Protection and promotion of health in threatening (emergency and crisis) situations

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Protecting and promoting public health always requires the use of practices, methods or tools that respond to the current needs of the population and the overall situation. This should be done while considering the broader social, cultural, economic, epidemiological, and other contextual factors. Therefore, it becomes imperative to substitute some of the standard procedures typically employed under normal conditions with specialized approaches that address the unique needs of individuals in emergency or crisis situations.

Definition

A harmful effect of forces and phenomena caused by human activity, natural influences, as well as accidents that threaten life, health, property or the environment and require rescue and liquidation work are considered ***an extraordinary event****.*

A crisis situation *is defined as an emergency event under the Integrated Rescue System Act, a disruption of critical infrastructure or other hazard in which a* ***state of danger, state of emergency or state of national emergency*** *is declared.*

Rescue work *are activities to avert or reduce the immediate effects of risks arising from an emergency, particularly in relation to threats to life, health, property or the environment, and leading to the interruption of these causes.*

The integrated rescue system *is a coordinated procedure of its components in preparation for emergencies and in carrying out rescue and liquidation work.*[1]

Doctors and paramedics may find themselves in emergency situations that require their professional help and expertise, for example, when a threatening event occurs in their own country or unexpectedly in a foreign country where they have gone, for example, to work or on holiday. If an emergency situation occurs in their own country, which has a crisis plan for

[1] In addition to these terms, the following text will use terms such as disaster, emergency or threatening situation, and others that overlap in meaning.

such cases, it is most effective to follow the specific instructions that result from the relevant laws (in the Czech Republic, Act No. 240/2000 Coll., on Crisis Management and on Amendments to Certain Acts (Crisis Act), Section 2, letter b and Act No. 239/2000 Coll., on the Integrated Rescue System and on Amendments to Certain Acts, Section 2, letters a, b, c) and to cooperate with the medical authorities controlled by the government. In a foreign country that may not have a functioning protective health system or crisis plan in place, it is advisable to follow the general rules of protection and promotion of public health formulated for threatening situations when engaging in professional medical assistance. (*In the absence of precedent information or guidance on solutions, it is best to follow a combination of common sense and humanity.)*

When dealing with public health issues in threatening situations, it is very important to respect fundamental ethical principles, whether it is the prioritization of assistance, the identification of vulnerable and at-risk populations, the weighing of a paternalistic approach versus the value of personal freedom against the necessary restrictions so that long-term interests prevail over short-term ones... An ethical approach is also necessary in special and transparent communication with the affected population, which requires, among other things, respecting their right to information or enabling their involvement in solving their own problems. And taking responsibility for their decisions is an ethical matter of course In the end, the decision of whom to prioritize in a situation where the number of people in need exceeds the total capacity of aid will always remain a distinct ethical issue.

Types of threatening situations and their specifics

Threatening situations can be formally divided according to the causes of their occurrence.

Natural disasters	earthquakes, volcanic eruptions, tsunamis, landslides, floods, droughts, insect overpopulation and infestations, plant diseases...
Caused deliberately by human	civil wars, interstate wars, targeted famine, destruction of food production, civil unrest, environmental disasters, nuclear power plant accidents, migration, terrorism, biological weapons...
Threats from other causes	population growth outstrips food production, widespread poverty, disruption of food transport, unequal distribution of resources...

Each of these categories has its own specificities, which may be reflected in the specific solution to the crisis.

Emergency basic needs in survival mode

Protecting the health of people at risk starts with trying to estimate how many people are at risk, as well as how many belong to vulnerable groups such as children, pregnant and breastfeeding women, the elderly, the disabled or the sick. We then focus on a couple of key areas of assistance, namely estimating the capacity for humanitarian aid and ensuring

1. emergency accommodation
2. water, hygiene and sanitation needs (waste)
3. food and nutrition, including breastfeeding support
4. evacuation if the specific situation requires it
5. protection and promotion of health (including mental health)

The issue of communicable diseases and threats from epidemics or pandemics is discussed elsewhere in this text, including how public health is protected in these situations.

