

Vingt-deuxième Journée Scientifique

Twenty-second Scientific Day

31 mai 2012 - 31st May 2012

Résumés des communications
Abstracts of the presentations

epicentre
ÉPIDÉMIOLOGIE • EPIDEMIOLOGY



40 ANS
D'INDÉPENDANCE



Paris, 31 mai 2012

Chers collègues et amis

Le programme de notre journée scientifique nous donne l'occasion de réaffirmer l'ancrage comme équipe de recherche dans une organisation de soins. Les sujets d'étude émergent à partir d'un examen commun des situations de terrain, et si l'analyse peut diverger les priorités de travail sont débattues et la mise en œuvre des décisions prises s'en trouve facilitée.

Les sessions du programme d'aujourd'hui attestent de cette dynamique. La matinée débute sur la question toujours pertinente de l'apport et de la validité des moyens diagnostiques, en l'occurrence de la tuberculose et du paludisme. Le dépistage est aussi abordé dans la présentation des performances d'une échelle de mesure de la souffrance psychique chez l'enfant.

A côté de l'amélioration de la prise en charge des malades, un de nos objectifs importants est d'apporter des éléments de décision sur lesquels les programmes s'engagent ou s'orientent. Trois situations seront présentées dans la deuxième session sur la leishmaniose viscérale, la tuberculose résistante et le paludisme.

Une même situation clinique – les maladies diarrhéiques – peut appeler plusieurs types de réponses opérationnelles. La troisième session illustre la complémentarité des angles d'étude d'une telle question : épidémiologie, traitement, pertinence de la réponse opérationnelle.

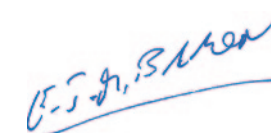
Mais les travaux d'Epicentre ne se résument pas à fournir des résultats chiffrés. Ils s'inscrivent dans une démarche plus large dont l'ambition est bien de peser sur les pratiques et les recommandations des acteurs et des décideurs dans les divers champs de la santé publique. Comment les informations que nous produisons sont appréciées et utilisées par les responsables opérationnels de MSF et des institutions qui sont nos partenaires ? Nous tenterons de dégager des réponses lors de la table ronde du début d'après-midi.

Enfin la journée s'achèvera sur des présentations qui constituent des nouveaux thèmes de travail pour nous : l'analyse de données d'activité chirurgicale à Amman, de la couverture d'un projet de soins obstétricaux au Nigéria et, au-delà de l'épidémiologie, l'étude de l'automédication comme une possible nouvelle piste opérationnelle de délivrance des soins.

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, 31 May 2012

Dear colleagues and friends

Our scientific day agenda is an opportunity to reaffirm ourselves as research group rooted within a healthcare organization. Study ideas emerge after a common assessment of the field situations by both epidemiologists and medical care teams. Although our analysis of the situation may sometimes be different, establishing work priorities and implementation is easier with this integrated approach.

The sessions presented today are evidence of this dynamic. The morning opens with a question that remains relevant concerning the potential and validity of diagnostic means, specifically tuberculosis and malaria. Screening is also addressed through a presentation on a scale that aims at to assess psychological suffering in young children.

Besides improving care delivery, one of our important objectives is to bring information to the decision making process concerning which MSF programs are opened and how they are oriented. Three such situations are presented in the in the second session on visceral leishmaniasis, drug resistant tuberculosis and malaria.

A single clinical presentation, such as diarrheal disease, may imply several different types of operational response. The third session illustrates the complementarity of different approaches for diarrheal diseases: epidemiology, treatment, and the relevance of an operational response.

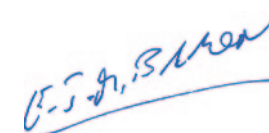
Epicentre's work is not restricted to producing only quantitative data. Our work is inscribed within a larger aim, to improve care by influencing the practice and recommendations of players and decision makers in medicine and public health. How is the information we produce perceived and used by operations within MSF and by our partners? We will try to address this question in the roundtable discussion after lunch.

The presentations at the end of the day are considered as emerging themes for us: data analysis of surgical activities from the program in Amman, program coverage of an obstetrics program in Nigeria and, beyond epidemiology, the study of self-medication as a possible operational way to deliver care.

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

Journée Scientifique Epicentre/Médecins Sans Frontières - Jeudi 31 mai 2012

8h45 Accueil et café

9h30 Introduction générale (Emmanuel Baron)

9h45 Session 1

Améliorer le diagnostic et la détection des cas

Modérateur : Dr Pamela Mbabazi, Mbarara University of Science and Technology, Ouganda

- String test : un nouvel outil diagnostique de la tuberculose chez les patients ne pouvant pas expectorer. (Daniel Atwine)
- Comparaison du temps de négativation de deux différents types de tests rapides de diagnostic du paludisme dans une zone de forte transmission. (Francesco Grandesso)
- Echelle de dépistage de la souffrance psychologique du jeune enfant : résultat des validations principales et secondaires. (Caroline Marquer)

