Research Protocol - Mortality Rates above Emergency Threshold in Population Affected by Conflict in North Kivu, Democratic Republic of Congo, July 2012–April 2013

Retrospective mortality survey in the MSF catchment area in Walikale, North Kivu, Democratic Republic of Congo

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Study proposal

Draft	2 November 2012 by AL and KB with comments from LS
Revisions	
Study design	Retrospective mortality survey
Study period	3 months
Study site	Randomly selected villages within catchment area of MSF OCA Walikale, DRC
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Collaborating institutions	Ministry of Health DRC

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LIST OF ABBREVIATIONS

95% CI	95% confidence interval
CHW/Reco	Community Health Worker?reco
CMR	Crude Mortality Rate
CTC	Cholera Treatment Centre
DRC	Democratic Republic of Congo
IDP	Internally displaced person
IMC	International Medical Core
MoH	Ministry of Health
MSF	Médecins sans Frontières
MSF-OCA	Médecins sans Frontières – Operational Centre Amsterdam
NFI	Non-food item
NGO	Non-Governmental Organisation
U5MR	Under 5 mortality rate (mortality rate in children under 5 years of age)
WHO	World Health Organization

1. INTRODUCTION

1. CONTEXT

The Democratic Republic of the Congo (DRC) gained independence in 1960. Following the assassination of President Laurent Kabila in the country continues to face a series of internal political and armed struggles.

The area of Walikale in North Kivu (eastern DRC) has been relatively stable between 2008 and 2012. However, in April and May 2012, a series of violent incidents occurred in and around Walikale-Kibua axes between members of the NDC Cheka armed group and the Armed Forces of DRC (FARDC). These violent confrontations led to the displacement of approximately 28,239 persons who fled to Walikale or Mubi cities. Since May violent reprisals are ongoing and the internally displaced populations (IDPs) have not yet returned to their places of origin. According to a situation report from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) in on 13 September, 2012, there are currently 151,140 IDPs currently living in Walikale[1] .

2. MSF-OCA IN NORTH KIVU, DRC

Médecins Sans Frontières-Operational Centre Amsterdam (MSF-OCA) has been working in the provinces of North Kivu and South Kivu since the early 1990s and Katanga since 2003. MSF-OCA operates 5 health programmes in North Kivu; Mweso, Kitchanga, Pinga, Walikale and as well as a cholera treatment centre(CTC) and IDP camp support in Goma

In Walikale, MSF-OCA worked between 2003 and 2008, supporting primary and secondary health care interventions. In May 2012, following reports of violence, internal displacement, reduced access to care and high incidence of malaria, MSF-OCA undertook an exploration mission. The vulnerability of the host and IDP populations were identified during this mission, and in terms of health care needs included: lack of access to basic health care (due to inability to participate in the existing cost-recovery system) and malaria (morbidity and mortality in children under five years of age being extremely high). Since June 2012, MSF OCA has focused on a vertical intervention for malaria diagnosis and treatment and strengthening the delivery of safe blood transfusions in Walikale hospital. These activities were extended in September 2012 with support provided to six basic health centres in the area.

Recent outpatient department (OPD) data from other North Kivu MSF-OCA projects (not Walikale) from January-July 2012 show that acute upper respiratory infections and malaria are amongst the top five most commonly reported clinical conditions. (Table 1). Severe malaria and severe acute diarrhoea are two of the most commonly reported reasons for admission to the inpatient departments in North Kivu between January and July 2012 in all age groups (Table 2). With respect to Walikale project area, between June and July over 3000 OPD consultations were conducted (Table 3). A map of the Walikale area is shown in the Figure.

[1] available from: http://clients.squareeye.net/uploads/anglican/OCHA_situation_Report_6_13_Sep_2012.pdf

Table 1: Top five syndromes/diseases for admission to OPD; North Kivu,January-July 2012, MMR 2012

	<5 years of age		> 5 years of age	
	Syndrome	**No (%)**	**Syndrome**	**No (%)**
1	Acute Watery Diarrhea	8892 (15.3)	Acute Upper Respiratory Tract Infection	24767 (21.6)
2	Acute Upper Respiratory Tract Infection	15718 (27.1)	Gastritis	6530 (5.4)
3	Acute Lower Respiratory Tract Infection	8378 (14.4)	Muscle Pain	13324 (11.6)
4	Parasitose	6043 (10.4)	Parasitose	9769 (8.5)
5	Confirmed Malaria	4864 (8.4)	Confirmed Malaria	10848 (9.5)
Total Consultations		58073		114428

