

## **CONTRIBUTING TOWARDS POLIO ERADICATION IN ETHIOPIA**

### **PAPER II**



**AFP case detection and status of surveillance in pastoralist and semi-pastoralist communities of CORE Group Polio Project implementation districts (*woredas*) in Ethiopia**

**CCRDA/CORE Group Ethiopia**

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## ACRONYMS

AFP	Acute Flaccid Paralysis
CCRDA	Consortium of Christian Relief and Development Associations
CGPP	CORE Group Polio Project
CORE Group	Child Survival Collaborations and Resources Group
CVSFP	Community Volunteers Surveillance Focal Persons
DPT	Diphtheria Poliomyelitis Tetanus
EDHS	Ethiopian Demographic and Health Survey
EPI	Expanded Program on Immunization
FGD	Focus Group Discussion
HEW	Health Extension Worker
IDSR	Integrated Disease Surveillance and Response
IEC	Information, Education, Communication
IIP	Immunization in Practice
IRC	International Red Cross
KAP	Knowledge Attitude Practice
MLM	Midlevel Managers Training
NID	National Immunization Days
NP AFP	Non Polio Acute Flaccid Paralysis
OPD	Outpatient Department
OPV	Oral Polio Vaccine
PEI	Polio Eradication Initiative
PPS	Probability Proportionate to Size
PVO	Private Voluntary Organization
SIAs	Supplementary Immunization Activities
SNIDs	Sub-national Immunization Days
SNNPR	Southern Nations Nationalities and Peoples Region
WHO	World Health Organization
WPV	Wild Polio Virus

## EXECUTIVE SUMMARY

The CORE Group Polio Project (CGPP) was formed in 1999 and has been active participant in the global Polio Eradication Initiative (PEI). Currently the project is functioning in Angola, Ethiopia and India with fund made available by USAID. The current CORE Group Polio Project (CGPP) which extends from October, 2007 – September 2012 has a goal of contributing to polio eradication by increasing population immunity and enhancing the sensitivity of surveillance for Acute Flaccid Paralysis (AFP). CORE Group Ethiopia started to function in November 2001 and has been supporting and coordinating efforts of PVOs/NGOs involved in polio eradication activities.

Ethiopia initiated surveillance in 1997 and AFP forms part of the Integrated Disease Surveillance and Response (IDSR) which was adopted in 1998. The last laboratory confirmed wild poliovirus was identified in April 2008 in Gambella region. However, the country remains at risk of re-infection because of a number of silent areas and borders with high risk countries.

This research is one of the three studies that have been identified as essential research areas to fill gaps towards efforts of GORE Group Ethiopia in contributing to polio eradication in Ethiopia.

The main objective of this study was to assess AFP surveillance status and enhance better AFP case detection in CGPP implementation semi-pastoralist and pastoralist *woredas* (districts).

The study used quantitative and qualitative methods and included community based cross sectional study design involving interviews of women who delivered during the previous one year, key informant interviews with Health Extension Workers (HEWs), program coordinators, Community Volunteer Surveillance Focal Persons (CVSFPs), and focus group discussions (FGDs) with community elders and religious leaders.

The study was conducted in 9 districts (*woredas*) selected using criteria that included representativeness and feasibility. A team consisting of enumerators, supervisors, coordinators, core research team members and community guides was involved in data collection and ensuring data quality, after appropriate training and pretest was done. Quantitative data were entered and analyzed using SPSS version 17. The records from the FGDs were translated to English and transcribed for analysis. Data analysis was done using thematic approach on the “Open Code” software program.

A total of 600 of women who delivered in the previous one year were included in the study. Four hundred ninety (81.7%) women could not read or write and 56 (9.3%) responded that they can read and write with difficulty. The great majority of the women (98.2%) were currently married.

Three hundred forty four (57.3%) women answered that they had heard about AFP. Their source of information included HEWs (36.5%), CSVFPs (19.7%), other health workers (9.7%), media (8.2%), and community members (4.7%).

Concerning symptoms and signs of AFP 189 (31.5 %) women said a child with polio limps, 156 (26 %) answered it stops walking, 146 (24.3%) has fever and 145 (24.2%) has flaccid paralysis. Other responses included cough, diarrhea and rash.

A total of 70 HEWs were interviewed in the nine study districts ( *woredas* ) . Forty one (58.6%) were female and 29 (41.4%) were male. Thirteen (18.6%), 4(5.7%), 5(7.1%) and 22 (31.4%) reported to have been trained in Immunization in Practice ( IIP), Integrated Refresher Training, Social Mobilization , and Newborn Tracking, respectively.

Asked about AFP case definition 12 (17.1%) answered points related to acute and flaccid paralysis, and 49(70%) mentioned flaccid paralysis only.

Concerning activities they carry out in relation to AFP surveillance, 34 (48.6%) said they search AFP cases by going house to house, 4 (5.7%) gave health education, while 27(38.6%) said they did not do anything specific to AFP surveillance.

Three HEWs said that they detected AFP, while the rest 67 answered that they had never detected AFP.

A total of 71 CVSFPs were interviewed from the nine study districts (*woredas*). Thirty five (49.3%) were female while 36 (50.7%) were male. Thirty nine (54.9%) respondents reported that they could easily read and write, others 11(15.5%) could read and write with difficulty and 21(29.6%) could not read or write at all. Thirty nine (54.9%) of the CVSFPs reported to have received supervision during the last six months, of whom 22(59.5%) got feedback. The case definition of AFP included paralysis from 20(28.2%) respondents and acute paralysis from 7 (9.9%). Nine (12.7%) respondents gave other answers that did not include paralysis and 22 CVSFPs (31.0%) answered they don't know the case definition of AFP.

Regarding the activities they perform, 44(62%) of the CVSFPs said they perform house to house search and 9(12.7%) said they conduct health education on AFP and Polio, 6(8.5%) house to house search and health education , while 7 ( 9.8 %) said they do not conduct AFP case detection activities. Concerning training only 2 out of the 11 respondents mentioned having been trained in IIP, cold chain users and community based surveillance each. Only 1 respondent mentioned being trained in Integrated Disease Surveillance and Report (IDSR) and Newborn tracking each.

Three health center AFP surveillance focal persons answered that they had reported AFP whereas the rest 8 had not.

Six *woreda* AFP surveillance focal persons said they were trained in community surveillance where as the other three were not. Three health center AFP surveillance focal persons and six *woreda* AFP surveillance focal persons said AFP was identified and reported in their *woredas* (districts).

Interview with WHO Surveillance Officers indicated high performance of several zones in non-polio Acute Flaccid Paralysis (NP AFP) detection rates and stool adequacy. However, there were some zones that were silent and some border areas had low AFP detection rates, poor stool adequacy, incomplete and untimely responses.

The responses of FGDs indicate that some discussants and by extension community members may not have adequate information on the causes and means of polio transmission and prevention as indicated by some misconceptions.

Considering the findings from the different components of the study the following recommendations were made: strengthening of awareness of women, families and communities through targeted IEC interventions on causes, transmission , prevention of polio, identification of AFP cases and care seeking; training and strengthening of supportive supervision HEWs community volunteers and health workers; establishing or strengthening of forums to involve stakeholders, religious and community elders and their institutions; involving kebele or other formal leaders to take responsibility on AFP identification, and subsequent actions.

# INTRODUCTION

## CORE Group Polio Project

The CORE Group is a voluntary network of 50 citizen supported private non-governmental organization based in the USA. CORE was formed in 1997 and to date works in over 140 countries to promote and improve primary health care. The main focus of the CORE Group is women and children in the context of multi-sectoral development.

The CORE Group Polio Project (CGPP) was formed in 1999 and has been active participant in the global Polio Eradication Initiative (PEI). It has been working in high risk areas of Angola, Bangladesh, Ethiopia, India, Nepal and Uganda. Bangladesh, Uganda and Nepal have “graduated”. Currently the project is functioning in Angola, Ethiopia and India with fund made available by USAID.