10h45 Pause café

11h15 Session 2

Enquêtes descriptives et suivi de programmes

Modérateur : Dr Gerardo Priotto, Organisation Mondiale de la Santé, Lyon, France

- Leishmaniose viscérale : enquête transversale dans les villages de la partie orientale de l'Etat de Gedaref, Soudan. (Yolanda Muller)
- Conversion des cultures chez les patients tuberculeux multi-résistants : analyse d'une cohorte multicentrique. (Cathy Hewison)
- Transmission du paludisme : enquête entomologique à Mbarara, Ouganda. (Patrick Ojuka)

12h15 Session 3

Réponses aux maladies diarrhéiques

Modérateur : Dr Benoît Kebela, Ministère de la Santé, République Démocratique du Congo

- Évaluation des mesures d'assainissement dans une zone de forte endémie pour le choléra, Kalémie, RDC. (Grazia Marta Caleo)
- Utilisation de la cartographie pour identifier des zones d'intervention prioritaires lors d'une épidémie de fièvre typhoïde à Harare, Zimbabwe. (Isabel Martínez-Pino)

- Revue des recommandations sur les interventions nutritionnelles dans la prise en charge de la diarrhée chez l'enfant. (Sheila Isanaka)
- Distribution spatiale des épidémies de choléra: orientations pour la préparation de la réponse et le contrôle de la maladie. (Francisco Luquero)

13h130-14h30 Déjeuner - Buffet sur place

14h30 Session 4

Introduction à la table ronde

Modérateur : Dr Marc Gastellu-Etchegorry, Institut de Veille Sanitaire, France

- Conséquences opérationnelles des enquêtes et de la surveillance de la mortalité dans différents contextes d'urgence. (Sandra Cohuet)
- Stratégies préventives de la malnutrition associant compléments alimentaires et transferts d'argent au Niger. (Céline Langendorf)

15h00 Table ronde

Que faire ensuite ? Utilisation des résultats des études dans la définition des programmes et des politiques de santé.

Participants :

- Bruno Jochum, MSF-OCG, Suisse
- Saskia de Pee, Programme Alimentaire Mondial, Italie
- Dr Eric Adehossi, Hôpital National de Niamey, Niger
- Dr Nigel Rollins, Organisation Mondiale de la Santé, Suisse

16h00 Pause café

16h30 Session 5

Nouvelles thématiques de recherche pour Epicentre

Modérateur : Dr Bertrand Dragez, MSF-OCB, Belgique

- Reconstruction osseuse sur pseudarthroses de l'humérus et du tibia chez les blessés civils de guerre en Irak. (Sophie Masson)
- La pharmacie intra domiciliaire : une piste possible d'amélioration de l'accès aux soins pédiatriques. (Jessica Neerkorn Sayyad)

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

Epicentre/Médecins Sans Frontières Scientific Day - Thursday, May 31st 2012

8.45 Welcome and coffee

9.30 Introduction (Emmanuel Baron)

9.45 Session 1

Improving diagnosis and detection

Chairman: Dr Pamela Mbabazi, Mbarara University of Science and Technology, Uganda

- String test: a new tool to diagnose tuberculosis in patients unable to produce sputum. (Daniel Atwine)
- Comparison of time to become negative of two different types of malaria rapid diagnostic tests in a high transmission setting. (Francesco Grandesso)
- A rapid screening tool for psychological difficulties in children 3-6 years old: results of primary and secondary validations. (Caroline Marquer)

10.45 Coffee break

11.15 Session 2

Taking stock of where we are: baseline surveys and monitoring

Chairman: Dr Gerardo Priotto, World Health Organisation, Lyon, France

- Burden of visceral leishmaniasis in villages of eastern Gedaref State, Sudan: an exhaustive cross-sectional survey. (Yolanda Muller)
- A multicentric retrospective analysis of culture conversion and time to culture conversion in multidrug resistant tuberculosis patients. (Cathy Hewison)
- A pilot entomological evaluation of malaria transmission in south western Uganda. (Patrick Ojuka)

12.15 Session 3

Responding to diarrheal diseases

Chairman: Dr Benoît Kebela, Ministry of Health, Democratic Republic of Congo MSF, Paris, France

- Assessment of water, hygiene and sanitation in a highly endemic area for cholera, Kalemie (RDC) January 2012. (Grazia Marta Caleo)
- The use of mapping to identify priority areas for intervention during a typhoid outbreak in Harare, Zimbabwe. (Isabel Martínez-Pino)

- Nutritional interventions in the management of childhood diarrhea: current strategies and opportunities. (Sheila Isanaka)
- Spatial pattern in cholera outbreaks: guidance for preparedness and control. (Francisco Luquero)

13.30-14.30 Buffet lunch on site

14.30 Session 4

Introduction to the round table

Chairman: Dr Marc Gastellu-Etchegorry, Institut de Veille Sanitaire, France

- Operational consequences following mortality surveys and surveillance activities in different emergency contexts. (Sandra Cohuet)
- Preventing malnutrition in Niger: supplementary food and/or cash transfer. (Céline Langendorf)

15.00 Round table

What happens now? Use of study results for programs and policy

Participants:

- Bruno Jochum, MSF-OCG, Switzerland
- Saskia de Pee, World Food Programme, Italy
- Dr Eric Adehossi, Hôpital National de Niamey, Niger
- Dr Nigel Rollins, World Health Organisation, Switzerland

16.00 Coffee break

16.30 Session 5

New research themes for Epicentre

Chairman: Dr Bertrand Draguez, MSF-OCB, Belgium

- Reconstruction of non-unions of the tibial and humeral fractures in war-wounded Iraqi civilians. (Rasheed M. Fakri)
- Estimation of emergency obstetrical care needs met by a Médecins Sans Frontières programme in Jahun, Jigawa State, Nigeria. (Sophie Masson)
- Home pharmacy: a possible way to improve pediatric care. (Jessica Neerkorn Sayyad)

17.30 Farewell drinks on site, at the 9th floor Terrace - Institut du Monde Arabe

First Session

Improving diagnosis and detection

String test: a new tool to diagnose tuberculosis in patients unable to produce sputum

Daniel Atwine, Epicentre, Uganda

Background

Diagnosis of pulmonary tuberculosis (PTB) requires good quality of sputum specimen. The use of the intra-gastric String Test (ST) has been proposed as an alternative specimen collection method for diagnosis of pulmonary tuberculosis (PTB) in patients unable to produce sputum. We compared the TB detection rate of the ST and the sputum induction (SI) in a series of adult patients presenting with PTB suspicion at the Mbarara Regional Referral Hospital in Uganda.

Methods

Two ST and SI were performed in adult PTB suspects defined by at least 2 weeks cough, chronic unexplained weight loss or fever. We used the paediatric Entero-test® (HDC corporation, USA), that is a gelatine capsule containing a 90 cm coiled nylon string, after a 2 hours fasting and with 2 hours of intra-gastric down time. The SI was performed after the ST with 5% saline for 20 minutes. LED-fluorescence microscopy, Lowenstein-Jensen and MGIT TB cultures were performed in all specimens.

Results

From March 2010 to December 2011, 195 PTB suspects were enrolled. Median age was 34 years, 53% were female and 58% HIV infected. There were 3 (1.5%) ST and 25 (12.8%) SI failures. 174 patients had at least one ST and one SI result. 23 (13.2%) and 22 (12.6%) were smear positive on ST and SI, respectively ($p= 1.0$). Using combined LJ and MGIT cultures, TB was detected in 39/172 (22.7%) patients using the ST compared to 41/172 (23.8%) with SI ($p= 0.69$). In HIV infected patients, 10/94 (10.6%) patients were smear-positive using ST versus 10/94 (10.6%) using SI ($p= 1.0$). There 17/91 (18.7%) culture positive patients with ST versus 19/91 (20.9%) with SI ($p= 0.50$).

Conclusions

The TB detection rate using ST was comparable to that of the SI irrespective of the HIV status. The ST is more feasible with less nosocomial risk compared to the SI and seems well adapted to low resource setting.

Comparison of time to become negative of two different types of malaria rapid diagnostic tests in a high transmission setting

Francesco Grandesso, Epicentre, France

Background

Antigen-detecting rapid diagnostic tests (RDTs) targeting the histidine-rich protein (HRP2) are generally more sensitive than those targeting the Plasmodium lactate dehydrogenase (pLDH) protein.

However, HRP2-based tests can remain positive for weeks after the patient has taken an effective treatment, whereas pLDH-based tests become negative within a few days.

This study aims to provide guidance on the use of RDTs in high transmission settings, where children may experience multiple infections over a short time period.

Objective

To estimate the time to become negative of the MSF-recommended rapid diagnostic tests SD Biotline Malaria Antigen P.f. (SD Biotline HRP2), CareStart Malaria HRP2 (Pf) (CareStart HRP2) and CareStart Malaria pLDH (PAN) (CareStart pLDH) in children under 5 years of age after treatment of a malaria infection.

Methods

In Kazo sub-county (Uganda), 212 children with a microscopically-confirmed diagnosis of malaria were treated with Coartem® and followed for 42 days. RDTs and blood smear microscopy were performed on days 2, 3, 5, 7, 14, 21, 28, 35 and 42. Kaplan-Meier survival analysis was used to estimate the risk of remaining positive over time.

Results

Out of 204 patients included in the preliminary database, 71 (35%) experienced a second episode of malaria during follow-up and were excluded from the analysis.

For the CareStart pLDH test, the median, 75th and 95th percentiles of the time to become negative were 2 days (95%CI 2-2 days), 3 days (95%CI 3-5 days) and 14 days (95% CI 7-NC days), respectively. For the SD Biotline HRP2 and CareStart HRP2 tests, the risk of remaining positive on day 42 was 0.52 and 0.53, respectively. The median time to negative for these two tests was therefore beyond the follow up period.

Conclusions

The time to become negative of the two HRP2-based tests was extremely long. About half of cured patients remained positive six weeks after treatment. This shows the difficulty in interpreting repeat HRP2-based tests in high transmission settings. Our study suggests that the use of a pLDH-based test might be more appropriate after recent treatment, which will be further evaluated taking into account sensitivity and specificity of the test. An identical study is ongoing in a low transmission setting.

