

REVIEW OF MSF INTERSECTIONAL CHOLERA RESPONSE: ZIMBABWE 2008–2009

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Background

Between November, 2008, and April, 2009, a large cholera epidemic swept across Zimbabwe. Cases were reported in nine of ten provinces, affecting both urban and rural populations. The outbreak occurred during a national economic crisis that included water and food shortages. The three sections of MSF already working in Zimbabwe responded to the epidemic in what was one of the largest cholera interventions in the organisation's history. In July, 2009, a review of the intersectional response was conducted. The review focused on preparedness, timeliness, and intervention strategy.

Methods

A retrospective review was conducted of the interventions carried out by MSF during the epidemic. Where possible, operational outcomes were compared with norms as presented in the MSF cholera guidelines. Interviews, both face-to-face and by telephone, as well as focus groups, were held with key informants. Key documents and databases were reviewed and health structures that had been used as treatment centres were visited.

Results

By the end of the outbreak, approximately 65,000 of the 100,000 reported cases had been treated in MSF supported structures. In urban areas, teams quickly implemented established strategies for treating patients, including large treatment structures for severe cases and small decentralised structures for mild cases. In large rural areas, few tools exist to guide interventions, and strategies took time to develop. Initially, water, hygiene, and sanitation activities were largely focused in treatment centres with preventive activities implemented later as a secondary activity. Although treatment protocols were standardised, in some areas there was incorrect application of case definition, which resulted in the number of cases being under-reported.

Conclusion

Experience gained during this epidemic should be used to adapt guidelines, which can help teams to improve response for future epidemics, particularly in rural areas. Revised guidelines should include recommendations for rural strategy, minimum requirements for rural treatment structures, data collection tools, protocols, and health promotion materials. Additionally, preventive practices should be reviewed to ensure best practices are put in place and to orient potential research into new strategies.

EPIDEMIOLOGICAL EVALUATION AND MATHEMATICAL MODELLING OF A HEPATITIS E OUTBREAK IN NORTHERN UGANDA

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Background

A hepatitis E outbreak started in Madi Opei sub-county, Kitgum district, in northern Uganda in October, 2007. The outbreak quickly spread throughout the internally-displaced persons (IDP) camp and then into other sub-counties in Kitgum and Pader districts. By May, 2009, the outbreak had resulted in almost 10,000 cases and 113 reported deaths. MSF started large-scale water and sanitation interventions, including latrine construction, chlorination of mechanised water supplies, and promotion of behaviour change, within selected IDP camps in Kitgum in April, 2008, and Pader in September, 2008. We assessed whether the MSF response had an effect on hepatitis E transmission and examined how MSF should respond to future outbreaks.

Methods

The timing and scale of the main water and sanitation responses in four IDP camps were compared with the epidemic curve and the corresponding infection curve (estimated by applying a mean incubation period to the epidemic curve). Any impact should lead to a change in the linear trend of the curve. To quantify this effect and to explore different intervention scenarios, an SEIR (susceptible-infected-infectious-recovered) deterministic model of the hepatitis E outbreak was constructed.

Results

The analyses showed that for most water and sanitation interventions, the incidence of infection was already decreasing in Kitgum before implementation. Therefore, the interventions were unlikely to have had a great impact. In Pader, the water and sanitation interventions might have prevented sustained transmission. However, the large scale and rapid migration back to villages of origin (from approximately 17% to 42% of the original main camp population) during the outbreak period might also have played a key part. The SEIR model indicated the interventions probably led to a 4.9%–6.7% reduction in total cases. The model also indicated that water purification would likely have a larger effect than latrine building in controlling hepatitis E, as the latter effect would be delayed by environmental contamination already in the system. A substantially better effect would be provided by combining the interventions.

Conclusion

Large scale water and sanitation interventions must be implemented early in an outbreak. The model assumed that implementation of these interventions started immediately and that direct person-to-person transmission was negligible. Accurate seroprevalence, population, and intervention data from future epidemics will help improve the reliability of this model.