The current CORE Group Polio Project (CGPP) which extends from October, 2007 – September 2012 has a goal of contributing to polio eradication by increasing population immunity and enhancing the sensitivity of surveillance for AFP.

CORE Group Ethiopia started to function in November 2001 and has been supporting and coordinating efforts of PVOs/NGOs involved in polio eradication activities. It closely collaborates with eight international NGOs (CARE Ethiopia, Child Fund Ethiopia, Catholic Relief Service, Plan Ethiopia, Save the Children USA, World Vision Ethiopia, International Rescue Committee and African Medical Research Foundation) and four local NGOs (Pastoralist Concern, Harrerghe Catholic Secretariat, Alemtena Catholic Church and Ethiopian Evangelical Church Mekane Yesus). In addition to these, CCRDA, WHO, MOH and UNICEF are close allies of CORE Group Ethiopia.

Currently, CGPP Ethiopia works in 55 *woredas* in Somali (11 *woredas*), Amhara (4 *woredas*), Benshangul-Gumuz (7 *woredas*), SNNP (8 *woredas*), Afar (6 *woredas*), Gambella (10 *woredas*) and Oromia (9 *woredas*) regions of Ethiopia. In these regions, CGPP reaches a total of 4,690,972 of which 179,795 are under one and 680,042 are under five years old.



CGPP Ethiopia adapted and implemented community-based surveillance model in response to the demands for highly sensitive AFP surveillance to eradicate polio. It trained and deployed Community Volunteer Surveillance Focal Persons (CVSFPs) at the village level to conduct house-house case detection and reporting of AFP, Measles and NNT; mobilize community for polio SIAs and routine immunization activities in its project areas.

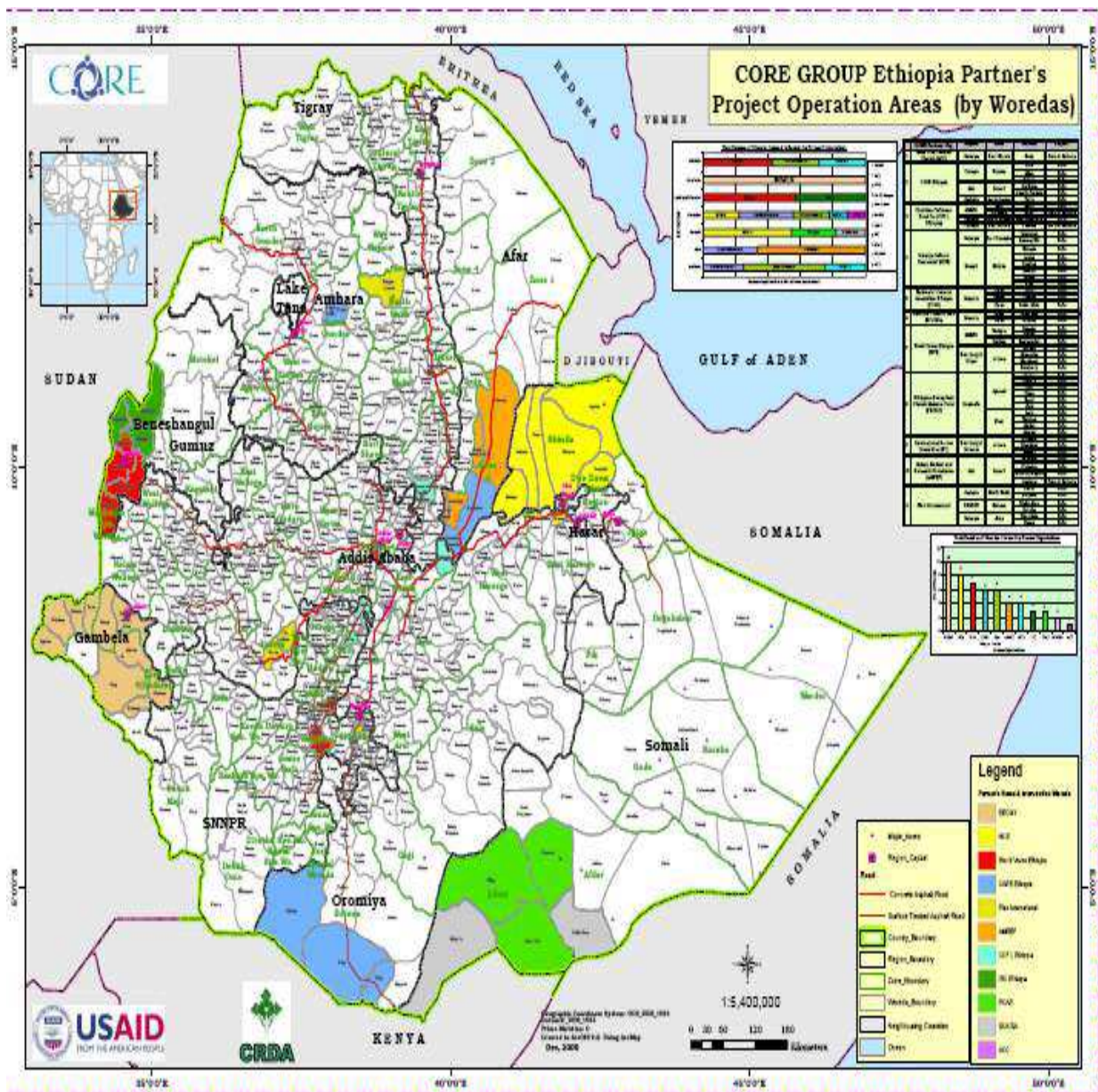
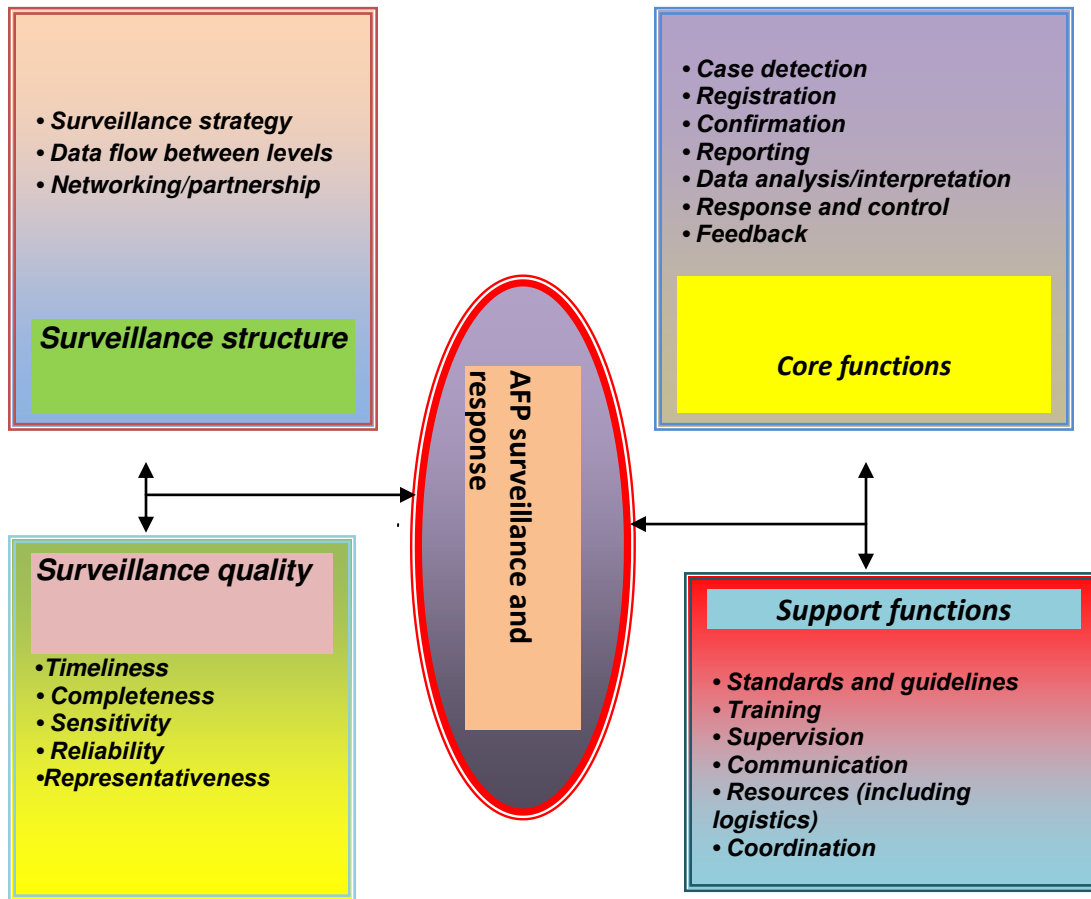