1. Emergency accommodation (shelter, hideout, camp, settlement)

The need for shelter or accommodation is usually for people who have lost their homes, for example due to a natural disaster or fire, refugees and displaced persons. Minimum standards have been established for such situations. These standards are, of course, far from the typical requirements for healthy, comfortable, and culturally appropriate housing, but they serve to provide assistance during the immediate period following an emergency.The United Nations (UN) has established the institution of the UNHCR, the Office of the High Commissioner for Refugees, which has formulated minimum standards for assistance in threatening situations.

The first indicator of meeting the minimum requirements is the area of the camp per person, the standard being 45 m^2 /person, the acceptable area being > 35 m^2 /person, the unsatisfactory (unacceptable) area being 30 to 34 m^2 /person and the critical value being $\leq$ 29 m^2 /person. [2]

The quality of aid can be measured by other indicators, as shown in Tables 5 and 6 below.

Table 5:

[2] The proportional area of 45 m2 per person covers 30 m2 for pathways, sanitary facilities, fire safety areas, food storage, educational and healthcare centers, water storage, and distribution points. Of course, land for shelter is also included. The remaining 15 m2 is allocated for food production plots, which should be integrated into camp planning and organization from the outset

Roofed area	Minimum 3.5 m^2 /person (more in cold areas), lowest height 2 m
Fire safety	30 m of open space every 300 m, minimum 2 m spacing between shelters
Slope of the terrain	1-5%, ideally 2-4%

Table 6: Service and infrastructure requirements

Service, infrastructure	**Standard**	**Another comment**
Shared toilet (latrine)	1 per 20 persons (in the emergency phase)	Separate latrines for women and men. For long-term accommodation 1 latrine for 1 household.
Distance of latrine from shelter	Minimum 6 m, maximum 50 m	Close enough to motivate use, far enough away because of the smell and insects.
Shower	1 per 50 persons	Separate for men and women, well drained.
Garbage container 100 l	1 per 50 persons	1 in 10 families
Waste pit 2 x 5 x 2 m^3	1 per 500 persons	1 per 100 families
Health Centre	1 per 20 000 people	With running water and toilets
The relevant hospital	1 per 200 000 people	
School	1 per 5 000 people	Minimum 50 m^2, 3 classes, shift teaching available if serving adults, evening classes possible
Distribution point	1 per 5 000 people	Dry place, secure against theft and weather.
Marketplace	1 per 20 000 people	Within reach of latrines and sanitation
Nutrition Service Centre	1 per 20 000 people	If the community units are smaller, i.e. for each community
Fencing, enclosure	Depends on safety conditions	

Source: UNHCR Emergency Handbook, Camp site planning minimum standards - UNHCR|Emergency Handbook

Depending on the specific possibilities, it is advisable to provide additional infrastructure, such as lighting for latrines and showers and places for other public services, etc., as well as a security service.

As shelters, or accommodation units themselves, e.g. tents, so-called emergency survival containers or even train carriages are used, or shelters are improvised according to local

possibilities. Where infrastructure is in place to assist refugees arriving from other disaster sites, e.g. school buildings, recreational facilities, etc. are used as accommodation options.

2. Emergency drinking water supply. Waste management. Burial.

The provision of drinking water, or water for everyone to drink, is crucial for survival in crisis situations. At the same time, however, drinking water sources in these situations are either completely unavailable or difficult to access, and clean water is needed not only for drinking, but also for anal and other personal hygiene, for health centres or food distribution points, and for livestock. Table 7 presents the basic needs of the population in the immediate aftermath of a disaster or emergency, once the initial emergency has been addressed and during the normalization phase of the overall situation. If an emergency drinking water supply system employing mobile tankers is in operation, appropriate sealable transport containers (such as jerry cans and bottles) must be provided for the recipients. Providing drinking water in crisis situations has its own unique challenges – often, improvisation is necessary based on the specific circumstances. When procuring water containers, such as jerry cans or PET bottles, it is advisable to inquire about their previous use in order to avoid potential contamination from any residues in the containers. Improvisation is often necessary when creating water filters, involving the use of the cleanest available materials and filtering water through a PET bottle with the neck turned downward and the bottom cut off.

