



Public Health in Humanitarian Action

An open educational resource from the University of Copenhagen

Contents

Chapter 1: Introduction to PHHA	1
Chapter 2: Basic Demographic & Epidemiological Concepts	6
Chapter 3: The Overall Human Impact of Emergencies	9
Chapter 4: Governance	14
Chapter 5: Coordination	17
Chapter 6: Assessments	20
Chapter 7: Health Systems	26
Chapter 8: Communicable Diseases and Outbreak Control	29
Chapter 9: Reproductive Health, HIV/AIDS and SGBV	33
Chapter 10: Non-Communicable Diseases (NCDs)	39
Chapter 11: Mental Health and Psycho-Social Support	42
Chapter 12: Injury	45
Chapter 13: Nutrition	48
Chapter 14: Water Supply	52
Chapter 15: Environmental Health, incl. Water, Sanitation and Hygiene (WaSH)	56
Chapter 16: Excreta and Waste Management	59
Chapter 17: Health and Hygiene Promotion	66
Chapter 18: Vector Control, Settlement Planning and Household Air Pollution	70
References	74

Introduction

This free textbook is edited by Siri Tellier and Niall Roche.

It has been reviewed by Rudi de Coninx

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This version is the first version of 'Public Health in Humanitarian Action'. To keep the information up to date it is our aim to update and republish it annually.

The newest version will be available for free download from www.globalhealth.ku.dk/phha

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Learning objectives:

1. To understand basic terminology and concepts related to PHHA;
2. To understand the basic patterns of excess mortality and morbidity, which can be expected in various emergency and refugee situations, as well as their determinants;
3. To know standard technical/managerial approaches to providing PHHA, especially as provided by consensus documents such as those maintained by the Inter Agency Standing Committee (IASC), e.g. the 'Health Cluster Guide' (1) the Sphere Handbook (2) as well as the follow-up to the Sphere Handbook: the Core Humanitarian Standard (3).

We add a section on Challenges, Dilemmas, Do's and Don'ts at the end of each sub-chapter, to help place this consensus in perspective.

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Chapter 1: Introduction to PHHA

General Concepts and Approaches

A **disaster** is commonly defined as ‘a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses, which exceed the ability of the affected society to cope using its own resources’(4)

Much literature refers to ‘**natural**’ vs ‘**man-made**’ disasters. This categorization is not consistent, but ‘natural’ disasters often refer to earthquakes or hurricanes, and sometimes droughts, epidemics and technological disasters. ‘Man-made’ disasters often refer to armed conflict. There is increasing criticism of this categorization, as many ‘natural’ disasters are influenced by human action (e.g. deforestation leading to mud slides, or introducing building codes that limit the damage caused by earthquakes). In recognition of this possibility for influencing what happens, disaster management is increasingly focussed on looking at factors in society that influence risk and vulnerability, in order to identify measures for **disaster risk reduction**.

However, it is significant to identify whether or not a given disaster involves armed conflict, as this has a greater impact on the root causes, impact and response.

A **complex emergency** has been defined as ‘A situation with complex social, political and economic origins which involves the breakdown of state structures, the disputed legitimacy of host authorities, the abuse of human rights and possibly armed conflict, that creates humanitarian needs’. This term is generally used to differentiate humanitarian needs arising from conflict and instability from those that arise from natural disasters (5, 6).

The terms ‘disaster’, ‘complex emergency’, ‘humanitarian crisis’ and many others are at times applied rather inconsistently, but here we will use the ‘disaster’ definition above as an umbrella working definition.

Another term which has come into use in the last decade is ‘**fragile states**’, sometimes referred to as ‘failed states’, ‘fragile situations’, or ‘chronic disasters’. There is no agreed definition of the term, but some agreement on what the fundamental characteristics are. Thus, the World Bank notes that ‘State policies and institutions are weak in these countries, making them vulnerable in their capacity to deliver services to their citizens, to control corruption, or to provide for sufficient voice and accountability. They face risks of conflict and political instability’. That is, these are situations where a state cannot, or will not, provide basic functions of a state, such as security, an environment where the population can pursue a livelihood, or basic services such as health. According to World Bank estimates, 1-1.5 billion people live in conditions characterized as ‘fragile contexts’ (7) where natural disaster/conflict may catalyse fragility.

The term [resilience](#) has appeared in parallel. One definition of this term is: ‘the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions’ (4). To build resilience, it is important to understand the societal and cultural conditions which may turn a hazard into a disaster.

[Humanitarian Action](#) is based on the concept of a disaster as given above, that is, that the society concerned cannot cope with the hazardous event and therefore needs external assistance. The vulnerability or coping capacity of the affected society – whether it is more or less fragile, more or less resilient - is central to deciding whether humanitarian action is indeed necessary, and what form it should take.

It also leads to one of the central challenges of humanitarian action: how a large number of external humanitarian actors can coordinate their action if the society concerned temporarily cannot. Over the last 2-3 decades, a great amount of effort has gone into harmonization of approaches and we, therefore, refer to it widely used standards of the so-called Sphere Project and the guidelines of the Inter Agency Standing Committee (IASC).

WHO defines [health](#) as ‘a state of complete physical, mental and social well being and not merely the absence of disease or infirmity’ and [public health](#) as ‘all organized measures (whether public or private) to prevent disease, promote health and prolong life among the population as a whole’ (6). [PHHA](#) builds on these definitions. Thus, we will address both preventive and curative measures, and both determinants of health (e.g. nutrition, WaSH or environmental health) as well as essential health services. Measures such as these, which seek to meet basic needs, are often referred to as ‘[relief](#)’. In emergencies, human rights abuses that jeopardize life with dignity (e.g. gender based violence) also become concerns for public health. Measures to address these are often referred to as ‘[protection](#)’.

There is broad agreement that the [overall objective](#) for PHHA, at least in the acute phases of emergency response, is to prevent excess mortality and morbidity and assist those affected by disaster to a life with dignity. Mortality is seen as a key measure of how an emergency is evolving (2). This overall focus on mortality is informed by the dramatic increase in mortality levels which have been observed in the past, up to 40-50 times the normal level among refugees e.g. from the Rwandan genocide (8-10).

To quantify this ‘excess mortality and morbidity’, the usual approach is to estimate pre-disaster mortality/morbidity levels (or, for protracted emergencies, sometimes the mortality in neighbouring countries) to arrive at ‘[baseline mortality](#)’, and then to compare with levels observed during the emergency, to determine ‘[excess mortality](#)’.

The metrics most commonly used to assess these mortality levels are mortality in the overall population, and mortality in children under five, since young children have historically seen the greatest mortality during emergencies.

The **threshold level** for identifying a situation as an **acute public health emergency** is often given as levels exceeding 1 death/10,000 people/day, or 2 deaths of children under five /10,000 children under five/day. This level was suggested in 1990, when it represented a doubling of baseline levels of mortality in developing countries. Since then, mortality levels have declined. Therefore, Sphere suggest the threshold level should also be reduced, and be calculated for each emergency as a doubling of the relevant baseline level of mortality (8, 9, 11).

This term is probably best applied as a way to focus surveillance attention on excess mortality, rather than as an exact level. It is not equally relevant for all emergencies, e.g. sudden onset natural disasters.

Resources are rarely sufficient to meet needs in PH, and usually the response must be prioritized, according to what causes the greatest harm, and where a response can do the most to prevent that harm. **Prioritization** is especially relevant in PHHA, as health problems may grow rapidly at the same time as local resources to deal with them may be decimated.

Prioritization is in principle based on **risk analysis**. Risk analysis is utilized in many fields and here we will refer to one form of a 'risk equation' adapted to public health:

$$R = H \times E \times V/C$$

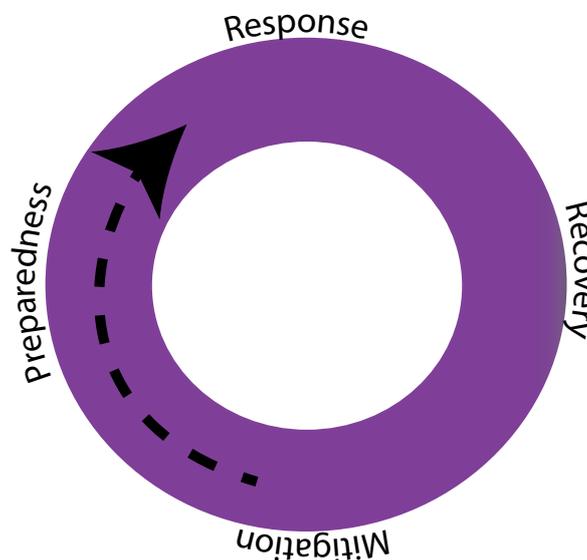
where R signifies **Risk** (e.g. the risk of excess deaths due to measles), H signifies **Hazard** (e.g. the likelihood and extent of a measles epidemic), E signifies **Exposure** (e.g. crowded conditions in refugee camps), V signifies **Vulnerability** (e.g. malnutrition, which increases case fatality) and C signifies coping capacity (e.g. due to vaccination). Many have begun to replace the 'equals to' sign with a 'related to' sign, to indicate that the relationship is not mathematically precise (12, 13).

Prioritization has been developed over time, based on experience. One early listing was developed by Médecins Sans Frontières in 1997 and includes ten actions, e.g. assessment and measles vaccination. The listing is still developing. For example, action to respond to reproductive and mental health/psychosocial support were developed since then, and non-communicable diseases still receive limited attention (9, 11, 14, 15). Within many essential health services, detailed guidelines have been developed, with a view to harmonize approaches, notably by the above-mentioned IASC and the Sphere Project. Here, we will follow the listings more or less as given in the Sphere Handbook.

The **time factor** is significant in disasters, influencing both the human impact and what the appropriate response would be. Disasters range from **sudden-onset events** (sometimes referred to as 'rapid-onset') such as earthquakes which may last minutes, to **slow onset** or **chronic situations** such as droughts or protracted armed conflict which may last years or decades.

In recent decades there is frequent reference to the 'disaster cycle' (see Figure 1), reflecting a basic concept that societies cycle between what is often termed 'normalcy' and sudden or slow onset disaster. This, in turn, is reflected in disaster management. The urgent 'response' to the onset of a sudden or slow onset disaster (e.g. surgery), transits into activities to assist recovery (e.g. rehabilitation from surgery), mitigation and prevention during non-disaster phases (e.g. improving building codes and practices), and preparedness and surveillance (e.g. mapping the location of disabled persons who may need assistance if an earthquake occurs).

Figure 1. The Disaster Cycle



The concept of the disaster cycle has been widely used over the last 30 years, with scholars debating the origin. The concept is challenged since it may give a somewhat simplistic and sequential impression of disaster stages. However, since it is still widely used we refer to it here.

Disaster preparedness is essential if quick and effective action is to be taken. Yet, disasters are very diverse, and often develop in unpredictable ways. Therefore, we take an [all-hazards approach](#), where the focus is on the overall organization of the response rather than having a separate plan for each type of disaster.

Decisions must be taken very quickly, often based on incomplete information. Therefore, situation assessment and [information management](#) are essential, both at initial rapid assessment (IRA) but also continuous. This includes key demographic and epidemiological indicators.

To help prepare, one practical PHHA approach is to develop [standard preparedness elements](#), based on past experience. One example is an agreed list of medicines, the [InterAgency Emergency Health Kit](#) (IEHK). This has

been developed, pre-packaged and sometimes pre-positioned, intended for 10,000 people for 3 months, at either community, regional or referral clinic/hospital level, to serve a standard demographic composition. As information about the specific situation is collected and analysed, such elements can be flexibly deployed and adjusted over time.

Challenges, Dilemmas, Do's and Don'ts

A central challenge is to establish the overall goal and level of ambition of any humanitarian response. During the acute phases of an emergency, the stated objective is a return to 'normalcy'. In recovery, and especially in mitigation or development phases, the objective may be to 'build back better', reducing vulnerability and increasing coping capacity of populations and their health systems in a sustainable manner. The objective of disaster response is to bring back to normalcy, whereas the objective of mitigation/development may be to change that normalcy.

This simple point can be contentious. For example, should a targeted emergency feeding programme aim to give beneficiaries perfect nutritional levels if the surrounding population has high levels of malnutrition and yet receives no aid? Should an emergency health programme provide services free of cost, or subsidize building of latrines, if the surrounding population has to pay for services or receives no subsidy, in accordance with governmental policy? Should humanitarian action address only injury due to earthquakes, or also advocate for a change in building codes to prevent future injury?

This is an eternal and real dilemma. Global frameworks have arguably paid too little attention to how it may be approached. The new Sustainable Development Goals, submitted to the UN General Assembly in September 2015, refers repeatedly to resilience to natural disaster, and this may increase attention. The Sendai Framework for Action, adopted in March 2015, also refers repeatedly to resilience and 'building back better', notably mentioning improved health not only as a goal in humanitarian response but also as a factor which increases resilience (16).

Another challenge is referred to above: how to balance between preparing for a generic disaster, yet ensuring that response is context specific and culturally suitable. Continual follow-up assessment is essential to help navigate that dilemma.

Finally, one may question the overall focus on saving lives - What about saving livelihoods?

Chapter 2: Basic Demographic & Epidemiological Concepts

Demography is the quantitative study of the structure (age, sex, location) of populations, changes therein (mortality, fertility, migration) and the determinants and consequences of these characteristics.

Epidemiology is the study of the distribution and determinants of health-related states or events (including disease), and the application of this study to the control of diseases and other health problems' (6).

Given that an overriding objective is to prevent excess mortality, it is important to establish **baseline** levels. The two most important are:

Crude Death Rate (CDR): number of deaths per 1,000 (mid-year) population per year (sometimes expressed as per cent, e.g. 1% of the population dying in a year).

Under-Five Mortality (U5M): the proportion of children dying before exact age 5. It is usually expressed per 1,000 (sometimes as per cent, e.g. 15% of children dying before they reach the age of 5).

In emergencies, mortality levels can change dramatically within days. Yearly rates are insufficient, and **emergency metrics** have been established, which are more time sensitive and simple to calculate:

Crude Mortality Rate (CMR): deaths per 10,000 population per day

Under Five Mortality Rate (U5MR): deaths of children <5 per 10,000 children <5 per day.

Comparing emergency and baseline metrics is simple for crude mortality. A CMR of 1/10,000 per day translates into a CDR of 36.5/1,000/year. Present global levels of mortality average around 10/1,000 or 1% per year, which represents 3-4 times the baseline in most countries.

For under-five mortality, the comparison is more complicated and confusing. The emergency metric, U5MR, is a simple rate: a level of 2/10,000/day translates into a rate of 73/1,000/year. If maintained over 5 years, this results in 36.5% of children dying before the age of 5. For the baseline metric, U5M is a cumulative proportion (a life expectancy). The global average is around 5% of children dying before the age of 5. It is complicated to calculate U5M life expectancy, and unrealistic to do so in an emergency. Thus, the U5MR metric is useful, as long as it is not simply compared to U5M.

Other important concepts related to mortality and morbidity include:

Case fatality (sometimes referred to as Case Fatality Rate(CFR)): The proportion of people diagnosed with an illness who die. Usually applied to acute, short-term illnesses such as cholera, which can be observed over a

limited period. CFR varies greatly with the vulnerability of the population and the quality of response, and is therefore a useful monitoring indicator.

Attack rate: The proportion who become ill after a specified exposure. Often expressed as a percentage (e.g. 10% of the refugees in the camp became ill with cholera during the most recent epidemic).

Case definition: A set of diagnostic criteria that must be fulfilled in order to identify a case of a particular disease. Case definitions can be based on clinical, laboratory, epidemiological, or combined clinical and laboratory criteria. When a set of criteria is standardized for purposes of identifying a particular disease, then it is referred to as "standard case definition".

Proportional mortality: The proportion of all deaths due to a specific cause

Incidence: Number of new cases of a disease during a specified period of time, divided by the population at risk during that time period

Prevalence: Number of existing cases of disease at a given point of time divided by the population at risk. The time period is arbitrary.

Ratio: Comparison of two numbers, where the denominator and numerator do not necessarily refer to the same population (e.g. 'sex ratio' refers to the number of males per 100 females).

Rate: A measure of the speed or frequency with which an event occurs in a defined population at risk for that event in a defined time. That is, the numerator refers to the same population as the denominator (e.g. the U5MR refers to the number of deaths to children under 5, divided by the number of children under five) (17)

Disability-adjusted life years (DALYs), The sum of years of life lost (YLL) to premature mortality in the population, and years lived with disability (YLD) (6). This metric was developed for the first 'global burden of disease' study, capturing not only fatalities but years lived with disease. Mortality and morbidity may be the most obvious metrics, but others are equally important.

Crude birth rate (CBR): The number of live births per 1,000 (mid-year) population per year.

Children: Different sources use different age groupings, or do not indicate precise age – e.g. 'women and children' is a meaningless metric unless it is clear whether the age grouping refers to 0-4 (under five), 0-17 (under 18) or other. The Convention on the Rights of the Child refer to children as anyone aged under 18.

Refugee: "Persons who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country or return there because there is a fear of persecution..." (18).

Internally Displaced Persons (IDPs): "Persons who have been forced to flee their homes suddenly or unexpectedly in large numbers, as a result of armed conflict, internal strife, systematic violations of human rights or natural or man-made disasters; and who are within the territory of their own country" (19).

Household: A group of one or more persons living together who make common provision for food or other essentials for living (20).

Health facility utilisation rate: Number of outpatient visits per year (may be calculated for a shorter period).

Number of consultations/clinician/day: The number of visits (new or repeat) per full time equivalent clinician per day.

Chapter 3: The Overall Human Impact of Emergencies

The Baseline Situation

Globally, the total population of the world in 2015 was about 7.4 billion. The annual number of deaths is approximately 55 million, giving a global Crude Death Rate (CDR) of around 8/1,000 or, in approximate terms, about 1% (21). This rate is fairly constant across populations, since higher-mortality populations also tend to be younger populations.

Out of those deaths, about 25% are due to what is commonly referred to as 'group 1' diseases (communicable diseases, maternal/perinatal and nutritional disorders), 65% to 'group 2' (non-communicable diseases, esp. cardiovascular disease, cancer, diabetes, and Chronic Obstructive Pulmonary Disease (COPD)), and 10% to group 3 (injury) (22).

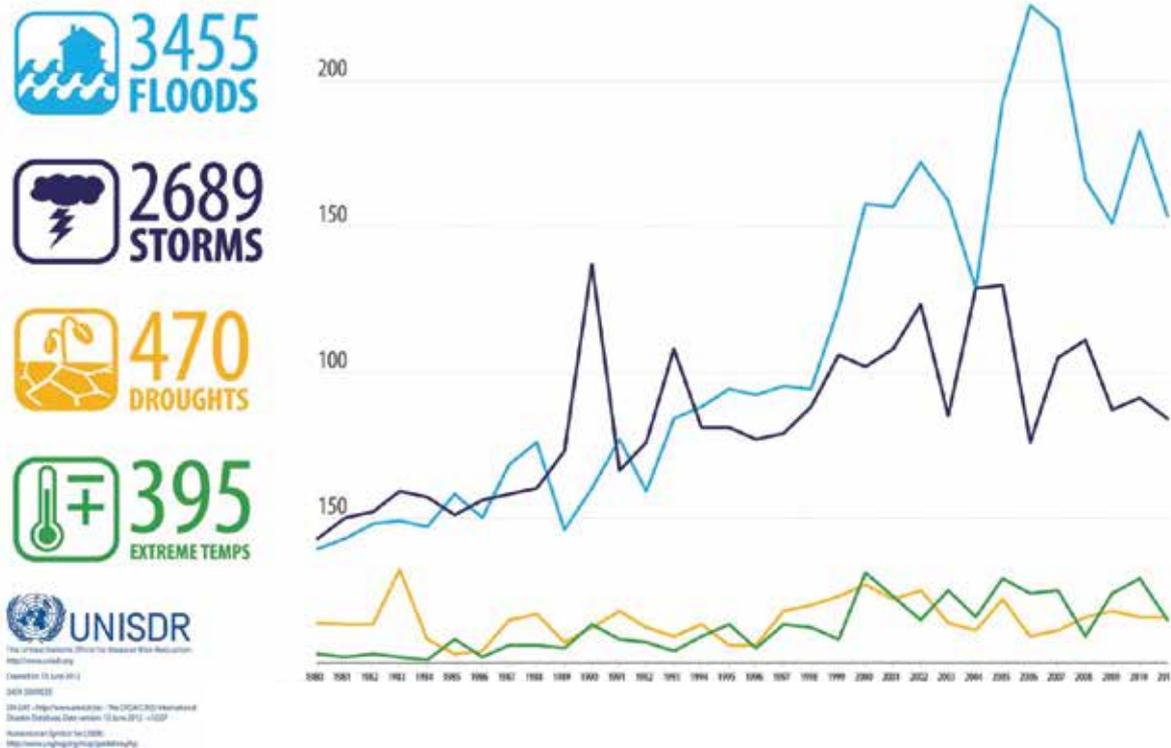
Several transitions influence the evolution in these overall levels, and the environment in which PHHA is delivered.

