

Assessment Toolkit

PART I: PRACTICAL STEPS FOR THE ASSESSMENT OF HEALTH AND HUMANITARIAN CRISES



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About the Assessment Toolkit Part I

A sound assessment of needs, vulnerabilities and capacities is indispensable for an effective intervention. With this toolkit we aim at promoting good assessment practice within Médecins Sans Frontières (MSF).

The Assessment Toolkit provides assessment teams with a practical framework within which an assessment can be organised in a wide variety of situations. It is written for anyone involved in the implementation of an assessment: (polyvalent) assessment teams, coordination teams, or programme managers.

The toolkit contains sample outlines and useful hints, including good practice examples for assessments. It draws from a variety of reference documents¹ and from evaluation findings of the past years. Emphasis is put on newer concepts, such as the notion of continual assessment, vulnerability, capacity, and coping (ie, risk analysis). Authors strongly encourage a systematic use of qualitative methods and the involvement of the affected population.

The Assessment Toolkit Part I at hand is a pilot version and presents main concepts and definitions, a general assessment framework with different steps, commonly used data collection methods, and assessment techniques.

¹ Among others from (Blok and Skinnider 2002)

A number of themes addressed here have been covered in other MSF reference documents. We opted to briefly describe the relevant issues (eg, rapid health assessment, sampling, surveys for assessment) and refer to the respective sources.

Part II of the Assessment Toolkit offers a collection of checklists for assessments and part III provides some hints for specific types of assessments together with good practices in various contexts.

A glossary with essential terms related to assessment is available on the website of the Vienna Evaluation Unit: <http://evaluation.msf.org>. On this website, the Assessment Toolkit Part I is also available for download together with some selected references.

In order to keep this toolkit up-to-date with the reality in the field, we highly welcome comments and feedback! Please address it to evaluation@vienna.msf.org.

List of Acronyms

ACAPS	Assessment Capacities Project
CBO	community-based organisation
CMR	crude mortality rate
DRC	Democratic Republic of Congo
EM-DAT	Emergency Disasters Database
FGD	focus group discussion
GIS	geographic information system
GP	general practitioner
GPS	global positioning system
HQ	headquarters
INGO	international non-governmental organisation
MH	mental health
MSF	Médecins Sans Frontières
NGO	non-governmental organisation
PHC	primary health care
RHA	rapid health assessment
Sitreps	situation reports
SGBV	sexual and gender based violence
SWOT	strengths, weaknesses/limitations, opportunities, threats
ToR	Terms of Reference
UN	United Nations
UNISAT	Universal Satellite Systems
WHO	World Health Organisation

1 Introduction

1.1 The aim of the assessment

The aim of an assessment is to understand a situation so as to identify the problems, their sources, and consequences as means to determining the best course of response. The priorities in any assessment are the current and potential future needs of the population.

1.2 General criteria for good assessment practice

Good assessment practice is about having relevant information of a crisis situation, which to base sound analysis and judgment on. The results of a formal assessment, involving systematic data collection and analysis, derive their validity from the methods used and the way they are applied

An assessment must be

- **timely** – providing information and analysis in time to inform key decisions on the response
- **relevant** – providing the information and analysis most relevant to those decisions, but not more than needed
- **covering** adequately to the scale of the problem
- **continuous** – providing relevant information throughout a crisis
- **useful** – providing a basis for effective intervention
- **valid** – using methods that can be expected to lead to sound conclusions
- **transparent** – being explicit about the assumptions made, methods used, and about the limits of accuracy of the data relied on

Source: adapted from (ACAPS 2012a)

rather than from the appraisal of the individual.² In addition, good assessment practice involves effective coordination with others, the sharing of data and analysis, and the communication of significant results. As a principle, assessments must include the perception of the affected population on their situation and their needs.

1.3 Definition of humanitarian crisis

From the range of definitions available for humanitarian emergency, disaster, or crisis, we define a humanitarian crisis as any situation in which there is an exceptional and widespread threat to life, health, or basic subsistence that is beyond the coping capacity of individuals and the community.³ This definition implies the need for intervention but also brings in a number of other factors: the idea of extensiveness, a concern with threats to health and subsistence, and the idea of coping capacity. Armed conflicts, epidemics, famine, natural disasters, and other major emergencies may all lead to a humanitarian crisis.

Many different classifications of humanitarian crisis have been attempted: According to Checchi and Roberts⁴, three types of crisis can be delineated in terms of patterns of mortality:

² (Darcy and Hofmann September 2003)

³ (Oxfam 2005)

⁴ (Checchi and Roberts 2005)

- **Sudden natural disasters:** most mortality occurs as a result of the mechanical force of the elements or of injuries and is therefore concentrated in a period of hours or days; further peaks of mortality can, however, occur weeks after the disaster as a result of precarious living conditions or various epidemics (eg, cholera in Haiti in 2010).
- **Acute emergencies:** can occur due to large-scale armed conflict and/or rapid displacement; where these result in relocation of the population, especially to camps or camp-like settings, crude mortality rate (CMR) is known to fall progressively as a result of better protection and the arrival of humanitarian aid, although neglect of vaccination and disease control efforts can lead to devastating epidemics of diarrhoeal diseases or measles.
- **Slowly evolving, chronic, or intermittent emergencies:** mortality may increase slowly over the course of weeks, months, and years from near-normal levels as a result of the progressive breakdown of health infrastructures, loss of livelihoods, exhaustion of individual and community coping strategies, isolation from international aid, and nutritional problems; or CMR can display regular peaks as a result of poor harvests, displacement waves, low-level conflict, or epidemics affecting a chronically vulnerable population (eg, droughts leading to food insecurity, hunger gaps, and famine that could happen after one or more bad seasons or displacement in open settings as increasingly seen in DRC).

Different assessment approaches are needed depending on the type of emergency.

In rapid onset crises, such as natural disasters or acute emergencies, an initial rapid assessment should start as soon as possible after identifying the emergency (within 24 to 72 hours). Timeliness has priority over the detailed information that might be obtained in a later stage together with the implementation of emergency activities. The initial intervention largely depends on the experience from past disasters.

In a slow onset emergency, there may be more time to analyse the situation before the field assessment and a more complex assessment process, usually comprising several phases, is often needed.



Remember that emergencies are not static and an assessment is only providing a snapshot picture of the situation. Continual assessment is needed to spot the changes and to help adapting the MSF response accordingly. Even in protracted crises the situation may deteriorate suddenly requiring a reactive assessment response.

1.4 Assessing risk and vulnerability

Traditionally, MSF focused its assessments on “existing needs”, more so on thresholds of mortality, nutritional status, etc, paying less attention to the concepts of vulnerability, capacity, and coping.

In protracted crises with blurred distinction between emergency and post-emergency phases, it is essential to

understand the relative vulnerability of the affected population and the extent to which people are able to adapt successfully to the changing environment.

We define vulnerability as a dynamic concept, which helps us to understand the level of risk that a person or a group face, related to natural or manmade disasters, including their capacities (protective factors) to anticipate, cope with, and recover.

The notion of capacity, closely linked to vulnerabilities, delineates the resources of individuals, households, communities, institutions, and nations to resist the impact of a crisis, including coping strategies (ie, adapted/unusual strategies that people choose as a way of living through difficult times). Coping strategies can be classified as:

- Strategies that are *not* damaging to livelihoods (eg, short-term dietary changes, collection of wild fruits, sale of non-essential assets, migration of individuals for work, extra work hours, use of skills, solidarity, etc). These are easily reversible.
- Strategies that *may* be damaging to livelihoods or society (eg, sale of property, sale of productive assets, such as animals, seeds, and agricultural tools, large-scale deforestation, child work, prostitution, banditry). These tend to be harder to reverse.

Risk can be understood as the probability of harmful consequences or expected loss.⁵ A population at risk is one that has a (more or less) high probability of suffering harm or loss.

In assessment practice we focus on identifying health related risk factors that contribute to higher vulnerability, usually translated to increasing morbidity or mortality.