Where it is not possible to arrange an emergency supply by tankers and sources of water that do not meet the criteria for drinking water (e.g. river or lake water, rainwater from open reservoirs, etc.) are used, it is necessary to treat it by boiling (during which the entire water level in the container bubbles and then cools for 10 minutes) or by disinfection and possibly filtration. As the possibilities for boiling water are usually limited or completely excluded, other improvised methods of preparing water for drinking must be used. An important practical skill is the so-called SODIS (solar disinfection with UV-A radiation combined with high temperature), which can be carried out wherever there is sufficient sunlight during the day (2).[3] In areas of strong sunlight, 6 hours is sufficient for the whole process, but where

[3] *Clean and clear PET bottles of up to 2 liter are used as containers (the lower the depth of water in the direction of the sun's rays, the more intensive the disinfection process is, the maximum recommended depth in the direction of the incident rays is 10 cm), from which the labels are removed (surface damage by scratching reduces the effectiveness of the process); clear glass bottles can also be used. When pouring in the already filtered water, it is filled to*

there is partial cloud cover, it is recommended to treat water in this way for 2 days. And where it is raining instead of sunny, rainwater is used. Water that has undergone the SODIS process is stored in bottles in which it has been disinfected. Drinking water treated in this way should be consumed immediately or as soon as possible, as bacteria multiply again in the bottles in a dark place (some practical recommendations even mention adding hydrogen peroxide at a ratio of 1:100 000). Despite the relatively good achievability of this method of solar disinfection, a more sophisticated method of treating drinking water is preferred, i.e. disinfection with chlorine preparations, which are applied according to the instructions. Disinfected water does not meet the chemical safety criteria - if contamination with toxic chemicals is suspected, the water cannot be used for drinking.

Table 7: Drinking water requirements for populations at risk

Requirement of the population at risk - beneficiaries	**Immediately in an emergency situation**	**Longer term after a threatening situation**	**Sustainable practice**
Availability (per person per day)	3-5 l (for survival)	15 l	20-50 l
Number of points for water abstraction by the beneficiary	1 place for 500-750 people	1 place for 250-500 people	1 place for 200-300 people (but ideally up to 80 people)
Distance from the point of consumption	1 km	500-700 m	100-400 m
Maximum waiting time at the collection point	2 hours	20 minutes	-
Water turbidity	<20 NTU	<10 NTU	<5 NTU[4]
Residual free chlorine at the sampling point	0,3 - 1,0 mg/l	0,2 - 0,5 mg/l	if the water is chlorinated, then < 0.2mg/l
Conductivity	<3000 µS/cm	<2000 µS/cm	<1400 µS/cm
pH	without restrictions	<8 for disinfection, 6-8 for coagulation if Al is used$_2$ (SO)$_{43}$	<8 due to chlorine disinfection
E. coli and thermotolerant coliforms	if possible, always use disinfectant, if not available, use SODIS.	max. <10 *E.coli/100ml*, use SODIS	0 *E.coli/100ml*, use SODIS

about ¾ full, then the cap is closed and the bottle is shaken for 20 s for oxygenation, then the water is poured into the full bottle. The sealed bottles are placed perpendicular to the sun on a surface that reflects as much light as possible (e.g. foil, staniol, aluminium plates, sheet metal roof.

[4] NTU is a water turbidity unit (non-thermometric turbidity unit)

Household consumption and storage capacity	1 collection container (canister, bottle) 10-20 l for 1 family, must have a cap and a narrow neck	2 containers (jerrycans) 10-20 l for collection and 0-1 container 20 l for storage for 1 family	is not a directive

Tom de Veer (1)

If there is a critical shortage of water, the rations are distributed evenly *ana partes aequales*, i.e. even young children receive the same amount as adults.

