

**FOOD, NUTRITION AND LIVELIHOOD PREPAREDNESS
FOR A PANDEMIC INFLUENZA DISASTER
GUIDANCE FOR LOW-INCOME COUNTRIES**

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PREFACE

“The prospect of an influenza pandemic ... spread by coughing and sneezing and transmissible within an incubation period too short to allow for contact tracing and isolation ... would have devastating consequences... the spread of the disease could not be prevented. Even if the influenza pandemic virus caused relatively mild disease, the economic and social disruption arising from sudden surges of illness in so many people would be enormous.” 2

This document was prepared by an inter-agency working group with input from a range of private voluntary organizations, UN agencies and the various members of the Red Cross and Red Crescent movement. It was prepared to complement the health guidance prepared by many of the same organizations.

The purpose of this document is to advise a wide range of community leaders and aid planners about the possible threats of a readily-transmissible influenza virus with a high case fatality rate which, as occurred in 1918-1919, has the potential to kill tens of millions of people in the span of several months, the time it takes the disease agent to travel from city to city around the world. The specific focus is the consequence of an unknown new strain of virus of the Orthomyxoviridae family, extreme outbreaks of which appear to occur worldwide every 20 to 30 years.

It is useful to consider a range of scenarios of how a pandemic may play out. The highly transmissible and fatal strains may end up being contained and well-treated in many scenarios. It is only the rare and infrequent pandemic in which tens or hundreds of millions of people may be at risk. But it is these worst-case scenarios that merit the most planning and are the focus of this document.

The premise of this document is that health authorities would identify a new strain of influenza via the WHO Global Influenza Surveillance Network, and leaders and aid works within countries would commence to take a sequence of actions to protect communities from not only the medical hazards posed by the influenza, but also the secondary food, nutrition and livelihood consequences.

"H5N1 poses a distinct threat to civilization as we know it, not so much in the numbers of people who might be killed -- though that could be bad enough -- but more because of the probable reactions to any pandemic. In the short term governments could place severe restrictions on travel, which would impact food and energy supplies, and bring trade and commerce to a temporary halt. The resulting shortages could trigger widespread disruption and civil disorder."3

Indeed, the food aspects of a pandemic could prove to be the more controversial, posing major policy dilemmas with very variable outcomes. Many experts believe that the most variable or preventable forms of death due to a pandemic are not from the immediate medical impact, but from the food and social effects. A global public goods perspective of a pandemic suggests that whereas disease control priorities are "non-rival," easy-to-share common goods shared among different countries, such as surveillance information and resources such as food, oil, and other goods are rival and excludable.⁴

The underlying problem is that the very globalization that has brought economic growth to billions of people in recent decades also represents fragile economic ties between communities and countries. Much more so than in past centuries, production chains now cross many borders, with finished products involving inputs and jobs from multiple countries.⁵ Shocks to this system that inhibit produce or trade will therefore ripple and cripple across all industries and trade.⁶

The links between influenza and malnutrition occur within individuals and across societies. Malnutrition compromises the immune response potentially leading to higher case fatality rates among those infected. Fear of starvation can also represent the tipping point in the decisions of many families to leave their homes and travel long distances in an effort to secure food, but unwittingly accelerating the spread of the disease in the act.

The larger focus of this document, however, is on those links through which the social reactions to a pandemic would cripple economies, with resulting interruptions in the harvesting, processing, transport, sales and distribution of the basic food supplies – mostly staples or grains – without which populations will suffer increased rates of malnutrition and, for those already malnourished, increased rates of crude mortality (the total number of deaths divided by the total number of people, per a defined period of time). In many scenarios of a severe pandemic, the greatest share of deaths would not be from the respiratory distress due to the influenza, combined with bacterial pneumonia, but from the economic dislocations involving long-term economic depression and pockets of famine.

This document is organized to provide guidance for community leaders in particular, as well as national leaders, with a final technical section that provides analysis for how local efforts can be supported by regional and international cooperation.

The Humanitarian Pandemic Preparedness (H2P) Initiative is a three year USAID-funded initiative aiming to build a fully prepared and deployable capacity of likely responders during an influenza pandemic. These responders will provide the rapid, coordinated, and effective response designed to limit morbidity and mortality, safeguarding livelihoods, and maintaining societal cohesion and integrity. This initiative, and this document intend to support community-level planning for how to organize, coordinate, and deliver an effective humanitarian response in countries deemed to be most vulnerable to an outbreak of pandemic influenza.

As well as addressing the specific challenges posed by influenza viruses, this document also serves as a way to think about an entire class of global disasters, those that involve a shock to the whole global system. The food security and livelihood ramifications of a worst-case pandemic mirror the disaster conditions that would be seen after a range of other infrequent but global hazards that disrupt the global economy resulting in collapse in trade, breakdown in domestic transportation and high unemployment. The same breakdowns in food supply chains and livelihoods would result from a series of attacks on major oil wells and oil processing facilities. Or from a large volcanic eruption or asteroid strike, the soot from which blocked sunlight to the earth for a year. Or from a protracted breakdown in global computer systems, as was feared during “Y2K”--the transition from the year 1999 to 2000. Or simply the dominoes-falling effect of a severe depression that leads to the sudden unemployment of hundreds of millions of manufacturing and service-sector workers in formal economies. In all these cases the hazards involve the failure of society to provide services and products that populations rely on. As well, in these multi-continent crises, canned disaster response procedures no longer apply: there is no "on site" anymore as the whole world is “the field.” This document therefore prepares community leaders for thinking through responses to any of a range of global emergencies that involve the unraveling of the extreme interdependence, across elaborate networks, that has come with globalization.

KEY TERMS AND ACRONYMS

1918	The influenza may have begun to spread in 1917 and continued into 1919 but for the rest of this document, 1918 will be used to refer to the entire course of the 1917-1919 pandemic
AED	Academy for Educational Development
AI	Avian Influenza
ARI	Acute respiratory infection
BCC	Behavior change communication
BMI	Body mass index
BP5	A specialty, long-lasting, enriched biscuit used in emergencies Business Continuity Plan
Business Continuity Plan	Measures taken by corporations and agencies to assign priorities to who will work on what tasks during a disaster
CBOs	Community Based Organizations
CBT	Community based targeting
CFR	Case fatality rate, a ratio of deaths per illness
CMAM	Community management of acute (severe, short-term) malnutrition
CMR	Crude mortality rate, a common measure for tracking the severity of a disaster
CRS	Catholic Relief Services, a PVO that manages food pipelines
CORE	A network of NGOs involved in USAID child survival programs
CSB	Corn soy blend
CSI	Coping strategies index
CTC	Community based Therapeutic Care
DAC	District AIDS committee
DHS	Demographic and Health Surveys
DRR	Disaster Risk Reduction
FDP	Final distribution point
FANTA	USAID project on food security, conducting research on food aid programs
FDI	Foreign direct investment
FFA	Food for assets
FFP	USAID Office of Food for Peace, also the name of the US food aid program
FFT	Food for Training
FFW	Food for Work
H1N5	One of approximately 3,000 permutations
H2P	Humanitarian Pandemic Preparedness Initiative
HIV	human immunodeficiency virus
ICVA	International Council of Voluntary Agencies, a global network of NGOs involved in emergency assistance
IDP	Internally displaced person
IEC	Information, education, communication
IFRC	International Federation of Red Cross and Red Crescent Societies, an association and support office, headquartered in Geneva, with intergovernmental status

IMCI	Integrated management of childhood illness
InterAction	Association of 160 U.S. private voluntary organizations
ITSH	Internal, Transportation, Storage and Handling
Hydration	Restoring an individual's fluids preferably with electrolytes, such as by ORS
JLC	United Nations Joint Logistics Center which supports the inter-agency logistics cluster
Local purchase	Procurement of food in the same region/country where it is intended as aid
MOA	Ministry of Agriculture
MOH	Ministry of Health
Monetization	Sale of food aid in a developing country's market, generating local proceeds
MT	Metric Ton, a measure for food supplies, equal to 1,000 kg, or 2,000 pounds
MUAC	Mid-upper arm circumference
NPI	Non Pharmaceutical Interventions, a term referring to a set of actions such as social distancing
OCHA	Office of the Coordinator for Humanitarian Affairs, part of the U.N. Secretariat
ORS / ORT	Oral rehydration solution / Oral rehydration therapy
PL-480	US federal Public Law 480 which authorized the international food aid of the same name
PPP	Purchasing power parity; a measure, adjusted to local currency, to provide more useful information about what a person can actually buy with the currency they use.
PRRO	WFP's category of projects "Protracted Relief and Recovery Operation
PTA	Parent Teacher Association
RDA	Recommended Daily Allowance
RUF	Ready to use Foods, processed so that they can be eaten without further cooking
RUTF	Ready to use Therapeutic Foods, such as Plumpy Nut
Social Distancing	Including the closure of schools
Tamiflu	Trade name for Oseltamivir, capsules produced by Hoffman la Roche which reduce the severity of flu but may or may not be effective against a new pandemic strain of influenza
TFP	Therapeutic feeding program
Title II	US Public Law 480 aid program
Ultra-Poor	Recent term, approaching standard usage, defined by BRAC as persons whose income is less than \$.5 per day.
UNHCR	United Nations High Commissioner for Refugees
USG	US Government
VAC	Village AIDS Committee
VAM	WFP's Vulnerability Analysis and Mapping efforts, with offices at headquarters and field
WFP	World Food Program
Wt/Ht	Weight for Height, anthropometric measure of acute (short-term) malnutrition

OPTIONS FOR COMMUNITY AND DISTRICT LEADERS: A GUIDE

This template of options is for community leaders, who may be Red Cross managers, mayors, traditional leaders, town council officials, staff of cooperatives or chambers of commerce, or others who take the initiative to think, plan and act to protect the entire local population from a pandemic. They may be elected by the population of an urban township or a rural district specifically to manage the distribution of aid supplies, as many areas of southern Africa did after a drought in 2002. They may be elders looked to by a particular group of people to warn and prepare for rare crises. What defines them is their care and responsibility for a given local community of people.⁷

The leader, concerned about the possibility of a public health crisis, seeks to achieve several aims: calm the population, identify vulnerable individuals, convene business representatives and merchants, organize or help coordinate the distribution of nutritional supplements, food supplies or vouchers to high-risk households, and stimulate community consensus on how to peacefully survive a pandemic. Local leaders should proactively liaise with national authorities to communicate local needs and concerns to national headquarters and the government -- guidance which also is recommended for all sorts of epidemics.⁸

In preparing for a pandemic, leaders can gather information and produce a community-based food security “pandemic preparedness plan,” appropriate to the unique types of work, interactions, and foods in that community. The plan should define, track and base decisions on local “indicators” for household and community level food insecurity and then can be a basis for flexible actions that may be needed to respond to the different scenarios in which a pandemic might unpredictably unfold.

In the sections ahead, frequent reference is made to food security, which is a broad concept that includes three common components: *food availability* (local supply of food), *access to food* (households can obtain the food, through exchange, purchase or production), and *food utilization* (individuals consume the right foods and can digest/absorb the needed nutrients). Poverty complicates each of these aspects of food insecurity.

The following pages explain a menu of possible interventions which may promote food access by all people in the community through the periods of shocks created by an epidemic.

Table 1.2: Prepare -- Steps to Take Prior to a Pandemic

Task	How often	Result	Requires
Map foodstocks	Annual update	Map, List	Visiting farms, industry
Identify food protection priorities	Every 2 years	List	Convening local experts
Assess which are most vulnerable households	Annual	Roster	Surveys, measures
Communicate to key organizations	Every 2 years	Messages	Meetings
Compile public works projects	Every 2 years	List	Creative exploration
Track early warning signs of local livelihood disaster	Continuously during pandemic	Decisions	Track markets, movements of people, local rumors
Propose increased foods for medical care	Every 2 years	Commitment	Convening community

Map Community and District Food Flows, Who Owns Food

Before a pandemic, leaders should work with the local chambers of commerce or other leading food industry leaders to conduct an inventory of food supplies with a focus on not just the seasonality of food production but the flow of food into and out of different channels of food processing and trade

with other regions. Farmers, merchants and business leaders should discuss which aspects of the food chain would be the most impaired – become weak links – during a pandemic: planting, sowing or harvesting crops, or making-bulk, transporting or processing foodstuffs, or the long-distance shipping or the retail or wholesale marketing of food. In most cases the more severe disruptions to food access will probably be due to either shut-downs of markets or bottlenecks in long-distance transport.

Recognizing that one's community will need to become largely food self-sufficient, map out sources of food at different times of year and how long they can last if held, not consumed, for six to eight weeks. For food in common property areas (forests, lakes, streams, grazing lands, village fruit trees), identify the legal authorities governing access to what foods may be there and how to avoid hurried depletion of these resources; how instead to organize the community to access the foods as a group, transparently and methodically.

The largest share of foods in any community is likely to be already committed for sale somewhere, or owned by or owed to a distant landowner, or the farmer may be under enormous pressure to sell (or export) foods to quickly pay down the debts incurred for inputs (fertilizer, fuel, agricultural loans). Much agricultural production is by tenants, leasing the land under agreement to pay a portion of the proceeds of the harvest; in other words they are already in debt and may become displaced if their harvest cannot find a market.⁹ Therefore, in mapping food flows, claims and ownership of food, and the flexibilities that may be needed if food can't be transported, or exports are closed off, should be considered.

What backup foods are available?

During crises, such as famines, many families resort to alternate sources of food, typically requiring more scavenging and low caloric values of acquired foods. Some of these “coping” methods may involve competition among families over public resources (in forests for instance), creating conflict, which can be mitigated by bringing the households together and finding community-wide measures for how and when to use up different resources.

Identify food supply and food flow targets needing physical protection.

Prior to a pandemic, leaders can list key foodstocks, stores, silos, which may require protection from vandalism (whether by individuals or migrating groups). Riots and armed attacks on food stores may occur by a) groups who feel that the food belongs to them anyway and they don't want to wait; b) groups who travel from outside out of desperation.

In a severe pandemic, protection of trucks and convoys that move foods will be a national priority. Each community, however, will have control over its own roads and should provide truckers the ability to feel safe in their jobs and the option to avoid physical interaction with other people so that truckers do not themselves become the means by which disease spreads from one community to the next. The risk is not merely that disease will spread. It's also that if truckers fear that they are at increased risk, as a group they may stop driving to certain areas, along certain routes, or invent reasons for delay or stop trucking altogether, which then could be the cause of a national economic and food crisis.

Ensure foods to medical facilities

Community leaders should determine what will be needed to obtain and ensure an increased flow of food to hospitals, clinics, and therapeutic feeding sites. If schools, gymnasiums or other facilities are converted into wards for medical care, new food pipelines will be needed for each. Hospitals or health posts may not instantly have the financial resources to scale up (increase) their food procurement, and it will be preferable to not make them dependent on massive back-and-forth visits by extended household members to bring foods, as is the case for most developing countries. Instead, health

facilities should have their own food supplies that allow for the isolation or quarantine of medical facilities.

Every industry and farm should be asked to contribute in advance, proposing that the medical aspects of the crisis will be a public good. Fresh foods, from gardens, and processed foods which can last weeks without spoilage or which require less cooking should also be prioritized to clinics.

Food for Work (FFW, described shortly) or related incentives should be made available to ensure that health workers do not drop out from their jobs due to household food shortages.¹⁰

Examine and discuss the pacing of food use

During a pandemic, tough decisions should be taken to plan the stretching of food resources over time. Some foods will spoil over time if uneaten. Flours and processed foods spoil in a few weeks if not packaged or vacuum-sealed, for instance. Thus, there may be some logic for people in a community to agree to consume perishable foods while still available, even if this means depleting stocks early in a pandemic. Conversely, other foods, such as some whole grains, canned goods, dried foods and unslaughtered animals can last late into a pandemic. Certain crops store best in the ground; cassava storage is typically by leaving the mature cassava crop in the ground. Other traditional storage methods that farmers would instinctively use include pit storage, heaping/watering, coating with mud paste, and storage under water; though none are suitable for longer terms.¹¹

Convening Group Discussions

Each household and to the extent possible, groups of households should meet to discuss the challenge they face of protecting their household food supplies, and what inter-household trade can help improve the mix each family has, to meet each family's needs. Recognizing the foods that will be available for the duration of a protracted crisis, the community should agree on how to slow the consumption to ensure availability of these foods, albeit in small portions, two months or more into a pandemic.

Regularly Identify and Monitor Vulnerable Households and Individuals

Understand which members of the community rely for their income on the sale of their services or products to distant markets, markets which may be unavailable in an epidemic. Understand which jobs in the community depend on the delivery of outside physical inputs, frequent spare parts, materials, semi-finished goods.