Figure1, CORE Group Ethiopia's project operations areas by woredas, 2011.

## **Acute Flaccid Paralysis Surveillance**

The global efforts in the struggle to eradicate polio have identified high quality surveillance of acute flaccid paralysis (AFP) as an essential component of the eradication strategy. Acute flaccid paralysis can be caused by a number of diseases including polio, Guillain-Barre Syndrome, Enterovirus71, transverse myelitis, traumatic neuritis, other viruses, other (toxins, etc.) and it occurs at predictable rates within a population. The strength of a polio surveillance system focused on identifying cases of AFP is determined by comparing the number of cases detected with the number of cases expected based on the predictable rate of incidence in a population. Ensuring that the surveillance system is picking up all expected cases of AFP is critical to ensuring that surveillance systems are robust enough to detect any cases of symptomatic polio that do occur. Achieving adequate surveillance levels to detect polio transmission requires strong case investigation, logistics to support transport of stool samples used to determine the cause of each case of AFP, and laboratories with the capacity to accurately analyze the samples. A key to achieving robust surveillance in underserved communities is engaging the population at large in reporting cases to the formal health system.

Figure 2 shows a general framework of surveillance and response for communicable diseases. This study focused on components the framework such as surveillance strategy, case detection, registration, confirmation, reporting, data analysis/interpretation, feedback, timeliness, completeness, reliability, at the community and district/zone levels.



**Figure 2: Conceptual framework of surveillance and response for communicable diseases (1)**

## Polio Eradication in Ethiopia

The polio eradication initiative in Ethiopia was started in 1996 based on the guideline provided by the World Health Organization (WHO). Ethiopia has adapted the four strategies to eradicate polio. These are achieving high routine immunization coverage, national supplemental immunization activities (SIAs), acute flaccid paralysis surveillance and mop-up campaign. Since then the country has been conducting a number of rounds of National Immunization Days (NIDs) and sub-National Immunization Days (SNIDs) to interrupt circulation of wild polio virus (WPV).

Ethiopia initiated surveillance in 1997 and AFP forms part of the Integrated Disease Surveillance and Response (IDSR) which was adopted in 1998. Currently, AFP surveillance in the country is conducted by MOH in collaboration with WHO. The difficult terrain, sparse, migratory population and weak infrastructure in Ethiopia constitute especially challenging conditions for AFP detection. The last laboratory confirmed wild poliovirus was identified in April 2008 in Gambella region. However, the country remains at risk for re-infection because of a number of silent areas and borders with high risk countries.

## **RATIONALE**

AFP surveillance is one of the key strategies for polio eradication. However, there are potential problems that can undermine the importance of polio/AFP surveillance systems. These include inappropriate case definitions or lack of case definitions, staff not adequately trained, zero reporting not implemented, delay in reporting, poor data analysis, interpretation and use, poor data management, poor logistics to support surveillance activities (e.g. insufficient transport mechanisms, specimen kits/carriers, communications) and absence of feedbacks . On the other hand intensive surveillance achieving close to 100% detection of AFP cases is required to ensure that any and all cases of polio are detected.

A CORE Group study in September 2009 (2) assessed the knowledge and practice CVSFP with respect to AFP surveillance, but little is known about community awareness and practice and health system performance in hard to reach semi pastoralist and pastoralist areas. This research is one of three studies that have been identified as operations research areas for effective implementation of CORE Group Ethiopia's major activities deduced from CORE Group mid term evaluations (3,4). For efficient use of resources, this study is implemented in the same study area as one of the other operations research studies identified by CORE Group Ethiopia (Newborn tracking of OPV in Pastoralist and Semi-pastoralist Areas of CORE Group Polio Project Implementation Districts).

## OBJECTIVES

### General Objective

To assess AFP surveillance status and enhance better AFP case detection in CGPP implementation semi-pastoralist and pastoralist *woredas* (districts).

### Specific objectives

- To determine the knowledge, attitude and practice of mothers/caretakers towards polio and AFP surveillance.
- To assess knowledge and practice of HEWs, CVSFPs and concerned health coordinators towards AFP case detection and reporting.
- To examine the system of identification and follow up of AFP case surveillance from *Woreda* to health facility and community levels.
- To identify mechanisms to support the AFP surveillance system at community and health system levels.

## METHODS

### Study design

A community based cross sectional study involving women who delivered in the previous one year and facility based cross sectional study design involving key informant interviews of community volunteers, HEWs, program coordinators and WHO surveillance officers were carried out. In addition, FGDs were conducted with community and religious leaders.

### Study area

The study was conducted in CORE Group Ethiopia implementation pastoralist and semi pastoralist project areas and included *woredas* (districts) in Afar, Benishangul, Oromia (Borena zone), Gambella and Somali regions.

The study areas were identified through a consensus process of the CORE Group Ethiopia secretariat using the following criteria:

1. Distance from center (Regional capital town)
2. Immunization performance (Coverage)
3. Cultural/ ethnic representation
4. Relevance to the study question

In using the above criteria, representation of worst and best scenarios was considered, while keeping in mind feasibility, i.e. excluding extreme case of inaccessible and in secure areas.

Accordingly the following *woredas* (districts) were selected.

- a. Gambella region : Larie, Gog<sup>1</sup>
- b. Benishangul region : Kurmuk, Maokomo
- c. Oromia region: Teltele
- d. Afar region : Gewane
- e. Somali region: Shinele, Filtu<sup>2</sup>, Dolobay<sup>3</sup>

## **Study Populations**

The study populations included

- Women of reproductive age group (Women who delivered in the previous one year)
- District health office, Health centers AFP surveillance focal persons
- HEWs
- CVSFPs
- WHO surveillance officers
- Community and religious leaders

## ***Sample size determination***

The sample size for the community based survey of women who delivered in the last one year was calculated based on the single population proportion formula for the newborn tracking study mentioned above. The details are shown in the report of that study. The calculated

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<sup>1</sup> Replaced by Abol because of unforeseen security situations during the time of data collection

<sup>2</sup> Replaced by Errer because of unforeseen security situations during the time of data collection

<sup>3</sup> Replaced by Moyale because of unforeseen security situations during the time of data collection

sample size was 581. The number of women who were going to be interviewed by *woreda* is shown in the following table (Table 1). The actual number of respondents was 600 due to rounding.

### ***Sampling Procedures***

A multistage cluster sampling method with probability proportionate to the size (PPS) of the population were employed to conduct the community based survey of women who delivered during the last one year.