SURGICAL DELIVERY AFTER THE HAITI EARTHQUAKE: LESSONS LEARNED IN EMERGENCY RESPONSE

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Background

On January 12, 2010, a 7.0 magnitude earthquake devastated Haiti, killing an estimated 200,000, with an additional 300,000 injured and 1 million people displaced. At the time of the quake, MSF was running an emergency centre in Port-au-Prince, and immediately after the event, launched its largest surgical project to date. Many earthquake victims suffer injuries requiring surgical intervention and the first 72 hours after the event are critical. Within hours of the quake, around 800 injured victims were gathered outside our health facilities and administrative offices. Other MSF hospitals in the area suffered major damage resulting in no functioning operating theatres. Tents were erected to care for the wounded, and thousands of minor surgical procedures such as wound debridements were performed in the first 24 hours. By the second day, our surgical teams arrived and the operating theatres in two government hospitals were rehabilitated and functional. Surgeons and anaesthesiologists worked in teams to operate day and night. In this study, we describe the volume and type of operations performed, as well as the lessons learned in providing surgical care in a major disaster.

Results

Data were prospectively collected in the field and validated by the surgical referent. In the 11 weeks after the earthquake, 1,444 procedures were performed on 775 patients. In the first 2 weeks, 171 (70%) patients had injuries directly related to the earthquake. 190 (65%) procedures were minor or wound surgery, and 34% (99) were orthopaedic procedures. After the third week, patients requiring emergency surgery not related to the earthquake increased, which reflected the lack of surgical care for the general population. In total, 56 amputations were performed. 72 (5%) surgical procedures were violence-related, and believed to be directly related to the collapse of a prison and the escape of thousands of inmates.

Lessons learned

MSF established surgical care quickly and cared for thousands of direct and indirect victims after this major earthquake. The pattern of injuries was similar to that reported by teaching and military hospitals after the Sichuan, China, and northern Pakistan earthquakes.

Recommendations

The key to our success was our presence in Haiti before the earthquake. The presence of more emergency physicians and a proper triage system would have improved the identification of surgical cases. The need to have more surgeons and anaesthesiologists with experience working in resource-limited contexts was identified. A surgical coordinator was needed to supervise the medical staff, and would have also helped refer or transfer complicated cases and make difficult clinical decisions. The presence of surgical subspecialists from the beginning of the intervention might have improved care and reduced the number of re-interventions.

A RETROSPECTIVE ANALYSIS OF COST AND COST-EFFECTIVENESS OF SWITCHING FROM STAVUDINE OR ZIDOVUDINE TO A TENOFOVIR-BASED FIRST-LINE REGIMEN FOR HIV TREATMENT IN RURAL LESOTHO

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Background

Lesotho is a resource-limited country with the third highest HIV prevalence in the world. In 2006 MSF, in partnership with the Government of Lesotho, started a decentralised, nurse-based HIV/AIDS programme at primary care level in Scott Health Service area, a rural health district with a population of roughly 200,000. At the end of 2007, in line with WHO recommendations, the national protocol for first-line HIV treatment was changed from stavudine (D4T) or zidovudine (AZT) to tenofovir (TDF). We used clinic data to assess the cost-effectiveness of switching to tenofovir as first line compared with stavudine or zidovudine.

Methods

We did a retrospective analysis using data extracted from the files of patients initiating antiretroviral therapy during 2008 and followed up until the end of 2009. The cost was calculated for each individual patient according to their antiretroviral regimen, prescriptions of essential drugs, number of consultations, number and kind of laboratory tests, length of hospitalisations, and programme supervision. Outcomes were expressed as quality-adjusted life-years (QALYs).

Results

943 patient files were analysed, representing 1,482 patient years on antiretroviral treatment. Median duration on antiretroviral treatment was 17 months. Baseline characteristics were not statistically different between groups. The total cost per QALY for a patient started on TDF regimen is only 16% more expensive than for a patient started on D4T and 3% more expensive than for a patient started on AZT. We found that TDF becomes cost effective (cost per QALY) compared with D4T or AZT if the price is reduced by 25% or 7%, respectively. Costing projections estimate a TDF price reduction of 30% within the next 2 years.

Conclusion

Our analysis, by contrast with previous costing studies, is based on data collected in a rural clinic setting. These results are therefore reassuring for countries considering implementation of new WHO recommendations for antiretroviral therapy in resource-limited settings.