Demographic transitions: Populations in most countries are ageing, and increasingly urban. Almost all future population growth will be in urban areas of developing countries, and similarly, most future population growth will be at older ages (21). This shift is a main contributor to the increase in NCDs.

Epidemiologic transitions: Most countries, both High, Middle and Low Income (H/M/LICs), have undergone a shift from group 1 to group 2 diseases as the main causes of death. This is both due to our success in controlling group 1 diseases and but also due to risk factors associated with ageing and urbanization. A few decades ago, close to 20% of children died before the age of 5, mostly from communicable disease and malnutrition. Vaccination programmes, antibiotics and improved nutrition and WaSH have contributed to cutting the under five mortality to less than 5%.

Disaster transitions: Many sources point to an observed, and/or expected, increase in numbers of people affected by extreme weather events, especially floods and storms. There is some variance in what pathways are identified as the cause of such increases – whether because the number of events have increased or because populations are increasingly concentrated in urban areas vulnerable to such events (23) or other reasons.

Figure 2. Number of Climate-Related Disasters Around the World (1980-2011)



Source: from UNISDR, www.unisdr.org

Earthquakes still kill the largest number of people, but their numbers seem to be not increasing (24).

Observers also note a shift from international conflicts of defined duration to longer term, low intensity situations of violence, often in urban settlements, in ‘fragile’ contexts, and with many non-state actors (25, 26). In recent years there have been several MICs, rather than in LICs, experiencing large-scale emergencies, with Iraq and Syria being prime examples.

Response transitions: Especially since 1991, the number of international actors in humanitarian assistance and funding has increased rapidly. Thus, in the aftermath of the 2010 earthquake in Haiti, several hundred international NGOs were active. Funding has increased from less than a percent of official development assistance (ODA) to around 10%, yet shortfalls remain (27, 28). A combination of increasing concerns about security, as well as technological innovation is leading to a rapidly changing role of web-based tools for collecting information as well as for developing response – what some observers term ‘cyber-humanitarianism’ (29). There is also a move towards providing cash or vouchers rather than relief goods, such as food, because it is less demanding in terms of logistics, and may prove less disruptive for local markets. New donors, including the private sector, increase both complexity and opportunities.

The transitions provide an increasingly complex image of how the emergency landscape is forecast to change and what the humanitarian consequences might be. The growing number of emergency and fragile situations, population movements, and hard learned lessons from situations such as the ebola pandemic pose major challenges. There is increasing realization that the ever-expressed goal of 'involving' local communities has not succeeded, yet is crucial if resilience is to be built, and therefore there may be some increase in awareness that anthropological approaches may be useful – where this does not necessarily mean bringing in foreign anthropologists but building on local knowledge (30, 31)

Levels and possible pathways to excess mortality and morbidity

As mentioned above, emergencies can cause dramatic increases in mortality (8, 9).

Historically, the big killers in emergencies were starvation and epidemics, both of which claimed millions of lives. For example, the Spanish flu in 1918 is estimated to have killed 25-50 million (more than World War I) and starvation caused an estimated 20-40 million deaths in China in 1958-61. Conflicts in the 20th Century (especially the two World Wars), are estimated to have caused a total of 50-100 million deaths (32).

In recent decades, death tolls to disasters are estimated to be lower than these historical levels. The Rwanda genocide is estimated to have caused 500,000-1,000,000 deaths, with similar estimates of death tolls due to starvation in the Democratic People's Republic of Korea in the mid-1990s. Since 2000, the 2004 Indian Ocean tsunami and the earthquake in Haiti in 2010 are estimated to have caused 200-300,000 deaths each. The conflict in Syria is estimated to have caused around 200,000 deaths as this book went to press (33).

As horrendous as contemporary emergencies are, the one thing that may be encouraging is that, in terms of death, tolls are not quite as high as historical levels.

As always for epidemiology, it is important to [disaggregate](#) these overall death tolls, to help identify the [pathways](#) leading to excess mortality and morbidity, and ways in which to break those pathways.

Level and cause of death toll is influenced by many variables, e.g.:

The [type of disaster](#): Droughts may cause deaths to starvation, whereas injury is the main cause of death in earthquakes (34). Historically, communicable diseases have caused high levels of death. There is growing recognition that this may change, at least for natural disasters, where health systems remain in place and displacement is limited (11, 35).

The [phase of disaster](#): In displacement caused by conflict, in some settings, most deaths in early phases are related to violence, and in later phases to communicable diseases as the usual protective structures break down (e.g. WaSH) (36).

Age/sex: In Sri Lanka after the tsunami children under five had the highest mortality, and females aged 20-40 had much higher mortality than males of the same age. Females on average have higher mortality in natural disasters, whereas males have higher mortality in armed conflict (37). In Haiti during the 2011 cholera epidemic, men were dying at higher rates than women since men were going to cholera treatment centres less than women, and the interpretation was that men had inaccurate information about the symptoms of cholera, mistaking them for those of HIV (38).

Battle/non-battle deaths: One major challenge in calculating deaths tolls in armed conflict is to determine how many deaths are direct battle deaths, versus indirect, especially group 1 causes such as malnutrition or disease. An oft-heard quote is that in World War I 90% of deaths were of combatants, and only 10% of civilians, whereas post World War II the inverse is true. Although the origin and evidence base for this quote are apparently difficult to trace, a number of recent studies do estimate levels of indirect deaths many times higher than direct battle deaths (39, 40).

Physical/economic environment: Generally, LICs have higher death tolls than M/HICs from what otherwise seems similar disasters. Beyond the human impact, it should be noted that economic losses are higher for HICs in absolute terms, but as a proportion of GDP they are lower (41). Thus, the 2011 Japan earthquake and 2010 Haiti earthquake caused respectively appr. 16 000 and 200 000 deaths, and 200 B and 2 B USD in damages.

Resilience of populations/health systems: Sri Lanka experienced little post-tsunami mortality in 2005, despite warnings that epidemics should be expected. This has been attributed to a resilient health system, a strong civil society and an educated population (42). Health systems that are overwhelmed by one type of disaster (e.g. ebola epidemic) and where trust in the health system is low, may result in deterioration in health services for other areas, such as maternal health (43).

Forced displacement is a major risk factor. In recent decades, refugee numbers gradually declined and stood at around 15 million, whereas the number of internally displaced persons (IDPs) gradually increased to around 25 million (44). However, the recent crisis in Syria has led to about 3 million refugees and 9 million IDPs, bringing global totals of displacement due to armed conflict up, to over 50 million. UNHCR identifies a major **protracted refugee situation** as one where more than 25,000 refugees have been in exile for more than five years. Using this definition, nearly two-thirds of refugees in the world today – over six million people – are in protracted refugee situations. With displacement, life sustaining coping capacities which populations have built up over centuries (food production, quality WaSH, shelter and family support) may disappear. Recent studies indicate that, in displaced populations, generally refugees have the best health indicators, and IDPs the worst, with those who have not fled occupying an intermediate position. While the UNHCR now often has a mandate to protect them, some of the special risks to IDPs are that they often reside closer to the fighting where public services have broken down, whereas most refugees have fled to some level of safety (45).

A group receiving little attention is that of persons displaced by sudden or slow onset 'natural' disaster, including due to climate change. The terminology and definition are not clear (climigrants? environmental refugees?), nor are the numbers. However, recent estimates are that the proportion of people displaced by such events has doubled over the last

decades. Such populations are, to some extent, in a governance limbo – there is no clear convention or declaration or international organization devoted to their protection (46).

Morbidity receives less attention than mortality. However, there is some development for example with the increased attention to Mental Health and Psycho Social Support, which may not cause death but yet cause major problems, not least, in protracted displacement situations. The 2015 Sendai framework refers to the importance of chronic disease, maybe indicating increased attention (16).

Challenges, Dilemmas, Do's and Don'ts

Levels are extremely difficult to estimate, yet are often quoted with misleading precision. For example, excess deaths in D.R. Congo are estimated at between 200,000 and over 4 million, depending on the method used (47-49).

Furthermore, the emphasis in recent decades has been on mortality. This chapter is about public health, and we can hardly suggest that mortality is unimportant. However, other health metrics, including for morbidity (e.g. DALYs), may arguably deserve higher prominence than they have now. Tackling root causes remain a challenge for preparedness.

Chapter 4: Governance

What makes governance in humanitarian action different? Let us go back again to the working definition of a disaster: that a hazardous event takes place, that it has great impact, and that the situation is beyond the capacity of the society concerned to cope. This poses the basic question: if the society cannot cope, what happens to the rules governing society?

During crises, especially during conflict, the questions are whether there are legal obligations to help people in need, who should be helping and according to what standards, and the extent to which the state is allowed to restrict or deny such help. If the state is unwilling or unable to help people within its territory, then what rules and principles should guide help from the outside? Can other countries force their way into a state and start helping people without the consent of the host state? What professional standards can be expected? How can the government cope, not only with the disaster but with the international actors?

In peacetime, and often during natural disasters, the obligations of a state towards the people on its territory are primarily regulated by national laws (including human rights law). This means that national laws also define the humanitarian response (sometimes referred to as disaster response law), including the issues related to health care. This can include laws and policies related to everything, from who can receive free government health care, whether there is a right to abortion, medical qualifications related to who can practice medicine and the rules governing the import of medicines. However, such national laws might be at odds with international obligations and it is therefore important for a humanitarian operator to find a way to strike the right balance and ensure that every response is contributing to the respect, protection and fulfilment of international obligations. A key human rights document concerning health care is the International Covenant on Economic, Social and Cultural Rights (1966), which establishes the right to health (Article 12) and binds signatory states to "take steps, individually and through international assistance and cooperation" to achieve full realization of this right. This is a direct obligation on state parties to seek and provide international assistance in order to achieve human rights obligations related to health, food, education and shelter. Refusing to request and facilitate such assistance on an arbitrary basis and in times of crisis may, in fact, amount to a violation of human rights.

There may be different reasons why international assistance is restricted during conflict. Security related concerns, real or not, are among the main reasons limiting humanitarian access. In some cases, denial of consent for humanitarian relief, or constraints imposed on the delivery of such, may even be part of a military strategy of starving out the enemy or the civilian population. Another important constraint on humanitarian access is the growing perception over the past years that humanitarian aid has become more and more politicized.

The Geneva Conventions (GC), International Humanitarian Law, have been universally ratified, indicating a consensus on the obligations of states to assist and protect their civilian populations against the effects of conflict and to grant access to impartial humanitarian actors during armed conflict. The obligation to ensure respect for the GC, means that all states must do everything in their power to put an end to violations of IHL,

among others, by exercising their influence over those who violate its provisions and by facilitating the delivery of impartial, neutral and independent humanitarian aid, such as healthcare services and medicine.

Other relevant IHL provisions are those related to the respect and protection of humanitarian and medical relief personnel and objects, and to the prohibition to use starvation of the civilian population as a method of warfare.

States have expressly recognized that impartial humanitarian organizations have an important role to play in addressing humanitarian needs. Public international law, including IHL, has over time recognized that these offers of services made by impartial humanitarian organization cannot be regarded as unlawful interference in domestic affairs of a state nor can they be seen as an unfriendly act. However, in order for it to be considered to be impartial, it must be distinct to the so-called "humanitarian interventions" or actions related to the "Responsibility to Protect", which are controversial and highly politicised concepts. Despite IHL being relatively clear about the issue of access, reality is that access has to be negotiated on a daily, if not hourly, basis in many places of the world.

The principles of [neutral](#), [impartial](#) and [independent humanitarian](#) action are reflected in many different cultures, documents and codified, particularly in the GC and a number of Security Council and General Assembly Resolutions. They are widely cited as the basis for humanitarian action. Impartial action means that the greatest aid is given to those in greatest need without unlawful discrimination (such as political affiliation or ethnicity). In order to be impartial, the organization must be able to act independently of other interests, such as the priorities of its donors. To have access to the populations in need, the organization and its staff must be perceived as neutral, exemplified by having the trust of all parties to the conflict and refrain from any undue controversies.

[Refugee Law and Principles related to IDPs](#) are also relevant where such populations are present. The former came into force in 1951 in the aftermath of World War II, with large populations of refugees (18). The latter, reformulated in 1998, were developed in response to the observations that conflicts were increasingly internal and of long duration, resulting in large numbers of internally displaced persons. The IDP Principles are not yet generally legally binding (50). In recent decades, a number of initiatives to protect specific populations, including to deal with Sexual and Gender Based Violence, are being developed (51).

Challenges, Dilemmas, Do's and Don'ts

No matter whether humanitarian relief is sanctioned by law or not, and whether consent has been given or not, the ability to operate will depend on the facts on the ground. Do the militia members at the check point trust and respect you? Do the local village chiefs consent to you treating the women of the village? How people perceive you and your actions will often be more crucial than the applicable laws.

Ensuring compliance with relevant international obligations is one of the key challenges. What do you do, when the law is on your side but there is no rule of law and no one seems to comply? Often negotiation skills

and persuasion using a mix of arguments drawing on law, religion and local culture are more appropriate than reciting articles in the Geneva Conventions. Another dilemma is the clash between what is national law, but might be ethically controversial. How would you react as a medical doctor if the gang rape victim wishes to have an abortion in a country where abortion is illegal, and where you know that both she and her child will be ostracized from the community? How would you balance when to report and go public with your knowledge of massive human rights abuses with the risk of the government throwing you out of the country because you publicly displayed their crimes? Humanitarian space is seen as being seriously in jeopardy, and resulting in increasing numbers of humanitarian workers killed or kidnapped (52), How can that be handled?

Chapter 5: Coordination

Evolution of the International Humanitarian System

The idea that one should help people in need is central to many religions and cultures, but the idea that this should be undertaken internationally is relatively recent. This immediately poses a possible dilemma as it may interfere with the concept of national sovereignty.

A first major effort to provide material assistance, to injured soldiers on the battlefield who were considered 'hors de combat', began with the [Red Cross in 1863](#). This was only possible because the national states concerned had acceded to the Geneva Conventions, providing the humanitarian space necessary for such action. Over the next decades, many humanitarian organizations emerged. However, another game-changing milestone came in 1991 triggered by images of humanitarian workers throwing loaves of bread to Kurdish refugees from the Iraq war. With the end of the Cold War in 1991, new possibilities for joint action seemed workable. [United Nations General Assembly Resolution A/RES/46/182](#) called on the UN to take a more active role in undertaking and coordinating international humanitarian assistance, and established structures for:

- leadership (including what is now called the [Emergency Relief Coordinator](#), heading the UN Office for Coordination of Humanitarian Action, OCHA),
- operational and technical coordination (including the [IASC](#))
- funding mechanisms (including what is now called the Central Emergency Response Fund – [CERF](#) and the Consolidated Appeals Process ([CAP](#))).

The IASC as a coordinating body includes both UN organizations as well as a number of non-UN organizations, including the Red Cross/Red Crescent Movement, and a number of non-governmental organizations, either as full members or standing invitees.

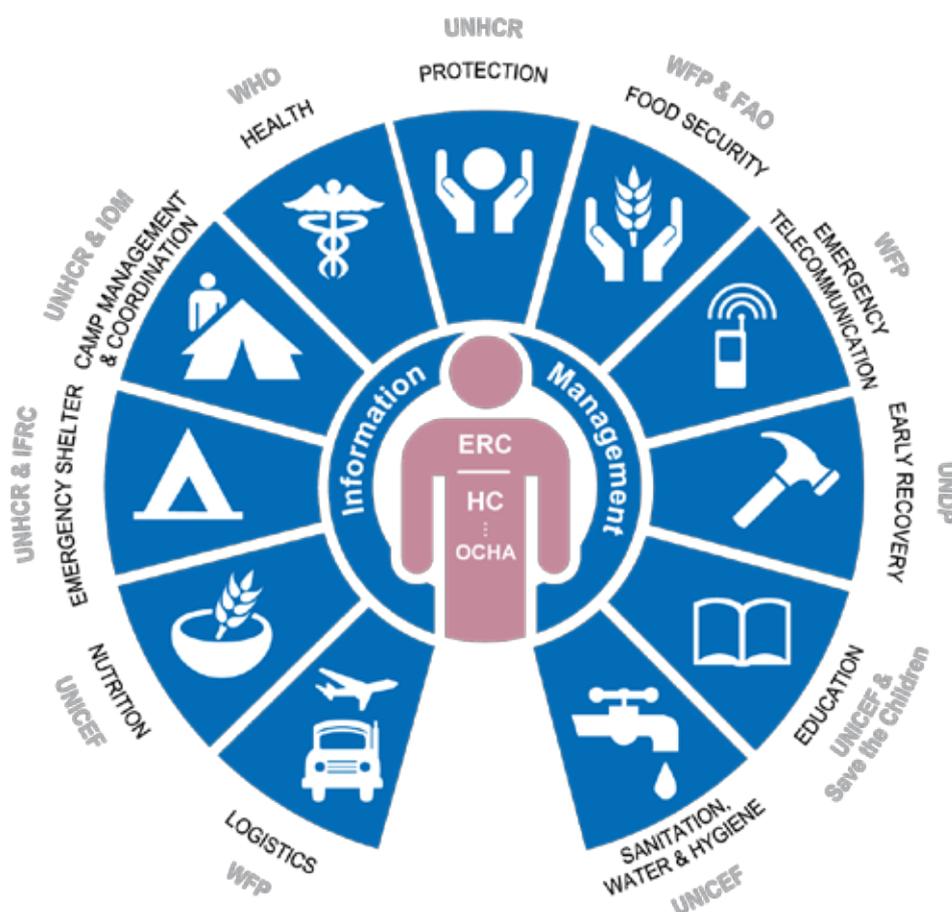
In response to experience, the system has undergone major changes over time. Major inter-agency evaluations after large humanitarian operations such as the Rwanda genocide in 1994, the Indian Ocean tsunami response in 2004-5, and response to the 2010 earthquakes in Haiti and floods in Pakistan have all had an effect.

The 1994 Rwanda experience focused the need of developing common operational standards and guidelines (e.g. [IASC guidelines](#) as well as the [Sphere Project](#) which by now includes hundreds of NGOs as well as Red Cross/Red Crescent members). In addition to harmonizing approaches, such standards also provide a basis for holding humanitarian actors accountable with respect to the assistance they are providing. The Humanitarian Accountability Partnership is another effort at standardizing Humanitarian Accountability and Quality Management.

