

Vingtième Journée Scientifique

Twentieth Scientific Day

4 juin 2010 - 4th June 2010

Résumés des communications
Abstracts of the presentations

epicentre
ÉPIDÉMIOLOGIE • EPIDEMIOLOGY



Paris le 4 juin 2010

Chers collègues et amis,

Les études présentées lors de cette nouvelle journée scientifique illustrent bien les liens étroits entre soins – ou programmes – et recherche. A partir de l'analyse et de l'interprétation des résultats s'élaborent des stratégies et recommandations, faisant de la recherche un outil de l'évolution et de l'amélioration des pratiques.

Nous présenterons d'abord quatre études portant sur l'efficacité des protocoles thérapeutiques actuels : efficacité et tolérance des ACT co-formulés, échecs du traitement antirétroviral de deuxième ligne, adhérence au traitement antituberculeux et définition d'indicateurs précoces de succès dans le traitement de la trypanosomiase africaine.

La nature, les orientations et la place de la recherche dans la réponse à l'épidémie de sida sera ensuite spécifiquement discutée lors d'une table ronde réunissant des acteurs de terrain, qui débattront des différents axes de recherche et de l'apport potentiel de ces recherches à la conception et à l'évaluation des programmes.

Nous proposerons ensuite quelques nouvelles pistes possibles à partir de l'analyse des situations de terrain : utilisation de nouveaux vaccins dans les situations d'urgence, nouvelles méthodes d'estimation de la morbidité et nouveaux outils de mesure de la souffrance psychique chez l'enfant.

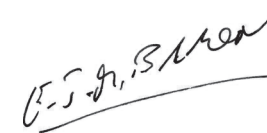
Les présentations de la troisième session seront consacrées à l'estimation du poids de certaines morbidités : diarrhées à rotavi-

rus au Niger, tuberculose résistante en Afrique subsaharienne, évolution de la prévalence du paludisme en Ouganda, estimation de l'incidence de la malnutrition.

L'épidémiologie permet de faire émerger un autre regard, critique, sur la nature des situations et l'impact des activités. La dernière session l'illustre dans des champs connus de l'action humanitaire tels que catastrophes, épidémies et conflits : évaluation des activités chirurgicales de MSF et du système de surveillance communautaire (Haïti), évaluation de l'impact de la campagne de vaccination de masse en réponse à une épidémie de méningite (Nigéria), estimation de la violence du conflit en RDC à partir de l'estimation de la mortalité dans une population réfugiée (Congo-Brazzaville).

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.



Emmanuel Baron
Directeur Général, Epicentre

Paris, 4 June 2010

Dear friends et colleagues

The studies presented at this year's Scientific Day will illustrate well the close connection between the provision of health care -or programs- and research. As analysis and interpretation of the results lead to the drawing up of strategies and recommendations, research becomes a means to improve and evolve field practices.

We will first present four studies looking at the effectiveness of existing therapeutic protocols: effectiveness and tolerance of ACT co-formulations, failures of second-line antiretroviral treatment, adherence to anti-tuberculosis treatment and the definition of early indicators of treatment success for African trypanosomiasis.

The nature, direction and place of research in the response to the AIDS epidemic will then be discussed during a round-table which will bring together different players from the field. They will debate different lines of research and how these may contribute to designing and evaluating programs.

Next, we will propose several new possible avenues based on the analysis of case studies from the field: the use of new vaccines in emergency situations, new methods of estimating morbidity and new tools to measure psychological damage in infants.

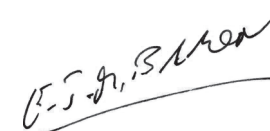
The presentations in the third session will focus on the burden of certain diseases: diarrhea caused by rotavirus in Niger, drug-resis-

tant tuberculosis in sub-Saharan Africa, the progression of malaria in Uganda and an estimation of malnutrition.

Epidemiology opens up a critical perspective regarding the nature of contexts and impact of different activities. The last session will illustrate this in the familiar territories of humanitarian action such as natural disasters, epidemics and conflicts: evaluation of MSF's surgical activities and community surveillance system (Haiti), evaluation of the impact of the mass meningitis vaccination campaign (Nigeria), assessment of the violence in the conflict in DRC derived from a retrospective mortality survey in the refugee population (Congo-Brazzaville).

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.



Emmanuel Baron
General Director, Epicentre

Journée Scientifique Épicentre/Médecins Sans Frontières - Vendredi 4 juin 2010

8h45 Accueil et café

9h30 Introduction générale

9h45 Session 1

Parcours du combattant pour un meilleur traitement

Modérateur : Pr Frederick Kayanja, Mbarara University of Sciences and Technology, Ouganda

- Validité et performance d'indicateurs précoces d'efficacité des traitements dans la trypanosomiase humaine africaine à *Trypanosoma brucei gambiense* en phase secondaire. [Mathieu Bastard](#)
- Echec de deuxième ligne et mortalité associée dans 27 programmes de traitement antirétroviral soutenus par MSF en Afrique et en Asie. [Suna Balkan](#)
- Adhérence au traitement antituberculeux auto-administré à Homa Bay, Kenya. [Helena Hueriga](#)
- Etudes contrôlées randomisées de tolérance et d'efficacité des combinaisons fixes artésunate-amodiaquine (ASAQ) et artémether-lumefantrine dans le traitement du paludisme non-complicqué à *Plasmodium falciparum*, Liberia. [Birgit Schramm](#)

11h00 Pause café

11h30 Table ronde

VIH, quelles priorités en recherche opérationnelle ?