DISTRIBUTION OF ANTIRETROVIRAL THERAPY THROUGH SELF-FORMING GROUPS OF PEOPLE LIVING WITH HIV, TETE PROVINCE, MOZAMBIQUE

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Background

As the number of people on antiretroviral therapy increases in resource-limited settings, new models of delivery are needed to manage increasing caseloads. Congested services, distance, and transport costs are among the reasons reported by patients for defaulting on treatment. We piloted a model for community antiretroviral groups (CAGs) in the rural province of Tete, Mozambique, to improve retention of stable patients on antiretroviral therapy and decongest health services. Data were collected prospectively for the cohort included in the CAGs.

Conclusion

Early data for mortality and retention in this community-controlled approach to antiretroviral delivery provides an effective and supportive model for delivering treatment. Continued monitoring will help to establish the long-term efficacy of this model.

Methods

Adult patients in five districts of Tete province were screened and encouraged to form antiretroviral treatment groups in their communities. The patient groups elected their own representative who each month reported adherence and outcomes of the group members to the health worker in the nearest health centre and collected antiretrovirals for distribution to the group. Members were required to attend group sessions at the nearest health centre, which included consultation, CD₄ count, and training, every 6 months. Functioning of the CAGs was monitored by a counsellor through home visits. Outcomes were reported monthly and updated in an electronic database.

Results

Between June, 2008, and December, 2009, 199 CAGs were formed by 1,253 eligible patients. Median time in a CAG was 9.1 months (IQR 8.1–11.6 months). At the end of January 2010, 1,195 (95.4%) patients were on treatment in CAGs, 21 (1.7%) had died, 3 (0.2%) were lost to follow up, 24 (1.9%) had transferred to another health centre, and 10 (0.8%) had returned to the conventional model of facility-based care. Patients were able to effectively support each other at the community level though the distribution of treatment, emotional support, and monitoring of basic indicators.

LONG TERM MORTALITY AND NUTRITIONAL STATUS FOLLOWING SEVERE ACUTE MALNUTRITION: A LONGITUDINAL COHORT STUDY

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Background

Effectively tackling severe acute malnutrition (SAM) is a global public health priority. Most treatment programmes report short term outcomes at discharge. There is limited evidence about subsequent mortality and morbidity. We aimed to address this research gap by describing longer term outcomes one year after SAM treatment.

Methods

A year after discharge, we attempted to trace all survivors from a large urban, inpatient-based SAM treatment programme in Blantyre, Malawi. 796 of 1,024 (78%) patients had been enrolled in a randomised controlled trial of probiotics, which had no overall effect. Detailed baseline and follow-up data were available.

Results

Between July, 2006 and March, 2007 1,024 patients (median age 21.5 months, IQR 15–32 months) contributed to 1,187 admission episodes for SAM treatment. 697 of 1,024 (68.1%) had oedematous malnutrition. 459 (45%) were known HIV seronegative, and 445 (43%) known seropositive. Long term outcomes were determined for 899 patients (88%). Mortality risk was greatest early in the programme: 238 (23%) children died during initial inpatient treatment, 84 (8%) in the subsequent 90 days, and a further 105 (10%) during long term follow-up. Preliminary Cox regression showed that HIV was strongly associated with mortality. Of total deaths, 274 of 427 (64%) were known seropositive but only 77 (18%) known seronegative. Low admission weight-for-age, low admission weight-for-height, and age less than 12 months were also associated with mortality after adjusting for age, sex, admission anthropometry, and admission oedema. Initial treatment cure (weight-for-height >80% of NCHS [National Center for Health Statistics] median) was associated with long term survival: 372 of 471 (79%) children whose initial programme outcome was cure were still alive long term. Other initial outcomes (default, non-cure, re-admission to inpatient care) were associated with poorer survival. Total known long term programme survival was 472 of 1,024 patients (46%). At long term follow-up, mean weight-for-height z-score (WHZ) of those measured was -0.03 (SD 1.2, n=396) compared with baseline WHZ -2.25 (SD 1.3, n=976). Height-for-age remained low: z-score -3.05 (SD 1.4), compared with -3.23 (SD 1.4) at baseline.

Conclusion

Most children who were successfully cured in a SAM treatment programme survived for at least a year after discharge. However, overall mortality was high. Community-based strategies could play an important part in earlier identification and treatment of high-risk children, as well as the longer term support of children discharged from nutrition programmes. Earlier treatment of HIV is also likely to be important in improving SAM outcomes in HIV prevalent settings.