A rapid screening tool for psychological difficulties in children 3-6 years old: results of primary and secondary validations

Caroline Marquer, Epicentre, France

Background

The mental health needs of young children in humanitarian contexts often remain unaddressed. The lack of a validated, rapid and simple tool for screening combined with few mental health professionals, in the field, able to accurately diagnose and provide appropriate care mean that young children often remain without care. MSF and Epicentre carried out a validation study to fill the gap for young children in need of care in humanitarian context.

Methods

This study was conducted in three different countries (Niger, Colombia and Kenya) in MSF programs from October 2009 to February 2012. A random sample of children 3 to 6 years old were included (900 children were included in total). A standard cross-cultural validation was implemented using quantitative and qualitative methods. First, the scale was translated into local language, using corroboration of independent translations. Psychometrically, the tool was classically examined (item analysis, factor analysis, Cronbach) and also analyzed with classical statistics as sensitivity and specificity. Then, external validity were assessed comparing the tool against a clinical interview as the gold standard.

Results

The RST-22 demonstrated good concurrent validity, as scores correlated with the gold standard and the Clinical Global Impression Severity Scale (CGI-S). The test-retest reliability of the RST-22 was found to be high. Qualitative research using focus groups and individual interviews provided useful information to support the external validity of the scale. Specific results from the primary and two secondary validations will be presented.

Conclusions

To our knowledge, this is the first validation of a general screening scale for children 3 to 6 years old with a cross-cultural validation component, for use in humanitarian contexts. The results of the validation showed the RST-22 as a reliable and a valuable tool in screening for psychological distress in humanitarian context to provide appropriate screening and organize care. Further studies to replicate our findings and additional validations of the RST-22 in other populations may help improve the delivery of mental health care to children.

Second Session

Taking stock of where we are: baseline surveys and monitoring

Burden of visceral leishmaniasis in villages of eastern Gedaref State, Sudan: an exhaustive cross-sectional survey

Yolanda Müller, Epicentre, Switzerland

Background

Since December 2009, Médecins Sans Frontières has been treating patients with visceral leishmaniasis (VL) in Tabarak Allah Hospital, eastern Gedaref State, one of the main endemic foci of VL in Sudan. A survey was conducted to estimate the VL incidence and the mortality attributable to VL in Al-Gureisha locality, that is, the catchment area of Tabarak Allah Hospital.

Methods

Between the 5th of May and the 17th of June 2011, we conducted an exhaustive door-to-door survey in 45 villages of Al-Gureisha locality. All individuals with fever of at least two weeks, VL cases diagnosed and treated in the previous year and suspects of post-kala-azar dermal leishmaniasis (PKDL) were referred to medical teams for clinical examination. New clinical VL suspects were tested with an rk39 rapid test, and, if negative, with the direct agglutination test (DAT). Deaths reported to have occurred in the previous year were investigated by verbal autopsy.

Results

In the 45 villages, interviews were conducted in 17,702 households, corresponding to a mid-year population of 94,369. The crude mortality rate over the mean recall period of 409 days was 0.13/10'000 people per day. VL was a possible or probable cause for 19% of all deaths. The VL-specific mortality rate was estimated at 0.9/1000 per year.

The medical teams examined 551 individuals referred by the field teams for a history of fever of at least two weeks. Out of these, 16 were finally diagnosed with primary VL. The overall incidence of VL over the past year was 7.0/1000 persons per year, or 7.9/1000 per year when also taking into account the deaths possibly or probably due to VL. Overall, 12.5% of the population reported having been treated for VL in the past.

Discussion

VL represents a significant burden in eastern Gedaref State. Active VL case detection had a very low yield and might not be the most relevant intervention for VL control in a context of current adequate access to care.

A multicentric retrospective analysis of culture conversion and time to culture conversion in multidrug resistant tuberculosis patients

Cathy Hewison, Médecins Sans Frontières, France

Background

Culture conversion is used to shift multidrug resistant tuberculosis (MDR-TB) patients from intensive to a continuation phase of treatment. Reversion to positive is not currently included in WHO definitions of treatment outcomes.

Methods

We have estimated the culture conversion rates at 12 months, along with long term outcomes in 9 MSF supported projects in 5 countries (Armenia, Georgia, Kenya, Swaziland and Uzbekistan).

Relying on retrospective observational data, MDR-TB patients, with cultured sputum and at least 12 months of follow-up were selected for study. Culture reversion, as defined by 2 positive cultures after an initial conversion, was calculated in patients with at least 21 months in the treatment program. Successful outcomes (cure or treatment completed) and negative outcomes (death or failure) conformed with WHO case definitions.

Results

Of a total of 2524 MDR-TB patients, 1084 patients were included in the analysis. Of these, 72% had previously been treated with first line drugs and 8% with secondline drugs, their median age was 31 years; 55% were male, and 25% had pre-extensively drug resistant tuberculosis (pre-XDRTB) or XDRTB on baseline testing. The rate of culture conversion was 74%. The median time to conversion was 4.2 months (IQR: 2.2-6.3).