Modérateur : Pr Pierre-Marie Girard, Hôpital Saint Antoine, IMEA, France

Participants :

- Dr Ndèye Fatou Ngom, Centre de Traitement Ambulatoire, Hôpital Fann, Sénégal
- Dr Bernard Taverne, Institut de Recherche pour le Développement, France
- Dr Eric Goemare, Médecins Sans Frontières, Belgique

12h15 Session 2

Bilan des pratiques médicales : une première étape vers le changement

Modérateur : Dr Anna Golaz, UNICEF, Suisse

- Place des nouveaux vaccins dans les programmes en situation d'urgence. [Melissa McRae](#)

- Mise en place d'un système de surveillance sentinelle prospectif de la mortalité et la malnutrition aiguë dans le sud-ouest de la République Centre-Africaine.

[Grazia Caleo](#)

- Souffrance psychique chez des jeunes enfants en contexte humanitaire : résultats préliminaires de l'utilisation d'une échelle de mesure pour non spécialistes.

[Caroline Marquer](#)

13h00 Déjeuner - Buffet sur place

14h15 Session 3

Mesures décisives pour estimer le fardeau des maladies

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

- Diarrhée chez l'enfant de moins de 5 ans au Niger : parcours de soin et importance du rotavirus. [Anne-Laure Page](#)
- Résistance aux anti-tuberculeux en Afrique sub-saharienne, dans un contexte à haute prévalence VIH. [Elisabeth Sanchez-Padilla](#)
- Evolution de la prévalence du paludisme chez les enfants de moins de 5 ans sur une période de 6 ans dans le district de Mbarara, Ouganda. [Elizabeth Kemigisha](#)
- Estimation de l'incidence de la malnutrition aiguë chez l'enfant. [Sheila Isanaka](#)

15h00 Pause café

15h45 Session 4

Le rôle de l'épidémiologie dans les situations de crise : documenter et conseiller

Modérateur : Dr Jean-Hervé Bradol, Fondation, Médecins Sans Frontières, France

- Description des activités chirurgicales de MSF après le tremblement de terre à Haïti. [Axelle Ronsse](#)
- Surveillance communautaire de la mortalité et de la malnutrition chez les populations en crise : résultats préliminaires de la catastrophe à Haïti. [Jonathan Polonsky](#)
- Epidémie de méningite en 2009 dans le nord du Nigéria : enseignements d'une campagne de vaccination de masse. [Augusto Llossa](#)
- Les réfugiés de la rivière Oubangui : une crise silencieuse. [Thomas Roederer](#)

17h30 Pot de clôture à MSF France, 8 rue St Sabin 75011 Paris

Epicentre/Médecins Sans Frontières Scientific Day - Friday, June 4th 2010

8h45 Welcome and coffee

9h30 General introduction

9h45 Session 1

Long roads to improving treatment

Chairman: Prof Frederick Kayanja, Mbarara University of Sciences and Technology, Uganda

- Validity and performance of early indicators of treatment efficacy for second-stage *Trypanosoma brucei gambiense* human african trypanosomiasis. [Mathieu Bastard](#)
- Failure on second-line therapy and associated mortality in 27 MSF-supported African and Asian ART programs. [Suna Balkan](#)
- Adherence to self-administered tuberculosis treatment in Homa Bay, Kenya. [Helena Huerga](#)
- Randomised controlled trials of tolerability and efficacy of artesunate-amodiaquine (ASAQ) and artemether-lumefantrine fixed-dose combinations for the treatment of uncomplicated *Plasmodium falciparum* malaria in Liberia. [Birgit Schramm](#)

11h00 Coffee break

11h30 Round table

VIH: deciding on operational research priorities

Chairman: Prof Pierre-Marie Girard, Hôpital Saint Antoine, IMEA, France

Participants :

- Dr Ndèye Fatou Ngom, Centre de Traitement Ambulatoire, Hôpital Fann, Senegal
- Dr Bernard Taverne, Institut de Recherche pour le Développement, France
- Dr Eric Goemare, Médecins Sans Frontières, Belgium

12h15 Session 2

Reviewing practice: the first steps to change

Chairman: Dr Anna Golaz, UNICEF, Switzerland

- Updating the emergency package: should new vaccines be introduced in the response to the acute phase of a crisis? [Melissa McRae](#)

- Implementation of prospective, sentinel-site surveillance of mortality and acute malnutrition in south-western Central African Republic. [Grazia Caleo](#)
- Addressing mental health needs of young children in humanitarian contexts: preliminary results of a screening tool for non-specialists. [Caroline Marquer](#)

13h00 Buffet lunch on site

14h15 Session 3

Weighty measures: estimating the burden of disease

Chairman: Dr Dominique Legros, World Health Organization, Switzerland

- Diarrhea in children under 5 in Niger: health care seeking behaviour and the burden of rotavirus. [Anne-Laure Page](#)
- Anti-tuberculosis drug resistance in high HIV prevalence settings in sub-Saharan Africa. [Elisabeth Sanchez-Padilla](#)
- Changes in the prevalence of malaria among children under five years over a six year period in Mbarara district, Uganda. [Elizabeth Kemigisha](#)
- Estimating the incidence of childhood acute malnutrition. [Sheila Isanaka](#)

15h00 Coffee break

15h45 Session 4

Crisis epidemiology: documenting and providing operational guidance

Chairman: Dr Jean-Hervé Bradol, Fondation, Médecins Sans Frontières, France

- A description of MSF emergency surgical activities after the Haiti earthquake. [Axelle Ronsse](#)
- Community-based surveillance of mortality and malnutrition among crisis-affected populations: preliminary results from Haiti. [Jonathan Polonsky](#)
- Meningitis in Northern Nigeria 2009: lessons learned from the mass vaccination campaign. [Augusto Llossa](#)
- The Oubangui river refugees: a silent crisis. [Thomas Roederer](#)

17h30 Farewell drinks at MSF France, 8 rue St Sabin 75011 Paris

First Session

Long roads to improving treatment

Validity and performance of early indicators of treatment efficacy for second-stage *Trypanosoma brucei gambiense* human african trypanosomiasis

Gerardo Priotto¹, François Chappuis², Mathieu Bastard¹, Jean-François Etard¹

¹ Epicentre, France; ² Médecins Sans Frontières, Switzerland

Background

Human African trypanosomiasis is fatal without treatment. The long (24 months) post-treatment follow-up period required to assess cure is major obstacle in the development of therapies and in the individual patients management. In an effort to identify early indicators of treatment efficacy, we analyzed patient data from 12 programs conducted by Médecins Sans Frontières in Uganda, Sudan, Angola, Central African Republic, Republic of Congo and Democratic Republic of Congo.