When analysing the risk, we consider both direct and indirect health effects of the crises⁶. While the assessment of direct health effects (people killed, wounded, traumatised, etc) is quite straightforward and can be easily quantified, the assessment of indirect health effects (worsening of chronic diseases because of drug rupture, starvation due to difficult access to fields, etc) is rather complex and difficult to measure.

Risk factors can be categorised in several ways. They can be distal (occurring long before the onset of the disease or death), intermediate (occurring closer to the onset of the disease or death), or proximate (occurring just before the onset of the disease or death and most closely associated with the disease).⁷

In acute emergencies we mostly look at proximate risk factors. In protracted crises, in order to understand

⁵ (UNISDR 2002)

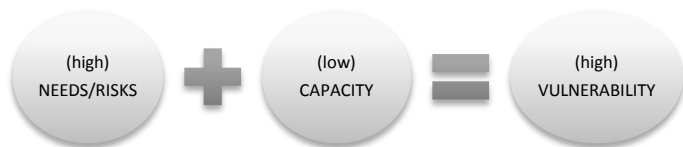
⁶ (London School of Hygiene and Tropical Medicine 2009a)

⁷ (London School of Hygiene and Tropical Medicine 2009a)

vulnerability and related capacity, we need to assess intermediate and distal risk factors as well. As a first step we identify various risk factors and categorise them into social, economic, geographical, political, etc (as shown in annex 5.1).

When we have identified major risk factors we can relate them to the existing capacity and display both in a table (see an example in annex 5.1).

The following diagram shows the relation between needs/risks, capacity, and vulnerability:



When you are in a situation where you have to decide which community or group is in need for an intervention, you can clearly discern which community (geographical location or specific groups) features most vulnerability and least capacity. This is very helpful, especially in situations where little quantitative data is available and/or appropriate thresholds for intervention do not exist (ie, protracted crisis in urban settings).

2 Practical steps in any assessment

This chapter gives a general overview of the six steps in an assessment process. The speed of progression during the process must be flexible and adaptive to the situation. Be aware that there is overlap between the steps! As you collect information, on-going interpretation and plans of how to collect more information to validate the information already collected take place. Also, new areas for investigation might be identified.

For data collection, precise checklists on different subjects can be found in part II of the Assessment Toolkit. Primary data collection methodologies are described in chapter 3 and for practical implementation relevant guidelines are referenced.

STEP 1 - Planning the assessment

1. Decision on initiating an assessment

The initiative of an assessment mission can arise from the head of mission or headquarters (HQ) (operational directors, programme managers) because of a present or anticipated future humanitarian and health crisis in an area. The reasons for an assessment will be consistent with the MSF operational policy and specific country policies.

2. Terms of Reference (ToR)

The purpose and reasons for an assessment must be clear to the assessment team, the country coordination and the support departments!



Expectations of all stakeholders should be explicitly and transparently included in the ToR but these should not bind or predetermine the recommendations made by the assessment team!

3. Assessment team composition

The composition of the assessment team will depend on the purpose of the assessment and its ToR. In general, at least one medical and one logistical person are recommended. Depending on the assessment, extra person(s) might be epidemiologists, anthropologists, medical, nutritional, water and sanitation, mental health, technical, human rights, context specialists, or others. Assessment team members should get clear roles, depending on the team composition and the context of the assessment. Responsibility for team leadership, reporting, logistics and security must be clearly identified. In certain regions nationalities of the team members may be sensitive and gender can be an issue.

4. Pre-departure briefing/training of the team

Briefings at headquarters with all relevant departments should comprise a review and adjustment of the assessment tool for the particular situation. This includes reviewing which measures and methods will provide valid and useful data for the purpose of deciding on an intervention.

SAMPLE OUTLINE FOR TERMS OF REFERENCE

Terms of Reference for ...

Subject of the assessment:

Commissioned by:

Starting date:

Duration of the assessment: (duration of the assessment will depend on the context; time for data analysis and report writing needs to be included)

Target area: (to be covered in the assessment)

ToR elaborated by:

1. CONTEXT

Known background of the situation

2. OVERALL OBJECTIVE and PURPOSE of the assessment

Overall purpose of the assessment summarised; justification

3. SPECIFIC OBJECTIVES / ASSESSMENT QUESTIONS

Well formulated specific and realistic objectives (and / or questions) of the assessment will determine what kind of information to gather and the methods to be used.

It can be helpful to state which kind of information is NOT expected.

4. TOOLS AND METHODOLOGY PROPOSED

5. TEAM MEMBERS

Required skills

A short training on assessment tools and methods for less experienced teams as well as on-going support during the assessment should be ensured.

5. Announcement of the assessment

ToR as well as timing of the assessment must be agreed with the field. Where possible, means of transport and other practical arrangements (translator, community guides, etc) shall be made beforehand.



Inform the authorities at national and local level as well as other MSF sections (if already working there) of the purpose and timetable of the assessment mission. Be aware of any international MSF agreements relevant to the area!

6. Coordination with other actors

Other organisations (other MSF sections, INGOs, NGOs, UN agencies, national Red Cross society, and faith organisations) as well as national and local governments should be contacted to discuss their plans and intentions. Assessments should be coordinated to avoid duplication of efforts and assessment fatigue.

7. Administrative arrangements

Administrative arrangements include:

- travel and visas
- security clearances (understanding security risks, use of existing security guidelines)

- organising transportation, accommodation and other logistics, communication systems
- organise equipment required for the assessment

STEP 2 - Secondary data review⁸

Secondary information is information that has already been collected from different sources or by other parties. It helps to form an initial idea of what the problems might be, what the situation was before (the crisis), or who the stakeholders are. Secondary information is essential for deciding what kind of primary data needs to be collected.

It can be in written form (reports, etc) or oral (discussions). This includes reports, surveillance records, and other published and unpublished documents.

A lot of secondary data can be obtained before the departure to the field. HQ staff might assist in gathering information.

⁸ This section has been adapted from (ACAPS 2011b).

Overview of information to look for during secondary data review and where to find it:

Focus	Content	Source
Context	<ul style="list-style-type: none"> Country profile (geography and climate, socio-economic data, education, socio-cultural characteristics, governance) Demographic profile 	<ul style="list-style-type: none"> → International reports (Economist country reports⁹), journals, media reports → MSF country reports, sitreps → Internet sites, online databases (ie, EM-DAT, ACAPs)
Crisis overview	<ul style="list-style-type: none"> Humanitarian profile (affected population, most affected areas, displacement pattern, priority concerns, humanitarian space) Stakeholders in the crisis historical overviews 	<ul style="list-style-type: none"> → Universities → National and regional ministry records related to policies on health, housing, water, sanitation, environmental, social service, and disaster plans, etc
Livelihood and food security	<ul style="list-style-type: none"> Key sectors of employment, local economy Market and prices Poverty rate, data on unemployment Food insecurity and coping strategies 	<ul style="list-style-type: none"> → International and national agencies, NGOs, institutions, universities: reports of programmes, assessments, consultancies, studies, surveys, statistics → Geospatial data from UNISAT, Google Earth, http://www.openstreetmap.org/
WASH	<ul style="list-style-type: none"> Access to water Access to sanitation 	<ul style="list-style-type: none"> → Satellite imagery
Health and nutrition	<ul style="list-style-type: none"> Main health indicators Functioning of health sector, health policies, patient fees Coverage and state of health facilities Mortality and morbidity rates Endemic and epidemic diseases Maternal health, SGBV Malnutrition rates Access to health Health seeking behaviour 	<ul style="list-style-type: none"> → Eyewitness accounts (people who have recently come from the affected area) → Verbal communication with experts about the affected area or the relevant technical issues → Health fact sheets (WHO) → Hospital and clinical records → Social media

⁹ Regularly obtained by MSF (see Tukul)

10 principles for obtaining useful secondary data

1. Collect data first on national level, and get population data to lowest administrative level possible
2. Look for important and relevant quantitative information, e.g. census, health-statistics, demographic data, etc.
3. Use snowball effects: use the references in collected reports and documents to guide you to further literature.
4. Ensure there is enough time to turn data into information. Collected data need to be analysed, synthesised and up to date to be useful
5. Scrutinise the reliability and credibility of the data (level of bias, confidence intervals, etc) and the validity of the data collection methods used.
6. Be careful of the actual meaning of terms used. Provide definitions for potentially confusing or sensitive terms as well as for technical terms.
7. Involve experts, who are familiar with the context or the subject.
8. Make sure the secondary data review is properly referenced. Always include details of sources in the report!
9. Clearly define when information is based on assumptions instead of facts or sufficiently verified information
10. Challenge your own assumptions and conclusions. Discuss your findings with colleagues!