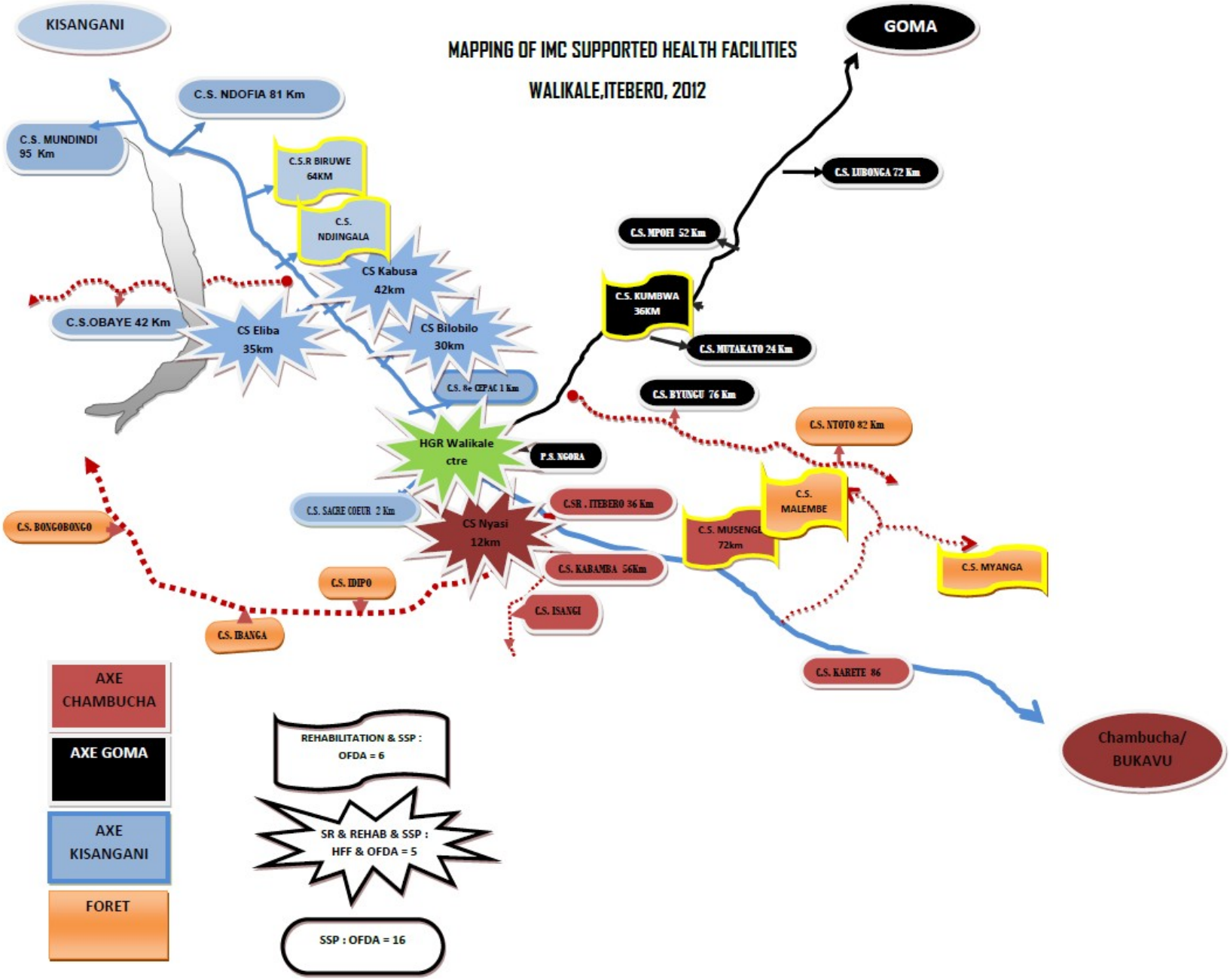
Table 2: Top five syndromes/diseases for admission to IPD, Mweso, North Kivu,January-July 2012, MMR 2012