History of previous secondline tuberculosis treatment (OR 3.2 95% [CI 1.6-6.3], $p < 0.001$) and any secondline resistance at baseline (OR. 1.4, [CI: 1.01-2.0] $p = 0.046$) were independently associated with the absence of conversion by 12 months. Out of 801 patients with culture conversion, 620 had been in the program at least 21 months of which 11% reverted to a positive status.

Successful outcomes were significantly higher among patients with culture conversion by 4 months (192/207, 92%), when compared to those converted between 4 and 12 months (173/218, 79%), $p < 0.0001$. Negative outcomes were significantly higher among patients who reverted after initial conversion (38/51, 75%) compared to those who did not revert (21/370, 6%) $p < 0.0001$.

Discussion and conclusion

Early culture conversion is associated with a successful outcome amongst patients with 12 months of follow-up. However, 11% of patients reverted to positive, and had poor outcomes. These results support the need for reversion to be included in a revised definition of treatment failure.

A pilot entomological evaluation of malaria transmission in southwestern Uganda

Patrick Ojuka, Epicentre, Uganda

Background

A recent malaria epidemiological survey in Greater Mbarara district showed a drop in malaria prevalence among children below five years from 44% in 2004 to 24% in 2010. Despite this drop, the decrease was very heterogeneous between rural and urban areas. The aim of this study was to collect baseline entomological data in the Greater Mbarara district to better understand malaria transmission in the area.

Methods

We conducted the survey during the rainy (R) and dry (D) seasons of 2011-2012. We collected mosquitoes using Human landing collection, morning indoor resting catches and Pyrethrum spray catches in Engari and Kigorogoro. We assessed *Anopheles* infectivity by detection of circumsporozoite protein (CSP) using ELISA and the level of resistance to insecticides. We calculated the entomological inoculation rate (EIR) using the man biting rate and sporozoite rate.

Results

We collected 133 (R) and 236 (D) female *Anopheles* in Engari, and 641 (D) in Kigorogoro. In Engari (D), 66 % were *Anopheles gambiae* while in Kigorogoro (D) 84 % were *Anopheles funestus*. Two biting peaks were observed: an early peak at 19-20 hours (R) and at 18-20 hours (D), both indoors and outdoors, and a late indoor peak at 24-1 hours (R) and at 24-4 hours (D).

We found 85% (R) and 44% (D) of *Anopheles* resistant to DDT in Engari, and 13% (D) in Kigorogoro. We calculated an EIR of 2 infective bites per person per night during the rainy season. EIR during dry season pending ELISA results.

Discussion

This survey showed that the principal malaria vectors in the rural areas of Kiruhura district are *Anopheles gambiae* and *Anopheles funestus*. The development of resistance to insecticides and the appearance of evening biting peaks in the early hours may impact on the malaria control strategies in the area.

Third Session

Responding to diarrheal diseases

Assessment of water, hygiene and sanitation in a highly endemic area for cholera, Kalemie (RDC) January 2012

Grazia M Caleo, Epicentre, France

Background

Contaminated water, scarce hygiene and sanitation are important contributors to the transmission of faecal–oral disease.

Since June 2011, MSF has supported MoH efforts to reduce the burden of cholera in Kalemie. Along with case management and the reinforcement of surveillance, preventive actions to improve water and sanitation and possibly vaccination are foreseen.

Evaluation of access to water, quality of drinking water, hygiene and sanitation at household levels are required, in order to guide cholera control actions in Kalemie.

Methods

The city of Kalemie was divided in five strata according to cholera incidence in 2008-2011; proximity to lake or river; population density and the possibility of connecting to the city water-pipe (REGIDESO). In each stratum, a cluster survey (25x13) was conducted with clusters randomly allocated using a spatial sampling method. In each household (HH), interviews were conducted with the person in charge of water collection. Water sources were classified as improved or unimproved, according to WHO classification. Levels of free chlorine (0.2-1.00 mg/l) contamination by *Escherichia coli* were measured and used as indicators of water quality. For each HH member, the number of diarrhoea episodes during the previous two months was collected. Types of latrine and hygiene practices were also noted.

Results

1628 household participated. About 93% of respondents were women. One out of five HH reported diarrheal case(s) during the recall period. Seventy percent of HH had access to an improved source of water, but 87% reported difficulties in accessing it. The proportion of HH actually using an improved source dropped to 18%, where difficulties were reported. Only 3% of HH had water of good quality, without *E.coli* contamination, with recommended levels of free chlorine and from an improved source. Only 15% of HH had chlorine a home. Overall, drinking water was chlorinated in 8% of HH; 66% of samples were contaminated by *E.coli*. About half of the HH (52%) declared washing hands after toilette and 5% after child toilet. Overall, 77% of HH had traditional latrines, with a high proportion of sharing (63%).

Discussion

Overall in Kalemie, the proportion of HH without safe drinking water and adequate sanitation is insufficient. Enhance access to chlorine, access to improved water sources and sanitation are important areas of intervention.