Identify and track children, particularly under-five year olds, who are already malnourished and on the verge of malnutrition, enrolling as early as possible in growth-monitoring programs.

Children who are already malnourished ought to be identified and in contact with growth-monitoring or maternal-child-health clinics, whether by NGOs or local community health teams. For rapid identification of threatening acute malnutrition, weight-for-height and MUAC are predictive of risk. *“Anthropometric measurements are quicker and simpler to perform than more lengthy surveys covering morbidity by recall, dietary intake, or health care practices.”*¹²

The identification of patterns of vulnerability prior to a pandemic provide clues for geographic and demographic portions of the population that should be re-visited once a pandemic begins. Much poverty is transitory. There is considerable mobility between the levels of poverty, even within a year of seasons.¹³

Communicate and Exchange Key Messages; Listen to Concerns

Red Cross offices should communicate each year to local civil society organizations and convey basic messages about food and livelihood in a pandemic. The messages should cover the fact that a few weeks of food shortage will not create a famine (famines take longer to unfold), however, individuals with pre-existing malnutrition will be at jeopardy, and malnutrition is the biggest risk of death in most crises.

During an epidemic, people will want to hear regular updates and forecasts about food supplies, and information about alternate sources of food sales if their routine markets close. Food programming and messaging in urban centers, therefore, should be orchestrated with the aim to calm populations and prevent migration. Principal among strategies should be to assure urban populations that in the near future food may be as available in urban centers as in rural areas.

Communications by local leaders and NGOs can be critical in supporting the host governments' claims. (Globally, Parliaments and Congresses rank lowest on the list of trusted institutions, with NGOs, the UN, religious institutions, and militaries ranking highest.¹⁴)

Compile and Update Plans for Public Works Projects

Public works projects have been used at local, district and national strategies in all parts of the world for maintaining livelihood – and access to food in particular – throughout many disasters. They are efficient, self-scaling, and respond to each household self-identifying their own vulnerability. However, in a pandemic, the special problem with traditional public works projects is that they have until now tended to bring people into close physical proximity with one another.

Many communities have histories of bringing together adults to work on joint projects that support one another or rehabilitate community or public properties, such as roads, canals, bridges, dikes, embankments, forests. These mechanisms allow for the distribution of limited food supplies to unemployed persons seeking minimal rations, useful particularly in times of famine and epidemic.¹⁵

Public works schemes guarantee employment to any or all who agree to work, including people from outside the community. These have been successful at reducing the harm of famines in India, where the Employment Guarantee Scheme automatically benefits the poorest families and also achieves seasonal stabilization effects."¹⁶

In emergencies, the most common public works schemes compensate with food, through "Food for Work." FFW has been and remains the dominant means by which governments, WFP, and NGOs respond to crises where a) the problem is pervasive and targeting to the most needy is difficult because so many people are affected; b) the onset and scale of the crisis is difficult to measure, typical in economic crises; and c) the crisis involves high unemployment as well as lack of purchasing power to obtain food that may exist in markets. In Africa and Latin America, FFW programs have effectively provided safety nets to many millions of short-term-food-insecure by engaging them in building construction, dirt roads, waterworks, reforestation, and anti-erosion works showing increasing labor shares in that order.¹⁷

Each community or district can prepare and design its own public works scheme. The defining feature is that there is no means test. No people are turned away if they come and are willing to do the work. Works projects may benefit individual farms, but should rotate to fairly help all individual farms. Creative projects that use FFW may include village cleaning, road maintenance, vegetable gardening, the construction or repair of culverts, roads, dams, water wells, irrigation systems, bridges, wells and grain stores.

Public works that bring people together can be a bad idea during a local epidemic, however, because they can promote the transmission of disease by putting people in immediate working contact with one another. Public works and FFW schemes should be planned, therefore, for periods of time when food shocks have hurt the local food economy, but not when people are ill with influenza.

Alternate Employment Guarantee Schemes During Epidemic

During the period when an epidemic is causing new infections within a country, communities may experiment with alternate measures for delivering food or cash through employment schemes. The defining characteristics should be that:

- a) people do not congregate or queue at the beginning of the day waiting for work assignments; rather they are assigned to a task as soon as they arrive and discouraged from milling around or sitting with others;
- b) participants conduct work that is designed to be done with physical distance from one person to the next; again, people are not induced to be within several feet from one another even when discussing the work or taking a rest break;
- c) participants do not queue up or congregate to receive payment or food;
- d) managers or supervisors are able to maintain physical distance from the participants to whom they are giving assignments, instructions, monitoring, cash or food.

Exceptional Temporary Labor in Combating the Pandemic

Many jobs which can be compensated with food and specifically help the poor can be created or defined by those tasks that respond to the pandemic itself, including protection of foodstocks, movement of food rural to urban areas, vulnerability mapping of families, mortuary services, or delivery of therapeutic foods to remote homes.

If the food crisis is severe, meaning that a large number of people are in need of creative new work, and if the influenza is also severe, exceeding the capacities of health care system, FFW jobs may be defined for work in hospitals, clinics, influenza wards, food distribution networks, and the protection of pharmacies or drug pipelines.

Watch Community Indices that Give Early Warning of Food Shock

Leaders should determine which few, feasible types of information will reveal when a local food crisis has begun. Some types of information will be easy to obtain, such as the retail price of foodgrains. Others will require new methods of inquiry, reaching out into the population and canvassing. For instance, the distress of some early-hit households is revealed by their loss of jobs, their sales of their assets, their sales of cattle, or tools, or house. Changes in borrowing or repayments are suggestive, as are dramatic changes in what people choose to consume or spend their scarce resources on.

Anticipate Safety Nets for Sharing Foods and Distributing Supplies

Those households that will be in need of these new distributions are those that are a) most vulnerable; b) non-farm, non-retail merchant households that do not already have food stores.

Many communities may find that most of the response to a pandemic in terms of food and livelihood will be up to the local community, using its resources. Thus, before the epidemic sweeps through the local community, leaders should convene discussions through civic organizations about how local resources can be assured for the most vulnerable – safety nets – until the crisis is over. Community

discussions should be multiple, in townhalls, parent teacher associations (PTAs), sports clubs, women’s groups, agricultural cooperatives, religious institutions and similar civic groups.

It is the responsibility of the leader to use these occasions to set forth long-term plans for how small amounts of food (or cash or vouchers) will be pushed out to vulnerable households in the mid and later parts of a local epidemic specifically to allow families to stay in place and not congregate or migrate. A key aspect of this will be setting forth plans for physical transport of supplies to each corner of the community. Targeting and management of who gets which foods needs to be transparent, with a view to fairness and equity. In other emergencies safety net food has been managed through local governments, through traditional leaders, through new groups or committees, and through groups of households. New groups or committees have the advantage of increasing community participation and their use “undermines abuse of power relations and has a lower risk of abuse;” but they are not seen by WFP as appropriate in emergencies and require extensive educational campaigns.¹⁸

When the epidemic passes through congregations of people (schools, markets) should be discouraged and diminished, yet people will need backup contacts, associations and networks. The IFRC and NGOs can help families map out ways to communicate without physically coming together, to support one another in sharing the acquisition and movement of food and how family members can receive shared food supplies obtained by neighbors if ill.

Community safety nets can channel resources through a wide range of mechanisms, depicted in the [chart at right](#), from relief to recovery, from cash to food, from grants to savings-stimulation.

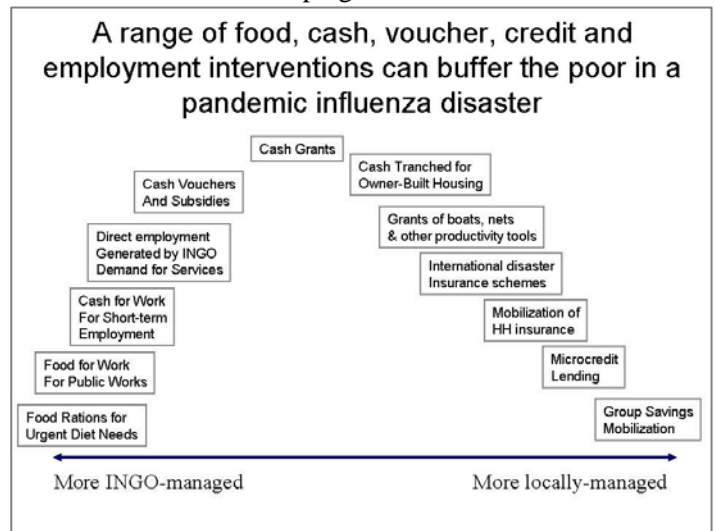


Table 1.2. Steps to take During a Pandemic: Recognizing that the food consequences of a pandemic anywhere in the world may cause local market problems even if the disease is not local

Task	How often	Result	Requires
Community meetings to plan food sharing	Pandemic onset	Transparency & volunteers	Leadership
Negotiate channels and networks for food or voucher provision to vulnerable households	Onset	Mapping and new vouchers	Cooperation among merchants & CBOs
Deliver small-scale food rations to homesteads	Twice/month	Household receipt of minimal food supplies	Trucks, motorcycles, community volunteers
Deliver nutrient-rich therapeutic foods to households with malnourished children	Twice/month	Prevention of severe malnutrition	RUTF, plumpy nut, BP-5, ORS, fortified foods
Convene public works without congregation	Daily	Self-targeted safety net	Food, mobile supervision
Merge feeding, IMCI, and agricultural extension	Ongoing	Coverage to families where they live	MOA and MOH sharing
Increase on-site feeding after epidemic wave	Daily	Malnourished rehabilitated	Fuel, structures, volunteers
Promote livelihoods through new loans in new loan cycles with short-term loan products	Once a month	Increased currency circulation among poor	Capital from banks into microfinance networks
Provision of short-cycle seeds post epidemic wave	Ongoing	Effective sowing of next crop cycles	Cooperation of seed companies

If the community is urban, the delivery of food to concentrated areas (larger towns, cities such as Cairo, Dhaka, Nairobi) will be a massive challenge. The mobilization of new food distribution staff, whether through NGOs or volunteer health workers will be difficult when people are also afraid for their own families' survival.

Reaching target households with food will also be frustrating. In many cases, people will have multiple residences, formal versus real. As in the experiences of delivering food in refugee camps, people will be found not to physically reside where they nominally are registered to live. Large segments of families will be working somewhere physically separate from where they formally live. Tracking individuals down will not be as important as outreach to known homesteads, i.e. geographic coverage of known settlements.

Structure both Cash and Voucher Measures

Where the problems are largely economic (loss of jobs, demand or purchasing power), instead of a simply a depletion of food supplies, pushing cash out to the poor is an efficient, short-term response. Similar to cash are food-stamps or vouchers redeemable for foods. Leaders or aid agencies can take advantage of existing cooperatives, savings groups, and micro-credit and entrepreneurship groups that exist in many poor communities (particularly in urban areas) which already manage the equitable sharing of cash resources among the poor. Vouchers or food-stamps have been successfully used in many countries to promote more equitable access to food by the poor, such as in Sri Lanka where food stamps given weekly to the poor could be redeemed at subsidized, low-price shops.

Vouchers represent an entitlement to food that provide a sense of security to households that can be created specifically for a pandemic. The voucher would represent a message as well as a promise. The promise is that food will be made available by the public, though at a later date. The message is: there will be a period of short-term contraction when economic activity and food availability may be interrupted for a few weeks, but don't worry, the epidemic will pass. Thus, the timing and redemption of vouchers need to be different from tradition. Food stamp participants tend to use up their benefits quickly each month.¹⁹ During an epidemic, the vouchers or food stamps would be given out early, and redemption would be predicated on the household staying where they are (not migrating) with the food becoming available at an uncertain time or times, several weeks thereafter.

Increasing the supply of funds through microfinance institutions (MFIs) is an option that banks already recognize. Associations of local bankers, Chambers of Commerce, and other groups with financial resources should be asked to make exceptional loans or grants through these groups.

Similarly creative mechanisms for supporting livelihoods in a food crisis include Payment-in-Kind (PiK) exchanges and barter. Farmers can be paid in grains to improve their own personal land ; if they harvest a percentage of their normal yield, they are paid in food, the difference from what they had hoped to harvest. The recipient can then barter for other goods. For those populations dependent on the sale of animal products, grain for animal exchanges will help preserve the value of animals and the pastoralists' income. Informal economies already include much barter (commodities and services directly exchanged, without currency being used).

Aid agencies have found that "barter shops" can help them promote the circulation of appropriate foods or seeds and agricultural products. Informal trade overcomes liquidity problems of merchants. "Informal traders are playing an important role in the circulation of goods from surplus areas to deficit areas."²⁰

Plan Multiple Modes of Food Distribution

Because multiple organizations may become involved in food assistance, various types of foods may be distributed via distinct methods, to different types of vulnerable groups.

If the epidemic has not hit the region in question, then food ration distributions may be conducted in a public place by an elected relief committee of elders (both women and men), to ensure transparency and reinforce social organization and a spirit of collective effort to get through the crisis. In many areas, leaders may prioritize registration of women first, to receive food rations, as women are recognized in communities as caretakers of children and preparers of food.

Group or Networked Distributions

Precisely to offset the need for people to concentrate together while waiting in long lines for food, food distributions should be staggered, lines should be avoided, people should be instructed to stay at a distance and food rations should be distributed to the heads of groups, not to each household. As Cuny explains “Group-distribution programs are fast and easy to monitor. Individual-registration systems are not necessary, although it is important for the agency to do verifications and spot checks. ...Group distributions should be avoided when a strong caste system exists”²¹ or other social stratification suggest that some households will be completely left out.

In the Rwandan refugee relief efforts in Tanzania, a mechanism for food distribution was tested and found successful, and indeed desirable. Referred to at that time as the Kuku method of distribution, food rations were distributed to groups of households through a representative, instead of to the head of each separate household as has been traditional in most operations.²² Kuku also included the “Family Group Distribution System.” The successful elements were that it allowed food to reach 20-30 families through a single female representative, as demonstrated in the Ngara Benaco camps.²³ That individual then dropped off the appropriate rations to each household. The advantage of this method was seen not only to make the job of distribution easier and faster for the aid agency, but it also promoted a sense of community among recipient households. Research in other refugee camps has found that food distribution directly from aid agencies to households all too often has the unintended consequence of reducing cooperation within a community, diminishing social capital.

Prepare to Ramp up Targeted Nutrition to Malnourished Children Quickly After Each Disease Wave if not During

During an epidemic, home-based feeding alone should be the priority, while afterwards on-site feeding centers, outpatient centers, and home-based feeding can each be expanded, in parallel. Immediately after an epidemic wave has passed through, therapeutic feeding should be expanded to reach (through outreach assessments) those children who have become malnourished during the period of the pandemic, which is likely to be roughly 5% of the under-fives, or 1% of the total population.

Both severely and moderately malnourished children should be identified, referred to the health system, and provided extra food. While severely malnourished children are at the greatest individual risk of death, in all cases they will be outnumbered by those who are moderately malnourished. “Moderate malnutrition contributes more to the overall disease burden than severe malnutrition, since it affects many more children.”²⁴

Wet feeding at centers

When communities cook food at a specific site and provide hot food to the ill or to malnourished children, it is called “wet feeding” and has the advantage of using scarce food supplies efficiently because only the most needy tend to come and devote half a day of their time just to receive two cups

of (for instance) porridge. In other countries, the concept of a “soup kitchen” similarly connotes that whole families may come to receive cooked meals. Food banks, in contrast, provide small take-home rations, and often tend to assist old people or heads of households.²⁵

Wet feeding centers may be ideal ways to offset food stress before, in between, and after the local waves of an epidemic, but should be disbanded during the weeks of the epidemic. Like schools they unfortunately require people leaving their homes and coming to a location where they are exposed in close contact with others.

Reach Out Deeply into Communities within the Primary Health System

Just as primary health care should be extended to all persons to care for secondary infections such as bacterial pneumonias, or to provide for early identification of any malaria, measles, or other life-threatening diseases among children, so also can malnutrition surveillance and on-site education, care and referral link health with nutrition.

Home based community care

Community based therapeutic care (CTC) is a recent label applied to NGO-initiated programs to deliver dry food to households for in-home caretaking of children who are severely malnourished. The system, similar to IMCI, relies on knowledgeable community health workers, or comparable home visitors, to know when to refer the child to come in to an outpatient clinic and when the mother can feed the child in-place with quality foods.

CTC makes use of small-scale, easily handed-out packages of long-shelf-life Ready-to-eat therapeutic foods (RUTF) which are nutrient-dense foods produced rapidly during the earlier phases.

CTC is relevant in a pandemic not only because it addresses continuity of care for the malnourished, but also as a partial model for how a small cadre of volunteers can deliver small quantities of nutrient-rich foods out to households living in diverse, often rural settlement patterns.