In the wake of the response to the 2004 tsunami, where major operational gaps were identified, as well as in order to learn from other major lessons of the past decade, a major humanitarian reform was initiated by the then ERC, Jan Egeland. To meet the challenges the 'cluster' system was developed, in which organizations were

grouped and leadership duties were assigned. For health related fields (the 'health cluster'), WHO is the lead organization at the global level, UNICEF for WaSH and nutrition, UNHCR for protection and UNHCR/IFRC for shelter. Within these, organisations may have special roles, e.g. UNFPA is the lead on reproductive health within the health cluster, and on SGBV within the protection cluster. At the local level, operational leadership may be given to another organization if the global lead has limited capacity.

Figure 3. The Cluster System



From UN-OCHA, www.unocha.org

An increasing focus on local capacity, risk reduction and 'building back better' also fed into the 2005 Hyogo Framework of Action: Building the resilience of nations and communities to disasters, and its follow-up – the 2015 Sendai Framework of Action on disaster risk reduction. The Sendai Framework places great focus on the issue of health, not only as an effect of disasters but also to improve the resilience of communities to disasters.

The 2010 disasters focused attention on the need for extraordinary effort in extraordinary situations, what was termed 'level 3 emergencies'. The 'transformative agenda' was adopted to try to meet this challenge as well as to follow up on the humanitarian reform process in general. A [World Humanitarian Summit has been called for in 2016](#) and with four themes: which will follow up on these developments,

- Humanitarian effectiveness
- Reducing vulnerability and managing risk
- Transformation through innovation
- Serving the needs of people in conflict.

Challenges, Dilemmas, Do's and Don'ts

Coordination remains an area where enormous progress has been made. However, there is more to achieve and many of these are mentioned in the sub-chapters that follow.

In the next chapters we turn to operational issues. These include essential health services (e.g. communicable disease control), protection (e.g. with respect to SGBV), as well as determinants of health (e.g. WaSH).

In a crisis, prioritization is crucial. An early attempt at a listing of such priorities is given in the 1997 MSF 'Refugee Health'(14) and the 2011 Sphere Handbook builds on these, adding mental health, reproductive health and a little bit on non-communicable diseases, as well as emphasizing health systems.

Chapter 6: Assessments

The Sphere Handbook Core Standard number 3 is: ‘the priority needs of the disaster-affected population are identified through a systematic assessment of the context, risks to life with dignity and the capacity of the affected people and relevant authorities to respond’ (2, 11); where we have highlighted what we consider the key terms. The standard is reiterated in the Core Humanitarian Standard (3). There are numerous guidelines for the conduct of such assessments, both topic/organisation specific (53) and joint, including the Multiclustert/sector Initial Rapid Assessment (MIRA) (54). We will reflect on some key recommendations below.

Why? Emergencies are by their nature chaotic and dynamic, where a ‘normal’ situation has changed into one of an evolving crisis. Demographic and epidemiological data are central in order to assess both the baseline situation as well as the extent of the change due to the crisis. Information management is one of the most basic skills of humanitarian action.

Specifically, such data serve a variety of purposes, including:

To guide operational response - estimating the overall scale and with regard to three dimensions: geography, sector and affected population group, assessing needs, monitoring progress including performance/outcomes/ impact;

To report to the outside world - advocating for appropriate intervention, raising funds, accounting for their utilisation; and

As always, in humanitarian action – to inform security assessments.

In all of these the basic humanitarian principles of ‘impartiality’ can be a challenge to live up to, and be perceived as living up to, that is, that assistance should be based on needs alone. Data can help inform that judgement.

When?

Assessment should be a continuous process, not a one-off event. Data are assembled:

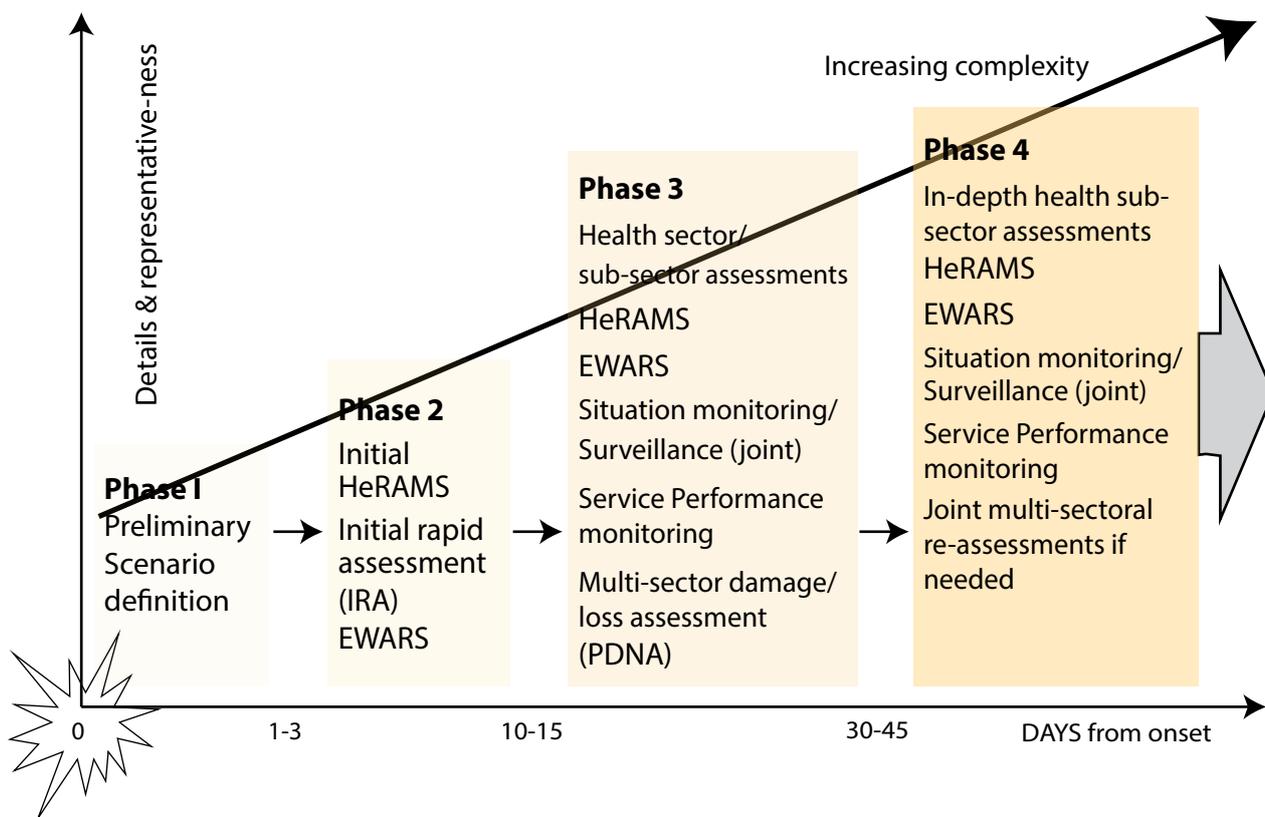
1. Pre-crisis: globally (e.g. ‘rules of thumb’ or ‘standard populations’, which can be used as a basis for global preparedness such as health kits), or locally (e.g. early warning systems, surveillance).
2. In the first hours after an event, before field data collection (e.g. based on web-based secondary data to adjust global ‘standard populations’ to the local situation and establish baselines).
3. In the first days after the event: primary data collected in the field as input for an initial rapid assessment. These are often qualitative and not statistically significant.
4. Over the next few weeks/months: sector specific surveys, including statistically sophisticated quantitative data. One representation of this timeline is given below (Figure 4) (1):

How: Basic Principles?

Some basic principles for assessments are well known, but inconsistently applied:

- do no harm (do not collect data that hurt the respondent or enumerator)
- prioritise (collect only the data that you need)
- adjust to time frame (see Figure 4 above)
- triangulate (collect data from different sources: compare them, distinguishing differences due to different methods from differences due to trends over time and place)
- be aware of how data are presented to the population (to empower, not panic)
- plan (careful planning of what data are needed as well as logistical planning)
- coordinate (do not duplicate what others are collecting)

Figure 4. Phases of Data Collection, Analysis and Planning, following a Major, Sudden Onset Crisis



Adapted from the WHO's *Health Cluster Guide* (1)

Additionally, as ACAPS suggests:

- “know what you need to know – be clear on your information requirements and what your decision-maker needs to know.
- ‘make sense, not data’ (use existing data before collecting more)
- ‘be approximately right rather than precisely wrong’ (avoid unjustified precision)

Or, as Gilbert Burnham suggests:

- public health is about making decisions on incomplete information. Short-cuts and simplified ways of reaching useful data may need to be applied.

We emphasize on collecting baseline data, including those available from the internet, and this is for a reason. Local data are often of poor quality and difficult to access, and even more difficult and dangerous to collect de novo. For example, on average, about 1/3 of births, and 2/3 of deaths are not adequately registered.

However, there is an upsurge in high quality big-data available on the internet. Such data are usually based on local sources, but have been analyzed and interpreted according to standard procedures, are easily available, and sometimes less politically sensitive than local sources. We emphasize ‘high quality’ sources - as is always the case for data, it is important to carefully choose the source, e.g. the UN and the CIA World Factbook may not be equally acceptable as a source, even if the data they present are the same.

There is also rapidly increasing use of the internet in primary data collection, e.g. through mobile phones.

What/How: Demography

Priority humanitarian operational action as outlined above includes such relief actions as providing tents for each household, measles vaccinations for children aged under 5/under 15, age-appropriate food distribution, or providing birthing kits for pregnant women. For each of these, it is important to know the demographic composition of the population. Such data are also needed as a denominator for other rates, e.g. mortality. To determine that composition pre-crisis, ‘standard populations’ are widely used, e.g. in the Sphere Handbook (11, 13).

However, country demographic profiles may vary greatly. To give an indication of the range, see Table 1 for five country profiles, 2010-15 (21, 37).

Table 1. Demographic Profiles of Five Countries, 2010-2015

	Japan	Brazil	Niger	Afghanistan	Iran
Population, Million	126	200	20	32	79
Total Fertility Rate	1.4	1.8	7.5	5	1.9
Crude Birth Rate, %	0.8	1.5	5	3.4	1.9
Crude Death Rate, %	1	0.7	1.3	0.8	0.5
Under 5 Mort/1000	3	24	127	92	22
Mat. Mort. Ratio /100,000 live births	5	56	590	400	23
Children <5, % (aged 0-4)	4	7.5	22	15	9
Women of Rep Age, % (15-49)	21	27	20	23	28
'Older' people, % (60+)	33	12	4	4	9

As a pre-crisis rule of thumb or 'mind map', CBRs are usually in the range of 1% for HICs, 2% for MICs and 4-5% for LICs. CDRs are more uniform, around 1% ($\pm .5\%$). The percentage of children under 5 is generally approximately 5 times the CBR (e.g. $5 \times 1.5\% = 7.5\%$ for Brazil). Mortality rates are almost uniformly higher for males than for females, especially in the age group 0-4, and the proportion of women of reproductive age is 25% ($\pm 5\%$)

There is little reason to use regional averages as can be seen from Table 1 above, the demographic profiles of Afghanistan and Iran, two neighbouring countries, are quite different.

When a crisis occurs, these rules of thumb can be refined within minutes by producing a country specific demographic profile from web-based data as given above. As humanitarian action moves into primary data collection, it may be sufficient to use an approximation of, say, 20% of children aged 0-4, rather than doing a large-scale survey which arrives at 18.45%, but which may miss many respondents, and which may not account for the fact that they do not have a precise record of their age.

Other short-cuts and triangulation methods may be used to compensate for poor data quality, such as categorizing any person shorter than 105-110 cm as under 5 years of age, or estimating the number of deaths from the number of graves. We give some key methods and data references in the suggested reading (37).

What/How: Epidemiology

As per the above-mentioned principles, before beginning collection of primary data, available secondary data should be assembled. In the first weeks after the crisis, primary **qualitative** data may be useful if collected in a systematic manner, down to the anecdotal level. Primary **quantitative** data should preferably be statistically

significant. Given the great effort involved in collecting primary quantitative data, one should only do so if the other data types are insufficient.

Preparation is crucial. Some practical advice in addition to the principles above:

- think through what data are needed – prepare dummy tables (draft final report);
- pilot questionnaires and interview technique to ensure questions are understood and acceptable. Translate and back translate to ensure wording is accurate;
- enumerators must be well trained – language is key; and
- logistics as well as security considerations are key.

Qualitative methods include:

Health walk: observing market places, clinics, fields, pharmacies, observing who is visiting, what prices are, whether markets are selling relief goods, what the general atmosphere seems to be. Can be done according to a systematic questionnaire.

Focus group discussions: ensure key populations who have specific needs and might otherwise not be heard are included (e.g. women).

In-depth interview with key informants: these may include religious/community leaders, health staff, clients, private pharmacy owners etc.

Rumour management: collecting and sifting through rumours is a recognized component of epidemiological intelligence. You may (carefully) establish it as part of your health information system, e.g. asking health personnel and others to report 'cases of acute, watery diarrhoea' (suspect cholera).

Quantitative methods, based on sampling (ideally statistically significant) are usually based on a statistical analysis of what the necessary sample size should be and the households (individuals) are chosen thereafter depending on the situation according to the following methods (55, 56):

Convenience sampling: picking out whatever sample you find possible. This is better than nothing, but unlikely to be representative.

Purposive sampling: picking respondents from each of the groups which you find most significant, often outliers, e.g. the poorest group, orphans etc. Again, not representative but can give important information.

Snowball sampling: interview one person who helps identify the next. Again, not representative.

Simple random sampling: you know the population size and household location (e.g. address, registry) and can select households randomly. Rarely the case in crisis.

Systematic: households are arranged in an orderly manner, e.g. tents in a line or street numbers, and you know you need, e.g., a 10% sample. Then you pick the first household randomly (e.g. a number 1-10), and thereafter interview every 10th household.

Multistage cluster sampling: you know the overall population size, but households are not systematically numbered. Here, you would sub-divide into divisions, and then into clusters, and then randomly identify the needed number of households within each cluster.

Assessments should be ongoing and the above methods may feed into a Health Information System to complement service data from health service points.

Challenges, Dilemmas, Do's and Don'ts

Despite the many guidelines on the importance of sharing and harmonization, one of the biggest issues is that organizations do not exactly do so but instead produce a profusion of uncoordinated reports. There is also criticism that the data collected are not focused on the main issues, e.g. injury after earthquakes (27). One of the reasons mentioned for lack of coordination is that having the data gives visibility for your organization and, therefore, will make it easier to obtain funding. There are some studies of the usefulness of the results of assessments in planning, with some critical findings that agencies do not use the data very well, that initial assessments (which are supposed to be prepared in the first 72 hours) are very late, and that there is overlap (57, 58).

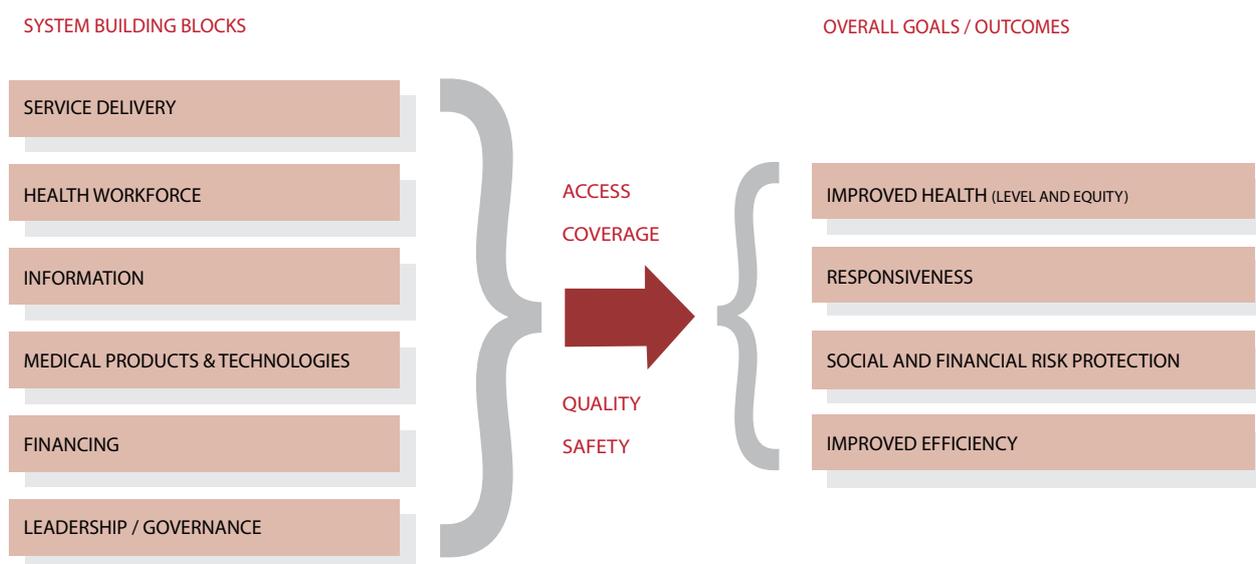
Chapter 7: Health Systems

Going back to the working definition of disasters. The local health system may temporarily be unable to cope, yet the guidance for humanitarian action is that international actors should work with local health systems (and populations) wherever possible.

Baseline Situation

WHO has proposed to approach health systems based on what is called the 6 building blocks (59).

Figure 5. The Six Building Blocks of a Health System: Aims and Desirable Attributes



From WHO's *Everybody's Business* (59)

They are:

Health service delivery: e.g. accessible and acceptable service delivery points, often arranged in a three-tier system. One example of such a system might be that there is one primary service delivery point per 10,000 population, one secondary per 50,000 population, and one tertiary/referral per 250,000 population.

Human resources: the health field is often relatively regulated in terms of qualifications to practice, but in many countries traditional health personnel (e.g. Traditional Birth Attendants - TBAs) are a major source of treatment, even if not recognized.

Drugs and medical supplies: are often, in principle, regulated by essential drugs lists, protocols for prescription, or regulations for disposal of outdated drugs. In many countries private pharmacies are de facto not only the main source of drugs but also the most used health facility.

Health financing: in LICs total health expenditure (THE) may be as low as 20 USD per capita per year, compared to 6,000 USD in a country like the US. Of that THE, populations of LICs pay a higher-than-average proportion out of pocket and in some fragile contexts there is almost no public, tax-financed budget.

Health information management: may include health information systems (e.g. service statistics), surveillance systems, and research.

Leadership and coordination: the regulation of the health field may come from both government, professional organizations and the population.

Emergency Situation

In emergencies, any existing health system may be totally or partially destroyed, including because buildings have collapsed, staff not present (displaced or killed, sometimes targeted) and drug supplies interrupted. The basic guidance is to map the existing health system and to work with it as much as possible avoiding parallel systems and, unless unacceptable, working within local regulations and within legal frameworks. The role of traditional healers as well as private pharmacies should be considered.

Resilience and fragility: Health system performance may be jeopardized when its capacity is swamped. The recent epidemic of ebola in West Africa had an effect on the utilization of other health services, thus attendance at maternity clinics declined. To bridge the gap, mobile clinics were established to reach women unwilling to go to health clinics (60).

Some health systems seem more resilient than others to the effects of disasters. For example, the health system in Sri Lanka seemed to continue functioning after the 2004 tsunami (42).

Finally, the issue of disposal of dead bodies can be an issue for the health system. There are many myths surrounding this, and many sensitivities. We will refer to it, in what may seem an insensitive manner, in the sub-chapter 'waste management' (61).

Challenges, Dilemmas, Do's and Don'ts

How should one engage with the local health system? Will engagement delay or jeopardize the quality of service delivery? If no engagement, what are the costs of building up a parallel system, possibly jeopardizing local trust in the national health system?

