. (Helena Huerga)

11h00 Pause café

11h30 Session 2

Poliomyélite, coqueluche et rougeole: anciennes maladies, nouveaux problèmes

Modérateur : Dr Peter Strebel Organisation Mondiale de la Santé, Genève, Suisse

- Poliomyélite au Congo : l'éradication en mauvaise passe ? (Arnaud Le Menach)
- Epidémiologie de la coqueluche chez les enfants de moins de 5 ans à l'hôpital de Niamey. (Viviane Jusot)
- Evolution de l'épidémiologie de la rougeole au Malawi et en RDC. (Andrea Minetti)

12h30 Session 3

Prévention des crises nutritionnelles : nouvelles orientations opérationnelles

Modérateur : Stéphane Doyon, Campagne d'Accès aux Médicaments Essentiels MSF, Paris, France

- Distribution préventive pendant la période de soudure au Niger: résultats d'une étude de cohorte observationnelle. (Emmanuel Grellety)
- Programme de prévention de la mortalité infantile à Konseguela, district de Koutiala, Mali. (Isabelle Defourny)

13h15-14h30 Déjeuner - Buffet sur place

14h30 Session 4

MSF et les épidémies de choléra: éléments pour la réponse et le contrôle

Modérateur : Dr Dominique Legros, Organisation Mondiale de la Santé, Genève, Suisse

- Description des cas de choléra pris en charge par MSF en Haïti, octobre 2010-mars 2011. (Kate Alberti)
- Enquête rétrospective en population de la morbidité et de la mortalité attribuable au choléra en Haïti (Francisco Luquero)
- Les différents modes de transmission dans les récentes épidémies de choléra à Haïti. (Francesco Grandesso)

15h30 Table ronde

Choléra en Haïti: comment en est-on arrivé là ?

Modérateur : Dr Dominique Legros, Organisation Mondiale de la Santé, Genève, Suisse

Participants :

- Claude Surena, Ministère de la Santé, Haïti
- Dana Van Alphen, OMS/PAHO, Panama
- David Walton, Partners In Health, USA
- Représentant Médecins Sans Frontières

16h15 Pause café

16h45 Session 5

Troubles psychiques : un regard sur les besoins

Modérateur : Pr Bruno Falissard, Maison de Solenn, Paris, France

- Epidémiologie de la dépression : qui et où ? (Caroline Marquer)
- Prévalence des troubles psychiques, camp de réfugiés de Burj el-Barajneh, Liban, 2010. (Augusto Llosa)

17h30 Pot de clôture sur la Terrasse, 9ème étage, Institut du Monde Arabe

Epicentre/Médecins Sans Frontières Scientific Day - Thursday, June 16th 2011

8.45 Welcome and coffee

9.30 General introduction

9.45 Session 1

Clinical and diagnostic advances: HIV, malaria and tuberculosis

Chairman: Dr Piero Olliaro, World Health Organization, Geneva, Switzerland

- Antiretroviral treatment based on nevirapine versus efavirenz in patients with tuberculosis-HIV co-infection: virological response after 48 weeks. (Maryline Bonnet)
- Artesunate versus quinine in the treatment of severe malaria in children. (Juliet Mwanga)
- Reaching 500 CD4 cells/ μ l is associated with higher survival after nine months on ART in sub-Saharan African patients. (David Maman)
- Rapid culture for tuberculosis diagnosis in smear-negative patients: impact in HIV high prevalence contexts. (Helena Huerga)

11.00 Coffee break

11.30 Session 2

Poliomyelitis, pertussis and measles: old diseases, new problems

Chairman: Dr Peter Strebe World Health Organization, Geneva, Switzerland

- Poliomyelitis in Congo: troubled times ahead for eradication? (Arnaud Le Menach)
- Epidemiology of pertussis in children under 5 in a Niamey hospital. (Viviane Jusot)
- The changing epidemiological landscape of measles in Malawi and DRC. (Andrea Minetti)

12.30 Session 3

Preventing nutritional crises: new operational directions

Chairman: Stéphane Doyon, Campaign for Access to Essential Medicines MSF, Paris, France

- Preventive distribution during the hunger gap in Niger: results of an observational cohort study. (Emmanuel Grellety)
- Preventing child mortality in Konseguela, Koutiala district, Mali (Isabelle Defourny)

13.15-14.30 Buffet on site

14.30 Session 4

MSF and cholera outbreaks: insights for response and control

Chairman: Dr Dominique Legros, World Health Organization, Geneva, Switzerland

- Description of the cholera cases treated by MSF in Haiti, October 2010-March 2011. (Kate Alberti)
- Population based retrospective survey to assess morbidity and mortality due to cholera in Haiti (Francisco Luquero)
- Modes of transmission of cholera during the recent outbreak in Haiti. (Francesco Grandesso)

15.30 Round table

Cholera in Haiti: how did we get here?