If community-based therapeutic programs could be established for all poor populations in the world, scaling up the current pilot projects by international NGOs, then there would be an ideal system already in place for addressing the food distribution needs in a pandemic, with staff, a food pipeline, and associated educational messages. CTC and community management of acute malnutrition (CMAM) outreach programs should therefore be promoted by the Red Cross and community leaders, seeking the advice of international NGOs for how to obtain affordable therapeutic foods. Save the Children estimates that its CTC programs cost \$13 per life saved, such as in Ethiopia where it provided CTC for 20,000 malnourished children in 2004 and 2005.²⁶

As these CMAM networks do not currently exist, community leaders should explore their creation and how networks can be merged or blended with comparable outreach programs for primary health care, via IMCI for instance, or with agricultural extension workers managed by the Ministry of Agriculture with FAO support.

For identifying food stocks, negotiating their use, and moving food rations to households, public health teams should meet and coordinate closely with agricultural extension workers (or village extension workers) who in many cases visit each cluster of families in rural areas once every two weeks.²⁷

Engage the Food Processing Industry

At any time much of the regional food supply is in the hands of those adding value to the food, through processing, milling, packaging, transport and marketing. For urban populations, up to 70% of food may be in this processing pipeline. The food processing industry therefore controls when and where food may be released and, more importantly, its nutritional value and perishability, or shelf-life. Leaders should know who are the key managers of these food processing pipelines and be able to convince them early in a pandemic to support the objectives of ensuring food supply for several months in a manner that is transparent and counters hoarding and inflation.

Both local and international production should be pursued, contracting any available food processing factory into the rapid processing of simple micronutrient-fortified foods that can be delivered quickly, i.e. with less processing and less of a middle-class orientation. International corporations such as Nestle and UN agencies such as WFP can assist companies in the rapid adoption of alternate food composition production.

Recovery: Livelihood Recovery through Microfinance Networks

Today there are millions of the very poor who are socially networked through microfinance institutions (MFIs). Some of these, such as BRAC, Grameen, Food for the Hungry, and FINCA, already explicitly address the food and nutrition needs of the target households. Others have the capability to retrofit their support networks to address the short-term food security demands of a pandemic. In some instances, these networks provide an excellent mechanism for communicating messages and short-term cash to households, on behalf of community leaders. Self-help groups, cooperatives and other networks created by groups like ASA, Finca, Plan International, BRAC, Food for the Hungry, and Accion, entail regular meetings and family-to-family connections that can be invoked to explain public health and nutrition messages, and to arrange for identification of households that are put at risk by food shortages. As often happens in natural disasters, microfinance institutions relax repayment conditions for a period of time, allowing the use of loan capital for short-term procurement of live-saving foods.

Community leaders, such as national Red Cross or Red Crescent staff and volunteers can establish contacts with local microfinance institutions and their micro-credit or savings groups in advance of a pandemic and discuss using these groups as channels for small cash transfers to the poorest households. The fact that the Red Cross and Red Crescent representatives are frequently based in capital cities can be advantageous because one efficient way to begin to map out many of the micro-credit and savings groups is through the larger microfinance networks and larger microfinance institutions with offices in larger cities, such as ASA in Dhaka, SKS in Delhi, and networks such as AEMFI in Ethiopia.

Recovery: Continuity of Long-term Agricultural Cycles

Community leaders can map out options for provision of critically-missing resources to jumpstart local economies, recognizing the agro-ecological conditions that allow alternate food production strategies, and tapping the memories of elderly members of the community who have seen other crops grown in decades past.

To avoid longer-term food shortfalls secondary to an epidemic, it may be critical to ensure the timely delivery and distribution of seeds for planting. Where outside seeds become unavailable from corporate suppliers, the community needs to identify nearby and indigenous seeds. Alternate planting

decisions may be taken, where inputs such as commercial seeds and fertilizers are lacking; households may put more of their time into labor-intensive gardening.

Leaders should maintain a mapping of community needs for seed supplies and an appreciation for when key seed varieties may become scarce –including when they may be eaten -- and when households are strapped in their ability to purchase, consider seed loans. During several-month-long crises, it is important to understand which seeds are long vs. short-season varieties.

Mixed farm systems may include livestock and poultry. In a protracted (months long) food crisis, many livestock and egg-producing poultry may be consumed that would not otherwise be eaten that year. As the food crisis protracts, the terms of trade may shift against the producers of meat products, as is often seen in famines. That is, in normal times, a kilogram of meat may be worth 30 kilograms of grain (though they have the same caloric content), but in times of stress, all sources of calories tend to converge in their price, as grain prices increase. Therefore, pastoralists who specialize in meat production can survive the crisis best by having their stocks purchased by the community early on.

Small businesses and small enterprise employ the most people

After disasters there is often an increase in demand for reconstruction, including infrastructure, though a decrease in purchasing power among many particularly in formal employment. Governments tend to give high priority to large, critical industries, while neglecting the majority of district-level businesses which employ 99% of the population. So too in food: “Even governments which profess to support a mixed economy often tend to neglect or disregard indigenous private agricultural marketing business, and often act as if local or foreign large-scale farms... are the only important representatives of the private sector.”²⁸ During the pandemic, leaders should be communicating (without congregating) with local business leaders and networks of families to generate ideas about which business activities generate the goods and services needed by others, and who can loan cash, fuel and other goods.

OPTIONS FOR NATIONAL LEADERS

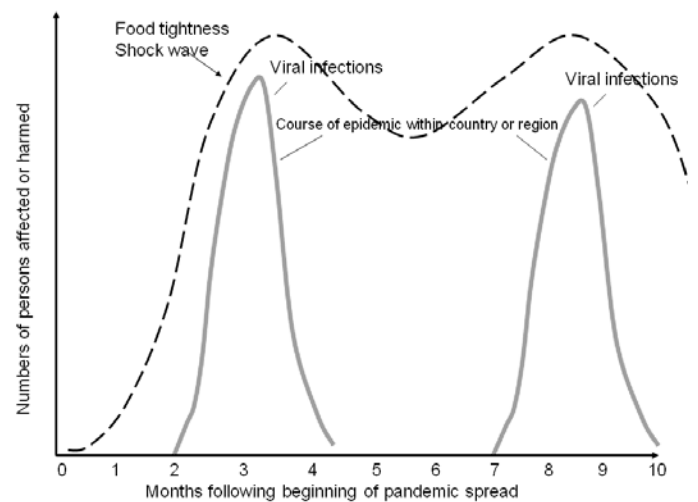
Many of the issues and options reviewed in this section overlap with issues discussed in the “Options for Local and District Leaders” but from a national planning point of view. National leaders will have a vantage point that allows their taking into account changes in international trade in food and fuels as well as the movement of food and fuel within their country, from port, and from rural to urban locations.

The Challenge: The Global Shockwave of Food Price Increases

Shortly after a fast-spreading, lethal pandemic begins, the bow-wave of food price shocks will spread to most developing countries either along with the virus or before the virus itself.

The food-price shock-wave is likely to hit most countries prior to the disease arriving. And the consequences of disrupted food markets will persist during the inter-wave phase and linger for some time during the recovery phase, as depicted at right. Not only might the food crisis kill more people than the virus directly, but the food crisis may threaten millions even in countries that never have any cases of viral infection.

The increase in food prices for some countries – those that are not food self-sufficient but depend on grain imports -- will be sharper and higher than that seen in 1974 or in 2008, when food price increases made international headlines as a pervasive crisis. The tightness in food markets in 1974 and 2008 provide some lessons about the dynamics of global food markets, though a pandemic’s effects on food trade could be far more lethal.



Just as occurred in 2008, food trade will become restricted and food will be rationed and hoarded, with the result that food prices will increase for most locations where populations aggregate (cities, towns), though food prices will decrease in rural agricultural areas. Even if the virus spreads from foci to foci, along lines of airplane travel, or migration, the wave of food panic may be more diffuse and global.

As commercial food pipelines break down, stores that sell food particularly in urban areas will likely be in a hurry to disburse fresh (perishable) foods, distributing quickly over 48 hours to friends and family before the markets shut down completely to avoid ransacking, and so that the market owners can protect their own family’s food stocks. If the store owners trust rumors that food transport will be interrupted and their inventories not replenished, they will have incentive to protect the store itself by closing it down, boarding it up and posting “no more food” signs rather than face break-ins, threats, or government requisition.

For these and other reinforcing dynamic reasons, food prices may inflate in urban areas to 500% or 1000% above normal over the first few weeks of a pandemic.

Key goals that are national-level, in support of community level outcomes, are to reduce national panic and reduce distress migration. Food programs can support leaders by helping them to maintain credibility when communicating to the public that people need not panic about food shortages. Therefore, governments need to have some credible back-up reserves of food with which to promise to

provide some targeted food for the malnourished. Most governments are inclined to maintain some emergency reserves. When the flag goes up, the government uses its resources to work with the Red Cross, to quickly pre-purchase and move food stores to decentralized locations, focusing on storage.

Inevitable Choices that will Confront Each Government's Leaders

Government officials will be challenged with key decisions during a pandemic, including:

- a) Attempt to purchase or nationalize bulk food-stocks with which to store food for a protracted, 6-10 month crisis;
- b) Restrict, further tax, or bar the export of foods to other countries: this will be popular among local constituents but jeopardize some other populations while also fueling a round of competitive protectionism between countries, with poorer countries further disadvantaged;
- c) Regulate which physical retail markets will operate, perhaps closing larger food markets to reduce the transmission of disease, perhaps in some cases requiring that some other markets remain open to cooperate with food distribution programs and to reduce the impulse of whole communities to move from one urban area to another, or one village to another;
- d) Regulate the retail sales price of basic foods, to quell speculative interests among food merchants who will have otherwise have incentives to seek to gain by buying up and holding on to food supplies until the price peaks, driving up the price of food in the process;
- e) Seek to ensure the continuity of food supply pipelines to critical institutions (hospitals, military barracks, government workers, orphanages, larger institutions), while also protecting the pipelines from theft and addressing how to manage people who want to come to these places just to acquire food;
- f) Distribution of grain reserves, including emergency reserves, to the population: there will be pressure to disburse in response to or even ahead of political protests with the consequence that food stocks may be used up early in the food crisis;
- g) Declare a national food and energy emergency, harnessing emergency powers of the national government to commandeer resources, to mobilize national militia, and deploy military units to enforce social distancing, closure of institutions and protection of medical facilities, energy power stations and food transport routes
- h) Appropriate emergency funds for greater government conduct of economic activities, such as new employment and for payouts to social safety nets. Governments will also react through deficit spending, printing more money: this will have the effect of reducing the value of the nation's currency, spurring general inflation and particularly accelerating the inflation of the price of foodgrains, while undermining the purchasing power of people on fixed incomes such as elderly pensioners.

Mapping Food Supplies by the Ministry of Agriculture

For gross priority-setting, to estimate how many kilocalories are likely to flow into and out of different districts, the MOA can map deficits using the caloric deficit charting produced by the World Bank, which paints a visual picture of how many people are food insecure by how much, allowing for planning figures focused on how to deploy calories, the key ingredient in grains.²⁹

The major reason food shortages have become less lethal in modern history is the ability of global food supplies to buffer any individual region, that is, food has become fluid enough that a rise in food prices anywhere is met by increased supply from the outside. A pandemic will de-couple that connection. Food price rises in urban areas will be balanced by food price declines in nearby rural areas; they will not equilibrate.

Countries will differ in their vulnerability depending on their domestic food production, the time of year the pandemic hits relative to food harvest cycles, and the size of the country relative to its own domestic markets. A food-exporting country will be under pressure to stop exports and to hold on to its food supplies while still importing what it can. As prices increase, governments of food-surplus countries actually step in to restrict the very exports needed by food-deficit countries. As prices increase, governments intervene not to increase national income but to address the food-price desperation of their own citizens.

Countries that are not food self-sufficient, but depend heavily on the import of food staples (rice, wheat, maize) will suffer the hardest shocks, with country-wide increase in food prices.

District managers employed by the Ministry of Agriculture should work jointly with district health officers to:

- Convene meetings among larger food processors, food industry leaders, and wholesale food merchants, as well as regional offices of the Chamber of Commerce (or equivalent).
- Organize meetings among food merchants to discuss the implications of an epidemic, examining their risks, exploring their options, and raising questions of equity and distributional needs for the larger population.
- Organize simulation exercises for key community leaders, including Red Cross, food pantry administrators, nutritional feeding center nurses, medical clinic administrators, community health workers, and food retailers.
- Produce and share among ministries and aid groups a mapping of where nutritionally-vulnerable children are distributed, how many net trips would be required to take food to their dwellings once a week, and how many community nutritional volunteers would be needed to be mobilized, taking into account 25% absenteeism (for instance, due to illness, or migration) of potential volunteers.

Draw on All Sources of Data and Estimate Vulnerabilities

This requires a simultaneous analysis of populations based on a) food supply; b) level of poverty; c) livelihood (job) collapse; and d) physical access to markets.

The three categories of people who will be advantaged and have the ability to command, obtain and have enough food will be: farmers who own their own land; store owners and merchants who already own stocks; and wealthy and upper middle class who can compete with one another to buy and stockpile high-priced foods.

Urban populations will be at greatest risk

The food access crisis will be most evident and may affect more people in urban areas for the simple reason that food-stocks may be trapped in rural areas and the flows into urban areas slowed or stopped. Poor populations in rural areas, even landless laborers with no assets, will in contrast face a very different circumstance: increased availability of locally-produced foodstuffs with price drops.

The challenge in urban areas will be the greatest because it is urban populations that will face the worst physical food shortages related to transport and hoarding, the greatest uncertainties about “what the truth is” amid competing rumors about food supplies and fast-changing prices, and the highest proportions of temporary job loss and loss of income. As such, they will be the most likely, by far, to migrate during a pandemic, and in concentrated numbers.

As many epidemics spread within a country starting in population centers (particularly where there are ports or trade nexuses), it will be migration from urban to rural areas caused by distress that will lead to unnecessary deaths and failures of public health containment. There may be variations; in the Sahel, the reverse will be true part of the year, as there is less food in rural areas than urban, since urban areas have greater demand. The outflow might take place during the spring but not the fall.

Thus, urban families who are dependent on day-to-day food purchases and day labor (reimbursed in cash) are confronted with no access to food. Among their coping strategies may be sending their teenagers and children to stay with extended families in countryside.

In some instances, the subsistence farmer will be worse affected, as his/her reliance on own-production will be reduced due to disease-related loss of production capacity and lack of alternate means to find food.

There may be instances where the economic disruptions from an epidemic cause greater harm in some rural areas than in some urban areas of a country. The differences in food shocks between rural and urban areas will vary enormously, depending on three main factors: a) where the epidemic hits first, or where it ventures from – remote border areas where it is in rural areas first, or ports of entry (Lima, Monrovia, Mogadishu) including airports based in urban areas; b) how severe the epidemic and resulting panic is (if thousands die in the earliest periods, then road transport for even informal and black-market trade will be reduced, though in no circumstance will it be completely eliminated); and c) the baseline infrastructure of the country, i.e. how connected markets are, how distant farmgates are from urban stores.

Discussion of urban and rural populations are a major topic for pandemic planning because tendencies for rural-to-urban migration, urban-to-rural migration or rural-to-rural migration need to be anticipated and, to the extent possible, prevented.

Citizens moving about within a country are both difficult to track and expensive to assist. Providing food to IDP populations have been found to be more difficult than feeding refugees, as they tend to be more dispersed.³⁰

Migratory populations

Pastoral populations frequently suffer the worst of any group in slow-onset famines due to drought because their main source of wealth, cattle, lose body weight and market value at the same time that the prices of grains, on which they rely for diet, increase beyond their ability to afford. Thus, pastoralists receive less income (terms of trade) per cattle sold, and have to pay out much more to obtain grains.

In a pandemic, the livestock would not be expected to lose weight, and in the absence of grain supplies in local markets, the demand for meat may hold steady. During food inflation, many consumers switch their food preferences from high-cost foods such as animal products to low-cost foods, grains, in order to focus their limited budget to obtain a minimum of kilocalories. Thus, the price of meats would not increase in tandem with the price of staples. But it would hold steady, affording pastoralists a better income and purchasing power than other famines.

Where pastoralists may be disadvantaged would be access to normal routes of mobility, grazing and exchange at market centers, particularly if these are port cities. In poor countries where livestock is delivered to market on foot, not on rail, their owners may find prohibitions on their own (not their livestock) movements.

National Parastatal /Grain Marketing Agencies

National leaders have options that parallel or lend support to local leaders. But they also have capabilities not available to local leaders. For example, in many countries the federal government formally owns land, for instance (such as Ethiopia, China) while other governments control community affairs (such as Mexico). Thus, the control of food stocks and direct contact with farmers is a prerogative of national leaders.