How should one engage with local populations? One of the most frequently cited recommendations is to encourage community participation. Yet, it is also one of the least followed (62) with identified reasons being both that it will delay/hamper response, and at times that it may jeopardize neutrality

The recommendation to work with local health systems often poses a dilemma if one wants to maintain high standards and be perceived to be neutral. At times, local standards are of unacceptable technical or ethical level (e.g. discriminatory). On the other hand, parallel systems may cause a drain of human resources from the existing system, and has potential issues of sustainability, lack of competence building and problems of exit strategy. Jealousy may arise if the surrounding population is receiving less relief than the affected population.

Standards are not only an issue for national health systems. Foreign medical assistance staff do not always conform to optimal standards with respect to technical skills, knowledge of medical context or experience working in resource-limited situations. Sometimes too many, and sometimes too few staff are deployed. There have been many attempts to rectify this with core humanitarian standards and most recently the WHO has developed guidelines for foreign medical teams (63). The same is true of medical products – at times drugs have been dispatched that were inappropriate for the local situation, that were past expiration date, or with insufficient instructions (e.g. not in the local language). The WHO inter-agency health kits are one attempt to overcome this challenge.

NEPAL – PLEASE SEND NO MORE DOGS

Two weeks after the April 2015 earthquake, Nepal issued a plea to international organizations to stop sending search and rescue teams. So far, 76 teams, with 2242 staff and 135 trained dogs had arrived, and found 16 bodies in total (64). The Health Ministry also asked that no more international health staff be deployed, since enough are available. Any new staff should be screened by the WHO.

Chapter 8: Communicable Diseases and Outbreak Control

Concepts

In principle, an infectious disease is caused by a pathogen (prion, virus, bacteria, fungus, parasite) and therefore potentially transferable to new individuals, often through contact or close proximity. The transfer may be directly from one individual to another or indirectly through a vector. Usually, contagious refers to any communicable disease which is capable of spreading rapidly. However, conventional use (e.g. in Sphere) is to refer to 'communicable' to cover all these concepts, and will do so here.

Baseline

Overall, deaths due to communicable disease have declined over the last two decades and now constitute 25% of the total (6). Progress has been particularly rapid for children under five, who were historically the group with the highest death rates to CD. Total deaths to children under-five has dropped from 12.4 M in 1990 (U5M 19%) to around 6.3 M in 2013 (U5M 5%) (6). The main killers of children used to be diarrhoeal diseases, measles and pneumonia, with under-nutrition being a contributing factor. All of these have seen great progress in the last few decades, due to increased vaccination, water and sanitation and nutrition. The age group of children with the least progress has been the neonates, where pre-term birth and low birth weight are remaining problems, linked to the more complex issues involved in EmOC.

Pathways to Excess Mortality and Morbidity in Emergencies

Not all emergencies result in outbreaks of communicable diseases but especially in those involving conflict or displaced populations, the risk factors for CDs and starvation may reappear: poor WaSH, insufficient food, uncontrolled vectors, poor housing, crowding and poor access to healthcare. Thus, the diseases mentioned may also reappear: diarrhoeal diseases, measles, acute respiratory infections, as well as malaria (65), with children under 5 at special risk.

Measles

Baseline: measles control has seen great progress, going from about 562,000 deaths in 2000 to 122,000 deaths in 2012. Measles vaccination (at least one dose) during the same period increased from 72% to 84% (66).

Excess risk: measles is often prioritized, both because it is one of the most infectious diseases known (spreading by air-borne droplets), and because displaced persons have higher exposure (crowding), and vulnerability (malnutrition) and lack of coping (vaccination, access to healthcare) mechanisms.

Case definition: clinical: any person in whom a clinician suspects measles infection OR any person with fever AND a maculopapular rash (i.e. non-vesicular) AND cough, coryza (i.e. runny nose or conjunctivitis e.g. red eyes).

Laboratory criteria for diagnosis: presence of measles-specific IgM antibodies.

Management and outbreak control: treatment of individual cases comprise general supportive care and potentially antibiotics for secondary bacterial infections. Both pre-emptively and as outbreak control, vaccination coverage should be kept above 90%, with the target age group being 6 months to 5 years, extending to 15 years if possible. This should include the distribution of vitamin A.

Malaria

Baseline: the global level of malaria deaths was estimated at around 627,000 in 2012, a 42% decline since 2000 attributed to massive scale-up of measures, such as insecticide treated nets (ITN), treatment, e.g. with artemisinin combination therapies (ACTs), and helped by the wide availability of rapid diagnostic kits (200,000 distributed in 2005, 205 million in 2012). 40% of all malaria deaths occur in Nigeria and the Democratic Republic of the Congo (67).

Excess risk: populations moving into endemic areas, poor environmental sanitation. children and pregnant women.

Case definition: uncomplicated malaria (species: *P. falciparum*, malaria, ovale, vivax): 'Persons with fever or history of it within the last forty-eight hours, with or without nausea, vomiting, diarrhea, headache, back pain, chills, myalgia, where other obvious causes of fever have been excluded. Complicated malaria (species: *P. falciparum*): 'Persons with fever and symptoms as for uncomplicated malaria but with associated signs of: disorientation, loss of consciousness, convulsions, severe anaemia, jaundice, hemoglobinuria, spontaneous bleeding, pulmonary oedema, shock.

Laboratory confirmation: rapid test (often widely available) or microscopy.

Management and outbreak control: adequate antimalarial treatment, by mouth or injection according to severity. Transmission reduction: insecticide-treated nets, vector control (environmental sanitation, indoor residual spraying, larviciding.), active case finding in the community.

Cholera and Other Diarrhoeal Diseases

Baseline: the total global deaths due to diarrhoeal diseases has decreased from 2.5 million in 1990 to under 1 million in 2013 (66), attributed both to improved WaSH and better treatment. With [Oral Rehydration Salts \(ORS\)](#) CFR has gone dropped from 50% to 1%. Many pathogens may cause diarrhea, but cholera (*vibrio cholera*) is of special concern in emergencies due to the potential for large outbreaks.

Case definition: (cholera): in a cholera non-endemic area: a patient over 5 who develops severe dehydration or dies from acute watery diarrhoea. In a cholera endemic area: a patient aged 5 years or more who develops

AWD, with or without vomiting. Laboratory confirmation: *Vibrio cholera* 01 or 0139 isolated from patient with diarrhea.

Protocol for treatment: oral rehydration (ORS) or intravenously according to severity. Antibiotics of limited value for cholera, but relevant for bloody diarrhea (dysentery). Recent evidence may indicate a role for oral cholera vaccination in the prevention and management of outbreaks. (68, 69).

Acute Respiratory Infections (ARIs)

Baseline: ARIs cover a spectrum from mild to life-threatening diseases. Many different pathogens. Severe diseases, often bacterial.

Excess risk: one comparative study suggests high excess morbidity and mortality (20-35% proportional mortality) and case-fatality (up to 30-35%) due to ARI in humanitarian settings. Although, comparison with baseline rates is difficult due to differences in definitions (70).

Case Definition: For moderate to severe ARIs: Any case of fever with cough and rapid breathing.

Protocol for treatment: oral or IV antibiotics according to severity. Oxygen provision (scarce resource due to logistical challenges). Rehydration, nutrition. Active case finding and early referral important.

Outbreak Preparedness and Control

Arguably, any emergency should be analysed to determine whether outbreaks are likely, and to evaluate the response capacity of the health system (11, 71).

An outbreak preparedness plan (general or disease-specific) should be developed, be available (e.g. hard copy) and be understood by involved parties. Training should be conducted.

It should contain

- coordination/leadership (who, what roles, when convened)
- case definitions and management protocols
- lists of contacts for reporting, testing – authorities/WHO/reference labs
- stocks of drugs, protective equipment – not necessarily vaccines if cold chain dependent. Kits, eg. diarrheal disease or haemorrhagic fever kits are commonly stocked
- plans for procurement of additional commodities
- plans for isolation facilities
- materials for sampling and shipping of samples (e.g. IATA rules)

Potential outbreaks can be identified by epidemiological surveillance, single-case alerts from health structures or the community or “rumour-checking”. Diseases with epidemic potential (measles, cholera, shigellosis, hemorrhagic fevers) require immediate reporting. (see Sphere p 319 for 10 key steps for outbreak investigation) Epidemiological investigations should include clarification of signs and symptoms (verbal autopsy for deceased persons), relevant sample-taking and shipping to reference lab, investigations of potential exposures and mapping of cases in time and space. Population at risk and potential scale of outbreak should be analysed.

Outbreak control measures generally comprise:

- Isolation and treatment of cases
- Proper management of dead bodies and medical waste
- Transmission/source reduction. Often cross-sectional with focus on WaSH, environmental sanitation, vector control
- Vaccination campaigns where relevant (measles, consider for cholera)
- Health promotion (HP) and community involvement, eg. on general hygiene, disease-specific measures, active/early case finding
- Close epidemiological surveillance (using HIS) to characterize the outbreak and evaluate quality of care (CFR<1% goal in cholera)

Chapter 9: Reproductive Health, HIV/AIDS and SGBV

Concepts

Reproductive health: In 1994, the International Conference on Population and Development agreed on a concept of reproductive health, referring to a state of complete physical, mental and social well being related to the reproductive system throughout the life cycle. It includes the ability to go through pregnancy and deliver a healthy infant, the right to freely decide on the timing, number and spacing of children (including issues related to infertility), eliminating unsafe abortion, prevention and cure of sexually transmitted infections, including HIV/AIDS, as well as health in relation to sexuality. It is sometimes referred to as Sexual and Reproductive Health and Rights (SRHR). Given the sometimes contentious nature of SRHR, this consensus is important.

Maternal Mortality Ratio (MMR): maternal deaths per 100,000 live births.

Neonatal (newborn) deaths: deaths during the first 28 days of life.

Skilled birth attendant (SBA): accredited health professionals trained in midwifery skills. This is contrasted with traditional birth attendants (TBAs): often community members who traditionally help women in child-birth, irrespective of their skills.

Emergency obstetric care (EmOC): life saving health care to prevent maternal and newborn mortality (72).

Contraceptive prevalence: percentage of women aged 15-49, married or in union, who are using any method of contraception.

Unmet need for family planning: proportion of women aged 15-49 years, married or in union, who report not wanting any more children or wanting to delay the birth of their next child for at least two years but are not using any method of contraception.

Total demand for contraception: sum of contraceptive prevalence and unmet need.

Infertility: a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse (also referred to as 'infecundity').

Traditional/modern means of contraception: traditional means include methods such as withdrawal or lactational amenorrhoea, whereas modern means include methods mostly available at clinics or pharmacies, such as sterilization, hormonal methods, intra-uterine devices. All methods have failure rates, but given that modern methods have lower failure rates the term 'effective methods' is often used as a synonym for 'modern'.

HIV/AIDS: human immunodeficiency virus/acquired immune deficiency syndrome. The majority of infections are sexually transmitted.

ART/HAART: anti-retroviral therapy and highly active ART.

STI: sexually transmitted infection. Previously this was often referred to as 'STD' (sexually transmitted disease), but the terminology was changed in recognition of the fact that many cases are asymptomatic, especially in women. **Reproductive tract infections** (RTIs) overlap with STIs but refer to the location rather than the manner of transmission.

SGBV (Sexual and Gender-Based Violence): the acronym and the definition are not universally agreed on, including among UN organizations. Acronyms in current use include GBV (Gender-Based Violence) or VaW (Violence against Women). Some actors object to the term 'gender' as it refers to socially ascribed roles, which they find relativistic. IASC uses the term GBV. We will use SGBV, as being more inclusive. It is taken to involve acts against another person that are based on socially ascribed gender roles, harmful, against that person's will, of a sexual, physical, traditional, socio-economic emotional or psychological nature (73).

Baseline

Maternal/neonatal health: The global number of maternal deaths in 2013 was estimated at 289,000 (66). This represents a reduction by 45% compared to 1990. The levels of maternal mortality demonstrate higher disparities within and among countries than almost any other health indicator, with 99% of deaths occurring in less developed regions.

As a rough estimate, up to 40% of women may develop complications in child birth, and 15% of those may be life threatening. Most estimates are that around 80% of maternal deaths stem from direct obstetric conditions, such as post partum haemorrhage (35%), hypertension/eclampsia (18%), sepsis (8%), abortion and miscarriage (9%). Indirect causes such as malaria, AIDS and heart disease aggravate conditions of pregnancy, and are estimated to cause around 20% of deaths. In addition to fatalities caused by complications, an estimated 10-30 times as many women experience morbidities, including fistula and uterine prolapse. Reproductive health includes the health of the newborn, and estimates are that 2.7 million stillbirths and 2.9 million neonatal deaths occur every year (66).

Up until the mid-1990s, the understanding was that risk factors for complications of child- birth were to a great extent predictable and that TBAs could be trained to provide pregnant women with the necessary care. However, the present understanding is that the direct conditions mentioned above can develop unpredictably and suddenly, and that a response requires a higher level of skills and clinical surroundings than can be provided by TBAs. Basic skilled EmOC is provided by skilled birth attendants who are trained to deal with those complications through so-called signal functions. These include: administering drugs such as oxytocin (to contract the uterus to stop haemorrhage), antibiotics (to counter sepsis), magnesium sulphate (to counter convulsions caused by eclampsia), conducting interventions such as manual removal of the placenta, removal of retained products of conception, assisted vaginal delivery preferably with vacuum extractor (to assist in prolonged labour), as well

as basic neonatal resuscitation care to assist new-born babies. Comprehensive EmOC is typically delivered in hospitals and includes these basic signal functions plus caesarean sections, safe blood transfusion and higher level care for sick or low birth-weight new-borns. Complications can develop quickly (e.g. haemorrhage can result in death in 1-2 hours) and reliable transport and costs are key challenges, causing delays in seeking and obtaining health care.

Contraception: For developing regions, the contraceptive prevalence rate has increased from less than 10% in 1960 to about 63% in 2012. There is much disparity in CPR among and within countries, e.g. in sub-Saharan Africa CPR is at 26%. Method mix also varies significantly, e.g. in Albania most couples use traditional methods, in Uganda injectable hormonal methods, whereas in India sterilization is widely used. International consensus is that approaches should focus on 'unmet need', that is, providing effective contraception to women who do not wish to become pregnant yet and are not using effective methods.

Infertility has received relatively little attention at global level. There are few comparable estimates, but levels for lifetime experience of clinical infertility as defined above are generally around 16-26% (74). This is true in both LICs and HICs, although the proportion of secondary infertility resulting from poor health care (e.g. infections) is higher in LICs (73).

STIs & HIV/AIDS: Globally, WHO estimates an annual incidence of 499 million new cases annually of treatable bacterial and protozoal STIs (syphilis, gonorrhoea, chlamydial genital infections and trichomonosomiasis). In addition, millions are affected by mostly incurable viral infections. New HIV infections peaked at 3.1 million in 1999 and dropped to 2.3 million in 2012. Deaths from AIDS have dropped from the peak of 2.1 million in 2004 to 1.6 million in 2012. Sub-Saharan Africa still has the highest levels for most indicators but has also had the greatest improvement, whereas Eastern Europe is still experiencing rising levels (67). Human Papilloma virus (HPV) is estimated to contribute to around 530,000 cases of cervical cancer every year, which result in 270,000 deaths (6). An infection with one STI increases the risk of becoming infected with another due to higher exposure risk, e.g. skin lesions providing easier transmission, and secretions with high levels of white blood cells. Risk factors for increased incidences of STIs/HIV include unprotected sex with multiple concurrent partners, injecting drug use, lack of infection prevention in health settings, as well as mother to child transmission.

Treatment for AIDs has changed radically over time as drugs and treatment strategies have become more effective and prices lower. Antiretroviral treatment for a year cost approximately 10,000 USD in the 1990s, but since 2000 it is closer to 100 USD. ARVs have contributed to a reduction in transmission, since persons who are HIV positive but receiving drugs transmit HIV at very low levels. Treatment is now also used to prevent HIV transmission after an act of unprotected intercourse or after occupational exposure.

SGBV: Levels of SGBV are notoriously difficult to estimate. Recent global prevalence figures indicate that 35% of women worldwide have experienced either intimate partner violence or non-partner sexual violence in their lifetime. Levels vary widely among countries. Risk factors for being both a perpetrator and a victim include low education, exposure to child maltreatment or witnessing violence in the family, harmful use of alcohol, attitudes accepting violence and gender inequality (6).

Excess mortality/morbidity

For [maternal/neonatal mortality](#), one basic point is not what is different, but what remains the same. At least in the first 9 months after an acute onset emergency women continue to have babies more or less at the same rate as before with similar need for EmOC. For example, in the case of Niger, one could expect a CBR of about 5%. In an affected population of 1 million, there would be an average of 140 births per day, of which 15% would need EmOC, including at least 5% caesarian section. In addition, there may be increases in communicable disease outbreaks, e.g. cholera or hepatitis E, leading to miscarriages and fetal loss; malaria and malnutrition, leading to anaemia, which increases the risk of death from post-partum haemorrhage.

For [STIs and HIV/AIDS](#), there is limited conclusive evidence to indicate an invariable increase in emergencies. However, there are many risk factors, e.g. reduced access to health services, family disruption, or displacement to a region with higher prevalence.

For [SGBV](#) reliable estimates are difficult to obtain, partially because survivors/victims find it difficult or dangerous to report. Some examples include: in Rwanda, between 100,000 and 250,000 women were raped during the three months of genocide in 1994, more than 40,000 in Liberia (1989-2003), up to 60,000 in the former Yugoslavia (1992-1995) (75-77).

Many risk factors for increases in SGBV in disasters, especially complex emergencies, have been identified. Protective societal institutions may be weakened (e.g. police, health care), protection by communities or families may be weakened as people flee, family dynamics may be disrupted leading to more domestic violence, health seeking behaviour may be jeopardized due to fear and stigma and livelihoods may be destroyed leading to increased vulnerability to transactional sex (78).

Existing Approaches and Guidelines

Reproductive health is contentious, in particular the issues of abortion, sexual life and sexual orientation. More than most areas of health, it is closely related to both personal dignity and choice as well as to physical health. Therefore, in humanitarian settings with multiple actors, the approach has been strongly influenced by human rights, with a strong component of both protection and relief. The definition of reproductive health, as mentioned above, was adopted by consensus in 1994 by all 179 attending states. As it is based on human rights (e.g. the Convention on the Elimination of Discrimination Against Women from 1979) it is universally applicable, including for refugees, internally displaced persons and others living in humanitarian settings.

The global political community has increasingly focused on addressing the gravity of sexual violence in armed conflict. The United Nations Security Council Resolutions 1325, 1820, 1888 and 1889 on Women, Peace and Security affirm the unique needs, perspectives and contributions of women and girls in conflict settings. For the first time in history, reproductive health has been recognized at the Security Council level, with Resolution 1889 explicitly referencing the need to ensure women and girls access to reproductive health services and reproductive rights to achieve better socioeconomic conditions in post-conflict situations.

SRHR, and in particular GBV, require a multi-sectoral integrated approach. Personnel from sectors such as protection, health, nutrition, WaSH, camp planning, education and community service all have an important role.

Strategic and operational policy: Given their contentious nature, SRHR are relative newcomers to the health services considered essential in emergencies. For example, the issue was not included in the 1997 MSF listing of health priorities. In 1995 an Inter-agency working group (IAWG) with more than 100 members from the UN and NGOs was established, producing a field manual on RH in emergencies for testing in 1996, and a full-fledged version in 1999. An update was produced in 2010 (79). It is not a fully-fledged IASC manual, but remains a version for field review, reflecting its contentious nature, e.g. related to abortion.

Other guidelines have also been developed by IASC, including successive versions of the HIV/AIDS guidelines (80), and GBV guidelines (78).

