Introduction

Humans throughout time have always been plagued by famine, but in this modern age of surplus, the enormous suffering and loss of life wrought by famine is especially tragic. According to the United Nations, 826 million people worldwide are either undernourished or malnourished. In developing countries, one out of every ten children under the age of five is killed by malnutrition or diseases related to malnutrition. Not only has hunger been implicated in high infant and child mortality rates, it is also associated with poor capacity for concentration and learning among children, poor productivity among adults, prevalence of communicable disease, and astonishingly low life expectancies (15).

The cause of famine is multi-factorial with one of the most critical components being poverty. One-fifth of the world's population lives in severe poverty. One-half of all people living on the continent of Africa (which comprises 43 countries) survive on 65 cents per day or less (15). Other factors that contribute to famine include drought, internal conflicts and war, natural disasters like hurricanes or volcanic eruptions, inequitable land distribution, and growth rates that exceed food production. Among all of these factors, poverty is perhaps the most critical because it dramatically increases the vulnerability of a population and limits its ability to cope with traumatic events like drought or disaster. Not to be underestimated is the impact of internal conflicts and war, which result in huge numbers of displaced people both within countries and across international borders. According to the United Nations High Commissioner for Refugees (UNHCR), there are over 20 million refugees worldwide with the greatest numbers found in Asia and Africa. The majority of these people are forced to flee their homes with absolutely nothing: no money, no food, no water, and no shelter. Many of them have nowhere to go for help (15). Additionally, inequitable land distribution also makes a formidable contribution to famine, especially in Africa where 19 of the 43 countries have been identified by the UN as critically vulnerable to famine. In many African countries land ownership has remained largely unchanged from times of colonial rule. In general, the best farmland, about half of all land in these countries, is owned by the white minority, while the indigenous population resides in the more arid regions prone to drought and not well suited for crop farming. It follows that hunger within these countries would be less pressing if land was more equally distributed (1).

In the past year alone, there have been news reports of famine in Chad, Guinea, Afghanistan, Niger, Sudan, People's Democratic Republic of Korea, Tajikistan, Zimbabwe, Malawi, Mozambique, Zambia, Lesotho, Swaziland, Somalia, Ethiopia, Bangladesh, Haiti, and Mongolia to name just a few countries in a very long list (15). While the stories of these tragedies spend less than a day or two in the headlines, the suffering goes on for months or even years. There are many emergency public health agencies, operating globally, working to mitigate the devastating affects of famine. But as one might imagine when the causes of hunger are so complex, how is the problem ever truly solved? What sorts of challenges do these international agencies face as they seek to fulfill their mission, and how effective are they when year after year hunger and famine persist?

The Challenges of Famine Relief

There are many diverse organizations involved in the work of famine relief. These agencies are classified under the broad categories of United Nations (UN), non-governmental or private

voluntary organizations (NGOs), and governmental donors. There are three agencies that operate under the UN umbrella and are specifically concerned with nutrition related emergencies: the World Food Program (WFP), the High Commissioner for Refugees (UNHCF), and the United Nations Children's Fund (UNICEF). The NGOs are a varied group ranging from large well-established organizations to those that have been quickly formed to respond to a specific emergency. The governmental donors, made up almost exclusively of European countries, Canada and the U.S., supply most of the food and financial resources used in emergencies. The World Health Organization has little operational involvement but plays a central role in setting nutritional standards and norms for ration levels. Likewise, the international media has no operational involvement in famine relief but it plays a central role in determining the volume of resources that are donated to any particular emergency (3).