Methods

Study subjects had confirmed second-stage disease, confirmed outcome (cure or relapse) and a CSF leucocytes count at 6 months post-treatment. We excluded patients without confirmed outcomes: incomplete follow-up, deaths, relapse diagnosed without seeing trypanosomes and CSF leucocytes count below 50/ μ L. We analyzed the leucocytes count at 6 and 12 months and its evolution since baseline, via receiver-operator-characteristic curves. For each cut-off value we calculated sensitivity, specificity, positive likelihood ratio (LR+), negative likelihood ratio (LR-) and Youden's index. A multivariate logistic regression was fitted. We also explored two-steps (6 and 12 months) composite algorithms.

Results

1822 patient records were analyzed in a first analysis. The CSF leucocytes cut-off at 10 leucocytes/ μ L was the best predictor of outcome with 76.2% sensitivity, 80.4% specificity, 3.89 LR+, 0.29 LR-, and 0.57 Youden's index. The multivariate analysis confirmed its association with outcome (odds ratio=17.2). In a second analysis (n=2190), the algorithm with the best performance used a cut-off at ≤ 5 leucocytes/ μ L for cure and ≥ 50 leucocytes/ μ L for relapse at 6 months, and all patients between 5 and 50 leucocytes/ μ L were followed at 12 months and a cut-off at 20 leucocytes/ μ L to predict outcomes was identified.

Conclusions

The 6-months CSF leucocytes count can reasonably predict efficacy outcomes. For early estimation of efficacy in clinical trials and for individual patients in the field, several options exist that can be used according to priorities.

Failure on second-line therapy and associated mortality in 27 MSF-supported African and Asian ART Programs

Mar Pujades-Rodriguez¹, Suna Balkan², Line Arnould³, Alexandra Calmy⁴ for the AIDS Working Group of Médecins sans Frontières

¹ Epicentre, France; ² Médecins sans Frontières, France; ³ Médecins sans Frontières, Belgium; ⁴ Campaign for Access to Essential Medicines, Switzerland

Background

We describe rates of failure on second-line therapy (SLT) and investigate factors associated with failure and death in 27 MSF-supported ART programs.

Methods

This was a multi-cohort study of ART programs. All adults (≥ 15 years) receiving protease-inhibitor SLT for >6 months were included. Rates and times to clinical or immunovirological failure (WHO 2006 criteria) were estimated using Kaplan-Meier naïve methods and adjusted incidence rate ratios (IRR) obtained from random-effect Poisson regression. Factors associated with death while receiving SLT were assessed with Weibull random-effect models.

Results

We analyzed 741 person-years of follow-up from 632 patients; 62% were women. At SLT start median age was 35 years and CD4 cell count 122 cells/ μL , interquartile range [IQR] 53 to 220. One-hundred-nineteen patients (18.8%) met failure criteria after a median of 11.9 months, IQR 8.7 to 17.0 and 34 (5.4%) died after 15.1 months, IQR 11.9 to 25.7. Failure rates were higher in patients treated in hospitals than in health centres (incidence rate ratio [IRR] = 1.61, 95%CI 1.01 to 2.57) and lower among those who changed 2 nucleoside-reverse transcriptase inhibitor drugs instead of 1 at SLT start (IRR = 0.64, 95%CI 0.42 to 0.96). Rates increased with lower CD4 counts at SLT start (from 1.59, 95%CI 0.78 to 3.25 for 100 to 199 cells/ μL to 3.32, 95%CI 1.81 to 6.08 for <50 , compared to ≥ 200) and decreased with time on SLT (from 1.90, 95%CI 1.19 to 3.02 for 6 to 11 months to 1.71, 95%CI 1.01 to 2.88 for 12 to 23, compared to ≥ 24). Mortality on SLT was lower in rural sites (hazard ratio [HR] = 0.33, 95%CI 0.12 to 0.91), and in women (HR = 0.45, 95%CI 0.23 to 0.91). Higher death rates were observed in patients who experienced failure to SLT (HR=2.83, 95%CI 1.38-5.80 for failure of any type).

Conclusions

Use of fixed-dose combinations of antiretroviral drugs, targeted reinforced adherence, and earlier failure diagnosis could reduce failure rates and associated-mortality in HIV-infected patients receiving SLT in resource-limited countries.

Adherence to self-administered tuberculosis treatment in Homa Bay, Kenya

Helena Huerga¹, Fabienne Nackers¹, Apollo Odongo Aloo², Jeremiah Chakaya³, Joseph Sitienei², Francis Varaine⁴, Emmanuelle Espie¹, Maryline Bonnet¹

¹ Epicentre, France; ² Kenyan National Leprosy Tuberculosis Program, Kenya; ³ Centre for Respiratory Diseases Research, Kenya Medical Research Institute, Kenya; ⁴ Médecins Sans Frontières, France

Background

Good adherence to tuberculosis (TB) treatment is crucial to cure patients and to control TB. Efficiency and feasibility of Directly Observed Therapy (DOT) under routine program conditions have often been questioned. As an alternative, Médecins sans Frontières introduced self-administered therapy (SAT) in several TB programs. We assessed the patients' adherence to SAT TB treatment and their clinical outcomes in Homa Bay (Kenya). Performance of simple tools for monitoring adherence was also assessed.