STEP 3 - Primary data collection

Most of the primary data will be obtained in the field. The type of information to be collected on context, vulnerability, and risks is briefly outlined below. Thematic checklists and sample questionnaires for assessing needs and vulnerabilities can be found in part II of the Assessment Toolkit.



Checklists and indicators for emergency situations involving displacement of population can be found in [MSF-OCB \(2011\) "The Priorities – Check-Lists, Indicators, Standards: situation with displacement of population"](#).

The choice of methods for data collection depends on the information required and on the assessment phase. The main methods for initial assessments are key informant interviews, group discussions, direct observation, mapping, and estimation of population size.¹⁰ The length of the field stay will depend on the physical access to and the size of the area to be covered, on the planned methods, and the estimated number of informants.

¹⁰ (Humanitarian Practice Network January 2011)

Vulnerability and capacity framework

Risk factors determining the vulnerability of a given society can be geographical, social/cultural, economic, or political (see annex 5.1). Capacities include both the local and international level.

Local response capacity

- Infrastructure: transport modes, communications, and utilities (electricity, water-supply, etc)
- Organisational characteristics of public and private sectors: level of functioning, emergency preparedness plans (if any), response capacity to (existing and/or future) emergencies
- Organisational characteristics about the affected community: more detailed information about community composition, organisation, and capabilities to act (existence and capacity of local associations/CBOs/NGOs)
 - What are the strengths and weaknesses of community leadership, organisations, and structures?
- Health services: service facilities (types and number, capacity, location), damage, service utilisation, service gaps, organisational arrangements
- Resources: financial, personnel, buildings, equipment, vehicles, and drugs

International response capacity

- MSF presence and/or willingness and capacity of response
- Other international organisations: plans for projects, bringing in resources

PLANNING CHECKLIST

Items can help simplify or amplify data collection in the field!

- Laptop
- Communication equipment (Mobile telephone, satellite phones, HF/VHF radio, laptop)
- Maps of country/region
- MSF address and telephone list (list and telephone of contacts in country)
- GPS
- Camera, extra batteries
- Audio recorder (check sensitivity)
- Cash
- MSF security guidelines on the country (if existing)
- Specific MSF guidelines if appropriate (Epidemic guidelines, Nutritional guidelines, Refugee Health book, etc.)
- MUAC tapes
- First aid kit, anti malarials, mosquito net and repellent, PEP kit
- Clipboards, pens and paper (including MSF paper)
- MSF stamp and business cards
- MSF charter and general information on MSF (in local language if possible)
- Flashlight (candles)

Depending on expected situation other items can be added, such as:

- population counter
- pool tester, turbidity tube
- measuring board and weighing scales
- other

STEP 4 - Analysis

The process of analysis should be on-going during the assessment in order to ensure that questions arising during the analysis can still be addressed. This will allow also to further cross-check or confirm initial conclusions.

POINTERS for the interpretation of analysed data

Evaluate the data analysed within the contextual situation of the affected area and the dynamics of the crisis. Describe the affected population:

- Determine the (unmet) priority health needs of different groups
- Describe risks and vulnerabilities of different communities/groups
- Assess the local and international response capacity – present and anticipated
- Assess the risks of intervention – security, negative consequences / harmful effects of aid; assess the consequences of no intervention in respect of future risks
- Ascertain the main (anticipated) problems/risks as a result of the crisis (ethnic balance disturbed, burden of the existing infrastructure, sharing few/limited resources, environmental consequences)
- Assess whether assistance can be provided to the affected (target) population according to humanitarian and MSF principles of neutrality, impartiality and independence – humanitarian space

The analysis should answer the following two questions:

1. Is there a necessity for outside intervention? (based on the needs assessment within a given context)
2. Is there a necessity for MSF to intervene? (based on the assessment of the response capacity within a given context)

An important first part of data analysis is getting a sense of the data quality and scope. Data need to be checked in terms of its reliability, accuracy, completeness, consistency, plausibility, and cross-correlated with data from other sources. Sources of data must also be evaluated in terms of credibility, comprehensiveness, representativeness, and specificity. Comment on how the results are validated by the different methods!

There are important differences between the analysis of quantitative and qualitative data (see page 16 for details).

Qualitative data are analysed by identifying categories, sorting answers, and then interpreting the findings. Data in each category should be summarised to produce a concise statement of the main findings.

Quantitative data can be used to calculate specific health indicators according to definitions and compared with standard or context specific benchmarks.



Clearly state (potential) bias and limitations in the report – whether in data collection, survey design, analysis, or interpretation.

SAMPLE OUTLINE FOR AN ASSESSMENT REPORT

Table of contents

List of Acronyms

Executive summary

1 to 2 pages at the maximum to present main findings and recommendations

Introduction

Introduction and contextual overview of affected area and population

Assessment process and methods

General and specific objectives; methodology; limitations, process of the assessment

Assessment findings

- Presentation of the results of the data collection, which should include indicators that show the impact of the humanitarian crisis on the health needs
- Data on the response capacity, both local (state of the existing infrastructure, existing local resources) and international response capacity (coordination efforts, resources)
- Forecasting of different possible scenarios depending on the evolution of the crisis (on-going conflict, worsening, resolution, etc)
- Conclusions (include information gaps and needs)

Recommendations

- Identify immediate and medium-term needs and prioritise actions that address them
- Recommend the best strategy to approach these actions considering the context and current response capacities
- A SWOT analysis might be done for the proposed intervention
- Recommendations on further assessment

Annexes

References, list of interviewees, ToR, sample questionnaire/checklist, itinerary

STEP 5 - Report and recommendations

The assessment report must provide a concise analysis of the data and must explain the urgency of the health and humanitarian situation as well as expected developments in the near future.

STEP 6 - Surveillance and continual assessment

Assessing the quality and needs of a health information and surveillance system is part of the assessment:

- If there is no existing surveillance system, one needs to be set up as soon as it is clear that immediate input of MSF is required.
- If there is an existing surveillance system, the reliability of data should be assessed and, if required, improvements and training should be done.

A surveillance system consists of on-going collection of data, the analysis of that data, the dissemination/feedback of the data analysed, and the implementation of a response based on the conclusions of the analysis.

Surveillance systems – wherever possible – will collect information on mortality (crude, age-, sex-, and cause-specific), nutritional status, morbidity of significant public health concerns, and diseases of epidemic potential. Sometimes alternative indicators are needed when measuring mortality is not practical and feasible (eg, food security, access to health).

The system should also monitor access to health, food, clean water, and should include sufficient information regarding human rights abuses. Blocked access, differential access to health care (based on what you know about the ethnic, gender, socio-economic distribution of the population), differential exposure to violence/trauma, population movement or flight (whether forced or voluntary), and obstruction to aid should be recorded systematically.

It can be very basic but should produce reliable data that can be a very powerful tool to alert and persuade other organisations and donors of the need to act. Some of this information may be very sensitive, so attention should be paid to how the information is requested and recorded. As crisis situations can be dynamic, changes have to be monitored at short intervals.

Within an MSF intervention area, prospective surveillance should be systematically implemented. It will be based on regular collection of selected health data gathered through community networks or health structures and their analysis.