While on the one hand the diversity of organizations involved in famine relief may appear to be a strength, there is no formal regulatory body overseeing and coordinating these organizations and this is the root of perhaps the greatest challenge facing famine relief work today. Governmental donors have no obligation to respond to an emergency within another sovereign state, and often when donors do respond there is a political motive behind their response. As far as the actions of UN agencies and NGOs go, once they choose to respond to a crisis they are subordinate to the government of the affected country. Therefore, the ultimate responsibility of coordinating and organizing a relief operation is left to the government of the affected country. Depending on your viewpoint this may sound great, except for the fact that in many countries where famine is secondary to political instability there may be no recognized government or the government may be very weak. In these circumstances, during the initial phase of a crisis general chaos often prevails while thousands of people starve to death because there is no one to organize the response. "Functionally therefore we have a system which is not a system, but a collection of nominally independent organizations. This is not to say that these can in fact operate independently (3)." Unfortunately, there are many consequences of this lack of coordination including slow and disorganized response to emergencies, discrepancies between the scale of an emergency and the amount of resources supplied, as well as failure to ensure systematic and efficient distribution of resources. Additionally, there are no standardized field guidelines specifying food and nutritional procedures except those put out by the World Health Organization which have not been re-evaluated in over a decade (3).

Another difficulty encountered by famine relief organizations concerns the international media. The manner in which major emergencies are covered by the media has a very large affect on whether or not governmental donors decide to respond to a crisis. In some cases very grave emergencies receive no attention at all while other less pressing situations become highly dramatized. Where the influence of the media becomes especially problematic is in the speed of international response, without media attention donor governments may be slow to provide resources. The UN and most NGOs do not have the supplies or financial backing necessary to launch a relief effort on any scale independent of donor nations. Therefore, given the focus of the media, it is easier to obtain donor funds for regions like Kosovo or Afghanistan than it is for Sudan or Mozambique (3).

Famine relief efforts are also hampered by the absence of a truly effective tool for measuring the degree and prevalence of malnutrition within a population and especially between age groups. Amid the debate over how best to assess a population's nutrition status are questions of how aid

should be directed, for example should aid be targeted towards the entire population or focused on those who are most in need? This then goes back to the question of how to decide who is most in need. Currently, "Mortality rates are believed to be one of the best indicators of overall population well-being (11)." The crude mortality rate, defined as the number of deaths per 10,000 people per day, has become accepted as the primary means of assessing the urgency and scale of an emergency. A crude mortality rate of one per 10,000 per day indicates a very serious situation and a rate of two or more per 10,000 indicates an out-of-control emergency (11). Since children under the age of five generally account for the majority of deaths in famine related emergencies, the crude mortality rate and overall nutritional status of children aged five and younger are considered a reasonable baseline for community status. However, research suggests that by the time relief organizations begin operating within a community, the most severely wasted children are already dead. Therefore, nutrition assessment surveys conducted by relief operations which show low rates of wasting among children may lead to erroneous conclusions that the nutritional situation of the community is stable or improving (2). Furthermore, many researchers have also suggested that the crude mortality rates of children under age five are not so high relative to baseline figures, and that the current practice of focusing a large proportion of relief efforts on this age group is perhaps not consistent with the goal of widespread reduction of mortality. In fact, many studies have demonstrated that the risk of malnutrition for older children and adults during famine may be much higher than what is commonly believed (11). Currently, nutritional assessment of adults is not a standard component of the community health surveys conducted during famine related emergencies. This is largely because there is no consensus among international organizations on the most suitable anthropometric indicator and cutoff range for defining adult malnutrition (2). All of this uncertainty demonstrates that relief agencies are in need of a more effective tool for measuring nutrition data in order to identify high-risk populations and appropriately target aid. Yet the unstable and often fragile circumstances that prevail during famines generally prevent the execution of scientifically rigorous research, which might provide such a tool (12). Furthermore, "Ethical considerations in conducting research in highly vulnerable, dependent populations must remain paramount (8)." Certainly it would not be ethical to have control groups and experimental groups among a population of people whose lives are hanging in a precarious balance between life and death. This then is one of the major dilemmas of famine relief work: research must be conducted in order to best determine how to reduce mortality but the immediate reduction of mortality must take precedence over research.

Absence of coordination between organizations, the often detrimental influence of the media, and lack of measuring standards for assessing prevalence of malnutrition are but a few of the challenges faced by agencies engaged in the work of relief operations. Because famine rarely develops in isolation from political, social, economic, and environmental factors, there are many other, sometimes more difficult, challenges that must be overcome in order to save human life. "Complex emergencies represent extremely difficult and challenging environments within which to provide humanitarian assistance. The constraints of political and economic instability, wider political interests (or non-interests), restricted access and physical insecurity, combine to create a volatile set of conditions which not only have an impact on the lives and nutritional well-being of people caught up in the crises but also seriously impede the delivery of aid (4)." Given all of these impediments and obstacles, how effective are famine relief efforts in achieving their ultimate goal of reducing mortality?