The use of mapping to identify priority areas for intervention during a typhoid outbreak in Harare, Zimbabwe

Isabel Martínez-Pino, Epicentre, France; European Programme for Intervention Epidemiology Training (EPIET)

Background

An outbreak of typhoid fever occurred in Harare City (Zimbabwe) in October, 2011. Our investigation aimed to identify priority areas for water and sanitation intervention through mapping of the most affected suburbs, Kuwadzana (KU) and Dzivaresekwa (DZ), two contiguous suburbs in the west of the city.

Methods

Individual patient data, collected from the Ministry of Health registers were used to describe the epidemic for Harare City in terms of person, time and place. We used Poisson regression to calculate attack rates (AR), stratified by sex, age and place of residence. Data collection for mapping was limited to KU and DZ. GPS coordinates of the residence of cases included in the typhoid fever registers were recorded. 2000 random points were generated within shape files of KU and DZ suburbs, serving as controls. We used k-functions and Kernel smoothing techniques to detect clustering. Data analysis was carried out using STATA 11 and R© Statistical Software.

Results

From 10th October 2011 to 17th March 2012, 3,795 suspected cases of typhoid fever were reported in Harare, 2570 (67.7%) of which were in DZ and KU. The median age was 16 years [IQR 4 – 30 years] and 54.1% were female. The stratified AR in DZ was 0.80% (785/98,179) and 1.37% in KU (1785/130,657). We were able to trace and record 2,212 (86.1%) GPS coordinates of suspected cases in DZ and KU. The difference between the k-functions for cases and controls showed that cases were more clustered than controls ($p < 0.001$). Two clusters were identified in KU and DZ, both of which were located next to two water sources.

Discussion

This is the third epidemic of water-borne infections occurring in Harare since 2008. Mapping revealed clusters (surrounding several boreholes), indicative of high typhoid fever transmission. Spatial analysis is a powerful tool able to identify potential sources of transmission, helping MSF target those water, sanitation and health education interventions, which might limit the spread of the outbreak.

Nutritional interventions in the management of childhood diarrhea: current strategies and opportunities

Sheila Isanaka, Epicentre, France

Background

Despite decreases in diarrhea-specific mortality, there has been little improvement in the incidence of childhood diarrheal illness in recent decades and diarrhea remains a leading cause of morbidity and mortality among children < 5 years. Effective interventions that may be used alongside currently available therapies to improve treatment outcomes and reduce the incidence of such illness are still required.

Malnutrition has been associated with an increased incidence, duration and severity of diarrheal illness, and diarrhea has been shown to impair both weight and height gains. Given this important bidirectional interaction between diarrheal illness and malnutrition, it may be possible to reduce the negative impact of diarrheal illness in children through the use of nutritional intervention.

Methods

Here, we review the evidence for current recommendations for the treatment of childhood diarrhea, in particular zinc therapy. We present the clinical benefits and operational challenges associated with zinc therapy and discuss evidence for other nutritional interventions that may be used in combination with zinc to accelerate progress in reducing diarrheal morbidity.

Discussion

We suggest dietary intake and nutritional status may modify and mitigate the negative effects of infection and propose that improving the nutritional status of children during and after diarrheal illness may be an opportunity to further improve child health. Future research should aim to evaluate the incremental benefit of providing nutritional support in the treatment and prevention of childhood diarrhea.

Spatial pattern in cholera outbreaks: guidance for preparedness and control

Francisco Luquero, Epicentre, France

Introduction

Cholera is still present in several areas of the world, particularly in African countries. Further, countries where cholera outbreaks have not occurred for years, like Zimbabwe or Haiti, have recently experienced serious epidemics. Effective responses to cholera outbreaks require two important actions: (i) case-management in order to reduce mortality and (ii) prevention and control activities in order to reduce transmission. The collection of spatial data is required to guide both types of intervention. Here we present examples of the use of epidemiological methods, in which spatial data collection helped to detect populations at high risk of cholera infection in Chad and in Haiti.

Methods

The study areas were Ndjamená the capital city of Chad and the Artibonite region in Haiti. Two types of spatial data were used for the analyses: individual data in Ndjamená and aggregated data in Artibonite. In Ndjamená, the coordinates of the place of residence of cholera patients were registered by field teams. In the Artibonite, the communal place of residence of cholera patients was collected. Kernel functions were used in Ndjamená to represent the spatial intensity of cases and k-functions and random labelling methods were used for cluster identification. In Artibonite, attack rates (AR) by section and incidence risk ratios (IRR) were calculated and a negative binomial model was used to calculate the confidence intervals. Kulldorff's spatial scan statistic was used for cluster identification in Artibonite.

Results

In Ndjamená, 4768 cholera patients (AR=0.5%) and 31 deaths (case fatality ratio: 0.7%) were registered in the two cholera treatment centres set up in 2011. The Kernel functions showed a heterogeneous distribution of the intensity of cases in Ndjamená and the K-functions identified statistically significant clustering. The random labelling methods allowed us to identify two main clusters.

In Artibonite, we collected the geographical origins of 80051 cases (AR=5%). Several sections showed a statistically significant higher risk of cholera infection than the overall risk in Artibonite. The sections at higher risk of infection were different during the first wave in 2010 (Southwest part of Artibonite) from those of the second wave in 2011 (East part of Artibonite). We identified a major cluster in the Northeast part with its centroid in Marmelade.