Methods

We conducted a cross-sectional survey amongst a series of new TB cases receiving 6 months of standard TB chemotherapy with fixed dose combination under SAT, weekly drugs collection for first 2 months, and monthly for the last 4 months. Adherence was assessed at home with urine testing for Isoniazid (INH), pills count, interviewer-administered questionnaire and visual analogue scale (VAS). Estimates of adherence, as measured by the different tools, were compared.

Results

The recruitment in the survey was conducted in 2 parts: November 2008 and June 2009. Of 279 eligible patients, 67 were excluded: 25 defaulted; 15 were dead or hospitalised; 14 could not be located and 13 did not consent. Among the 212 inclusions, the mean age was 35 years; 46% were female; 79% had pulmonary TB; 69% were HIV-positive (two third receiving antiretroviral treatment). Median treatment duration at the time of the survey was 89 days. Urine INH test was positive for 98% of the patients. Ninety-five percents of the patients reported not having missed a tablet in the last 4 days and 91% reported never having missed tablets during their treatment. On the VAS, all but one patient rated their adherence as at least 80%. Pills count could be assessed among only 70% of the patients. It was exact for 84% of them. Of the patients surveyed, 5 defaulted, 6 died, 4 were transferred out, 193 were successfully treated (cured or treatment completed) and 4 were treatment failure. Agreement was fair between the questionnaire and the INH test (kappa coefficient (k) = 0.43) and between the questionnaire and the VAS (k = 0.40). Agreement was poor between the INH test and the VAS (k = 0.33) as well as between the pills count and each other adherence tools (k < 0.20).

Discussion

These results suggest adequate treatment adherence using SAT in Homa Bay. Self-administration of TB treatment appears as a good alternative to DOT. These results also suggest that adherence monitoring cannot rely on the use of one single tool. The VAS and the questionnaire would be the most appropriate under routine conditions.

Randomised controlled trials of tolerability and efficacy of artesunate-amodiaquine (ASAQ) and artemether-lumefantrine (AL) fixed-dose combinations (FDCs) for the treatment of uncomplicated *Plasmodium falciparum* (Pf) malaria in Liberia.

Birgit Schramm¹, Parastou Valeh¹, Elisabeth Baudin¹, Charles S. Mazinda¹, Richard Smith¹, Loretzu Pinoges¹, Timothy Sundaygar¹, Yah M. Zolia², Joel J. Jones², Eric Comte³, Vincent Jullien⁴, Gwenaëlle Carn⁵, Jean-René Kiechel⁵, Elizabeth A. Ashley¹, Philippe J. Guerin^{1,6}

¹ Epicentre, France; ² National Malaria Control Programme, Ministry of Health and Social Welfare, Liberia; ³ Médecins Sans Frontières, Switzerland; ⁴ Saint-Vincent de Paul, France; ⁵ Drugs for Neglected Diseases initiative, Switzerland; ⁶ Centre for Tropical Medicine, Nuffield Department of Clinical Medicine, University of Oxford, CCVTM, United Kingdom.

Background

Artemisinin-based combination therapies (ACTs) are the recommended treatment for uncomplicated Pf malaria. Our objective was to provide more information on the tolerability of ASAQ FDC in the post-registration phase, particularly in the ≥ 6 year age-group where data are scarce. In a parallel trial, the efficacy of ASAQ FDC in the <5 years was assessed.

Methods

Both studies were open-label randomized controlled trials. Artemether-lumefantrine (AL) was chosen as the comparator treatment, drug allocation was 1:1 (ASAQ:AL). In Study 1, assessment of tolerability was the primary objective: 1000 patients ≥ 6 years were included. Clinical and laboratory adverse events were recorded up to Day28. In Study 2, the assessment of efficacy was the primary objective. A non-inferiority trial compared the genotyping-corrected Day42 cure-rates of ASAQ and AL in 300 children aged 6-59 months.

Results

Tolerability trial: 92.1% (ASAQ) and 90.2 % (AL) of patients reported at least one adverse event (AE). AEs fatigue (ASAQ: 39.8%, AL:16.3%; $p<0.001$), vomiting (ASAQ: 7.1% , AL: 1.6%; $p<0.001$), nausea (ASAQ: 3.2 % , AL: 1.0 %; $p=0.015$) and anemia (ASAQ: 14.9%, AL: 9.8%; $p=0.013$) were reported with significantly higher frequency in the ASAQ arm. These were exclusively mild to moderate events with exception of one severe anemia, and occurred mainly during the first 3 days without leading to treatment discontinuation. Few severe AEs, mainly asymptomatic blood-disorders or hepatic-enzyme abnormalities, were noted in both arms (ASAQ: 3.4%, AL: 1.6%, $p=0.064$). One serious adverse event was reported. Genotype-corrected Day28 cure rates (routine blood smears on Day2 and 28 only) were notably high (≥ 98 %) in both groups. Efficacy trial: The genotyping-corrected Day42 cure rate of ASAQ was 97.3% [91.6-99.1] and 94.2 % [88.1-97.2] for AL (mITT, Kaplan-Meier analysis) and non-inferiority of ASAQ was shown. Similar results were obtained by PP-population analyses. Both FDC were well tolerated in the <5 years population.