Using the PPS technique 30 clusters were distributed among the nine selected *woredas*. The total number of women who have delivered during the last one year per cluster (cluster size) was about 20 (581/30). Studies had shown that a sample of 20 in a cluster of 30 clusters give a fairly adequate sample (5-7). First the number of clusters to be included in a *woreda* were identified proportionate to the size of the population and the corresponding number of women to be studied in a *woreda* were identified by multiplying number of clusters per *woreda* by cluster size (twenty). The PPS technique is shown in Annex 1.

The number of women who were interviewed by *woreda* is shown in the following table (Table 1).

**Table 1: Number of clusters and total number of women with under one children required for the study in the selected *woredas***

<b>Region/ <i>Woreda</i></b>	<b>Population</b>	<b>Eligibles</b>	<b>Cumulative Eligible</b>	<b>Sampling Fraction 18282/30 =609</b>	<b>Clusters per <i>woreda</i></b>	<b>Samples Per Cluster</b>	<b>Total samples per <i>woreda</i></b>
Gambella				<b>Random number 49</b>			
Larie	35538	1174	1174		2	20	40
Gog (Abol)	18569	613	1787		1	20	20
Benshangul							
Kurmuk	14989	555	2342		1	20	20
Maokomo	46415	1717	4059		3	20	60
Oromia							
Teltele	76935	2924	6983		5	20	100

Afar							
Gewane	34564	1071	8054		2	20	40
Somali							
Shinele	113158	3847	11901		6	20	120
Filtu (Errer)	94847	3224	15125		5	20	100
Dolobay (Moyale)	92860	3157	18282		5	20	100
Total	576736	18282					600

### *Sample size for facility based health worker KAP assessment*

Considering accessibility and feasibility 5-10 kebeles were selected in each *woreda*. In the selected kebeles<sup>4</sup> one HEW (per health post) and 1 CVSFP were included. One health center was also randomly selected in each *woreda*. The number of health facilities and respondents is summarized in Table 2.

**Table 2: Number of respondents and health facilities by region selected for the facility based study by region**

Name of regions	No of <i>woredas</i>	No of kebeles		No of HC	No of HP		No of HEWs		No of CVSFPs	
		Min	Max		Min	Max	Min	Max	Min	Max
Gambella	2	10	20	2	10	20	10	20	10	20
B.Gumuz	2	10	20	2	10	20	10	20	10	20
Oromia	1	5	10	1	5	10	5	10	5	10
Afar	1	5	10	1	5	10	5	10	5	10
Somali	3	15	30	3	15	30	15	30	15	30
<b>Total</b>	<b>9</b>	<b>45</b>	<b>90</b>	<b>9</b>	<b>45</b>	<b>90</b>	<b>45</b>	<b>90</b>	<b>45</b>	<b>90</b>

<sup>4</sup> Kebele is the smallest administrative unit in Ethiopia



## Data Collection

Questionnaire on vaccination status of the index child, community knowledge on surveillance of AFP and other relevant variables was prepared in English. In addition, facility based questionnaire were prepared to assess KAP of health workers towards AFP surveillance, AFP case detection and reporting. The questionnaires were translated to Amharic and Somali and back translated to ensure consistency. They were pretested and administered by trained interviewers.

As mentioned above, a study on newborn tracking of OPV in pastoralist and semi-pastoralist communities was simultaneously conducted in pastoralist and semi-pastoralist areas of CGPP implementation *woredas*/districts among women who gave birth during the previous one year. These women also participated in this study of AFP case detection and status of surveillance in pastoralist and semi-pastoralist communities in order to efficiently use resources.

Based on the sample size of women to be interviewed, 2- 10 interviewers each were selected to collect data in each *woreda* for both studies. For *woredas* where 20 women would be interviewed, two interviewers were deployed. For *woredas* with a sample of 40 – 100, five interviewers were assigned. Ten interviewers were deployed where the sample was greater than 120 women (Table 3).

Partners at field level and respective study *Woreda* health offices were contacted beforehand to make the necessary preparation for data collection like selecting interviewers and providing technical, logistics and transportation support.

The interviewers had a minimum of diploma education, (experience in data collection preferable), spoke fluently the local language, and were residents in the local area or vicinity. Data collection was supervised by 2 supervisors in each study *woreda*. The supervisors had a minimum of a diploma education and a previous experience in supervising community based data collection. Their job descriptions included responding to questions and queries of interviewers and corresponding with a coordinator and researchers whenever necessary. The supervisors checked all filled questionnaires for completeness and consistency each day before turning them to the coordinator. In addition, one or two coordinators (minimum of a bachelor degree and relevant experiences) were selected to facilitate the activities of interviewers and

supervisors for each region. Job descriptions for the interviewers, supervisors and coordinators was clearly spelt out and given to them in writing (Annex 2). A field guide manual was developed for use by the interviewers and supervisors (Annex 3). Each interviewer was accompanied by a community guide person to help identify households and eligible respondents and facilitate communication with the study population.

**Table 3: Number of interviewers, supervisors, field guides by *woreda*; and coordinators by region**

Region/ <i>Woreda</i>	Clusters per <i>woreda</i>	Total number of women to be interviewed	Interviewers	Field Guides	Supervisors	Coordinators
Gambella						1
Larie	2	40	4	4	2	
Gog(Abol)	1	20	2	2	2	
Benshangul						1
Kurmuk	1	20	2	2	2	
Maokomo	3	60	6	6	2	
Oromia						1
Teltele	5	100	9	9	2	
Afar						1
Gewane	2	40	4	4	2	
Somali						2
Shinele	6	120	10	10	2	
Errer	5	100	9	9	2	
Moyale	5	100	9	9	2	
Total	30	600	55	55	18	6

The interviewers, supervisors and coordinators were trained for four days on general techniques of interviewing and supervision and administration of each item in the questionnaire.

A pretest was conducted in a selected pastoralist *woreda* before the final study began and the findings were used to improve the study instruments.

In the selected *woreda*, a kebele was selected by simple random sampling among those that fulfilled the inclusion criteria mentioned above. Some kebeles were divided into “gots” or villages. In such cases, one of the villages was selected by simple random sampling procedure. Then, in the selected kebele/village a central place was identified and a direction randomly selected (eg by spinning a bottle) to locate the first household to start data collection. Data were collected in subsequent households until the end of the selected direction was reached. If the selected household didn’t have eligible member then the nearest household was included. If the allocated sample was not achieved, another direction was randomly selected and data collection was continued in a similar fashion until the required number of respondents was obtained. In case eligible respondents were not available at the time of the survey a revisit (of no more than 2 times) was arranged. If the required number of respondents was not obtained in one kebele/village, another kebele/village was selected by using the simple random sampling method and the procedure continued until the required sample size for the *woreda* was achieved.

The interviewers also collected data in the selected health posts randomly selecting one HEW where there are two (Please see below). They also randomly identified one CVSFP and interviewed him/her.

## **Key Informant Interviews**

### ***Health Extension Workers (HEWs)***

Key Informant Interviews were conducted with HEWs in the selected for women’s interviews kebeles . The interviews were moderated by the study supervisors, coordinators or research team members.

### ***Community Volunteer Surveillance Focal Persons (CVSFPs)***

All CVSFPs in the selected kebeles were included in the study. Interview guide questions including activities undertaken by the CVSFPs, respondents’ knowledge and practice with regards the immunization and surveillance were prepared. The interview was moderated by the study supervisors, coordinators or research team members.

### ***Key Informant Interviews with concerned woreda health office staff***

A *woreda* health office that serves the catchment population of the selected *woreda* was identified. In the selected *woreda* office, a staff member who is responsible for AFP surveillance services, often known as AFP surveillance focal person was contacted. Interview was conducted based on a questionnaire which included AFP case detection, investigation, reporting and mechanisms for AFP surveillance.

### ***Key Informant interviews with concerned health center staff***

One health center was randomly selected in each *woreda*. In the selected health center, a staff member who was responsible for AFP surveillance services (Health center AFP surveillance focal person) was contacted. Interviews were conducted based on a questionnaire similar to that of the *woreda* AFP surveillance focal persons.