Chairman: Dr Dominique Legros, World Health Organization, Geneva, Switzerland

Participants:

- Claude Surena, Ministère de la Santé, Haïti
- Dana Van Alphen, OMS/PAHO, Panama
- David Walton, Partners In Health, USA
- Représentant Médecins Sans Frontières

16.15 Coffee break

16.45 Session 5

Mental health disorders: taking a look at what is needed

Chairman: Pr Bruno Falissard, Maison de Solenn, Paris, France

- Epidemiology of depression: who and where? (Caroline Marquer)
- Prevalence of mental health disorders, Burj el-Barajneh refugee camp, Lebanon, 2010. (Augusto Llosa)

17.30 Farewell drinks, 9th floor terrace, Institut du Monde Arabe

First Session

**Clinical and diagnostic advances:
HIV, malaria and tuberculosis**

Antiretroviral treatment based on nevirapine versus efavirenz in patients with tuberculosis-HIV co-infection: virological response after 48 weeks

Maryline Bonnet¹, Nilesh Bhatt², Elisabeth Baudin¹, Carlota Silva¹, Christophe Michon³, Anne-Marie Taburet⁴, Laura Ciaffi⁵, Agnès Sobry⁵, Rui Bastos⁶, Elizabete Nunes⁶, Avertino Barreto⁷, Christine Rouzioux⁸; Ilesh Jani², Alexandra Calmy⁹, on behalf of the CARINEMO study group

¹ Epicentre, France ; ² Instituto Nacional de Saúde, Mozambique ; ³ Annecy hospital, France ; ⁴ Bicêtre hospital, France ; ⁵ Médecins sans Frontières, Switzerland ; ⁶ Hospital Central de Maputo, Mozambique; ⁷ Mozambique National AIDS Service Organisation, Mozambique ; ⁸ Necker hospital, France; ⁹ Access Campaign for Essential Medicine, Médecins sans Frontières and Geneva University Hospital, Switzerland

CARINEMO study group: Paula Samo Gudo (National Tuberculosis Control Program, Mozambique); Josué Lima (International Center for AIDS Care and Treatment Programs, Mozambique); Alpha Diallo and Claire Rekeciewicz (ANRS, France); Maria Nhadzombo, Fernando Siteo, Delário Nhumaio, Odete Bule, José Tandaucane, Vânia Guilovica, Bindiya Meggi, and Nédio Mabunda (Instituto Nacional de Saúde, Mozambique).

Background

Several concerns regarding the safety and efficacy of nevirapine (NVP) in patients receiving rifampicin prevent its use in HIV-TB co-infected patients.

Objective

To compare the efficacy and safety of NVP and efavirenz (EFV) based regimens in the population of co-infected patient with the intention of showing the non-inferiority of NVP, when given without a lead-in dose.

Methods

A multicentered, open-label, non-inferiority trial was conducted in Mozambique. Patients with CD4<250 cell/mm³ were randomized to NVP (200mg BID) or EFV (600mg) combined with lamivudine-stavudine 4 weeks after starting TB treatment. The primary endpoint was virological suppression at 48 weeks (<50copies/ml). The safety of the regimens was assessed by clinical examination and alanine transaminase (ALT) measurement. The non-inferiority margin for the difference IN efficacy was 10%. Analyses were performed on intention-to-treat (ITT) and per protocol (PP) populations.

Results

Between November 2007 and April 2010, 570 patients were assigned NVP (n=285) or EFV (n=285) based regimens. Median CD4 and viral load at randomization was 92 cell/mm³ and 5.5 logs for NVP and 86 cell/mm³ and 5.6 logs for EFV. In ITT, 171 patients on NVP (60%) and 195 (68.4%) on EFV had VL<50 copies/ml at 48 weeks (difference 8.4%, 1-sided 95% CI 15.0%). The difference in efficacy was similar in PP. In the NVP and EFV arms 18 (6.3%) and 16 (5.6%) patients died, respectively. Grade 3 or 4 increase of ALT occurred in 20 (7.0%) patients on NVP and 17 (6.0%) on EFV. Fifteen patients (5.3%) were switched from NVP to EFV (11 hepatitis, 3 rashes and 1 protocol deviation) and 6 (2.1%) from EFV to NVP (2 psychiatric disorders and 4 pregnancies).