Waste

The safe disposal of solid waste is crucial for public health in hazardous conditions. However, the existing waste collection and disposal system is often one of the first services to be disrupted. The situation is typically exacerbated by the emergency itself, which generates new types of waste, including debris, mud, slurry, fallen trees, rocks, and packaging from emergency supplies. These additional types of waste introduce new challenges alongside the regular household garbage, packaging materials, ash, excrement, and food scraps. It is imperative that waste is removed and disposed of quickly without undue delay as, in addition to the risks of infection and possibly poisoning, it poses a threat from odour, flies and other insects, rat colonies, packs of stray animals (typically dogs), snakes and other scavengers and, in the case of large piles or heaps, can be dangerous due to landslides. Water reservoirs into which fluids from landfills flow are breeding grounds for mosquitoes, which in endemic areas pose a risk of transmitting malaria, dengue fever and yellow fever. Garbage piles and landfills pose a high risk of fires in hot climates, with subsequent toxic smoke hazards if chemicals or plastics burn. Mould often grows on their surfaces, posing a risk due to potential respiratory problems, while sharp objects such as shards, nails or needles can cause injury to people passing by. After a rain, garbage can contaminate drinking water supplies, massive dumps can block and clog waterways, and even cause flooding. Last but not least, uncleared waste always demoralizes the vulnerable population and increases their overall frustration.

Waste management consists of assessing the overall situation and formulating what the daily quantity and type of waste is, how it has been handled so far (if at all), who is responsible for disposal (if anyone), whether it is hazardous waste (e.g. from a medical facility), whether the existing disposal capacity will be sufficient, whether there are any additional areas available for collection and disposal. Natural disasters, such as earthquakes, hurricanes, landslides, and

floods, as well as unfortunate events like bombings, can generate significant amounts of debris. Its removal becomes a top priority after the initial 7 days. This period is generally considered critical, as it is the timeframe during which trapped individuals may still be found alive within the rubble. The use of heavy equipment for debris removal typically commences only after this initial window of opportunity has passed.

When handling debris, sorting is recommended, as some items can be recycled and repurposed, especially in the construction of replacement housing. Smoking is strictly prohibited during any waste management activities, as it increases the risk of ignition and fire.An ongoing disaster typically does not significantly reduce the generation of domestic waste by survivors.Domestic waste is not an unusual problem for villagers, who usually use collection pits that are fenced off for safety and into which waste is poured in layers. Each layer is filled with about 10 cm of ash or soil, when the pit is full it is covered with wire mesh and at least 50 cm of soil is filled in on top, leaving the fencing in place. This is usually not an option for city dwellers, so we try to provide them with 100 liters containers (one such container can be used for up to 200 people in the first days of an emergency, and 50 people in the following period). In refugee camps, waste disposal is handled similarly to rural areas when the population is sparse. However, in densely populated camps, the same principles used in urban settings apply. Both waste pits and containers or waste bags should be disinfected, for example, with a chlorine-based solution (at the concentration specified in the instructions), or, in the case of biological waste, covered with calcium hypochlorite. Sustainable waste management methods, such as composting or incineration, should be assessed on a case-by-case basis according to the specific situation.

The construction of replacement latrines can be a rather complex task. However, in the initial days of an emergency situation where latrines are not available, it is advisable to use two waste containers (buckets): one for urine and one for feces. Urine is typically sterile, so it can be safely poured into the ground or even into a local sewer system if available. The solid waste container should be gradually filled with loose carbon-containing materials, such as ash, sawdust, wood chips, chaff, or finely shredded paper. These materials aid in the decomposition of waste and help reduce odors. It's not necessary to empty the container after each use, but if a chlorine disinfectant is available, it should always be used after emptying.

Burial

Even a significant number of deaths in a disaster or war conflict does not, in itself, pose a public health risk. The risk arises only when dealing with the bodies of individuals who have died due to highly contagious diseases, biological agents, or toxins. Nonetheless, the presence of a large number of deceased individuals intensifies the psychological trauma experienced by survivors, making it advisable to promptly address this issue, which may not necessarily involve burial.

The handling of human remains must adhere to strict hygiene recommendations. Those who come into contact with the bodies during disposal should, at a minimum, wear boots and gloves for protection, and have access to handwashing facilities with soap. Ideally, these individuals should be vaccinated against tetanus and, when appropriate, viral hepatitis B, or they should be selected for these activities if they possess valid vaccinations.

