

Addis Ababa University, College of Health Sciences, School of
Public Health

Ethiopian Field Epidemiology and Laboratory Training Program
(EFELTP)

Compiled Body of Works in Field Epidemiology

By

Birhanu Kenate Sori

Submitted to the School of Graduate Studies of Addis Ababa
University in partial fulfillment for the
Degree of Master of Public Health in Field Epidemiology

May 2014

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List of Abbreviations

AAU	Addis Ababa University
AFP	Acute Flaccid Paralysis
AR	Attack Rate
BPR	Business Process Re-engineering
CFR	Case Fatality Rate
CRS	Congenital Rubella Syndrome
CSA	Central Statistics Agency
CSF	Cerebro Spinal Fluid
E.C	Ethiopian Calendar
E.F.Y	Ethiopian Fiscal Year
EHNRI	Ethiopian Health and Nutrition Research Institute
FP	Family Planning
HC	Health Center
HEP	Health Extension Program
HEW	Health Extension Worker
HMIS	Health Management Information System
HP	Health Post
IDSR	Integrated Disease Surveillance System
IgM	Immunoglobulin M
IgG	Immunoglobulin G
IHR	International Health Regulation
IR	Incidence Rate
IRS	Indoor Residual Spray
ITN's	Insecticide Treated Nets
LBRF	Louse Borne Relapsing Fever
LLIN	Long Lasting Insecticide Treated Nets
MIS	Malaria Indicator Survey
MOH	Ministry of Health
NNT	Neonatal Tetanus
OR	Odds Ratio
PCR	Polymerase Chain Reaction
PHEM	Public Health Emergency Management
PMI	President Malaria Initiative
PMTCT	Prevention of HIV from Mother to Child Transmission
RDT	Rapid Diagnostic Test
RHB	Regional Health Bureau
RRT	Rapid Response Team
SRS	Simple Random Sampling
TT	Tetanus Toxoid
UNICEF	United Nations Children's Emergency Fund
WASH	Water Sanitation and Hygiene
WHO	World Health Organization
ZHD	Zonal Health Department

Executive Summary

In order to cope up with the challenges of recurrent and emerging public health threats, the Federal Ministry of Health of Ethiopia adopted Field Epidemiology Training programme for early detection of unusual health events, prevention and control of diseases through multifaceted approach. From the beginning of second week of October 2013 up to the end of May 2014 I have been stayed in Field Epidemiology Training Program, School of Public Health-AAU and at Oromia Regional Health Bureau field base.

I carried out two outbreak investigations, one surveillance data analysis, one evaluation of surveillance system, and one Woreda health profile description, two abstracts for scientific conference, one maher assessment, one research proposals and training as outputs.

Chapter I: Epidemiological investigations of two outbreaks were conducted. Descriptive and Analytic Epidemiology was used during investigations. We identified several factors that contributed to rubella outbreak. We investigated rubella outbreak in arid- pastoralist society of Borena zone of Miyo Woreda. It is found that recent travel to an areas where cases of rubella was reported, attending a school where the cases present and the housing condition with poor ventilation were significantly associated with rubella outbreak. We confirmed Measles outbreak in remote area of Gelana woreda of Borena zone. This investigation revealed that the outbreak was likely contributed due to accumulation of a large number of susceptible individuals in the community exacerbated by contact among cases, unventilated households and low immunization activity which was highly significantly associated with the cases. We recommend improved routine and supplementary immunization activities, strong ongoing active case surveillance for the Woreda.

Chapter II: - Five years (2008 to 2012) West Shewa zone malaria data was used for analysis to describe malaria cases by person, place and time. Malaria still continued to be a major cause of public health in west shoa zone despite that different malaria control strategies were implemented.

Chapter III: - Evaluation of surveillance system was conducted from June 6 – 21, 2013 in East Wellega Zone. The data revealed that despite the public health surveillance system is young, the way of reporting, case detection, supportive supervision and feedback delivery system, communicating both in horizontal and vertical direction like outbreak investigation, monitoring and evaluation of the surveillance system framework is well established. However, still there is

a long gap between their achievement and their final goal. In general terms the overall surveillance system currently underway in the zone was not satisfactory.

Chapter VI: - Health profile is a system of collecting and summarizing health and other health related events, demographic, socio-economic, political and cultural aspect of a particular Woreda. Health profile description of Adea Woreda of East Shewa Zone of Oromia region was collected, analyzed and interpreted accordingly from February 3-9/2013.

Chapter V:-Scientific Manuscript for Peer Reviewed Journals was done on Rubella outbreak in Miyo, Borena Zone Oromia, and Ethiopia in December 2013.

Chapter VI:-two abstracts were submitted for scientific .This includes:

1. Rubella Outbreak Investigation and response in pastoralist community of the Ethio-Kenyan Boarder of Miyo Woreda-Borena zone, Oromia, Ethiopia, December 2013
2. Measles Outbreak Investigation and Response in remote area of Gelana Woreda of Borena Zone; Oromia-Ethiopia, January 2014

Chapter VII:-Narrative summary of disaster situation. Meher assessment was conducted in three zone of Oromia region. These include North, West and East Shewa zones. It was conducted from November 25 to December 14. Its aim was to identify to assess the outcome of 2013 meher crop and potential risk factors for the anticipation of occurrence of Health Problems and food insecurity for ensuring appropriate and effective humanitarian planning and responses for reducing morbidity and mortality in the zone. No diseases outbreak was reported in zones within the past six month. The food insecurity problem

Chapter VIII: - Protocol/proposal for Epidemiologic Research Project was prepared. The main purpose of study is to assess the proportion of LLITNs ownership by householders, utilization among the household members and factors affecting utilization in Bako Woreda, West Shewa zone, Oromia Region. Cross-sectional study designed will be implemented. Sample size required for this study is 1,320 households. The sample size was calculated using the standard formula for estimating a single population proportion

Chapter – I

Outbreak

Investigation

1.1.1 Rubella Outbreak Investigation and response in pastoralist community of the Ethio-Kenyan Boarder of Miyo District-Borena zone, Oromia, Ethiopia, December 2013

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Abstract

Introduction; Rubella is an acute contagious infection caused by the Rubella virus. It presents fever with maculopapular rash similar to Measles. Rubella is usually mild in children. When woman contracts rubella early in pregnancy, serious consequences may occur including birth defects known as congenital rubella syndrome (CRS). Little is known about rubella epidemiology and the incidence of CRS in Africa. At present Rubella vaccine is not included in any vaccination program in Ethiopia. In November 2013, Miyo Woreda of Borena zone, Oromia - Ethiopia reported suspected Rubella cases and we investigated to confirm the etiology, identify potential risk factors and suggest control measures.

Methods: We defined a confirmed Rubella case as an illness characterized by acute onset of generalized maculopapular rash, fever, arthralgia, arthritis, lymphadenopathy, conjunctivitis with positive serologic test for rubella immunoglobulin M (IgM) antibody in the blood specimen. We collected ten blood samples for laboratory confirmation. We conducted matched case control study to identify possible risk factors.

Result: We identified 183 suspected Rubella cases with zero death . The median age of the case was 6 years. The overall attack rate of this outbreak was 29 per 100,000 populations. We collected ten blood samples with 100% positivity rate for Rubella IgM antibodies. Travelling history to outbreak area (OR= 26.29, 95% CI= 9.15 -77.87), having contact with a person who had a recent illness consistent with Rubella (OR: 34.0, 95% CI: 11.44-104.90), living in unventilated house (OR=14.6: 5.59-38.14) were found to be significantly associated with rubella infection.

Conclusion; Recent travel to an areas where cases of Rubella was reported, attending a school where the cases present and the housing condition with poor ventilation were significantly associated with rubella outbreak.

Key Words: Rubella, Rubella outbreak, CRS

1.1.2. Introduction

Rubella is usually a mild febrile rash illness in adults and children (1; 2; 3; 4; 5; 6) . Rubella also called German measles which is contagious disease of short duration, caused by virus infection. The disease is characterized by a rose-colored maculopapular rash and followed by other mild symptoms, such as fever, sore throat, and swelling of the lymph glands behind the ears. The maculopapular rash, which lasts from one to four days, first appears on the face and spreads rapidly to the chest, limbs, and abdomen. It is most common among teenagers and young adults. It has an incubation period of 12 to 23 days, more commonly 14 to 18 days. An attack of the disease usually confers lifelong immunity. (1)

During 2009, a total of 121,344 rubella cases were reported from 167 member states to WHO, an 82% decrease from 670,894 cases reported in 2000 from 102 member states. This report summarizes reported rubella and CRS cases globally and progress toward global introduction and use of RCV. In addition to this, 300 children still enter the world with the disabilities of CRS despite the availability of effective, safe and inexpensive vaccines (6; 7).

Following a widespread epidemic of rubella infection in 1941 the occurrence of congenital cataracts among 78 infants born following maternal rubella infection in early pregnancy. This was the first published recognition of congenital rubella syndrome (CRS). Rubella virus was first isolated in 1962 by Parkman and Weller. The first rubella vaccines were licensed in 1969. (1)

Rubella virus is classified as a toga virus, genus Rub virus. It is most closely related to group Arbo viruses, such as eastern and western equine encephalitis viruses. It is an enveloped RNA virus, with a single antigenic type that does not cross-react with other members of the toga virus group. Rubella virus is relatively unstable and is inactivated by lipid solvents, trypsin, formalin, ultraviolet light, low pH, heat, and amantadine. Following respiratory transmission of rubella virus, replication of the virus is thought to occur in the nasopharynx and regional lymph nodes. A viremia occurs 5 to 7 days after exposure with spread of the virus throughout the body. Transplacental infection of the fetus occurs during viremia. Fetal damage occurs through destruction of cells as well as mitotic arrest.

The incubation period of rubella is 14 days, with a range of 12 to 23 days. Symptoms are often mild, and up to 50% of infections may be subclinical or inapparent. In children, rash is usually

the first manifestation and a prodrome is rare. In older children and adults, there is often a 1 to 5 day prodrome with low-grade fever, malaise, lymphadenopathy, and upper respiratory symptoms preceding the rash. The rash of rubella is maculopapular and occurs 14 to 17 days after exposure.

The rash usually occurs initially on the face and then progresses from head to foot. It lasts about 3 days and is occasionally pruritic. Evidence of disease burden due to rubella is emerging from countries that have not yet provided rubella immunization (2). The US childhood rubella vaccination program was started in 1969; however, many other countries do not have, or have recently implemented, rubella vaccination programs (3). The countries that have already started immunization against rubella should integrate rubella surveillance with measles surveillance. This will help to ensure that all potential rubella cases and outbreaks are investigated and quantify the impact of rubella immunization (2). Measles and Rubella Initiative Annual Report by WHO 2012 indicates that by 2011, 130 Member States (67 per cent) were providing at least one dose of rubella-containing vaccine (RCV), an increase from 99 countries (52 per cent) in 2000. By the end of 2012, four more countries—Bangladesh, Lao People’s Democratic Republic, Nepal and Solomon Islands—had introduced RCV either in the routine programme, SIAs or both. This leaves 59 countries remaining that have not yet introduced RCV, of which 49 are GAVI-eligible as of 2013. Rubella vaccine coverage is almost identical to that of measles, as all countries except Tunisia use the vaccine combined with measles vaccines or measles and mumps vaccines. The burden of congenital rubella syndrome—estimated at about 103,000 cases in 2010—is greatest in WHO regions where most of the countries are not using rubella vaccine (8)

Surveillance for rubella or CRS does not exist in Ethiopia; however, the measles case-based surveillance system, established in 2004, includes laboratory testing for the detection of measles specific and rubella-specific antibodies. The measles case-based surveillance system has helped greatly in terms of documenting the epidemiology of measles in Ethiopia. However, little is known of the magnitude and distribution of Rubella cases. In African countries, including Ethiopia, CRS is widely under-recognized as a public health problem, and information on rubella and CRS epidemiology is very limited

1.1.2. Background

At present Miyo Woreda Of Borena Zone detected increasing number of cases of suspected Rubella cases on WHO Epidemiological week 44 which was later confirmed Rubella Igm positive. Currently the cases were distributed in 13(72%) kebele's out of 18 kebele's found in the Woreda. Miyo is one of the 14 Woreda found in Borena zone. The Woreda is found at the border of Kenya. The total surface area of the Woreda is 5536 km² and the traditional Kalu and Geda system is still functioning. It is located in southern Oromia bounded with Dhaas Woreda in North, Kenya in South, Dire in West and Moyale Woreda in East.

According to 2007 population census, the estimated population of the woreda in 2013 is to be 62,133 which constitute 31,315 and 30,818 males and females respectively.

Hidi Lola is the administrative town of the woreda that is located at about 729 km from Addis Ababa and 154 km from Yabello town, the capital town of Borena zone. Currently, Miyo Woreda has 16 farmers association and 2 urban kebeles. Miyo's climatic condition is classified as 95 % Tropical climate and 5 % is warming temperate.

Regarding the Health service coverage, the Woreda has five functional Health centers which give the Health center coverage above 100%. Similarly there are 16 Functional Health Post in the woreda which leads to 100% coverage.

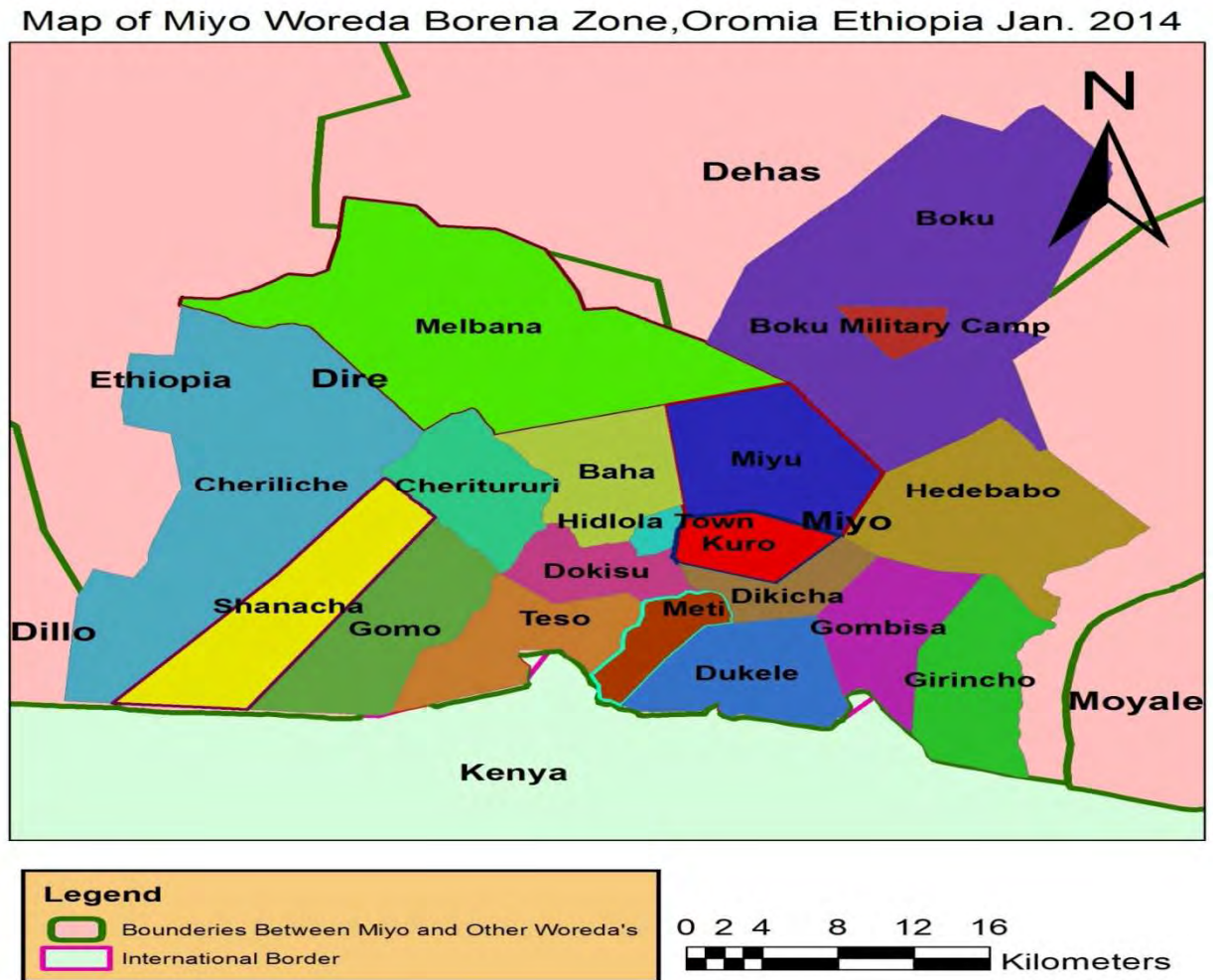


Figure 1.1.1. Map Showing the Occurrence of Rubella Outbreak in Miyo Woreda, Borena Zone, Oromia-Ethiopia, December 2013

Map of Miyo Woreda Borena Zone, Oromia Ethiopia Jan. 2014

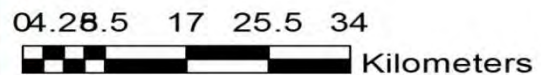
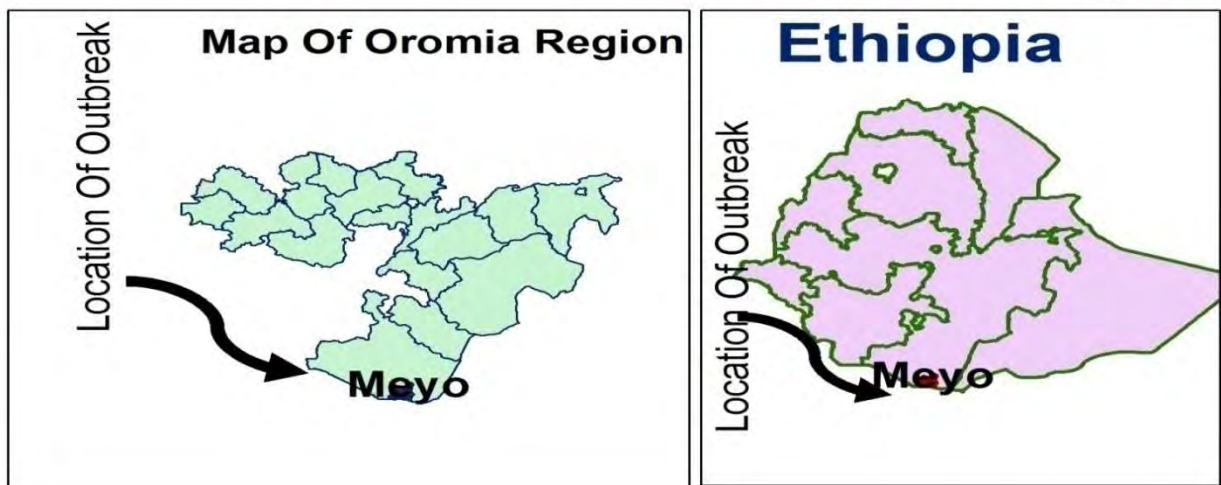


Figure 1.1.2: Map Showing the Occurrence of Rubella Outbreak in Miyo Woreda, Borena Zone, Oromia-Ethiopia, December 2013

1.1.3 Objectives

1.1. 3.1.General Objective

To describe Rubella burden and identify risk factors associated with Rubella outbreak in Miyo Woreda.

1.1.3.2. Specific objectives

- To verify Rubella outbreak in Miyo
- To identify the risk factors associated with Rubella outbreak in Miyo
- To propose control measures against Rubella transmission

1. 1.3.0. Methods and materials

1.1.3.1. Study area, population and period

1.1.3.2. Study Area: - an outbreak investigation was carried out in Miyo Woreda of Borena zone in Oromia Region from November 15 to 26/2013. Miyo Woreda has 18 kebeles with the total population 62,133. The major ethnic groups in the Woreda are the Oromo. They are pastoralists and live across the border on both sides of the Ethio-Kenyan border. There were five Health Centres and sixteen Health Posts. The Potential Health service Coverage in Health Center and Health Post was 100%.

1.1.3.3 Study design: Both descriptive and Analytical matched Case- control study design was used.

1.1.3.4. Sample Size: matched case-control study in the ratio of 1:2 (37 case and 74 control) was conducted to describe potential household's risk factors for infection.