Discussion

ASAQ and AL were highly efficacious and well tolerated treatments of uncomplicated Pf malaria in a highly endemic area in Liberia. Some mild to moderate AEs were reported more frequently in the ASAQ arm in ≥ 6 years, but did not require treatment interruption. Notably, hepatotoxicity, neutropenia or dystonic reactions were of no major concern in this study.

Round table

HIV: deciding on operational research priorities

Chairman: Prof Pierre-Marie Girard, Hôpital Saint Antoine, IMEA, France

Participants:

- Dr Ndèye Fatou Ngom, Centre de Traitement Ambulatoire, Hôpital Fann, Senegal
- Dr Bernard Taverne, Institut de Recherche pour le Développement, France
- Dr Eric Goemare, Médecins Sans Frontières, Belgium

Second Session

Reviewing practice: the first steps to change

Updating the emergency package: should new vaccines be introduced in the response to the acute phase of a crisis?

Melissa McRae¹, Florence Fermon², Marie-Eve Burny³, Rebecca F. Grais¹

¹ Epicentre, France; ² Médecins sans Frontières, France; ³ Médecins sans Frontières, Belgium

The changing nature of emergencies has important implications for humanitarian aid organisations and there is continuing debate regarding their responses. However their primary aim remains unchanged: to reduce excess mortality. In addition to malaria, the other major causes of mortality and morbidity, namely *Haemophilus influenzae* type b (Hib), *Streptococcus pneumoniae*, rotavirus and cholera, are all vaccine preventable diseases. New vaccines targeting these diseases have been widely implemented in the industrialised world but have yet to be implemented in the acute phase of the emergency response. Our objective was to review current evidence regarding the use of newer vaccines (Hib, pneumococcal conjugate vaccine (PCV), pentavalent, rotavirus and cholera) in sub-Saharan Africa with the aim of providing operational guidance.

We searched the published literature for papers reporting on Hib, pneumococcal conjugate vaccine (PCV), pentavalent, rotavirus and cholera vaccines between 1995 and 2009. We also searched the grey literature, pharmaceutical and international agency documentation on scheduling, interactions, use in vulnerable populations, contraindications and adverse events. Our review focused on burden of disease, preventive impact, feasibility, cost and acceptability. We defined emergencies as “new crises” defined as “after the initial population displacement and the creation of camps” rather than long-standing camps.

This review confirmed that for all the above mentioned infectious diseases, the burden of disease in children living in sub-Saharan Africa justifies preventive intervention in crises. However, the vast majority of published research focused on vaccination within EPI programs and full dose scheduling. The lack of published robust evidence on reduced dose schedules or double dosing in children with poor vaccination history and limits our ability to make firm recommendations for safe use. Our review highlights the paucity of evidence and the need to conduct operational research in order to provide a sound basis for future planning.

Implementation of prospective, sentinel-site surveillance of mortality and malnutrition in south-western Central African Republic

Grazia M. Caleo^{1,3}, Aly Penda Sy², Jonathan Polonsky^{3,4}, Pedro P. Palma², Serge Balandine³, Rebecca F. Grais³, Francesco Checchi³

¹ European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Sweden;

² Médecins Sans Frontières, Spain; ³ Epicentre, France; ⁴ Health and Nutrition Tracking Service, Switzerland

Background

Prospective community surveillance is a recognised approach to generate health data, but one that has been utilised rarely in developing and crisis settings. To monitor population mortality, most agencies rely on retrospective surveys but these yield estimates reflective of the past and, unless repeated periodically, cannot provide information on changes over time. A recent nationwide survey in the Central African Republic (CAR) reported crude all age and under 5 mortality rates consistent with severe emergency conditions. A review of this survey found the results difficult to interpret, and it was suggested that collection of mortality and nutritional data in CAR should instead be done using a validated method designed to capture trends over time.

We therefore designed a prospective, sentinel site-based surveillance system to estimate prospectively crude mortality rates, monitor trends in acute malnutrition prevalence and estimate the coverage of nutritional interventions in Boda, Boganangone, Boganda and Gadzi sub-prefectures, south-western CAR, an area where MSF-Operational Centre Barcelona-Athens has intervened since mid-2009.

Methods

We selected a stratified sample of 24 sentinel sites. In each site, we trained home visitors to carry out a baseline census of all Households and collect weekly information on vital events and mortality. Home visitors also assess the nutritional status of children 6-59m in a weekly, pre-determined systematic sample of households, and learn whether children are being treated in MSF-supported facilities. An automated analysis tool was developed to estimate and report mortality rates, malnutrition prevalence and nutritional programme coverage over time.

Results and Discussion

The system currently surveys about 18 000 people. Constraints in implementation of the system in rural settings are presented, along with preliminary data. Pros and cons of this approach to mortality and malnutrition measurement are discussed.

Addressing mental health needs of young children in humanitarian contexts: preliminary results of a screening tool for non-specialists

Sarah Hustache¹, Caroline Marquer¹, Yoram Mouchenik², Thierry Baubet³, Bruno Falissard⁴, Douma Maiga Djibo⁷, Rebecca F. Grais¹, Marie Rose Moro^{3,5,6}

¹ Epicentre, France; ² Unité INSERM 669, Maison de Solenn, France; ³ Hôpital Avicenne, Assistance Publique Hôpitaux de Paris, Bobigny, Unité INSERM 669, France; ⁴ INSERM U669, Maison de Solenn, France; ⁵ Université Paris Descartes, Hôpital Cochin, Assistance Publique Hôpitaux de Paris Maison des adolescents, Unité INSERM 669, France; ⁶ Médecins Sans Frontières, France; ⁷ Hopital General de Niamey, Niger

Background

The mental health needs of young children in humanitarian contexts often remain unaddressed, which may result in long-term consequences. The lack of a validated and simple tool for screening combined with few mental health professionals able to accurately diagnose and provide appropriate care mean that young children remain without care. The purpose of this research is to validate a simple scale, administered by non-specialists, to screen young children in crises and thereby refer them to care if needed. Here, we discuss the validation process and preliminary results.