Continual assessment is a package of activities, such as monitoring, surveillance, and regular feedback from beneficiaries to rapidly spot and react to changes. It will, additionally, cover the new areas at risk (eg, new sites of displacement) as they appear. Existing local networks must be used or – if not possible – new ones established to feed information into the continual assessment. Teams specifically devoted to assessments might be needed in constantly changing environments

3 Data collection

3.1 Introduction

This chapter provides an overview of different data collection methods, their advantages and disadvantages, sampling strategies, validation, and limitations.

Assessments are often conducted in chaotic emergency situations. There may be constraints to collecting data, such as lack of access, time limitations, and security incidents. However, the planning of data collection, the choice of methods and informants as well as the analysis must be systematic. This will ensure that the assessment findings are not based on personal impressions depending on the profile of the assessor but provide a full and objective picture of the situation.

When collecting any data, always keep in mind that it is

- useful for making decisions (do not collect too much or irrelevant data)
- feasible to collect (consider the available resources and time)
- reliable (accuracy, biases, representative of the affected population)
- complete (any groups not included/specified)
- worth the cost (including security issues)
- timely (most recent data)
- triangulated, if possible

Two categories of data collection methods are distinguished: quantitative and qualitative. The difference lies in the approach and the types of questions they seek to answer:

- Quantitative methods provide numbers or numerical measurements, i.e. “how many” or “how much”.
- Qualitative methods aim to answer questions about “what”, “how” or “why”.

Both methods are scientifically sound, if applied correctly. Often they are employed in tandem in order to gain a complete understanding of the situation¹¹ (eg, the results obtained with qualitative methods can inform the design and parameters of the quantitative part of the assessment, so that appropriate questions can be asked in quantitative surveys).

Detailed information on strengths and weaknesses of quantitative and qualitative data collection methods can be found in [ACAPS \(2012a\) "Qualitative and quantitative research techniques for humanitarian needs assessment: an introductory brief"](#).

¹¹ (MSF-UK 2007)

Qualitative and quantitative research methods

	Qualitative research method	Quantitative research method
When to use it	<ul style="list-style-type: none"> • When in-depth understanding of a specific issue is required • To understand behaviour, perception and priorities of affected community • To explain information provided through quantitative data • To emphasise a holistic approach (processes and outcomes) • Assessor only know roughly what he/she is looking for • Recommended during earlier phases of assessments 	<ul style="list-style-type: none"> • To get a broad comprehensive understanding of the situation • To get socio-demographic characteristics of the population • To compare relations and correlations between different issues • When accurate and precise data is required • To produce evidence about the type and size of problems • Assessor knows clearly in advance what he/she is looking for • Recommended during latter phases of assessment
Objectives and main features	<ul style="list-style-type: none"> • To explore, understand phenomena from within the context • Perspectives, opinions and explanations of affected populations toward events, beliefs or practices • Lends itself to community participation 	<ul style="list-style-type: none"> • To seek precise measurement, quantify, confirm hypotheses • Provides a general overview, demographic characteristics • Prediction, causal explanation • Looks at specific aspects from the outside
Data format	<ul style="list-style-type: none"> • Data can be observed and described, but not measured • Mainly textual (words, pictures, audio, video), but also categorical 	<ul style="list-style-type: none"> • Data can be counted or measured. Involves amount, measurement, or anything of quantity • Mainly numerical and categorical values
Answers the questions	<p>Method answers questions arising during the discussion:</p> <ul style="list-style-type: none"> • How? Why? • What do I need to look for in more detail? <p>Questions are generally open ended</p>	<p>Method answers a controlled sequence of questions with predetermined possible answers:</p> <ul style="list-style-type: none"> • What? How many? <p>Questions are closed</p>
Methods	<ul style="list-style-type: none"> • Individual interviews • Key informant interviews • Semi-structured interviews • Focus group discussions • Observation 	<ul style="list-style-type: none"> • Quick counting estimates • Sample surveys • Population movement tracking • Registration • Structured interviews
Sampling	Non-random (purposive)	Random
Questionnaire	Checklist with open questions and flexible sequence	Predetermined questionnaire with sequence and structure
Analysis	<ul style="list-style-type: none"> • Use inductive reasoning; analysis is descriptive • Involves a systematic and iterative process of searching, categorizing and integrating data (searches for patterns) • on-going analysis (eg, waves of data) • Describes the meaning of research findings from the perspective of the research participants 	<ul style="list-style-type: none"> • Uses deductive methods • Descriptive statistics • Inferential statistics

Source: (ACAPS 2012a, 12)

3.2 Selecting respondents: sampling

Sampling is the process of selecting a number of subjects from all the subjects in a particular group or "universe".¹²

The first step of sampling is to identify the target population. This is the population we want to get results about. The next step is to define the study population from which the sample will be drawn. This may not be the target population but a more limited, accessible population.

There are two ways to select the sample: probability vs non-probability sampling or random vs non-random sampling.

3.2.1 Probability sampling

Probability sampling is applied when we wish to extrapolate results from the study population to the population from which the sample was drawn. If a sample is not representative, estimates from the sample will be biased. The best way to avoid selection bias is to choose the sample randomly from a clearly defined population.¹³

The aim of all random sampling methods is for each sampling unit to have a known chance of selection. In case of equal probability selection methods (epsem) each sampling unit has the same chance of being selected.¹⁴

In order to draw a sample from the study population, we need a sampling frame. This is a complete list of all sampling units in the study population. A sampling unit may be, for example, an individual or a household.¹⁵ In MSF settings, a household is the most common sampling unit.

Basic probability methods

- simple random sampling
- systematic sampling

More complex probability methods

- stratified sampling
- multi-stage sampling
- cluster sampling

Simple random sampling is the most straightforward method of selecting a sample, using random numbers generated electronically or from tables, whereas every sampling unit has the same chance of being selected. It is only appropriate if the population is homogeneous and a complete list of all the sampling units in the population is available.¹⁶

Systematic sampling is more convenient than simple random sampling if the sampling frame is arranged in a way that systematic selection is easily accessed. For example, if houses are organised in ordered rows; the total number of houses is

¹² (Porta 2008)

¹³ (London School of Hygiene and Tropical Medicine 2009c)

¹⁴ (Porta 2008)

¹⁵ (London School of Hygiene and Tropical Medicine 2009c)

¹⁶ (London School of Hygiene and Tropical Medicine 2009c)

divided by the required sample size, which gives the sampling interval to be used.¹⁷

Stratified sampling¹⁸ is used when the population is composed of groups with different characteristics. In such a heterogeneous population, overall estimates from a simple random sample will not be as precise, unless the sample is very large. In stratified sampling the population with common characteristic is divided into groups or strata. Then a sample is selected from each stratum.

Multi-stage sampling¹⁹ is used when it is not feasible to take a simple random sample (ie, population is widely dispersed or there is no suitable sampling frame), which is very common in MSF settings. In these situations the sample is more easily selected in stages using the hierarchical structure. In multi-stage sampling, the first-stage (or primary) sampling units are chosen with “probability proportional to size”. Sampling in this way ensures that each unit in the population has the same chance of being selected. For example, if the individuals of villages are the primary sampling units, each individual will have the same chance of being included in the sample. But if villages were the primary sampling units, then a village with a large population would be more likely to be selected than a village with a much smaller population.

Cluster sampling is a special case of multi-stage sampling in that all units at the lower level are sampled. In this context, the first-stage units are called clusters.

In cluster sampling, several clusters of households are selected. Often, a sample of 30 clusters of 30 families is taken, representing approximately 4000 to 5000 persons, 900 of whom are children between 6 and 59 months. However, the appropriate sample size should be calculated for every survey.²⁰

Practical guidance on sampling methods can be found in [MSF/Epicentre \(2006\) "Rapid health assessment of refugee or displaced populations"](#).



Ask for the support of an experienced epidemiologist when you plan to carry out a survey in a complex situation (open setting displacement, urban setting, etc.).