Conclusions

High risk areas for cholera transmission were identified in Ndjamená and Artibonite using different analytical approaches. Individual based analysis and area data analysis can each be used to characterize the variation in the risk of infection. However, the spatial patterns should be put together with other information like feasibility, acceptability or expected impact of the interventions in order to guide preparedness, prevention and control plans.

Fourth Session

Introduction to the round table

Operational consequences following mortality surveys and surveillance activities in different emergency contexts

Sandra Cohuet, Epicentre, France

Background

Mortality data, properly collected, interpreted and used, can inform and contribute to humanitarian action. We present three examples of the uses of mortality data in two different contexts: acute crisis in Somali refugee camps and chronic crisis in Central African Republic (CAR). Our objective is to report actions undertaken delivered by stakeholders following the communication of the mortality results.

Methods

Two household- based retrospective mortality surveys were conducted: one among the residents of Carnot urban district in July 2011 and another among recently arrived Somali refugees in Dagahaley camp, Dadaab, Kenya in August 2011. An active mortality surveillance system, based on community health workers, was implemented in August 2011 among Somali refugees' communities in Kobe, Dolo Ado camp, Ethiopia.

Results

In Carnot Urban District, during a 6 months recall period, the crude and under-5 year mortality rates were 3.7 and 7.0 deaths per 10,000 person-days. In Dagahaley, during a 6 months recall period, the crude and under-five mortality rates were 1.0 and 2.2 deaths per 10,000 person-days. In Kobe, the crude mortality rate was between 5.8 and 0.3 deaths per 10,000 person-days between August and December 2011. The under-five mortality rate was between 11.9 and 1.7 deaths per 10,000 person-days during the same period.

Discussion

All three examples showed mortality results largely above emergency thresholds (1 and 2 deaths per 10,000 person-days for crude and under-five mortality rates respectively). Mortality estimates in chronic crisis can lead to a change in the operational strategy. A Paediatric program has been implemented in Carnot in 2012. However, results from retrospective mortality surveys in acute crisis are frequently delivered too late to be able to influence the operations in emergency. While these surveys often deliver messages that advocate interventions on behalf of populations in crisis, prospective mortality surveillance can guide humanitarian actions in a more timely and effective manner.

Prevention strategies for malnutrition: combining food and cash transfers in Niger

Céline Langendorf, Epicentre, France

Background

Although ready-to-use foods and community-based care have transformed treatment of malnutrition, preventive strategies continue to be the subject of debate. Options for large-scale preventive distributions include fortified blended flours, ready-to-use foods and direct cash transfer either alone or in combination with family protective rations. Finding the most appropriate strategy is essential in countries like Niger, who face annual hunger gaps. Here, we report the interim results of a study comparing the effects of different preventive strategies on the incidence of acute malnutrition and mortality.

Methods

Observational cohorts include all children 60cm to 80cm, resident in 48 villages of Madarounfa district, Niger (n=4,671 in August 2011). Seven strategies are assessed: monthly distributions of supplementary food, (CSB++, Supplementary'Plumpy® [SP] or Plumpy'Doz®[PPD]) for children, with or without household support: either cash (38€ per month) or food. An additional arm includes a cash transfer of 42€ per month to all households with a child in the target group. Anthropometric and clinical data are collected monthly. All children have access to the same primary health care programs. Endpoints include wasting, severe wasting and mortality. Mortality events include all reports in which the cause of absence from surveillance visits was reported to be death by a family member.estimated during this preliminary analysis.

Results

At 5-months of follow-up (August to December, 2011), strategies involving a food supplement plus cash transfer all showed reduced incidence of wasting compared to the cash only arm. A similar trend was apparent in the incidence of severe wasting, only for the PPD plus cash arm (HR=1.94; 95%CI: 1.11-3.40). Similar incidence of severe wasting (HR=0.76; 95%CI 0.43-1.35) and wasting (HR=0.75; 95%CI: 0.54-1.03) were found in the CSB++ and the SP arms. There was no difference in the incidence of severe wasting between the cash only and the SP arms (HR=0.89; 95%CI: 0.47-1.67). Similar incidence of wasting was found in the CSB++ and the cash only arms (HR=0.98; 95% CI: 0.68-1.41).

Discussion

These results cover the first 5 months of the study. Further analyses and results after the 2012 hunger gap will provide important additional information.

Round Table

What happens now? Use of study results for programs and policy

Participants:

- Bruno Jochum, MSF-OCG, Switzerland
- Saskia de Pee, World Food Programme, Italy
- Dr Eric Adehossi, Hôpital National de Niamey, Niger
- Dr Nigel Rollins, World Health Organisation, Switzerland

Fifth Session

New research themes for Epicentre

Reconstruction of nonunions of the tibial and humeral fractures in war-wounded Iraqi civilians

Rasheed M Fakhri, Médecins Sans Frontières, France

Objective

To describe medical care and surgical outcomes following functional reconstructive surgery for tibial (2006 to 2008) and humeral nonunions (2006 to 2010) in late-presenting patients who already had at least one prior operation in Iraq.