Similarly, many countries already have agencies that are extensively involved in local, regional, national and international grain marketing. As these entities frequently act both as governmental agencies and as commercial agents, they are referred to often as “parastatals” but also as grain marketing boards. When a pandemic hits, governments will be motivated to regulate food trade so as to keep foods within their borders (prohibit trade) and encourage imports. Even in years of ample food production, government interventions in food markets unfortunately encourage hoarding.³¹

The Egyptian government already manages most of the grains, particularly wheat products (bread), pulses and oil, routinely making them available at low prices, subsidized through the government.³² Therefore, no new systems are required for Egypt to engage in food markets to control prices during a pandemic.

Parastatals vary widely in their capacity. Some countries such as Indonesia control enormous amounts of their domestic rice markets through their para-statal agencies or grain marketing boards. Though in many countries these have been disbanded, privatized and diminished in scale in recent decades, their existence allows an instant mechanism for rapid government intervention in its own food sector, as these agencies frequently have the network to obtain food from farmgate and the capability to monitor and manage food transport and storage country-wide.

Where new government intervention in food markets occurs, in a pandemic, with the result that it takes foods off the market to store them, driving up retail consumer prices, this will invariably lead to criticism,³³ and should be done alongside public education about the pandemic.

Marketing boards play a key role post-epidemic as well in their ability and practice in provision of loans to restart cooperative and group agriculture.

Coordinate the Movement and Positioning of Grains from Rural to Near-Urban Areas As Quickly As Possible in a Pandemic

Urban areas may be cut off from the flow of food during a protracted epidemic. Food flows may be cut off for any of a number of reasons, or many at once. The key point is that there may be a limited window of time, prior to the epidemic reaching the country, when it is feasible to pull existing national grains up into newly-converted storage facilities and warehouses proximate to large populations that may otherwise be cut off—i.e., urban, manufacturing, service, and peri-urban economies that are not food self-sufficient.

The benefit of moving food to urban areas is that it allows for ongoing food availability during the epidemic phase(s) and early in recovery. It also promotes the credibility of the government and aid agencies when they communicate to populations that although food shortages exist, they are being managed; i.e. that aid agencies have the means to prevent starvation among the most at-risk.

In many circumstances, the key benefit of organizational food stockpiling may be primarily in establishing the credibility of authorities, supporting their appeals to the population to stay in place and not flee. Were foods not to spoil, and money no obstacle, governments would preventatively stockpile food for the occasional crises. But food stocks do spoil and the costs of buying enough food to feed whole populations is prohibitive.

Aid agencies can support the government which, working with WFP, buys up foods early in the pandemic to stockpile near cities. As other trade diminishes in volume, authorities should directly engage the transport sector, working with the national Red Cross and other aid agencies with skills in food aid, to move food to secure peri-urban locations.

The risk of early purchase by governmental and WFP authorities is that it will hasten the food price inflation. Even though the food price inflation will occur inevitably, the earlier it occurs, the earlier fear and panic migration may commence.

For this reason, the food stockpiling must be closely linked to the messaging of leaders that food price inflation will be temporary and, in fact, a result of the early provisioning by aid efforts to ensure later food access.

Timing of local purchase matters greatly for three reasons.

Even, early in a pandemic, after food transport routes shut down, local and regional purchase may become impossible.

When the epidemic is in country, and after transport routes and economies shut down, many authorities and leaders may become immobile (sheltered-in-place) and it may become infeasible to move large quantities of food to urban areas. In any case, the movement of food always requires many round-trips of fleets of vehicles, which necessarily take time. The later it begins, the less food will be able to be stockpiled.

The later in the pandemic cycle that local purchase occurs, the more directly it will compete with other panic purchases and hoarding by both retailers and wholesalers. As a consequence, aid agencies will at that point be promoting confusion and more severe inflation.

Movement of food in-between epidemic waves

The time period in between the waves in a country or region of the spread of influenza are an important opportunity to move foods within a country and a region. If the second or third waves are more lethal than the first, contractions in economic activity and food access may also be much worse during the later waves. To mitigate this eventuality, governments and aid agencies should take advantage of the opportunity to procure foodstocks which may have accumulated at farmgate or in rural wholesale locations during the first wave and move this food to food insecure regions.

Leaders can spearhead the planning of the smooth scheduling of food along roads. This period may see the most risk of banditry and evening-disappearances of foods off trucks.

Releasing Stocks and Controlling prices

National governments almost always have the authority to dictate price bands (upper and lower prices permitted for sale in country) as well as tariffs and taxes for imports and exports. There are good reasons for reducing import duties and tariffs, not just to lower the price of foods but to expedite the swift offloading and movement of foods in a pandemic year which may see interruptions in ocean transport. There are fewer reasons to impose export restrictions, which would disrupt marketing

chains, bankrupt merchants and could provoke hostile economic counter-measures by neighboring states.

Where governments control foodstocks, one month into an epidemic (in country) would be the appropriate time to begin distributing food through a variety of channels. Governments will not have the capability to directly distribute the food through their own agents, but will have to rely also on wholesale and retail networks. Public auctions can ensure that however food is disbursed is transparent and efficient.

Governments may try to control prices by establishing a fixed price, but in many cases markets will disregard these rules. Prices will diverge between countryside (food prices depressed, other goods increased) and urban areas (food prices increase, labor decreased). Nevertheless, government imposition of price ceilings on basic grains can help to reduce informal price increases due to speculative hoarding.

Fortify Emergency Foods with Vitamins and Minerals

Because emergencies always compound or worsen micronutrient deficiencies in populations, it is advisable to find windows of opportunity for fortifying foods while in the control of authorities, during the period of waiting before distribution one or two months into an epidemic.

The large-scale fortification of foods for distribution in an emergency was demonstrated in the 2002-03 emergency in southern Africa, when more than 1 million metric tons of food was delivered to a stretch of countries in southern Africa. “Agreements were reached with five large roller mills in South Africa, Malawi, Lesotho, and Zimbabwe to fortify the maize. To date, more than 70,000 metric tons have been milled, fortified and distributed, by far the largest distribution in history of micronutrient-fortified cereals in an emergency context.”³⁴

The necessary blend of vitamins and minerals is commercially available in most parts of the world and can be stockpiled in advance. Unicef and WFP can provide technical expertise in support of governments to obtain these fortificants. The cost of the “premix” powder, which carries all the vitamins and minerals humans need, is \$5 per ton of grain.³⁵

Anchor Trust around Distribution

Distribution of limited food supplies can be through community volunteer networks, CHWs, fair price shops, employment schemes and dry take-home rations administered by a council of elected village leaders, as discussed in the earlier section on local leaders.

Where there are high densities of unusually vulnerable populations, authorities may extend national safety nets to pre-distribute rations – ahead of the epidemic’s arrival -- to households with high dependency rations and elderly so that they can maintain their own two-month stores.

Food-for-Stay Vouchers

Vouchers are one tool in the arsenal of governments and aid agencies to easily give to households some form of entitlement to food. Voucher systems ease the costs and burdens associated with delivery; a voucher is cheaper to maintain and transport. But vouchers usually assume that the beneficiaries will go to a central point for collection of food, as in a store, with queues. Thus vouchers do not solve the problem of distancing people. But they do help solve the problem of providing timely assurances to people that they will have an assured entitlement at a later time, regardless of apparent rises in food prices. Vouchers can serve as government bonds, time denominated promises to deliver value at a future point that lead households to say “okay, we’ll stay” in the short-run.

Push Food to Families to Avoid People Migrating or Congregating

Pre-stock non-perishable emergency foods

Unlike basic grains, which comprise the largest mass of food traded, donated, or consumed everywhere, processed, canned, and vacuum-sealed foods have the value of being able to be preserved for long periods.

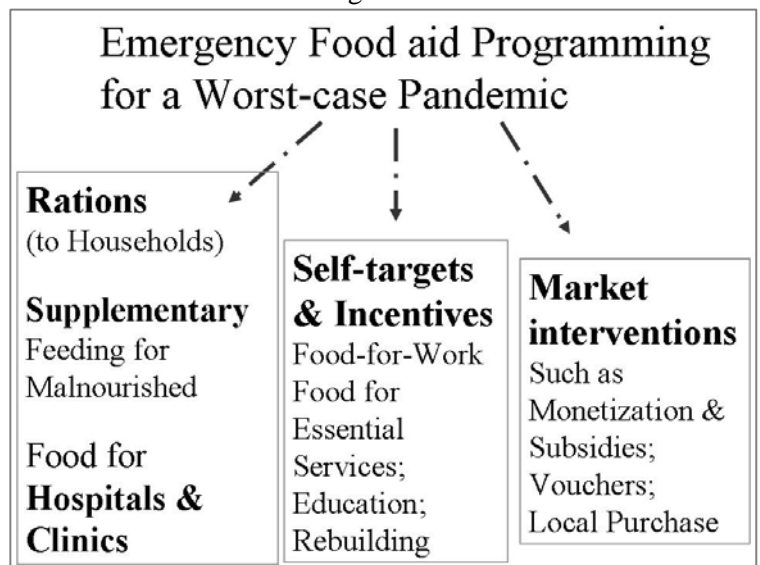
Avoid stockpiles as distribution points

Large silos where people can come and get food are the natural points where aid agencies would lean toward organizing distribution. By and large aid agencies are incapable of directly arranging the direct distribution of food rations to the household level. Instead, almost all aid agencies have defaulted to having beneficiaries come to the site where food is warehoused or other central point, as at a railhead or truck-route. Such methods will not work and should not be considered during an epidemic.

Government employees with trucks

A model for food distribution is the specialized US program of food aid to low-income native Americans, a program created in 1977 and called the “Food Distribution Program on Indian Reservations.” Its essential characteristics are that it is managed primarily by the community in the reservation, and thereby makes the food available to remotely-living populations.

Bread for the World describes Anthony Nertoli, who manages the food distribution in Michigan’s Sault reservation: “He distributes the food packages from the tailgate of his truck in locations around the reservation. He covers 1,600 square miles of territory and provides food to more than 1,000 people per month. The food packages vary from 50 to 7 pounds, depending on the size of a household. He also drops food packages off at homes whose residents are unable to travel.”³⁶



Fair Price Shops

Fair price shops may be linked to government subsidies, but ensure a limited supply at a low price of limited food supplies, to ensure that the poor can afford enough food to survive. Aid agencies that control food supplies should consider these as self-targeting outlets to reach the poor. Where money supply itself becomes a limitation (jobs are lost, paychecks undelivered, banks close), barter shops can be set up. NGOs have successfully set up barter shops for exchange of seeds, tools, food, clothing, blankets and other necessities in emergencies. In Haiti, cooperatives have run similar stores for their members. In Kenya the government has sold grain at low prices to dealers who agree to resell. During the famine in Bihar, India, from 1966 to 1967, 20,000 fair price shop outlets were put into use to promote equitable access. In Kerala, India, fair price shops have been part of a safety net that has successfully reduced child mortality for decades.

Laws, Policies and National Entitlements for Employment

National government programs include the creation of entitlements to food in times of disaster. Across India this has involved public employment schemes that are auto-ramping, require no perfect knowledge by aid officials, and are efficiently targeting because the only people who benefit from them are those who recruit themselves to come to do work for a survival ration of food. In the United States, during the depression of the 1930s, special work camps were created by the Civilian Conservation Corps, many of them in rural areas relatively separated from urban areas and commercial traffic.³⁷

Planning in advance for public works and compensation as a nation-wide measure to support households so that they do not need to migrate from one district or region to another may be critical to slowing the spread of an epidemic. In many countries, it helps to pass national legislation.

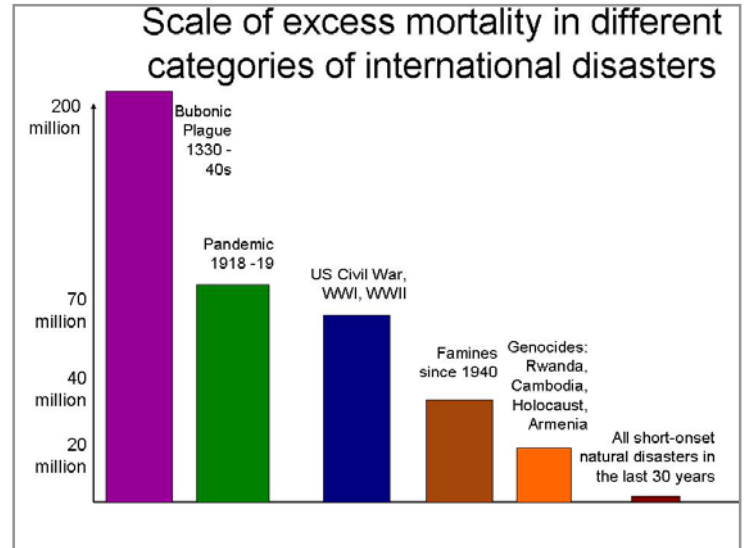
TECHNICAL REVIEW

I. Dimensions of a Pandemic and Relations to other Crises

Potential Impacts: Comparing Food-Related Conditions with 1918

The 1918-19 pandemic of influenza claimed more lives than any set of disasters in the years since, killing (estimates vary) more people than all famines, genocides and natural disasters in the last 78 years combined. The essential aspect of the epidemic was its global nature. If a similar pandemic hits which many epidemiologists argue is inevitable, it too would differ from other disasters by being a global problem, with some aspects similar to the current food crisis, threatening every country in the world. In a pandemic, the numbers of persons exposed to the disaster is often two or three orders of magnitude higher than most natural disasters or complex emergencies.

In anticipating the food security problems from a modern recurrence of a 1918-like influenza pandemic, the following are reasons to expect the consequences to be less harsh than 1918:

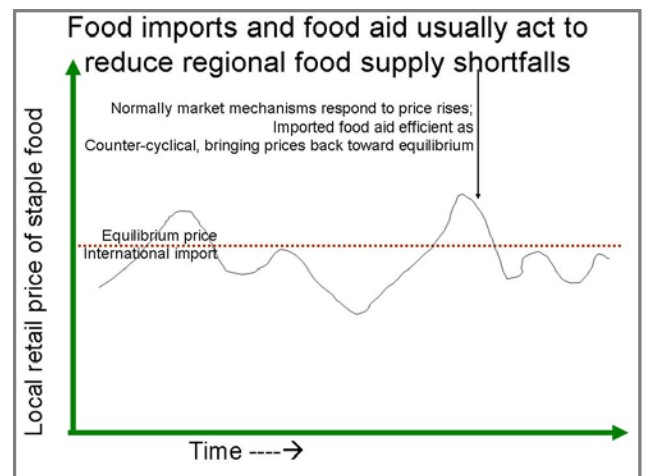


- Global purchasing power is, on average, higher today, affording more people more flexibility in food procurement; indeed, one reason why food prices increased as high as they did in 2008 was because hundreds of millions of previously-poor people (e.g. in India and China) had the purchasing power to not forego food. Ajay Shah explains, “In the old days when food prices went up, millions of people in India and China ate less, that made the world’s demand for food quite elastic. When prices rose a bit, demand dropped enough to clear the market.” Whereas, in the new century, “the new middle class is less price sensitive; this makes the world food market more volatile: large price changes come about when there are small supply shocks.”³⁸
- Global food production and transport/delivery systems are more industrialized and in some ways have more technical complexity and options; transportation networks are more extensive and varied, in many cases permitting faster delivery;
- Improved early warning, medical response, public health preparedness and (limited) vaccine production would provide prospects of containing the transmission of the virus;
- The rate of malnutrition in most populations, with the exception of sub-Saharan Africa, is markedly lower than in 1918 and would be lower at the onset of a pandemic;
- A larger share of the world’s population would have extra body weight, in fat, to cushion short periods of food insecurity;
- Short-onset disasters, where populations are displaced from their homes tend to have lower case-fatality rates (deaths per total population size) than in the past;
- Markets have greater cross-linkages, where gaps in one supply line can be replaced by another supply line;
- In 1918 there was a World War which both preoccupied people (leading to less incentive for public information about the pandemic) and pushed young men into close proximity to one another while shipping them across continents and countries;

- A large proportion of people at the turn of the century, including many adults, had tuberculosis, for which there was no treatment at the time and which often became a cause of death among individuals also infected with influenza;
- Information systems are far improved, facilitating international collaboration between governments, between public health experts, and among aid agencies;
- Global emergency supplies are partially standardized and somewhat stockpiled.³⁹

However, there are other reasons to expect the consequences to be harsher:

- The total number of people at-risk in the world is substantially larger: over six billion, compared to 1.9 billion (less than one-third) in 1918-19;
- The proportion of urban dwellers in the world is substantially larger;
- The number of people not living near farms or near the sources of food, but dependent on a multiple-step logistics chain to deliver food to them is dramatically higher;
- The cascade effect of market interruptions would be many times more profound: far more people would lose access to the supply chains necessary to maintain their jobs, and would lose income;
- As the global food market is much more integrated than before, the consequences of port closures and panic (leading to export restrictions) would be far greater;
- In the short-run, food production or supply is inelastic. Farmers cannot respond to large swings in demand to create extra food in just a few months; their planning, planting, and investment cycles respond from year to year, not from month to month. Thus, if there were a sharp increase in the price of food – spiraling inflation – it would not be compensated for by increased market supply during the first ten months. (In some markets, say Australia, markets could respond in shorter periods of time);



- The proportion of populations in all countries who are elderly is much higher than in 1918.⁴⁰ Although the 1918 pandemic killed relatively low percentages of the elderly, one theory posits that many of the elderly who were exposed in 1918 had partial immunity from exposure to a virus with a similar antigenic profile in the 1800s. That coincidence might not occur in a new pandemic. Thus, the vulnerability of elderly may well be dramatically higher than ever seen in any prior crisis, if the antigens of the particular pandemic agent had not circulated in recent years;
- Antibiotics and antivirals that were not available in 1918 would be available in the future, albeit in limited quantities and probably not available for the majority of poor people in developing countries. The time it would take to research, engineer, produce and distribute a vaccine would make the option of a vaccine ineffective during the first wave of a pandemic;
- In many countries, public health outreach has regressed in recent years. Dr. Heymann worries: “Immunization, the vanguard of public health practice, is losing ground in both developing and developed countries... tourists are becoming less and less rigorous in their vaccinations.”⁴¹

The Worst of Scenarios are the Least Probable, But Can Have Extraordinary Impact

Epidemiologists believe that it is probable that a pandemic similar in its public health impact to the 1918 influenza will occur in the next century. The re-insurance company Swiss Rei calculated recently that “in most developed countries a 1-in-200 year severity pandemic would give rise to excess mortality of between 1 and 1.5 per 1,000 lives,” and judges the 1918 event one that would occur once every 420 years.⁴²

Any number of zoonotic infectious agents could mutate and appear, as did SARS, to create a pandemic worse than 1918. Influenza is a prime candidate though most worst-case scenarios of influenza suggest that it would be less lethal than in 1918. As populations grow, as the number of poultry farmed for food increases, and as humans continue to urbanize, the opportunities for viral experimentation increase:

*“But even in the case of a natural mutation, people's actions may ultimately determine the fate of a new virus, just as they can facilitate genetic exchange. For example, dense human populations in constant contact with an array of naturally mutating viruses may increase the chance for a potentially deadly genetic creation to find people to infect. What's more, intensive agriculture and other conditions that create extremely high densities of various viruses - in waste ponds, for example -- mean, as a matter of simple probability that more random mutations will occur there. The increased number of mutations, along with almost unlimited possibilities for these microbes to find people, either directly or through other animals, increase the chance that another epidemic will be born”.*⁴³

Separate from the mutations is the prospects for actual spread, versus containment. Often, it is happenstance, i.e. fundamentally unpredictable events, which determine the extent of spread – for instance through airports – of asymptomatic but contagious diseases as in the case of SARS.⁴⁴

Were a pandemic like the 1918 strain of flu, or a new virus, like SARS, to spread around the world, it may hit each country in 2 or three waves, separated by several months, as occurred in 1918-19. Thus, the mortality related to infections would be concentrated over a 1-2 month period for any given region, and very likely would hit specific villages only once in all, while it may spread around a country several times (i.e. discrete waves) over a 10-month period. Some models suggest that the number of people who become infected and die will be relatively fixed and unaffected by demographics or programs. For instance, in Swiss Rei's model of a the spread of a potential pandemic, the high density of human populations, compared to the past, did not make a significant difference in the resulting excess mortality attributable to infection.

Opportunities to stop or contain the spread of disease, or to slow it so that counter-measures can be prepared, depend greatly on the public health surveillance system, including the WHO network. In the Americas, surveillance systems are specifically geared to catch transmission of dengue fever between South and North America. The Armed Forces Research Institute of Medical Sciences in Bangkok may be the most sophisticated diagnostic laboratory in Southeast Asia.⁴⁵ Thus, food and nutrition actions can be triggered by the results of laboratory testing.

Economic Shock Waves -- Costs

The household economic implications would not be limited to the periods of influenza infection and deaths. Rather, an economic crisis would endanger millions of additional lives in advance of and even in the absence of the virus ever arriving in a community, due to global economic contractions.

Those experts who have examined the transport and economic effects of a pandemic predict that liquidities and insolvencies would lead to a global recession.⁴⁶ In other words, there would be a

reduction in demand, reductions in trade, investment, and a rise in unemployment. Even if large banks are relatively prepared for continuity through a 10-week epidemic, the economic contraction will expose many banks' inability to manage outstanding debt, similar to the crisis in 1998 after the East Asian financial crisis forced industry-wide reforms of the banking sector.

In a pandemic, food and economic disruption may be greatly amplified by interruptions in the transport and delivery of energy, particularly petroleum which is required for transport.⁴⁷ Port closures to contain an epidemic would automatically reduce travel and transport. The short-term SARS epidemic led to 1% reductions in gross income in China, Hong Kong and Taiwan, and billions in losses to Canada. The plague in Surat, India led to trade embargoes, outmigration, job loss and mass migration out of Surat, costing a relatively poor economy an estimated \$2 billion. Milan Brhmbhatt and Arindam Dutta also estimate that the cholera epidemic which reached Peru in 1991 cost \$770 million.⁴⁸

But none of these examples come close to exemplifying what would happen in the case of a pandemic that killed millions in every part of the world. The extent of a 1918-like pandemic could be enough to close all ports and reduce all trade, including trade between regions and cities in a country or district.

Food and Nutrition Problems in a Pandemic

The effects of a pandemic are of a different kind, largely because of the sustained nature of the problem, compared to geographically-confined disasters such as Hurricane Katrina, the 1999 floods in Mozambique, or the Mexico City earthquake of 1976, and more in common with broader economic/financial crises that directly harm billions of people through months or years of contraction in income, purchasing power, and trade. The financial crises of Southeast Asia, Mexico, and South Korea in the 1990s have more in common, in terms of the harm to people.⁴⁹

The food/nutrition threats that would probably ensue from a worst-case pandemic can be conceptualized as falling into these distinct classes:

1. Interrupted food pipelines within country to clinics, hospitals and other institutions with high-risk dependents will endanger the continuity of operations of essential services, particularly the medical services for which demands for food will increase several-fold during the epidemic.
2. Food supply (availability) decreases for towns and cities, as roads close, regions are separated. As countries move to restrict food exports, ports close, and other transport decreases, commercial food pipelines will fail to replenish urban foodstocks. Foodstocks in markets in urban centers would probably disappear within several weeks. The trend toward just-in-time delivery of products (championed by industry and universities) in the modern global system of supplies, creates lean or thin volumes of inventory. "Thin markets are more susceptible to manipulation because a small volume of trade can cause a large change in price, or because a few buyers or sellers can collude. ...the quality of pricing information obtained from thin markets may be poor."⁵⁰

Food supply may also decline, country-wide, if the wave of pandemic hits during a harvest period, essentially reducing the amount of grown food. Low-labor production, such as corn in Nebraska, may be more resistant to impact because it can be compartmentalized as opposed to a maize farmer in Ghana, who needs labor to produce, and the amount of labor defines how much is produced.⁵¹

3. Food access (markets function, people can afford food) declines, particularly for the poor, as food prices increase 300 to 900% in many areas, as global prices decouple. "Food access" is a profoundly

distinct issue from food supply. Even where there are food supplies, changes in price means that poor people will be unable to purchase foodstocks that exist in the area.

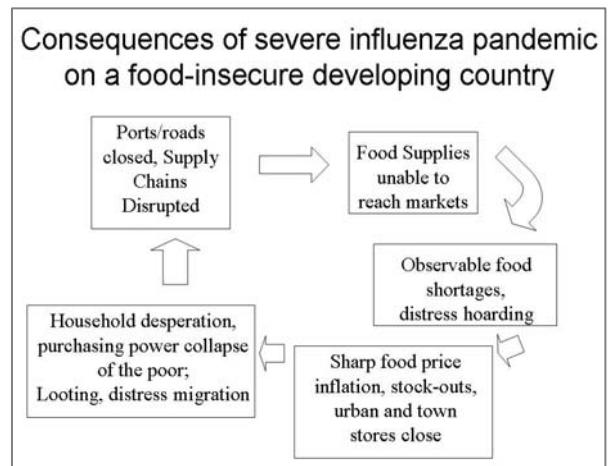
4. As supply chains uncouple, and people adjust their behavior by not traveling or congregating at workplaces, disposable income among the very poor will plummet in a manner that they will be unable to afford to buy food potentially for many months. Thus, whole classes of workers in manufacturing, service, day-labor, transport and other industries will lose purchasing power, and fear the inability to obtain food, as they look ahead. How different is Lagos from NYC?

5. As household members switch to new coping strategies, their caretaker behavior may change. In any case, marginally malnourished children who have few food reserves may, during a 10-week period of reduced food, become severely malnourished. Young children between 6 months of age and 3 years of age would be the greatest at risk.

6. The quality of diets will worsen. In general, the more market access contracts, the fewer options consumers have, thus diets become less diverse, on average. A decrease in diversity of dietary items, for most population, will result in a decline in the balance of vitamins and minerals (micronutrients) consumed. Micronutrient deficiency diseases will grow worse. Over the period of a few months, this set of deficiencies will not lead to observable, pronounced consequences for certain nutrients, such as iodine, calcium, which store for longer periods. But where deficiency diseases already exist, for B1, B2, Niacin, they will worsen. Likewise for other nutrients including vitamin C, iron, and perhaps vitamin A for which overt and sub-clinical deficiencies are endemic in the poorer populations.

7. Formal government actions, by interfering with markets, may encourage economic disruption. Government interventions that abruptly affect markets may be the cause of malnutrition-related excess mortality in some emergencies. When the British requisitioned food supplies from India for World War I, it drove up food prices, exacerbating the effects of an ill-timed monsoon and accounting for much of the excess mortality attributed to the 1918-19 pandemic.

Governments rarely deal effectively with irrational bubbles, frequently because the timing and extent of bubbles are difficult to measure except in retrospect. Many senior officials may be confused about or disagree one from another about what policies to pursue with regard to food. Many governments will attempt to dictate prices at which foods can be sold, or increase barriers to trade (regional, exports from shore). Government regulations (giving orders to merchants that are contrary to the interests of both suppliers and consumers) in a tight market (vis-a-vis Zimbabwe 2004-2008) do more harm than good, making commodities more scarce as they are driven into informal markets and avoidance behavior.



8. Food rumors and panic: Further complicating these food challenges are the challenges of public acceptance of price increases. Events in many food scarce situations throughout history (Haiti 2008, Ethiopia 1974, etc) have found that populations rise up in protest and sometimes overthrow their governments when food prices rise. Governments therefore box themselves in a corner when they attempt to placate restless urban populations with make-shift, improvised policies promising to produce food that isn't accessible. It's likely that in a pandemic the public will perceive more attention to the public health aspects of a pandemic than to the livelihood and food aspects. A perception of "no policy direction" will allow for public sentiment, driving behavior, to be influenced

by rumors. Rumors and beliefs about food scarcity can and often do actually create such scarcity even in the absence of a physical shortage of food. One of the pernicious dynamics that define most famines is the circular feedback loop of fear, hoarding, and hoarding-created food scarcity. It is the anticipation of food shortages that lead to hoarding, which leads to a self-perpetuating circle of price increases and further hoarding.

The high food price events of 2008 mirror similar food price rises in the early 1970s, particularly when the (then) Soviet Union began buying grains in large quantities on international markets, as its population had graduated in its diet from mere staples to animal products (which require more grains to feed). The food markets of the 1970s were also coincident with oil price spikes, reflecting tight supplies of energy.

Medical-Biological Interaction Between Nutrition and Influenza

From a medical point of view, malnutrition will decrease the survival rates among those who become infected in a pandemic. In most instances, the synergy will be between malnutrition, the immune response and the secondary infections (such as bacterial pneumonias). In the 1918 pandemic “the types of bacteria found in the lungs varied from one country to another...as if a very active virus ...finding almost all individuals susceptible to it and in its passage made all sorts of temporary alliances with pathogenic bacteria spread by the same respiratory route. The virus initiated the illness in every case, but when a fatal outcome resulted it was almost always the bacteria which were final responsible.”⁵²

Evidence from 1918 suggests that in developing countries with food insecurity, death rates due to the influenza were highest. The extent of the 1918-19 epidemic in India is notable because it overlapped with a food crisis, leading to very high death rates. The epidemic in Bombay appears to have been confined to the second six months of 1918. “It began in Bombay City in May but reached truly epidemic proportions only in September, when 60,000 deaths in excess of normal were reported... The epidemic peaked in October, with over 600,000 deaths in excess of normal reported, and then receded fairly quickly – less than 200,000 deaths in November and almost none after that...”⁵³

How a Food Crisis Would Threaten Containment of the Disease

Separate from the pandemic’s consequences on food security are the affects of food security on the pandemic. Economic dislocations, job loss, transport interruptions, price inflation, market closures as well as the combination of rumors and panic about food security will tend to lead many people to flee their homes. This migration will dovetail with the impulse to flee concentrated population areas that results from fear of infection. Populations often close themselves off (erect barriers to entry) while individual families flee their current homes. In a pandemic, fears of food shortages in urban areas would very likely compel millions of households to stream from urban and peri-urban areas to rural areas following kinship networks, seeking to be closer to where food is. From a food security point of view, such behavior would be both rational and beneficial. But from a population-based public health perspective, it would be the worst thing to happen: it would further spread the epidemic, and undermine the ability of authorities to contain, isolate and stop the endemic in any country or region.

Traditional Food Aid and Nutrition Responses Are Not Appropriate

Regular, ‘sustainable’ food responses, including increase of arable land under cultivation, application of added technologies and fertilizers, increases in labor intensity, and switch to higher-yielding varieties can all boost food availability. Though, not in the short-term period that the pandemic would hit, i.e., the 10 weeks of a wave in a country, or the one-year covering all the waves.

Where food production fails, food aid from international sources often can make up the difference, saving lives. However, international food aid cannot play an important role during a short-term period

after an epidemic is in-country. The time period between the onset of a crisis and when food can be planned, procured and shipped takes between 4 and 6 months at best.⁵⁴ Often, in large-scale responses, the lag between planning and final delivery to families averages 10-12 months. Markets will provide most of the food.

Even where food aid can be obtained, say through local procurement, and delivered, the conventional ways of delivering food favor four major types: rations at major distribution points, such as camps; meals in clinics; meals in schools; and rations distributed at food-for-work sites. As each of these traditionally requires a site, i.e. beneficiaries coming to a common place, they achieve the opposite of the main goal in a pandemic response: to allow people to remain separated, to eliminate points of congregation, while supporting families in staying at home.

II. Goals & Objectives of Food and Nutrition Programming

The over-arching goal is to minimize excess mortality, while also minimizing disability and morbidity and preserving human dignity as defined by Sphere's minimum humanitarian standards. The numerous goals associated with food and nutrition programming fall in three discrete categories:

1. Ensuring continuity of food supplies for the diets and recovery needs of people who are sick and their primary contacts. This includes food pipelines for vulnerable populations:

- 1.1 People who are ill from influenza (a growing but unpredictable number)
- 1.2 Continuity of programs for other ill people in hospitals and clinics
- 1.3 Therapeutic foods for children who are malnourished, including community-based programs
- 1.4 Health care workers.

The history of modern emergencies is full of cases where food shortages led to mass forced migration which led in turn to the spread of epidemic diseases. Therefore, aid programs mounted in a pandemic should neither attract people away from their homes nor induce them to congregate around central distribution points, whether intentionally or via spontaneously-created road-side camps. The standard model of creating facilities where food is delivered to people waiting in long queues should be avoided. Once influenza is in a country, under no circumstance should queues or camps be allowed in the delivery of aid. Instead, measures such as distribution by aid teams to homesteads, or use of community-based therapeutic care models should be considered.

2. Prevention of the mass migration of people, which in large part would be related to distress, fear, rumors and belief that food, sustenance and water will not remain accessible in urban locations. Here, food programming supports a public health objective: the containment of the disease, reducing human transmission from one geographic area to another.

- 2.1 Target food to households deemed high-risk of flight (poor, urban, with few assets)
- 2.2 Create messaging and use of economic measures, such as vouchers for later-receipt of food rations that vest or increase incentives for urban populations to stay where they are
- 2.3 Anticipate these needs in advance, thus move early to preposition food stocks near urban locations at the start of any occurrence of pandemic in another country. This may take the form of both large-scale food stocks controlled by government as well as smaller food stocks at the community or suburb level.