One of the central operational concepts in the RH Field Manual is that of the **MISP (Minimum Initial Service Package)**. The MISP is intended to be put in place as soon as possible during the first phases of an emergency before an in-depth analysis of the local situation has taken place. It prioritizes the actions needed in order to prevent excess mortality and morbidity in those first months through 5 objectives:

1. ENSURE the health sector/cluster identifies an organization and a RH officer to lead implementation of the MISP.
2. PREVENT AND MANAGE the consequences of sexual violence (e.g. improve security related to WaSH, treat victims)
3. REDUCE HIV transmission Ensure safe blood transfusion practice; facilitate and enforce respect for standard (universal) precautions; make free condoms available
4. PREVENT excess maternal and newborn morbidity and mortality, Ensure availability of basic and comprehensive EmOC, including newborn care services. Establish a referral system to higher level care where needed Provide clean delivery kits to visibly pregnant women when access to a health facility is not possible
5. PLAN for comprehensive RH services, integrated into primary health care (PHC) as the situation permits.

Approaches have changed over time. For example, in the 1990s there was reluctance to provide treatment for AIDS, given cost and complexity in providing continuity of care. As costs decreased and simplicity increased, a 2007 guideline by UNHCR proposed a decision tree which recommended initiating ART treatment where funding for 12 months trained providers with adequate supervision and protocols, assured confidentiality and access by the host population were available (81).

Within the health cluster (headed by WHO), at national level UNFPA, is often responsible for SRHR. Given that RH care is commodity dependent, a set of 13 reproductive health kits have been developed by the IAWG and are managed by UNFPA to support implementation of the MISP. The various kits have supplies for three months and target community and primary health care level (with a population coverage of 10,000), health centres or hospital levels (with a population coverage of 30,000) or referral hospitals (covering a population 150,000). They

are composed on the basis of a demographic/epidemiologic standard population (an average of those given in Chapter 4):

- Adult males 20%
- Women of reproductive age (WRA) 25%
- Crude birth rate 4%
- Complicated abortions/pregnancy 20%
- Vaginal tears/delivery 15%
- Caesarean 20%
- WRA using contraception 15%, of which oral contraception 30%, injectables 65%

The kits can be ordered from UNFPA (82). Menstrual protection or dignity kits are not globally available. They are compiled for each setting, based on a discussion with affected women and girls on menstrual protection practice.

Within the protection cluster, headed by UNHCR, UNFPA is responsible for SGBV. The multi-sectoral, survivor-centred programming approach to prevent and respond to GBV includes: camp design (e.g. placement of latrines), protection systems for women and girls, making available medical services (+emergency contraception, STI and HIV prevention) and psychosocial support for survivors, informing the community of available services.

Challenges, Dilemmas, Do's and Don'ts

SRHR remains a sensitive issue. The experience is that local authorities may not be aware of the level of international agreements that do exist and, therefore, humanitarian workers should familiarize themselves with global and national policies and instruments. Other lessons from implementation of the MISP include:

- Appointment of a strong, respected coordinator is essential, with clear division of roles.
- Contraception is important – people use methods during an emergency if available.
- Where legal, safe abortion care should be available (abortion is only completely illegal in about 6 countries (73)).
- Syndromic diagnosis and treatment of STIs should be applied. That is, a protocol is established for patients presenting with clinical symptoms and signs for an STI and treatment is provided without laboratory testing.
- Ensure that culturally appropriate menstrual protection materials (usually packed with other toiletries in “hygiene kits”) are distributed to women and girls.

Recent reviews of MISP implementation note increased awareness of the MISP, but also continuing logistical issues and delays in moving toward comprehensive RH programming (73, 83, 84). Global policies such as Resolution 1325 provide an important step, but have been criticized for securitizing/victimizing women rather than empowering them.

Chapter 10: Non-Communicable Diseases (NCDs)

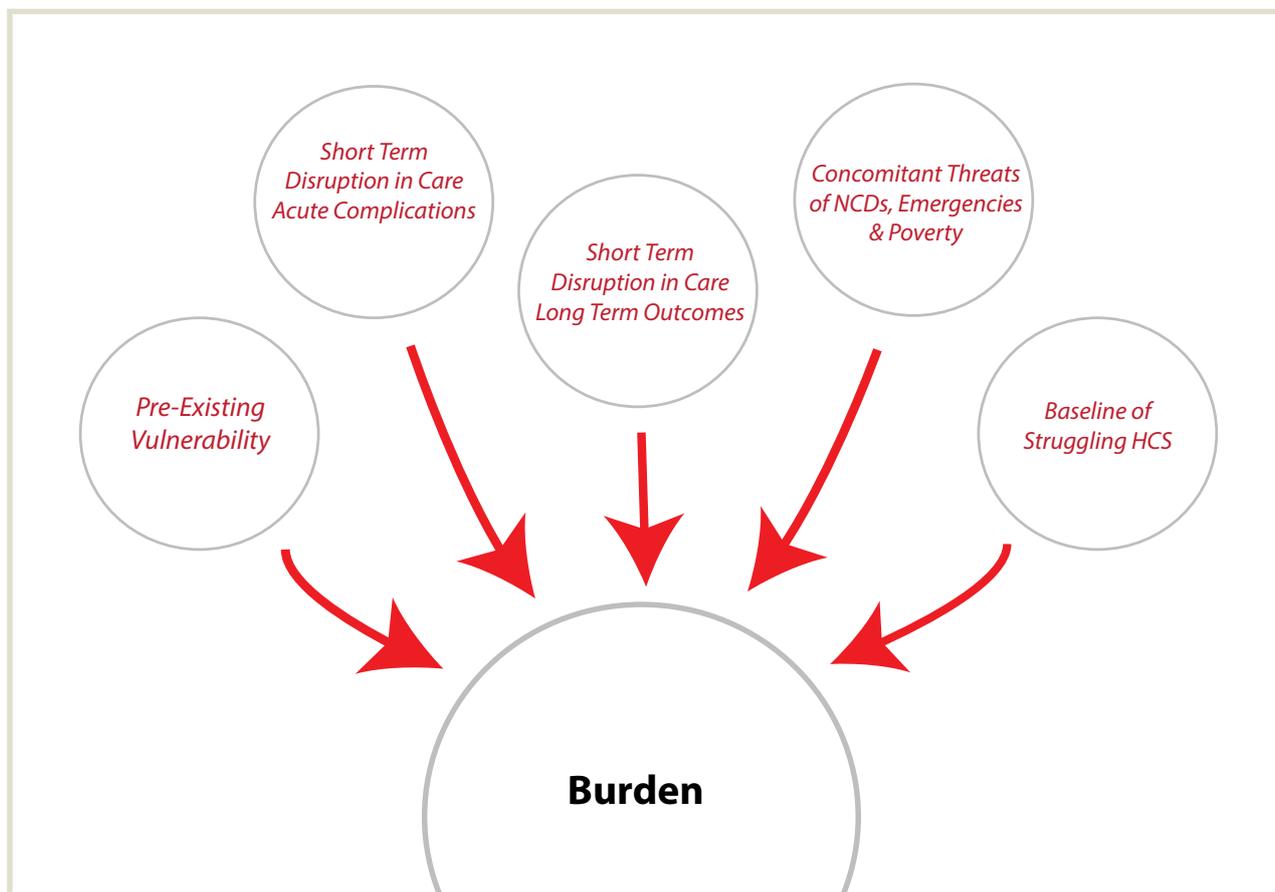
Concepts:

Non-communicable Diseases (NCDs) include a wide range of illnesses, but here we will refer particularly to the 'Big 4' NCDs which are the focus of global consensus documents such as WHO's NCD strategies. These 4 are cardiovascular diseases, diabetes, cancers and chronic respiratory diseases. One reason they are grouped is that they share four risk factors - tobacco use, physical inactivity, unhealthy diets and the harmful use of alcohol.

Baseline mortality: As mentioned in the introductory chapter, major transitions in demography (ageing and urbanizing populations) and in epidemiology (improved control of communicable diseases, maternal, perinatal and nutritional disorders) as well as a globalization of food systems have resulted in a global transition in the burden of disease. Today, 65% of deaths are caused by NCDs, and this shift has occurred globally, first in HICs and now accelerating in L/MICs (66). Therefore, the baseline situation in any population where a crisis occurs is different from what it would have been a few decades ago. As many recent disasters and population movements occur in Middle Income countries rather than Low Income Countries, the shift to NCDs becomes more prominent.

Excess mortality: Several pathways to excess mortality in emergencies have been identified. Persons with an NCD such as heart disease may be more exposed to a crisis (e.g. if they have mobility problems), they may be more vulnerable to its effects (e.g. persons with diabetes may be at risk for injury developing into gangrene), or less able to cope (e.g. because their medication is interrupted due to the crisis). Conditions in post disaster situations may include more exposure to risk factors (e.g. tobacco or alcohol marketing in displaced populations), or longer term consequences due to lack of treatment for communicable diseases (e.g. untreated streptococcus infections leading to heart disease), malnutrition or nutritional treatment for malnutrition (e.g. rapid nutritional rehabilitation with high calorie nutritional supplements has been identified as a possible risk for longer term diabetes). Maternal malnutrition may contribute to low birth weight babies, which again is a risk factor for later diabetes and heart disease (15, 85).

Figure 6. Pathways to Excess Mortality in Emergencies



General approaches: NCDs generally received limited attention until the last decade, but that is changing. A few examples, there is a WHO strategy from 2008, a UN General Assembly High Level meeting in 2012, a WHO Global Action Plan 2013-2020, and operational guidelines such as the WHO package for essential non-communicable disease interventions in primary health care in resource-poor settings (86). While the Millennium Development Goals (MDGs) make no mention of NCDs or their risk factors, the present version of the Sustainable Development Goals (SDGs) do at some length.

Approach in emergencies: The response in emergency situations is less advanced. Reasons given are that until recently the burden of disease in the baseline situation did not indicate NCDs as a priority, that NCDs usually do not cause the rapid increase in mortality which could be expected from e.g. cholera or measles, and, since NCDs are generally chronic, this presents dilemmas for treatment, as continuity of care is jeopardized for logistical and cost reasons.

The interagency emergency health kit, 2011 version does not include drugs related to NCDs, such as insulin (87), and there is no IASC guideline on NCDs. There is a draft WHO guideline from 2008 but it has not yet been made available officially. Guidelines such as Sphere include only one or two references with the suggestion to ensure continuation of drug treatment.

However, there is increasing attention to the fact that a more concerted approach needs to be found (88). There is also attention to the very real dilemmas related, for instance, to prioritization of cost (89). There is focus on the inter-action with other priority areas, e.g. disability and ageing populations, where IASC guidelines do exist. The typhoon Haiyan in the Philippines, and the long-term conflict in Syria have begun to draw attention to the issue. Both populations had relatively good health care and a relatively high median age, so the baseline situation was one where a large proportion of people were already under treatment for NCDs. According to a Health Access and Utilisation Survey published by UNHCR in October 2014, approximately 15% of Syrian refugees aged 18 years or older had at least one chronic condition and seeking medical care was one reason cited for refugees returning to Syria, and this trend is confirmed by MSF studies (90).

Challenges, Dilemmas, Do's and Don'ts

The attention to NCDs in emergencies is still recent, and most challenges are still ahead. There is little high-quality evidence on the epidemiology beyond a few small-scale examples of a high demand for clinical services. There is no clear agreed strategic or operational guideline, albeit a recommendation to avoid interruption of medication. There is little to support operational response in terms of commodities or funding. There are also major logistical and cost challenges. Some authors suggest to use an approach integrated with other treatment of chronic diseases to maintain continuity of care throughout the disaster cycle, using some of the same decision trees as for other chronic diseases, e.g. AIDS. The importance of treating the surrounding or host population as well as those affected by disaster has also been noted as a criterion, but this poses ethical dilemmas for which there is no consensus as yet. WHO has established a framework of evidence-based 'best buys'. These are cost-effective and easily implemented individual and population-based interventions designed to reduce the risk factors and overall burden of NCDs, and might be adapted for emergencies. However, there is still need for further discussion on where humanitarian mandates end (91). The Sendai Framework notably refers to chronic disease (para 30(k)) so this may change.

Chapter 11: Mental Health and Psycho-Social Support

Concepts

Mental health and psycho-social support (MHPSS) include specialized approaches needed to address mental health as well as more basic support.

As mentioned above, the metric of Disability-Adjusted Life Years (DALYs) (6) captures not only fatalities but years lived with disease. One of the most important effects of introducing the metric was that it drew attention to mental health, which does not necessarily kill but causes major disability.

Baseline

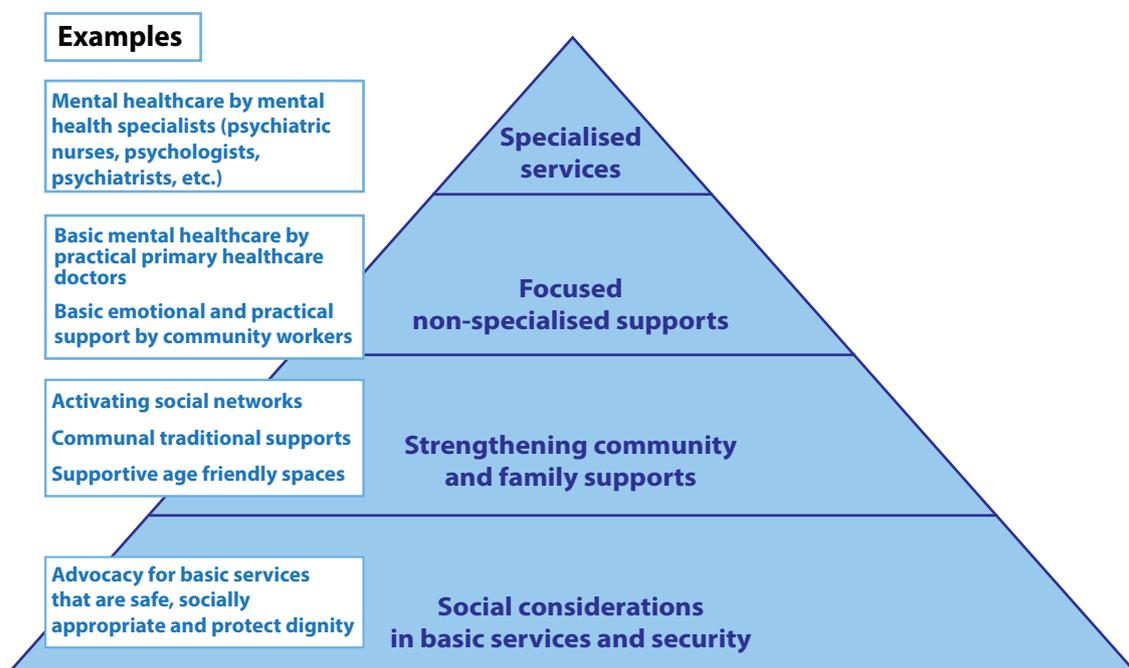
In 2010, mental and substance use disorders accounted for 7.4% of all DALYs worldwide, and were the leading cause of YLDs worldwide. Out of this, depressive disorders accounted for 40.5%, anxiety disorders 14.6%, illicit drug use disorders 10.9%, alcohol use disorders 9.6%, schizophrenia 7.4%, bipolar disorder 7.0%, pervasive developmental disorders 4.2%, childhood behavioural disorders 3.4%, and eating disorders 1.2%. The burden of disorders increased by 37.6% between 1990 and 2010, mostly driven by population growth and ageing. Although few deaths are attributed directly to such disorders (with the exception of self-harm) the disorders pose a significant challenge (92). An additional disorder not included in the above would be dementia.

Excess Mortality and Morbidity

The complete disruption of 'normalcy' in a disaster can be expected to cause excess mortality and morbidity (93). As one example, there were high rates of probable PTSD (7.5%) and major depression (9.7%) among directly affected Manhattan residents one month after the September 11 attacks (94). Given that mental ill health in emergencies may, to a large part, be normal and reversible reactions to external events, various measures have been developed to assess the situation, e.g. the simplified distress scale, which focusses on stress rather than disorder, and uses a number of additive components:

- Events
- Disruption of daily functioning
- Reactions (e.g. confusion, worry, fear)
- Symptoms (95)

Figure 7. Intervention Pyramid for MHPSS



Source: Interagency Steering Committee Freelance Group on Mental Health and Psychosocial Support, 2010

General approach: the Global Burden of disease study brought increased attention to mental health. Yet, in L/MICs health systems devote a very low percentage of their already limited financial resources to MHPSS. In emergencies, the 1990s saw a growing focus on psychological first aid. The tsunami in 2004 as well as other events drew further attention. Yet there remained a wide variety of approaches, ranging from the more bio-medical to social support in returning to normalcy. Thus, it is seen as an achievement that IASC guidelines were produced in 2007, ‘providing a coherent framework for the diverse approaches’. The guidelines give some rules of thumb of the severity of problems, as well as the type of assistance needed, in the form of an ‘intervention pyramid’, which has since been further developed (95).

The intervention pyramid is built on a model developed by Strang, emphasizing factors that promote individual wellbeing and resilience (‘Psychosocial wellbeing model’), going beyond the traditional mortality and morbidity focus of disasters, and highlighting the relationship between human capacity, social ecology/support system, as well as culture and values of the population at hand (96).

It also builds on five evidence based principles in MHPSS interventions identified by Hobfall et al., further supporting the wellbeing model and suggests areas for intervention in the immediate and mid-term phases of a post traumatic event: 1. Promote Safety, 2. Promote Calming, 3. Promote Self- and Collective-Efficacy, 4. Promote connectedness, and 5. Promote hope (97).

Various rules of thumb estimate that around 10% of the population may have pre-existing conditions that need clinical care, 20-40% have been exposed to aggravated situations (e.g. lack of protection/violence) and need paraprofessional care, and 50-70% may be temporarily affected and in need of community/family support but return to normalcy once some basic needs are in place (98).

These guidelines have been followed up with an assessment guideline in 2010. MHPSS is increasingly seen as a standard part of emergency response, e.g. 'emergency response units' of the IFRC in Haiti in 2010.

Challenges, Dilemmas, Do's and Don'ts

Wessels et al. (2009), identified many issues with MHPSS approaches to date, and widespread violations of the 'do no harm' imperative in emergency contexts. Prominent issues include contextual insensitivity to issues such as security, humanitarian coordination, and the inappropriate use of various methods; the use of an individualistic (Western) orientation that does not necessarily fit the context and culture; an excessive focus on deficits and victimhood that can undermine empowerment and resilience; the use of unsustainable, short-term approaches that breed dependency, create poorly trained psychosocial workers, and lack appropriate emphasis on prevention; and the general imposition of outsider approaches (99).

A 2014 review of the guidelines credited them with assisting in an overall improvement on the quality of MHPSS response. However, many challenges remain, including interagency competition, lack of coordination, and imbalanced funding issues between the more clinical approaches positioned at the top level of the IASC pyramid, and generally supported by WHO and medical organisations, and the more community and social based interventions, often supported by organisations such as UNICEF/UNHCR. There is also a remaining problem that external funding at times establishes systems that are not sustainable (100).

Chapter 12: Injury

Concepts

Multiple casualty event: an incident where the number of casualties overextends but does not overwhelm the health system. The priority is to treat the most life-threatening cases.

Mass casualty event: an incident where the number of casualties overwhelm the health system. The priority is to treat cases with the greatest chance of survival.

Triage: the process of categorizing patients according to the severity of their injuries/illness, prioritising treatment by availability of resources and the patient's chances of survival.

Penetrating trauma or blunt trauma: the former involves that the skin has been penetrated, the latter that it has not.

First aid medical care for injury: non-operative functions that can be done prior to possible transfer to referral centre for more advanced functions, e.g. advanced surgery.

Baseline Morbidity and Mortality

The global burden of disease to injury (group 3 diseases) is about 10% of all deaths. This includes **accidental** (3-4 million a year) as well as **intentional**, where intentional includes self-harm (about 1 million) interpersonal (about half a million) and collective violence (on average about 200 000 a year). Exposure to the forces of nature account for another average of around 100 000 over the last decade.