Study Design

Retrospective review of patient records for initial data and active follow-up for the latest outcome information.

Setting

Médecins sans frontières surgical program in the Red Crescent Hospital, Amman, Jordan.

Subjects and procedures

Sixty-two civilians experienced nonunion tibial fractures caused by war-related trauma in Iraq. Almost three fourths of these patients arrived with infected injuries. Nine patients had amputations as initial surgical procedure; the rest, and all uninfected patients, underwent reconstruction. Thirty patients with humeral nonunion were also assessed. Sixteen patients were treated with intramedullary nail (IMN) (8 with bone graft), 8 patients were treated with dynamic compression plate (DCP) (6 with bone graft) and 6 had external fixation (2 with bone graft).

Main Outcomes

Late surgical complications (after the patient's return to Iraq) were analyzed for infection recurrence and bone union. Functional condition was assessed using the Short Musculoskeletal Functional Assessment score for tibial nonunions and muscle strength, shoulder pain score and range of motion for humeral nonunion.

Results

A-tibial: Excluding 9 patients lost to follow-up, four of 53 patients (8%) had infection recurrence, all from the group of initially infected patients.

Excluding 9 patients lost to follow-up and the 9 patients who underwent an amputation, 7 patients (16%) did not achieve successful tibial union (2/14 and 5/30 in respectively the groups of uninfected and infected patients).

B-Humerus

Bone union was achieved in 26 patients (87%). Non-union occurred in 12% of IMN fixation cases and IN 30% of those with DCP fixation, while all external fixation techniques resulted in satisfactory union. All surgeries involving nailing and bone graft achieved bone union. There were no significant differences in the function of the shoulder between IMN and DCP groups. However, patients with external fixation tended to continue to have more pain and limited function.

Conclusion

Our program shows that despite delays in definitive reconstruction, devastating war wounds can be successfully reconstructed in the sub-acute period in patients with infected and uninfected injuries. Surgically treated patients in Amman achieved similar outcomes.

Estimation of emergency obstetrical care needs met by a Médecins Sans Frontières programme in Jahun, Jigawa State, Nigeria

Sophie Masson, Epicentre, France

Background

The MSF-OCP comprehensive emergency obstetric programme began in July 2008 in Jahun General Hospital (JGH), serving the population of Jahun and Miga LGA. Despite increased activity, the number of complicated deliveries being admitted has recently levelled off. Our study tried to estimate the project's coverage of emergency obstetric care.

Methods

A cross-sectional survey was conducted in Jahun and Miga LGA (September 2011) using a PPS cluster sampling (30 clusters). All the women who ended a pregnancy in the year prior to the survey in each selected cluster and identified through an active case finding approach, were interviewed. The "complicated deliveries" assignment was based on the reported occurrence of the clearly discernable signs of major obstetric complications.

Results

In 28 villages, 1326 women who delivered their infants in the 12 months prior to the survey were interviewed. 13.81% (95% CI, 10.3-18.3) of the women delivered in a health facility. Of these, 82% (95% CI, 69.4-90.1) took place at JGH. The MSF program provided care for 14.6% (95% CI, 10.3-20.3) of women who reported complications and 30.7% (95% CI, 17.7-47.6) of the women when only adverse outcomes were considered. Among women who delivered at JGH, the reported occurrence of complications seemed to be the main reason for seeking care.

Discussion

Our study revealed that women sought care in our programme mostly when they perceived complications. Programme participation remains below 50% when only adverse symptoms and delivery outcomes are considered. Increased sensitisation of women in child-bearing age to the signs of important complications is warranted. This might increase attendance in the program. Reinforcement of coordination with the health services in the catchment area are also required.

This study was to our knowledge the first attempt to estimate the use of a Comprehensive Emergency Obstetric Care programme through a population based survey of self-reported complications.

Home pharmacy : a possible way to improve pediatric care

Jessica N Sayyad, Epicentre, France

Background

Although both diagnostic and treatment capabilities are present in most health care structures in Sub-Saharan Africa, access may be limited for certain groups who face financial, geographical and cultural barriers. Self-medication remains an important means of care that could be integrated in strategies to improve treatment and access. Home pharmacies may offer mothers a medically-guided toolkit with which they can manage minor ailments before they become serious, thereby reducing the burden on health care structures.

Methods

In order to develop this medically-guided toolkit, we conducted a preliminary qualitative assessment in the Likouala district, in the area of Bétou, Republic of Congo. Using focus groups, we explored health care seeking behavior and patterns and types of self-medication used in this population by mothers when children get sick.

Results

The preliminary study conducted in the area of Bétou confirmed the quasi systematic use of self-medication by mothers as a first resort solution despite access and availability of free care.

Discussion

The home pharmacy should be tailored to context and based on local practices, epidemiology, behaviors and the types of self-medication used whether originating in traditional or modern medicine.

Practices and use of self-medication could be integrated into operational strategies, therefore a pilot project is planned to document the integration and potential value added of the home pharmacy into the MSF programs.



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