

4.1 Health Problems

Trainer's Note

Session at a Glance:

Content	Activity	Time
1 Introduction	Brief Oral Presentation	5 minutes
2 Recurrent problems	OH presentation with plenary discussion	30 minutes
3 Death rate analysis, calculation and uses	Individual exercise with analytical review using short case study analysis	50 minutes
4 Conclusions	Brief Oral summary of main points	5 minutes
Total Session Time: 90 minutes		

Required Materials: 4.1 OH set, background paper "Mullahs, Mountain Tops, and Mortality: Creative Demography in Refugee Emergencies" by Brent Burkholder, attached to the end of this trainer's note.

Trainer's Notes:

1. Introduction

This session on emergency health, like the other "problem" sessions, is intended to show the types of recurrent problems that seem to persist in disaster-affected, and particularly, refugee camp populations. Explain that the point of these "problem" sessions is to show very practical ways to address these problems in a realistic rather than theoretical way. The Sphere guidance that follows in the next session can then be discussed as "solutions".

If you are not a doctor, nurse, or other public health professional, it is critical that you read through the background material and Sphere chapter very closely and explain your "tour guide" status to the group. If there are expert doctors, epidemiologists, or public health practitioners in the group, work closely with them to help explain the more technical areas of the presentation. This material should be readily understood by generalists, and usually presents no real problems in understanding, given enough time to talk things through. The Sphere & Health session (session 4.2) that follows is more technical in nature and requires a more careful preparation and field experience with emergency health programs.

2. Recurrent Problems

Using the OH slides prepared for this session, present each problem and provide examples from your own experience to fill out each problem in greater detail. If there are people in the group who have seen illustrations of these problems, ask them to contribute them to the discussion as you cover each problem, rather than waiting until the end. Remind the group that these are only representative problems, and that there are many others that are also common. At the end of this presentation ask if any participants have experienced other types of problems in relations to emergency health programs.

The presentation generally follows the background reading provided for this section. Remind the participants that a description of each problem and corresponding solutions are to be found in the

background reading as well as the Sphere book. The last 2 problems deal with understanding the death rates both crude mortality rates (CMR) and the under 5 death rate. The exercises that accompany these problems set the stage for the longer discussion about the meaning, use, and limitations of these indicators.

3. Death rate analysis, calculation and uses

This part of the presentation is based on the last two problems presented in the "health problems" OH series. The OHs will guide you through the meaning and math required to produce both the crude and under 5 mortality rates. In each case take time to allow each participant to work through the math individually before revealing the correct answers.

After the participants are familiar with the mechanics of calculating the death rate, use the prompt from the OH to refer them to the short paper by Brent Burkholder on analysis of death rates. People usually require about 10 minutes to read and digest this short piece. After everyone has read through the article ask the following questions to facilitate a discussion about the uses, biases, and limitations of death rates as indicators for health systems in disaster response:

Q. What is the management value of the CMR as an indicator of health systems in mass displacement emergencies such as refugee or IDP camps?	A. It is the ultimate indicator of real impact - death, specifically excess mortality.
Q. What is the most difficult number in the death rate calculation to accurately determine?	A. Finding the true total population is often very difficult to establish
Q. What types of bias may be inherent in the reporting of these numbers?	A. Deaths may be hidden by beneficiaries to preserve larger distributions. B. Deaths may be under-reported by those with out adequate means of registering and or counting total deaths C. The mortality rates may be vastly skewed depending on the total population figures used.
Q. What are the limitations of using CMR as an indicator?	A. It comes late; more predictive indicators would allow you to avoid excess mortality. B. Often the number is faulty since the total population number required in the denominator is often not known, or agreed upon. C. The cause of the deaths is also extremely important in order to address problems of excess mortality.

4. Conclusion

There are recurrent problems associate with mass displacement emergencies where crowding, lack of food, and inadequate water and sanitation are the norm. These problems are often considered "medical" problems and are addressed by health programs. In actuality, if water, food, sanitation, and shelter sectors are adequately addresses, the health sector is relatively manageable - the primary areas being curative care of specific cases and immunization campaigns against communicable diseases. The Sphere materials in this chapter represent some of the more agreed-upon findings from many situations around the world. The following session will explain some of the specific guidance provided by Sphere in running emergency health programs.