### ***Key Informant interview with WHO Surveillance Officers***

In the administrative zones of the selected *woredas*, a WHO surveillance officer was interviewed on the status of AFP case detection, investigation, reporting and challenges and way forward to improve AFP surveillance.

### **Focus Group Discussions (FGDs)**

FGD were conducted among community and religious leaders consisting of 6-8 people in each study *woreda*.

Guide questions were prepared to explore the knowledge, attitude, believes of each group on poliomyelitis, availability and detection of AFP cases, actions to be taken when AFP cases are detected and recommendations on improving AFP surveillance in the area. FGD participants were people who were knowledgeable and able to express the opinions of the community on the topic of discussion and were selected with the help of kebele administration, health staff and partner organizations. The discussions took place in a “neutral” setting. The FGDs was conducted by skilled/experienced moderators who have good knowledge of the subject of the study. This included the research team members and the study coordinators. The discussions were tape-recorded with the consent of the participants and notes were taken by an assistant to the moderator.

## **Data Entry and Analysis**

Quantitative data were entered and analyzed using SPSS version 17. Data analysis included data presentation using tables, graphs and appropriate summary figures.

The records from FGDs were translated to English and transcribed for analysis. Data analysis was done using thematic approach.

The translated transcripts text files were copied into the “Open Code” computer program(*ICT Services ,Umea University, 2006*) for the study site under the same *Project Title*. After reading the transcripts statement by statement and paragraph by paragraph, open coding of the texts was performed producing substantive codes. As a number of substantive codes repeatedly came out across and between sites, selective coding was performed where relevant codes were summarized to answer the thematic questions.

## **Ethical Considerations**

This is a cross sectional study mainly done to inform a program planning process and as such did not need to go through a national IRB process. However, it was important to consult with the RHB and get permission to undertake the survey from regional, *woreda* and *kebele* administrative authorities. Official letters from the Regional Health Bureaus were written to the study sites as needed. Informed consent was obtained from the study participants after explaining the purpose of the study. Participation of all respondents in the study was strictly voluntary. During the training of interviewers, supervisors and site coordinators emphasis was placed on the importance of obtaining informed consent and avoiding coercion of any type. The interviewer was made to sign on the consent form thereby verifying and taking responsibility of getting informed consent.

## **RESULTS**

### **Interviews with women who delivered in the previous one year**

#### **Socio-demographic characteristics of women who delivered in the previous one year**

A total of 600 of women who delivered in the previous one year were included in the study. The socio-demographic characteristics of the study population is shown in table 4.

The mean age of the respondents was  $26.3 \pm SD5.7$ , median 25 and range 15-49 years. Four hundred ninety (81.7%) women could not read or write and 56 (9.3%) responded that they can read and write with difficulty. The great majority of the women (98.2%) were currently married and about 79% had monogamous marriage. Four hundred seven (78%) were Muslims. This was followed by different sects of the Christian religion (16.8%) and Wakefeta (8.8%). Waketa is a religion observed in Oromia Administrative Region. The majority (45.5%) belonged to the Somali ethnic group followed by Oromos. Four hand ninety (81.7%) had different types of live stocks including camels, cows, oxen, goat and sheep and 343(57.2%) owned some farm land. About 30% of the women responded that they carry out income generating activities other than their much occupation, which is mainly cattle rearing.

**Table 4: Socio-demographic characteristics of women who delivered a baby in the previous one year in pastoralist and semi-pastoralist areas of CORE Group Polio Project Implementation Districts, Ethiopia. 2012**

Characteristics		Number	Percent
<b>Region</b>	<i>Woreda</i>		
Somali		320	53.3
	Shinele	120	20.0
	Moyale	100	16.7
	Errer	100	16.7
Oromia			
	Teltele	100	16.7
Benishagul		80	13.3
	Maokomo	60	10.0
	Kurmuk	20	3.3
Gambella		60	10
	Lare	40	6.7
	Abol	20	3.3
Afar		40	6.7
	Gewani	40	6.7
<b>Age</b>			
15-19		44	7.3
20-24		164	27.4
25-29		198	33.1
30-34		121	20.2
35-39		57	9.5
40-49		15	2.5
Don't know		1	0.2
<b>Literacy status</b>			
Can read and write easily		54	9.0
Can read and write with difficulty		56	9.3
Cannot read and write		490	81.7
<b>Grade Completed</b>			
None		493	82.2
1-6		71	11.8
7-13*		36	6.0

Characteristics		Number	Percent
<b>Marital status</b>		589	98.2
Currently married		8	1.3
Divorced		3	0.5
Widowed			
<b>Type of marriage</b>			
Monogamous		464	78.8
Polygamous		123	20.9
I don't know		2	0.3
<b>Religion</b>			
Muslim		407	72.8
Protestant		78	13.0
Orthodox Christian		15	3.0
Catholic		5	0.8
Wakefeta		53	8.8
Others		9	1.5
<b>Availability of livestock</b>			
Yes		490	81.7
No		110	18.3
<b>Own farm land</b>			
Yes		343	57.2
No		257	42.8
<b>Other income generating</b>			
Yes		181	30.2
No		412	68.8
I don't know/missing		7	1.2

### **Knowledge of and actions to be taken when AFP occurs**

Three hundred forty four (57.3%) women answered that they have heard about AFP. Their source of information included HEWs 219(36.5%), CSVFPs 118(19.7%), other health workers 58(9.7%), media 49(8.2%), Community members 28(4.7%) (Table 5).

Concerning symptoms and signs of AFP 189 (31.5 %) women said a child with polio limps, 156 (26 %) answered it stops walking, 146 (24.3%) has fever and 145 (24.2%) has flaccid paralysis. Other responses included cough, diarrhea and rash (Table 5).



Regarding actions to be taken if a person is suspected to have AFP, the majority 415(69.2%) said they would take her/him to health facility, 32 (5.3%) inform the community volunteer, 80 (13.35%) would visit traditional healer or wizard. Other answers included give home remedies such as *Abish* to drink, massage of the legs, saying religious prayers, isolate the child, get the child vaccinated and others.

**Table 5: Knowledge of AFP and actions to be taken when AFP occurs by women who delivered a baby in the previous one year in pastoralist and semi-pastoralist areas of CORE Group Polio Project Implementation Districts, Ethiopia. 2012**

Knowledge/Actions	Frequency	Percent
<b>Heard about AFP</b>		
Yes	344	57.3
No	256	42.7
<b>Source of AFP information*</b>		
HEWs	219	36.5
CVSFPs	118	29.7
Other health workers	58	9.7
Mass media	49	8.2
Community members (neighbors, friends...)	28	4.7
Model families	27	4.5
<b>Signs and symptoms of AFP cited by respondents*</b>		
Limping	189	31.5
Stops walking	156	26.0
Fever	146	24.3
Flaccid paralysis	145	24.2
Others (diarrhea, cough, rash, blindness..)	20	3.3
<b>Actions to be taken if a person is suspected to have AFP</b>		
Take to health facility	415	69.2
Take to traditional healer or wizard	80	13.3
Inform community volunteer	32	5.3
Others (home remedy fluids, massage, saying prayers, take for vaccination, isolate child..)	18	3.0

\* More than one answer could be provided.

## Interviews with HEWs, CVSFPs, AFP Surveillance Focal Persons

A total of 70 HEWs were interviewed in the nine study *woredas*. The median age of the respondents was 24.0 years. It ranged from 18-45 years. Forty one (58.6%) were female and 29 (41.4%) were male. The mean (and median) duration of work of the respondents was 3.0 years and ranged from 3 months to 6 years. In the majority of the cases 59(84.3%), the health posts were located in rural areas. Thirteen (18.6%), 4(5.7%), 5(7.1%) and 22 (31.4%) reported to have been trained in IIP, Integrated Refresher Training, Social Mobilization, and Newborn Tracking respectively. Forty four HEWs (62.9%) attended the last quarterly *woreda* meeting while 60(85.7%) received supervision during the last 6 months of which 39(63.9%) got feedback.