3. Prevention of the malnutrition effects of food shortages, including cascade effects on livelihood systems, that occur as some food prices inflate dramatically and markets fragment.

- 3.1 Assess populations that may become newly malnourished as a consequence of entitlement failure
- 3.2 Intervene with employment programs, new entitlement systems, currency substitutes to protect or restore livelihoods and, thereby purchasing power for the poor
- 3.3 Compensate for loss of purchasing power
- 3.4 Minimize cascade effects on people displaced from their jobs
- 3.5 Message to and educate populations that recovery will begin within a short period of time
- 3.6 Government intervention in transport industry, working with NGOs and WFP to establish safe transport system to allow food to be moved where appropriate. Transport hubs in developing countries where intense labor is required, with humans in close proximity (loading, unloading, stevedoring, etc.), will be interrupted by social-distancing requirements as well as fear and absenteeism.⁵⁵

III. Cautionary Lessons from Past Emergencies

Lesson 1: Economic shocks can lead to famine deaths despite food availability

While food availability refers to the existence of foods in a region, it says little about whether farmers can get the food to market and whether consumers can get to market or afford the food. Amartya Sen revolutionized thinking about famine by pointing to historical examples where people died due to a lack of “access” to food, despite ample supplies of food in the region. In recent decades, economic crises, war and government oppression have provided numerous examples of classes of people denied access to food. Distinct elements of access include: 1) farmers cannot market harvest; 2) merchants cannot move bulk foods; 3) physical markets cannot open to allow transactions; 4) the price of food is too high for many to purchase (food price inflation); 5) the value of money has deflated rendering many fixed-income groups incapable of buying food; 6) unemployment or other food shocks lead to classes of people with no income or purchasing power.

In pockets in many countries, people may die of starvation in a pandemic, even though food-stocks may be ample in aggregate. In almost all countries, food market prices dictate whether poor people can obtain food, and where food prices are high for many months, many will die of starvation. Depression, recession and devaluation of currencies all can lead to wide-scale loss of access to food.

Lesson 2: Hoarding and panic are distinct hazards and can lead to famine deaths.

Numerous instances exist of bubble economies creating extreme economic behavior, wherein the price of specific resources increases dramatically over short periods. When these resources are flowers, houses, stock prices and other forms of wealth, their subsequent rapid collapse can bankrupt those families who depended on them. But it is far more serious when speculation occurs over the price of food, because it removes food from markets and poor people can't wait months for the bubble to burst in between meals.

A pandemic may re-create circumstances like that seen in the Bay of Bengal famine of 1942-43, where there was no food shortfall, but anxiety about a Japanese invasion that never occurred led to food hoarding which fed a price spiral that took food off the market (reflected in high prices), resulting in two million deaths. Thus, just as food price increases accounted for high levels of excess mortality at the time of the 1918 pandemic in India, so too, during the next world war did food price increases account for enormous preventable mortality in the same region. Remarkably, the high rates of death occurred despite a mature famine code and governmental “famine manual” that specified food for work and food rations in just this situation.⁵⁶

Similar to the Bay of Bengal famine, a pandemic may create dire conditions in many developed countries for those groups that would become acutely vulnerable to food shortages, especially the poor who have minimal assets or wealth, those who depend on commercial activity including service/manufacturing jobs, and those who do not own land.

Lesson 3: Ongoing trading of food occurs throughout a famine and does not indicate a lack of need.

Almost all major emergencies exhibit ongoing economic activities in many sectors. People continue to invest their time as productively as they can, whether in formal economies or in newly invented informal activities. As well, all goods continue to be exchanged at some price, and most people know what the local price is (dictated by local supplies and local demand via purchasing power).

Just because food continues to be shipped or transported does not imply that people in those areas have access to food. Famine can occur in the same countries where foods are exported, as in the well-documented case of commercial exports to Europe and Japan during the Sahel Famine in 1972-74.⁵⁷ Indeed, obligations to export food may take food out of local communities and endanger lives.

Lesson 4: the poor rely on the retail price of food

All the policies, all the dollar values of aid contributions, all the camps and plans matter little compared to the main reality of the poor: “how much does the local loaf of bread cost today?” Policies and programs that seek to maintain a lower retail price of bread are the most effective at protecting the largest numbers of poor, particularly urban and non-farm poor. In a pandemic, this should be the main index that planners watch and governments should aim to influence.

Lesson 5: sanctions, sieges and government restrictions

The local effects of a pandemic may be similar to those effects intended and documented in various sanction regimes, where imports to a country were cut off, seen for instance in Rhodesia (now Zimbabwe), Yugoslavia, Liberia, and Cuba. Sieges during war (Leningrad, Angola) also replicate what may be seen, with lessons drawn about coping strategy and social capital. In some cases, “sanctions open the door for diverse forms of violence, loss of trust, spiritual side of life.”⁵⁸

In the early 1990s, Haiti, a very poor country to begin with, saw increased rates of child malnutrition and mortality within two years of the sanctions imposed by the international community, including an oil embargo.⁵⁹ As would be seen in a pandemic, food prices were significantly lower and food was more available for the rural poor than for urbanites. Food stress was greatest in the urban areas, as transport networks broke down.

Lesson 6: Mass migration creates a new set of hazards

When large numbers of people uproot and flee long distances, in reaction to natural disasters, drought, famine and war, they are following a rational course of action. But the fact that they had to represents a system failure. More often than not, distress migration over a short-term hazard becomes permanent uprooting, and most members of the families never return. Worse, migrations relocate people into more concentrated locations, either urban areas or camps, where influenza and other epidemics will attack them at the worst possible time, when they have the fewest coping options, the fewest social safety nets and may be malnourished and dehydrated. One of the reasons that refugee and internally displaced person (IDP) camps have had the highest crude mortality rates in many emergencies is because of this confluence of livelihood-collapse, malnutrition and demographic density allowing the transmission of contagious disease.

The hazards of migration would be worst in a pandemic, where people fleeing into cities or camps would be running headlong into exposure to the influenza and in turn re-transmit it faster because of the mass migration.

The highest priority in most emergencies is to prevent distress migration. In a pandemic, the importance would be even greater: the over-riding priority in a pandemic is to prevent mass migration.

Lesson 7: Large short disasters lead to economic growth afterwards

No matter how dramatic the disaster, they frequently are followed by waves of reconstruction, generating more demand than ever. Short-onset natural disasters often are followed by increases in gross production, not decreases. Aid agencies often contribute through public works schemes that focus on labor shares “with building construction, dirt roads, waterworks, afforestation and anti-erosion works showing increasing labor shares in that order.”⁶⁰ Thus, if a pandemic passes quickly, in 8 – 10 weeks, economic losses may be limited to the downturn in activity during just the pandemic.

Short-onset, limited disasters tend to demonstrate and even reinforce social capital.⁶¹ Historically, emergencies do not routinely lead to breakdowns in law and order. Riots and violence tend to occur among urban populations suffering moderate shortfalls in purchasing power or other economic disenfranchisement; but where populations are in shock they rarely resort to sudden violence.⁶² “Most people behave rationally in disasters. Although panic is not to be ruled out entirely, it is of such limited importance that some leading disaster sociologists regard it as insignificant or unlikely.”⁶³ The types of food riots that occur are similar in kind to those that have occurred in many developing countries as a result of rapid re-valuation (devaluation) of local currencies in response to of structural adjustment recommendations, which occurred in 90% of developing countries in the 1980s and 1990s.⁶⁴

Lesson 8: Protracted Epidemics and Famine can Lead to Longer-Term Social Reordering

However, in contrast to the point made above in Lesson 7, **prolonged** hazards and distress gradually lead to portions of the population resorting to theft, breaking into stores, and armed robbery.

After months of high food prices, popular protests will occur, which will in many instances use physical destruction as symbolic gestures of the seriousness. Governments may be overthrown by groups thinking that they have a solution for forcibly redistributing food. At that point in famines where people are compelled to sell off their generations-built assets (land, tools, cattle), their level of distress increases by quantum leaps. Famines that lead to mass migration and separated families lead to confusion and dismay. As reported by an American Friends Service Committee relief worker to the US Senate “Many social structures have broken down under the stress of the drought. There were innumerable accounts of suicides, of men abandoning women and children in the desert, of mothers abandoning children.”⁶⁵

Long-protracted emergencies frequently do lead to momentous changes in society. Severe famines toppled two governments in a row in Ethiopia and to revolutions in almost every country at some time. Cantor records how “*Three pandemics ...smallpox and gonorrhoea from AD 250 to AD 450 and bubonic plague from 540 to 600.. the devastation and fear brought about by succeeding waves of epidemics that sank Rome and thus changed the course of history...*”⁶⁶ Cholera has been similarly associated with conflict in Europe.⁶⁷ Cholera shifted the power and scope of control between indigenous American tribes of North America.⁶⁸

After bubonic plagues killed larger portions of the world’s population than any other known disasters in human history, the result was that the price of labor increased (as there were fewer people to work), relative to other factors of production (land, capital, equipment, technology, ideas). This led to an unleashing of creative ways for scarce human labor to be multiplied and more efficiently used.

Where hazards lead to protracted livelihood collapse, systematic invasions of one country by another, or civil strife within countries may occur. A correlation between food insecurity and violent conflict has been observed by many in the aid community.⁶⁹ Thus, in a pandemic, the risk of state collapse, civil violence or inter-state war (countries invading one another desperate for supplies) may depend on the depth of regional economic collapse and the duration of the economic contraction, which in turn depend on how long the disease circulates and fears of it persist. A ten-month long pandemic, if lethal enough, could trigger distress invasions and overthrow of some governments, particularly where the national government itself retreats into a shell, as individuals protect their own families.

More likely than war or state collapse will be other forms of social re-ordering. When economies contract severely, they rebuild along new lines, as seen post-war and post-sanctions. People forced to sell off assets and migrate re-align their livelihoods to new industries. In the long-run this may have positive or efficiency aspects, in the short-run it suggests a lengthy period of unemployment. The great depression of the 1930s represented such a decade-long period of low production, low purchasing power, and reduced international trade following a shock brought on in large part by sudden protectionist and trade restrictive policies between countries.

Lesson 9: Commercial sector permeates all of society

Whether through formal market sales or through barter, transactions continue to occur in all circumstances, from prison camps to famines. Even if GNP decreases by 90%, it's still worthwhile for people to invest their time in transacting with other people over those resources that exist.

Frequently, aid agencies adapt the assumption that commercial markets (also referred to as the private sector) are too profit-oriented to be trusted. Nonprofits and governments often misconceive of the world as being divided up between 1) huge corporations, some of them transnationals, with immense assets and representation in the capital city; and 2) petty production by individuals. In fact, the spectrum of industry follows no such dichotomy, but instead reflects a smooth curve of businesses of all sizes. And in all economies, in all districts, for every company that employs 100,000, there will be twenty that employ 10,000, and one hundred that employ 1,000. Thus, small and medium size businesses cannot easily be supported or captured through a polling of the largest business leaders in the capital city.

Most of these small and medium sized businesses require electricity, fuel, truck transport, and face-to-face contact with contractors, suppliers, merchants, and customers to survive. In order to recover an economy in severe recession, particularly where trade has been disrupted, governments need to map, and use input-output matrices, to triage which businesses can be rehabilitated where they can achieve access to each of the above requirements.

Lesson 10: Most livelihood assistance is performed by locals

In a pandemic, as during any disaster, aid from outside institutions, governments, and international institutions represents only a tiny fraction of the life support that people receive. Local civic organizations from sports leagues and clubs to religious institutions kick into gear, but even they provide less aid than families, extended families, and neighbors. Though poorly documented, badly measured, and thinly-understood, the livelihood and coping strategies that keep people alive in famines, mass forced migrations and other protracted emergencies rely on the knowledge and networks of the people around the most vulnerable. One implication is that marginalized groups, minority ethnic groups, widows and other individuals who for whatever reasons lack personal support networks are at greatest risk of starvation during a protracted pandemic.

During an epidemic or food shortage, local leaders and governments bear a responsibility therefore to think beyond the in-group mentality that focuses on majorities and well-off and active organizations and search for the homeless, dislocated, illiterate and forgotten individuals as the targets of program food distributions.

Lesson 11: Local and secondary trade tends to improve diets

In any pandemic, the circulation (sale) of foods will often represent rational behavior by the poorest and most vulnerable. In the past, aid agencies, governments and journalists have misinterpreted informal trade of aid foods as somehow immoral, or a sign of surplus or a sign of oppressive black marketers intervening. In fact, it's natural for households to swap portions of foods received and to exchange through traders to achieve a variety that the aid agencies cannot provide, and in almost all cases variety improves the likelihood of each individual receiving more micronutrients. Where refugees can trade food, the result tends to diversify, "and nutritional deficiency disease are thus reduced."⁷⁰

Lesson 12: Food security programs can be dynamic

NGOs have learned over many years that effective food security programs can use the resources available to build dynamic, multi-pronged, community-owned, participatory and inclusive decision making structures, that improve social dynamics so that each community can better track local risks, understand which population groups are most vulnerable, and maintain their own multiple-sourced safety nets for the most vulnerable households. Food distribution and sharing programs, for instance, are integrated with the training of community health workers, food aid monitors, extension staff, and local leaders on new risks, pre-positioning of relief items to shorten the time of response, etc. Community level mitigation measures can successfully include local surveillance systems with local, continuous collection of data which in turn informs each community's efforts to create local grain-banks or other inter-seasonal storage. In the case of a pandemic, this would imply, as well, inter-wave grain stores.

Lesson 13: Cash vs. Food

Unicef, WFP, governments, OFDA, DFID, the Red Cross and UNHCR have extensive experience experimenting with different forms of livelihood support to vulnerable populations. They have found that there is no single answer about whether cash distributions are superior to food or vice-versa. This, despite the recent rhetoric in policy circles about whether or not food is ever useful. (Debates about reform of international food aid regime, how it influences local markets and the system of food security within countries, calling for deeper learning by project designers, policy makers and WFP.⁷¹)

Decisions about when to provide food or cash depend on the local availability of food aid and its price. In a pandemic, in most rural areas, food will be available in ample supplies, and people at risk will be those who cannot work. In these circumstances, the cost of food will be low, even depressed, and cash handouts or vouchers will be efficient forms of livelihood support.

In contrast, there will be pockets where food is not available, and shanty-towns and inner-city slums will be among these. There, the cost of food will be very high, and cash will not only fail to provide much purchasing power, but will drive up the price of food further, while making no more food available overall. Thus, cash distributions or cash-for-work programs are inefficient.

Lesson 14: Industry can mass produce and market high-nutrient specialty foods

During a pandemic, when industry is called upon to re-orient its production of food, leaders with the technical assistance of aid agencies can advise them on how to improve both the nutritional value of

the foods produced and the shelf-lives. Such sharing of food recipes can occur now, well in advance of a pandemic, as food producers can better meet the needs of the poor and malnourished.

Many aid agencies (CARE, WFP, OFDA) have struggled to make low-cost, high-nutrient foods commercially sustainable. Many times in the past, aid agencies have crafted high-nutrient foods for mass consumption of children, with the hope that these foods would become commercially popular and self-sustained. By and large, these have not met expectations, as most specialty foods that have been tested over the years for malnourished children have not been sustainable.⁷² The children's food in central America, Incaparina, designed by INCAP, has provided positive lessons, as has Lukuna Phala in Malawi, promoted by WFP.

Where specialty foods have been successful has invariably been in emergency response, as with Ata foods in Bangladesh, biscuits in North Korea and Fafa porridge in Ethiopia. UNICEF, ACF, Save the Children, WFP and donors may build into their stockpile plans for foods such as BP-5 and RUTF, and intentionally carry stocks – which would rotate (first in, first out) that are greater than the needs in an average year, in anticipation of the rarer black-swan events like a pandemic.

The Red Cross or Red Crescent society in every country should have a plan for rapidly informing food mills about how to scale down the complexity of their processing and focus on scaling up low-cost specialty foods like these.

Lesson 15: Bulk food aid from international donors is often late

International food aid is not always needed. Not all emergencies require food aid from outside, even though food aid tends to be by far the item most “appealed” for in UN consolidated appeals. Short-term hazards do not require food aid most of the time. Food aid is frequently less about nutrition and more about livelihood: it tends to be a high-value commodity that aid agencies can at least distribute to support livelihoods and recovery.

Where food aid is needed, as in refugee camps and warzones, it is frequently in insufficient quantity to meet minimum humanitarian standards (i.e. SPHERE standards), and often arrives at unpredictable times, as aid agencies are dependent on the somewhat haphazard ocean freight schedules and vagaries of roads washing out for truck transport to remote camps.