Whereas group 1 (communicable disease, nutritional conditions and perinatal deaths as well as maternal condition) affect children under 5 disproportionately, and group 2 (NCDs) affect persons over 45 disproportionately, injury affects young adults, especially young males, for whom they are the leading cause of death and injury. The proportional mortality has increased modestly over the last decades, especially mortality due to transport accidents. With increasing urbanization and motorization this is likely to continue, young males are the demographic group that has experienced the least improvement in mortality over the past decades, and this is partially due to limited progress in addressing injury.

The main immediate causes of death due to injury are central nervous system injury and substantial blood loss.

Excess Mortality and Morbidity – Levels and Pathways

The level and type of injury varies by the type and phase of the emergency concerned. In rapid-onset natural disasters such as earthquakes, fractures and crush syndrome are frequent. **Crush syndrome** occurs when muscle tissue is crushed, and subsequently the body attempts to rid itself of the waste products, flooding the kidney and causing renal failure. In droughts and heat waves, heat exhaustion and stroke contribute to excess mortality. Fatal hypothermia can be caused both by low temperatures and exposure to water. Volcanoes cause both burns and problems related to inhalation of fumes. In conflict and post-conflict situations, mines and unexploded ordnance can cause both penetrating and blunt injury. This distinction is important with respect to the risk of infection. The time factor is particularly important for injury: what is sometimes referred to as the 'golden hour' captures the fact that central nervous system or respiratory failure may happen within minutes, and massive bleeding within hours.

Approaches for Response

There is no single approach to the response to injury in emergency, although several organizations have developed guidelines, e.g. WHO (101).

As for other essential health services, in a rapidly changing and overwhelming emergency situation, continuing assessment of the seriousness of the situation and the capability to respond are crucial. Continuous assessment involves deciding: is the condition life or limb threatening? Is it salvageable? Are resources and time available? Should and could it be referred?

Some assessment and triage tools include that of Advance Trauma Life Support (ATLS), which builds on the main risk factors mentioned above. It is used to prioritize action for an individual patient or patient population by following the ABCDE steps:

- A: airway – if airways are blocked, remove the obstruction (e.g. suction, tube)
- B: breathing – if breathing not regular, use ventilation, a tube, oxygen
- C: circulation – if there is no pulse, or massive bleeding, compress to control bleeding, use a tourniquet, provide IV fluids to restore
- D: disability - immobilize to prevent injury (splint)
- E: exposure - ensure the patient is protected from hot/cold (blankets)

Throughout, treat wounds, provide tetanus vaccination if not already vaccinated, provide pain killer.

In situations with mass casualties, a system of prioritization will often include categorization of patients:

- T1 Red** (serious, treatable)
- T2 Yellow** (less serious, can wait)
- T3 Green** (not serious, must wait)
- T4 Black** (life threatening but not salvageable)

Challenges, Dilemmas, Do's and Don'ts

Surgical teams may be geared to treating combat injury. However, in many emergencies the proportion of injury due to violence, or as a direct result of a natural disaster, may be limited, with one study estimating 22% of injury as due to violence. Non-intentional injury (e.g. traffic accidents, obstetric) may increase, and civilians not related to combat may account for the majority of cases. Thus, surgical teams must adapt their priorities accordingly (102). Prioritisation is hampered by extremely poor data, e.g. because assessments do not classify injury (27).

Chapter 13: Nutrition

Concepts

Malnutrition: can be either over-nutrition or under-nutrition. Under-nutrition can be lack of micronutrients (vitamins and minerals, especially Vitamin A and Zinc) or lack of macronutrients (protein, carbohydrates, fats). Extreme malnutrition can lead to marasmus (extreme thinness, especially in children under 18 months, and kwashiorkor (with two sided oedema especially in children over 18 months).

Stunting/wasting: stunting refers to low height for age (usually the result of chronic malnutrition) whereas wasting refers to low weight for height.

Z-score: standard deviation – if your nutritional Z-score is 0, it means that you are at the same level as the mean. If it is -1, it means that you are 1 standard deviation below the mean, for example, your weight for height is in the lowest 5%. A Z-score of -2 is that you are in the lowest 1% and a Z score of -3 is that you are in the lowest 1/1000 of the population.

SAM: severe acute malnutrition – Z-score for weight-for-height is below -3.

MAM: moderate acute malnutrition – Z-score for weight-for-height is below -2.

MUAC: mid-upper-arm-circumference. The MUAC measure is a long strip with a series of colour bands. It is used to screen children with various nutritional levels, to help detect the seriousness of their condition and thereby help to indicate treatment. It is based on the finding that the circumference is rather stable across the ages 6-59 months (and therefore can be applied without knowing exact age). Green (>125 mm) indicates normal, yellow (115-125 mm) indicates moderate malnutrition, red (<115 mm) indicates severe malnutrition and risk of death. For example, the 115 mm cut-off point is an indicator of marasmus, and a need for special feeding (BP100, plumpynut).

BMI: weight (in kg)/height (in metres) ² – a value less than 18.5 is considered underweight, whereas over 25 it is overweight, and over 30 it is obese. Mostly used for adults.

Figure 8. Mid Upper Arm Circumference Measuring Tape

MUAC - MID-UPPER ARM CIRCUMFERENCE

We use the MUAC band to identify the level to which a child under five years of age is malnourished before proceeding with a treatment plan.

HOW TO USE THE MUAC BAND

The band is wrapped around the child's mid-upper arm to measure the circumference.

There are four coloured zones, starting at **green** (normal) and moving up to **red** (severe malnutrition).

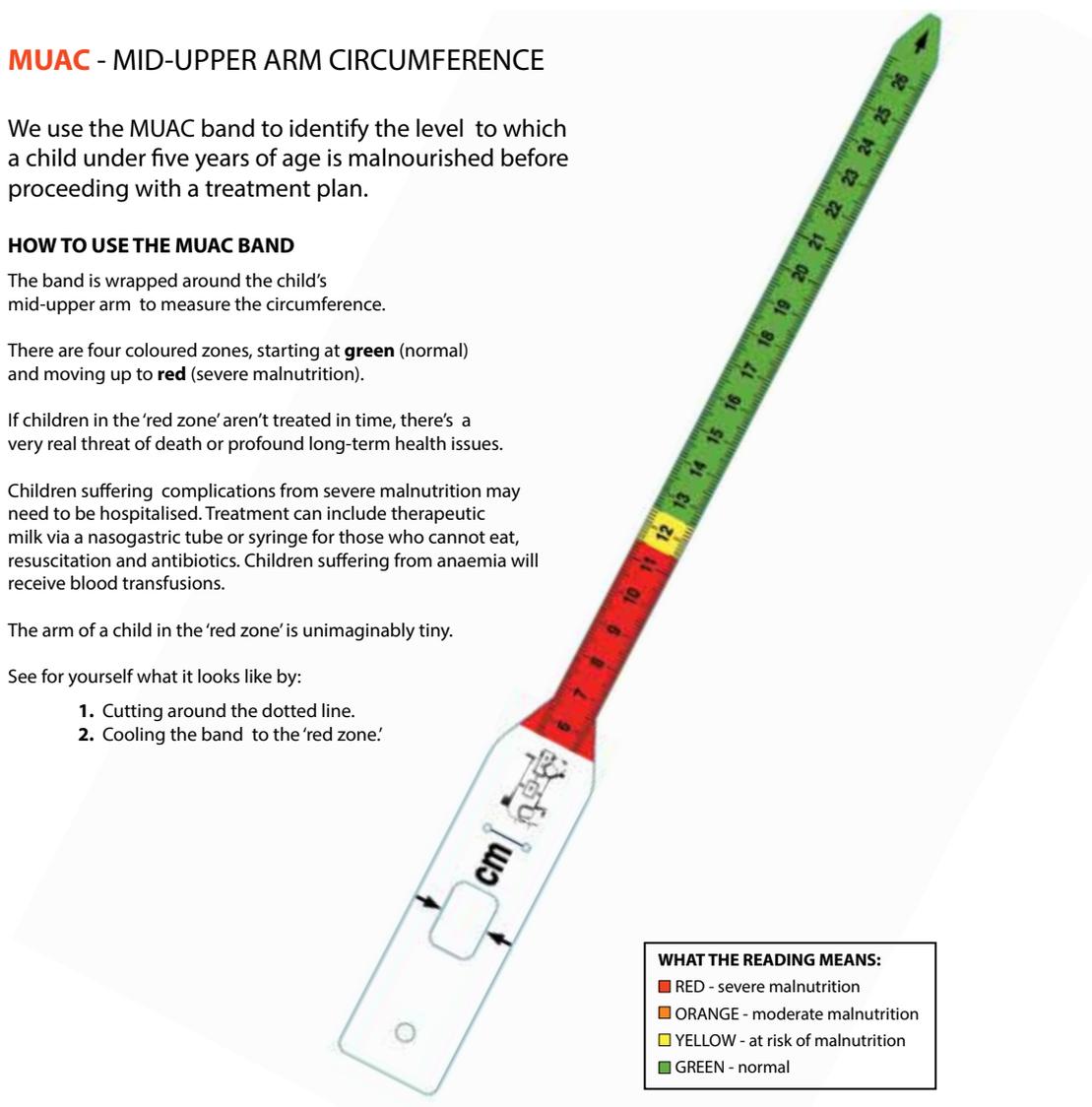
If children in the 'red zone' aren't treated in time, there's a very real threat of death or profound long-term health issues.

Children suffering complications from severe malnutrition may need to be hospitalised. Treatment can include therapeutic milk via a nasogastric tube or syringe for those who cannot eat, resuscitation and antibiotics. Children suffering from anaemia will receive blood transfusions.

The arm of a child in the 'red zone' is unimaginably tiny.

See for yourself what it looks like by:

1. Cutting around the dotted line.
2. Cooling the band to the 'red zone.'



From UNICEF, www.unicef.org

Baseline levels

Malnutrition is increasingly recognized as a contributor to disease. Historically, starvation killed a large number of people outright. Today, death to starvation is rare. The proportion of children under 5 who are stunted was estimated at a quarter in 2012, down from 40% in 1990, with the highest rates in South Asia. Despite this improvement, under-nutrition is estimated to be a contributing factor to close to 50% of all child deaths (67). It reduces the resilience and immune defense of the child and increases CFR for CDs such as measles, as well as contributing to impaired mental development. The focus is on young children since most growth is in the first 3 years of life.

Over-nutrition and overweight are also increasing due to some of the transitions (especially urbanisation) mentioned in Chapter 3. This affects both children and adults. There is great disparity among different populations. Thus, in Syria in 2012, around 40% of females aged 20+ were estimated to be obese, whereas this was the case for only 3.5% of females aged 20+ in Japan (6). This is significant since obesity is a risk factor for many NCDs.

Pathways to Excess Mortality and Morbidity in Emergencies

In emergencies, food production and general livelihoods may be destroyed, caregivers may be under increased levels of stress and consequently may be unable to care for children, and health systems may be destroyed, all of which increase the risk of malnutrition. Especially in displaced populations, there may be an increased risk of the negative effect of other nutritional factors, including increasing use of unhealthy food and reduced exercise, which may lead to obesity. There is little research on this aspect.

One of the important interactions is between maternal starvation and child health. There is robust evidence that a pregnant woman who is very undernourished may give birth to low-birth-weight babies, which may result in an elevated risk of that child to a variety of NCDs (diabetes, heart disease) later on in life. There is also some evidence that their own children are low-birth-weight, in other words a transgenerational epigenetic effect. However this finding is less robust (103, 104).

Existing Approaches and Guidelines for Response

Nutrition is an area of humanitarian action which has seen great advances in the last decades. Both, ways to monitor levels and screen patients and feeding programmes and products, have undergone great changes (105).

The recommendation to prevent malnutrition is for exclusive breast-feeding of infants until they are 6 months, and partial until they are 2 years. The estimate is that this in itself it would prevent around 20% of child deaths, mostly those due to pneumonia or diarrhoeal disease. Feeding programmes will usually aim at providing 2,100 kCal per adult, in general, with 10% protein and 17% fat, but with precise composition determined by age and situation. Aggravating circumstances include cold weather (under 10°C), poor health conditions (a situation where CMR is > 1/10,000), as well as individual factors such as pregnancy.

For treatment, the focus is on SAM and MAM rather than micro nutrient deficiencies or stunting, since they are most likely to develop as a result of an emergency, are most easily identified, can cause the most excess mortality and can be relatively easily treated.

Rapid assessment is extremely important, even if often conducted under difficult conditions, where simplified methods of screening are necessary. For both SAM and MAM, patients are identified by MUAC screening, weight/height measurement to determine Z-score, observations for possible oedema. The same is true for adults

(using the BMI measurement). For children with SAM (Z-scores >3) they will need treatment in a health care facility. Special feeding products have been developed, such as plumpy'nut or BP100. For MAM, feeding can usually be achieved at the home or community level, and includes training of caregivers.

Photo 1. Plumpy'nut and BP-100 packages



Challenges, Dilemmas, Do's and Don'ts

Supplemental feeding programmes have had great positive effects, but there is also some evidence that rapid recovery from malnutrition may lead to adverse health effects in later life, e.g. NCDs.

Chapter 14: Water Supply

Concepts

The key concept to capture with regard to water supply is the “Water Safety Chain” which focuses attention on the need to protect and possibly treat water from the source all the way to the point of consumption or point of use. The following outlines the different stages in water supply provision to ensure that beneficiaries are enabled to have access to safe water in sufficient quantities.

Water Sources and Demand

Water essentially comes from 4 different sources:

1. Surface water (rivers, lakes and ponds)
2. Ground water (wells, boreholes, tubewells, springs)
3. Rainwater
4. Sea water (which can be desalinated)

Daily demand for water varies among the regions of the world, populations and cultures but need is determined by the variety of uses people have for water, some of which is outside the home. Domestic water need generally refers to water for the purposes of 1. Drinking, 2. Washing (of cooking utensils, clothes and personal) and 3. Cooking. The Sphere Project Handbook’s standard for water for these purposes is 15 litres per person per day as an absolute minimum. Daily demand in Ireland for domestic water is 150 litres per person per day illustrating how varied demand can be.

Beyond domestic needs water has a multitude of uses, including but not limited to water for construction (mud blocks for example), drinking water for animals (a cow may drink up to 40 litres of water in a day), water for irrigation of crops including vegetables, water for religious purposes (needed before praying), water for excreta management (water is needed to flush many types of toilets) plus the added demand for water at institutions such as schools, hospitals, cholera treatment centres, administrative centres etc.

In humanitarian contexts where the affected population engage in crop production the demand for water can be up to 70 times the water needed for domestic purposes and, therefore, those planning water supply need to take account of the varying demand for water for different purposes which may also fluctuate over the seasons. Management of water calls for what is termed Integrated Water Resources Management (IWRM) where household water demand is just one part of the entire equation.

Source Selection, Advantages, Disadvantages

Choosing water sources to utilise in a humanitarian situation will depend on a number of key criteria that include but is not limited to:

1. The number of people in need of water and their culture
2. The uses of water needed and the quality of water needed for each use (water for consumption will need to be of the highest quality but water for bathing could be of a lower quality)
3. The standards to be applied suited to the context, which may be a different national standard to Sphere
4. The phase of the emergency you are in, as development of groundwater sources may take time
5. Construction issues surrounding finance, human resources and material resources needed to develop a source
6. Operation and Maintenance issues to sustain a particular source; and
7. Environmental sustainability of the source.

Each source has certain advantages and disadvantages. Surface water sources tend to be easy to access and it is often easier to quantify the amount of water available. However, surface water sources are easily contaminated and the water will need treatment. Groundwater sources tend to provide water of a high quality (microbiological quality at least) but are often more difficult to access. Rainwater provides water of a good quality if collected in a clean manner but may not be available all year round.

Construction and Protection of Sources

Most surface water sources are not constructed as they are naturally occurring rivers or lakes but in some cases such sources are constructed. Constructed ponds are a common feature in Cambodia and in parts of Eritrea microdams have been constructed to capture and retain rainwater as an adaptation measure in response to climate change. As with any source, protecting the source from contamination is paramount and surface water sources can be protected by keeping concentrations of people away from the source, fencing to prevent human and animal access plus the provision of platforms to enable people access water without entering and potentially transmitting schistosomiasis and guinea worm.

Groundwater sources such as wells are either dug or drilled. "Shallow wells" of less than 10 metres can easily be dug but beyond that depth tend to be drilled and may extend to depths of 45 - 60 metres and sometimes beyond 100 metres. Springs can be developed by the construction of a spring protection box.

Shallow wells often have open access where people use a rope and bucket to collect their water. However, such wells can be protected through a series of progressive steps ultimately leading to the fitting of a handpump.

Sustainability of Supply

Part of the sustainability question is dealt with under environmental sustainability but one of the biggest challenges with respect to water supply in later phases of an emergency and in recovery is the sustainability of operation and maintenance through community participation. Some of the issues that need to be addressed

under this question are the level of community contribution expected, including financial contributions, the choice of technology, the availability of spare parts, skilled pump mechanics to repair non-functioning handpumps for example and the role of Government in monitoring and technical support.

Water Transport, Storage and Distribution

The stages in a water supply system include:

1. Abstraction and transmission
2. Storage
3. Treatment
4. Distribution (107)

The chain of supply may not follow the stages in this order, with treatment, for example, sometimes taking place before storage (at the household level for example) but whatever chain is followed the ultimate aim is to ensure that the available water is fit for human consumption.

Water is transported to an affected population in one of two ways, either by trucking or through a pipeline, if not directly accessed from a source by those affected. Pipes can be of various types and sizes and may extend for several kilometres depending on the distance from the source to the people being served.

If people are accessing water from a source directly they may collect and transport water in a variety of containers made from different materials and of various sizes. Standard “jerrycans” used for collection tend to be made of plastic with a capacity of 15-20 litres.

Storage of water for supply to a community can be in reservoirs or large storage tanks. Storage tanks vary in size and construction from bladder tanks to the Oxfam tanks which can reach capacities of 95,000 litres.

From storage facilities water is directed to a distribution point or series of distribution points. Often for treated water this is through tapstands (often containing 4-6 taps) with each tap expected to serve 250 people. If water is accessed directly from a well or borehole (fitted with or without a handpump) the ratio can be higher, often one well per 500 people served. Distribution points should, of course, be accessible not only in terms of distance (the Sphere standard is 500 metres) but also time so that people do not spend significant amounts of time queuing for water.

Water Treatment (community and household level) and Testing

In order to render water safe for human consumption it may be necessary to treat it and in general surface water sources need the most amount of treatment to ensure faecal coliforms (see Figure 9) are not present. There are

4 stages to the treatment process and depending on the quality of the raw water accessed up to all stages will need to be followed. They are:

1. Coagulation (using ALUM (Aluminium Sulphate)) and Flocculation
2. Sedimentation
3. Filtration
4. Disinfection

The stages prior to disinfection aim to remove as much organic matter and pathogens from the water prior to disinfection in order to maximise the disinfectant (normally chlorine) applied. In humanitarian contexts the chlorine product procured for disinfection normally comes in granular form and would be known as HTH (High Test Hypochlorite) delivered in concentrations of 55% - 70%. Chlorine can be applied to batches of water as in trucks or can be delivered continuously in water treatment plants. To be effective, the chlorine normally needs a contact time of 30 minutes. Water that is supplied to communities either through trucks or pipelines should contain a residual chlorine level of 0.2 – 0.5 mg/litre at the point of use. This excess is provided to deal with any post treatment contamination that may occur during transmission to the point of use. Normally, a swimming pool comparator is used to determine if there is a chlorine residual in the water at the point of use and the level of residual present. It should be noted that the treatment of water in this way only deals with microbiological quality and does not remove chemical impurities in the water.

At the household level there are a number of treatment options, including boiling, household filters, solar disinfection and chlorine based products that often come in liquid or tablet form. Some products for use at the household level combine flocculation and chlorination actions.