Asked about AFP case definition 12 (17.1%) answered points related to acute and flaccid paralysis, and 49(70%) mentioned flaccid paralysis only.

Concerning activities they carry out in relation to AFP surveillance, 34 (48.6%) said they search AFP case by going house to house, 4 (5.7%) gave health education, 5 (7.1%) gather information from volunteers, while 27(38.6%) said they did not do anything specific to AFP surveillance.

Three HEWs said that they detected AFP, while the rest 67 answered that they have never detected AFP. The reasons given for not detecting AFP were 61 (91.0%) there were no cases, and the community is mobile 3 (0.5%). All the three who responded to have identified AFP, answered that they had reported immediately. Two said they detected the case during house to house visit while the other one said it was detected during a community gathering. Two were reported to *woreda* health office and one to health center. Twenty nine said that reporting format was available while 41 responded that they would apply 0 reporting.

A total of 71 CVSFPs were interviewed from the nine study districts (*woredas*). The mean age of the respondents was  $33.9 \pm 9$  and median 30 years. Thirty five (49.3%) were female and while 36 (50.7%) were male. Thirty nine (54.9%) respondents reported that they can easily read and write, others 11(15.5%) could read and write with difficulty and 21(29.6%) could not read or write at all. The mean duration of work was  $3.4 \text{ years} \pm 2.4$ , and median was 3.0 years.

Thirty eight (53.5%), 21 (29.6%) and 16(22.5%) were trained in community based surveillance, newborn tracking and social mobilization respectively. Seventeen (23.9%) did not have any of

the above training. Thirty nine (54.9%) of the CVSFPs reported to have received supervision during the last six months, of whom 22(59.5%) got feedback. Forty one (57.7%) attended health post monthly meeting and 34 (47.9%) attended the quarterly meeting.

Most of the kebeles 60(84.5%) where the CVSFPs worked were located in rural areas while 11(15.5%) are located in urban areas.

The case definition of AFP included paralysis from 20(28.2%) respondents and acute paralysis from 7 (9.9%). Nine (12.7%) respondents gave other answers that did not include paralysis; such as diarrhea, vomiting, a problem of under five children, a problem under fifteen old children, children don't eat, and 22 CVSFPs (31.0%) answered they don't know the case definition of AFP.

Regarding the activities they perform, 44(62.0%) of the CVSFPs said they perform house to house search and 9(12.7%) said they conduct health education on AFP and Polio, 6(8.5% ) house to house search and health education , while 7 ( 9.8 %) said they do not conduct AFP case detection activities (Figure 3 ).

Answering the question to whom they report, 43 (60.6%) said they report to the HEW/Health post and 16 (22.5%) to the health center of the catchment area.

Twenty four (33.8%) CVSFPs said report forms are available while 22(31.0%) said they apply zero reporting.

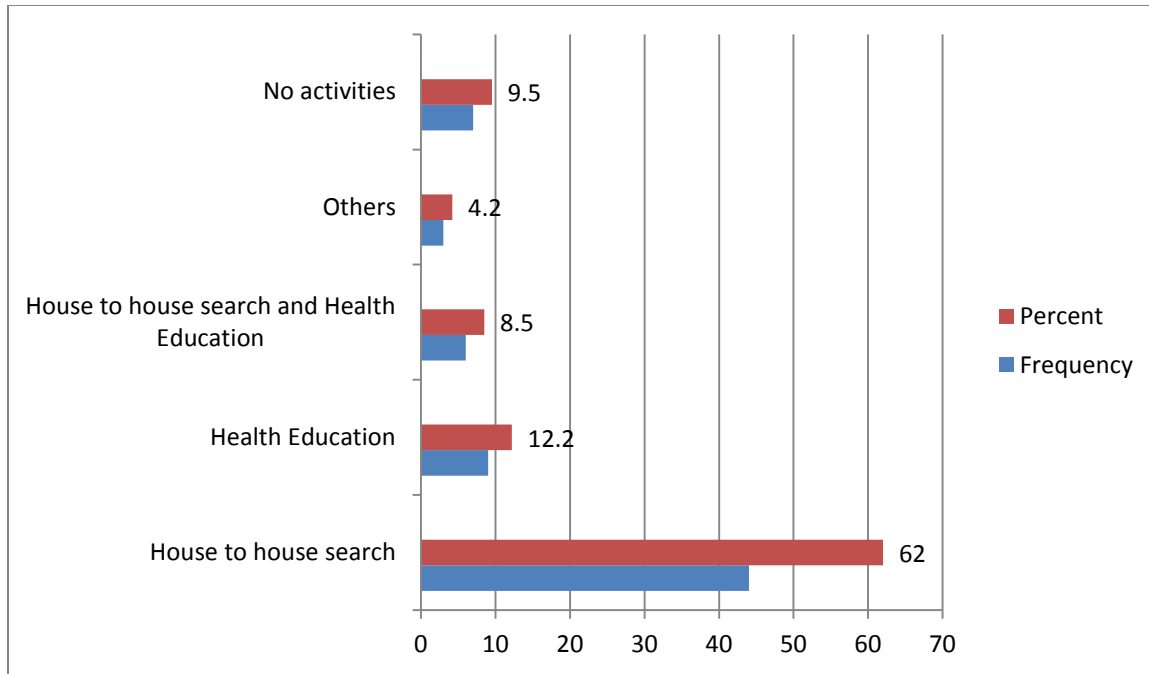


Figure 3: Reported Activities Performed by CVSEFPs in pastoralist and semi-pastoralist areas of CORE Group Polio Project Implementation Districts, Ethiopia. 2012

Eleven health centers and 9 *Woreda* (district) AFP Surveillance focal persons were also interviewed on the activities they undertake with respect to AFP surveillance and their training related to AFP surveillance. The health center AFP surveillance focal persons reported that their activities include providing IEC to the community, and reporting weekly and monthly AFP cases. Two health center AFP surveillance focal persons mentioned coordinating community based surveillance. Two answered that they orient and support identification of AFP among children that come for outpatient service and another one mentioned he participated in SIAs. All health center AFP surveillance focal persons have other responsibilities and mentioned working in the outpatient department, rendering EPI services, working in under-five clinics, working as EPI coordinators, working at the PMTCT clinics and heading the outpatient department. Four pointed out having attended a quarterly meeting whereas the other seven had not. Eight AFP focal persons had received supervision during the last 6 months, whereas 5 got feedback.

Concerning training only 2 out of the 11 respondents mentioned having been trained in IIP, cold chain users and community based surveillance each. Only 1 respondent each mentioned being trained in IDSR and Newborn tracking.

Three health center AFP surveillance focal persons answered that they had reported AFP whereas the rest 8 had not. Four said they did not report because no case was detected and 7 answered they use zero reporting. One of the cases reported was identified by HEW and brought to the health center. Another was brought to the outpatient department (OPD) by the family and another identified by community members.

Six woreda AFP surveillance focal persons said they were trained in community surveillance where as the other three were not. Three said they were trained on IPP and only 2 each said they were trained on social mobilization and newborn tracking. One each said they were trained in EPI, IDSR and MLM. All mentioned that they have additional tasks that included being EPI coordinator, HMIS and planning integrated supportive supervision, malaria control, rendering immunization services, cold chain management and HIV-TB coordinator.

Six *woreda* AFP surveillance focal persons said that AFP was identified in their *woredas* (districts). Two were said to have been identified by house to house visits and reported by health facilities, another two were identified because they visited health facilities and the other one was identified and reported by community members. The *woredas* where AFP was not identified gave reasons such as there were none in three cases and search system may not be adequate in two cases. Seven respondents said they applied or would apply zero reporting.