Conclusions

Non-inferiority of NVP over EFV was not established. Nevertheless, the use of NVP without a lead-in-dose was well tolerated and efficient. It remains a reasonable alternative for TB-HIV co-infected patients when EFV cannot be used.

Artesunate versus quinine in the treatment of severe malaria in children

Juliet Mwanga-Amumpaire, Margaret Nansumba, Elizabeth Kemigisha, Eleanor Turyakira, Yap Boum II, Pierre DeBeaudrap, Epicentre, Uganda

Background

Severe malaria is a major cause of childhood death and hospitalization in Sub-Saharan Africa. Whereas Quinine is still the treatment of choice, a recent multicentric trial in Asia showed that artesunate was associated with a lower mortality. This work describes the situation in the regional hospital in Mbarara, a mesoendemic area for malaria transmission, over five years and presents the main results of a multicentric trial comparing artesunate to quinine in children with severe malaria.

Methods

An open label randomised comparison of parenteral artesunate and quinine in children with severe falciparum malaria was conducted in 9 African countries between October 2005 and July 2010.

Results

In Mbarara, 663 children were enrolled contributing to the 5425 children included in the overall study. Over the four years, an increase in the number of children presenting with cerebral malaria was observed in Mbarara. At inclusion, severe anemia was the most common manifestation (70%) in Mbarara followed by neurological manifestation (coma or persistent convulsion, 32%).

The mortality was 6.2% in Mbarara, 9.7% overall, 8.5% in artesunate-recipients and 11.0% in quinine-recipients (relative reduction: 22.5%, 95%CI: 8.1-36.9). More than 50% of the death occurred within the first 24 hours and children with neurological manifestations were at higher risk of death (HR: 6.0, 95%CI: 3.0–12.0). Significantly less coma (OR: 0.68; 95%CI: 0.49-0.94) and convulsions (OR: 0.80; 95%CI: 0.66-0.97) but similar incidence of neurological sequelae were observed in the Artesunate arm. Artesunate was well tolerated without serious drug-related adverse effects.

Conclusions

Despite the global decrease in malaria transmission recently observed, the number of severe malaria cases remains stable. Artesunate substantially reduces the mortality of severe malaria in children and should replace quinine as first-line treatment. However, mortality from severe malaria, above all from cerebral malaria, remains unacceptably high especially during the first 24 hours after admission.

Reaching 500 CD4 cells/ μ l is associated with higher survival after nine months on ART in sub-Saharan African patients

David Maman, Epicentre, France

Background

In sub-Saharan Africa, ART scaling-up programs started almost a decade ago. However, if early mortality on ART had been extensively studied, little is known about factors associated with longer term mortality. We described mortality after 9 months of ART and explored the association between CD4 response and mortality in four HIV African programs supported by Médecins Sans Frontières.

Methods

All ART naïve adults (>15 years) who initiated ART between March 2001 and November 2010 and receiving therapy for at least 9 months were included. We calculated mortality rates stratified for different time periods. Multivariable mixed Poisson models were used to assess the effect on mortality of current CD4 counts (measurements after 9 months on ART). Other factors included in the models were programs, age, adherence, baseline CD4 count, WHO stage and BMI.

Results

A total of 27,018 patients, 67.4% female, contributed 66,577.2 person-years at risk to the analysis. At ART initiation, 6,410 patients (23.7%) were classified as WHO stage 4, 1,834 (6.8%) had a BMI below 16kg/m² and 2,862 (10.6%) had a CD4 count below 50 cells/ μ L.

At the end of their follow-up, 23,300 patients (86.2%) were alive, 922 (3.4%) dead and 2,796 (10.3%) lost to follow-up. Mortality rates during the second, third and fourth years were 1.87 (95%CI 1.69 - 2.07), 1.14 (95%CI 0.98-1.32) and 0.89 (95%CI 0.73-1.09) deaths per 100 person-years, respectively. Higher mortality was observed in patients with current CD4 cell levels 350-499 cells/ μ L (HR 1.64, 95%CI 1.22-2.21; p=0.001, compared to those with CD4 \ge 500cells/ μ L) and adherence < 90% (HR 3.52 95%CI 3.06 - 4.06). Mortality was higher among men (HR 1.25 95%CI 1.15 - 1.37) and lower in patients with initial BMI >18 kg/m² (HR 0.68, 95%CI 0.50-0.92, vs. < 16 kg/m²).