1.1.3.5. Cases Definition

1.1.3.6. Suspected Cases

Any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella or any other illness

1.1.3.7. Probable cases

In the absence of a more likely diagnosis, an illness characterized by acute onset of generalized maculopapular rash and temperature greater than 99.0° F or 37.2° C and arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and lack of epidemiologic linkage to a laboratory-confirmed case of rubella; and noncontributory or no serologic or virologic testing.

1.1.3.8. Confirmed Case definition

A case with or without symptoms who has laboratory evidence of rubella infection confirmed by one or more of the following laboratory tests: isolation of rubella virus; or detection of rubella-virus specific nucleic acid by polymerase chain reaction; or significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay; or positive serologic test for rubella immunoglobulin M (IgM) antibody;

OR An illness characterized by acute onset of generalized maculopapular rash and temperature greater than 99.0°F or 37.2°C arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and epidemiologic linkage to a laboratory-confirmed case of rubella.

1.1.3.9. Epidemic Threshold

1.1.3.9.1 Confirmed rubella outbreak

The epidemic threshold for this outbreak is defined as the occurrence of three or more confirmed rubella cases (at least two of which should be laboratory confirmed; IgM positive) in a health facility/block/Woreda (approximate catchment population of 100,000) in a month. (9)

1.1.3.9.2. Mixed outbreak

If at least one case is positive for measles and at least one case is positive for rubella, the outbreak is designated to be mixed outbreak.

1.1.3.10. Surveillance and Response

During the last Epidemiological week 45 of 2013 Miyo Woreda of Borena zone have been reported Suspected Rubella cases to regional health bureau public health emergency management through a weekly aggregated report.

As report was sent from the zonal PHEM focal person we communicate with concerned bodies for the verification of suspected outbreak. Having this, team was mobilized to the area. We communicate with Borena Zone Public Health Emergency Management focal person in collaboration with Woreda task force committee. After dealing some issue about the cause and early preparedness and response we directly discussed with Woreda technical committee about the causes and how we proceed the way of the outbreak investigation. We directly contact with Woreda Health office vice head and PHEM focal person and Woreda except about the root cause and some aggravating factors relating to the outbreak and the response under action. Team were established for further control of the outbreak in the Woreda and mobilized to the affected Kebeles. Five Case based measles surveillance was sent to EHNRI for laboratory confirmation and all specimen were resulted Rubella IgM positive.

Mean while additional five samples were taken to confirm for further verification of the cases and all of them were Rubella IgM positive. Line list was also created to collect information about cases and was maintained throughout the outbreak.

1.1.3.11. Data collection procedure

Information on potential risk factors was collected using semi structured questionnaire. A questionnaire were prepared based on basic epidemiological information, symptoms, time of onset of rash, medical care, measles vaccination history, housing condition, nutritional status, history of contact, travelled history and also Knowledge, attitude and Practice on Rubella transmission and prevention strategies.

1.1.3.12. Data analysis

All the quantitative data from questionnaires and line list were entered on a computer and analyzed using a computerized data base Epiinfo 7 and Microsoft office excel 2007. Arc GIS was also used to indicate the spatial distribution of the diseases. Data was cleaned and checked for inconsistencies and missing values. During the analyses P-value and 95% confidence interval (CI) for odds ratio were used in deciding the significance of the associations.

1.1.4.1. Result

1.1.4.2. Descriptive analysis

A total of 183 suspected rubella cases and no death were reported from 13 kebeles of the Woreda starting from November 3, 2013 to December 15/2013. The overall attack rate was 29 per 10,000, with no case fatality rate. The index case was seen on 03/11/2013 at health facility. The median age of the case was 6 years old with range of 1-26. The attack rate among less than five years age group was 75 cases per 10,000 populations while 2 cases per 10,000 populations in the age of greater than five years. In addition, the attack rate between five and 15 years age was 5 cases per 10,000population. There was no case fatality rate registered throughout the outbreak.

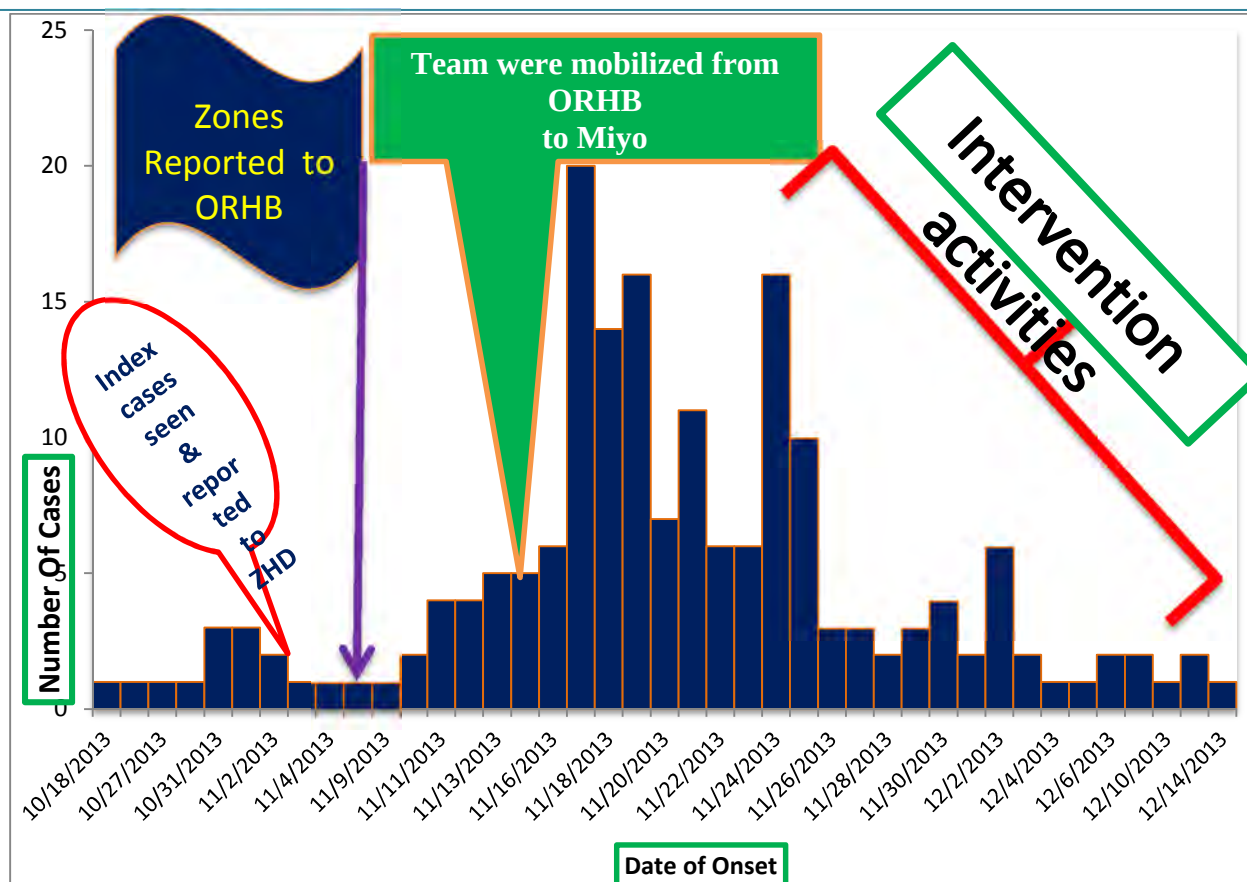


Figure 1.1.3: Rubella cases reported by date of onset, Miyo Woreda, Borena, Ethiopia, December 2013

Out of 18 kebeles in the Woreda, rubella cases were distributed among the majority of the kebeles. It accounts 13(72%) kebele's in the Woreda. From those 84(46%), cases were reported from Kuro Kentela Kebele followed by Hidi town 36(20%), Gomo16(9%), Miyo 15(8%) and Dikicha 15(8%) kebele's .

Table 1.1.1; Attack rate of Rubella outbreak by Kebele's, in Miyo Woreda, Borena zone, Oromia, Ethiopia December 2013

Name Of Kebele's	Population			Number of Cases	Attack rate/10000
	Male	Female	Total		
Baha	985	1200	2185	2	9
Dhokisu	1032	1262	2294	2	9
Dikicha	1545	1888	3433	15	44
Girinco	1444	1767	3211	1	3
Gomo	1127	1377	2504	16	6.4
Gonbisa	1429	1745	3174	2	6
Hidi	2182	2667	2185	36	9
Kuro kantala	1377	1685	3062	84	274
meti	1361	1662	3023	6	20
Miyo	2190	2676	4866	15	31
Teso	1006	1230	2236	3	13
Xurura	1111	1359	2470	1	4
Total	27960	34173	62133	183	29

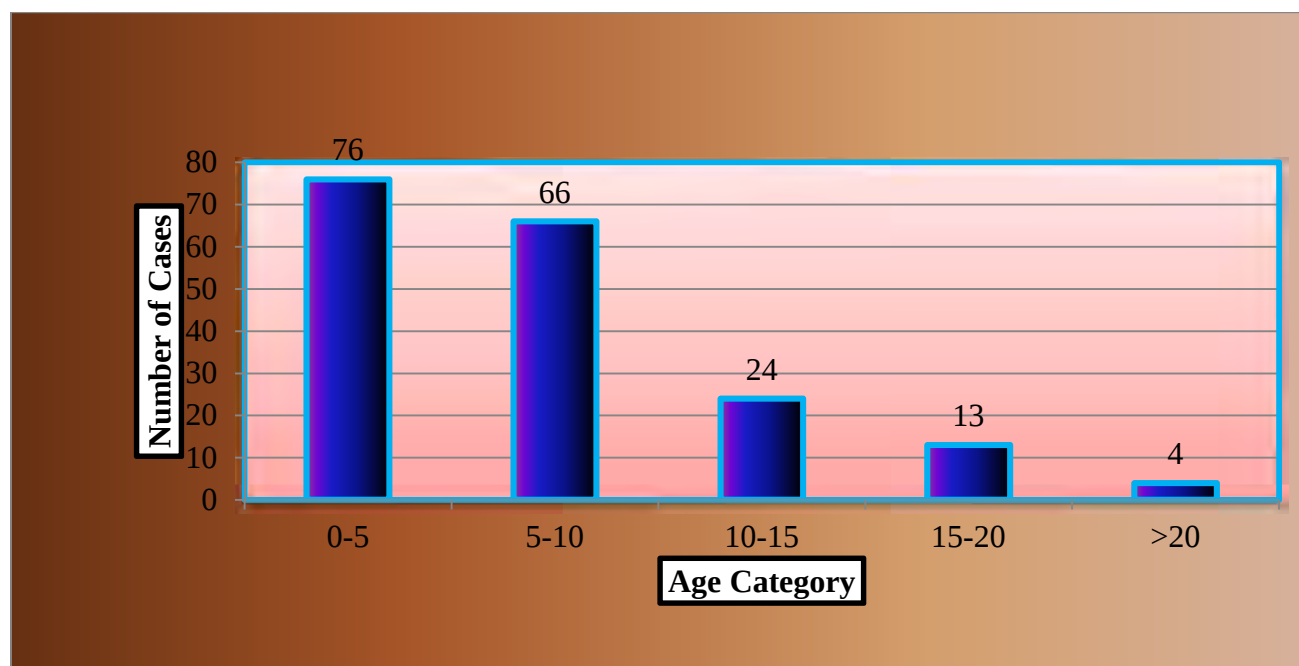


Figure1.1. 4: Rubella cases reported by Age Category, Miyo Woreda, Borena, Ethiopia, and December 2013

Measles Vaccination Coverage versus Rubella cases in Miyo Woreda, Oromia-Ethiopia January 2014

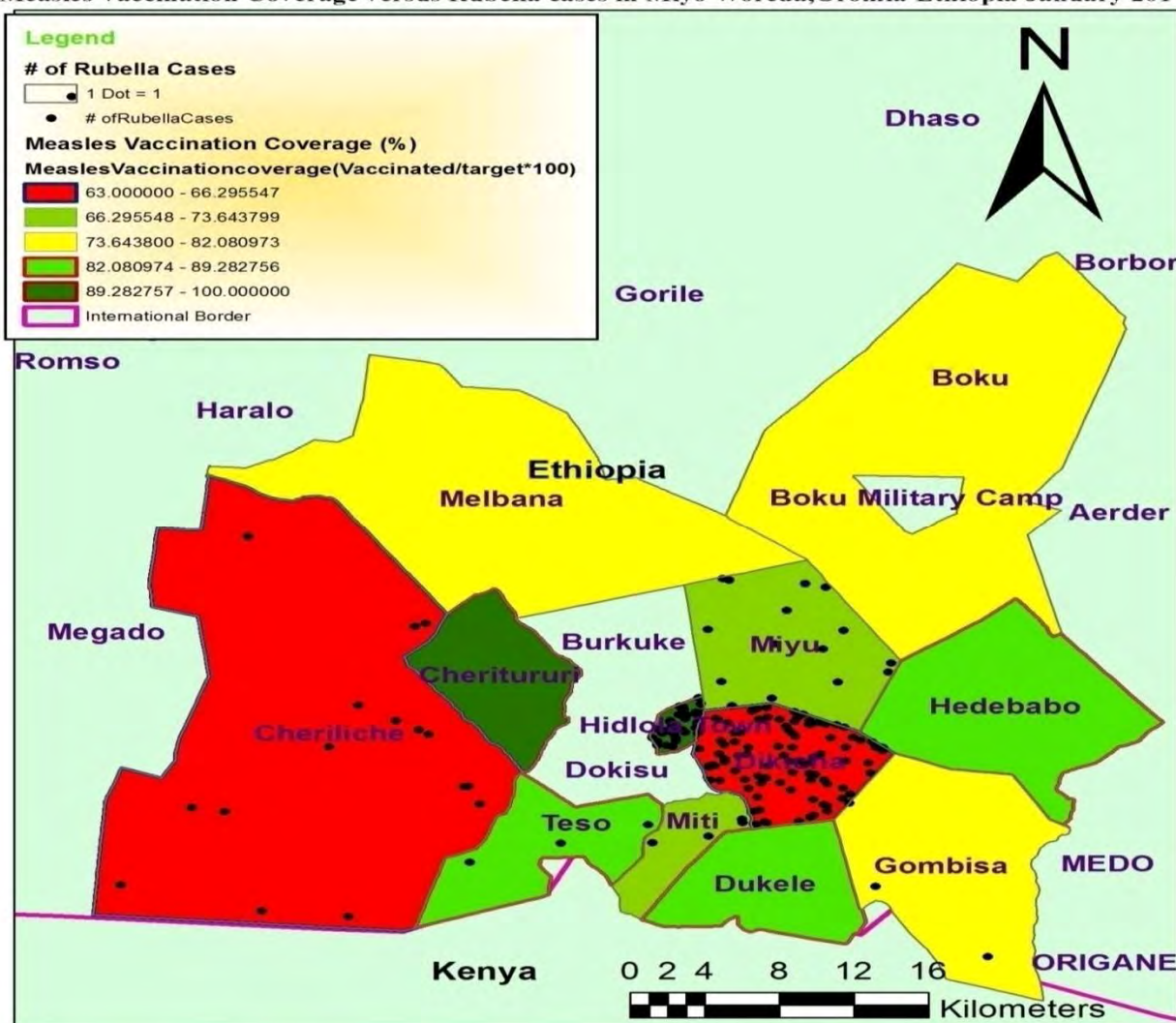


Figure 1.1. 5: Rubella cases distribution by kebeles in Miyo Woreda, Borena, Ethiopia, December 2013

The rest eight kebeles have accounted for only 17(9%) of the total 183 cases; each had <5%. No death was reported from the Woreda which resulted in the case fatality rate of zero.

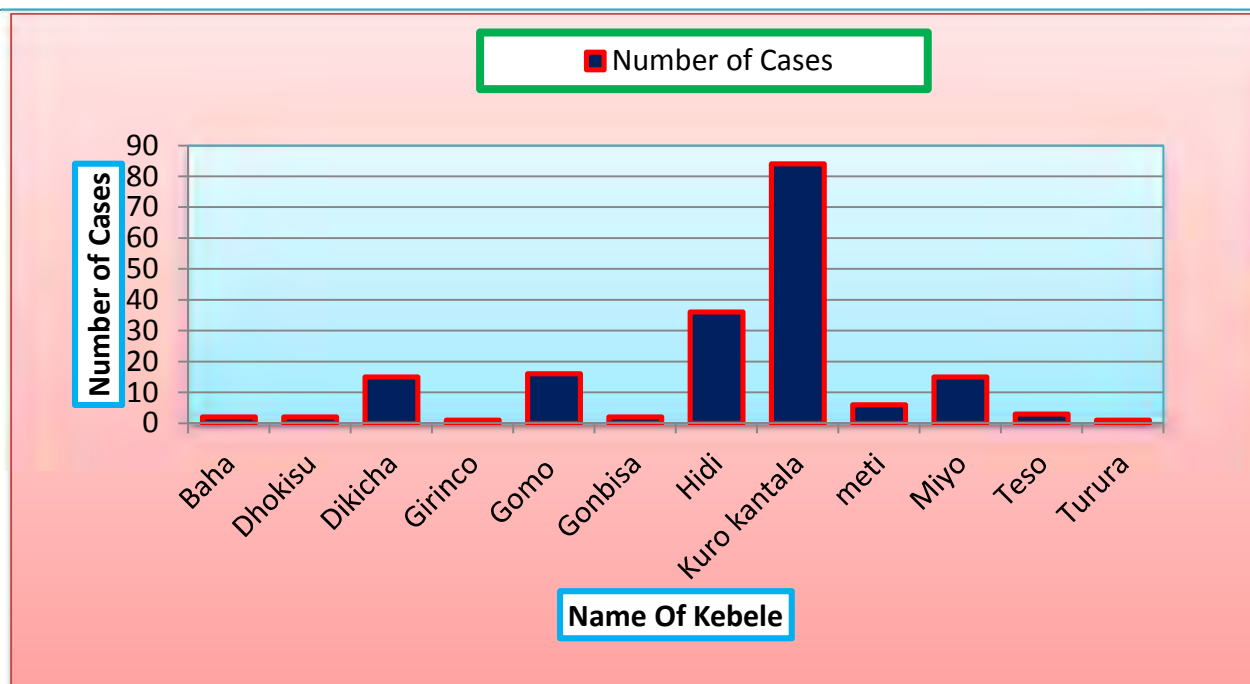


Figure 1.1.6: Rubella case distribution by Kebeles reported in Miyo Woreda, Borena, Ethiopia, December 2013

Considering the vaccination status of the cases , 105(57%) of the cases received one and 20(11%) of the cases received two doses of measles vaccine. Twenty five percent of cases did not receive any measles vaccine (see figure 7). Cases occurred among males and females was 79(43%) and 104(57%). Females were more affected by Rubella compared to males by 25(14%).

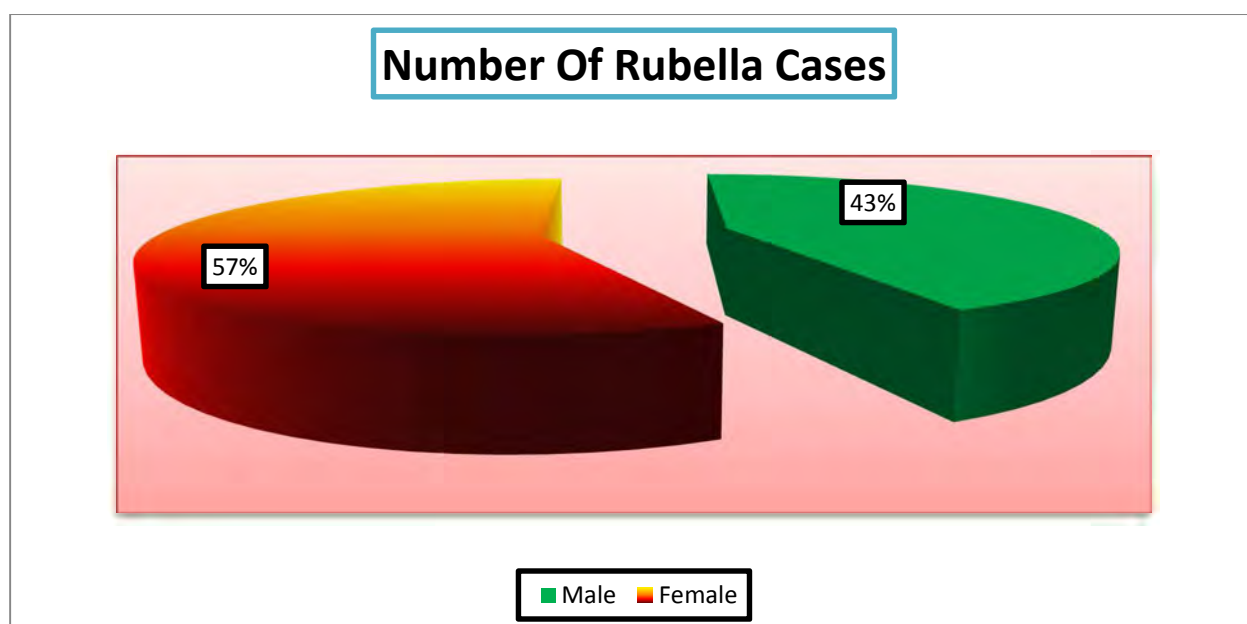


Figure 1.1.7: Rubella cases distribution by sex, Miyo woreda, Borena, Oromia-Ethiopia, 2013.