	<5 years of age		> 5 years of age	
	Syndrome	**No (%)**	**Syndrome**	**No (%)**
1	Severe acute diarrhoea/cholera	198 (10.3)	Severe acute diarrhoea/cholera	77 (7.9)
2	Severe malnutrition	675 (35.1)	Chronic diseases	109 (11.2)
3	Acute Lower Respiratory Tract Infection	315 (16.4)	Acute Lower Respiratory Tract	87 (8.9)
4	Neonatal diseases	306 (15.9)	Others	263 (27.0)
5	Severe Malaria	249 (13.0)	Severe Malaria	224 (23.0)
Total Admissions		1921		975
Mortality (% of total consultations)		9.98%		5.58%

Table 3: number of OPD and IPD admissions and mortality ratio between June and July 2012 in Walikale project area

Walikale	**<5 years of age**	**> 5 years of age**
OPD	1297	2225
IPD	182	149
Mortality Ratio (%) in IPD	2.7%	3.4%

Figure: Map of Walikale project area , eastern DRC; *Source: IMC supported health facilities*



Study proposal: Retrospective Mortality Survey /Walikale, DRC/OCA/2012

3. BACKGROUND - JUSTIFICATION FOR THE STUDY

Following the violent incidents in April and May 2012 as well as the fact that MSF-OCA has only been present in Walikale since June 2012, there is currently little reliable data available on mortality and access to care in the catchment area of the Walikale project. It is therefore unclear what the precise impact on the population has been following the violent incidents in April and May 2012 and the displacements resulting from those.

It is anticipated that this survey will provide estimates on possible causes of death and general mortality in the displaced and host populations in Walikale from April 2012 until the present. Also, concrete information about the population's access to care will become available. This information will assist MSF (and potentially other actors in the area) to better understand and respond to the current humanitarian and healthcare needs in this population. Additionally it may be used to call attention to the ongoing humanitarian crisis in this part of DRC.

2. OBJECTIVES

2.1. PRIMARY OBJECTIVES

To estimate the crude mortality rate for the total population (host and IDP) and for children under five years of age in Walikale project area, DRC, in order to help understand better the impact of the recent violence and population movements in this area on the humanitarian and healthcare needs in the population.

2.2. SECONDARY OBJECTIVES

- To determine the frequency and reasons for displacement;
- To assess access to health care;
- To determine the main causes of deaths during the recall period;
- To measure the incidence and types of direct violence experienced by the civilian population;
- To evaluate household ownership of basic non-food items;

3. STUDY DESIGN

Retrospective mortality survey using a two-stage cluster sampling methodology as an adaptation of the standardized method recommended by the World Health Organization (WHO)[2].

This study protocol is an adaptation of a protocol that was implemented for a retrospective mortality survey in North Kivu in 2009 (Alberti K pour Epicentre et MSF (2009) Protocole d'enquêtes sur les conséquences des violences sur les populations civiles, Nord Kivu, République Démocratique du Congo.)

4. STUDY AREA AND PERIOD

The study area will be the entire catchment area of the Walikale and Kibua health zones.In this part of DRC it rains all year round, with a period of less rainfall between May and July.

[2] Henderson RH, Sundaresan T. Cluster sampling to assess immunisation coverage: A review of experience with simplified sampling methodology. Bulletin of the World Health Organization 1982(60):253-60

5. STUDY POPULATION

The study population will consist of all people living in the villages which are situated in the Walikale and Kibua health zones.

5.1. INCLUSION AND EXCLUSION CRITERIA

A person will be included in the study if s/he satisfies all of the following criteria:

- Living in the randomly selected household *and*
- Informed consent *has* been given by the head of the household

A person will be excluded from t*he study* if s/he satisfies one of the following c*ri*teria:

- Refusal to participate in the study

or

- Inability to locate the potential participant after two attempts to trace him/her

6. DEFINITIONS

6.1. HOUSEHOLD DEFINITIONS

Definition of household

A household will be defined as a group of people who were under the responsibility of one person or head of household, regularly sleeping under the same roof and eating together. The whole household will be included, no matter the age of the household member or the relation with the other members.