Water must be tested to ensure it is safe for human consumption in accordance with the WHO Guidelines on Drinking Water Quality or national equivalents. Often, water is tested at the point the source is identified and before the source is developed. There are three broad sets of parameters tested: 1. Physical parameters such as colour, taste and smell; 2. Microbiological parameters as an indicator of faecal contamination; and 3. Chemical parameters such as iron and arsenic to name just two. Special kits are available to test some of the key parameters in the field and for microbiological testing this is important as samples need to be analysed soon after collection.

Challenges, Dilemmas, Do's and Don'ts

A key temptation in water supply is to aim strictly for the Sphere standard of 15 litres per person per day and not to contextualise the situation and adapt the standard aimed for in accordance with cultural practices and demand for water beyond the needs for domestic purpose. A second key challenge is to ensure the issue of gender is adequately mainstreamed into planning for water supply as the majority of the burden for collecting, transporting and storage lies with women and children.

Chapter 15: Environmental Health, incl. Water, Sanitation and Hygiene (WaSH)

Introduction and Concepts

Environmental Health/WaSH is one of the key public health priorities in any humanitarian context and is a sector that is often populated by engineering professionals but demands a range of “softer” skills to complement those delivering the “hardware”. Environmental Health/WaSH staff many come from a variety of disciplines.

Environmental Health: Environmental Health, sometimes referred to as Environment and Health is, as defined by WHO in 2006: “A conceptual domain covering the interrelationship between human health and the environment, linking improvement of human health, now and in future generations, to the protection, restoration and improvement of environmental quality”.

It goes beyond the normal interpretation of WaSH in that it has the scope to address many other environmental determinants of health. It is mainly focused on the interaction between human health and the built environment and addresses not only the communicable disease burden that WaSH normally works to address but also the ever-increasing non-communicable disease burden.

WaSH: WaSH has different interpretations but is generally regarded as including all aspects of water supply, sanitation (excreta management, waste management and drainage) plus hygiene promotion.

The sub sectors of WaSH as outlined in the Sphere Project Handbook (2011) are Hygiene Promotion, Water Supply, Excreta Disposal, Vector Control, Solid Waste Management and Drainage.

Sanitation: Sanitation was officially defined during the International Year of Sanitation in 2008 and is “the collection, treatment and disposal or reuse of human excreta, domestic wastewater and solid waste and associated hygiene”

Hygiene Promotion: Hygiene promotion is essentially a sub component of wider health promotion but is focused on the environmental or WaSH determinants of health. Ferron, et al. 2000, defines hygiene promotion as “the planned and systematic attempt to enable people to take action to prevent water and sanitation related illness, and to maximise the benefits of improved, water and sanitation facilities”.

The existing literature does not give a clear indication of what WaSH actually is. In some organisations the sub components of Environmental Health/WaSH will include vector control, medical waste disposal, provision of bathing and laundry facilities, food safety, shelters, responder safety and even radiation. Regardless of the

sub-components listed in various places the key to good environmental health, like any other public health intervention in humanitarian action, is to properly assess the risks to health and address those risks in a prioritised fashion.

For the purposes of this section and sub-chapters the key components of Environmental Health and WaSH deemed most relevant in humanitarian action are as follows:

1. Water Supply
2. Excreta Management
3. Liquid and Solid Waste Management including Dead Body Management
4. Health and Hygiene Promotion
5. Vector Control
6. Housing/Shelter and Settlement/Site Planning
7. Control of Pollution with a focus on household air quality

Note: Housing/Shelter and Settlement/Site Planning fall under the responsibility of the Shelter cluster but due to the role of overcrowding in the transmission of many communicable diseases in particular we also include it here (106-117).

The Baseline: there has been a great deal of progress in WaSH, Yet, globally, over 700 million people are not using an improved source of water, 1 billion are using open defecation, and only 19% use soap after using the toilet (67, 118).

The Evidence Base: The evidence base for the effect of WaSH and wider Environmental Health on the communicable disease burden goes back more than 150 years to the 1850s when John Snow (the father of epidemiology) advised authorities in London to take the handle off the Broad Street handpump, the effect of which was a marked decline in the incidences of cholera. "Sanitation" has also been voted by readers of the BMJ (British Medical Journal) as the most important medical advance since 1840 when the journal was founded. In many respects WaSH has become the "Forgotten Foundation of Health".

Relative Effect of Different Components: While the broad evidence of the effect of WaSH on health is long known the relative impact of the different components is currently best encapsulated by the Fewtrell, et al., Systematic Review of 2005. This Review determined, with respect to diarrhoea (the second biggest killer of children under 5 and one of the four key communicable diseases in emergencies), handwashing with soap as an intervention delivers the biggest reduction in incidences (by as much as 47%), followed by water quality at the household and sanitation which, in turn, is followed by water quantity. Providing safe good quality water at the source (like a handpump) while important delivers the least amount of impact in terms of reduced incidences of diarrhoea. It is important to remember this when determining what aspects of WaSH and wider environmental health to emphasize.

The “f” diagram: Much of the work in WaSH is centred around the “f” diagram which helps to illustrate the areas of focus within WaSH in order to prevent the transmission of pathogens through the faeco-oral route.

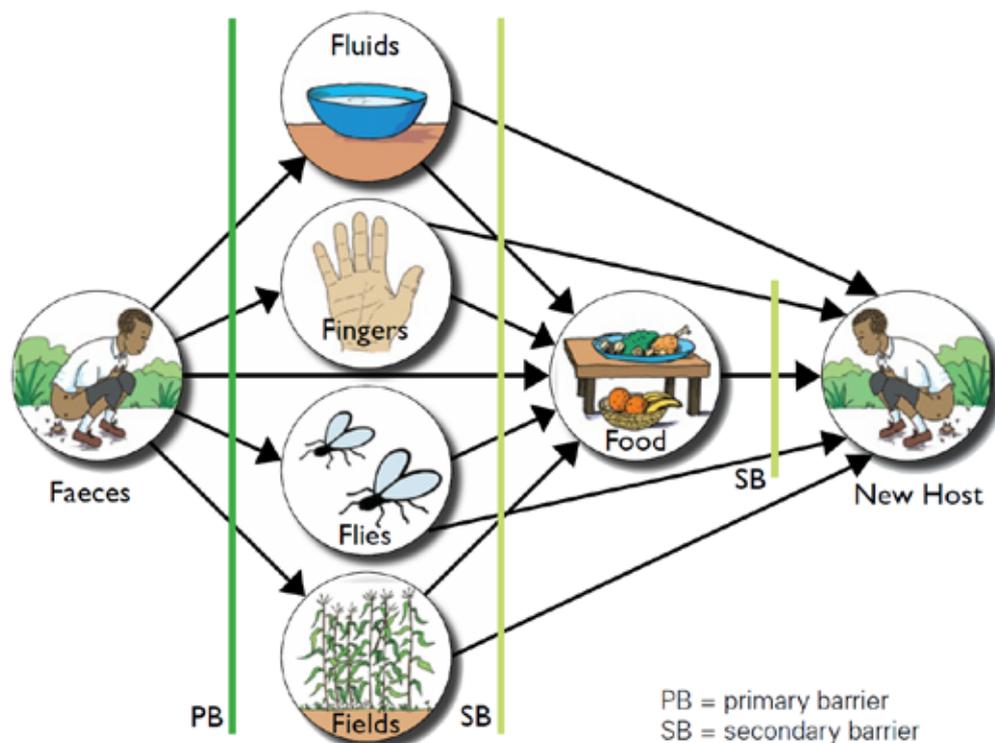
The ‘f’ Diagram

The movement of pathogens from the **faeces** of a sick person to where they are ingested by somebody else can take many pathways, some direct and some indirect. This diagram illustrates the main pathways. They are easily memorized as they all begin with the letter ‘f’: **fluids** (drinking water), **food, flies, fields** (corps and soil), **floors, fingers and floods** (and surface water generally).

Barriers can stop the transmission of disease; these can be primary (preventing the initial contact with the faeces) or secondary (preventing it being ingested by a new person). They can be controlled water, sanitation and hygiene interventions.

Note: The diagram is a summary of pathways: other associated routes may be important. Drinking water may be contaminated by a dirty water container, for example, or food may be infected by dirty cooking utensils.

Figure 9. The ‘F’ Diagram



From the Water, Engineering and Development Centre (WEDC), wedc.lboro.ac.uk

Chapter 16: Excreta and Waste Management

Excreta Management

Concepts

Some people view excreta as public enemy number one which is perhaps not surprising when one hears that one gramme of faeces contains a reported 10 million viruses, 1 million bacteria, 1 thousand parasite cysts and 1 hundred parasite eggs (Towards Better Programming, A Manual on Hygiene Promotion, UNICEF and LSHTM 1999). As with water, there is the concept of the “Sanitation Safety Chain” to ensure that excreta once produced is kept from coming in contact with the human population either directly or indirectly. The following section will deal mainly with the options available, some key principles to consider, as well as touch upon ways to improve “sanitation coverage” in later phases.

In the majority of cases excreta management is referred to as sanitation and in the context of development goals reference is often made to “basic sanitation”, “improved sanitation” and the “sanitation ladder”. In essence, people move up the sanitation ladder from open defecation to the ultimate separation of excreta from human contact which is through a system of sewers.

Diarrhoea and Intestinal Parasites are the key illnesses that excreta management aims to prevent but one needs to be mindful of the link with environmental enteropathy (a condition that shows no clear clinical signs) but contributes to reduced nutritional outcomes. As some would say “shit stunts” and some now suggest we refer to Faecally Transmitted Infections to help capture environmental enteropathy, diarrhoeal diseases and intestinal parasites.

The importance of excreta management is exemplified by the events that happened in Goma, Zaire (now the DRC) in 1994 where there was only one latrine for every 1,029 inhabitants and over a 3 week period a total of over 45,000 people died from cholera.

What Latrines Do, What Are The Components and What Are The Options?

Latrines, the term often used to describe toilets in resource poor settings, serve a number of functions. They not only protect health but should also provide comfort, privacy and safety for users.

A latrine has three principle components:

1. The pit, often 2-3 metres deep which may be unlined or lined (to prevent soil from collapsing)
2. The floor slab or platform which is often set up for sitting or more often than not for squatting
3. The superstructure or the housing that the user enters

In the early phases of many emergencies toilets simply do not exist (refugees fleeing to a green field site) or if they do exist they may be damaged and in need of repair or have to be adapted to suit the situation being faced. The following outlines the options for managing excreta and essentially follow steps along the sanitation ladder. Successful provision of toilets/latrines may depend on knowing what step on the sanitation ladder those affected are normally on.

1. Open defecation – in some situations this may be a normal practice for the affected
2. Defecation fields – an immediate and short term solution
3. Communal latrines – a medium term solution but difficult to maintain and pose protection issues
4. Family latrines – a medium to long term solution, often provided at the ratio of one latrine for 20 people, equivalent to four families, and considered the target to reach in order to enhance cleaning of latrines and extend the lifespan of latrines

In public health terms the VIP or Ventilated Improved Pit latrine is a preferred technical option to control flies in pit latrines but resources may not stretch to providing this type of latrine. Many pit latrines when close to full can simply be covered over with soil and a new pit dug, with the floor slab and possibly the superstructure being reused.

The lifespan of a latrine depends on several factors, including the number of users, the volume of the pit, the sludge accumulation rate for each user and the infiltration capacity of the soil. As a guide each person produces approximately 175 g of excreta per day and a standard pit latrine may last for up to 6 months, perhaps less.

Not all excreta is disposed of and in some cultures the reuse of excreta may be the cultural norm. Latrine options may include options that allow for the recovery of excreta and urine for reuse, often as a fertiliser. These types of latrines are known as composting latrines, Ecosan latrines or urine diversion latrines.

In some contexts, such as urban environments or areas with high water tables, excreta management options can be limited. Buckets or bag options (one is known as the pee poo bag) may be feasible or the use of portable toilets. Portable toilets and some pit latrines need to be emptied from time to time by which time the contents become known as faecal sludge. The proper management of faecal sludge is critical to ensure human contact

with the sludge is kept to a minimum both for the workers removing the sludge from latrines, septic tanks or portable toilets as well as the general public.

Toilets also may need to be provided and/or managed at institutional and public areas. Schools, health centres, hospitals, market areas and Administrative Officers may need support in this area.

Cross Cutting Issues

There are a number of key cross cutting issues relevant to excreta management in addition to the issues of protection, environment and responder safety mentioned already. Gender is another, and normally latrines are demarcated along gender lines with more latrines allocated to women. Men are often provided with urinals. Separate waste facilities may be provided in toilets to support menstrual hygiene and toilets must be accessible to all sections of the community including the elderly, the disabled and young children. The excreta of very young children may have to be additionally managed through the provision of nappies and/or potties, possibly included under a hygiene kit.

As with any development or humanitarian action, good planning is key to successful excreta management. Participation of the affected in all stages of the project cycle will contribute to success. Understanding existing cultural norms and practices is key and one example to establish in planning is whether the population to be served are “washers” or “wipers”, which refers to the preferred method of anal cleansing.

Later Phases

The background situation with respect to “sanitation” coverage may be very low when one considers how many people do not use “basic” or “improved” sanitation as we now move towards targets set under the Sustainable Development Goals. In the context of Linking Relief and Rehabilitation to Development (LRRD) one may have to implement excreta management activities along more development lines. Many countries have now adopted the CLTS (Community Led Total Sanitation) approach to sanitation in which communities are “triggered” to build their own sanitation facilities without any subsidies or inputs from external agents. Social marketing of sanitation is another common approach that utilises the 4 Ps of marketing where the toilet (the product P), is sold (at the right Price), in a market (in the right Place) through marketing (the Promotion P).

Challenges, Dilemmas, Do’s and Don’ts

Excreta management should not be seen as an isolated public health priority. Poorly designed or maintained latrines are a breeding ground for flies, a key vector of disease. Toilets may also be important from a protection and dignity perspective plus they have a role to play in menstrual hygiene management.

Do not assume that once faecal sludge has been removed from a latrine or portable toilet that it will be disposed of in a proper manner. One must ensure that faecal sludge is managed properly all the way to the end of the sanitation safety chain.

Do not assume that reaching a defined ratio of latrines to users of say 1:20 means you have been successful. Excreta management is more than outputs (the latrines), it is also about use, proper operation and maintenance of those facilities, the elimination of open defecation and proper decommissioning of facilities once the emergency is over.

Waste Management

Concepts

Waste is not only unsightly and often smelly but has the potential to pose a serious public health risk to populations affected by a disaster. Other waste, such as the rubble generated following an earthquake event, may simply inhibit access to affected areas and limit the effectiveness of the overall humanitarian response. The health risks associated with waste are as follows:

- Waste provides a source of harbourage and food for flies, rats, dogs, snakes and other scavengers, many of whom are vectors of communicable diseases. Flies are perhaps the most important.
- Waste may also provide a breeding site for mosquitos, such as aedes aegypti or the tiger mosquito, responsible for the transmission of dengue fever. They are often found breeding in pools of water inside waste tyres.
- Waste may pose a fire risk and source of pollution if burned.
- Waste may pose a risk of physical injury.
- Waste may also contribute to the pollution of water sources.
- Waste may block drains and contribute to flooding events.

Types of Waste and Strategies for Dealing With Them

There are a number of categorisations to waste but for the purposes of this chapter we outline the following:

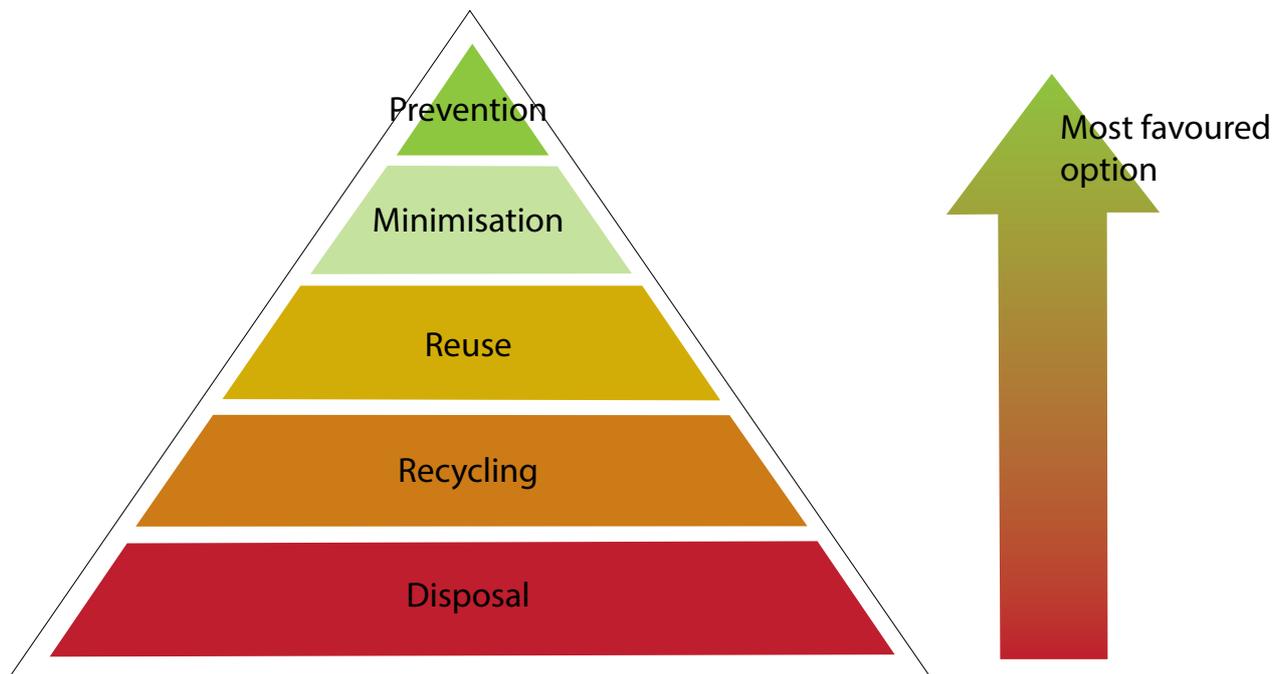
- Storm water (a significant issue in monsoon affected countries)
- Solid waste which can be sub-categorised into 1. Domestic/Household waste, 2. Hazardous wastes, 3. Vegetation/ Soil/Sediment, 4. Relief waste (plastic bottles, fish tins etc.) and 5. Demolition waste.
- Wastewater (sometimes known as sullage or grey waste) from kitchens, bath-houses and laundry
- Health Care Waste

Stormwater drainage problems can be prevented or solved in a number of ways. Linking again to site selection it is important to try and identify sites that are not prone to flooding and have sufficient slope to allow drainage to occur. Drainage must be planned in accordance with the expected rainfall and either removed or harvested as a potential source of water. Drains once constructed need to be kept clear and not allowed to block up with silt or other solid waste.

Solid waste can come in a variety of forms and most implementing agencies engaged with waste management will deal with solid waste from the domestic environment which may be broadly classified into organic (compostable) and inorganic material (glass, plastic etc.). Hazardous waste can cover a multitude of types including waste oil, batteries, pesticides, asbestos etc.

The principal strategy to good waste management is to try and follow the waste hierarchy where the aim is to prevent the generation of waste in the first place with disposal being the least favoured option.

Figure 10. Good Waste Management Hierarchy



Source: courtesy of Gary Morris-Iveson, Golder Associates

Humanitarian agencies in keeping with mainstreaming the environment into their actions have a responsibility to reduce or minimise the amount of waste they generate. Reuse of materials may be common in some emergency

contexts where, for example, bricks could be reused in construction. Recycling is another option and a good example is the crushing of rubble following an earthquake for use as an aggregate in the making of concrete or a road surface. Organic waste at the household level can be made into compost for the cultivation of crops.