Conclusions

The reported higher survival in patients with current CD4 levels of more than 500 cells/ μ L in African HIV programs supports policies to initiate ART at earlier stages in resource-limited countries.

Rapid culture for tuberculosis diagnosis in smear-negative patients: impact in high HIV prevalence contexts

Helena Huerga¹, Eric Okwaro², Joseph Sitienei³, Mathieu Bastard¹, Elisa Ardizonni², Jeremiah Chakaya⁴, Francis Varaine², Maryline Bonnet¹

¹ Epicentre, France; ² Médecins Sans Frontières, France; ³ National Tuberculosis Control Program, Kenya; ⁴ Kenya Medical Research Institute, Kenya

Background

Rapid Mycobacterium culture is recommended for diagnosis of smear-negative tuberculosis (TB) in high HIV prevalence countries. In 2007, Thin Layer Agar (TLA) culture was introduced at Homa Bay District Hospital, Kenya. We compared the performance of a smear-negative diagnostic algorithm without and with TLA, using Lowenstein Jensen (LJ) culture, as reference standard.

Methods

A prospective cohort study of smear-negative TB suspects was conducted between 2009 and 2011. Clinical examination, chest X-ray, TLA and LJ cultures were performed at first consultation. Patients not started on TB treatment were re-assessed clinically and microscopically after antibiotic trial. Since average time to positive TLA is 2 weeks, algorithms' performances without and with TLA were measured in same patients. Factors associated with overtreatment decision were assessed.

Results

380 patients were included: median age 34 years, 62.9% female, 24.2% with past TB history, 68.0% (247/363) HIV positive. Of these patients, 150 (39.5%) were started on TB treatment. LJ culture was positive in 44/343 patients (12.8%). Reasons to start treatment among the 44 LJ positive patients were: TB suggestive X-ray (31.8%), absence of response to antibiotic trial (13.6%), severe clinical condition (6.8%), positive smear after antibiotic trial (4.5%), TLA culture (22.7%) and LJ culture (20.5%). The sensitivity of the diagnostic algorithm increased from 61.0% without TLA to 79.5% with TLA. Specificity was 70.7% and 68.0% without and with TLA. The positive predictive value varied from 22.3% to 26.9% without and with TLA, and negative predictive value from 92.9% to 95.7%. Median time to positive TLA was 16 days. Increased number of symptoms reported, TB history and HIV infection were independently associated with overtreatment decision.

Conclusions

Rapid TB culture significantly increased the confirmed TB patients treated but did not reduce the overtreatment. More rapid testing with similar sensitivity may limit the number of overtreated cases.

Second Session

Poliomyelitis, pertussis and measles: old diseases, new problems

Poliomyelitis in Congo: troubled times ahead for eradication?

Arnaud le Menach^{1,2}, Augusto Llosa³, Isabelle Mouniaman-Nara⁴, Félix Kouassi⁵, Joseph Ngala⁶, Naomi Boxall¹, Klaudia Porten³, Rebecca F. Grais³

¹ Health Protection Agency, London and South East Regional Epidemiology Units, United Kingdom; ² European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Control and Prevention, Sweden; ³ Epicentre, France ; ⁴ Medecins Sans Frontières, France ; ⁵ Medecins Sans Frontières, Congo ; ⁶ Direction Départementale de la Sante de Pointe-Noire, Congo

On 4 November 2010 the Ministry of Health of the Republic of the Congo officially declared a poliomyelitis outbreak centered in Pointe-Noire following the laboratory identification of poliovirus type 1 in one Acute Flaccid Paralysis (AFP) case. The last reported outbreak in Congo, occurred in 2000 when 22 laboratory-confirmed polio cases were reported. Here, we describe the epidemic and the results of a rapid cross-sectional survey in one affected neighborhood of Pointe-Noire.

Cases were defined as residents of Pointe-Noire of any age, diagnosed with acute flaccid paralysis (AFP) since 1 October 2010. We implemented a cross-sectional survey in a socially heterogeneous affected neighbourhood (representing 9.5% of the city population), selected from the Loandjili district (highest district attack rate: 71.6 cases per 100,000) following expert consultation.