A NEW METHOD FOR ASSESSING ACUTE MALNUTRITION IN MOVING POPULATIONS: REPORT OF A FIELD TEST IN MALI

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Background

Guidelines for anthropometric nutrition assessments are available for sedentary populations. However, for pastoralists there are two main limitations: firstly, assessments cannot give a representative sample in a low density, scattered, mobile community where there is limited information on population size; and secondly, the traditional measure for acute malnutrition (weight-for-height) over-estimates malnutrition in pastoralists in the Horn of Africa and the Sahel, as they have a long-legged and short-trunked body shape. It has been shown previously that using mid-upper arm circumference (MUAC) for the case-definition of under-nutrition might be a more appropriate measure than weight-for-height for this body shape. The aim of this study was to develop a reliable sampling method appropriate for this population.

Methods

Following expert consultation and a peer review process, the pastoralist survey method (PSM) was developed. It was piloted in Kidal, Mali, from February to March, 2008. The survey started with a qualitative phase with key informants. This phase allowed an understanding of troupes, defined as an identifiable group of households moving together with their livestock, and also of the factors that determine how troupes are socially or geographically organised (organising factors). This phase led to construction of a sampling frame so that each troupe in the survey area had an equal chance of inclusion. The second quantitative phase of PSM was similar to a two stage cluster design. Validation of the qualitative phase was done by comparing information from different sources and methods. Data were analysed using bootstrap methods. Quantitative data were validated by comparing the precision of the estimates obtained in the field-trial to precision predicted by computer-based simulation.

Results

Appropriate organising factors were determined that enabled the construction of a usable sampling frame. In Kidal, water points were a key organising factor. The survey was practicable. The population data collected during the qualitative phase were validated using other quantitative and qualitative sources. Global acute malnutrition estimated by MUAC was 1.6% (0.2–4.3 95% CI). The precision of the estimate compared well to that predicted by computer-based simulation.

Conclusion

The PSM represents a significant improvement in estimating malnutrition where population data are not well known in advance or a population is moving. The method of sampling could be used for collecting information on other variables, such as vaccination coverage, and should be tested further.

A SLEEPING SICKNESS AWAKENS? DESCRIPTION OF A HUMAN AFRICAN TRYPANOSOMIASIS HOTSPOT IN A REMOTE AREA OF CENTRAL AFRICAN REPUBLIC

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Issues

The Ouham and the Moïssala regions, located in the western border area between Central African Republic (CAR) and Chad, are historical foci for human African trypanosomiasis (HAT). A recent WHO prevalence survey done in Moïssala suggested that the pocket is under control, with a prevalence of 0.03%. Globally, the prevalence of HAT is reported to be decreasing; however, figures are often underestimated in remote and conflict-affected areas. Through epidemiological characterisation of our HAT program in this isolated and insecure region of CAR, we aimed to identify the main challenges in setting up a HAT programme and to understand critical differences in expected prevalence.

Description

MSF has been treating HAT in the region since 2007. Screening strategies have been adapted over time, beginning with passive case finding with an eventual scale up to active screening. Changes in strategy were due both to security improvement and recognition of the large burden of disease. In 2009, we screened 7,765 people and treated 836 confirmed cases, making this one of the largest HAT programmes in MSF. A high proportion of patients are presenting with stage-one disease compared with stage-two (ratio P1/P2 of 1.6) while we have been performing semi-active screening. In general, parasitaemia is high and white cell count distribution low.

Lessons learned

High prevalence rates, high parasitaemia, and stage-one proportion are all in line with an active transmission hotspot of HAT. Analysis of these indicators has led us to scale up infrastructure, financial resources, and human resources to respond appropriately to the extent of the epidemic. Discrepancy between our data and reported prevalence in the region has encouraged us to strengthen our data collection and the diagnostic algorithm. Furthermore, by including the Ouham data in the WHO atlas of HAT cases, we have advocated for the revival of HAT surveillance in the area.

Recommendations

Our findings indicate that prevalence of HAT can vary widely, even within small geographic areas, and reinforces the need for close surveillance of HAT in regions seemingly under control.