One of the key principles in disaster response is that prioritizing the preservation of the living always takes precedence over tending to the deceased. In practical terms, this means, for example, giving preference to the use of ambulances for transporting survivors, as well as utilizing beds or bunk beds, among other resources.Dead bodies or body parts should be placed in designated boxes, bags, or other containers. If these are not available, locally sourced materials or plastic sheeting may be used. Individual body parts should be treated as if they were a complete body. Under no circumstances should any attempt be made to reassemble them on-site. Personal belongings of the deceased should be collected from the body, as they can assist in identification and may also hold legal or psychological significance for the survivors.

For each body, the location and date of discovery should be recorded, and it should be marked with a reference number. This reference number should also be affixed to the box or bag containing the body. Additionally, the body's details should be recorded on a standardized form. Given that bodies can decompose within 12 to 48 hours, particularly in hot climates, and cooling bodies to a temperature of 2 to 4 °C is often not feasible, temporary burial is usually necessary. To this end, a trench, at least 1.5 meters deep, should be dug, located at least 200 meters from a water source (up to 4 bodies, or 350 meters for 60 or more deceased), and at least 2 meters above the water table. Bodies should be placed in the trench in a single layer, with a spacing of 0.4 meters between them. Whenever possible, a documentary photograph should be taken, including an identification number, which should also be

recorded on the surface of the burial site. Final burial should occur after identification, as it is a fundamental human right.

Ritual washing of the deceased is generally not allowed. Burial in the ground is the preferred method over alternatives like cremation, as it allows for the possibility of conducting forensic autopsies if necessary. Graves should be individual, marked, and range from 1.5 to 3.0 meters deep, following local traditions and customs. Communal graves should only be established in exceptional cases of unmanageable disasters.

Handling a large number of deceased individuals can have a negative impact on the mental well-being and mental health of the rescue team members, which can manifest immediately and persist over time.

In threatening situations, families are frequently forcibly separated, and some of their members may go missing. The missing individuals are always treated as being alive until clear evidence suggests otherwise. Survivors should be aware of the methods available to trace or receive information about their missing loved ones (www.icrc.org).

3. Food and nutrition security. Acute malnutrition. Breastfeeding support. Food assistance. Famines.

The initial response to the emergence of an emergency situation should prioritize gathering information on food security and assessing the nutritional status of the population. It is recommended to utilize pre-crisis data for evaluating food security, including the availability of food sources, existing food stocks, food costs, and food quality. This data should be combined with investigative methods such as focus group discussions, interviews with key representatives, household visits, observations, and the use of satellite imagery (providing information on agricultural products) to draw conclusions. Nutritional status knowledge can be supplemented with available pre-crisis data, if possible.

The examination of nutritional status primarily focuses on the measurement of acute malnutrition indicators (4). In cases of prolonged crises (lasting for months to years), a chronic malnutrition examination is also conducted.

To investigate nutritional status, either a random sample of the at-risk population or purposive sampling is employed. As per WHO guidelines, children aged 6 to 59 months (1/2 year to 5 years) are screened, and the findings are then extrapolated to the entire at-risk population.

When conducting a nutritional status survey, it is essential to collect and record the following data: the location where the person is residing, the date, the population unit's size (e.g., village or camp), gender, age, weight, height, Mid-Upper Arm Circumference (MUAC), the presence of bilateral edema ("pitting edema"), and whether the individual is or has been enrolled in a nutrition support program (especially relevant in low-income countries).

From the anthropometric data, acute malnutrition is assessed, and its severity is determined using percentile plots of weight vs. height and Z-scores (refer to Table 8). Practically, it's imperative to adhere to methodological guidelines, such as recording the child's age in full-term months, weighing the child on a scale to the nearest 0.1 kg (either individually if they can stand or through double weighing if they can't stand), measuring the child's height while standing (barefoot and without a head covering for children over 2 years, and lying down for those under 2 years using appropriate equipment with an accuracy of 0.1 cm), and measuring the MUAC with a specialized tape, ensuring accuracy to at least 2 mm. Suspected edema must always be independently verified by a second trained examiner.