¹⁷ (MSF/Epicentre 2006)

¹⁸ (London School of Hygiene and Tropical Medicine 2009c)

¹⁹ (London School of Hygiene and Tropical Medicine 2009c)

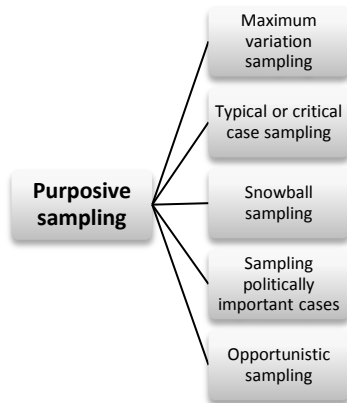
²⁰ (MSF/Epicentre 2006)

3.2.2 Non-probability sampling²¹

Non-probability sampling does not involve random selection, so extrapolation of results to wider populations is not possible.

Purposive sampling²²

In qualitative research purposive sampling is the method of choice. Also for field assessments – aiming at obtaining information that is relevant and credible in a particular setting in relatively short time-frame – purposive sampling is often most appropriate.



The advantage of purposive sampling is to select relevant and information-rich cases. This contributes to rapid understanding of the situation and to detection of specific vulnerabilities of the affected population. It produces a sample where the included groups are selected according to specific characteristics that are considered to be important as related to vulnerability (eg, new and old IDPs vs host population, rural vs urban population, etc). With such a sample, group differences can be compared and the level of

vulnerability can be ranked (ie, highest to lowest access to food, water, or health services). Using this method, the assessment team will choose a sample of sites which represents a cross-section of affected areas or groups.

As a first step the assessment team will choose a sample of sites or specific groups. The criteria for selection and number of sites/groups will depend on the context of the emergency and on the heterogeneity of the affected population.

For more specific guidance consult [ACAPS \(2011a\) "Technical brief: purposive sampling and site selection in phase 2"](#).

The second step will be to sample respondents within the chosen sites or groups. The following sampling approaches exist:

Maximum variation sampling aims at respondents with the most diverse characteristics that are relevant for the assessment (eg, young vs old, sick vs healthy, employed vs unemployed, etc).

Typical or critical case sampling focuses on typical or critical representatives of a particular group (newly displaced, victims of sexual violence, etc) in order to describe their situation or their specific problem in detail. Similarly, sampling could also be relevant in terms of a specific criterion (eg, victim of sexual violence that has not received medical care).

²¹ Adapted from (Patton 1987)

²² Adapted from (ACAPS 2011a)

Snowball sampling aims at discovering new information-rich informants by asking the people interviewed for others who might know about a particular topic. In that way, the assessment team is led from one key person to another.

Sampling politically important cases might be applied to involve respondents of political importance in a particular area – either to get them interested or to gain their acceptance. It is similar to critical case sampling.

Opportunistic sampling means that whenever the evaluator considers an encounter in the field relevant, s/he should allow enough flexibility during the process to include those.

The sample size in purposive sampling is determined based on the notion of saturation. This means that new data are collected until the point where no additional insights to the assessment question can be obtained (eg, if interviews confirm information or provide sufficient explanation for differences in statements, the saturation has been reached). Based on this logic, the sample size cannot be precisely planned before the assessment.

For more guidance consult [MSF-UK \(2007\) "A guide to using qualitative research methodology"](#).

3.2.3 Convenience sampling

In some cases, due to accessibility issues with the target population, convenience sampling may be adopted. This is the weakest sampling technique because selection bias may easily occur. However, it is considered efficient, cost-effective, and it is commonly used in rapid assessments. It is

important to record the limitations of this choice, especially the lack of generalisability of the findings.

✓ Consider which sampling strategies will be most appropriate to reach the best suitable respondents for your assessment questions and maintain enough flexibility to change!

3.3 Data collection methods

In this chapter we introduce a series of different methods. Some of them are used to collect quantitative or qualitative data (eg, observation, interviews), others are applied to compile only qualitative data (eg, FGDs, participatory methods), and some methods focus entirely on quantitative data, such as sample surveys.

3.3.1 Observation

Observation means observing objects, structures, events, processes, relationships between people or people's behaviour systematically, and recording these observations. Observation should be used continuously throughout the assessment. It is an on-going eye witnessing – active as well as passive – of all that is encountered during the assessment.

Visual inspection of the affected area

Visual inspection of the affected area involves an examination of the physical environment, including visits to medical facilities, markets, food distribution sites, etc. Observations should be recorded and a map of key elements made.

Validating data gathered from other sources

While interviewing can give information about what people think and say, observation will give information about what people *actually do*. It also provides information about the context surrounding events and actions.

Observation can be overt (people know you are watching) or covert (people are not aware). The information can be gathered independently of people's wishes to cooperate but the ethics of this needs careful consideration. One disadvantage is observer bias – data collected is likely to vary according to the observer and their interpretation can be culturally conditioned. The presence of an observer can have an effect on people's behaviour.



Identify indicators that you can assess through observation! Draw up a checklist for observation!

3.3.2 Interviews

There are different types of interviews: An interview can be highly structured, usually with closed questions and coded responses (traditional questionnaire). Interviews can also be semi-structured with open-ended questions and an interview guideline or in-depth, where one or two issues are covered in great detail and questions are more based on what the interviewee says.

Interviews can be conducted with individuals, special interviewees (key informants), or with groups (focus group discussions).

Examples of non-directive probes

- "Tell me more about..."
- "Take me through exactly what happens when you..."
- "Can you give me an example of...?"
- "Did I understand you correctly when you said...?"
- "Can you explain a bit more what you mean by...?"
- "Why do you think that is the case?"
- "Do you think everyone thinks that?"

Source: (GAP 2004)

Key informant interviews are a major tool for initial assessments. They can provide information about a community in a fairly short period of time and without a large number of people needing to be interviewed. Cross-checking is necessary and should include a few interviews with members of vulnerable groups. When time allows, more individual interviews should be conducted to get a range of opinions.

Informant security is vital. Be aware that by approaching someone for an interview, even randomly, may make that person more vulnerable in his own local setting. Always introduce yourself, explain the reasons for the interview and ask if they are willing to be interviewed. Informed consent should be clear and respectful. Assure the respondents that the information will be kept confidential. If information is sensitive, record only age, sex, and position as well as date and place of the interview.

Interviews should be interactive and sensitive to the language and concepts used by the interviewee. The choice of translator is important, especially in settings where human rights abuses are known to occur and where there are distinctions between groups (religious, ethnic, and gender). Be aware that having a certain translator may limit the type of information that can be collected (eg, male translator for issues regarding the abuse of women).

Check that you have understood the respondents' meaning instead of relying on your own assumptions. Be aware of how you are perceived by the interviewee and how that affects the responses (responder bias).

Key informants are people who

- you suspect to possess a lot of knowledge about the topic you are interested in.
- are individuals who are looked upon as representatives of the opinion and experiences of a whole or sub-group.
- can be government officials, health personnel, teachers, social workers, village elders, leaders/members of local and international non-governmental organisation, leaders/members of informal groups (women or the poor).
- are identified as key informants represent the views of the community or sections within it and not their own views.
- are often the more vocal, better off, better-educated, and more powerful members of the community, which can introduce a bias.
- may not represent the views of the more vulnerable in the society. Time and effort should be spent locating key informants, who represent the more vulnerable groups in the population (women and children, certain ethnic or religious group, etc).

Tips for interviewing

- Arrange place and time convenient.
- Explain the purpose of the interview/assessment.
- Reassure that the discussion will be confidential.
- Don't interpret or correct! Do not argue, discuss, or judge.
- Respect the informants' point of view.
- Ask open-ended questions.
- Start with easy questions to warm up.
- Approach sensitive issues gradually.
- Be flexible and allow a natural flow of the discussion.
- Depending on how much detail you want, "probe" for it!
- Pausing allows participants to think more about the questions.
- If relevant, leave your contact with the informants.
- Make sure you summarise and feedback the most important points at the end.
- Finish with an informal chat and thank your respondent.
- Be aware of overburdening interviewees – keep it simple!