Definition of head of household

- The head of household is defined as follows:
- Adult household member (15 years or more), *and*
- Can give accurate information on all demographic and mortality issues in his/her household (can describe with reasonable accuracy the events that occurred during the recall period), *and*
- Has lived in the household the entire recall period, *and*
- Is present at the time of the survey

A household will be excluded from the study if none of the household members fulfil all criteria of the above mentioned definition.

Definition of permanent member of the household

A permanent member of the household is defined as a person who is part of the household according to the household definition and is present at the moment of the study or slept in the house the previous evening.

6.2. RECALL PERIOD FOR REPORTED DEATHS

For this survey the start of the main recall date will be the Easter 2012 (April 8, 2012, around 330 days recall period). This date has been chosen as it is a well known day among the displaced and host population in the Walikale and Kibua health zones. Additionally, the events that have occurred since this date are those that the survey aims to capture in the

survey. A secondary recall date is linked to questions of occurrence of disease in the members of the household. This recall period will refer to the 14 days (two weeks) prior to the date of the survey being carried out.

The end of the recall period will be the day before the start of the interviews in the field. Together with the field team an events calendar will be generated for the chosen recall period in order to determine more accurately the times of the occurred deaths.

6.3. OTHER DEFINITIONS

For the purpose of this survey the following definitions will be adhered to:

- Displaced person: a person that is currently not living in their place of permanent residence due to reasons of war or internal upheaval.
- Returned person: a person currently living in their place of permanent residence, but who was previously living as a displaced person elsewhere.
- Permanent person: a person living in his place of permanent residence.
- Disappeared person: a person who is no longer present in the household (whether displaced or permanent) for who the destination or status (alive/dead) is unknown.
- Absent person: a person who is not present in the household (whether displaced or permanent) but who is known to be alive.

7. SAMPLE SIZE AND SAMPLING

7.1. SAMPLE SIZE

The sample size was calculated using ENA for SMART software (http://www.nutrisurvey.de/ena/ena.html). The criteria listed in Table 1 were taken into consideration for the calculation of the sample size.

Assuming the survey will be conducted in the first quarter of 2013, the study team chooses Easter 2012 (beginning of April 2012) as the reference date for recall. The population in the study area is very religious (Christian) and therefore Easter should be an easy date to remember. Therefore the recall time is considered to be 11 months (330 days).

As it is likely that the population in this part of DRC is very heterogeneous, we have chosen to increase the design effect of the sample size calculation to 3 to account for this factor.

Table 4 Criteria for the calculation of the sample size, Walikale, Kivu, DRC, 2012
NB: the estimated CMR of 0.7/10,000 per day is based on a similar survey conducted in Kivu in 2009 with Epicentre and MSF (K & YC, 2009)

Criteria	
Expected mortality of 10 000/day	0.7
Precision of 10 000/day	0.3
Design effect	3
Recall period in days	330
Non-response rate	20%
Nr. population to be sampled	2716
Average household size	5
Number of households to be surveyed (assuming average household size of five persons)	679
Number of clusters	30
Number of households per cluster	23

7.2. SAMPLING

A two-stage cluster sampling methodology will be chosen as an adaptation of the standardized method recommended by the WHO[3].

The survey will address Walikale health zone (estimated population of 143,514) and Kibua health zone (estimated population of 96,092). This survey will obtain a representative sample of 30 clusters for both health zones. Therefore cluster allocation will be done by systematic sampling with probability of allocation proportional to the respective population size of each village (probability proportional to size or PPS). Table 5 shows the villages in the Walikale and Kibua health zones, their respective population sizes, the cumulative population and the randomly selected 30 clusters from this sample.

Table 5: Villages, population estimates and cluster allocation for Walikale retrospective mortality survey.