Disposal of waste is the least favoured but often a necessary and expensive action to undertake. The stages of solid waste disposal cover collection (household bins for example), transport and disposal. Disposal is normally in one of two ways. The waste is either burned or buried. In the majority of cases it is buried either on-site or off-site in a landfill.

Deciding what to do with solid waste will depend on a number of factors including the types of waste generated and locally available options to deal with such waste. In many cases there may be opportunity to segregate the waste and follow a decision pathway for each type of waste to reuse it, recycle it or dispose of it.

Wastewater can be generated from a number of sources including overflows from tapstands, household and communal washing areas (i.e. public showering rooms) and possibly centralised kitchens. Such waste, if not directed into a public drainage system or water course can be utilised as a resource for irrigation or disposed of as is the norm in a soakpit. Kitchen waste in particular may contain oils and fats which need to be removed before discharge into the drainage system.

Dealing with Health Care Waste requires specialist expertise as some of it is medical or clinical waste. About 10-25% of the waste generated at health care facilities is medical or clinical waste. The remainder is more general waste and can be dealt with like other categories of solid waste and if to be disposed of can be burned or buried. The medical waste can be sub-divided into a number of different categories including infectious waste, pathological waste and sharps (e.g.. syringes, scalpels etc.). Segregation of waste at the point of generation or accumulation is key, with sharps being an obvious type of waste to segregate immediately. As with other categories of waste, medical waste can be burned/incinerated or buried/contained (placentas in a placenta pit). Incineration to achieve certain temperatures is necessary for some categories of medical waste.

‘Managing The Dead’ – or ‘Safe and Dignified Burial’?

Classically, the issue of burial has been placed under waste management. Perhaps this is a good place to interject a comment on how insensitive this placement may seem to the communities affected, and how, beyond the emotional aspects, this vantage point may affect operational issues. The ebola pandemic is one recent event which has drawn attention to the critical role of burial practices in the response to the epidemic.

To some people the management of the dead is a waste management issue whilst understanding the emotional sensitivity surrounding the issue. In sudden onset events like genocide, an earthquake or epidemic like ebola or cholera large numbers of dead may be present. In general the dead DO NOT pose an immediate risk to physical health unless the cause of death is due to a highly infectious disease like ebola or cholera. The priority should be on the survivors.

Following a disaster WaSH personnel are often designated to deal with the dead and the first priority has to be ensuring the safety of those undertaking this task. Staff have to be aware of the risks in handling dead bodies and accessing those bodies in often dangerous circumstances. They should be provided with PPE, enabled to wash and change clothes after work, have first aid available and be vaccinated to ensure they have cover against diseases like tetanus. When bodies are recovered there should be facilities available to store them, identify them and deal with them in a culturally sensitive way. Information has to be managed and communicated carefully and support has to be provided to the families and relatives left behind. In the majority of cases the issue can be approached in accordance with the customs and norms of the society they come from, be it burial or cremation.

The exception may be in relation to “infectious dead” who may have died from ebola, marburg or cholera, for example. Special precautions have to be taken when handling infectious dead. Extra precautions may include extra PPE for handlers, the use of body bags (bodies in West Africa during the ebola crisis of 2014/15 were double bagged), the use of a disinfectant (a 2% chlorine solution), limited or no contact by family with the body and immediate burial. Facilitating dialogue with communities, informing the family about the process will help alleviate fear and facilitate acceptance (119).

Challenges, Dilemmas, Do's and Don'ts

In a resource poor setting waste is often seen more as a commodity to be exploited than disposed of and the recovery of waste from landfill sites is often a means of livelihood for some. Consideration of this fact should be well thought out in waste management planning. Special reference also needs to be made to the fact that you do not want some categories of waste to be reused or recycled. One time use syringes, for example, must be disposed of.

Do not be in a rush to dispose of the dead in mass graves for fear of an epidemic, which may lead to communities resisting, and hiding bodies. To do so may cause other problems for relatives of the dead who may not be able to grieve properly nor prove a relative is dead to insurance companies.

Chapter 17: Health and Hygiene Promotion

Concepts

Hygiene Promotion is an essential component of WaSH but is often seen as something that is tacked on to the other more prominent and tangible components of providing water, excreta and waste management facilities. A global WaSH cluster meeting once indicated that many people did not know the purpose of hygiene promotion, the expected outcomes and the common ways in which it is implemented.

As a concept, hygiene promotion is essentially a sub-component of wider health promotion and if one is to address some of the wider environmental determinants of health one needs understand the wider interpretation of health promotion and what it aims to achieve.

The Ottawa Charter of 1986 defined health promotion as “the process of enabling people to increase control over their lives so that they may maintain and improve their health....”. Promoting health in its widest sense addresses many of the social determinants of health, including peace, access to education, food, income and equity and not just some of the more direct determinants such as access to safe water.

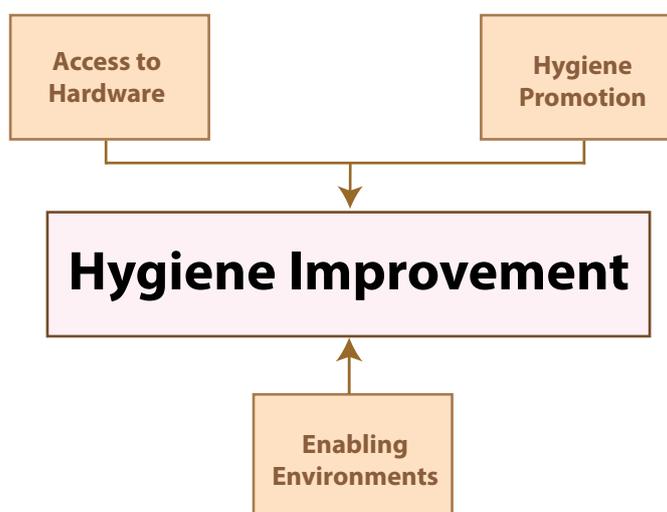
Health can be promoted using a number of different approaches and is not limited to education, which may be a perception of some. For example, the Irish Road Safety Strategy promotes health through a reduction in road deaths and injuries by what they call the 4 Es. Education is one of the four Es but road safety is also promoted through Engineering (making the road safer), Enforcement (of laws that punish people for drinking and driving for example) plus Evaluation (to measure performance). Similar approaches can also be taken to promote health even in humanitarian contexts and many may refer to the combination of “hardware” (the engineering work) and “software” (education work) to deliver on health objectives.

Hygiene Promotion as defined by Ferron, et al., 2000 (pg 12) is “the planned and systematic attempt to enable people to take action to prevent water and sanitation related illness, and to maximise the benefits of improved water and sanitation facilities”. Hygiene education can therefore be viewed as part of wider hygiene promotion and its purpose is to provide knowledge and information, and to develop the necessary skills (making ORS to treat diarrhoea for example) so that a person can make an informed choice about their health behaviour.

Some of the terminology used with respect to health/hygiene promotion are Behaviour Change Communication (BCC), IEC (Information, Education, Communication) and Dialogue and Action. Emphasis needs to be placed on the phrase “Dialogue and Action” as this helps to stress that health/hygiene promotion starts by engaging with affected populations to understand existing beliefs and behaviours in a spirit of true participation in the programme development process.

A common framework used to help understand the inter-relationship between different components is the Hygiene Improvement Framework as it not only refers to access to hardware and hygiene promotion but also the enabling environment. In humanitarian contexts the enabling environment might be regarded as the commitment and capacity of implementers to conduct hygiene improvement effectively.

Figure 11. The Hygiene Improvement Framework



Much of what we call health/hygiene promotion tends to be more health/hygiene education with the provision of hardware captured under the Water and Sanitation parts of WaSH. The provision of Non-Food Items to further enable people utilise the knowledge they have been given may form a part of the hygiene promotion response or be delivered under other clusters.

Steps in Health/Hygiene Promotion

Assuming the hardware aspects and enabling environment parts of the “hygiene improvement framework” are addressed elsewhere the following are the key steps to planning and implementing effective hygiene promotion activities:

1. Make contact with community in a spirit of participation ensuring you do not bypass leadership. Make special efforts to consider marginalised/vulnerable groups.
2. Deepen understanding of the community, including gathering baseline data, identifying risks, understanding motivational factors towards certain behaviours and family dynamics in the household.

3. Identify target groups, be it mothers, children, men etc. Some may be regarded as your primary audience (i.e. children) while others will be secondary (i.e. parents)
4. Define your objectives and indicators for measuring progress and impact
5. Decide on outreach structure and human resource requirements. Many personnel may already exist within the health system and be known as Community Health Workers or similar.
6. Decide on the methods to use (usually a combination of mass media and interpersonal methods), settings to target (community health clubs for example) and prepare (IEC) materials. These materials must be pre-tested to ensure understanding of the message.
7. Initiate training of staff and the community
8. Monitor progress utilising the community as much as possible.

Communication Channels

Hygiene Promotion tends to be delivered in two ways:

- Through the Mass Media
- Through a People Centred or Interpersonal Approach

The Mass Media is a convenient way to deliver health messages and there are numerous mass media avenues to utilise, including radio, posters, leaflets, campaigns (Global Handwashing Day on October 15th each year), street theatre, social marketing and more recent developments using technology such as SMS or text messaging of health messages. The mass media can convey simple messages, it can support behaviour change if the other enabling factors (presence of handwashing stations for example) are present and it can simply put a health issue on the public agenda. There are limitations to the impact of the mass media and it is more effective if part of an integrated campaign including one to one advice (as in a doctor patient setting) or group settings (teacher to school children setting or Imam in the mosque to attendees).

In the interpersonal aspect of hygiene promotion the deliverer of the message is important and must be someone the recipient of the information respects and will believe. Doctors are often regarded as trustworthy and may be believed and people may respond to their advice more than to others.

Measuring Health/Hygiene Promotion

Part of the challenge with respect to health/hygiene promotion is the challenge of trying to measure the change. Tapstands and toilets are somewhat easy to count as an output but successful health/hygiene promotion is not measured simply by the number of leaflets distributed or the number of hygiene sessions conducted by community health workers. Measuring success is more complicated than that and requires significant qualitative and also quantitative research skills. The key hygiene behaviours promoted in humanitarian contexts tend to be around handwashing with soap at critical times such as after going to the toilet, safe disposal of excreta and

safe storage of water at the household level. These all aim to address some of the key communicable disease risks associated with emergencies. Other behaviours to promote may include sleeping under a bednet to prevent malaria and keeping children away from cooking fires to limit exposure to household air pollution. Some of these are specific to WaSH and some are not. Hence, the reference here to health and not just hygiene promotion.

The common way utilised by hygiene promotion implementers to measure performance is through Knowledge Attitude and Practice Surveys (KAP) in which baseline knowledge, attitude and practice levels are measured at the beginning of a response and then using this baseline to compare changes in knowledge, attitudes and behaviours at or near the end of the intervention from an endline KAP survey. The problem with KAP surveys is that they are prone to social desirability bias (the respondent gives the answer they think the enumerator wants to hear) giving misleading results in terms of the handwashing behaviour, for example. To overcome this bias it is recommended to measure performance through Formative Research that includes tools such as Structured Observation, Household Surveys, Behaviour Trials, In-depth interviews and Focus Group Discussions to help triangulate findings.

Hygiene Related Non-Food Items

There are numerous health/hygiene non-foods items or NFIs that may be distributed as part of an emergency response. In more recent times the mechanisms are changing to using cash or vouchers so that beneficiaries can procure the items they want themselves. Standard items often considered important to distribute that “enable” or support behaviour change include water containers (jerrycans) for transport and storage of water (some with a tap built in that can aid handwashing), household water treatment products such as disinfection tablets, mosquito nets and hygiene kits. Hygiene kits may contain soap, toothbrushes, toothpaste, nailcutters, sanitary pads and razors etc. Determining the exact content is tricky and should where possible be determined following consultation with the affected population.

Challenges, Dilemmas, Do’s and Don’ts

Every culture has its approaches to hygiene, including your own. Do not assume that once people have the information they will change their behaviour. Behaviour change is complicated and many forces determine motivation towards a certain behaviour, deviating from that behaviour or adopting another behaviour. Soap manufacturers sell soap not by promoting the health benefits of soap but more often than not they sell it by indicating how fresh and beautiful you may feel after using it. The importance of understanding your “market” cannot be over emphasized. Inconsistent or unadjusted messaging risks not achieving the hygiene promotion objectives. Thus, it is important to understand beliefs and customs around hygiene, and to harmonize messaging among actors and over time.

Chapter 18: Vector Control, Settlement Planning and Household Air Pollution

Vector Control

Concepts

Vector control is basically the prevention and control of a disease spread through vectors such as mosquitoes and flies. Two of the four big killers in emergencies, diarrhoeal diseases and malaria are spread through vectors. Flies (who physically transport pathogens from excreta to your food for example) transmit diarrhoeal diseases and anopheles mosquitoes spread malaria by enabling the parasite to undergo life cycle changes in the mosquito after picking up the parasite from the blood of an infected individual. Other common vectors include rats, fleas, cockroaches, mites, lice and ticks.

The key to vector control is Integrated Vector Management which demands a wide public health approach. Vector control is not just about the spraying of chemicals but includes drainage (to limit breeding sites), good engineering (of latrines for example to control flies), waste management (to limit access to food for rats), behaviour change communication (sleep under a bednet, cover your water jar) and even animal husbandry (to limit the potential spread of zoonotic diseases which are diseases spread from animals to humans e.g. Crimean Congo Haemorrhagic Fever spread from donkeys to humans in Afghanistan via ticks).

Strategies for the Control of Vectors

A stepped strategy outlined below can help determine what interventions to engage in and when. At the height of an epidemic you may skip some of the steps to tackle the immediate problem if large numbers of the adult vector are present.

- Step One – Know your enemy, which entails understanding as much as possible about the vector you are trying to target. Where do they lay their eggs, what types of environments do they breed in and where do they like to rest. Some mosquitos prefer to rest indoors making Indoor Residual Spraying a feasible option.
- Step Two – Prevent the vector from breeding in the first place. Drainage work for example and the removal of waste can limit opportunities for vectors to breed.
- Step Three – Control early in the life cycle. The larvae of mosquitos are easier to target than when they are adults flying all around the place. Larvacides for example can be added to water storage jars to control the mosquito responsible for dengue fever.

- Step Four – Control of the adult vector. Thermal fogging and Indoor Residual Spraying may be implemented to control mosquitos, rats may be caught in traps or poisoned and fleas may be controlled by dusting.
- Step Five – Personal protection. This includes the use of bednets, repellents and coils. Vaccination is feasible for some vector borne diseases and even treatment is a form of prevention as it removes a source of infection.

Bednets and Indoor Residual Spraying with respect to Malaria

Bednets also known as ITNs (Insecticide Treated Nets) or LLINs (Long Lasting Insecticidal Nets) and Indoor Residual Spraying (IRS) alongside Intermittant Preventive Treatment for Pregnant Women (IPTp) are primary tools for the control of malaria. Bednet coverage in sub-Saharan Africa where the majority of deaths occur has increased substantially in recent years due to the impact of the Global Fund. Indoor Residual Spraying may be implemented using a variety of different insecticides including DDT. Ideally IRS (where the chemical is sprayed on wall surfaces of domestic dwellings where mosquitoes rest) should take place in advance of the malaria transmission season and continue to deliver a killing effect over many months.

Challenges, Dilemmas, Do's and Don'ts

End user compliance with respect to using bednets effectively is a challenge and is again linked to behaviour communication and enabling targeted groups to use the nets. Factors that will contribute to uptake include previous experience of using nets, the time of year in which distribution takes place, colour, mesh size, type of housing people have and the shape of the net.

Household Air Pollution

Concepts

Household Air Pollution (HAP), sometimes referred to as indoor air pollution is not listed as a public health priority with respect to humanitarian situations and is not normally addressed. However, in a context where air pollution, in general, and HAP, more specifically, is one of the biggest risk factors to health and the single biggest risk factor in Asia one could argue there is some justification to address it. As those affected by disasters tend to be the poorest in vulnerable situations they also tend to be the population group that uses the dirtiest fuels such as crop waste and dung to cook and in some cases heat their homes. WHO estimated that for 2012 air pollution accounted for 7 million deaths globally (1 in every 8) and HAP alone accounted for 4.3 million with over 580,000 of those deaths occurring in sub-Saharan Africa. In perspective this is nearly three times the number of deaths attributed to HIV and AIDS.

Inefficient cooking fires, using dirty fuels in unventilated environments often occupied by the most vulnerable (women and children) produce a cocktail of pollutants including particulates and carbon monoxide. The health impacts are also numerous, including cancers, chronic obstructive pulmonary disease and acute lower respiratory infections. People living in poverty and those affected by a disaster are often exposed to pollution levels way beyond levels that would be considered safe in an industrial environment.

Solutions

The solutions to household air pollution are at three levels.

1. Tackle the source of the pollution by changing to cleaner fuels such as LPG (Liquid Petroleum Gas) or kerosene. In many contexts this is simply not a feasible option in the short term.
2. Adjust the living environment by supporting the use of more fuel efficient stoves (may be distributed as part of NFI distribution), improve ventilation in shelters and support the cooking of food outdoors.
3. Improve behaviours around cooking/heating through health education and promotion. Information provided may include advice on keeping children away during cooking, drying fuel properly before use and simply using a lid on the cooking pots which can reduce cooking time substantially.

Challenges, Dilemmas, Do's and Don'ts

Do not assume that just because others are not addressing household air pollution and it is not considered WaSH that it is not an issue deserving of attention as a public health intervention. The impacts extend beyond health, to include protection of the environment through reduced fuel needed and also a protection issue as women do not have to spend time at risk in the bush collecting fuelwood.

Shelter/Housing and Site/Settlement Planning

Concepts

In the majority of cases people displaced in an emergency self select where they are going to stay during the crisis but in many cases sites can be identified and planned in advance. As part of its contingency plan for dealing with floods, the Government of Malawi has pre-selected "evacuation sites" suitable for the displacement of people affected by floods. Site selection is critical as many of the public health problems associated with camps are attributable to weak selection of a site (located in a flood prone zone or in an area where malaria is endemic) and/or poor site planning that fosters overcrowding, producing conditions suitable to the spread of communicable diseases. Poor planning of sites and services, such as distribution centres, may also be a great source of stress and psychological harm to beneficiaries.

Solutions

While it is practically impossible to find sites that meet all the criteria suitable for the protection of public health one must be aware of the criteria that need to be considered and decide which criteria are most critical. In Pakistan in 2001 following the September 11 attacks sites were identified and planned in advance of an anticipated influx of refugees from Afghanistan. The criteria of security, water supply and access (all year round) were considered the most critical determinants in approving suitable sites. Other criteria one might include in site selection are to ensure there is enough space (45 square metres per person) for each person to be housed including space for potential new arrivals, elevation to ensure drainage is optimum, soil type to enable the digging of pit latrines, location of the water table to access water but also limit contamination of groundwater supplies and vegetative cover to help keep dust levels down around health centres, for instance, and provide shade. All these factors are important to curtail the environmental determinants of health and promote health.

Site planning is an additional part to the equation and again must be done with great care. Good site planning will, from a WaSH perspective, alone enable affected populations to access the services they need and protect them from harm. For example, site planning that fails to plan for latrines from the beginning and thereby forcing implementing agencies to place latrines on the edge of camps create a number of potential problems that could be avoided. Placement on the edge of camps may discourage some people from using them as they may be too far away as well as generating a protection risk.

Challenges, Dilemmas, Do's and Don'ts

A challenge that may be overlooked with respect to camps is that once camps are vacated much of the infrastructure needs to be decommissioned. WaSH infrastructure, particularly pit latrines need to be carefully decommissioned. Staff engaged in closing down latrines need to be adequately protected from the risk of infection and latrines need to be adequately backfilled with additional soil to allow for settlement and thereafter be marked and possibly mapped.

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