External food aid typically is needed in famines; indeed much of the definition of famine is the need for outside food aid. Even when there is sufficient national food supply, international food aid can be critical to reach the poor if food is hoarded or over-controlled by institutions, or trade inhibited by war, crime, or other interference in markets. International food aid has saved many millions of lives in these circumstances. However, because of the long timeframes involved in identification of need, processing of plans and proposals, open-bidding for food in donor markets, ocean transport across oceans, port delays and weeks-long trucking schedules over long distances, food aid ends up arriving too late to assist people at the peak of hunger and malnutrition.

Traditional international food aid will be relatively inelastic in the short term, as it typically takes months for donors to appropriate additional funds, and then 4 to 6 months to deliver. Aid donors are well aware of this sobering reality and acknowledge that in the case of a pandemic, where the time between the appearance of the infectious agent and its spread may be days or weeks (not months), the ability of international food aid to be timely would be reduced. Food aid programming from donor countries, such as the USG's PL 480 Food for Peace food aid, will be slow to respond, because it tends to follow annual budgetary cycles. Food aid can and will be re-directed and re-deployed, but not in a way that will increase the size of the food aid pie, in the short-run. More than half of the world's food

aid programs will be in route to populations already having special needs, either as refugees, war-victims, in famines, or with HIV/AIDS.

In any case, if the problem is a contraction of international freight, closure of ports, and disruption of shipping, food aid would often be of less importance than efforts to push along shipments of commercial food to their intended destinations, as the amount of foods in commercial food trade dwarfs food aid volumes.

The lesson is that in a pandemic, new and additional international food aid (above whatever is already in the pipeline, perhaps in-country) might be non-existent, small in volume, and relevant more for the recovery phase, not the epidemic phases. To the extent that donors have resources to contribute, cash to permit local or regional procurement may be of greatest value.

Lesson 16: The international food system is more at risk than ever before of system failure or ripple effects of dramatic price shocks

As seen in 2008, when food prices rise significantly, and populations fear food shortages, governments stockpile food and disrupt international food trade. By restricting the free flow of food, this drives the price higher, creating a vicious circle of speculation, hoarding, protectionism and lack of food access by the poor.

What has brought this circumstance about has been lengthy periods of stability and reliance on the free flow and just-in-time delivery of foods between countries. Exports have represented the greatest share of growth in US agricultural production, a pattern that has repeated for many other countries.⁷³ One consequence is that most countries maintain smaller emergency grain reserves than they used to (on a per capita basis), relying instead on the multiple options of food import from the growing number of suppliers. However, in a global crisis, the multiplicity of suppliers will disappear.

In most future influenza pandemics (global mortality in the 100,000s, not the hundreds of millions, i.e. not worst-case), food may flow freely between countries, and the food shortages detailed here may not occur. In medium-case pandemics, it is expected that laden ships at sea will still discharge at ports, one way or another, as demurrage charges are so steep. But in worst-case scenarios, tipping points will be passed, and governments will become preoccupied with the protection of their own populations. Aid agencies will also protect their staff first, sheltering-in-place humanitarian staffers who might otherwise move into the field. But staff will be stretched thin also because the emergency divisions of UN agencies and NGOs are not large enough to respond simultaneously to crises in over one hundred countries.

Lesson 17: Local procurement of food can be “regional”

Despite much of the language of documents like this, governments, leaders and other planners should not assume that food is either grown locally or imported from distant locations. Much of the most important food relief provided in recent emergencies came from within the same region. WFP has routinely procured food from Uganda, Kenya and Tanzania to address emergency needs in Somalia, Sudan, Ethiopia, Rwanda, Zaire and Burundi, for example. In southern Africa, the SADC regional organization promotes regional solutions, and indeed food from South Africa, Tanzania and northern Mozambique tend to meet shortfalls among the other regions. Similar flexibility in the rapid local procurement – early in a pandemic – will require creativity and flexible cross-border arrangements between governments, and cooperation between adjacent UN missions.

Fortunately, WFP and other aid agencies are gaining increasing experience with local purchase, recently encouraged through an initiative called “Purchase for Progress”, funded by the Bill and Melinda Gates Foundation along with some bilateral donors, which procures food from small farmers when possible to raise their income.

Lesson 18: Prevention, preparedness and mitigation can benefit from the numerous and ongoing food assessments by aid agencies

If the goal is to save lives, then prevention and preparedness frequently provide the only options, whereas relief really ends up being more about support to survivors. In the case of food security in a pandemic, millions of lives may be saved through careful planning that results in the prevention of panics, hoarding and distress migration. Lives saved in emergencies bear little correlation to how much money was spent, but on how wisely it was spent, to educate and mitigate.

One lesson of humanitarian agencies’ planning is that they rarely plan for rare events that do unfold, leading them afterwards to make excuses about the one-time-ever nature of that particular disaster, year after year, disaster after disaster. Randolph Kent encourages humanitarian aid agencies to mainstream inter-disciplinary speculation about rare crises: “Speculation, like planning itself, will have to gain greater respectability if an organization is to be truly adaptive.”⁷⁴

Much information is already available, which ought to be collated and made more centrally accessible to planners. Dozens of NGOs already produce their own assessments of food security needs and high-risk groups in low-income countries. Their surveys are rarely read and tend to use different methods and different definitions. There is no central location of these surveys, nor any inventory of where they can be accessed.

However, during the last twenty years the indicators used in these surveys have been more clearly defined, so that they can be interpreted universally. Indicators of household and community level food stress or resilience can be readily used as a first-cut of where food shortages will hurt people the most in a new pandemic. For many international NGOs, their assessments are embedded in their proposals to the office of Food for Peace.⁷⁵ Thus, a pandemic preparedness initiative should create a new mechanism--for instance, through the IFRC--to create a global database of such assessments of food and livelihood vulnerabilities. By managing it through the IFRC, it would be inclusive of both international and local actors, and link these assessments both to SPHERE humanitarian targets (minimum standards) and to the associated, Geneva-based databases on nutritional status: the Nutrition in Conflict Situations (NICS, formerly the RNIS) managed by the inter-UN nutrition office in Geneva⁷⁶, and the global malnutrition database managed by the World Health Organization.

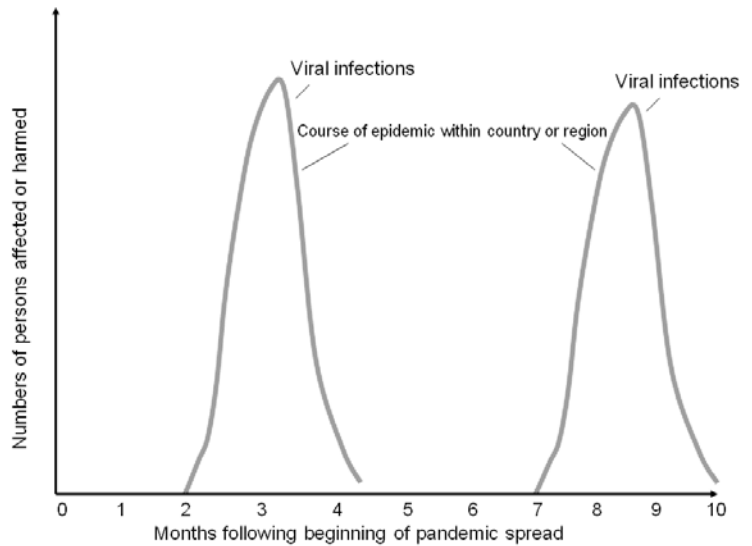
When a pandemic hits, there will be insufficient time for national authorities to canvass all parts of a country to reconfirm current food vulnerabilities. Therefore, it will be useful for all countries to have a national coordinating unit that does update household and community food insecurities on an ongoing basis, drawing on and transparently publishing all strands of evidence, including local production, migration, asset accumulation, rainfall, and local surveys.

In advance of a pandemic, donors can help the poorest countries become more resilient to the food consequences of a pandemic by helping them produce more of their own food, through technical assistance investments in agricultural research and extension. The US aid program, to mention one, used to do much more of this type of investment, which it could increase again: “US land-grant universities have been institutional marvels in agricultural science”⁷⁷

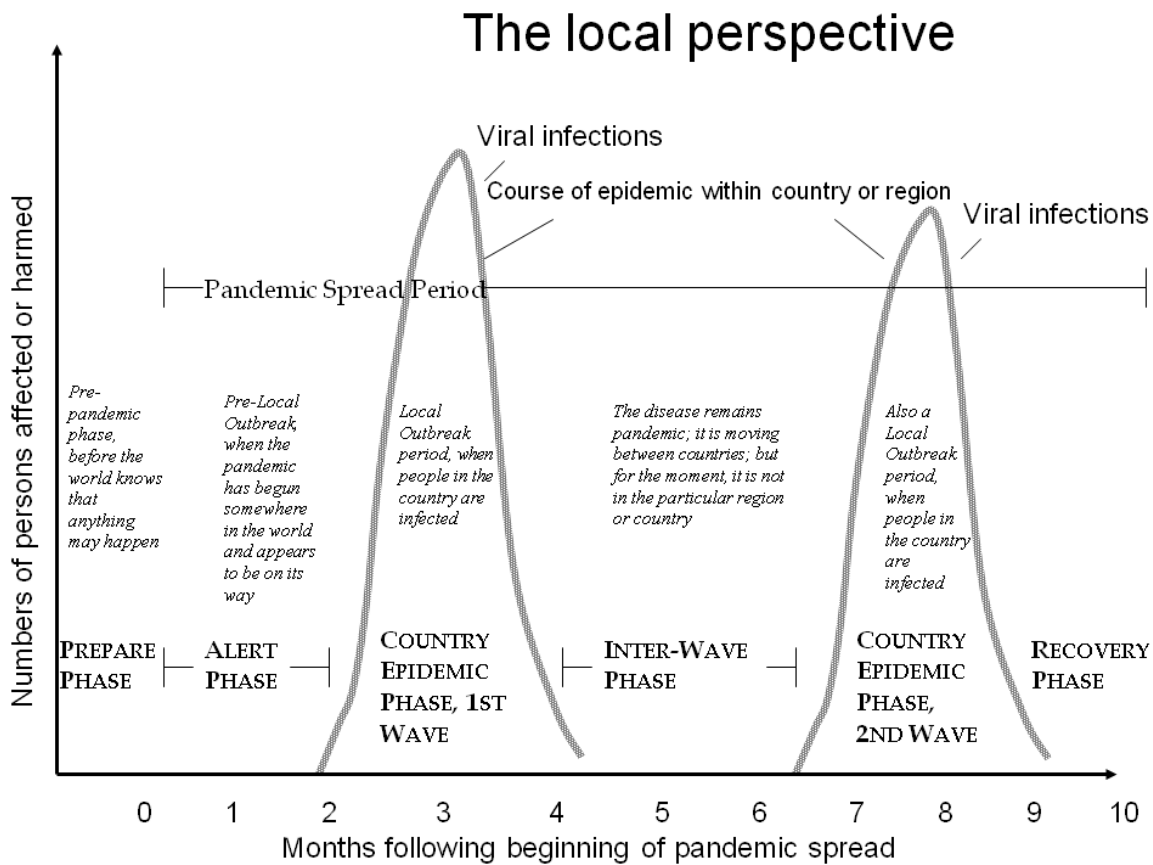
IV. Timing, Phases and Scenarios

Professionals and leaders preparing for a pandemic will mostly focus on the region where they work. Thus, while the pandemic may start in one country, with one or two exceptions, leaders will have some period of early warning before the disease reaches their country.

Based on the experiences of past pandemics, any country may expect to face two or three discrete waves of the disease within their country. Thus, there would be periods before each wave to prepare.



The chart below suggests a way to conceptualize each wave. The prepare phase (now), is of indeterminate duration (1 moment to 100 years). Once a mutation occurs, spread begins and the pandemic begins to spread, there is also an indeterminate period before it reaches a country. The working assumption here is that it will reach all countries, though it could be one week or six months before it reaches that country. The assumption is that each wave would last 8 – 12 weeks within a country, less for any region in that country.



V. Options for International Aid Agencies

Contingency plans wherein the World Food Program (WFP) and NGOs know how to work with one another in local purchase and release to urban populations

Since 1989, aid agencies have been increasing the practice and knowledge-base for procuring foods near to, or “local” to the target destination for distribution. In a pandemic, local purchase may be the only response. Unfortunately, donors have largely worked through WFP to achieve local purchase. Therefore, more NGOs should develop in-country capacities, learning from WFP.⁷⁸

WFP establishes plans for how to redeploy food pipelines as possible to help stockpile foods in countries most likely to be harmed by a pandemic; and for conducting local purchase that are timed to allow disbursement in a manner that mitigates the social disruptions of a crisis. International NGOs should therefore have plans for how to redeploy their national staff in ways that move them into safe employment in rural-to-urban transport and distribution.

WFP currently receives several hundred million dollars, primarily from European governments, with which to conduct local purchase. This is money already routinely spent each year to meet the needs of vulnerable populations. Thus, while it would probably continue to exist in the instance of a pandemic, it would not represent added resources with which WFP could scale up to a larger scale of effort, by itself.

WFP already works with 3,000 local partners (mostly nongovernmental groups) and has global guidelines that make it easy today for local NGOs to partner with WFP.⁷⁹

Establish standby agreements between the WFP and Red Cross Movement

WFP and the Red Cross demonstrated in the 2003 Southern African relief effort a strong complementarity of capabilities (WFP in procurement and regional planning, the Red Cross in long and short-haul transport and distribution). An ongoing MOU between WFP and the IFRC was later tested in Haiti, but needs to be strengthened with the specific objective of clarifying that the IFRC and local Red Cross or Red Crescent societies would receive hand-over of food supplies from WFP for household distributions early in a pandemic. Too often, bureaucratic and legal arrangements between aid agencies prohibit the actual transfer of resources for many months and, in half the cases, years--far too late to save lives.

Also needed are standby arrangements that would allow donors to allow grantees and contractors to rapidly redeploy funds already committed, to new disbursements related to the pandemic. Currently most aid agencies are required to spend their resources on the development of emergency projects that were specifically defined in their grant or cooperative agreements. In the event of a pandemic, the months that sometimes are required to receive permission to re-deploy funds will not be available. Nor, for that matter, will there be the human resource capacity in donor agencies to swiftly move through the legal requirements to review and communicate permission to redeploy resources.

Enormous resources will be available to be redeployed, if arrangements are established in advance. In the US humanitarian NGO world, this would likely amount to some \$2 billion, complemented by private donations, much of which are un-restricted. Many NGOs already spend limited unrestricted funds to ramp-up new emergency operations on the prospects of replenishing those funds from private donations later down the line.

IFRC leadership in global messaging, as a trusted voice about food prices, malnutrition and the ability to reduce deaths

Because no other international agency has the attention to lessons of disasters, and the continuity and universality of presence in countries, the various Red Cross and Red Crescent agencies are best positioned to be the voice of wisdom in addressing how the short-term food shortages in a pandemic will play out to a fearful population.

NGOs play a pivotal role in international attention to neglected poor countries

NGOs delivering food – even with their local staff – in Ethiopia, Rwanda, Bangladesh, will play an indispensable role of informing donors about the needs in remote locations. International NGOs can therefore engage in credible advocacy – helping to shape international opinion about priorities, confront myths, and help push donors to expedite new appropriations necessary for a pandemic.

US Government preparedness can be improved for low-frequency hazards

The US's global humanitarian response apparatus is fragmented and poor at developing long-range (over the horizon) plans for rare types of disasters because of the multiplicity of stove-piped offices that analyze food crises (Food for Peace) versus mass migrations (State Department's Bureau of Population, Refugees, and Migration) versus conflict and technological disasters (OFDA) and pandemics (USAID's global health bureau). Meanwhile, HIV/AIDS funds are managed by other branches of the US Government, including HHS and the military. Recent recommendations have suggested that a comparative advantage in health care rests with the Millennium Challenge Corporation, further increasing the tools in the toolkit, but confusing planners.⁸⁰

Militaries have a comparative advantage in the delivery of medical supplies at sea and way-stations to protect critical transport corridors

Internationally, militaries can be helpful beyond the surveillance and laboratory functions already discussed, through provision of armed protection and delivery of vaccines, antibiotics and anti-viral drugs to key carriers, on the high seas and at key chokepoints, including the Suez and Panama Canals and ports.