Table1.1. 2; Distribution of cases by sign and symptoms, Miyo Woreda, Borena, Oromia, Ethiopia December 2013

S.No	Number of Cases(N=37)				
	Sign and Symptom	Yes	Percentage (%)	No	Percentage(%)
1	maculopapular Rash	37	100	0	0
2	Conjunctivitis/Red Eyes	31	84	6	16
3	Cough	33	89	4	11
4	Head ache	32	86	5	14
5	Mild fever	35	95	2	5
6	Sore throat	20	54	17	46
7	Arthralgia/Muscle Pain	16	43	21	57

Table1.1. 3; Education Level of Cases in Case Control studies in Miyo Woreda of Borena Zone December 2013

S.No	Educational Level of Patient	Frequency	Percent	Cum. Percent	95% CI Lower	95% CI Upper
1	Elementary	10	27.03%	27.03%	13.79%	44.12%
2	Illiterate	21	56.76%	83.78%	39.49%	72.90%
3	Read and Write	4	10.81%	94.59%	3.03%	25.42%
4	Secondary	2	5.41%	100.00%	0.66%	18.19%
	TOTAL	37	100.00%	100.00%		

Table 1.1.4; Distribution of cases and Attack rate by Sex, Miyo Woreda, Borena, Oromia, Ethiopia December 2013

Sex	Population	# of Cases		AR/100
		Number	%	
Male	31,315	79	43	0.137314
Female	30818	104	57	0.184957
Total	62,133	183	100	0.160945

1.1.4.3. Laboratory investigation

To identify the etiologic agent of the outbreak five specimens were collected and sent to EHNRI. All the specimens were IgM positive for Rubella. However, to be sure that this all cases were rubella, five specimens were additionally collected and sent to EHNRI. All cases were IgM Positive for rubella. Therefore the Positivity rate was 100% for rubella in both specimen collected

1.1.4.4. Analytical Epidemiology

We compared 37 Rubella cases with 74 community controls matched by sex, age and place of residence. Descriptive statistics and odds ratios (OR) with 95% confidence intervals (CI) were calculated to compare risk factors among cases and controls. Analysis was performed using Epi Info version 7. A total of 31(83.78%) cases and 12(16.22%) of controls selected from the community having history of recent travel to the area where Rubella outbreak cases was reported and 9(24.42%) cases and 61(82.43%) controls had ventilated room during the observation and the rest 28(75.68%) and 13(17.52%) cases and controls have no Ventilated shelter during the visit respectively. About 26(70.27%) of Rubella case patients and 62(86.11%). Controls had a recent history of measles vaccination. 28(75.68%) of the cases and 38(51.5%) of controls did not know any information on the way of transmission of rubella cases from one person to other. Using case-control study, recent travel to an areas where cases of Rubella was reported (Odds Ratio (OR): 26.69, 95% confidence interval: 9.0-77), attending a school (OR: 21.39, 95% CI: 7.44-61.46) and the housing condition with having no ventilation (OR) 14.59, 95% CI 5.59 -38.14, $P < 0.05$ were statically associated with the rubella infections.

Table 1.1. 5; Demographic characteristics of Rubella cases and controls, Miyo Woreda, Oromia-Ethiopia, Dec. 2013

Variable		Case n=37(%)	Control=74(%)	Odds ratio	(95% CI)	P Value
Sex	Female	18(48.65%)	36(48.65%)	1.0	(0.4540-2.202)	1
	Male	19(51.35%)	38(51.35%)			
Marital Status	Single	36(97.3)	1(1.35%)	2.0	(0.1233-33)	0.61
	Married	1(2.7%)	73(98.65%)			
Religion	Christian	20(54.05%)	42(59.15%)	0.81	(0.3645-1.801)	0.6109
	Muslim	17(45.95%)	29(40.85%)			
Occupation	Employed	21(56.76%)	34(45.95)	1.5441	(0.6973-3.419)	0.2829
	Unemployed	16(43.24%)	40(54.05)			
Level of Education	Illiterate	25(67.57%)	40(54.05%)	0.5647	(0.2471-1.2903)	0.17306
	Literate	12(32.43%)	34(45.95%)			

Table 1.1.6; Risk factors for contracting Rubella in Miyo Woreda, Oromia-Ethiopia, Dec. 2013

Exposure	Yes/No	Case	Control=74(%)	Odds		P Value
		n=37(%)		ratio	(95% CI)	
History of travel	Yes	31(83.78%)	12(16.22%)			
two weeks prior	No	6(8.82%)	62(91.18%)	26.69	(9.15-77.87)	<0.05
onset of illness	Yes	30(81)	9(12%)		11.56-	
Contact with case	No	7(19%)	65(88%)	34.84	104.90)	<0.05
Living in	Yes	28(75.68%)	13(17.57%)			
Unventilated house	No	9(24.32%)	61(82.43%)	14.60	(5.59-38.14)	<0.05
Being	Yes	26(70.27%)	63(85.14%)			
Unvaccinated for					(0.1592-	
Measles	No	11(29.73%)	11(14.86%)	0.4127	1.0698)	0.069*
Contact with cases	Yes	27(72.97%)	11(14.86%)			
in School	No	10(22.03%)	63(85.14%)	15.46	5.87-40.70	<0.05
Contact with cases	Yes	20(54.05%)	8(8.81%)			
in Neighbors	No	17(45.95%)	66(89.19%)	9.70	3.65-25.80	<0.05

1.1.5.0. Discussion

Several factors may have contributed for the occurrence of this outbreak. The results of the investigation revealed that of the total number of rubella, 100% had never been vaccinated against rubella infection. Ongoing rubella outbreak among adolescents in Salaj, Romania, September 2011–January 2012 indicates that 98% had never been vaccinated against rubella infection. (10)

Rubella outbreak is not common to Ethiopia hence it is not targeted as priority disease and there is no set of prevention and control strategy. Like of measles, a safe, heat-stable, effective and inexpensive rubella vaccine exists, and substantial progress has been made towards rubella control activities. As of December 2010, 131 of the 194 WHO Member States included rubella-containing vaccines (RCVs) in their routine immunization programmes, in the form of MR or MMR (6). However, Ethiopia did not introduce rubella vaccine yet. Similar outbreak also happened in Japan males aged 20–39 years, who were not included in the initial rubella vaccination program, accounted for 68% of the reported cases. However, with the introduction of 2 doses of Measles-Rubella vaccine into the national vaccination schedule in 2006 for both boys and girls and the successful catch-up vaccination program, children who currently are aged <15 years account for only 5.6% of the case. This might be one of the risk factors contributing for the occurrence of the outbreak.

In the outbreak situation, isolation of infected person with Rubella virus is the major prevention and control mechanism. In practical setup of Miyo woreda isolation was very challenging. Because their living style is very crowded and there are many children in the family. Hence, if somebody infected with Rubella virus in the family, it is difficult to isolate the infected person from the family. This creates the ease transmission of the cases in the family.

Vaccination of susceptible person to Rubella virus with Rubella vaccine is the other major activities. However, there is no vaccination strategy in our country for Rubella virus.

To minimize further complications case management should be conducted early and regularly. Case - contact tracing was done. Similarly in Miyo Woreda the case management was good.

The other major activity is conducting active case search and treating the cases early. In Miyo Woreda active cases search was conducted in each kebele every day including schools every

morning and if they found new cases they do proper case management and proper isolation of the students from the school until he/she recovers. Health Education was continual given at the community level, at school community both in Elementary and High school students and teachers in the Woreda.

1.1.6.0. Limitation of the study

These results are subject to few limitations. First, the case definition used to detect the rubella cases was designed for the measles case-based surveillance system and is specific for measles. Many individuals with rubella cases may not have any significant fever, and up to 50% of individuals with rubella cases may present without a rash or have subclinical illness. The sensitivity of this case definition is likely not high enough to identify all rubella cases.

1.1.7.0 Conclusion

We investigate rubella outbreak in arid- pastoralist society of Borena zone of Miyo Woreda. It is found that recent travel to an areas where cases of *Rubella* was reported, attending a school where the cases were present and the housing condition with poor ventilation were significantly associated with rubella outbreak.

1.1.8.0. Recommendations

1.1.8.1 Federal/Regional/Zonal Health Department

- The Regional Health Bureau in collaboration with the FMOH should plan together towards the introduction of rubella vaccine in to the country's immunization programme for the sustainable prevention and control of the cases.
- Support additional operational cost for capacity building of Health workers and Health extension workers.

1.1.8.2. The Woreda Health Office

- The Woreda Health Office should strengthen active surveillance system in order to detect case early as much as possible.
- Restocking emergency drugs and supplies that are running out
- Strengthen sensitization of health workers and health extension workers
- Continue watchfulness on the already enhanced active surveillance
- Continues Health Education of the community on Ways of transmissions and prevention activities
- Intersectorial collaboration with other sector like administration, education bureau is mandatory to reverse the transmission of the cases.

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Annex 1.1.1: Questionnaires for Case - control study on Rubella outbreak in Miyo Woreda, Borena zone, Oromia Region

Case status Case _____ Control _____

Patient Name _____. Name of Mother _____ Date of Data collection ____

Region _____ Zone _____ Woreda _____ Kebele _____. Got _____ Phone _____

Location: Longitude: _____ Latitude: _____

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1. Male 2. Female
1.2	Age	years _____ Months _____
1.3	Occupation of the patients	1. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Government 8. Other (specify) _____
1.4	Family Occupation	1. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Government 8. Other (specify) _____
1.5	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Wakefata 6. Other (specify) _____
1.6	Ethnic group	1. Oromo 2. Tigre 3. Amhara

- | | | |
|------|--|---|
| | | 4. Gedewo |
| | | 5. Other (specify) |
| 1.7 | Educational level of the patient | 1. Illiterate
2. Read and write
3. Elementary
4. Secondary
5. Above secondary |
| 1.8 | Educational level of the family | 1. Illiterate
2. Read and write
3. Elementary
4. Secondary
5. Above secondary |
| 1.9 | Marital status of patient | 1. Single 4. Widowed
2. Married 5. Separated
3. Divorced |
| 1.10 | Family size | _____ |
| 1.11 | Is there any sick person with rash, fever, running nose/conjunctivitis (illness)? In the family? | 1. Yes 2. No |
| 1.12 | If yes, number of sick person | _____ |

For Case Only

II. Clinical History of Diseases:

Name of Mother _____

Does she have a clinical History of 1 Cataracts 1. Yes 2.No

- 2.1 What was the symptom?
1. mild fever
 2. Maculopapular rash
 3. conjunctivitis (red eyes)
 4. arthralgia/arthritis/Muscle pain
 5. enlargement of cervical lymph nodes
 6. cough,
 7. sore throat
 8. Headache
 9. Others(Specify)_____

complication

- | | |
|-----------------------------------|---------------------------|
| Pigmented retinopathy | 1. Yes 2.No 3. Not Known |
| Microcephaly | 1. Yes 2.No 3. Knot known |
| Congenital Heart diseases | 1. Yes 2.No 3. Knot known |
| Glaucoma 1.Yes 2. No 3. Not known | 1. Yes 2. No 3. Not known |
| Menningoencephalitis | 1. Yes 2. No 3. Not known |
| Mental retardation | 1. Yes 2. No 3. Not known |
| Splenomegaly | 1. Yes 2. No 3. Not known |
| Jaundice | 1. Yes 2. No 3. Not known |
| Describe other ----- | 1. Yes 2. No 3. Not known |

- 2.2 Date of rash on set / /
- Duration of rash_____
- 2.4 Do you Visited health facilities? ☐ yes no ☐,
- 2.5 If yes,Date seen at health facility / /
- 2.6 Illness duration before visiting the health facility _____ in days/hours
- 2.7 Did you (he/she) take treatment?
- 1.Yes
- 2.No

1. 2. 1 Measles Outbreak Investigation and Response in remote Area of Gelana Woreda of Borena Zone; Oromia Ethiopia, January 2014

Abstracts

Introduction: Measles continues to be a leading cause of public health problem in developing countries, despite the availability of an effective vaccine. Suspected Measles outbreak has been reported in Gelana Woreda of Borena Zone, Oromia, Ethiopia in the first week of January 2014. Consequently, we conducted investigation to confirm the existence of the outbreak, identify potential risk factors and undertake appropriate public health interventions.

Methods: We defined a case of suspected measles based on National measles case definition as a person developing Maculopapular rash with fever 38.5 degree centigrade and above with one or more of the other signs Coryza, conjunctivitis and cough. A matched cases control study was conducted and analyzed using Epi info, Microsoft excel and ARC GIS.

Result: One hundred and sixty one cases with 10 community deaths were identified with the attack rate 2 cases/1000 people with 6.2 deaths per 100 cases. The ages of the cases ranged from 4 months to 35 years (with mean age of 4.9 years; median: 3.0 years). Contact history with case-patient (OR: 14.333, 95% CI 3.06-18.11), history of travel two weeks prior to onset of illness (OR: 7.4516, 95% CI 7.4516-35.4711), living in unventilated house (OR: 14.6, 95% CI, 5.9700_35.4711) were found to be significantly associated with measles infection. Being vaccinated for measles vaccination (OR= 0.2941, 95% CI: 0.139_ 0.622) was protective. There was no statistical significant difference in the socio-demographic characteristics of both cases and controls.

Conclusion and Recommendation; This investigation revealed that the outbreak was likely contributed due to accumulation of a large number of susceptible individuals in the community exacerbated by contact among cases, unventilated households and low immunization activity which was highly significantly associated with the cases. We recommend improved routine and supplementary immunization activities, strong ongoing active case surveillance for the Woreda.

Key Words: Measles; Measles Outbreak investigation

Number of Words: **291**

1.2.1.0. Introduction

Measles is an acute contagious respiratory infection caused by measles virus in the family paramyxovirus, genus Morbillivirus [11-13], and frequently results in widespread outbreaks among unvaccinated individuals (11). The highest fatality rates are usually seen among children under five, and up to 20% in infants less than one year old. Children affected by measles may suffer lifelong disabilities, including brain damage and blindness. Measles is a widespread killer disease.

Measles causes a significant number of childhood deaths. Measles mortality in the year 2000 is estimated at 750 000 worldwide, of which 395 000 (53%) were in the African Region. 80% of These deaths were estimated to have occurred among children below five years of age (12).

In 2004, approximately 454, 0001 people died from the disease, often from secondary complications related to pneumonia, diarrhea and malnutrition. An effective vaccine has been available since the 1968. (13; 11). Measles remains the leading cause of childhood Morbidity and mortality in the World. Globally, more than 20 million cases were reported yearly and 345,000 deaths were recorded in 20051 .

Measles is an important vaccine-preventable cause of infectious disease morbidity and mortality in developing countries. According to the World Health Organization (WHO), measles killed 164 000 people in 2008, with approximately 450 deaths every day and 18 deaths every hour (6).

The strategies being implemented to attain the measles mortality reduction goals include: increasing routine immunization coverage; providing a second opportunity for measles immunization through catch-up and follow-up Supplemental Immunization Activities (SIAs); establishing case based surveillance with laboratory confirmation; and improving case management (12; 14)

Routine measles vaccination coverage was selected as an indicator of progress towards this goal because of the potential of measles vaccination to first, reduce mortality among children, and secondly, to serve as a marker of access to children's health services. In 2011, 84 per cent of world's infants received the first dose of measles vaccine before their first birthday (15)

¹ World Health Organization ,Measles mortality reduction and regional elimination strategic plan 2001-2005,Geneva,WHO,2001

Global progress in the past decade against measles has been stunning. All 194 World Health Organization (WHO) Member States have committed to reduce measles deaths by 95% by 2015 and accordingly in 2011, about 84% children had received one dose of measles vaccine by their first birthday. As more countries immunize more children, measles deaths have been reduced by 94 percent from an estimated 2.6 million in 1980, 71 percent in 2000 from 548,000 to 158,000 in 2011 (16). No single other health intervention has returned these mortality reduction results in such a short space of time. In 2012, countries had the opportunity to make even more progress through introduction of a second dose in routine immunization, high-quality nationwide campaigns and, critically, to further expand measles activities to include a rubella-containing vaccine.

The year 2012 also saw continuing challenges, with stagnating routine immunization coverage in some countries, and large measles outbreaks in several, putting measles control and elimination goals in some regions at risk. More than 20 million infants did not receive measles vaccine in 2011. These children the poorest, with poorer nutrition, weaker immune systems and least served by the health system are the very children who need measles, rubella and other vaccines the most (17). Despite the availability of a safe, effective, and relatively inexpensive measles vaccine for over 40 years, measles remained a leading cause of childhood mortality especially for children living in developing countries. (18)

In 2001, countries in the World Health Organization (WHO) African Region began accelerated measles control activities to reduce measles deaths by half by 2005 compared to the estimated number of measles deaths in 1999. Implementation of the recommended strategies led to a 75% reduction in estimated measles mortality in the African Region by 2005. Following this progress, in 2006 the African Region adopted a goal to achieve 90% measles mortality reduction by 2010 compared with the estimate for 2000. By 2008 in the African Region, reported measles cases decreased by 93% and estimated measles mortality decreased 91% compared with 2000. (19)

The importance of raising measles vaccination coverage, dramatically reducing measles deaths and indeed eliminating measles from most of the world is recognized in several global and regional documents.

Despite the introduction of the Reaching-Every-Woreda approach to strengthen immunization coverage, services have not expanded adequately to ensure enough coverage of the hard-to-reach populations in all Woredas in the African Region (12).

Measles outbreaks appear in communities with low measles vaccination coverage as the measles virus is one of the most infectious human diseases, and the disease is easily recognizable. Measles outbreaks are an early warning signal of low immunization coverage. Countries may use the measles outbreaks to learn the causes of the outbreaks determine problems in the immunization and health system and address these through policy change or improvements in programme implementation (20).

Recently, countries of the Region have seen a substantial improvement in the detection, investigation and case management of measles outbreaks (8), surveillance and improvement in surveillance of vaccine preventable diseases. Information from outbreak investigations have helped to identify susceptible groups and targeted supplemental immunization campaigns. Improved measles surveillance has also helped to uncover the previously unrecognized Measles disease burden in Bangladesh, Bhutan, Maldives and Nepal (18).

To interrupt endemic transmission of measles, mathematical models indicate that 93%–95% population immunity is needed (21).

Once a successful measles catch-up campaign has been conducted, measles incidence should immediately decline. However, outbreaks can still occur because of accumulation of susceptible children due to missing routine immunization and the uneven efficacy of measles vaccine for younger children (13).

1.2.2.0 Background of the Woreda

Gelana Woreda is one the woreda's in Borena zone. The Woreda reported suspected measles cases starting from end of November 2013 till the study period (January 2014). The Woreda has 18 kebeles and the total population of the Woreda is 85,318.

It is bounded by Abaya Woreda and Abaya lake in North, Abaya lake and Nech Sar National Park and Amaro Woreda of SNNP in West and Bule Hora and Dugda Dawa in South, Kochere and Yirgachefe Woreda in East(see Figure 1.2.1).