Methods

The “Questionnaire Guide d’Evaluation” (QGE), is a mental health screening tool for children 3 to 6 years old. The tool consists of 40 items concerning depression, phobia, anxiety, regression, psychosomatic complaints and a psycho-traumatic component. To validate the scale, this study is conducted in three different contexts. In all contexts, the scale is first translated in to the local language, using corroboration of independent translations. Next, the scale is administered to a random sample of 300 mothers or caregivers, with children between 3 and 6 years of age, who respond to the questions concerning their child. Subsequently, the scale is reviewed for its diagnostic properties to ensure cohesion. The

next phase consists of scale validation against that of a clinical assessment by a trained psychologist (200 randomly children). Subsequent validation sites follow the same process, but with a reduced sample size in each phase. A standard trans-cultural validation is also implemented using an adapted qualitative methodology with anthropological and clinical components.

Results

The scale validation occurred in the region of Maradi, Niger with the first phase taking place between December 28th 2009 and January 21st 2010. The preliminary results showed 4 main dimensions which corresponded to a clinical profile with trans-cultural validity. In the general population, although not the purpose of this study, approximately 10% of children required subsequent follow-up with a psychologist.

Discussion

To our knowledge, this is the first attempt at the validation of a screening scale, with a trans-cultural validation component, to be used in humanitarian contexts. These preliminary results suggest that the tool has the capacity to detect psychological suffering in children and provide a basis to refer them to specialists for evaluation and care.

Third Session

**Weighty measures:
estimating the burden of disease**

Diarrhea in children under 5 in Niger: health care seeking behaviour and the burden of rotavirus

Anne-Laure Page¹, Sarah Hustache², Ali Djibo³, Mahamane Laouali Manzo³, Abdul-Aziz Mamaty², Viviane Jusot², Francisco Luquero¹, Brahim Toure², Céline Langendorf², Rebecca F Grais¹

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Background

Rotavirus is a major cause of acute diarrhea in children. In order to guide the effective introduction of new rotavirus vaccines within the existing vaccination scheme, countries are encouraged to collect data on the local epidemiology of diarrhea due to rotavirus. As a first step, the health care seeking behavior of children's caretakers needs to be investigated to identify the structures to be included in the prevalence study.

Methods

We conducted a household survey using cluster based sampling in four districts of the Maradi Region, Niger. Caretakers were asked about episodes of diarrhea in children under five and their health care seeking behavior in such instances. A weighted cluster analysis was conducted to estimate the prevalence of diarrhea, as well as the proportion of consultations and types of health structures consulted.

The regional hospital and ten health centers of the region of Maradi, as well as the three main hospitals in Niamey were selected for the one year prevalence study. Stool samples are being collected from all children under 5 with diarrhea and moderate or severe dehydration and tested for rotavirus by a rapid test. In addition, a sample of the collected stool is used for bacteriology analyses in Maradi.

Results

The survey showed a period prevalence of diarrhea between April 24th and May 21st 2009 of 36.8% (95% CI: 33.7 – 40.0). Of those reporting an episode of diarrhea, 70.4% (95% CI: 66.6-74.1) reported seeking care at a health structure. The most frequently visited sites were health centers, followed by health posts. Preliminary results of the rotavirus prevalence data from the Maradi region and Niamey will be presented.

Discussion

In the Nigeran decentralized health system, the health centers and hospitals were found to be the most appropriate locations for surveillance of diarrhea in rural and urban areas, respectively. Preliminary data confirm the high burden of rotavirus among children with moderate and severe diarrhea in Niger.

Anti-tuberculosis drugs resistance in high HIV prevalence settings in sub-Saharan Africa

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Background

Rising tuberculosis (TB) rates in sub-Saharan Africa are largely attributable to the HIV epidemic. Emergence of multi-drug resistant tuberculosis (MDR) in high HIV prevalence areas is a serious concern that remains poorly documented in many countries. The objectives of these studies were to measure the prevalence of MDR TB among new TB patients and to describe the prevalence of resistance to first and second line drugs.

Methods

We present results of the regional surveys conducted in Homa Bay district (Kenya), Chiradzulu district (Malawi), and West Nile region (Uganda); and the national survey conducted in the Kingdom of Swaziland, all high HIV prevalence areas.

A cross-sectional survey was designed based on the WHO/IUATLD guidelines for surveillance of antituberculosis drug resistance. Consecutive newly diagnosed smear positive adult patients with less than 1 month of TB treatment history were included (NC). Previously treated cases (PTC) were also enrolled in the Swaziland survey. Culture and drug susceptibility testing were performed at the Institute of Tropical Medicine in Antwerp (Belgium) or at the Supranational Laboratory for Mycobacteria in Borstel (Germany).

Results

At regional level, drug susceptibility patterns were available for 950 patients. Almost 80% were susceptible to all drugs: 83.1% in Homa Bay, 80.5% in Chiradzulu, and 73.0% in West Nile region. Among resistant strains, resistance to isoniazid was the most frequently detected (12.1%). The prevalence of MDR TB was 1.4% (95%CI 0.2-2.6) in Homa Bay; 2.0% (95%CI 0.4-3.6) in Chiradzulu; and 0.7% (95%CI 0.1-1.7) in West Nile region.

In Swaziland, drug susceptibility patterns were available for 352 NC and 281 PTC. Any drug resistance was 15.3% in NC and 49.5% in PTC. Isoniazid resistance was 13.4% in NC and 45.2% in PTC. The prevalence of MDR TB was 7.7% (95%CI 4.9-10.5) in NC and 33.8% (95%CI 28.3-39.3) in PTC.