Donors are moving gradually to use insurance policies that define payout flexible funding that would support rapid stockpiling and food distributions by the World Food Program

The model for engaging insurance-for-famine-relief was pioneered by a combination of climatologists, economists, and the USAID DCHA bureau, which demonstrated in Ethiopia that multilateral agencies, such as WFP, could successfully bid to insurance companies a successful policy that would productively engage large global insurers to tap their resources for quick liquidity in the event of a large disaster, for organized relief. In the Ethiopian test case, the conditions of the contract were unambiguous shortfalls in rainfall in a region. Currently, the World Bank is now attempting to scale up the same program. But it demonstrated that members of the ProVention Consortium (such as Swiss Rei or Munich Rei) could engage directly with international humanitarian donors to manage contracts (insurance policies) through annual payments to the insurers for the purpose of rapid infusion of capital not for recovery but for immediate response. The large insurers, who manage trillions of dollars of investments from pension and other investment funds, have funds necessary for swift transfer (payout) of funds to WFP or other agencies for timely local purchase in the first weeks of a pandemic.

Testing models of insurance payouts for food procurement

Past models of famine relief would not work in a severe influenza pandemic. The food shocks would hit early, and food would not have time to arrive. The compressed timing of the pandemic waves may prevent food from ever getting out of donors' ports, let alone into ports of embarkation. The shock waves of price inflation would not readily be buffered by the promise of food that might arrive six months later.

The World Food Program can circumvent the limitations of international food aid related, for instance, to ocean freight or donation delays, by focusing primarily on the local and regional procurement of food, conducted rapidly when the first sign of a pandemic appears.

WFP has extensive contingency plans in many developing countries along these lines. The weak link in the plan may be having the instant financial resources that would be needed to do massive procurements, where the amount of food that ought to be procured may cost \$10 billion or more, far above WFP's regular budget (only a portion of which is in the form of cash).

The solution is to structure insurance contracts specifically intended for rapid payout, in the event of a lethal pandemic, to governments, WFP and UNICEF for the type of early procurement necessary.

Procurement would need to be faster than is at first apparent. WFP and other aid agencies would not have the luxury to keep procuring throughout the wait and arrival of influenza waves into a country. Rather, the procurement would need to be done up front, at the outset. If not, three difficult problems arise. First, food price inflation would undermine WFP's ability to purchase food. Second, tightened food pipelines, depleted markets, and public fears will force governments and aid agencies to stop competing for the purchase of foods that are suddenly seen as scarce. Third, when the epidemic is in country, opportunities to have food delivered by contractors or moved to desirable locations by aid agencies will be gone, as transport networks freeze up.

The argument for applying the insurance model to a pandemic is even stronger than it is for a famine. In most famines, there is a fair amount of time, often up to two years, between the failure of rains or decline in food supplies and the cumulative stress that leads to forced migration and malnutrition-based excess mortality. During those months, the traditional shipment of foodstocks from donor continents to drought-stricken areas or refugee camps can ramp up and proceed gradually. In quite a number of cases, the food supplies provide the safety margin for keeping people alive. Since the advent of the Famine Early Warning System (FEWS, created by USAID) in the mid-1980s, there have been few famines in Africa; with the exception of Somalia, none, arguably, of the major food shortfalls in sub-Saharan Africa have resulted in the types of large numbers of excess deaths that had been seen in previous eras.

Lines of Credit from the World Bank and IMF

Another mechanism by which donors can support WFP and governments of low-income, food insecure, food-importing countries to either import or conduct regional purchases at the outset of a level 6 declaration of a pandemic would be to pre-arrange for the World Bank and IMF to under-write (guarantee) lines of credit for WFP to borrow money from international financial sources (banks), which can be compensated later when donor funding (e.g. PEPFAR) is dispensed.

NOTES

- 1 This document was prepared with funding from USAID under the H2P initiative. The principal author, Steve Hansch, a consultant to the IFRC, produced the report in consultation with the H2P Food Security Working Group (including representatives from the World Food Program and numerous NGOs) coordinated by the Academy for Educational Development.
- 2 World Health Organization *World Health Report 2007* Pg. xx, Geneva
- 3 Dr. Peter Moore 2007 *The Little Book of Pandemics* Collins Harper Publishers Pg 14
- 4 See Johan Giesecke "International Health Regulations and Epidemic Control" in R Smith et al. "Global Public Goods for Health: Health economic and public health perspectives" 2003 Oxford Univ Press.
- 5 The observation that the world is changing inevitably and dramatically has been popularized by Thomas Friedman in "The World is Flat: A Brief History of the Twenty-First Century" 2005 NY: Farrar Straus and Giroux, for example: "Engines talking to computers, talking to people, talking back to the engines, followed by people talking to people -- all done from anywhere to anywhere." pg 172
- 6 The flip side is also true: the most immune populations to job-loss and livelihood crises will be those that are currently marginalized and disempowered by globalization, the rural poor in India, Africa, Latin America, China and eastern Europe,
- 7 The community can be considered as a village composed of people from similar backgrounds who have lived together for a long time. It may also involve a livelihood zone - geographical area with similar livelihood practices. In some programs, communities may be groups of individuals united by similar interests, such as businessmen, farmers or health workers. A community may be an urban slum or rural village.
- 8 Epidemic Diarrhoeal Disease Preparedness and Response, Training Manual by WHO 1997
- 9 See: Martin Upton 1996 *The Economics of Tropical Farming Systems*, Wye Studies in Agricultural and Rural Development, Cambridge University Press
- 10 IFRC, WFP, WHO, UNHCR 2000 *The Management of Nutrition in Major Emergencies* Geneva: World Health Organization, pg 135
- 11 Silim Odong, A Agona 1993 "Food Storage and Post-Harvest Crop Losses in Uganda" paper prepared for conference on export diversification in Kampala Uganda
- 12 Beatrice Lorge Rogers 1997 "Food Security Performance Measurement Workshop Report: Indicators of Improved Food Utilization as an Element of Food Security" in *Proceedings of the USAID Workshop on Performance Measurement for Food Security*, USAID, 1997, Margie Ferris Morris editor
- 13 In a review of studies of rural poverty by IFAD Rural Poverty Report 2001: The Challenge of Ending Rural Poverty Rome: IFAD
- 14 Globescan 2003 Proportional Global Ratings
- 15 Lynn R Brown, Patrick Webb and Lawrence Haddad 1994 "The Role of Labour in Household Food Security: Implications of AIDS in Africa" *Food Policy* Vol. 19 #6
- 16 Joachim von Braun, Tesfaye Teklu, Patrick Webb 1991 *Labor Intensive Public Works for Food Security: Experience in Africa* International Food Policy Research Institute
- 17 see J Gaude et al 1987 "Rural Development and Labor-Intensive Schemes: Impact Studies" in *International Labor Review* 126
- 18 WFP 2002 "Emergency Field Operations Pocketbook"
- 19 Bread for the World, 2007.
- 20 Jose Luis Macamo (World Vision) 1999 *Estimates of unrecorded Cross Border Trade Between Mozambique and Her Neighbors* Washington DC: USAID Africa Bureau Technical Paper 88 pg 49

21 Fred Cuny, Rick Hill and Pat Reed 1999 *Famine, Conflict and Response: a Basic Guide* Kumarian Press Pg 94

22 The standard model of humanitarian relief with food aid has sought to provide a set of bags of monthly food rations directly to each household; i.e. each family has a ration card recording who is in the family and one person from that family waits in line to have the ration card stamped and then receive food to carry home.

23 Some history is provided in "The Role of Women in Food Management" by Zhara Mirghani in Issue 3 of *Field Exchange*, published by the Emergency Nutrition Network pg 18.

24 Andre Briend, Claudine Prudhon, et al 2006 "Putting the Management of Severe Malnutrition on the International Health Agenda" in *Food and Nutrition Bulletin* 27 #3 UN University

25 In the US, food banks tend to be managed by grassroots nonprofits, such as Second Harvest, and staffed by volunteers. Similarly, much work in an epidemic would be managed by volunteers.

26 From Save the Children's 2007 newsletter "Emergency Health and Nutrition Forum", Washington, DC

27 Daniel Benor, James Q Harrison and Michael Baxter 1984 *Agricultural Extension: the Training and Visit System* The World Bank

28 Malcolm Harper and FAO 1984 *The Private Marketing Entrepreneur and Rural Development* Rome, Italy: the Food and Agriculture Organization

29 Shlomo Reutlinger and Marcelo Selowsky *Malnutrition and Poverty: Magnitude and Policy Options* 1975 World Bank, Staff Occasional Paper 23

30 This point is made, along with emphasis on the high malnutrition rates of IDPs, by Peter Salama, Paul Spiegel and Richard Brennan "No Less Vulnerable: the Internally Displaced in Humanitarian Emergencies" *The Lancet* Vol 357 May 5 2001

31 Such intervention amplified a food crisis in Iran, described by Charles Melville in his 1988 "The Persian Famine of 1870-1872: Prices and Politics" in *Disasters* Vol. 12 Issue 4 pg 308.

32 Harold Alderman, Joachim von Braun 1984 "The Effects of the Egyptian Food Ration and Subsidy System on Income Distribution and Consumption" IFPRI Research Report #45

33 Government anti-famine stocks in India led famine expert Jean Dreze and local groups to seek redress from the Indian Supreme Court for famine crimes. See: "Poor in India Stare as Surplus Wheat Rots" by Amy Waldman, Dec. 2, 2002 *New York Times*, pg A3.

34 Tina van den Briel and Patrick Webb "Fighting World Hunger Through Micronutrient Fortification Programs" *Food Technology* November 2003, vol. 57 #11

35 Dijkhuizen, P, Afsar N 2003 Review Mission: Pilot Project for Atta Milling and Fortification. Consultants Report to the World Food Program in Bangladesh

36 Chapter 5 of "Health Food, Farms and Families, Bread for the World's Hunger Report 2007" Washington DC: Bread for the World Institute.

37 As depicted in the recollections in Howard Lange, MD 1984 "the CCC: A Humanitarian Endeavor During the Great Depression" New York: Vantage Press

38 Ajay Shah, a fellow of the National Institute of Public Finance and Policy, in New Delhi, wrote this essay, "Food Fight: Why the Conventional Wisdom on Crazy Food Prices is Wrong" in the June 16, 2008 journal *Forbes*, pg 44.

39 For example UNICEF maintains supplies, see its 2003 *Supply Catalogue* published by their Copenhagen, Denmark warehouse.

40 The vulnerabilities of the developing countries' aging population is monitored by HelpAge International, as in 1999 *The Ageing and Development Report: Poverty, Independence and the World's Older People* London: EarthScan

41 David Heymann of WHO in Institute of Medicine 2001 “Emerging Infectious Diseases from the Global
to the Local Perspective” Forum on Emerging Infections”

42 Swiss Rei 2004 *Influenza Pandemics: Time for a Reality Check*, Focus Report

43 Mark Jerome Walters 2003 *Six Modern Plagues and How we are Causing Them* pg 154 Washington
DC Island Press

44 The blow-by-blow story of how epidemiologists and governments responded to SARS is presented in
Karl Taro Greenfeld 2006 “China Syndrome: the True Story of the 21st Century’s Great Epidemic”
Harper Collins

45 So claims Institute of Medicine 2001 *Perspectives on the Department of Defense Global Emerging
Infections Surveillance and Response System, Program Review* Washington DC: National Academy of
Sciences, pg 65

46 Claims Max Rudolph, financial planner, in Feb 2007 “Influenza Pandemics: Aligning Solutions for
Institutions and Individuals” Iowa Actuarial Club.

47 It’s likely that the reduction in everyday mobility by commuters and bus routes may dramatically
reduce the need and demand for oil; thus attenuating the economic shockwaves of reduced oil trade.

48 Milan Brhmbhatt and Arindam Dutta “Economic Effects During Outbreaks of Infectious Disease”
World Bank Research Digest pg 7, and also Working Paper 4466 “On SARS-Type Economic Effects
during Infectious Disease Outbreaks 2008, noting also that the BSE epidemic in the UK cost \$6 billion.
Diseases that may not be high on a list of mortality may be high on the list of economic morbidity.

49 See Paul Blustein 2003 *The Chastening* New York: Public Affairs

50 William Tomek and Kenneth Robinson 1990 *Agricultural Product Prices* Ithaca, NY: Cornell
University Press

51 River blindness is another example of a disease where the relationship between morbidity, death and
food availability have been modeled.

52 Sir MacFarlane Burnet and David White 1972 *The Natural History of Infectious Disease* Cambridge
University Press Pg. 122

53 Michelle Burge McAlpin 1983 *Subject to Famine: Food Crises and Economic Change in Western
India, 1860-1920* New Jersey: Princeton University Press

54 There are many dozens of examples of US emergency food aid arriving long after the period of food
shortage had passed. Every decade, critical authors like Tony Jackson and Francis Moore Lappe
compile the litanies.

55 In contrast, transport hubs in developed countries, where more work is mechanized and can be managed
by a light human crew, who can carry out their tasks without direct contact with one another.

56 As detailed by Lance Brennan 1988 “Government Famine Relief in Bengal, 1943” *Journal of Asian
Studies* 47 (3) August pg 542-67

57 Richard Franke and Barbara Chasin 1980 *Seeds of Famine: Ecological Destruction and the
Development Dilemma in the West African Sahel* Totowa, NJ: Allenheld Osmun and Co.

58 The ways that trade embargoes, by leading to uncertainty, break down civic trust and induce multiple
forms of inter-personal violence are discussed by Jovan Babic and Aleksander Jokic in 2000 “The
Ethics of International Sanctions: the Case of Yugoslavia” The Fletcher Forum of World Affairs spring
2000, vol. 24.1

59 Gretchen Berggren, Lincoln Chen, Winifred Fitzgerald et al. 1993 *Sanctions in Haiti: Crisis in
Humanitarian Action* Cambridge, MA: Harvard Center for Population and Development Studies

60 See J Gaude et al 1987 "Rural Development and Labor-Intensive Schemes: Impact Studies" in
International Labor Review 126

61 Often people assume or refer to breakdown in public law and order during disasters. In most short-term
crises, people come together and social capital can actually be reinforced. Criminal behavior is
frequently seen, but it is not the norm.

62 This is a generality, not true in every sense. There have been many societies where poaching, raiding
and violence are long-term, culturally-expected forms of coping with food shortages, for instance.

63 David Alexander 2002 *Principles of Emergency Planning and Management* Oxford University Press

64 Compiled by Peter Atkins and Ian Bowler in *Food in Society: Economic Culture, Geography* London:
Arnold Publishers pg 174

65 US Senate, July 1973

66 Norman Cantor in *In the Wake of the Plague: the Black Death and the World It Made* New York: the
Free Press

67 See Richard Evans 1988 “Epidemics and Revolutions: Cholera in Nineteenth Century Europe” *Past and
Present* No.120 pp 123-146

68 See Ramon Powers and James Leiker 1998 “Cholera among the Plains Indians: Perceptions, Causes
and Consequences” *The Western Historical Quarterly* Vol. 29, No. 3 pp 317-340

69 See for instance, Marc Cohen and Ellen Messer *Breaking the Links Between Conflict and Hunger in
Africa* IFPRI 2020 Conference Brief 10

70 Angela Berry 1989 “Options to Alleviate Nutritional Deficiency Diseases in Refugees” policy paper
from the PTSS unit, Geneva: UNHCR

71 See the collection of essays edited by Vernon Ruttan 1993 “Why Food Aid?” Johns Hopkins
University Press

72 Comments by Dr. David Pelletier, Professor of Nutrition at Cornell University.

73 William Browne, Jerry Skees et al. "Sacred Cows and Hot Potatoes: Agrarian Myths in Agricultural
Policy" Boulder: Westview Press

74 Randolph Kent 2004 “Humanitarian Futures: Practical Policy Perspectives” London: Overseas
Development Index; Humanitarian Policy Group

75 These proposals for multiple year, integrated food-supported programs -- MYOPS and SYOPs – tend to
be proprietary and available only to a small set of US government reviewers.

76 The Refugee nutrition Information Service was established by the ACC/SCN – the inter-UN
Subcommittee on Nutrition, which collates UN, CDC, NGO and other data about current malnutrition,
CMR and epidemics in emergencies. It was renamed the “Nutrition Information in Crisis Situations”
and all its data is publically accessible via the www.unsystem.org/SCN/Publications/html/mis.html site.

77 Norman Borlaug, Peter McPerson “How to Continue the Fight Against Hunger” *Wall Street Journal*
opinion, June 2008

78 Diversifying the mix of local purchasing organizations is a recommendation in the 2007 report
“Procuring Food Aid Outside of the United States: Local/Regional Purchase as a New Food Aid Tool”
by the Partnership to Cut Hunger in Africa, Washington DC.

79 See *How to Work with WFP: a Handbook for Non-Governmental Organizations* published and
available from the World Food Program in Rome, revised in December 2005.

80 Lael Brainard, Carol Graham et al 2003 *The Other War: Global Poverty and the Millennium
Challenge Account* Washington, DC: Brookings Institute Press