Table 8 displays the criteria used for diagnosing moderate and severe acute malnutrition. It includes an evaluation of the Weight-for-Height (WFH) index based on the extent of Z-score deviation, MUAC measurement, and the presence of edema in various body parts.

Aside from anthropometric indicators, clinical signs of malnutrition are also monitored during the nutritional status examination. These include symptoms like emaciation, dry skin, muscle wasting, lackluster hair, bradycardia, hypotension, amenorrhea, impotence, spontaneous abortion, edema, anemia, diarrhea, as well as psychological and mental disorders.

Table 8: Criteria for acute malnutrition

	Moderate acute malnutrition (MAM)	Severe acute malnutrition (SAM)
Children 6-59 months	WFH -3 Z to -2 Z and/or MUAC 115-125 mm	WFH < -3 Z and/or MUAC <115 mm and/or nutritional edema
Seniors 60+ years old	MUAC 185-210 mm	MUAC <185 mm
Pregnant and breastfeeding women	MUAC 185-229 mm	MUAC <185 mm
Adults	BMI 16.0-18.5	BMI < 16.0

When assessing the nutritional status of a population at risk, the construct of global acute malnutrition (GAM) is introduced to reflect the severity of malnutrition at the population level. GAM works with the prevalence of MAM and SAM, which it does not distinguish (the critical value is always lower than the highest critical value for the MAM level) in the population at risk. The severity of the GAM is shown in Table 9. If the prevalence is higher than 10%, it is a direct threat to the population.

Table 9: Global acute malnutrition - GAM

Prevalence of wasting in the population	Severity of global acute malnutrition
< 5 %	Acceptable
5 % - 9,9 %	Low
10,0 % - 14,9 %	Serious
> 15,0 %	Critical

When investigation of chronic malnutrition is indicated, the method of choice in children is the assessment of height-for-age stunting. Similar to the investigation of acute malnutrition, percentile plots are used, in this case growth curves and deviations expressed by Z-scores. Severe stunting is defined as a value below -3 Z, while moderate stunting is defined as values between -2 Z and -3 Z.

Famine

Famine is a critical shortage of food in an area leading to starvation and the death of a significant portion of the population. Famine is defined by specific criteria, where the death rate from starvation exceeds 1 death per 10,000 persons per day or the wasting ratio surpasses 20 %. A severe famine is characterized by more than 5 deaths per 1,000 persons per day due to starvation or a wasting ratio exceeding 40 %. An additional qualitative criterion for identifying famine includes the presence of individuals with abdominal edema and an unusually high number of red-haired individuals within the starving population.

Throughout human history, famines have been extensively documented, with records dating back to 1769-1770, when approximately 10 million people died of starvation in India (refer to Table 10). In the last century, in some instances, only specific population groups have been affected, such as the intentionally induced famine in Ukraine in 1932-1933. Even today, despite significantly improved logistical capabilities, famines continue to occur, as seen in the food insecurity experienced by ordinary people in North Korea.

Typical consequences of famine include starvation and death due to starvation, mass population migration, the outbreak of epidemics (typically typhoid, plague, smallpox, cholera, and dysentery), and an increase in fatalities from tuberculosis among adults and measles among children.

Table 10: Brief history of selected famines

Year	**Country/region**	**Number of deaths in millions**	**Causes**
1693 - 1694	France	1,5	disorder
1740 - 1741	Ireland	0,3	cold weather
1846 - 1852	Ireland	1	potato diseases, policy failure
1868	Finland	0,1	disorder
1876 - 1879	India	7	drought, policy failure
1877 - 1879	China	9,5-13	drought, floods
1921 - 1922	USSR	9	drought, civil war
1932 - 1933	Ukraine (USSR)	6 (5-7)	deliberate genocide, Stalinism
1942 - 1944	Bengal	2 (60 miles severely affected)	war, policy failure, supply shortages, crop failures
1942 - 1943	Leningrad (USSR)	?	War
1946 - 1947	USSR	1,2	crop failure, policy failure
1959 - 1961	China	15-25	drought, floods, the result of the Great Leap Forward policy
1974 - 1975	Bangladesh	0,5	war, floods, crop failure
1975 - 1979	Cambodia	0,5-0,8	policy failure, deliberate starvation
1985 - 1986	Ethiopia	0,5	war, drought, deliberate starvation
1994 - 1998	North Korea	up to 3.5	crop failure, policy failure
After 2000	Central Africa, Somalia, Sudan, Ethiopia, Yemen, Nigeria, North Korea, Madagascar, ...	?	drought, crop failure, war, policy failure