3.3.3 Focus group discussions (FGDs)

A small group of six to ten people with similar background, (eg, specialist knowledge, particular interest, specific characteristics, such as age, gender, people suffering from the same disease, urban/rural, etc) are invited to discuss a topic in detail. Make sure that the group is diverse enough to have fruitful discussions from different perspectives!

The facilitator must speak the local language or use a well-versed interpreter. S/he keeps the discussion on or around the topic but – in contrast to group interviews – the aim of

FGDs is for the participants to debate with each other whereas the facilitator is taking the role of an observer.

FGDs are useful for understanding perceptions and attitudes. They can stimulate the analysis of past changes, generate future ideas, and paint a picture of what is socially acceptable or what general beliefs are, rather than give in-depth knowledge.

The advantage of FGDs is that a lot of information can be obtained with one session/discussion. Informants can add information to each other's statements, thus enabling the collection of more information than with individual interviews. Also, people feel less inhibited in a group than in a one-to-one situation. Interaction in the group stimulates people to express their views – although the opposite may occur, especially in case of sensitive topics.

Therefore, FGDs are not appropriate for sensitive, contextual information or information about SGBV for instance (unless generic). Additionally, one needs to be aware that the hierarchy or differences within a group (gender, ethnicity, etc) may inhibit some from talking. Caution is also required when interpreting results because participants may agree with other respondents (for different reasons, such as peer pressure, group acceptance) even if they have a different opinion. Keep in mind that confidentiality cannot be guaranteed in a group setting!

For practical guidance on how to perform interviews and how to organise FGDs consult [MSF-UK \(2007\) "A guide to using qualitative research methodology"](#).

3.3.4 Participatory tools^{23,24}

Participative techniques encourage interaction and active involvement of the affected population. They generate open discussions and can be particularly useful with illiterate respondents. Participatory methods require sufficient time.

(Community) Mapping

Drawing maps with a group can serve to find out more about an area, about social features in an area, or about changes in a particular area. Maps can demonstrate what features are important for different respondents (men, women, etc). Mapping can be on paper, on the ground using local resources, etc.

Community mapping can also be done using satellite maps.²⁵ The main objective of this method is to map the community according to the needs in order to define, analyse, and prioritise the driving forces of vulnerability.

The method consists of two major steps: First, data and satellite imagery are acquired and presented to community members as a blank map to facilitate discussion and the mapping of specific features. In a second step, data are being integrated in a GIS system and enhanced through additional spatial analysis. In the second parallel step the issue of vulnerability to natural and manmade hazards is addressed

²³ (IFRC 2008)

²⁴ (Kienberger 2008)

²⁵ (Kienberger 2008)

together with the community members.

→ Ask the community to identify and mark the required features on the map, such as:

- Community boundary
- Neighbouring communities
- Risk zones (high risk, low risk, safe areas)
- Agricultural zones
- Special infrastructure of the community, such as health structures, wells, markets, assembly points
- Settlement area, displacement sites

For an example of community mapping see [Kienberger \(2008\) "Toolbox & manual: mapping the vulnerability of communities. Example from Búzi, Mozambique"](#).

Transect walks

Transect walks are similar to maps but ambulatory and often partial (may not take in the whole village spatially). Organised (or casual) walks through a particular area can help to identify important features for respondents and help to observe specific points. Walks can be more informal and ease discussions.

Daily calendar

Daily calendars provide an insight into how different members of a community spend their time, if and how this is changing. They can also help in the choice and the design of programmes.

→ Ask participants to describe a typical day, giving as much detail as possible about their activities and the amount of time each activity takes.

(Historical) Timeline

The aim of a historical timeline is to understand the recent history of the area and its inhabitants by identifying the main events that have affected people's lives. The exercise can be done during a general group interview.

→ Draw a line and pinpoint two or three important events that have occurred within living memory. Place them in chronologically and let people come up with other events (or changes).

Proportional piling

Proportional piling is a useful exercise for estimating quantities and proportions, especially when working with people who are not used to quantifying data. Proportional piling is often used to find out about the relative importance of different things and it also triggers further discussion. For example, if you want to know the proportion of income that a family receives from several different sources or what the family's main expenditure is, their food consumption or ways of obtaining their food:

→ Collect 100 dried beans (or pebbles or anything similar) and ask the household members to first describe each income source and then to divide up the beans according to the relative importance of each source.

Seasonal calendar

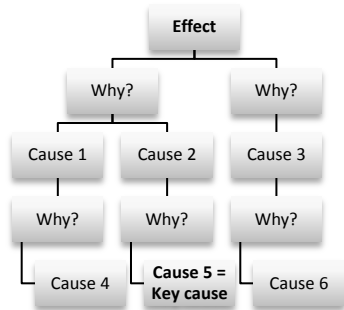
Seasonal calendars are a useful tool in rural environments where production varies throughout the year. They can reflect all significant events occurring during the year. Seasonal calendars should ideally be established for a period

of 18 months in order to reflect seasonal cross-over periods. Calendar design is usually based on a normal year, thus facilitating the subsequent deduction of deviances observed during the assessment.

Ranking

There are different ways of ranking or ordering information (eg, wealth ranking, problem ranking, impact ranking, or performance ranking). Ranking can be used to identify differences in the community and to understand local indicators and criteria for wealth, health, etc. It can be done through voting to select a preference.

Pair-wise ranking is used to define priorities or to determine relative importance. For example, several informants may be asked to indicate their problems or needs in order of priority, and the assessment team can then verify the consistency of the answers.



Why-why tree

The why-why tree allows for a participatory debate on the underlying causes of a specific problem. It also facilitates the prioritisation of such causes. It clearly illustrates the relationship between cause and effect. By going to the roots of an issue,

this tool makes it possible to better define objectives and to choose appropriate intervention strategies.

Practical guidance on participative methods can be found in [IFRC \(2008\) "Guidelines for assessment in emergencies"](#).

3.3.5 Rapid health assessment (RHA)

Rapid health assessment is described in detail in the specific and practical guide [MSF/Epicentre \(2006\) "Rapid health assessment of refugee or displaced populations"](#). Below, we briefly outline what it is and when to conduct it.

RHA is designed to carry out a rapid assessment of the health-related status of an emergency-affected population and it focuses on the top ten priorities in emergencies. RHA refers to collection and analysis of information concerning demography, mortality, morbidity, nutritional status, and immunisation of the concerned population as well as food, water, and basic living conditions. RHAs are generally carried out at the start of an intervention, together with the first operational activities. They rapidly provide data on the size of the population, health priorities, and vital needs. Rapid assessments may include data collection by:

- Visual inspection
- Interviews with key informants (community leaders, humanitarian aid workers, health providers, public health authorities)
- Limited surveys using small semi-random or convenience samples
- Review of existing morbidity and mortality surveillance data
- Review of clinical registers
- Collection of other existing data

3.3.6 Surveys²⁶

A sample survey allows collecting quantitative data on any number of topics. The analysis of quantitative sample survey results is relatively easy. Results are analysed and expressed as numbers, percentages, averages, scales, or other numeric presentations.

Major concerns in conducting surveys include how to minimise bias and how to account for sampling errors. Bias refers to any error in the design or in the conduct of the study leading to conclusions that differ from the truth. Bias cannot be measured or calculated. Potential sources of bias have to be identified at the design stage as it is impossible to adjust for bias at the analysis stage.

Respondent bias can result from a tendency to provide socially acceptable responses or – even the opposite – of making a situation seem worse than it is in reality. Good translation of questions (ie, understanding of the meaning) is crucial. Survey questionnaires should be re-translated to the original language by a different translator to check the accuracy of the local translation.