*This short paper is reprinted from: Carolina Population Center 9CPC) website
<http://www.cpc.unc.edu/> The paper was written by Brent Burkholder, CDC, 7 Feb 97*

Mullahs, Mountain Tops, and Mortality: Creative Demography in Refugee Emergencies

Demographers and epidemiologists share a passion for numbers--more specifically, we share a passion for precise numbers. However, dealing with international refugee emergencies requires both flexibility and a tolerance for ambiguity. Obtaining even basic demographic information amid the chaos of these settings can be extremely problematic, but is essential to humanitarian assistance efforts. The situation in Goma, Zaire in July-August 1994 presents an excellent example of the challenges faced in the field attempting to gather meaningful population estimates and indicators of health status, particularly mortality rates, while simultaneously attempting to maintain some semblance of scientific rigor.

Longstanding civil unrest in Rwanda between rival ethnic groups, the Hutus and Tutsis, finally exploded in mid 1994. Between July 14-17 thousands of ethnic Hutus fled Rwanda and sought refuge in the North Kivu region of neighboring Zaire around the small town of Goma. The chaos created by this rapid mass migration in just three days overwhelmed all attempts to count refugees at the border. Initial estimates of the refugee population around Goma ranged from 500,000 to 1.2 million. The wide range of these estimates was perhaps understandable due to the chaos of the situation and the wide geographic disbursement of the refugees, but greatly frustrated planning for humanitarian assistance.

Basic demographic information is needed in emergency situations principally for three reasons: 1. the total population is the denominator for all mortality, injury and morbidity rates; 2. it enables the calculation of relief supplies; and 3. a breakdown of the population by age (and sometimes gender) enables the targeting of special interventions (e.g. immunization and care for pregnant women). The "why" of collecting demographic data is much more obvious than the "what" or "how". A common problem in emergency situations is to attempt to collect too much data and epidemiologists must constantly resist the temptation to expand their scope beyond collecting only the basic, key information needed for initial planning. In general, the primary priority is to determine the total population and the general age structure (limited to "0-4 years" and "five years and over"). Other critical information but of slightly less priority is information on gender, identification of at-risk groups (e.g. unaccompanied children, pregnant women) and average family/household size.

Various strategies were attempted in Goma to further refine the wide range of population estimates. Counting shelters from aerial photographs of the three main camps and extrapolating from a "guesstimated" number of refugees/shelter provided a gross underestimation of total population because a majority of the refugees were initially surviving in the open without tents or even makeshift shelter. (In other recent situations more precise satellite imaging capable of counting discrete individuals has been used; however, even this high tech approach may be limited by weather, dense foliage, and sometimes political sensitivities. In any case, satellite photos were not immediately available in Goma.) Epidemiologists from Medicines sans Frontieres (MSF) attempted a simple, yet systematic approach. Based on both aerial photographs and crude maps drawn from the vantage point of nearby mountain tops, MSF first created a grid of one camp showing gross population densities. Using a planimeter, they next measured the area of the grid, marked off areas of different densities on the ground, counted individuals within the few selected areas, and extrapolated to determine a number for the entire camp. (A formal registration was not attempted until over a year later; however, even this process proved extremely problematic, primarily for political reasons.) Nevertheless, based primarily on the MSF survey, humanitarian assistance agencies generally agreed on a planning figure of 750,000 for a total population estimate.

The debilitated condition of many refugees on arrival, crowded camp conditions, difficulties in providing even basic requirements to thousands of families, and the acute onset of a massive cholera epidemic led to

an almost immediate increase in the number of deaths among refugees in Goma. Information on fertility is rarely available early in an emergency and of limited necessity for acute stage interventions. However, information on mortality in such settings is an essential indicator of improving or deteriorating health status. In emergency situations, mortality rates are usually calculated as number of deaths/10,000 population/day to allow for detection of sudden changes. The comparable rate for developing countries in non-emergency situations is around 0.5-1.0 deaths/10,000/day. In many recent emergencies, the crude mortality rate has been from 2-25 times higher than this baseline. It is generally accepted that health workers should be concerned when crude mortality rates in a displaced population exceed 1/10,000/day; the emergency is considered "out of control" if the rate is $>2.0/10,000/day$ and a "major catastrophe" if the rate is $>5.0/10,000/day$.