A provisional total of 554 AFP cases with a higher proportion of males (68%) were identified nationally with paralysis onset from September 20, 2010, to February 27, 2011 (3). During this same period, a total of 451 cases (81.4%) including 184 deaths were reported in Pointe-Noire. Cases were predominantly found in the young adult population (57.4% between 15-24 years) with a higher Case Fatality Ratio (CFR) of 40.8% compared to the rest of the country. Vaccination coverage in the surveyed population for one or more doses of oral polio vaccine was 55.5% on average and decreased with age to 33.5% for individuals older than 30. Sanitary conditions were poor to medium with latrines commonly shared between households (57.4%).

Poor vaccination coverage led to a large susceptible population, particularly in young adults and spread was further facilitated by poor sanitary conditions. Moreover, polio causes more severe clinical symptoms among older age groups, which may explain the high case-fatality ratio. Supplementary vaccination activities should target older age groups in regions with evidence of immunity gaps.

Epidemiology of pertussis in children under 5 in a niamey hospital

Viviane Jusot¹, Said Aberrane², Franck Alé¹, Boubou Laouali³, Alio Sanda Abdelkader⁴, Issa Moussa³, Eric Adehossi³, Jocelyne Rocourt⁴, Jean-Marc Collard⁴, Rebecca F Grais⁶

¹ Epicentre Niger, ² CHR Créteil, France, ³ Hôpital National de Niamey Niger, ⁴ CERMES Niger, ⁵ Epicentre, Paris, France,

Background

Whooping cough, or pertussis, caused by *Bordetella pertussis*, is estimated to cause as many as 170,000 deaths annually in Sub-Saharan Africa. Although vaccination programs have reduced the burden over the past several decades, recently a resurgence of whooping cough has been observed. In Niger, vaccine coverage of DTP is low yet notified pertussis cases are few. Nevertheless, notified cases of coughs and colds of unknown aetiologies represent the second reported cause of morbidity nationwide.

Aims of the study

Through a prospective cohort study, we aimed to estimate the prevalence of *B. pertussis* in children under 5 in a pediatric ward, identify circulating subtypes and provide recommendations for improved disease control.

Study design

Between 6 December 2010 and 30 April 2011, children under 5 consulting the paediatric screening unit of the National hospital of Niamey with at least one of the following symptoms were recruited after informed parental consent: persistent cough lasting ≥ 1 week; clinical suspicion of pertussis or pneumonia by a physician; or a child with a cold or who has a family member with persistent cough. Nasopharyngeal aspirates (NPA) were collected from all children and tested by culture and PCR.

Results

342 suspected cases were recruited. Clinically, only 5 (1.46%) subjects presented with the typical “whoop” and 63 (18.42%) with coughing paroxysms. Almost all children reported having been previously vaccinated (320 children (93.57%)) and 234 (68.42%) had taken antibiotics before consulting the hospital. Results of culture and PCR are forthcoming.

Conclusions

These results highlight the need to improve awareness among clinicians, integrate laboratory diagnosis in the existing surveillance system, and strengthen immunisation to limit resurgence. Clinical diagnosis of whooping cough is problematic because of the wide range of manifestations (both in those with partial immunity due to past vaccination and in unimmunised infants) and variable awareness among clinicians. The sensitivity and specificity of laboratory tests can be influenced by the use of antibiotics early in the course of infection, mixed infections, recent immunisation and time since symptom onset.

The changing epidemiological landscape of measles in Malawi and DRC

Andrea Minetti for Médecins Sans Frontières and Epicentre, France

The 2010 WHO resolution RC61 calls for measles elimination in the African Region by 2020. In 2010, 28 countries in Sub-Saharan Africa experienced measles outbreaks with a cumulative total of 223,000 reported cases and 1200 deaths. In other words, there were an estimated 17.4/100,000 cases reported in 2010 in sub-Saharan Africa, nine times greater than the 1.9/100,000 reported cases in 2009. As case reporting is incomplete, the real numbers of measles cases and deaths are larger than reported. The current outbreaks are primarily the result of increases in the numbers of susceptible children and adolescents who either missed immunization who did not develop adequate immunity after their first dose.

The large-scale epidemic in Malawi in 2010 and the ongoing epidemics in Democratic Republic of Congo (DRC) reveal the importance of considering past gaps and weaknesses in immunization activities (EPI, SIAs) in planning outbreak response strategies. The different age distributions of measles cases in these settings reveal two different dynamics. In Malawi, the majority of cases were above 5 years (58%) indicative of a longstanding immunization programme, while in DRC the overwhelming majority of cases occur among children aged less than 5 years.