How Successful Are Famine Relief Efforts?

Certainly it cannot be denied that without emergency public health organizations, the toll of human suffering and death during famine would be much higher. However, specifically measuring the efficacy of famine relief programs in terms of how many lives are saved and how many are lost as a direct result of the actions of a relief operation is very difficult, if not impossible. This is because "Many relief operations are complicated by extraneous factors - for example, political or military obstruction to access, the diversion of food, or the arrival of a refugee population with established high rates of malnutrition (3)." In fact, there is so much variation from one emergency situation to the next that establishing a relationship between the actions of a famine relief operation and the overall nutritional outcome can only be done in circumstantial terms (3). For this reason perhaps it is best to measure success on a case by case basis. For example, Action contre la Faim, an NGO which maintained an operation in Burundi for several years, felt that given their highly restricted access to the populace, their greatest success was simply remaining present as close to the most vulnerable communities as possible (5). In other less volatile situations such as the nutrition crisis that unfolded in Ethiopia last year, the World Food Program estimated that as many as ten million people were at risk of starvation and later reported that famine had been averted through the efforts of the international relief system (2). This example could clearly be held up as a major success. Sometimes, agencies are simply not sure how successful their efforts have been because they are not able to conduct reasonably thorough follow-up studies due to the unstable circumstances in which they are operating (6).

One of the biggest issues raised in any discussion of the effectiveness of famine relief programs is the slowness with which they respond to an emergency. In a retrospective study of the Ethiopian famine mentioned above, it was noted that approximately 75% of the total number of deaths occurred prior to relief intervention (2). Statistics of this sort are unfortunately common and are probably related to the fact that by the time relief agencies decide to provide aid to a given region, a major humanitarian crisis is often already underway. For example, studies conducted in Afghanistan last year prior to relief intervention revealed crude mortality rates for children under the age of five to be roughly 5.9 per 10,000 per day (9). It is therefore quite obvious that if relief organizations provided aid at an earlier stage of a developing crisis, they would be more effective in reducing mortality. However that being said, solving the problem of slow response time is not a simple matter given all of the variables and challenges previously discussed including dependency of organizations on donors, influence of the media, and lack of coordination between agencies.

Another serious issue which prevents the famine relief system from more effectively reducing mortality concerns the poor hygiene and sanitation conditions that generally develop around major food distribution sites. One of the most common causes of death during famine is communicable disease. Malnutrition seriously impairs the ability of one's immune system to overcome illness, and for this reason it is the combination of wasting and disease, like measles, diarrhea, respiratory tract infection, and malaria, that proves to be most fatal during famine. In developing countries where vaccinations are not always routinely administered, the measles epidemics that spread through relief sites can be particularly devastating especially for children. Many epidemiological studies of famines reveal that prior to humanitarian intervention the most common cause of death tends to be wasting. After the onset of intervention, while the number of

deaths due to wasting alone decrease, death resulting from the combination of communicable disease and malnutrition greatly increase (2). Keeping in mind the constraints and unusual circumstances faced by most famine relief operations, it is difficult to imagine a viable alternative to the system of central food distribution sites, yet it seems this set up causes as many problems as it solves.

Again, while one can readily surmise that mortality rates during famine must surely be decreased by the actions of relief organizations, for many of the reasons already discussed, "[T]he history of food and nutrition in emergency relief is overwhelmingly that of malnutrition and vitamin deficiencies, sometimes on an epidemic scale, associated in many cases with appalling rates of mortality (3)." Given the many challenges that face the famine relief system, this apparent inability of the system to eradicate famine-related mortality is perhaps easier to comprehend. But accepting the limitations of the system does absolutely nothing for the millions of people who suffer and die every year. What can be done to improve the efficacy of famine relief programs? What types of innovations can be achieved to definitively reduce the mortality caused by hunger and starvation?