Age-, sex- and cause-specific mortality rates will indicate the need for interventions targeted at specific vulnerable groups; however, during the early stages of a relief operation even gross estimates of these parameters may not be possible to collect. If at all possible, information is collected on death rates for <5 years of age and >5 years of age since this former group is often the most vulnerable in an emergency. Further disaggregation and more specific mortality information must usually wait until the situation is more stable.

Sources of mortality data can be grossly divided into passive and active. Passive sources such as hospital clinic records and camp administrators are the easiest to collect but are notoriously incomplete. Epidemiologists in most emergencies must supplement clinic records with more creative sources which require active information gathering. Refugee populations may be reluctant to report deaths in their families because of the adverse consequences on their food ration. Grave-counting has been used in multiple situations, but refugees may not use a single burial site. Even if the overall number of deaths can be counted, obtaining information on age and cause of death may be very difficult. Verbal autopsy conducted with a family member of the deceased may give a clue to the major cause of mortality, but are of limited sensitivity and specificity in most situations. In some societies consulting community leaders or mullahs who distribute burial shrouds may provide the best source of mortality information, but these individuals may also be reluctant to provide potentially sensitive information to foreigners or even local health officials.

Because the ground in the area around Goma was hard volcanic rock, graves could not be easily dug and most bodies were simply left beside the road and in other public places. Several humanitarian agencies established a truck collection system to pick up these bodies daily and tallies were reported to epidemiologists at the United Nations High Commissioner for Refugee (UNHCR). Initial body counts had to be adjusted downward when it was discovered that workers exaggerated the body counts due to the misconception that their payment was related to the number of bodies collected. However, the problem of over-reporting was resolved and figures from this source are thought to be reliable. A household survey conducted in August found that 96% of families reported that they placed their dead along the road. This was confirmed by comparing body counts to the deaths registered in the camp clinics. During the period of highest mortality early in the emergency, over 45,000 bodies were collected compared to just over 4000 deaths in clinics. Thus over 90% of fatalities occurred outside health facilities. Relying only on camp records would have given a gross underestimation of the mortality rate. Obviously, the body tallies could not give information on the cause of death. Later, some estimations were made regarding the age of the deceased based on the length of the body (e.g. $<100cm = <5$ years of age); however, the sheer numbers of bodies in the first few weeks precluded gathering even this rudimentary information.

Goma provides a typical example of the difficulties in determining both accurate numerator and denominator data. In this cases, epidemiologists used the best available data for number of deaths (e.g. body count) and calculated mortality rates for various population estimations. The overall crude mortality rate (CMR) from July 18-August 14 was estimated at between $21.6/10,000/day$ and $34.5/10,000/day$ depending on total population estimations of 800,000 and 500,000 respectively.

Household surveys, which asked about mortality over the preceding month, were also conducted in August in the three major Goma camps. These retrospective surveys of surviving family members were subject to recall bias and presented further dilemmas in calculating denominator size yet they gave further evidence of

these extremely high mortality rates. Estimates of the CMR in the camps ranged from 28.1/10,000/day to 41.3/10,000/day. Part of the differences among the camps may be explained by the differing time periods covered in the surveys since the highest mortality was known to occur in the first 2 weeks after the mass migration. The major point is that these estimates are generally consistent with the CMRs derived from body counts. From both the epidemiologic and public health planning point of view, it was sufficient to document a major catastrophe with death rates two to three times the highest previously reported rates among refugees. This finding documented the scope of the emergency and established a yardstick to measure effectiveness of humanitarian interventions. A well-coordinated relief effort (plus perhaps the initial high mortality) was associated with a steep decline in death rates to 5-8/10,000/day by the second month of the crisis.

Goma demonstrates both the limitations and importance of using epidemiology in refugee emergencies. The challenge is not only how to creatively gather information, but also how to interpret and critically analyze the validity and reliability of data from unconventional sources.

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