The cases was reported from Ergensa and Odo Derba kebele. Both kebeles are found far from the Woreda town (Tore) with the distance of 510 Km and 400 KM respectively. These two kebeles were bounded by Abaya Lake and Nech Sar National park and highly desert mountainous area.

In The History of Vaccination, there was no routine vaccine ever conducted in the past in both kebeles. Five blood samples were send to Referance laboratory for measles IgM confirmatory test and three out of five samples were confirmed as positive for Measles.

Map of Gelana Woreda, Borena Zone, Oromia, Ethiopia January 2014



Figure 1.2 1: Figure 1.2.1: Map of Gelana Woreda

1.2.3.0 Objectives

1.2.3.1 General Objective

The overall objective was to verify the existence of an outbreak and identify possible associated risk factors for the occurrence of the outbreak.

1.2.3.2 Specific objectives

- To verify Measles outbreak in the woreda
- To describe the disease by place, person and time
- To identify the risk factors
- To propose suggested prevention and control measures

1.2.4.0 Methods and materials

1.2.3.1. Study area

The outbreak investigation was conducted in Gelana Woreda, Ergensa and Odo Derba kebeles of Borena zone, starting from January 1 to 15, 2014. Gelana woreda has 18 kebeles with the total population 85,318. The total population of the two kebeles, Ergensa and Odo Derba are 3,168 and 2,454 respectively.

1.2.3.2. Study design

Descriptive cross-sectional and Analytical (cases and controls) study designs were used.

1.2.3.3. Sample Size:

Matched case-control study in the ratio of 1:1 (64 cases and 64 controls) was included to verify potential risk factors for infection

1.2.3.4. Laboratory methods: To initiate appropriate preventive actions, early confirmations of diagnosis are critical. Five blood specimens were collected and transported to EHNRI for serologic confirmation of measles IgM.

1.2.3.5 Analytic Epidemiology: Neighbors with no maculopapular rash, fever, cough and coryza or Conjunctivitis were selected as healthy controls and matched for age and sex to measles cases identified by laboratory confirmation and epidemiological linked cases.

1.2.6. Descriptive Epidemiology

1.2. 3.1.5 Cases Definition

1.2.3.1.5.1: Suspected Cases

Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) OR any person in whom a clinician suspects measles (22).

1.2.3.1.5.2 Probable cases

In the absence of a more likely diagnosis, an illness characterized by acute onset of generalized maculopapular rash and temperature greater than 38° C, or conjunctivitis (22).

1.2.3.1.5.3 Confirmed Case definition

The Confirmed cases for Measles are defined as a suspected case with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed cases in an epidemic (22).

1.2.3.1.6 Epidemic Threshold

1.2.3.1.6.1 Confirmed Measles Outbreak

A confirmed measles outbreak is defined as the occurrence of three or more confirmed measles cases (at least two of which should be laboratory confirmed: IgM positive) in a health facility/block/Woreda (approximate catchment population of 100,000) in a month (23) or three confirmed measles cases in one month (22).

A suspected outbreak of measles is defined as the occurrence of five or more reported suspected cases of measles in one month per 100,000 population living in a geographic area (e.g., block/Woreda). All measles outbreaks should be fully investigated (23) or five suspected measles cases in one month (22).

1.2.3.1.6.2 Mixed outbreak

If at least one case is positive for measles and at least one case is positive for rubella, the outbreak is designated to be mixed outbreak (23).

1.2.3.1.7 Surveillance and Response

During the last Epidemiological week 48 of 2013 Gelana Woreda of Borena zone has been reported Suspected Measles cases to regional health bureau public health emergency management through a weekly aggregated report. In response to this the regional PHEM communicated Borena zone PHEM focal person to verify the outbreak in the Woreda. A team of health professionals deployed to the site to control the outbreak. On the way to the outbreak site the team gathers information on the outbreak from zonal health department, from Woreda emergency task force committee and Woreda technical committee about the cause and how to go on to control the outbreak. Line list was also created to collect information about cases and was maintained throughout the outbreak.

1.2.3.1.8 Data collection procedure

Information on potential risk factors was collected using semi structured questionnaire. questionnaire were prepared based on basic epidemiological information, symptoms, time onset of rash, medical care, measles vaccination history, housing condition, nutritional status, history of contact, travelled history and also Knowledge, attitude and Practice on Measles transmission and prevention.

1.2.3.1.9 Data analysis

All the quantitative data from questionnaires and line list were entered on a computer and analyzed using a computerized data base Epiinfo 7 and Microsoft office excel 2007. Arc GIS was also used to indicate the spatial distribution of the diseases. Data was cleaned and checked for inconsistencies and missing values. During the analyses P-value and 95% confidence interval (CI) for odds ratio were used in deciding the significance of the associations.

1.2.3.3 Coordination

The Zonal PHEM focal person was reported the suspected measles cases on November 30, 2013 and five blood samples were send to EHNRI for confirmation. After a week, three out of five samples result were positive for measles IgM and the outbreak was confirmed. Oromia RHB/PHEM in collaboration with EPHA had sent the field epidemiology residents at the epidemic sites on January 1, 2014 to verify and investigate the outbreak. Afterward the Regional investigation team joined with Zone and Woreda health offices head and experts to verify the epidemic and to give technical support.

1.2.4.0 Result

1.2.4.1 Laboratory investigation

To identify the etiologic agent of the outbreak five specimens was collected and sent to EHNRI/EPHI. Three of the specimens were IgM positive for Measles.

1.2.1.2.4.2 Descriptive analysis

A total of 161 measles cases and ten community deaths were reported from 12/11/2013 to 15/01/2014 E.C from two kebeles (Odo Derba and Ergensa kebeles) in the Gelana Woreda of Borena Zone (Figure 1.2.4). From the total cases 114(70.8%) were reported from Odo Derba kebele. The rest kebeles reports 47(29.2%) of the total reported cases. The case fatality rate was 4(8.5%) and 6(5.2%) in Ergensa and Odo Derba kebele's respectively. Overall case fatality rate (CFR) in the woreda was 6.2 %. The mean age of the cases were 4.9 years with a median age of 3.0 years with range of 4 months to 35 years. In addition, of 161 cases, 84(52%) cases were not vaccinated and 77(48%) cases received one doses of measles vaccine in Measles supplementary immunization activities. Of the total affected cases 85(52.8%) were females and 76(47.2%) were males. Children of less than 5 years of age were 106 (65.8%).

Measles Spot Map in Gelana Woreda Of Borena zone,Oro-Ethiopia,Jan. 2014

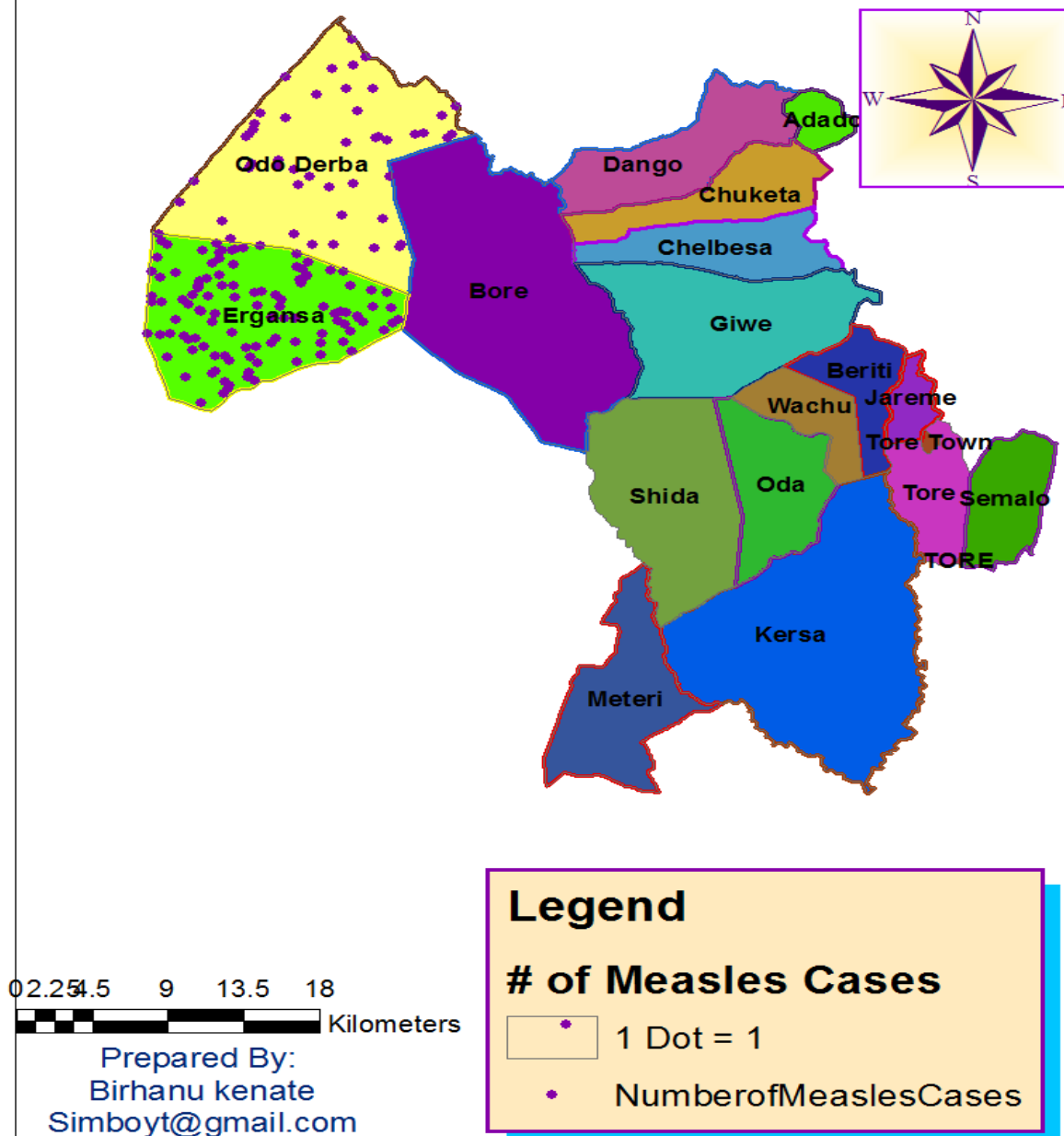


Figure 2 2 Measles Spot Map In Gelana Woreda of Borena Zone, Oromia, Ethiopia, 2014

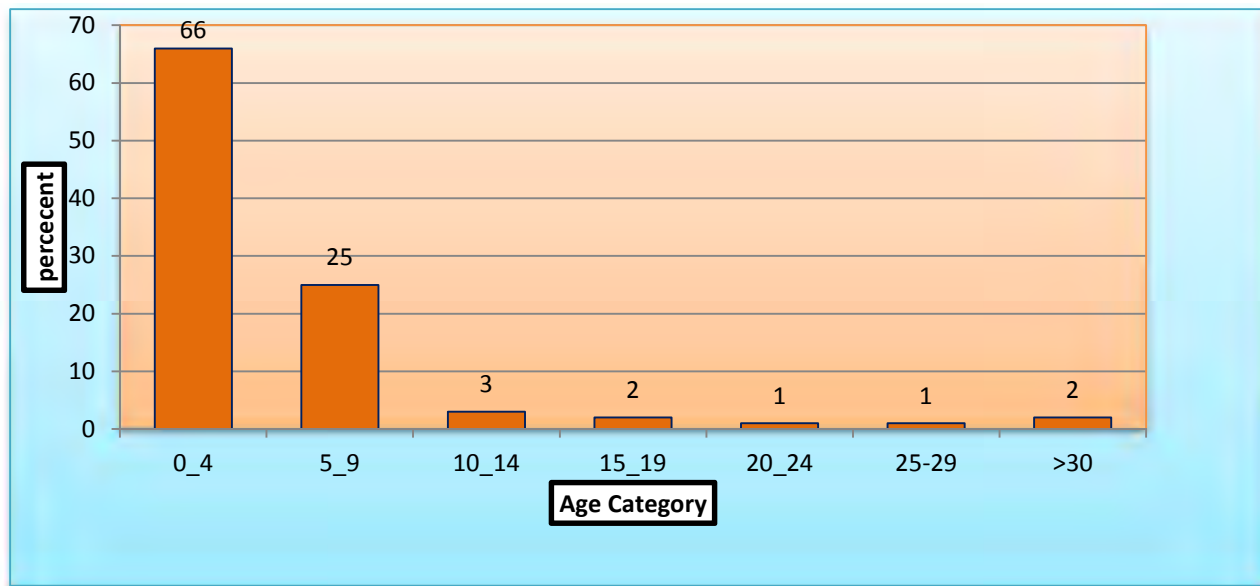


Figure 1.2. 3: Measles cases by Age category in Gelana Woreda, Borena Zone from December 21/2006 to January 7, 2006, and Oromia

The epidemic curve showed that the outbreak had two peaks of onset, which started from 12/11/2013 to 15/01/2014(Figure 3). The index cases was started around November 12 of 2013, however the cases were not reported and did not come to the observation of health facilities till December 1/2013. These two kebeles were isolated. According to the investigation the outbreak was come to attention of health authorities due to emergency call from the community in which five deaths were happened from a single household within a one week period.

Table1.2. 1: Analysis of Measles outbreak cases distribution by Kebele's and age group in Gelana Woreda of Borena Zone Oromia, Ethiopia January 2014

Name of Kebele	Case(Percent)by age Category					Age specific Attack rate				Crude Attack rate
	0-5	5_14	15_44	45+	Total	0-5	5_14	15_44	45+	Crude AR
Ergansa	33(70.2)	10(21.2)	4(8.5)	0	47(29.2)	8.5	1.345895	0.38204394	0.0	2.0
Odo Derba	73(64)	35(30.7)	6(5.3)	0	114(70.8)	14.484	4.710633	0.44378698	0	3.7
Grand Total	106(65.4)	45(28)	10(6)	0	1(0.6)	11.857	2.654867	0.41684035	0	2.95

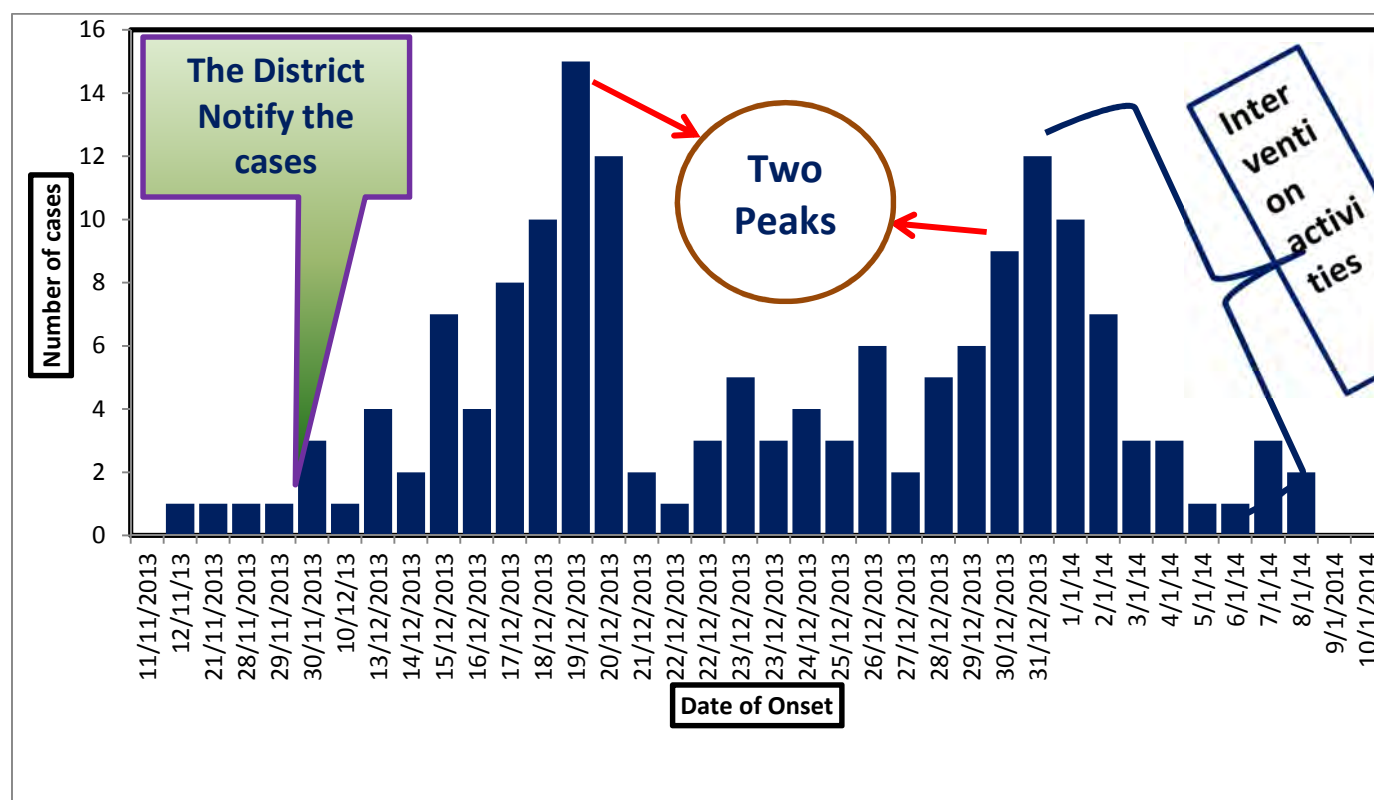


Figure 1. 2. 4: Date of Onset of Measles cases in Gelana Woreda of Borena Zone from November 3 to January 7, 2014

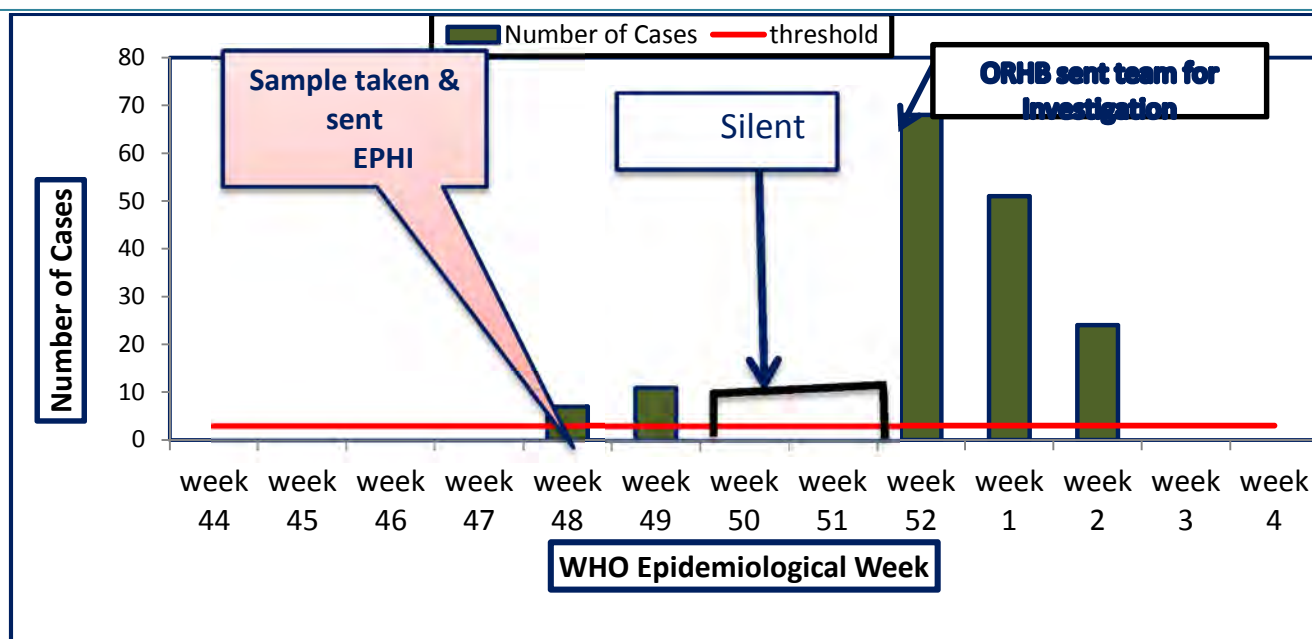


Figure 1.2. 5: Date of Onset of Measles cases in WHO Epidemiological week of Gelana Woreda of Borena Zone from November 3 to January 7, 2006

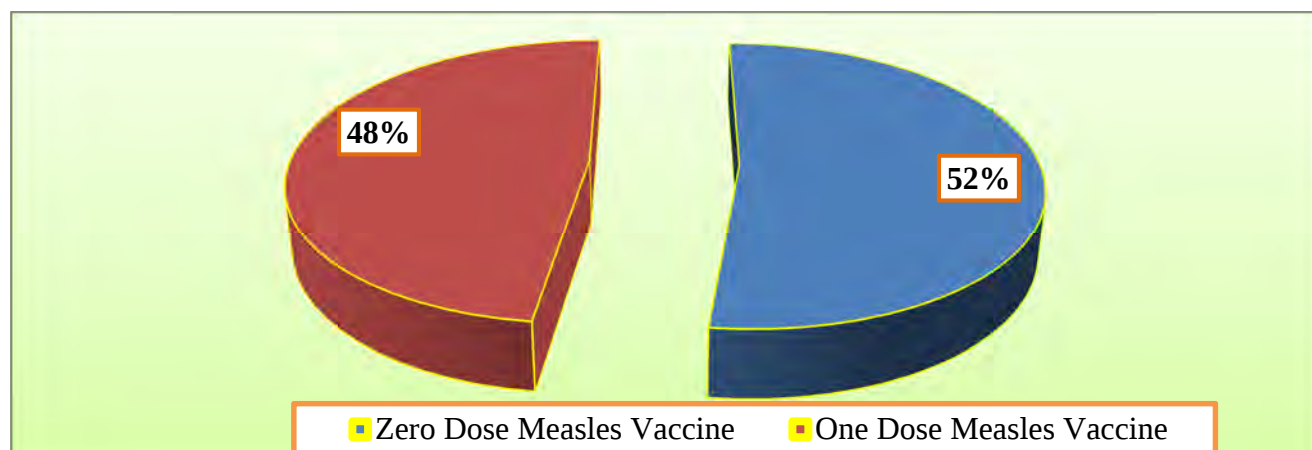


Figure 1.2. 6;Measles cases vaccination status in Gelana Woreda, Borena Zone from November 21 /2006 to January , 2006, Oromia

The Measles Vaccination coverage of Gelana Woreda in the past five year was 78 %. There were no routine expanded immunization being undertaken in Ergensa and Odo Derba kebele's in the history of immunization. Nevertheless, in May 2013 supplementary immunization activities were done without boosting the first dose of vaccine. This all is due to inaccessibility and lack of infrastructure in both kebele's. From 161 cases 77 (48%) cases were received one supplementary dose during the campaign.