Source: Cormack O'Grada, Famine: A short history, 2009

In all circumstances, whether in the aftermath of a natural disaster or war, one of the most important steps to protect and promote health is to encourage breastfeeding. This topic is explained in detail in Chapter 4.2.1.

Food Aid

Threatening situations often lead to individuals lacking access to an adequate quantity and quality of food, making them vulnerable to malnutrition, disease, and even death. This is where food aid becomes essential. Various types of food aid are typically utilized, often overlapping in their application. These include direct provision of food (in-kind), financial support for food purchases, ration cards, assistance in food production, and support in establishing food markets. Food aid is offered by official international organizations such as FAO, WFP, Sphere, UNICEF, WHO, World Bank, IRC, among others, as well as by non-profit humanitarian organizations, some of which may have nutritionists on staff. As a vital link between donors, intermediaries, and the at-risk beneficiary population, it is imperative to have an expert who can evaluate the quality, appropriateness, and potential vulnerabilities associated with this food aid and fine-tune the necessary details.

Food aid operates under clear guidelines that must always be adhered to (refer to, e.g., Sphere Association's The Sphere Handbook). In the case of in-kind food aid, a per capita portion, uniform for all recipients, is predetermined for each food item. Whenever possible, food items distributed should be familiar and traditionally consumed within the target population, assuming general cooking skills. Additionally, it must be ensured in advance that individual households (or units living and farming together) have the necessary conditions for food preparation, including cooking facilities and utensils.

Specific, detailed principles governing the nutritional quality of food aid are outlined and can be found in materials provided by UN organizations like FAO, UNHCR, and WFP. The minimum daily nutritional requirements are outlined in Table 11.

Table 11: Minimum nutrient requirements per person per day

Nutrient	**Minimum requirement**
Energy	2 100 kcal
Protein	53 g (10% of total energy)

Fats	40 g (17% of total energy)
Vitamin A	550 µg retinol equivalent (RTE)
Vitamin D	6.1 µg
Vitamin E	8.0 mg alpha-tocopherol equivalent (alpha TE)
Vitamin K	48.2 µg
Vitamin B1(thiamine)	1,1 mg
Vitamin B2 (riboflavin)	1,1 mg
Vitamin B3 (niacin)	13.8 mg niacin equivalent (NE)
Vitamin B6 (pyridoxine)	1,2 mg
Vitamin B12 (cobalamin)	2.2 µg
Folates	363 µg folic acid equivalents (DFE)
Pantothenic acid	4,6 mg
Vitamin C	41,6 mg
Iron	32 mg
Iodine	138 µg
Zinc	12.4 mg
Copper	1,1 mg
Selenium	27.6 µg
Calcium	989 mg
Magnesium	201 mg

Source: RNIs from FAO/WHO (2004), Vitamin and Mineral Requirements in Human Nutrition, 2nd edition, were used for all vitamin and mineral requirement calculations except copper. Requirements for copper are taken from WHO (1996), Trace Elements in Human Nutrition and Health

The generally accepted minimum daily energy intake standard for food is 2,100 kcal per person, assuming that individuals obtain approximately 500 kcal per day from local sources. Protein should account for about 10-12 % of the total energy, with fat making up 17 %. The composition of food is often one-sided due to logistical and availability constraints. Furthermore, distributing fresh food is often infeasible for objective reasons. Therefore, dry commodities like flour, rice, and maize are preferred due to their energy content and overall nutrient density. In such cases, it's essential to ensure the supply of vital micronutrients through supplementation with missing vitamins and minerals. It's crucial to provide iodized table salt, and if possible, supply oil fortified with at least vitamin A, and preferably vitamins D and E. When maize or sorghum is the staple, niacin supplementation is necessary for an extended period, and when rice is the staple, thiamine is added. If a significant reduction in food aid's total energy intake is required, riboflavin should be supplied as a precaution. In situations where the target population must endure difficult conditions for extended periods, monitoring iron and vitamin C intake is essential in addition to vitamin A intake. Where possible, kitchen additives like salt (and sugar) should be provided to enhance palatability, as the monotonous diet of extended consumption can lead to an undesirable lack of appetite.