Village	**Nr. Population/village**	**Cumulated Population**	**Numb of clusters (villages)**	**Cumulative Clusters**
8ieme CPAC	17,042	17,042	3	3
sacre coeur	16,778	33820	2	5
Nyasi	4,826	38,646	0	5
Mutakato	7,316	45962	1	6
Kumbwe	3,336	49,298	1	7

[3] Henderson RH, Sundaresan T. Cluster sampling to assess immunisation coverage: A review of experience with simplified sampling methodology. Bulletin of the World Health Organization 1982(60):253-60

Mpofi	3,865	53163	0	7
BiloBilo	38,258	91421	5	12
Eliba	6,336	97757	1	13
Ndjingala	16,274	114031	2	15
Obaye	3,046	117077	0	15
Biruwe	6,359	123436	1	16
Ndofia	5,852	129,288	1	17
Bisie	6,347	135,635	0	17
Mundindi	7,879	143,514	1	18
Byungu	5,850	149,364	1	19
Kasuka	4,768	154,132	1	20
Kibati	7,589	161,721	1	21
Kibua	7,268	168,989	1	22
Kimua	7,075	176,064	1	23
Kishanga	7,760	183,824	1	24
Langira	10,600	194,424	1	25
Limangi	4,383	198,807	0	25
Lubonga	5,850	204,657	1	26
Machumbi	4,528	209,185	1	27
Misau	5,883	215,068	0	27
Ngenge	6,758	221,826	1	28
Nkimba	3,875	225,701	1	29
Ntoto	10,110	235,811	1	30
Robe	3,795	239,606	RC	RC (reserve cluster)
Total		239606	30	30

In the second stage, the standard WHO/EPI methodology will be used to select the allocated households within a cluster: Accordingly, a pen will be thrown on the ground in the central point of the cluster, and a line will be drawn in its direction towards the edge of the cluster. Households along this line will be counted, and one of these will be selected using a random number table as the first to be interviewed in the cluster.

The next household following in order of physical proximity will then be interviewed until the desired cluster of all allocated households will be completed.

Physical proximity is defined as being the household which front door is closest to the front door of the household that was just interviewed.

If all households of a selected cluster are included in the study before completing the required number of households, the cluster will be continued by selecting the (geographically) closest village. The standard WHO/EPI methodology will again be used in the closest village to select the first household in the village.

If for unforeseen reasons a selected cluster cannot be visited, it will be replaced by selecting the (geographically) closest village. The standard WHO/EPI methodology will again be used in the closest cluster to select the first household in the village.

8. DATA COLLECTION

Selected clusters according to the sampling (see chapter 7.2.) will be informed before the survey teams will visit them. Each village or section head will be informed that the survey will take place 2 days before the scheduled day of arrive of the study team.

The heads of the villages will be visited the day of the survey and the purpose of the study will be explained before conducting interviews in their villages. Furthermore it will be clearly explained to the heads of the villages, that they are freely allowed to decline the participation of their village without any consequences or penalty. In this case it will be replaced by selecting the (geographically) closest village. The number of village heads that refuse participation of their village in the survey will be documented for the final report as this might suggest a limitation of the sampling methodology.

In the households randomly selected according to the above methodology, the purpose of the survey will be explained to the head of the household in the language he or she is familiar with and written consent obtained to conduct the interviews (see chapter 10.1).

The household interviews will be based on a household/mortality questionnaire that consists of the following sections:

- Questionnaire for the household level addressing questions on the origin of the household, the condition of their goods and house in their place of origin, access to non-food-items, access to health-care and limitations to access healthcare services for the household;
- Questionnaire that includes all members of the household:
    - Age and sex of all persons who had arrived, had left, were born or had died in the household during the recall period of the survey;
    - Cause of deaths and time of deaths (e.g. rainy or dry season) for all deceased persons in the household;
    - Number and types of episodes of violence experienced during the recall period.

The questionnaire for the household level and the individual (household member) level are available in Annex 3 and 4 respectively. The questionnaire will be translated into French and Swahili and back-translated from Swahili into French to ensure consistency of the questions.

The questionnaire will be pilot tested with a convenience sample of 10 households (in easy access from the MSF-OCA office in Walikale) to ensure consistency of language and flow of the questionnaire. Any necessary adaptations will be made accordingly,

9. DATA ENTRY AND ANALYSIS

Data will be entered into Epi Data by the field epidemiologist supervising the survey and if possible a second data entry clerk. Data cleaning will be done to check for inconsistencies in data entry and responses. Data analysis will be conducted using ENA for SMART, Epi Data, Excel and STATA 10 (StataCorp, College Station, TX, USA) where necessary.