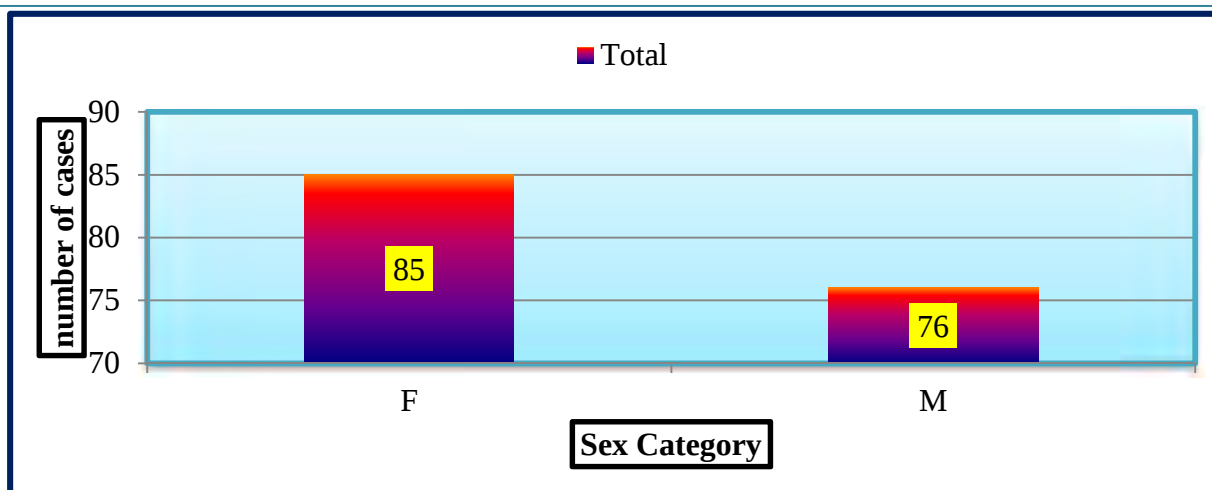


Figure 1.2. 7: Measles cases by Sex in Gelana Woreda, Borena Zone from December 30/2013 to January 15, 2014, Oromia

The cases distribution in Odo Derba was 114(70.8%), and forty Seven cases in Ergensa kebele (see table 1.2.1).

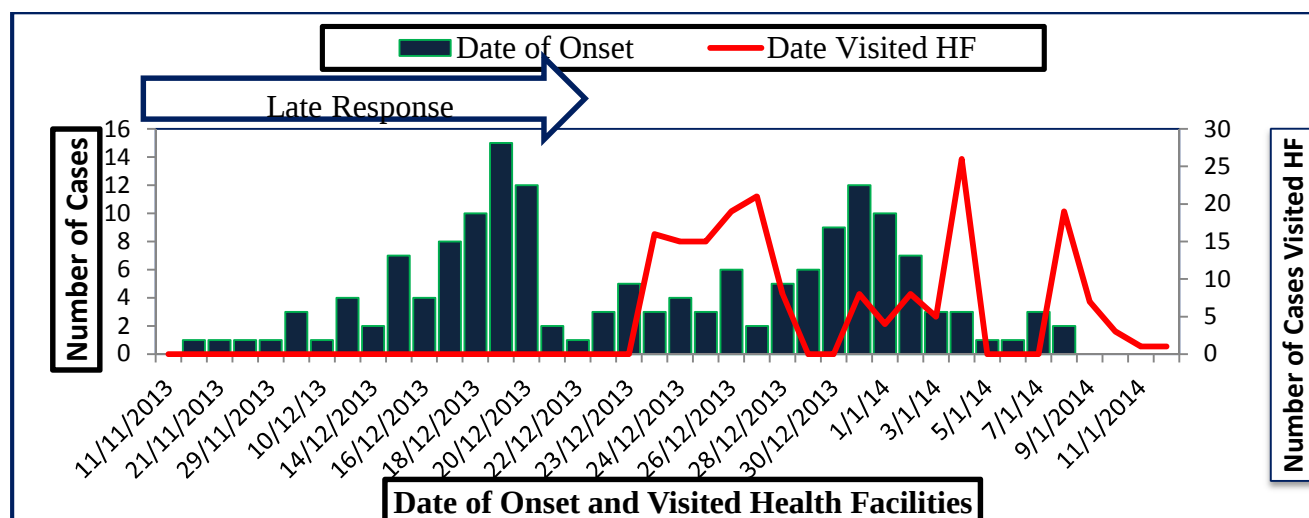


Figure 1. .2 8: Date Of Onset of Measles cases and date Visited Health facilities in Gelana Woreda of Borena Zone from November 11 to January 15, 2014

Table 1.2. 2: Measles attack rate and CFR by kebele in Gelana Woreda, Borena Zone from December 22 /2006 to January 15, 2006, Oromia.

S.No.	Kebele	Total pop.	# of cases	# of deaths	AR (per 100 population)	CFR (%)
1	Ergensa	3168	47	4.0	1.48	8.5
2	Odo Derba	2454	114	6.0	4.65	5.3
Grand Total		5622	161	10.0	2.86	6.2

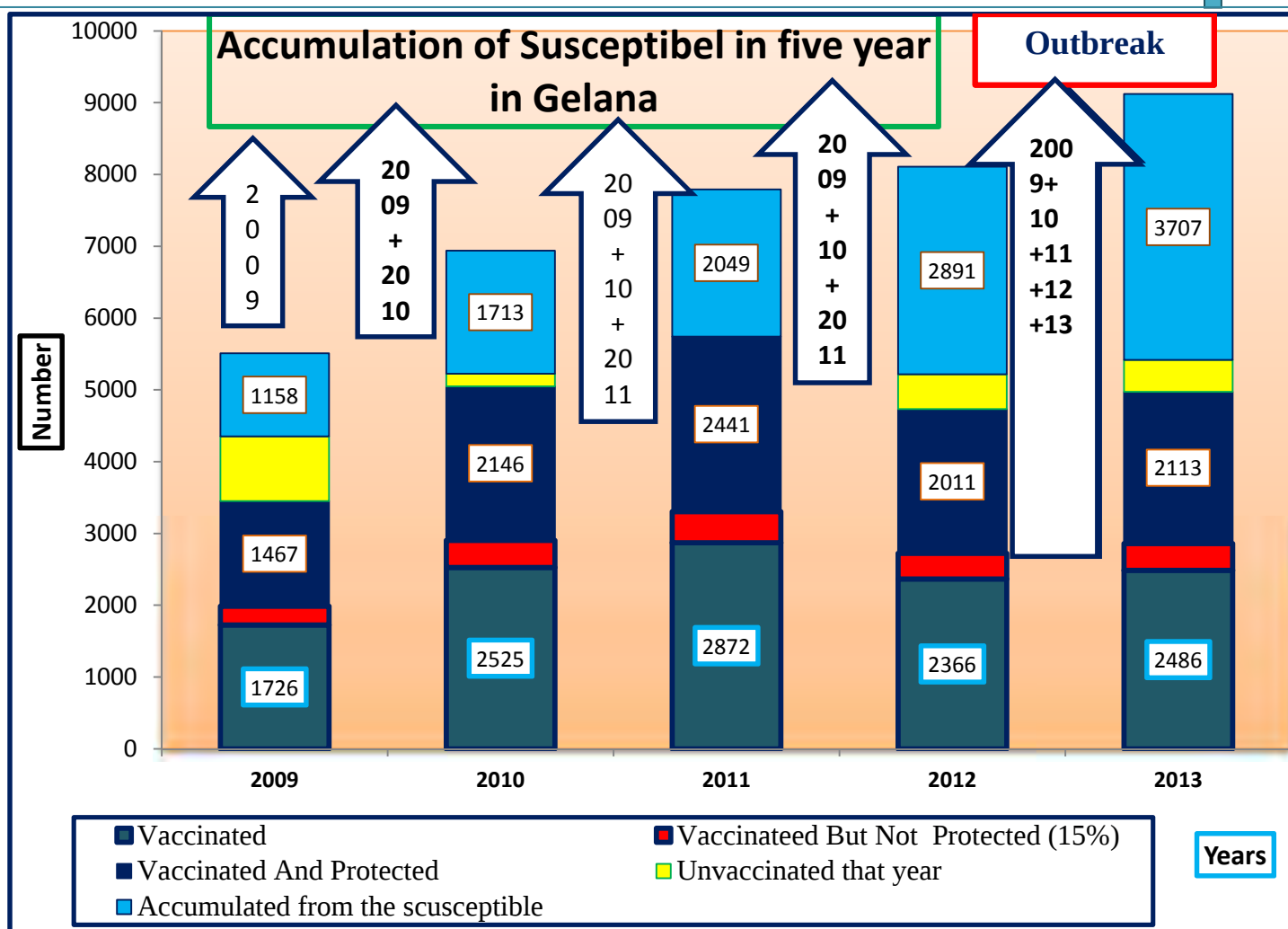


Figure 1.2. 9: Risk pool Analysis of Measles Vaccination Coverage by Kebeles from 2001 - 2005 E.C in Gelana Woreda of Borena zone January 2006

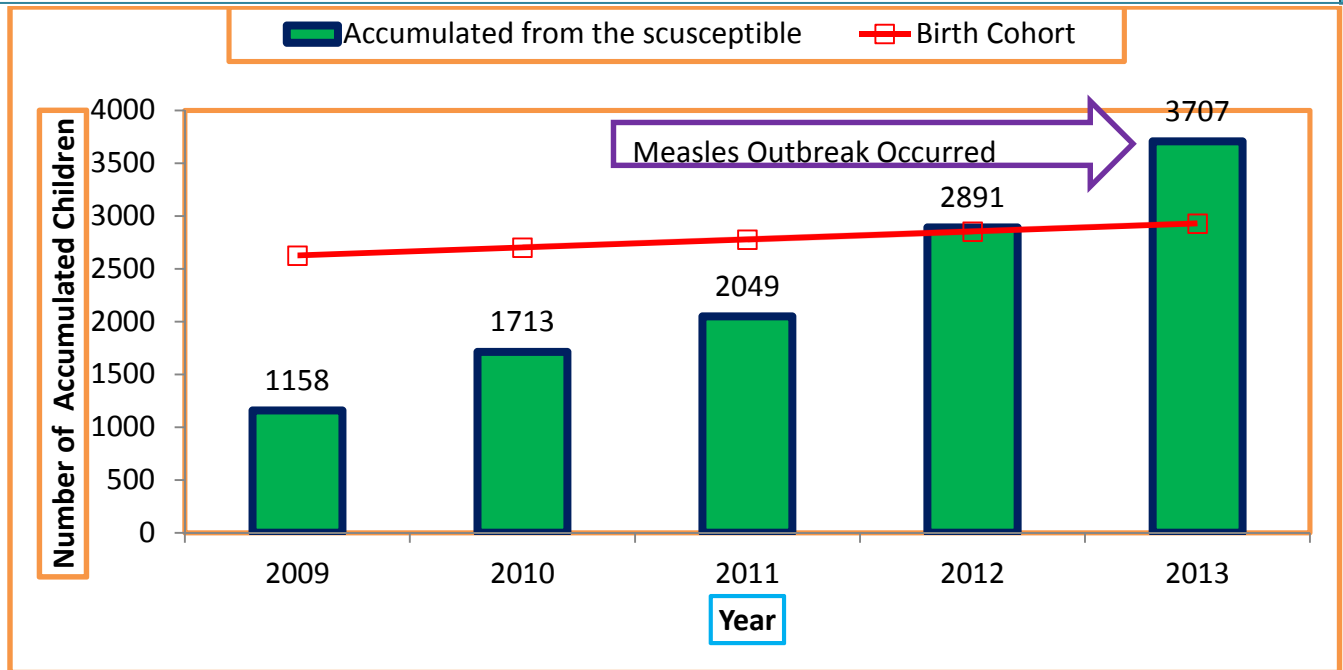


Figure 1.2. 10: Risk pool Analysis of Measles Vaccination Coverage from 2009-2013 in Gelana Woreda of Borena zone, Oromia-Ethiopia, January 2014

The accumulation of susceptible children's occurs over time. According to our finding in Gelana Woreda, the vaccine coverage in 2009 was 1467(55.9%), however the rest 1158(44.1%) were at risk of measles Virus. Consequently, in 2013 the birth cohort was likely to be 2929. However, the number of children being accumulated since lack of measles vaccination in the Woreda was much higher than the birth cohort which were 3707(figure1.2.10)

Table1.2. 3 Risk pool Analysis of Measles Vaccination Coverage by Kebeles from 2009-2013 in Gelana Woreda of Borena zone January 2014

Sr. No	Name Of Kebele	Total Population	Target (3.17%)	Measles vaccination Coverage							Measles Coverage in Five year
				2001	2002	2003	2004	2005	Total Target from 2001-05		
1	Tore Town	4094	130	90	123	132	138	108	649	501	77
2	Tore Rural	6277	199	99	200	238	168	174	995	780	78
3	Jirme	4265	135	91	155	167	114	146	676	582	86
4	Wachu	3656	116	93	112	180	162	112	579	566	98
5	Beriti	3121	99	105	131	121	100	76	495	428	87
6	Kersa	4891	155	140	200	201	131	158	775	690	89
7	Semalo	6442	204	123	200	250	191	170	1021	811	79
8	Shida	3298	105	91	111	130	168	157	523	566	108
9	Oda	3104	98	87	123	120	149	153	492	545	111
10	Meteri	4525	143	89	123	144	193	153	717	613	85
11	Bore	4144	131	69	108	118	78	121	657	425	65
12	Giwe	6531	207	133	202	249	161	219	1035	831	80
13	Chalbesa	5588	177	151	223	260	171	194	886	848	96
14	Cheketa	6200	197	153	205	233	186	199	983	823	84
15	Dango	7105	225	113	198	198	117	202	1126	715	63
16	Adado	4117	131	99	111	131	139	144	653	525	80
	Woreda Coverage	82811	2625	1726	2525	2872	2366	2486	13126	10249	78

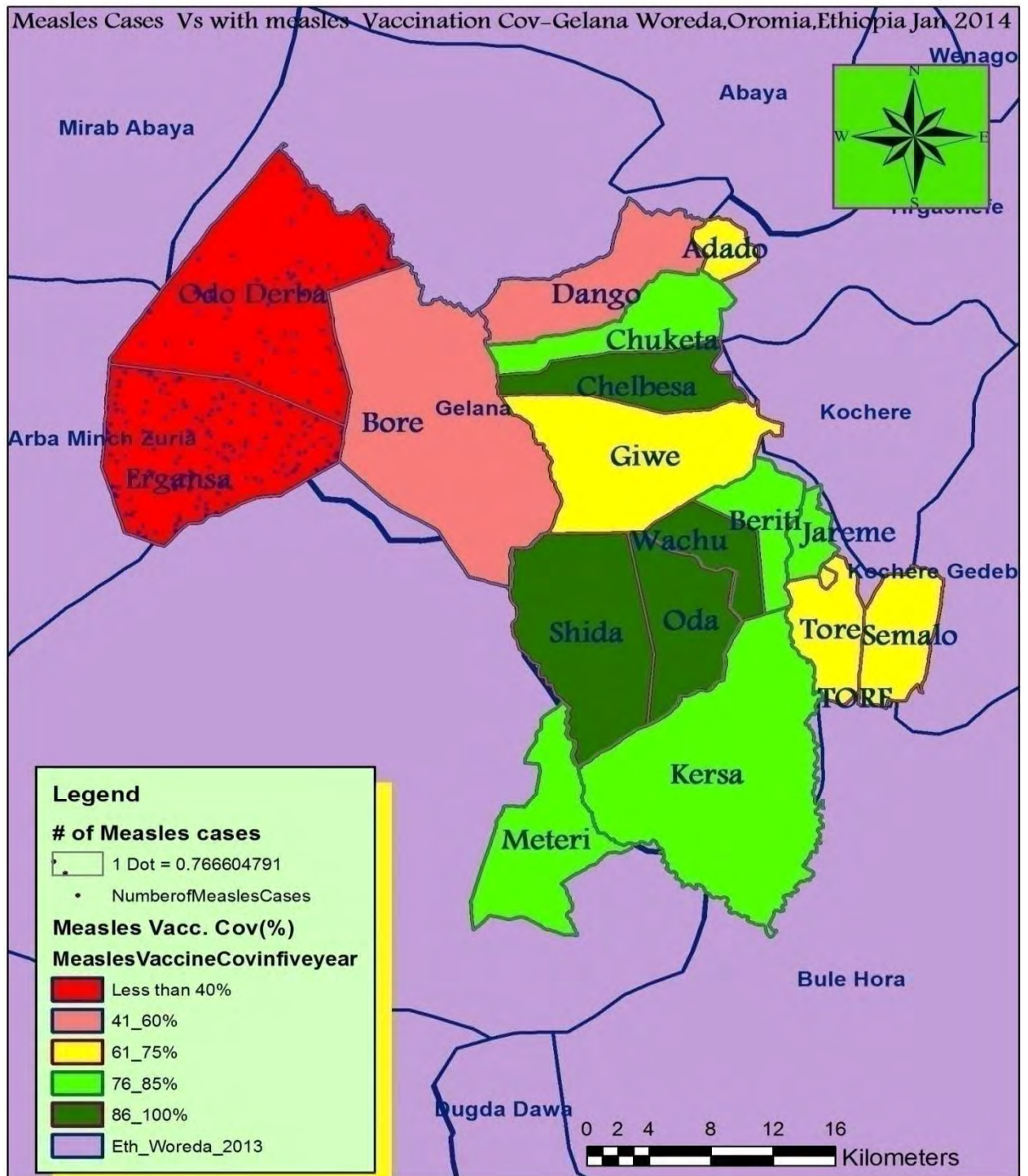


Figure 1. 2. 11. Measles Vaccination Coverage Versus Number of cases By Kebeles from 2009 - 2013 in Gelana Woreda of Borena zone January 2014

1.2.4.3. Analytical Epidemiology

We compared 64 Measles cases with 64 community matched controls by sex, age and place of residence. Descriptive statistics and odds ratios with 95% confidence intervals were calculated to compare potential risk factors among cases and controls. Analysis was performed using Epi Info version 7. A total of 43(67.19%) cases and 8(12.5%) of controls selected from the community had history of recent contact to the Cases where Measles was reported and 33(52%) cases and 8(12.5%) controls selected from the community had history of travel two weeks prior to the onset of illness (table 3). Contact history with case-patient OR; 14.333, 95% CI (7.4516-35.4711) was significantly associated with measles infection. Being vaccinated for Measles vaccination (OR= 0.2941, 95% CI: 0.1391_ 0.6221) was protective factor. There was no statistical significant difference in the socio-demographic characteristics of both cases and controls.