Another source of bias is the selection bias (ie, when the sample is not truly representative of the target population). Often only parts of the affected population are accessible for a survey but they may not represent the same needs. Especially in open settings the need to select a representative

sample is complicated by geographical spread, compromised access, and lack of reliable population figures.

Unlike bias, sample errors can be predicted, measured, and accounted for at the analysis stage using several measures such as confidence interval, standard deviation, or p value.

Rapid convenience surveys

Convenience surveys are a pragmatic choice when there is no way to conduct a proper survey. During the very early days of an emergency or when conducting rapid site assessments mortality is often estimated roughly by drawing non-representative samples from the population, based on criteria of feasibility and speed of data acquisition. Examples of these methods include interviewing heads of households standing in line for food distribution or mothers bringing their children to a vaccination point. Alternatively, local people of importance (chiefs, leaders of women's groups) may be asked to list recent deaths in the communities under their oversight. This allows a simple and rapid quantitative estimation of needs but data must be interpreted with caution and should not serve as the only base for decision.

Convenience surveys may not capture the more disenfranchised and vulnerable members of the population, who may not have access to distributions or may be marginalised by the leadership of the affected community (eg, because they belong to a different ethnic group).

²⁶ (United Nations World Food Programme n.d.)

More information on RHA and surveys can be found in [London School of Hygiene and Tropical Medicine \(2009a\)](#) "[The use of epidemiological tools in conflict-affected populations: open-access educational resources for policy-makers. Table of contents](#)" and in [MSF/Epicentre \(2006\)](#) "[Rapid health assessment of refugee or displaced populations](#)".

3.4 Validation of findings

Whatever methods are used during the assessment, you will need to ensure that the validity (or “trustworthiness”) of your findings is maximised. There are three important ways to guarantee the validity and credibility of the research process and the data collected: Triangulation, cross-checking of information, and reflection phases.

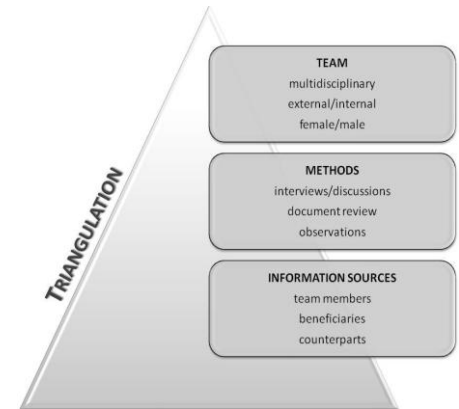
3.4.1 Triangulation

Triangulation is an essential way for ensuring validity and quality of the information collected. It means that there are constantly three or more angles of data collection to cross-check information and avoid bias.

Triangulation works through:

- Using different methods throughout the evaluation project (eg, document review, questionnaires, interviews, observations, etc)
- Using different information sources (eg, MSF staff, beneficiaries, local authorities, other NGOs, etc)

→ Looking for heterogeneity in the (assessment) team and a minimum of two team members with different professional background and gender



3.4.2 Cross-checking of information

Another way to ensure validity is to cross-check information with respondents and stakeholders (eg, feedback at the end of the interview, on-going exchange with the project team).

3.4.3 Reflecting phases

Reflection phases are crucial for the assessors. They need to take time out to reflect on information collected so far and check whether the process is on track in regards to the objectives of the assessment.

- ✓ A key element for improving validity is dealing with deviant (different, unexpected) cases or findings. You need to make sure to look into detail and account for why they differ! Explaining this will strengthen your analysis!

In the next chapters, various data collection methods will be briefly introduced starting with qualitative and followed by quantitative methods.²⁷

3.5 Limitations

Each method used during the assessment has its limitations. These have to be considered at the assessment design stage and explicitly accounted for at the analysis stage.



Always include details of secondary information sources in the report!

²⁷ For practical implementation during the field assessment we recommend to consult (MSF-UK 2007) for the qualitative part of the assessment and (MSF/Epicentre 2006) for the quantitative part of the assessment.

4 Mapping and estimation of population size²⁸

4.1 Mapping

Maps are an essential and vital part of every assessment. By visualising information collected during a survey onto a map, large amounts of information can be presented in a format easy to read.

Maps are not only a way of storing and recording information but also a way of analysing, presenting, and sharing information. They should be printed beforehand to be used during the assessment. All information collected on the map can later be transferred into the desired format/programme. If there are no printed maps available, simple maps can be drawn during the assessment with all the information transferred later on.

Global Positioning System (GPS) receivers are getting more and more a standard tool in the field and should be used wherever possible and allowed. The information and waypoints taken during the assessment can be used and plotted onto a simple base map to create your own maps.

In case GPS units are not allowed, SatPhone, smartphones, and geotagging can be used to provide GPS locations. Many smartphones come with applications and maps built-in but

²⁸ Not to be confused with community mapping, see chapter 3.3.4.

applications such as MotionX GPS can be used to turn a smartphone into a GPS unit.

The GPS coordinates can be transferred into Google Earth® directly or by using software like EasyGPS²⁹. The information (waypoints, trajectories, etc) is processed, classified, and saved under the format .kml or .kmz. These files can then be easily shared via email.

There is also a possibility to capture the maps from Google Earth® and to use free drawing software like GIMP³⁰ to do the modifications or to improve the layout.

The use of professional Geographic Information Systems (GIS), such as Arcview, requires not only the software but also the knowledge how to use it. Arcview is not standard MSF software, requires thorough training in order to handle the complex programme, and a hefty investment to obtain the license. Quantum GIS³¹, also called QGIS, is an Open Source GIS software. Unlike Arcview its access is free. As all GIS software *its use* needs planning, time, and competences.

Earth observation-based support can be used to carry out in-depth analyses of areas such as camps, cities, etc. An example of such an in-depth analysis is the population monitoring tool. This tool can provide information on the number of dwellings in a specific area, the density of the

dwellings, and its change over time. As the input of specialists is required, it cannot be applied by assessment teams in the field but can be used as an aid to gain a better understanding of the situation on the ground before conducting the assessment.

Practical guidance on how to create and share the maps using Google Earth software and the Google Maps online website can be found in [Population Services International \(2011\) "Google Mapping Toolkit"](#), in Google Earth® online tutorial³², and MSF-OCA's "GIS Toolkit" (2012), including ["Guide to Global Positioning Systems \(GPS\)"](#), ["Guide to using Google Earth"](#), ["Guide to Gazetteers"](#), and ["Instructions for 'Joekit' and 'Tallykit'; Spreadsheets to Google Earth maps"](#).

4.2 Estimation of population size

Population size refers to the number of people in a specified population. Few populations remain exactly the same for very long – births, deaths, and migration are mainly involved. In the context of disasters, especially in complex humanitarian emergencies involving conflict and large-scale displacement, obtaining reasonably precise estimates of the population size has proven elusive and problematic, particularly during the acute phase of an emergency. There are various methods³³ to determine the size and structure of an affected population:

²⁹ (TopoGrafix 1998-2012)

³⁰ (The GIMP Team 2001-2012)

³¹ (Quantum GIS n.d.)

³² (Google n.d.)

³³ (MSF/Epicentre 2007)

4.2.1 Census and/or registration

During census every person is counted and registered individually. This is the “ideal” method. However, a census is timely and financially consuming. Systematic registration can be done upon arrival at the site.

4.2.2 Counting habitats

Habitats in the target area are counted one by one. This is often only feasible in small sites (small surface area). The average number of persons per household is obtained from a sample survey of households, selected at random or through systematic sampling. Counting habitats may be done on foot or in a vehicle, and sometimes by aerial photography.

4.2.3 Vaccination coverage

This method uses the results of a vaccination coverage survey or the number of vaccines administered during a mass vaccination campaign for a specific age group (eg, 6 to 59 months). Using the reference age group distribution, the total population can be deduced.

4.2.4 Spatial sampling

When affected populations are in a reasonably well-defined area but the numbers are too large to do head counts or habitation counts, population estimation can be done with spatial sampling. In spatial sampling, first the surface area is estimated. Then, the total population is calculated from counting the number of persons in a randomly selected sample of habitats.