Discussion

Although the MDR prevalence is low in the three regions, it is very high in Swaziland. This is the highest MDR prevalence reported in an African country. These results warrant a revision of the TB guidelines in Swaziland with rapid identification and treatment adaptation of MDR-TB cases and for reinforcement of infection control measures in TB and HIV facilities to limit the risk of a nosocomial MDR-TB epidemic.

Changes in the prevalence of malaria among children under five years over a six year period in Mbarara district, Uganda

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Background

Recent data suggest that there might be a decline in the malaria burden in several African settings following the implementation of various interventions for malaria control during the last decade. Further evidence is needed to confirm this decline.

Objectives

To measure the prevalence of infection with *malaria* in children under five years during a high transmission period, to assess the change since 2004, and to analyse the risk factors of malaria infection.

Methods

A cross-sectional survey was conducted in 2004 and in 2010 in Great Mbarara district, Uganda. A cluster sampling method was used. Spatial information was collected with GPS and behaviour information was obtained through interviews. Malaria was detected with rapid diagnostic tests (RDT), blood smear (BS) and PCR. Only results based on blood smear or RDT corrected for BS are presented.

Results

In 2004, 286 households were visited. A total of 493 children had been included in our survey. In 2010, of the 941 households visited, 490 were in an urban area (Mbarara municipality) and 451 in rural area. A total of 1324 children were included.

The prevalence of infection with *Plasmodium* was estimated to be 44.0%, 95%CI= [34.9;53.1] in 2004. Prevalence decreased to 24%, 95%CI=[17.6;30.4] in 2010 ($p<0.001$). It was significantly lower in the urban setting (4.4%, 95%CI=[2.6;6.1]) compared to the rural area (24.5%, 95%CI=[18.1;31.0], $p<0.001$). In urban area, 76% of the households used at least one preventive measure compared to 50% in the rural. Bed-net was the method most commonly used, but less frequently in rural area (61% of the children under 5 years slept under bed-net in the urban compared to 38% in the rural).

Discussion

These results show that despite a decrease in the prevalence of infection with *malaria* over the last 6 years, the malaria burden remains high in rural areas. They also indicated a large heterogeneity in the prevention or care seeking behaviours.

Estimating the incidence of childhood acute malnutrition

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Estimates of the burden of acute malnutrition in children are typically based on rapid cross-sectional prevalence surveys, which are used to benchmark the severity of nutritional crises and inform interventions. A practical challenge in the implementation of these nutritional interventions is the estimation of expected incidence or programme size over a time horizon of several weeks or months. The duration of untreated episodes of moderate or severe acute malnutrition is mathematically related to incidence and therefore a key parameter in the determination of programme needs.

We estimated the duration of moderate and severe acute malnutrition in the absence of treatment through a dynamic mathematical model fitted to data from a longitudinal, community-based cohort of children in Maradi, Niger, and data from the MSF-France nutritional intervention in 2006-2007. The model predicted the prevalence of moderate or severe acute malnutrition over time. We compared the predicted outcomes of the model with those observed in the longitudinal cohort using maximum likelihood methods to identify the most likely value of duration.

Estimating the duration, and thus incidence, of malnutrition in the absence of treatment is an essential aspect of obtaining burden estimates and assessing programme needs. The methodology and results presented here are a novel attempt to develop these estimates. The duration of episodes in the absence of treatment will likely depend on contextual factors, such as the severity of malnutrition, prevalence of infectious illness, and access to health services. As a result, a single estimate of the mean duration will not likely apply to all settings. We recommend considering a range of durations when estimating program size, by compiling data from other settings, to assist program managers to construct plausible estimates of incidence for program planning.

Fourth Session

Crisis epidemiology: documenting and providing operational guidance

A description of MSF emergency surgical activities after the Haiti earthquake

Axelle Ronsse for the MSF/Epicentre Haiti surgery follow-up group

Background

On January 12th 2010 an earthquake struck Haïti, devastating the capital, Port-au-Prince. The three sections of Médecins Sans Frontières (MSF) present at the time responded by providing emergency medical and surgical care. Prior to the earthquake, the operational centre of Amsterdam (OCA) was running a high risk obstetrical programme, the operational centre of Paris (OCP) a trauma centre and the operational centre of Brussels (OCB) a small general hospital with no surgical capacity. The earthquake damaged all operating rooms requiring teams to find new sites for the emergency intervention.

Methods

During the emergency, OCA set up 2 operating rooms, OCP operated initially in 1 temporary operating room and then opened 2, later 3 operating rooms in an inflatable hospital installed 10 days after the earthquake. OCB opened 4 operating room in 2 sites, including an unused hospital in which they had previously worked. In addition the operational centre of Geneva (OCG) and the operational centre of Barcelona (OCBA) began emergency projects outside Port-au-Price, including surgical interventions with 1 operating room in Jacmel (OCBA) and 2 in Léogane (OCG). Data presented here were entered into to the Excel based Surgery tool, both prospectively for sections already using the tool and retrospectively from data collected on paper or in other tools during the emergency. Classifications of interventions presented are derived from this tool.

Results

An analysis of the final databases of surgical interventions carried out between the occurrence of the earthquake and the end of February will be presented. The description will include demographics of patients, timing and type of intervention and type of anaesthesia used. An additional specific analysis of orthopaedic patients will also be presented.

Conclusions

This is one of the largest emergency surgical operations carried out by MSF. In extreme conditions, life saving surgical interventions were carried out promptly. Three months post emergency all sections continue to run surgical programmes and to provide follow-up care, including physiotherapy as appropriate. The lessons learned from this intervention can contribute to planning for future surgical emergencies.