## **Key Informant Interviews WHO Surveillance Officers**

A WHO surveillance officer explained that in 2011, AFP detection was high with NP AFP rate of 2.6 and stool adequacy of 100% for the six cases detected in Shinelle zone, Somali Region. He mentioned that the community surveillance focal person plays a very useful role in the detection of AFP cases. In 2011, all the 6AFP cases were validated by WHO. All collected specimens were in good condition as reported by the Central Polio Laboratory. In addition to stool specimen from cases, additional specimens were also collected from contacts. However, he noted that specimen transportation is becoming discouraging from time to time as the cost of

living is becoming so much challenging. Despite attempts by WHO to improve DSAs, transporters are reluctant or complaining about taking specimens to Addis Ababa mainly due to the DSA becoming insufficient to cover their expenses. He underscored the importance of coordination of government counterparts, hospitals, private clinics, and NGOs, and the role played by HCS regarding surveillance and RI. He further said that WHO in collaboration with RHB and partners has conducted a number of trainings for HWs and HEWs in the past many years. Concerning some other *woredas* of the Somali region the officer explained that AFP detection rate in general was less than 2 per 100,000 children and stool adequacy was also less than 80% in national border areas.

A WHO surveillance officer speaking on behalf of Assosa and Metkel zones of Benishangul Gumuz Region said that Assosa zone was expected to report 2 AFP case in 2011 and reported 6 cases with NPAFP rate 6.0 and specimen adequacy rate of 83%. Metekel zone was expected to report 2 cases and reported 3 NPAFP cases. Stool adequacy was 100%. He further explained that in major indicators both zones' completeness and timeliness of indicators were above 80% and they have achieved standard certification. Regarding community mobilization, he said that community volunteers were being used in some *woredas*. IRC has trained community surveillance focal persons (3 in each kebele) in Kurmuk and Sherkole *woredas* of Assosa zone. Community case definitions on AFP, measles and NNT were prepared by WHO and distributed to kebeles in both zones.

Another WHO Surveillance Officer for Guji and Borena zones in Oromiya Region stated that detection rate for Borena Zone was 2.5 AFP cases per year and stool adequacy reached 93%. Dire *woreda* almost reported the expected number of cases. On the other hand, Teletel *woreda* was silent for the last two years.

According to the WHO Regional Surveillance Officer for Gambella, AFP surveillance was weak in Nuer Zone and became much weaker at the border with South Sudan. AFP case detection rates and stool adequacy had often been low. Reports often came late and were incomplete. It was often completely interrupted during the rainy season. The officer attributed the low performance to problems of inaccessibility and also mentioned low staff motivation in some instances.

## FGD with community leaders

Relating to the question whether they had seen any polio or AFP case, several FGD participants mentioned that they had seen polio or AFP cases in some villages and other countries like Kenya while several others had not come across patients with Polio or AFP cases.

Participants mentioned that polio is known by different names and indicated symptoms and signs of the disease. One such sign related name can be translated as “death of legs”. Several participants in all groups mentioned that polio causes paralysis of legs and inability to walk. On the other hand, they also mentioned symptoms that may not be indicative of polio such as leg swelling and fainting. Some participants attributed curse as a cause of polio while several answered that they didn’t know the cause of polio. Regarding transmission of polio, a number of ways including airborne from infected person, close contact with a polio patient, body contact with a polio patient and the like were mentioned. A few mentioned that polio is transmitted by movement of people and migration from neighboring countries. On the other hand, several participants said that they did not know the ways of polio transmission. Regarding prevention, many participants mentioned vaccination. However, in some cases correct and specific knowledge may be lacking on polio vaccination. An example of such a response is that polio is prevented by vaccination of pregnant women and children. Other responses include not eating together, not sharing clothes, exclusive breast feeding, feeding children with a lot of milk and protecting children from dirt and keeping them clean.

According to several participants, most people would prefer to take a child with signs and symptoms of AFP/Polio to a health facility nowadays. Taking the child to traditional healer or applying traditional means used to be much commoner earlier. Traditionally the legs could be massaged with warm water or could be burned using hot iron rods. The severest form of traditional polio treatment reported from two study *woredas* was to bury the lower half of the body of the patient. It was mentioned that the body could be buried from one to several days. Although the situation has improved a lot nowadays, and most would take suspected AFP cases to health facilities as mentioned above, participants recommended conducting awareness raising activities for community members to take appropriate actions if and when AFP/polio cases are encountered.

In order to detect, report and stop polio transmission participants recommended that any suspected case should be taken to the nearest health facility and/or reported to a health facility, awareness to seek care immediately should be enhanced, health committees should be involved in identification of cases, suspected cases should be reported to kebele administration, unvaccinated children should not travel, and sensitizing the community on polio immunization.

## **DISCUSSION**

Six hundred women were included in the study making the response rate 100%, although non-response to few questions was noted and that the values had to be considered as missing and some variables had to be discarded from analysis. A 100% overall response was possible because in case of absence or non-response, data collection continued until the allocated sample size was obtained. Absence or non-response that needed to be replaced was noted in only 12 (2%) cases. Data not included in the results were related to economic status assessment such as number and type of cattle and land size since they were found not to be meaningful and/ or the majority did not respond to them. This could be because of lack of information by the women (only the husband knows) or fear of implications of telling the truth, although the purpose of the study was well explained at each study site.

The socio-demographic characteristics of the study population generally represent the distribution of pastoralist and semi-pastoralist population in CORE Group Ethiopia Project areas. The majority of the respondents (91%) were either unable to read and write or did so with difficulty. While this is expected in such relatively disadvantage places, it has important implications for planning, organizing and provision of proper IEC (Information, Education & Communication). Health education messages and methods should be geared accordingly. The great majority of the respondents (98.2%) were married reflecting the expectation that child bearing generally takes place in the context of marriage in these areas.

Three hundred forty four (57.3%) women answered that they have heard about AFP. The sources of information appeared to be varied, HEWs taking the lead (36.5%) followed by CSVFPs (19.7%). Thus a high proportion (42.6%) of women of reproductive age groups did not have information on AFP. On the other hand, it appears that CSVFPs who might have greater access to the community might not be doing enough work in terms of informing mother about



AFP. It also appears that less than a third of the women had a reasonably comprehensive knowledge of the signs and symptoms of AFP, indicating even a much lower proportion would be able to identify or suspect AFP than those who answered that they knew AFP. This is because some who said they heard about AFP mentioned non-AFP related signs and symptoms such as cough, diarrhea and rashes.

About 70% of the women answered that a person suspected to have AFP should be taken to health facility, which is encouraging. On the other hand, the implications of responses such as going to traditional healers or applying home remedies need due consideration, although a minority had given such responses.

About 40% of the HEWs were male whereas in non-pastoralist areas all HEWs are females. Most of the services of HEWs deal with women and families and females are expected to have better acceptance in their activities than males. The implication of having both female and male HEWs in pastoralist and semi pastoralist population may need to be explored. Thirty four HEWs (48.6%) said they search AFP case by going house to house while 27(38.6%) said they did not do anything specific to AFP surveillance. This implies that HEWs alone cannot carry out the task of house to house AFP case detection, perhaps one of the reasons being high workload as they are expected to carry out a package of seventeen activities.

Joint meeting at the *woreda* level and supportive supervision are considered means to improve performance. Ideally all HEWs should have received supportive supervision with feedback and attended the quarterly meetings, whereas it was around 63% that received feedback and attended the quarterly meeting indicating the gaps that need to be filled in this regard. AFP reporting formats were said to be available only by 29 HEWs, although a higher number of forty one said they would apply zero reporting. This shows that a problem exists in the readiness to document and report AFP cases.