Quadrat method

The quadrat method counts the population in small square blocks of equal areas. Blocks are randomly chosen within the defined area. The average sample data is then extrapolated to the level of the total camp population.

T-squared method³⁴

T-square method, adapted from ecology, is a potential alternative for quadrat method. It involves sampling a number of random points, measuring the distance between each point and the nearest household or family unit, then measuring the distance between that household and the next closest one and finally counting the number of occupants in the house. The population size is then calculated by multiplying the number of houses in the survey area by the average number of people in a household.

For practical guidance on the estimation of populations consult the [MSF/Epicentre \(2007\) "Rapid population estimation in emergencies: for field personnel working in camps or sites and wishing to rapidly draw maps and estimate population figures"](#) and [ACAPS \(2012b\) "Rapid estimation of affected population figures: desk review"](#). The latter also provides strengths and weaknesses of each method.

³⁴ (ACAPS 2012a)

5 Annex

5.1 Risk factors determining the vulnerability of a given society (non-exhaustive list)

Physical / geographical	Social / cultural	Economic	Political / governance
Remoteness from health facilities/ inhabitants per health care provider	Social rank (income, ethnicity, nationality, gender); marginalisation	Inability to purchase daily food items (drinking water, basic staple food)	Health policy: is it inclusive for our target group?
Bad road / transport conditions (access to health care)	Disadvantaged groups (single mothers, widows, CSWs, migrants)	Inability to pay for rent	Housing policy: threat of eviction, home demolition, and resettlement
Lack of safe drinking water	Illiteracy (understanding of disease, prevention, and medical care)	Inability to purchase drugs, pay hospital fees	Political neglect / exclusion from benefits
Proximity to unsafe environments (waste dumps, swamps, etc)	Alcohol and drug abuse (extent and percentage in a society / group)	Likelihood and consequences of indebtedness	Exclusion: are there means to participate in political / communal decisions?
Settlement patterns (population density, quality of shelters)	Unsafe sexual behaviour, family planning / average family size; unwanted pregnancy / abortions	Compare average income with prices (for food, rents, etc)	Insecurity: are security forces (police, army, militias) used to protect or to harass inhabitants?
Risk of natural disasters (flooding, earthquake, volcano, landslide, etc)	Role of the core family (frequency of disrupted families)	Characteristics of economic activities (subsistence or profit orientated)	Political freedom: risks for opposition members / activists?
'Risky' neighbourhood (violence, crime, prostitution)	Cultural norms (FGM, widowhood rites, forced ritual cleansing, etc)		Freedom of speech / expression
Condition of infrastructure in residential areas (sanitation, schools; shops)	Violence (domestic, criminal, sexual/ gender based) and its cultural role		Conflict resolution: risk of conflicts ending up in violence?

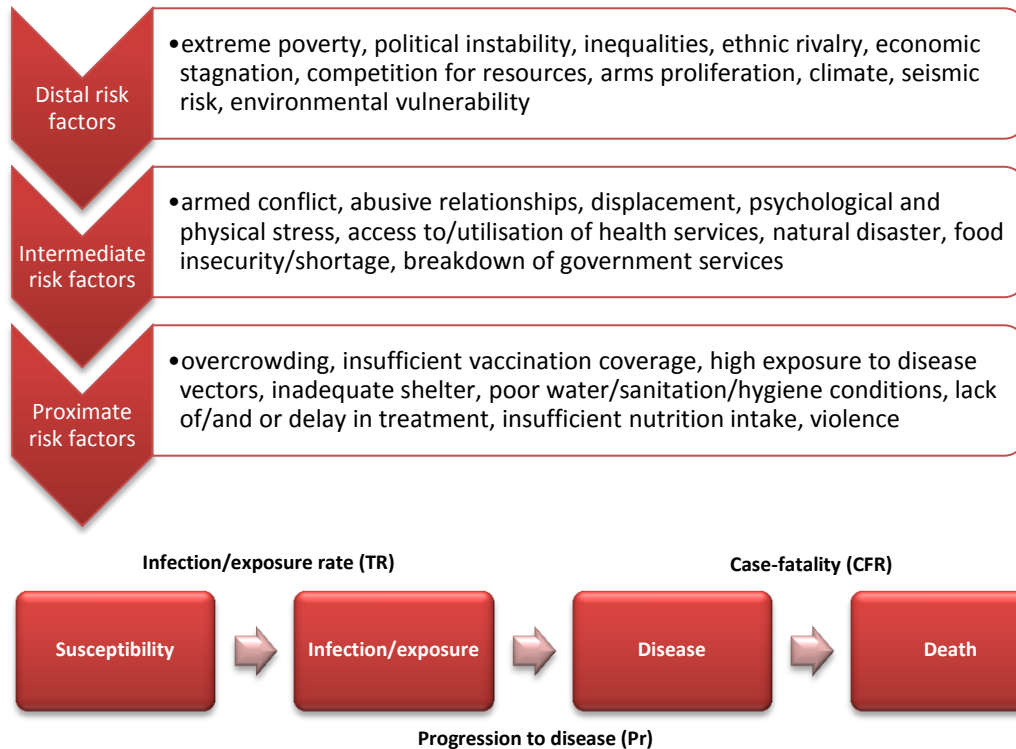
5.2 Exploratory Mission, Lebanon, 2011

Vulnerability of the population living in Tabbeneh and Jabal neighbourhoods as a product of risk factors and capacity

		Risk factors	Capacity/coping
Socio-economic		<ul style="list-style-type: none"> → High level of poverty → High unemployment rate 	<ul style="list-style-type: none"> → Support by political leaders (for those politically affiliated and especially before elections) → Money from families living abroad → Shifting between small businesses → RMF support for education → Drug abuse and alcohol abuse**
Security related		<ul style="list-style-type: none"> → Chronic political instability → “Continuous crisis” between Alawite and Sunni population with regular clashes → Proximity of the two communities 	<ul style="list-style-type: none"> → Population “used” to the conflict → Preventive movement of the population before the clashes
Health related	Health provision	<ul style="list-style-type: none"> → No public health structures 	<ul style="list-style-type: none"> → Dispensaries run by political parties and religious groups → Good coverage of PHC services, limited lab and imagery, some specialists missing
	Health access	<ul style="list-style-type: none"> → Inability to purchase drugs (mainly for chronic diseases), pay hospital fees, medical investigations (lab, imagery, etc.) and specialist consultations → No access to hospitals during clashes for Alawite population* → Poor living and hygiene conditions → High prevalence of chronic diseases, polymorbid patients 	<ul style="list-style-type: none"> → NSSF (small proportion of employed population), irregular support from dispensaries (reduction of price or drug samples), families indebtedness**, not taking or interrupting chronic medication, purchase of bad quality generic drugs mainly from Syria → Limited medical care in dispensaries in Jabal, escort with Lebanese army*
	Health situation	<ul style="list-style-type: none"> → Thalassemia among Alawite population* (? 5%) → High prevalence of smoking → Drug abuse and alcohol abuse → Violence: domestic violence, sexual abuse 	<ul style="list-style-type: none"> → Screening programme of AZM & Saade ass. (? for whom) → Supply of drugs for chronic diseases by YMCA (limited)
Mental health related		<ul style="list-style-type: none"> → Mediocre awareness about mental health problems → No mental health services (only 2 private psychiatrists, approx. USD 100/session) → Assumed high prevalence, MH problems due to continuous crisis 	<ul style="list-style-type: none"> → Follow-up by some GPs (not a popular choice) → Psychiatrists in Beirut (cheaper than in Tripoli) → Drug abuse and alcohol abuse**

*specific risk factors for Alawite population **harmful coping strategies

5.3 Examples of risk factors of excess morbidity (disease) and mortality (death) in a crisis



Source: (London School of Hygiene and Tropical Medicine 2009d)

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Notes

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