To respond to outbreaks effectively, in contexts that are increasingly at country or regional levels, it is essential to consider local demographic and epidemiologic factors to tailor the response strategy. The age distribution of cases should be part of the risk assessment in the planning stage to guide resource allocation for vaccination. In contexts such as DRC, where measles is endemic, vaccination should aim to reach the most highly affected age groups as a priority. In contexts such as Malawi, with a wide age-range of cases, the vaccination response should consider both local epidemiology and national level needs. Reducing transmission requires a comprehensive country-wide approach. Death from measles complications can be reduced by ensuring appropriate and universal treatment and free treatment remains a cornerstone of MSF interventions.

Third Session

**Preventing nutritional crises:
new operational directions**

Preventive distribution during the hunger gap in Niger: results of an observational cohort study

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Between July and October 2010 Médecins Sans Frontières and Forsani distributed Ready-to-Use Supplementary Food (RUSF) to all children aged 6 to 23 months in Guidan Roudji and Madaroufa; and only to children in Mirriah aged 6 to 35 months with a MUAC (Mid Upper Arm Circumference) between 115 and 134 mm. A protective ration, which varied by district but consisted of a combination of corn soy blend, cereal, legumes, sugar, and oil, was distributed as well. Representative cohorts from Madarounfa, Guidan Roudji and Mirriah were followed to monitor the distribution.

Three cohorts comprised of all children from >60cm to ≤80cm in Madarounfa and Guidan Roudji and from >60cm to ≤85cm in Mirriah, resident in 10 villages of each district, were implemented. All children were eligible for the preventive distributions and all children were followed monthly. Children meeting the admission criteria for nutritional treatment were referred. Age, height, weight, and MUAC were measured monthly. The amount and type of distribution received and the amount shared and remaining two weeks after each distribution was also assessed.

Only half the households received the intended rations in Guidan Roudji and Mirriah and 72% in Madarounfa. Those that received the ration exhibited more than non-recipients at baseline, as assessed by MUAC below 125mm. Mortality was lower for children whose households had received the ration than those that had not (Guidan Roudji 1.1 vs 2.5, Madarounfa 2.2 vs 5.3 deaths/10,000/d). In Mirriah, mortality was more than halved for children aged 6 to 23 months (1.2 vs 3.2 deaths/10,000/d).

Despite late intervention during the hunger gap, the preventive distribution programs had a positive effect on mortality. Recipients, because they were more wasted, would have been expected to have a higher mortality risk. In fact these children had half the number of deaths of the initially better nourished non-beneficiaries. Further research is needed to ensure that each eligible child receives the preventive distributions. In conclusion, the program had an impact on child survival over a short period of intervention, even if the child did not receive the totality of the rations.

Preventing child mortality in Konseguela, Koutiala district, Mali

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Reducing child mortality in sub-Saharan African contexts, particularly in rural areas, necessitates an integrated and comprehensive paediatric approach. In March 2010, Médecins sans Frontières, in collaboration with the Ministry of Health, started a program in Konseguela, Mali (population 34,000) to deliver the essential package of pediatric care using novel operational strategies to provide preventive and curative care both at the village level and within the health center.

Just after birth, children are identified by mobile vaccination teams who visit all villages on a monthly basis. Mothers are referred to the health center, where their child receives a follow-up visit, the program is explained and a health passport provided. Vaccination is delivered directly in the villages, but infant consultations and distributions of ready-to-use supplementary foods (RUSF) and mosquito nets are provided at the health center. As this is a malaria endemic area between July and December, rapid diagnostic tests are used for children with fever and treated appropriately with ACTs if necessary, by non-medical staff in the villages. The health center is free of charge and open every day. Severe cases are referred to the district hospital. An ongoing monitoring and evaluation component, including qualitative assessments, for this program was incorporated at its outset to help orient operational strategies.

During 2010, participation in the program was consistent with 93% of children (284/306) enrolled at birth seen at 6, 9 and 12 months. Of children in the program, almost every child completed the three doses of pentavalent (DTP-Hib-Hb) (91%) and poliomyelitis vaccine (96%) verified by their health passport. The pilot qualitative study found that the program is appreciated and understood by parents and the community and perceived as a package rather than a series of vertical interventions.

The results of this program show the feasibility of integrated programs, which can be expanded and adapted to other contexts as well as the benefits of delivering multiple interventions in a comprehensive package.