Of note is the fact that only 12(17.1%) HEWs could give a comprehensive definition of AFP, and 49(70%) could mention flaccid paralysis. This may be a major hindrance in detecting AFP cases. Only three HEWs said that they detected AFP, while the rest 67 answered that they had never detected AFP, which may be related to the point mentioned above regarding high workload.

Thirty two 32(45.1%) CVSFPs said that they could read and write with difficulty or could not read or write at all. This indicates limitations in updating their knowledge through reading and writing and the need for continuous support and follow up. On the other hand it was only about 30% of the CVSFPs who received supervision and feedback. The problem is also aggravated by the fact that about one fourth of CVSFPs said they had not received any training while 38(53.5%) said that they were trained in community based surveillance.

Knowledge of the case definition of AFP was found not to be impressive as only 20 (28.2%) mentioned paralysis 9(12.7%) and respondents gave other answers such as diarrhea, vomiting, a problem of under five children, children don't eat, that did not include paralysis in their response and 22 CVSFPs (31.0%) answered they don't know the case definition of AFP. Thus although use of CVSFPs to reach the community with IEC messages and for detecting AFP seems indispensable, the capacity of several of the CVSFPs to identify AFP cases and/or deliver proper information about AFP appears not to be strong. It is also worth noting that 28(39.6%) of the CVSFPs were not engaged in AFP search activities and only 15 (21.2%) said that they conduct health education. While these could be attributed to lack of knowledge, training and supportive supervision, there is a need to explore the reasons for such sub-optimal performance of the CVSFPs.

Only 2 health center focal respondents said they were trained in community based surveillance and 1 in IDSR indicating again a possible gap in conducting proper surveillance. Similarly, three *woreda* AFP surveillance focal persons said they were not trained in surveillance.

Three health center AFP surveillance focal persons and six *woreda* AFP surveillance focal persons said AFP was identified and reported in their *woredas* (districts). It appears that adequate number of AFP cases may not have been reported, although this has to be considered against the number of eligibles and possible other channels of reporting that are not known to them.

All health center and *woreda* AFP surveillance focal persons mentioned that they had additional or other tasks. While AFP surveillance focal persons may not need to have just one task, it may be important to find out whether the focal persons are devoting adequate time for the duties related to AFP surveillance.

According to WHO Surveillance Officers, several zones in Somali Region, Benishagul Region and Ormia Region had high NP AFP detection rates and stool adequacy and have achieved standard certification as completeness and timeliness of indicators were above 80% (8). Exception were Teltele worda in Oromyia Region, silent for two years and bordering areas with Somali region where the detection rate was in general less than 2 per 100,000 children and stool adequacy was also less than 80%. The Gambella situation appears to be worse where weak performance persists particularly in one of the zones and gets gravest in bordering with South Sudan areas. This is in line with what is reported by WHO Ethiopia (9) and strengthens the point that due attention should be given to border and silent areas and the need to identify and give emphasis to silent *woredas*.

Several FGD participants in all groups mentioned that polio causes paralysis of legs and inability to walk. On the other hand, they also mentioned symptoms that may not be indicative of polio such as leg swelling and fainting. Some participants attributed curse as a cause of polio while several answered that they don't know the cause of polio. Other responses include not eating together, not sharing clothes, exclusive breast feeding, feeding children with a lot of milk and protecting children from dirt and keeping them clean. These responses show that there is a mix of correct and incorrect information with respect to the cause of polio in the study communities.

### **Strengths and limitations of the study**

This study used several study populations and a combination of qualitative and quantitative methods and presented a comprehensive answer for the study questions from different perspectives in CGPP implementation areas.

On the other hand, it cannot claim to be representative of all pastoralist and semi-pastoralist areas of the country, as the different areas may have unique characteristics related to health seeking and related issues. Similarly, each study district may have certain unique features that may not have been well covered in the study. Moreover, some extremely hard to reach areas and those with security problems during the time of data collection were excluded from the study and hence the findings may not reflect the realities in these areas. In addition, as mentioned above, certain variables, especially those related to assessment of economic status were not included in the results of the study.

## CONCLUSIONS

This study took place in a sample of CORE Group Polio Project pastoralist and semi-pastoralist areas characterized by high illiteracy rate, almost universal marriage where monogamy and polygamy are practiced, gender mix of HEWs, highly influential community and religious leaders and poor access to health services.

A high proportion (43%) of women of reproductive age groups does not have information on AFP and less than a third of the women have reasonable knowledge of the signs and symptoms of AFP indicating even a much lower proportion would be able to identify or suspect AFP than those who answered that they know AFP.

About half of the HEWs said they searched AFP case by going house to house and about a third said they did not do anything specific to AFP surveillance, perhaps related to the high workload and the many activities that they are expected to carry out. The results of this study also indicate that knowledge of case definition of AFP may not be adequate possibly limiting detection of AFP cases by HEWs.

Similar shortcomings with respect to case definitions were noted among the CVSFPs which is aggravated by difficulty in the ability to read and write by some and inadequate training in community based surveillance and inadequate supervision. Thus, the performance of CVSFPs, which form an important link between the health system and communities who are perhaps indispensable in providing IEC to the community and detecting AFP may be undermined.

Responses of the health center and *woreda* AFP coordinators revealed that there are gaps in training, supervision and follow up and documentation in AFP surveillance.

Interview with WHO Surveillance Officers indicate high performance of several zones in NP AFP detection rates and stool adequacy. However, there are some zones that are silent and some border areas have low AFP detection rates, poor stool adequacy, incomplete and untimely responses.

The responses of FGD participants indicate some misconceptions on the causes and means of polio transmission and prevention. These misconceptions need to be corrected as community and religious leaders play key roles in curtailing polio transmission and detecting AFP.

On the other hand, FGDs revealed although most people seemed to agree that suspected case of AFP should be taken to health facilities, traditional treatment can be dangerous as shown by practices of applying hot iron rods and burying half of the body.

Several options were mentioned by FGD participants to detect and report AFP cases and these are included in the recommendations below. The following recommendations are made based on the findings of the different components of this research.

## **RECOMMENDATIONS**

### **1. Strengthen awareness of women, families and communities through targeted IEC interventions on causes, transmission, prevention of polio; and identification of AFP cases and care seeking**

- Prepare messages and materials based on identified gaps, misconceptions or incorrect responses on the issues mentioned above i.e. causes, transmission, prevention of polio and signs and symptoms AFP and reporting when they come across such cases
- Use appropriate mechanisms to reach women, families and communities with messages. This may include house to house HEW and CV visits, community meetings, local media, religious and other institutions.

### **2. Training and strengthening of supportive supervision**

- Train or retrain HEWs, CVs, on AFP case detection and social mobilization
- Develop mechanisms for effective implementation of planning, conducting and monitoring of supportive supervision and feedback of HEWs and CVs within the existing health and administration systems
- Train *Woreda* and Health Center AFP surveillance focal persons with emphasis on AFP detection, reporting, documentation, interpretation and utilization of results
- Avail the necessary forms for documentation and reporting.
- Ensure allocation of adequate time for activities related to coordinating AFP detection, documentation and reporting by AFP surveillance focal persons.

### **3. Establish or strengthen fora to involve stakeholders**

- Establish or strengthen committees or taskforces that include all stakeholders consisting of health authorities and workers, other relevant sector representatives, concerned NGOs, concerned international organizations (WHO, UNICEF..) and community and religious representatives
  - Involve religious leaders and community elders and their institutions at each step of creating awareness, case detection and reporting.
  - Involve kebele or other formal leaders to take responsibility on AFP identification, and subsequent actions.
- 4.** Identify and/or develop mechanisms for identification of AFP cases, reporting, collection of specimen and transportation specially for silent *woredas*, hard to reach and border communities.

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