Table1.2. 4 : Demographic characteristics and Risk Factors of Measles cases and controls, Gelana Woreda, Oromia-Ethiopia, January 2014

Exposure	Yes/No	Case n=64(%)	Control=64(%)	Odds ratio	(95% CI)	P Value
History of travel two weeks prior onset of illness	Yes	33(52%)	8(13%)	7.4516	(7.4516- 18.1154)	0.0000034
	No	31(48%)	56(87%)			
Contact History with case	Yes	43(67.19%)	8(12.5 %%)	14.3333	15.7919- 35.4711	0
	No	21(32.81 %)	56(87.50%)			
Living in Unventilated house	Yes	45(70.31%)	9(14.06%)	14.6	(5.9700- 35.0988)	0
	No	19(29.69%)	55(85.94%)			
Being vaccinated for Measles	Yes	16(25%)	34(53%)	0.2941	(0.1391- 0.6221)	0.001111
	No	48(75%)	30(47%)			
Contact with cases Among Family members	Yes	48(75%)	7(10.94%)	24.4286	9.2823- 64.2894.70	0
	No	16(25%)	57(89.06%)			
Contact with cases in Neighbors	Yes	32(50%)	5(7.81%)	11.8	4.1870- 33.2553	0.0000019
	No	32(50%)	59(92.19%)			
Marital status of the patient	Married	5(7.81%)	5(7.81%)	1.25	0.3197- 4.8870	0.74718
	single	59(92.19%)	59(92.19%)			
Family Size	<5	8(12.5%)	3(4.69%)	2.9048	0.7340- 11.4956	0.11483
	>5	56(87.5%)	61(95.31%)			
Know the Mode of Transimission	Yes	13(20.31%)	19(29.69%)	0.6037	0.2682- 1.3590	0.2267
	No	51(79.69%)	45(70.31)			
Educational Level of the Family	Literate	3(4.7%)	5(7.81%)	0.5803	0.1327- 2.5378	0.465209
	Illiterate	61(95.3%)	59(92.19%)			
Educational Level of the Patient	Literate	2(3.13%)	4(6.25%)	0.4839	0.0854- 2.7406	0.40297

1.2.5. Public health action

1.2.5.1 Measles mop up campaigns

Since the beginning of the outbreak, the regional Health Bureau in collaboration with Zonal and Woreda Health Office decided to conduct Vaccination campaign of infants less than 15 years of age in the Woreda. In Line with vaccination, strong case management activities, active case searching and community health education were conducted in the affected Woredas.

As the cases are still occurring, the Woreda health office and the Health center has now strongly conducting treatment service at both kebele's in the Woreda. Non-selective mass vaccination campaign was given for children from nine months to 15 years old. The target children were 51,000 children. This campaign will be conducted on January 13-18th 2014.

1.2.6.0 Discussion

Measles continues to be a significant cause of infectious morbidity in Oromia region. Several factors may attribute for the occurrence of this outbreak. Usually measles outbreak is expected in the area of low measles vaccination coverage and poor cold chain management of vaccine.

The index cases were reported from Odo Derba kebele where expanded to nearby kebeles due to population movement and social interaction. The epidemic was started around November 12 of 2013; however the cases were not reported and did not come to the observation of health facilities till December 1/2013. This might be indicates the delayed notification by the health care providers, poor active surveillance system in the Woreda especially in this two Kebeles was totally weak. These two kebeles were isolated. According to the investigation the outbreak was come to observation due to community rumor in which five deaths were happened from a single household within a one week period Different anticipated risk factors were assessed during this outbreak investigation. Low measles vaccination coverage of affected kebeles was significantly contributed for the existence of the outbreak and its severity. The WHO designated African done by Jorge L Barinaga revealed that improved vaccination rates were associated with a 93 percent reduction in measles cases, from 492,116 cases in 2001 to 32,278 cases in 2008. Study done in the Netherlands also revealed that, 94% of affected children by measles outbreak were unvaccinated (15). Measles outbreaks continue to occur, and failure to vaccinate has been identified as the primary cause (24).

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Additionally, late response of the Woreda and other concerned bodies to this outbreak was contributed for the expansion, magnitude and severity of the cases. Less number of functional refrigerators for vaccine storage and poor cold chain management practice at kebele level may associated with this outbreak.

The measles case fatality rate (CFR) in this outbreak was 6.2%.The likely contributory and aggravating factors to the death include delayed report of cases, lack of Health facility and lack of devoted health Extension Worker in the nearby community, inaccessibility and delayed treatment of cases. In the year 2000, the World Health Organization (WHO) report estimated that 535 000 children died of measles, the majority in developing countries, and this burden accounted for 5% of all under five mortality (25). In some developing countries, case-fatality rates for measles among young children may still reach 5–6% (26).

During this investigation, we able to identify the community awareness towards measles prevention and control were very minimal. The community believes that a child caught by measles should not be exposed to the community and should stay at home. Consequently, lack of knowledge on the diseases pattern and way of transmission and treatment, it made the cases to be propagated from person to person. Living in not ventilated room contributed the transmission of the outbreak.

Of the total affected cases 85(52.8%) were females and 76(47.2%) were males. Less than 5 years of age were more affected 106 (65.8%) compared to the age of greater than 5 years of age which was 55(34.2%). This because the vaccination status was very low provided that failure to vaccinate susceptible persons remains an important reason for not achieving adequate levels of herd immunity. Low vaccine coverage rates can be due to insufficient resources, inaccessibility. The accumulation of susceptible children's occurs over time. According to our finding in Gelana Woreda, the vaccine coverage in 2009 was 1467(55.9%), however the rest 1158(44.1%) were at risk of measles Virus. Consequently, in 2013 the birth cohort was likely to be 2929. However, the number of children being accumulated since then due to lack of measles vaccination in the Woreda was much higher than the birth cohort which was 3707, which was likely contributing to the occurrence of the outbreak. According to the Immunization Essentials practical guide line a serious outbreak of measles was occurred when number of susceptible unvaccinated children's is greater or equal to respective birth cohort accordingly (27).

1.2.7.0 Conclusion

This finding suggests that measles continues to cause high morbidity and mortality in populations of hard to reach area where infrastructure is poor with low coverage of measles vaccine. Consequently, investigation revealed that the outbreak was likely contributed due to accumulation of a large number of susceptible individuals in the community exacerbated by unventilated household condition which was highly significantly associated with the cases. This is because routine expanded immunization programme was not started in both kebeles yet. Therefore, Efforts should remain focused on strengthening expanded routine immunization programme and stronger surveillance systems.

1.2.8.0 Recommendation

1.2.8.1 Woreda Health Office and Health office

- Woreda health office and cluster health center should continue active case search to identify new measles cases at all school and community level, as well as sensitization of health workers and the community.
- The Woreda Health Office and the primary Health care unit should continue temporary treatment site until the declaration of the outbreak in the affected kebeles
- Woreda health office should record new measles cases in the line list format and sent to the next level on timely base.
- Woreda health office 1. Should start to give Expanded Routine vaccination programme in the affected area soon now onwards. 2.Should strongly strengthen their effort for measles routine vaccination activities with the target of reaching more than 90% of infants of 9 to 11 months of age and the coverage should be monitored accordingly in each level,3. Should conduct mop up campaign (Supplementary immunization activities) for Measles vaccine for less than fifteen children.
- Woreda health office should give special attention for hard to reach areas to strengthen routine vaccination.
- Woreda health office should provide supplementary vaccination campaign in the area where there is low vaccination coverage and bounded kebeles with affected kebeles
- Woreda health office should conduct continued Social mobilization campaigns by coordinating with other concerned stake holders such as Administration office, Education office and other partners, to inform parents and community leaders about the importance of obtaining measles vaccination as soon as possible before one year of age.
- Woreda health office should maintain their cold chain management at each level and they should establish cold chain for hard to reach areas.
- Woreda health office should improve their Documentation system for the future including lower levels
- Regular analysis of routine immunization data and taking corrective action to ensure a sustained increase in the administrative measles vaccination specifically those of hard to reach area is a key for control of such outbreak.
- Increase measles immunization coverage for this marginalized communities

- Poor maintenance of cold chain system due to lack of Electric power and persistent power failures throughout the kebeles leading to questionable safety and efficacy of dispensed vaccines in the future.

1.2.8.2. Regional Health Bureau and Zonal Health Department

- The regional Health Bureau and the zonal Health Department should support the Woreda Health office
- Regional Health Bureau and Zonal health department should facilitate vaccine supply and financial issues for conducting the SIA campaign.
- Zonal health department should reactivate the Task force committee and rapid response team and the Task force committee should take the responsibly until the end of the outbreak.
- Regional health bureau, Zonal health department and Woreda health office should strengthen Routine measles surveillance system for early detection of any measles outbreak and early response.
- Regional Health Bureau Should cooperates with NGO and concerned bodies to install solar Electric power for such hard to reach area for the essence of vaccine cold chain management system.
- The Regional Health Bureau should construct health center/Health Stations in the area because of the fact that it is more than 400km away for the Woreda town and far from nearby health centers.
- The Regional health Bureau in collaboration with the government bodies should strongly coordinate together to construct roads from the Woreda health office to the kebeles! it is mandatory for the sustainable health development of the community.

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Annex 1.2.1 Questionnaires for Case - control study on Measles outbreak in Gelana Woreda, Borena Zone, Oromia Region, January 2014

Case status: Case _____ Control _____

Patient Name _____ Date of Data collection _____

Region _____ Zone _____ Woreda _____ Kebele _____ Got _____ Phone _____

Location: Longitude: _____ Latitude: _____

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1. Male 2. Female
1.2	Age	years _____ Months _____
1.3	Occupation of the patient/Control	2. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify) _____
1.4	Family Occupation	2. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify) _____
1.5	Religion	7. Muslim 8. Orthodox 9. Protestant 10. Catholic 11. Other (specify) _____
1.6	Ethnic group	6. Oromo 7. Tigre 8. Amhara 9. Gurage 10. Other (specify)
1.7	Educational level of the patient /Control	6. Illiterate 7. Read and write 8. Elementary 9. Secondary 10. Above secondary 11. Under school age
1.8	Educational level of the family	6. Illiterate 7. Read and write 8. Elementary 9. Secondary 10. Above secondary
1.9	Marital status of the patient /Control	4. Single 5. Married

		6. Divorced 7. Widowed 8. Separated
1.10	Family size	_____
1.11	Is there any sick person with rash, fever, running nose In the family?	1. Yes 2. No
1.12	If yes, number of sick person	_____
2.1	What was the symptom?	1.fever 2.Rash 3.cough, 4.coryza (runny nose), 5. conjunctivitis (red eyes) 6. Others_____
2.2	ONLY if complication	a) Pneumonia: ☐ yes no ☐ b) Cornea: ☐ yes no ☐ c) Blindness : ☐ yes no ☐ d) Convolution ☐ yes no ☐ e) Otitis media (ear discharge): ☐ yes no ☐ f) diarrhea : ☐ yes no ☐ g) Feeding problem ☐ yes no ☐
2.2	Date of rash on set	___ / ___ / ___
2.3	Duration of rash_____	
2.4	Date seen at health facility	___ / ___ / ___
2.5	Illness duration before visiting the health facility	_____ in days/hours
2.6	Did you (he/she) take treatment?	1.Yes 2.No

2.7	If yes, treatment taken	1.ORS 2.Antibiotics
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		3.Vitamin A 4.Supplementary food 5. TTC ointment 6.Anti pyretics 7.Others given_____
2.8	Treatment Outcome?	1.cure 2. partially 3. deteriorated/disabled 4.death
2.9	Location when rash started?	Woreda_____. Kebele_____
2.10	Do you have any travel history four days before and after rash onset	1.Yes 2. No If yes where _____
2.11	Do you have any contact history with someone else four days before and after rash onset	1.yes 2.No If yes with whom_____

III. Risk factor (for case and control)

3.1	Did you ever vaccinated for measles?	1.Yes 3.Unknow 2.No 4.Not applicable
	Is there vaccination card	Yes No
	If yes last vaccination date	1.patient recall__/__/__ dd/mm/yy 2. vaccination card_/_/____ dd/mm/yy 3. I don't remember
3.2	Number of vaccine doses received	1.one dose 2. two dose 3.three and above
3.3	Age of vaccination at first vaccinated.	_____
3.4	If not vaccinated why?	☐ lack of knowledge about vaccination campaign, ☐ absence during vaccination campaign, ☐ other, specify Religious exemptions
3.5	Did you have any travel history 7-18 days to other areas?	1.Yes 2.No If Yes where _____
3.6	Did you contact with a person with Rash symptoms within the last 2-3 weeks?	☐ yes ☐ no
3.7	If Yes to question 3.5 place of travel	1.School 2.Neighbor 3.Market 4.Other_____

3.8	Nutritional status of the cases	1.Normal 2.Moderate 3.Severely malnourished
3.9	What is the estimated area of the house in m ²	_____
3.10	House condition?	☐ ventilated ☐ not-ventilated
3.11	Distance from house to HC?	☐ greater than 5 km ☐ equal or less than 5 km
3.12	Do you know modes of transmission for measles?	1.Yes 2.No 3. If yes specify_____
3.13	Where did you go first when you get ill?	1. Health Facility 2. Traditional Healers 3. Holy Water 4. Stayed at home 5. Other :(Specify)_____
3.14	How do you think people get measles?	1. Contact with a virus from ill person 2. From God 3. Bad attitude of other people 4. Other(Specify)
3.15	Do you Know measles is vaccine preventable?	1. Yes 2. No 3. Don't Know
3.16	Who do you think can be affected by measles?	1. Children of aged less than 5 years 2. Children of aged less than 18 years 3. Women of any ages 4. Any age groups of both male and women 5. Other (specify):_____
3.17	How do you think measles can be cured?	1. Using modern medicine 2. Using traditional Medicine 3. Holy water 4. By feeding nutritious foods 5. Keeping the sick person indoor 6. Other(Specify)_____

Chapter II – Surveillance Data Analysis Report

2.1.1 Malaria Surveillance Data Analysis in West Shewa Zone, Oromia Region, Addis Ababa, Ethiopia, from 2008 to 2012

Abstract

Background: More than a million people die of malaria cases each year in the world, most of them in Africa. In Ethiopia, malaria remains to be one of the major public health problem that causes significant barrier to both public health and socio-economic development. I conducted a descriptive malaria surveillance data analysis in west Shewa zone and proposed possible recommendations useful for control and Prevention activities.

Methods: Data on malaria indicators were collected from the Integrated Disease Surveillance and Response system database and Public Health Emergency Management core process from 2008 to 2012. Reporting units were standardized over time with 2007 census populations. The data was analyzed to indicate the trend of malaria Morbidity and Mortality rate in the Zone

Results: The annual total malaria incidence rate for the calendar years 2008 to 2012 was 63 per 1000, and the Incidence rate of confirmed malaria cases for the same period accounts for 24 per 1000 population. The Average Reported malaria in-patient admissions and death rates in this zone during the same period were 7 per 100,000 and 1 per 100,000 per year respectively. Although the average malaria incidence rate among men's and women's were (55%) and (45%) respectively. The data also showed cases treated clinically decreased from 88% in 2008 to 24 % in 2012.

Conclusion: Malaria continued to be a major cause of ill-health in west shoa zone. Even though different malaria control strategies were designed to rollback to its minimum level, the malaria cases were not decreased as expected that the incidence rate of total malaria and confirmed malaria cases would be not only high but rising from 2008 through 2011 and showed slight decline to 2012. Therefore, the zonal health department should evaluate again their weakness and strength the reason why the malaria incidence rate was elevated through 2008-2011, unless otherwise this will be a threat for the community in the coming year.

1. Introduction

Malaria still remains one of the most important parasitic diseases of the developing world although it is known to human kind since ancient times in different forms. It is caused by Plasmodium malaria parasite and kills approximately 1-3 million people and causes disease in 300- 500 million people annually. Pregnant women are the main adult risk group in most endemic areas of the world [1-3]. The disease poses a major public health challenge, which restricts the development in the poorest countries [3].

In low-transmission areas when there is appreciable heterogeneity in the distribution of malaria, it becomes increasingly important to identify the population groups most susceptible to infection and to target resources appropriately. When the case incidence is reduced sufficiently, health facilities can begin to report details of individual malaria cases to Woreda level. These reports can be used to construct a case register that provides more detailed information on the principal locations and population groups affected by malaria.

Ethiopia is among the few countries with unstable malaria transmission. Consequently, malaria epidemics are serious public health emergencies. In most situations, malaria epidemics develop over several weeks, allowing some lead-time to act proactively to avoid larger numbers of illnesses and to prevent transmission. Approximately over 58 million people (68%) live malaria-endemic areas in Ethiopia, chiefly at altitudes below 2,000 meters. Malaria is mainly seasonal in the highland fringe areas and of relatively longer transmission duration in lowland areas, river basins and valleys. Although historically there have been an estimated 10 million clinical malaria cases annually, cases have reduced since 2006. Malaria is a public health priority problems and also have high Epidemic potential which causes high Outpatient morbidity which leads to high socio economic impacts in Ethiopia.[4- 6 ,7].

The main malaria parasites are Plasmodium falciparum and Plasmodium vivax, accounting for 60% and 40% of all cases, respectively. Anopheles arabiensis is the main vector; Anopheles pharoensis is also widely distributed in the country and is considered to play a secondary role in malaria transmission. [4, 5, 8].

Information on the number and distribution of malaria cases and deaths is critical for the design and implementation of malaria control program. It is needed to determine which areas or

population groups are most affected by malaria, so that resources can be targeted to the populations most in need. Information on the incidence of disease in relation to past levels is needed to alert program about epidemics, so that control measures can be intensified. Data on changes in disease incidence and mortality are also needed in order to judge the success of a program and to determine whether it is performing as expected or whether adjustments in the scale or blend of interventions are required. The capacity of malaria surveillance systems to provide information on the distribution and trends in malaria varies widely across the globe.

Surveillance systems can help program managers to do this, by providing information on the populations in which the incidence of malaria is highest (and therefore to whom resources should be targeted) and on changes in incidence over time that require attention.

The main source of information for malaria surveillance in the control phase is reports of confirmed malaria cases, malaria inpatients and malaria deaths obtained from all or selected public sector health facilities. These may be complemented by data from household surveys on the prevalence of parasitaemia and intervention coverage. In high- and moderate-transmission areas, monthly counts of malaria cases, inpatients and deaths can be used to determine trends over time and the geographical distribution of malaria. At health facility level, data on individual patients are used to investigate the circumstances surrounding each admitted case and death, so as to identify program weaknesses and potential improvements. As transmission is reduced and the risk of epidemics increases, more frequent analysis of cases is undertaken at health facility level to allow early detection of potential outbreaks. Moreover, as the numbers of severe cases and deaths diminish, health facilities can report details of each malaria inpatient and death to Woreda level so that a Woreda register of severe cases can be assembled and action taken to address persistent problems [4].

Public health surveillance plays great important roles in reduction of morbidity and mortality of malaria by ongoing, systematic collection, analysis, interpretation and dissemination of data regarding to health-related event for use in effective and efficient Decision making purpose in public health action to enhance the sustainable development of the country.

This continuous analysis of surveillance data is important for detecting outbreaks and unexpected increases or decreases in disease occurrence, monitoring disease trends, and evaluating the effectiveness of disease control programs and policies. This information is also needed to determine the most appropriate and efficient allocation of public health resources and personnel. Routine malaria surveillance data is useful for assessing incidence and trends over time, and in stratification for targeting of malaria control.