Fourth Session

MSF and cholera outbreaks: insights for response and control

Description of the cholera cases treated by MSF in Haiti. October-March 2011

Kate Alberti, Epicentre, France

Background

The 2010 – 2011 cholera epidemic in Haïti was the first reported in the country in nearly a century and one of the largest recorded in recent history. The epidemic began in the centre of the country and within one month had been declared in all 10 departments of Haïti. By mid-April 2011, 286 590 cases and 3008 institutional deaths had been reported nationally. The 5 sections of Médecins Sans Frontières (MSF) assisted the Ministry of Public Health and Population (MSPP) in responding to the epidemic by supporting over 70 treatment centres across the country. While case management was the main focus of the MSF intervention, social mobilisation and water and sanitation activities were carried out in some sites.

Methods

Case definitions and a common data collection and reporting system were shared by all MSF sections. Data was shared with the MSPP daily. Epidemic and case fatality curves for MSF supported structures were analysed and disseminated daily for Port au Prince and weekly at the national level.

Results

Between late October 2010 and mid-March 2011, 125,003 patients (44% of the cases reported countrywide) had been treated and 1250 deaths (CFR 1.0%) reported in MSF supported structures across Haïti. In most departments the epidemic was mono-modal, with the exception of Port au Prince where it was bi-modal.

Conclusions

MSF continues to be an important support to Ministries of Health confronted with cholera epidemics. In Haïti, the use of standardised case definitions and data collection tools facilitated aggregation and diffusion of intersectional data which in turn helped orient activities during a nation wide epidemic. Analysis of epidemic indicators such as observed attack rates, time to epidemic peak and duration of local outbreaks will help guide future operations during cholera epidemics in other contexts.

Population based retrospective survey to assess morbidity and mortality due to cholera in Haiti

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Background

National surveillance data in Haiti have reported more than 250,000 cholera cases and almost 5000 deaths due to cholera since October 2010. Nonetheless, the actual extension of the epidemic and the related death toll at community level remain uncertain. Four retrospective surveys, covering the period of the epidemic, were conducted in the departments of Artibonite, Nord and Nord-Ouest with the aim of estimating the morbidity and mortality due to cholera in highly affected rural and urban sites. Here, we present the preliminary results of two of the surveys in the town of Gonaives and in the remote rural area of Gaspard.

Methods

We conducted a retrospective cohort study in both sites, using a household based cluster sampling survey in Gonaives and an exhaustive survey in Gaspard. The required sample size for Gonaives was 16,007 individuals (100 clusters of 32 houses). The main outcomes of interest were the attack rate of acute watery diarrhoea and the overall and diarrhoea specific mortality rate over the period of interest (17 October 2010 to survey date in April 2011).

Results

Overall, 18,290 individuals were recruited in Gonaives and 21,182 in Gaspard. The attack rate of acute watery diarrhoea during the period was 10.8% in Gonaives and 22.6% in Gaspard. The crude mortality rate (expressed as number of deaths per 10,000 per day) was 0.6 [95%CI: 0.4-0.6] in Gonaives and 0.9 in Gaspard, with 0.4 [95%CI: 0.3-0.5] and 0.7 diarrhoea specific mortality rates respectively. The reported case fatality ratio of acute watery diarrhoea was 5.3% [95%CI: 3.8%-6.8%] in Gonaives and 6.0% in Gaspard.

Conclusions

Both the overall attack rate of acute watery diarrhoea and the associated mortality during the epidemic were higher than those reported by surveillance data. Adaptations in the response to cholera outbreaks, especially in sites with difficult access to health care, are needed.

Modes of transmission of cholera during the recent outbreak in Haiti

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Background

Haiti has suffered in 2010-2011 of its first cholera epidemic in a century, and cholera may now become endemic, given the precarious sanitary conditions prevailing in the country. Understanding the routes of transmission of cholera in Haiti is crucial to the improvement and development of control measures. We report here the preliminary results of a case-control study conducted after the acute phase of the epidemic to identify the main factors contributing to the ongoing transmission in a highly affected area.

Methods

A density case-control study was carried out in Gonaives, Artibonite. The calculated sample size was estimated at 80 cases and 160 age and sex matched controls. Cholera cases were defined as patients suffering from acute watery diarrhea confirmed by a positive rapid test. Controls were randomly selected among persons living in Gonaives who had not suffered from acute watery diarrhea prior to the date of the interview. Participants were interviewed regarding socio-economic factors, water and food sources, sanitation and close contacts with cases of acute watery diarrhea. Matched odds ratios were used as a measure of association between disease and risk factors and were calculated through conditional logistic regression. Only crude matched odds ratios (CMOR) were estimated during this preliminary analysis.