No name-related data will be collected during the survey; therefore no participants will be able to be identified after the survey has been completed. An electronic database will be generated from the paper questionnaires and this database will be password protected. The paper versions of the questionnaires (paper versions) and the electronic database will be stored at the MSF-OCA Headquarters in Amsterdam for a duration of 5 years after the survey. Access to the electronic and paper version of the survey will be restricted to the co-investigators of the study and the Medical Coordinator. After 5 years the paper copies of all the questionnaires will be destroyed/burned.

All indicators (i.e. sex and age of the survey population) will be calculated as proportions with 95% confidence intervals (95%CI). Estimates of actual design (cluster) effect will also be calculated for each variable and those with effects greater than 1 will be reported. Where appropriate, differences in proportions will be measured using Pearson $\chi 2$ test and p-value (p) will be presented.

The end of the recall period will be calculated individually for each member of the household present at the start of the recall period or born within the recall period. The recall period will end either with the day of the study or the day of death of the household member. An average of all recall days will be taken.

Denominators for mortality rates will correspond to the mid-period population sizes, assumed to be the total population at the end of the period minus half of persons joining the sample during the recall period (newborns and new household members) plus half of persons leaving the sample during the recall period (deaths or absenteeism). Ninety-five percent confidence intervals will be calculated and adjusted for the design effect.

10. ETHICAL ISSUES

The study will be conducted in accordance with the World Health Assembly of 1975 concerning ethical aspects in human tests, and with the Helsinki declaration[4].

The study protocol will be submitted to the Ethics Review Board of MSF. It will also be presented to the Mnistry of Health of the Democratic Republic of Congo for permission to conduct the study.

Authorities and communities (such as village heads, religious leaders, and opinion makers) in the study area will be informed about the purpose of the study and their endorsement will be sought.

MSF-OCA commits to sharing study results with the communities who have participated in the study. This will be done through meetings with village heads and village once the survey has been completed and the results are available.

A detailed information sheet about the study and its objectives will be read to each household to inform them about the survey (Annex 2). Written consent will be sought from all heads of households participating in the study prior to administering the questionnaire. A written consent form can be found in Annex 1.

All data will remain anonymous throughout the data entry and analysis process. Nominal data will not be distributed outside the study location, or appear in any report or publication. All subjects included in the surveys will have the investigations explained to them in a language with which they are familiar. Everyone will be offered the opportunity to refuse participation in the study at any time without penalty and no incentives or inducements will be provided to any respondents. Everyone is completely free to participate or not.

10.1. RISKS AND BENEFITS OF THE STUDY AND CONTINGENCY PLANS

a) Benefits

As the Walikale project is very new, this mortality survey will facilitate to measure the impact of the recent violence in the population and understanding existing barriers to access appropriate healthcare.

[4] [http://www.wma.net/en/30publications/10policies/b3/](accessed 26 September 2012)

A better understanding of the rates and causes of mortality in the area will allow better tailored programming and more efficient use of resources. Accurate data on mortality and estimates regarding causes of mortality are of tremendous importance for advocacy on national and international level.

b) Risks

To interviewees: The retrospective mortality survey does not cause any physical harm to participants. Nevertheless, asking the heads of households for details of recent deaths of household members may be upsetting, relatively intrusive and in village contexts there may be limited privacy. Using local staff and careful training on interview-techniques can mitigate this. Additionally, a Mental Health Officer from MSF-OCA will be seconded to the project in Walikale (from the project in Pinga) for the duration of the survey and for some time after the survey in order to ensure that any identified psychosocial needs arising in the surveyed population are adequately addressed.

Outcome constraints: If unacceptable levels of mortality are determined to be due to violence, there might be constraints on using the outcomes of the survey in a more public setting. This can affect both MSF as well as the displaced and host population.

Operational constraints: Due to the insecurity context the survey might have to be delayed, interrupted or cancelled, this cannot be predicted in advance.

11. COLLABORATION & DISSEMINATION

a) Collaboration

This study will be carried out in collaboration between MSF-OCA and the MoH of DRC.

MSF- OCA is the study sponsor and is responsible for the funding. It is in charge of the field part of the study, the analysis and report writing. The MoH will provide approval for the survey and will be requested for any input into the analysis and writing up of the results.

Study results will belong to MSF- OCA and the MoH of DRC.

b) Dissemination

The study results will be included in a formal report about the survey, written by the epidemiologist in the field with support from the team, the Medical Coordinator and in Amsterdam the Health Advisor and Epidemiologist.