This surveillance data will be collected through Ethiopian Field Epidemiology residents and then analyzed and interpreted to see the general trends of malaria morbidity and mortality by place, person and time in Oromia Region, West Shewa Zone health Department.

2.1.1. Objectives

2.1.1.1. General Objectives

The main objective of this project is to assess malaria morbidity and mortality in West Shewa Zone, Oromia region February 2013.

2.1.1. 2 Specific Objectives

- To describe malaria trend in the zone from 2008-2012.
- To describe the malaria data by place, person and time in west Shewa zone from 2008-2012.
- To propose possible recommendations linked to action in the zone

2.1.3 .Materials and Method

2.1.3.1. Study Area

West shewa Zone is one of the zone in Oromia regional state located at Western part of Ethiopia 114 Km away to West of Addis Ababa .This Zone Contains 18 woreda' s and 1 Administration town in which further divided into 529 Rural and 43 Urban kebele's . The current 2012/2013 total population of the zone is estimated to be 2,315,784 having land area of 14,921.19 km² with population density of 155 per KM².

Map of West Shewa, February 2013

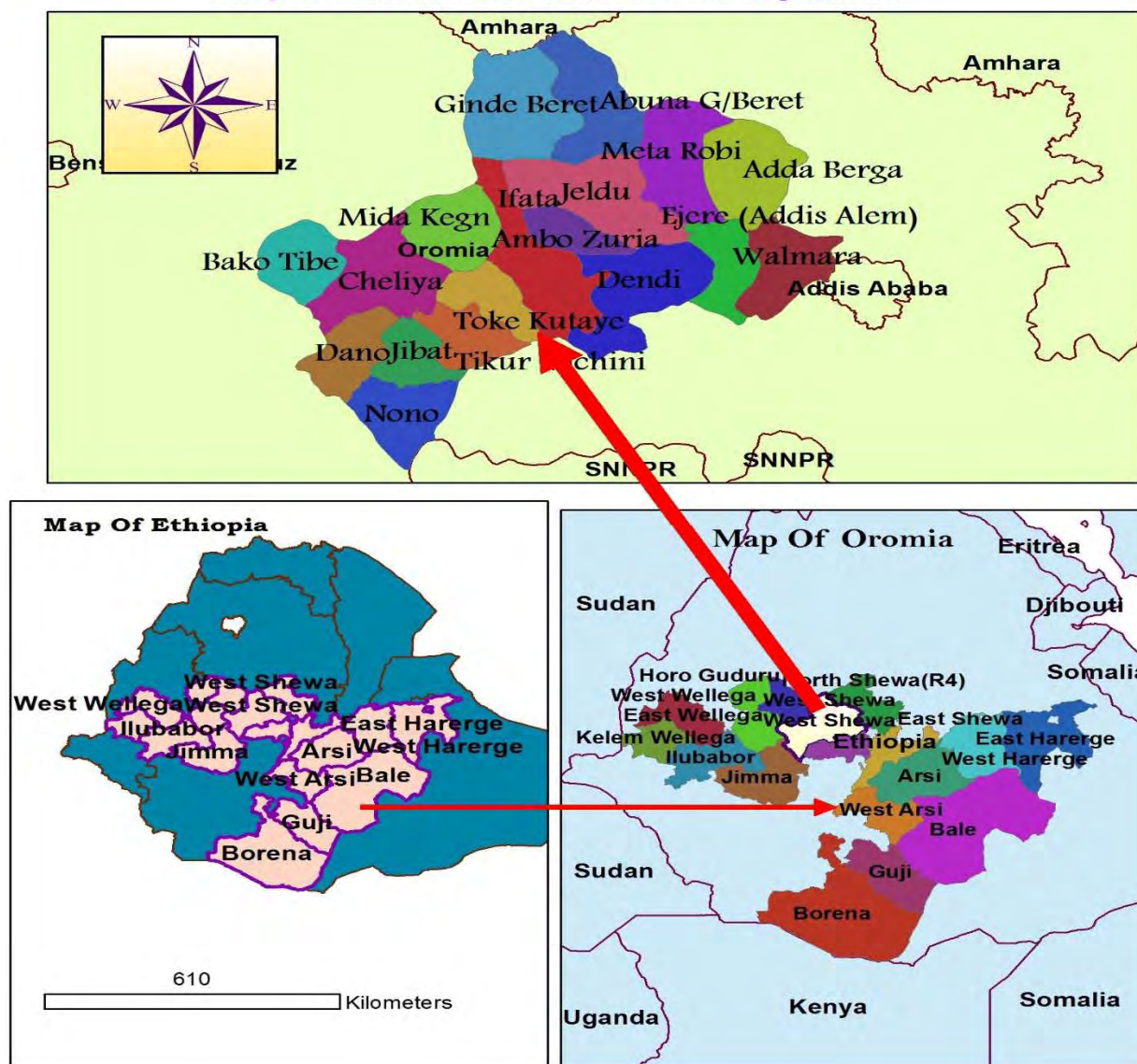


Figure 2.1.1: Map of Oromia and Location of West Shewa February 2013

Map of Malaria Risk Area by Woreda West Shewa Zone,2013

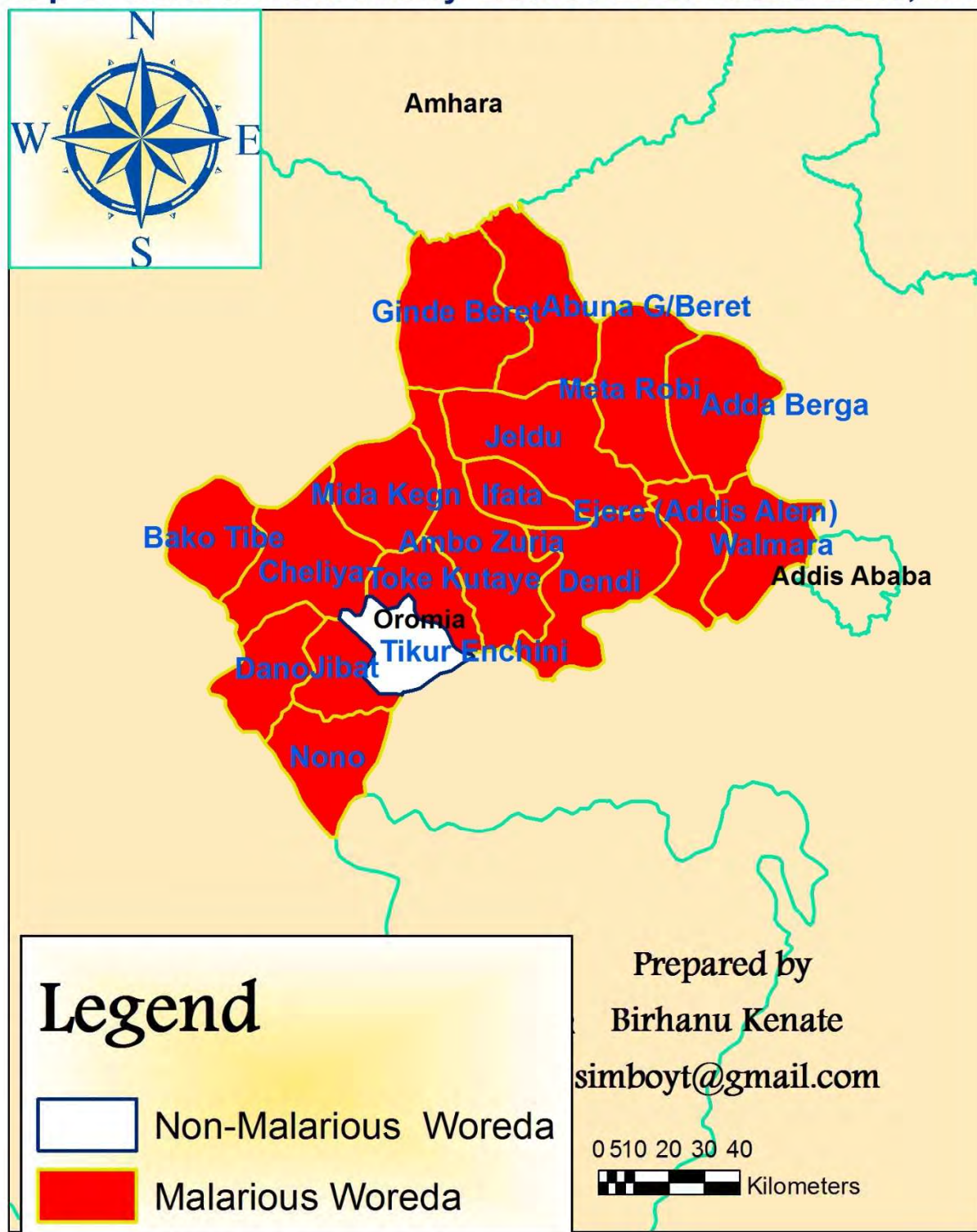


Figure2. 1. 2. Map of West shewa with Malaria at risk Feburary 2013

2.1.3.2 Study period:

Malaria five years data from 2008 to 2012 were Collected, Organized, analyzed and interpreted accordingly Using Microsoft excels 2007.

2.1.3.3 Case Definition:

Suspected Case Definition:

Any person with fever or fever with headache, rigor, back pain, chills, sweats, Myalgias, nausea, and vomiting diagnosed clinically as malaria [8].

Confirmed Case Definition:

A suspected case confirmed by microscopy or RDT for plasmodium parasites [8].

Presumed malaria (clinical malaria):

Suspected malaria case without a diagnostic test to confirm malaria but nevertheless treated presumptively as malaria. [2]

Total Malaria Outpatient -it is the total malaria (either clinical or by confirmation)

Population at risk: Populations at high risk for malaria are those living in areas where the number of reported cases is ≥ 1 per 1000 per year, and those at low risk are living in areas with < 1 case of malaria per 1000 per year (defined at the lowest administrative level for which data are provided). Other parts of the country are free of malaria transmission.

2.1.3.4. Study Design and Sampling procedure

Descriptive retrospective cross sectional study design were used to assess data from PHEM reporting format which includes malaria items encompassing total malaria cases (clinical and confirmed) for out-patients, in-patients and deaths; confirmed out-patient malaria cases by species; in-patient cases and deaths for malaria; and out-patients, in-patients and deaths for malaria in pregnancy. All are given by age group < 5 years and > 5 years except malaria in pregnancy indicators which only apply to women of childbearing age. Incidence estimates for summary malaria indicators by year and month were obtained by summing the appropriate indicator over the time period in question using the relevant population denominator (population at malaria's area) for each reporting unit.

2.1.3.5. Data processing and analysis technique:

Microsoft Excel 2007 was used and all eligible key indicators were entered manually and finally data were organized, analyzed and displayed in different Figures.

2.1.3.6 Data dissemination:

Written report (both hard and soft copies) was prepared and shared to Addis Ababa University/School of Public Health Ethiopia Field Epidemiology Training Program Resident advisors and coordinators , Oromia Regional Health Bureau, and finally to West shoa Zone Health department .

2.1.3.7. Ethical consideration

This five year data were collected after having written consent letter from Oromia Regional Health Bureau to zone to get ethical clearance. After discussing the purpose and method of the study, permission was sought from the West Shoa Zonal health department head before the data collection.

2.1.4. Result:

The total malaria outpatient during 2008 was 38/1000 which was then raised to reach its maximum point in 2011 which was 98/1000. However, this was then decreased by half in the year 2012 and reaches 43/1000 in malaria population. In West shoa Zone the total estimated annual malaria Incidence rate for the calendar years 2008 was 38 per 1000 and 43/1000 in 2012 , and the Incidence Rate of confirmed malaria cases for the same period accounts for 5 cases per 1000 population and 33/1000 respectively . The Average Reported malaria in-patient admissions and deaths in this zone were 7 per 100,000 and 1 per 100,000 per year respectively.

Table-2.1. 1 Total IPD and Mortality of Malaria in Oromia Region West Shoa Zone from 2008 -2012

Major Malaria Indicators	2008	2009	2010	2011	2012
Total Malaria Outpatient cases/1000	38	42	98	93	43
Confirmed Malaria cases /1000	5	11	27	46	33
Malaria Inpatient cases /100,000	12	4	10	7	1
Malaria Inpatient death /100,000	0	0	1	1	0
Malaria In Pregnancy Outpatient/100,000	12	8	19	7	5
Malaria in pregnancy inpatient /100,000	2	1	0	0	0

The malaria trend in this zone almost remains constant from 2005-2008 as indicated in figure 1a but, started to raise and reached its highest point in 2011 regardless of the increment of health facilities and strength of the surveillance system in the zone and then decreases down up to 2012

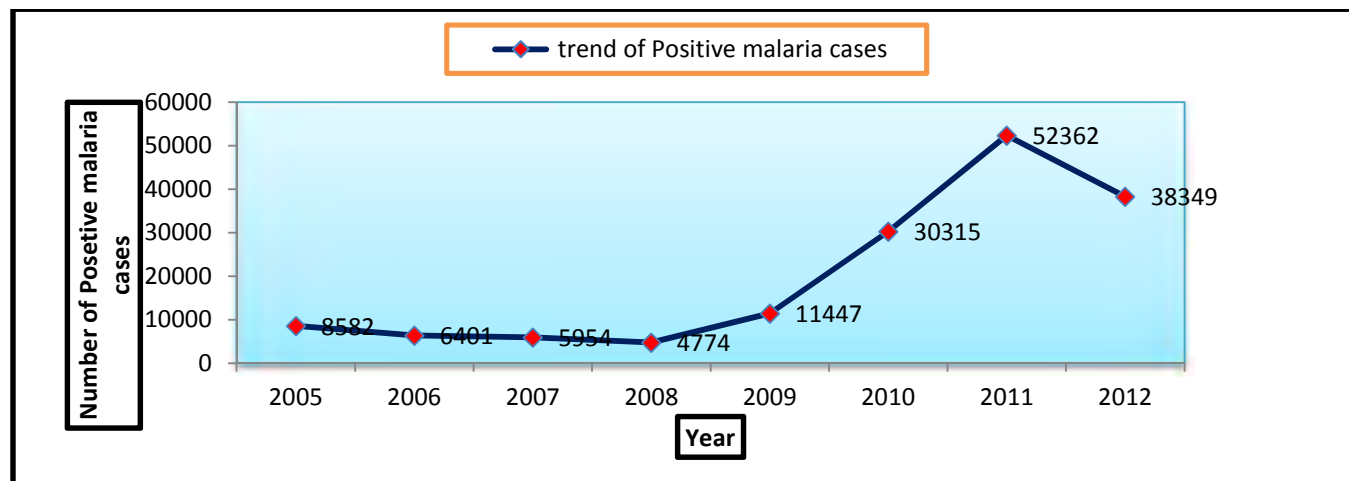


Figure2 1.3. Malaria trend in Oromia Region in West shoa Zone from 2005-2012

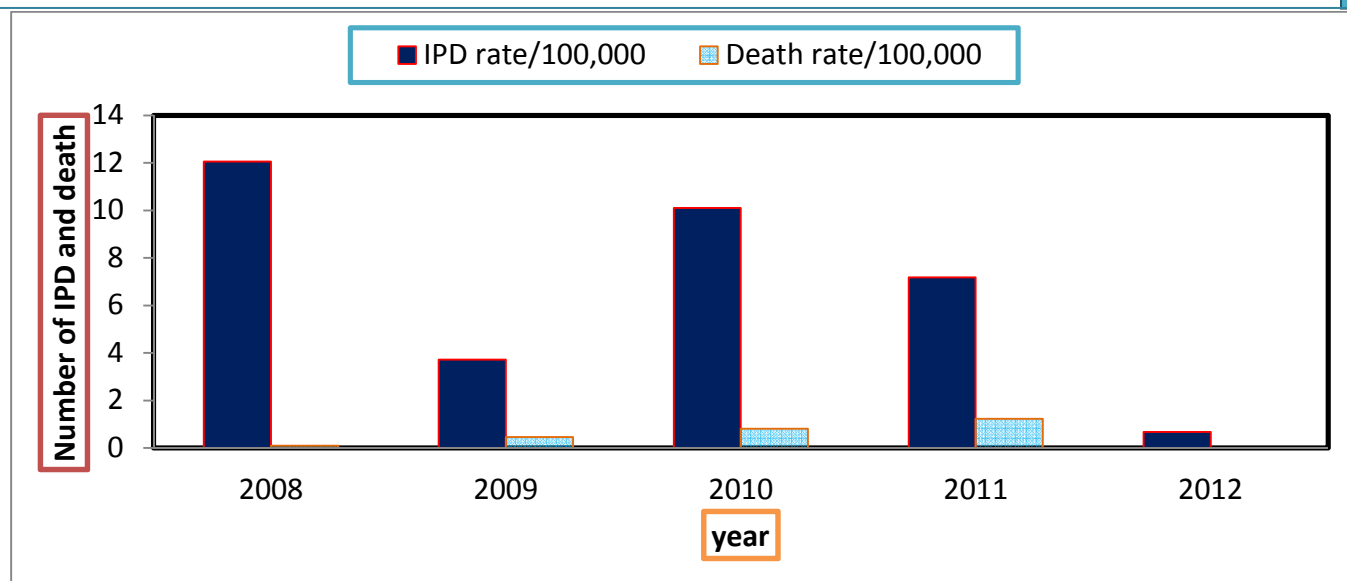


Figure2.1. 4: IPD and Death rates of malaria cases in Oromia Region West Shoa Zone from 2008- 2012

the malaria IPD rate decreases dramatically from 12/100,000 population in 2008 to 1/100,000 in 2012 and malaria death rates was zero in 2008 but only 1/100,000 in 2010 and 2011 then decreases in the same way from to zero in 2012 .

Table-2. 1. 2 Malaria In pregnancy in West Shoa Zone- Oromia Region from 2008-2012

Indicators	2008	2009	2010	2011	2012
Total Pregnancy Expected	39,734	40,921	42,143	43,402	44,698
number Malaria in Pregnancy out patient	12	8	19	7	5
Number Malaria in Pregnancy Inpatient	2	1	0	0	
Number of death Rate in pregnancy	0	0	0	0	0
Rate Of Malaria In Pregnancy in OPD/10,000	3	2	5	2	1
Rate Of IPD In pregnancy IPD/100,000	5	2	0	0	0
Death rate in pregnancy/100,000	0	0	0	0	0

Table-2 .1.3 Malaria Case Distribution in Oromia Region West Shoa Zone with list of species of plasmodium by Woreda from 2008-2012

WORED	2008	2009	2010	2011	2012	PF	PV	Mixed total	%of PF	%of PV	%of Mixed	Total
Meta Robi	0	0	0	0	2140	1698	424	18	79	20	1	100
Ambo town	1126	2019	3971	7866	37	1817	4857	8345	12	32	56	100
Ambo Rural	5	10	15	30	463	351	172	0	67	33	0	100
Dandi	51	164	1974	3533	1027	1788	4114	847	26	61	13	100
A/G/Barat	52	32	289	1101	701	1133	906	136	52	42	6	100
Nono	1101	23	0	5446	10583	8976	7420	757	52	43	4	100
Jibat	60	261	794	429	1543	2271	640	176	74	21	6	100
A/Barga	2	91	202	758	680	914	613	206	53	35	12	100
Mida	2	16	111	2018	2743	2449	1656	966	48	33	19	100
Ilfeta	132	30	119	459	181	513	380	28	56	41	3	100
B/Tibe	499	1870	2795	4575	4954	5411	7108	2174	37	48	15	100
Caliya	196	158	646	567	121	493	849	346	29	50	20	100
Dano	361	432	1026	4266	2270	3256	3400	1699	39	41	20	100
Jaldu	10	10	319	3056	570	2058	1649	258	52	42	7	100
G/Barat	33	272	2955	7176	3162	8919	3843	836	66	28	6	100
Ejere	9	138	357	435	332	459	712	100	36	56	8	100
T/Kutaye	32	170	2073	2075	1301	2555	2588	508	45	46	9	100
Ilu-galan	1103	5751	12669	8975	4957	15759	13761	3935	47	41	12	100
Total	4774	11447	30315	52362	38349	60820	55092	21335	44	40	16	100

In this zone the average distribution of plasmodium species from 2008 to 2012 was 44%, 40% and 16% falciparum, Vivax and mixed respectively.