Results

A total of 63 cases and 126 controls were recruited. The chlorination of water was reported more often by controls than cases. However, the drinking water stored at home was inadequately chlorinated more than 80% of the time in both groups. Controls reported having a latrine in the court more often than cases. However, water and soap were absent in 95% of the toilets of both groups. Eating outside was more often reported by cases (29%) than by controls (5%) (CMOR=30.5; 95%CI: 4.5-230.6; $p=0.001$).

Final results and conclusions, along with adjusted matched odds ratios, will be presented at the Epicentre Scientific Day.

Round table

Cholera in Haiti: how did we get here?

Chairman: Dr Dominique Legros, World Health Organization, Geneva, Switzerland

Participants:

- Claude Surena, Ministère de la Santé, Haïti
- Dana Van Alphen, OMS/PAHO, Panama
- David Walton, Partners In Health, USA
- Représentant Médecins Sans Frontières

Fifth Session

Mental health disorders: taking a look at what is needed

Epidemiology of depression: who and where?

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Depression is one of the most common psychiatric disorders in the general population. It represents one of the major causes of disability, affecting over 121 million people worldwide (WHO, 2009). It is estimated that 5 to 12% of men and 10 to 20% of women have a significant depressive episode at some point in their lives. Depression occurs at any age, from infants to the elderly, regardless of educational or socio economic level. Undetected, untreated or undertreated depression may have wide-ranging implications for patients' personal and professional lives. The burden and appropriate screening, diagnostic and treatment for depression in MSF programs is a continuing concern among field teams. Here, we review the available literature on the burden of depression in Sub-Saharan Africa, as well as validated screening and diagnostic tools appropriate for use in this region.

The burden of depression is poorly understood with mainly scattered data from specific contexts and populations (ex, pre and post-natal consultations). Few tools are available for screening and diagnosis, as the Heath Patient Questionnaire (PHQ-9) and the Beck Depression Inventory (BDI), but they have only been validated in specific geographic contexts and for specific patients and their use remains a subject of debate.

Incorporating screening, diagnosis and treatment of depression into MSF programs necessitates an understanding of the disease burden. A simple, validated scale applicable to wide age ranges and a comprehensive approach to care (primary health, chronic illness, conflict) is needed. Further research should aim to provide a better understanding of the burden of depression in MSF programs and also to identify simple field-oriented tools for screening and diagnostics to better guide operational and medical strategies.

Prevalence of mental health disorders, Burj el-Barajneh refugee camp, Lebanon, 2010

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In 2008, MSF OCG initiated the Burj el-Barajneh mental health project in Beirut, Lebanon to provide therapeutic support to refugees living in the camp and the surrounding neighborhood. This study aimed to provide key information on mental disorder prevalence and access to mental health care among adults ≥ 18 years in the camp to improve services for the community.

A random sample of households was selected from a camp listing. After obtaining informed consent, individual and household questionnaires were administered by a trained survey team. During the screening phase, household informants and individual household members were interviewed with 3 standardized instruments. In the confirmatory phase, a psychologist performed a clinical assessment on a randomly selected subset. Weighted prevalence estimates and odds ratios (OR) from multivariate logistic regression with corresponding 95% confidence intervals were calculated.

Interviews of 283 household informants, questioned on 748 individual revealed that 246 (32.9%) persons were potentially suffering from a severe mental disorder. Re-screening of 315 of the 502 remaining individuals showed another 86 (27.3%) potentially suffering from common mental disorders. In the confirmatory phase, 88 (45%) out of 194 people clinically assessed were identified with a psychological morbidity; the corresponding weighted prevalence was 29% (95% C.I.: 19%-39%), with depression being the most common diagnosis. Mental disorders were associated with limitations in role functioning OR = 11.8 (4.3 – 32.39). Severe functional impairment was significantly predicted by severe psychiatric morbidity, OR = 7.85 (1.59 - 38.77). The gap between those who need help and those who have obtained it was 96% (92 – 100%).

We found high levels of unmet need for psychological treatment in this camp. The social deprivation experienced by this population, combined with the high prevalence of mental health disorders and elevated treatment gap provides an impetus to strengthen the mental health intervention in the community.



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