Community-based surveillance of mortality and nutrition among crisis-affected populations: preliminary results from Haiti

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Background

On January 12th 2010, Haiti was struck by a magnitude 7.0 earthquake. An estimated 200,000 people were killed, with a further 2 million believed to have been displaced, exacerbating an already precarious situation. In order to track evolving trends and orient the activities of MSF-France, we established community-based surveillance of mortality and nutrition in the catchment area of two MSF-France out-patient departments (OPDs), Delmas 24 (D24) and Champs de Mars (CdM).

Methods

In order to generate denominator data, a rapid population estimation was conducted in D24, while in CdM an exhaustive census was done. During the course of each subsequent week, every household was visited by one of community agents, at which time information on population movements, new births and deaths within the household was recorded.

Within a subset of households, systematically sampled and varying each week, nutritional status of all children aged 6-59 months living in the household were measured using Mid Upper Arm circumference (MUAC) < 115 and / or oedema for severe acute malnutrition (SAM) and MUAC < 125 and or oedema for Global acute malnutrition (GAM) as a threshold.

Results

There has been extensive movement of people during the first three weeks in D24, with about 2,600 people joining, and 1,500 people leaving the households. An average of 125 new households was established each week, with an average of 43 households leaving each week. The crude and under 5 mortality rates were alarmingly high during the first week, with CMR exceeding the threshold of 1 death per 10,000 population per day. This rate subsequently fell to anticipated levels during the subsequent two weeks.

The prevalence of SAM and GAM as defined by MUAC measurement has been steady during the first three weeks of data collection, with mean SAM = 0.3% and mean GAM = 3.3%.

Discussion

Surveillance of key indicators of health status among crisis-affected populations is feasible, even within a short time following a sudden-onset emergency. The methodology described here, although as yet unvalidated and implying a considerable investment of resources, is preferable to one-off retrospective mortality and nutrition prevalence surveys, as it yields real-time indicators of crisis severity, and provides rapid alerts on deteriorating situations. In addition, in comparison with one-off surveys, results may be considered more reliable for a number of reasons: improvement of the quality of agents over time, simplicity of methodology, very short recall period, and ease of supervision due to exhaustive nature of system.

Meningitis in Northern Nigeria 2009: lessons learned from the mass vaccination campaign

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Background

Beginning in January 2009, cases of meningitis were reported in several Local Government Areas (LGA) of Northern Nigeria. This early onset outbreak was followed by the largest meningitis epidemic in Nigeria since 1996. More than 50,000 cases of cerebrospinal meningitis (CSM) were reported in the country with *Neisseria meningitidis* serogroup A identified as the main causal agent. Given the magnitude of the outbreak, in collaboration with the Federal and the State Ministry of Health, Médecins sans Frontières (MSF) intervened by supporting case management, strengthening surveillance and organizing mass vaccination campaigns (MVC). As a part of an evaluation of the intervention, Epicentre conducted vaccination coverage surveys and performed preliminary analyses to estimate the number of cases averted.

Methods

We performed household-based surveys in Katsina, Jigawa, Gombe and Zamfara States. Interviewer administered questionnaires addressed vaccination during the campaign, reasons for non-vaccination and household demographics. As a part of the evaluation, we estimated the relative impact, in terms of the number of cases averted, of the MVC in Katsina State.

Results

The vaccine coverage surveys were conducted in September and October 2009. Study populations in all four sites were over 37,000 persons. The vaccination coverage was estimated to be 81.8% (95%CI: 78.0-85.6) in Katsina; in Jigawa 86.1%(82.8-89.3); in Gombe 72.8% (68.0-77.6); and in Zamfara 72.8% (68.0-77.0). Among the sampled families, the main reasons for non-vaccination during the MVC were absence at the time of the intervention, lack of awareness and distance from the vaccination site. In terms of cases avoided, preliminary results suggest that 12 to 14 % of cases were averted by the MVC in Katsina state.

Discussion

Vaccination coverage attained was high in all four states. We discuss the lessons learned from this intervention, which highlights the importance of responding early and therefore the necessity of vigilant surveillance.

The Oubangui river refugees: a silent crisis

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Background

During the night of 28 October, 2009 a violent confrontation occurred in Dongo, Democratic Republic of Congo, located on the Oubangui River. Fleeing the violence, thousands of families crossed the river to take refuge in Republic of Congo. Little information was available on the events that occurred, but testimonials suggested a dire situation. MSF-France asked Epicentre to conduct a retrospective mortality survey of the displaced population in the Republic of Congo to document the situation.

Methods

We performed a systematic household-based survey to estimate mortality, the proportion of violent and non-violent deaths, and the place of death (ex. before flight, during flight) in five informal settlement sites in the district of Betou, Likouala, Republic of Congo. After informed oral consent, the present head of household, provided the household composition before and after arrival, the number of deaths and their cause. We used a recall period of 50 days, from the 28 October to the time of the survey.

Results

The survey was conducted between December 17 and 21, 2009. A total of 946 families were interviewed (5798 persons). Of these, 63% arrived between October 28 and November 4, 2009. The crude mortality ratio was estimated to be 10.9/10 000/day [9.8-12.3] over the recall period. A total of 57.5 [50.2-65.9] of deaths were attributed to the violence in Dongo, representing 3.6% [3.10 – 4.06] between October 28 and November 3. According to the head of household, 47% of deaths occurred in their village of origin, en route for 45%, 2% upon their arrival in informal settlements and 7% in hospital. Among the sampled families, a total of 5.81% [5.21–6.41] persons disappeared; 55% occurred in flight and 45% in their village before flight.

Discussion

The results of this survey reveal the devastation of this population displacement and the continued uncertainty of this population.

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