The outcome of the survey will be used in the overall strategy of MSF-OCA to speak out on the effect of violence on the population and advocate on behalf of the population and lobby where needed with other actors for possible increased interventions, either on the protection side or on other needs.

The aim for MSF is to publish a report both nationally as internationally.

12. IMPLEMENTATION OF THE STUDY IN THE FIELD

12.1. SELECTION AND TASKS OF THE STUDY TEAMS

The task of the interviewers will be to collect the necessary data for the study.

Each study team is composed of two interviewers. On average one team can visit one cluster in a full day's work. In order to complete 30 clusters in 5 days, we would need at least 6

teams of trained interviewers (i.e. 12 staff). Of these 12 staff, two persons will be identified as the coordinators/supervisors to allow teams to split the clusters amongst them in two groups.

General selection criteria for all interviewers:

- Able to read and write in French *and*
- Fluent in the Swahili
- Available for the ENTIRE time of the study (training and interview days), *and*
- Willing and able to work on Saturdays and Sundays during the survey time (see chapter 12.5. for a possible timeframe in the field), and
- Motivated to participate in the study, *and*
- Not biased in expectations of the outcome of the study
- Experience with interviews in difficult settings and study populations would be an advantage

12.2. SUPERVISION

The principal investigator is responsible for the quality of the research, the data analysis and report writing. He/she will implement and closely supervise the field component of the study.

The tasks of the principal investigator are as follows:

- Preparation of all necessary documents (protocol, questionnaires, informed consent forms) for the study
- Preparation of the field component of the study (training of the study teams, logistics, materials) together with the MSF team in the field
- Follow-up of the field component of the study
- Data entry
- Data analysis
- Report writing

12.3. SUGGESTED MSF SUPPORT IN THE FIELD

- Administrative support for study preparation at the field level prior to the survey: the North Kivu team will have to present the protocol of this mortality survey to the Ministry of Health in order to obtain their approval.
- Administrative support during field part of the survey: this will include payment of field workers etc.
- Human resources support, such as facilitating the hiring of the study team members, ensuring their contracts are in place etc.
- Logistic support for study preparation at the field level: photocopies, purchasing of needed equipment and supplies, ensuring transportation and drivers are available for the duration of the study, ensuring communication tools are available to the study teams.

Logistic support during the study implementation: any additional photocopies and ensuring transport plans and communication plans are functioning for the duration of the survey.

12.4. TRAINING OF THE STUDY TEAM AND PRE-TESTING OF THE QUESTIONNAIRES

Two days training will be given to all interviewers to familiarise them with the background of the study, the questionnaires, the information sheet and the informed consent form. The training will be given in French by the principal investigator. It consists of an intensive review of the questionnaires and the information sheet including role-plays. As the interviews will be held in the local language, the principal investigator should ensure that all interviewers are using the same and correct wording for providing information to the households and for the interviews.

The 2-days training will be finished with a pilot study in a place, which is outside of the study area. The pilot study allows for the testing and possible final adaptation of the questionnaires and informed consent to field conditions.

Annex 5 includes a draft agenda for the training of the field interviewer teams.

12.5. TIMEFRAME IN THE FIELD

- Translation of questionnaires into French and Swahili (prior to arrive of the epidemiologist in the field
- Travel epidemiologist from home location to the field (including briefing day in Amsterdam and Goma if needed) – 3 days
- Hiring of staff and finalisation of study protocol in the field (6 days):
    - Hiring of staff and interviews
    - Defining of final study areas
    - Finalisation of sample size and sampling strategy (including discussions on appropriate recall period, different recall periods etc.)
    - Back translation of questionnaires into French and correction of words/sentences where needed;
    - Planning of survey days
    - Planning of vehicle movements
    - Coordination with project team
    - Definition of working conditions of the selected interviewers: working hours, per diem (food and water during survey) and payment;
    - Survey materials: photocopying of questionnaires, purchase of pens/markers etc.
- Training of field staff including pilot study (see Annex xxx for the sample template for this training) – 2 days
- Conducting the survey – assume one team of interviewers can do one cluster per day worked – between 10 days of work
- Buffer days for unexpected events – 3 days
- Data entry, analysis and report writing – 14 days
- Travel back of the epidemiologist home – 3 days