The distribution of food aid occurs once a week, or at most once every two weeks, as storing large quantities of food in individual households poses both the risk of food spoilage and theft. Providing any breast milk substitute as part of food aid is inappropriate and essentially prohibited. For example, if milk powder is accidentally included among food aid supplies, it should not be distributed individually but mixed into other bulk foodstuffs, such as flour.

In cases of distribution shortfalls where the quantity of food distributed suddenly decreases, one of the following options is chosen: either individual rations are reduced proportionally for all individuals or full rations are provided only to vulnerable groups (children, the elderly, the sick, pregnant, and breastfeeding individuals), with others receiving reduced rations. As a last resort, the distribution interval may be extended and postponed. Sometimes even an additional intake of 300-500 kcal per day can prevent severe starvation and death by starvation.

Beneficiaries must be regularly and truthfully informed about the progress of food aid, and the entire process is subject to monitoring, careful record-keeping, and control.

4. Organization of Evacuation

Evacuation of individuals is initiated when there is an anticipation of a prolonged threat or a fundamental deterioration of living conditions, or when such circumstances are imminent. In

the Czech Republic, evacuation is governed by Decree No 380/2002 Coll., § 12 - § 14, which prioritizes the following groups for evacuation planning: children under 15 years of age, patients in medical institutions, individuals residing in social institutions, persons with disabilities, and the caregivers of the aforementioned groups. Consequently, individuals engaged in rescue operations, evacuation planning, and other critical aid roles are not evacuated.

5. Protection and Promotion of Health, Including Mental Health

The principles and methods for protecting and promoting health during emergencies are not significantly different from those in everyday life. However, there is a heightened risk that healthcare professionals might prioritize addressing the immediate issues arising from disasters or other emergency situations, potentially neglecting long-term objectives such as promoting breastfeeding, establishing smoke-free and drug-free environments, encouraging spiritual well-being, mental and emotional health, physical exercise, and promoting social and environmental health. Commencing these efforts within the public health system early in a threatening situation is critical for the successful return of survivors and those at risk to normal life.

6. Prevention of Threatening Situations

Unfortunately, not all threatening events and situations can be prevented or avoided. Nevertheless, from a public health protection perspective, some risks can be identified that, if mitigated, can reduce the adverse impact on public health.

Preventing Disasters

Timely dissemination of information about impending natural events (hurricanes, tsunamis, volcanic eruptions, floods etc.) to as many people at potential risk as possible may not avert the event itself but can significantly reduce the number of affected individuals, particularly if a coordinated crisis system for evacuation and early assistance is in place.

Preventing Epidemics and Pandemics

Epidemics of diseases for which a safe vaccine exists can be effectively prevented by reducing the number of susceptible individuals through vaccination. For example, measles is considered to have sufficient collective immunity when 95 % of the population is vaccinated (most commonly achieved in countries where vaccination is legally mandated). For infectious diseases transmitted through contaminated food or water, preventive measures include

interrupting possible transmission routes, such as practicing good hygiene, which is essential for diseases like typhoid or cholera. Epidemics of airborne diseases can be slowed down through restrictive measures, although these are often met with lower population compliance, and their feasibility is temporary.

Preventing Famine

Efficient famine prevention, primarily under government purview, involves a diversified economy, a well-developed agriculture and food sector that encourages reasonable food self-sufficiency, effective interventions (e.g., control of crop diseases), functional governance (government, infrastructure, health) allowing for NGO participation, stable transportation conditions, safe food supplies, an adequate provision of acceptable food, participation in international systems, control of corruption, and other social measures.

Literature

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