How Can Famine Relief Be Improved?

Critics of the current practices that dominate famine relief efforts unanimously agree that programs must be individually adapted to the particular social, political, economic, and environmental circumstances of the affected population. More specifically, critics have observed that, "it is the fact of famine's occurrence, and particularly it biological manifestations, to which institutional attention is overwhelmingly directed. The specificity of the context in which famine develops, and the means by which it progresses, receive far less attention. Consequently, despite the wide diversity of situations in which famines occur, relief interventions exhibit a remarkable uniformity of approach, in terms of the timing and orientation of the response (10)." This criticism likely explains why the efforts of a given relief organization may be very successful in one circumstance but when the exact same methods are applied to another circumstance they result in complete failure. A further manifestation of this standardized approach to relief operations is the conflict that often develops between the priorities of the relief system and those of the affected population. For example, frequently in the case of refugees, families get split apart while fleeing from their homes and consequently end up in separate camps. Inside the camps, relief agencies tend to be more concerned with what they consider to be issues of immediate importance like food aid, while refugees tend to be more concerned with re-unification with other family members. In cases such as this, it is not unheard of for refugees to simply leave the safety of the camps at which point the relief agencies lose contact with the very people they are there to help (10). Thus, if international relief organizations are going to go to the trouble of offering assistance, they may as well go the extra step and provide assistance that is appropriate for the circumstances from the viewpoint of those affected by the crisis.

Another important point that has been raised by many of the researchers who study famine relief operations is the need for an international agency that could coordinate the myriad parties participating in providing relief. Virtually everyone involved in the system agrees that the absence of such a regulatory body results in slow and unorganized emergency responses particularly in situations where the government of the affected population is in turmoil - the very situations that usually need the most orchestration. By working in partnership with governments,

UN agencies, and NGOs, a regulatory agency could dramatically improve the efficiency of famine relief response by directing action and delegating duties. Furthermore, such an agency could lead the way in creating universally accepted anthropometric standards for adult malnutrition as well as a field manual detailing guidelines for food and nutritional procedures (2). A regulatory agency could also set policy and research priorities, oversee the careful documentation of relief operations, provide education and training opportunities, and promote collaboration among the various factions of the relief system (13).

Yet another important suggestion that has been made by those concerned with improving famine relief efforts is the decentralization of therapeutic feeding centers. The present model of central feeding centers pulls people out of their communities and concentrates them into areas where an environment of poor hygiene and sanitation typically prevails leading to rapid spread of communicable diseases. Furthermore, such feeding centers require the recruitment of a large foreign staff, while they simultaneously undermine local health infrastructure and community cohesion. Many of the experts on famine relief operations believe that shifting to a model of community-based care, which utilizes both members of the affected population and foods that can be prepared locally, would result in a more even distribution of food and also minimize the risks associated with centralized aid. "Instead of relying exclusively on therapeutic feeding centers, imported foods [as opposed to foods commonly available in undeveloped countries], and large numbers of external experts, community-based therapeutic care offers the potential to establish community structures to address the problems of severe malnutrition with local knowledge and locally manufactured therapeutic food (7)." Community-based care could also address the concern of fostering local dependency as might develop during prolonged relief operations because with community-based care it is the community who is helping itself with the use of supplies made available by relief organizations as opposed to the community being rescued by foreign agencies (7).

In summary, by individualizing relief efforts to meet the specific needs of each unique emergency, creating a central regulatory agency to oversee relief operations, and implementing a model of community-based therapeutic care, the efficacy of famine relief programs could be dramatically improved. No one would deny that these are large structural changes that would require an enormous amount of effort, yet the alternative is a future of famine relief that mirrors a history of placing band-aids on gaping wounds and hoping it will slow down the bleeding. We live in a world that can fly men to the moon, a world that has mapped the human genome, and accomplished countless other feats that previous generations couldn't have imagined. There can be no doubt that as soon as we universally agree humans should not starve to death in an age of unprecedented surplus, the solution to famine will quickly be discovered.

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