Table-2.1. 4 Trend of Incidence Rate of malaria cases in Oromia Region West Shoa Zone from 2008 -2012

Year	Total malaria			confirmed	
	Total Population at risk	cases (Confirmed + Clinical)	Incidence Rate of total malaria cases/1000	Confirmed malaria cases	Incidence Rate/1000
2008	1045642	39890	38	4774	5
2009	1076871	45585	42	11447	11
2010	1109033	108517	98	30315	27
2011	1142156	106702	93	52362	46
2012	1176267	50759	43	38349	33
Average	1,109,994	70,291	63	27449	24

The incidence rate of total malaria increases from 2008 to 2011 and shows slight decrease in 2012. Not only the total malaria cases but also the Incidence rate of confirmed malaria cases would increased from 5/1000 population in malarious area in 2008 to 33/1000 population in 2012 . Both the Total and confirmed malaria cases reached its highest point during the year 2011. But it shows slight decreases from the same year to current situation. Confirmed malaria cases in 2012 were six times higher than in 2008.

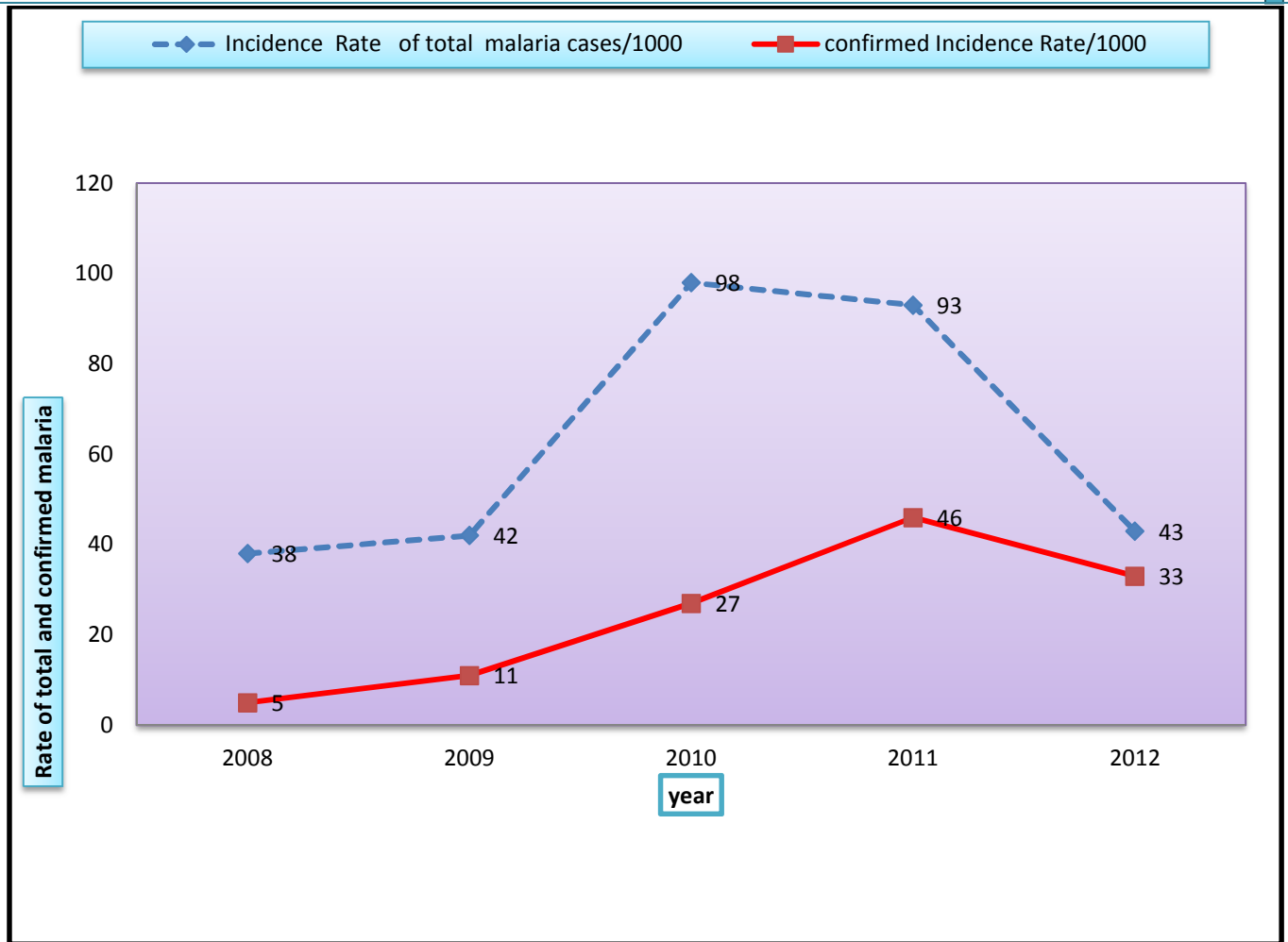


Figure2 1.5. The total Malaria incidence and confirmed Rate in the West Shoa Zone from 2008 to 2012

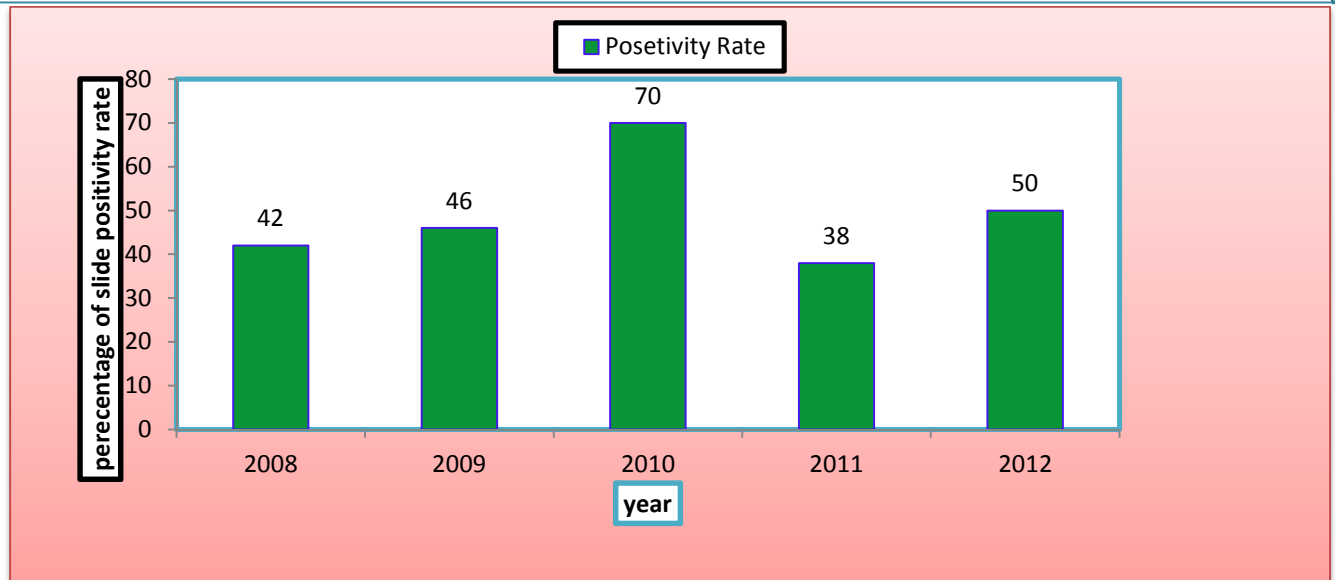


Figure2.1. 6: Malaria slide positivity rate of West Shoa Zone - Oromia Region from 2008-2012

The malaria positivity rate increases from 42% in 2008 to 50% up to 2012. The positivity rate attains its maximum point 70% in the year 2010.

Table-2 .1.5 Malaria treated by Confirmatory test and treated with clinical sign and symptom in Oromia Region, West Shoa Zone from 2008-2012

Serial Number	Woreda Name	2008		2009		2010		2012		2013	
		treated Clinically	treated by test	treated clinically	treated By Confirm	Red Clan	Treated By	Red Clan	treated By Confirm	Red Clan	Treated by test
1	Meta Robi	726	0	1088	0	1961	0	1929	0	409	2140
2	Am T	3295	1126	4340	2019	8359	3971	16595	7866	3518	37
3	Ambo Rural	16595	5	506	10	1012	15	3989	30	846	463
4	Dandi	1058	51	856	164	5643	1974	661	3533	140	1027
5	A/G/Ba	709	52	125	32	1957	289	590	1101	125	701
6	Nono	2313	1101	4149	23	8988	0	2192	3505	465	10583
7	Jibat	194	60	405	261	1160	794	510	569	108	1543
8	A/Barga	508	2	158	91	711	202	858	758	182	680
9	Mida	208	2	399	16	2165	111	2353	1972	499	2743
10	Ilfeta	435	132	341	30	1033	119	3491	360	740	181
11	B/Tibe	3639	499	7230	1870	7123	2795	2888	4329	612	4954
12	Chelia	926	196	122	158	1912	646	571	643	121	121
13	Dano	1178	361	2233	432	3056	1026	3107	3944	659	2270
14	Jaldu	415	10	627	10	1816	319	1543	2799	327	570
15	G/Barat	719	33	941	272	3421	2955	4104	6167	870	3162
16	Ejere	241	9	1565	138	7618	357	4060	435	861	916
17	T/Kutaye	655	32	556	170	3620	2073	3027	2523	642	1301
18	Ilu-galan	1302	1103	8497	5751	16647	12669	6076	7624	1288	4957

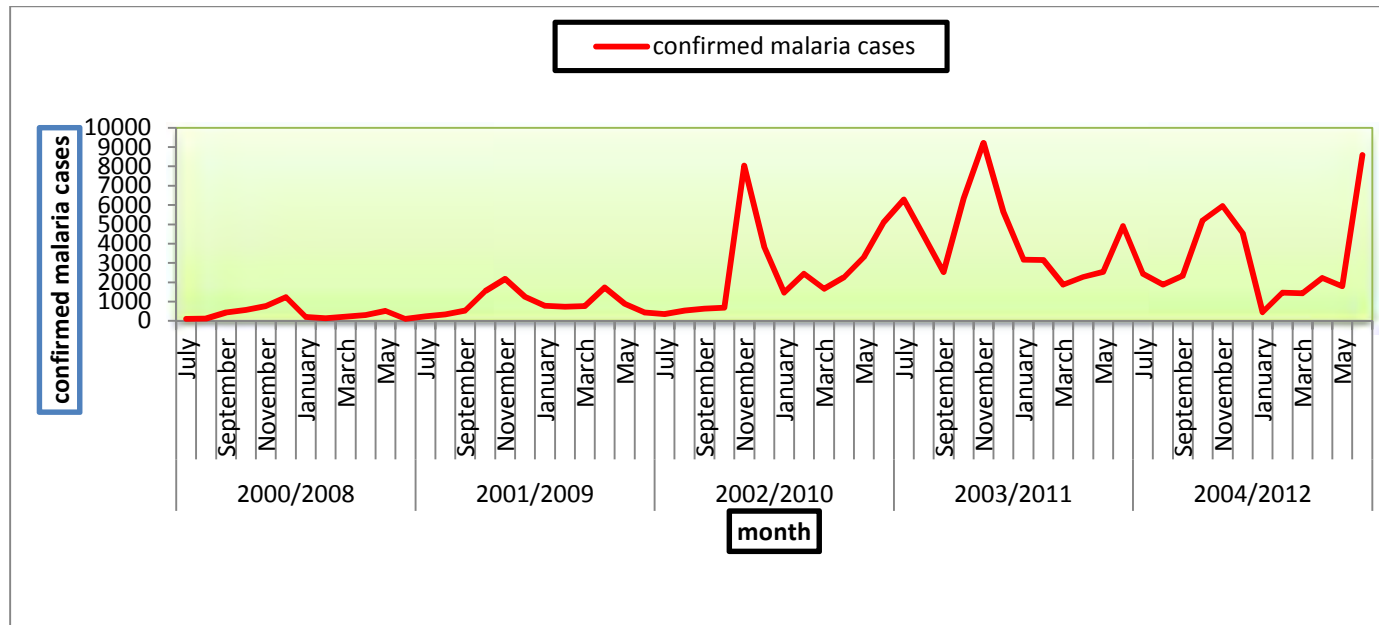


Figure2.1. 7: Trend of Confirmed malaria cases in Oromia Region West Shoa Zone from 2008-2012

From The Figure 5 we can easily understand that the malaria morbidity is higher during the harvest time specially after the rainy season starting from September to January and from April to June .reaches its highest point during the month of November.

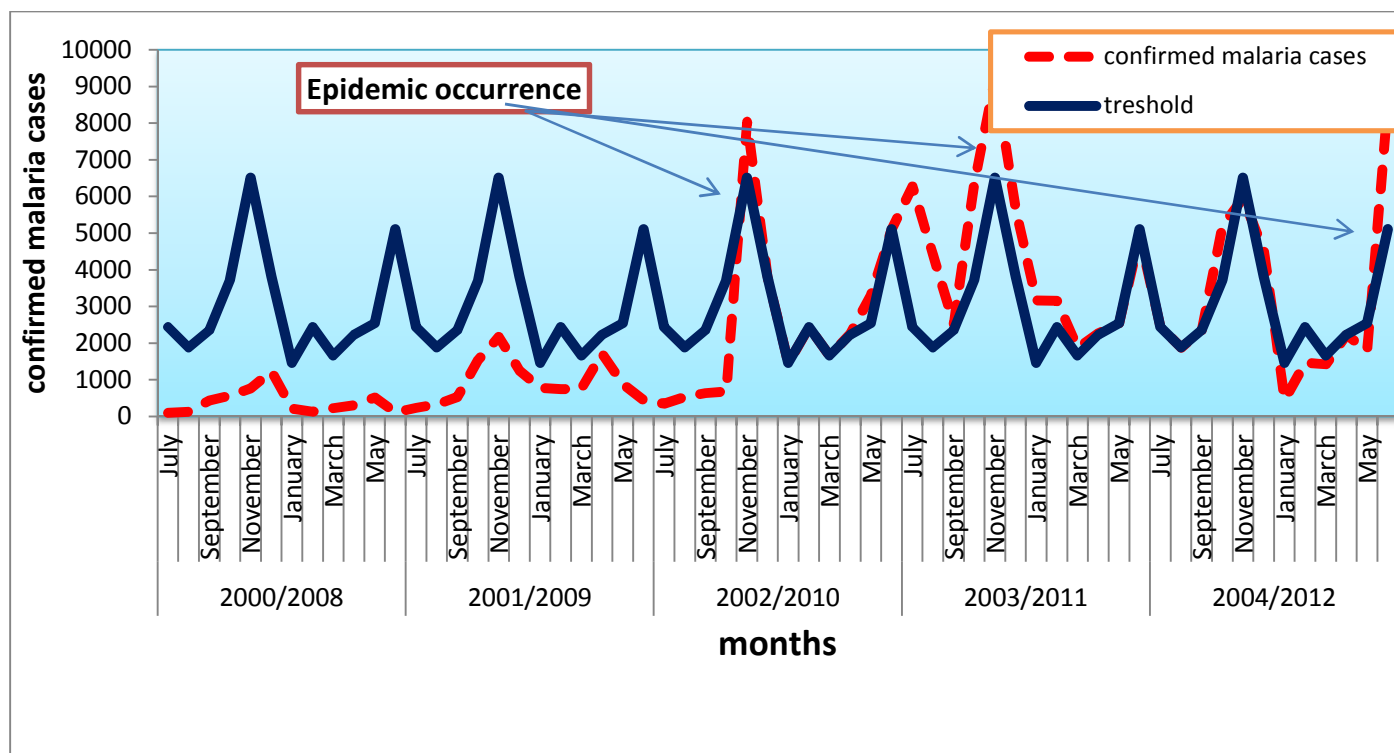


Figure 2.1. 8: Trend of Confirmed malaria cases and Expected threshold in Oromia Region West Shoa Zone from 2008-2012

In the control of the status of malaria cases outbreak monitoring tool (threshold) i.e. the second largest number) is very important. So in the Figure 6 indicated that there is an outbreak between the month of September through January of 2010, 2011 and at the end of 2012.

The cases treated with laboratory diagnosis using microscope and the Rapid Diagnostic kit increases from 2008 through 2012 however, the malaria cases treated without either of Laboratory or RDT diagnosis (presumptive treatment) decreased with the increment of time. In 2012 24 percent of malaria patient were treated with clinical sign and symptom while 76% of the total patients treated with either of microscopic or RDT test results.

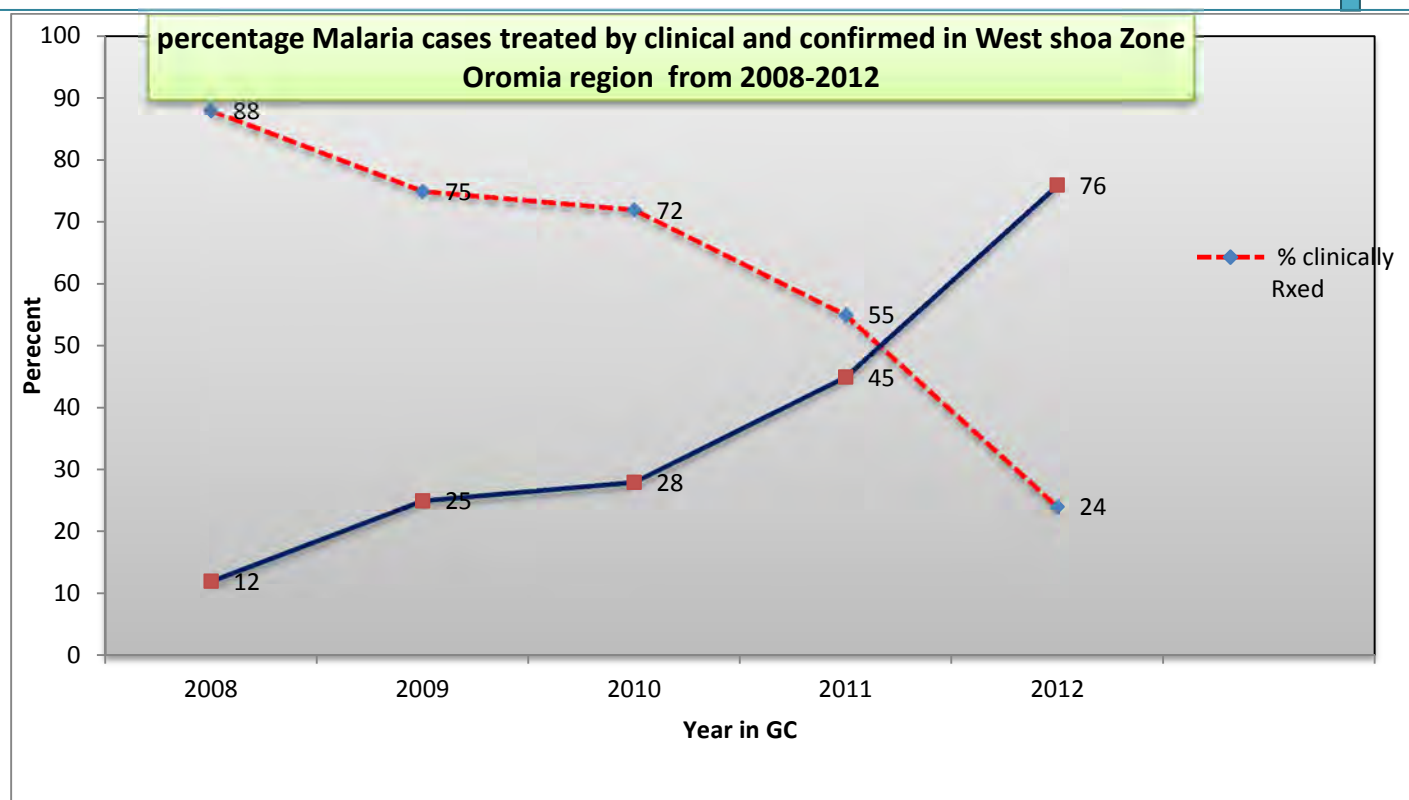


Figure2.1. 9: percentage of malaria cases treated typically by Sign and symptoms and By Laboratory Investigation in West Shoa Zone, Oromia Region from 2008-2012

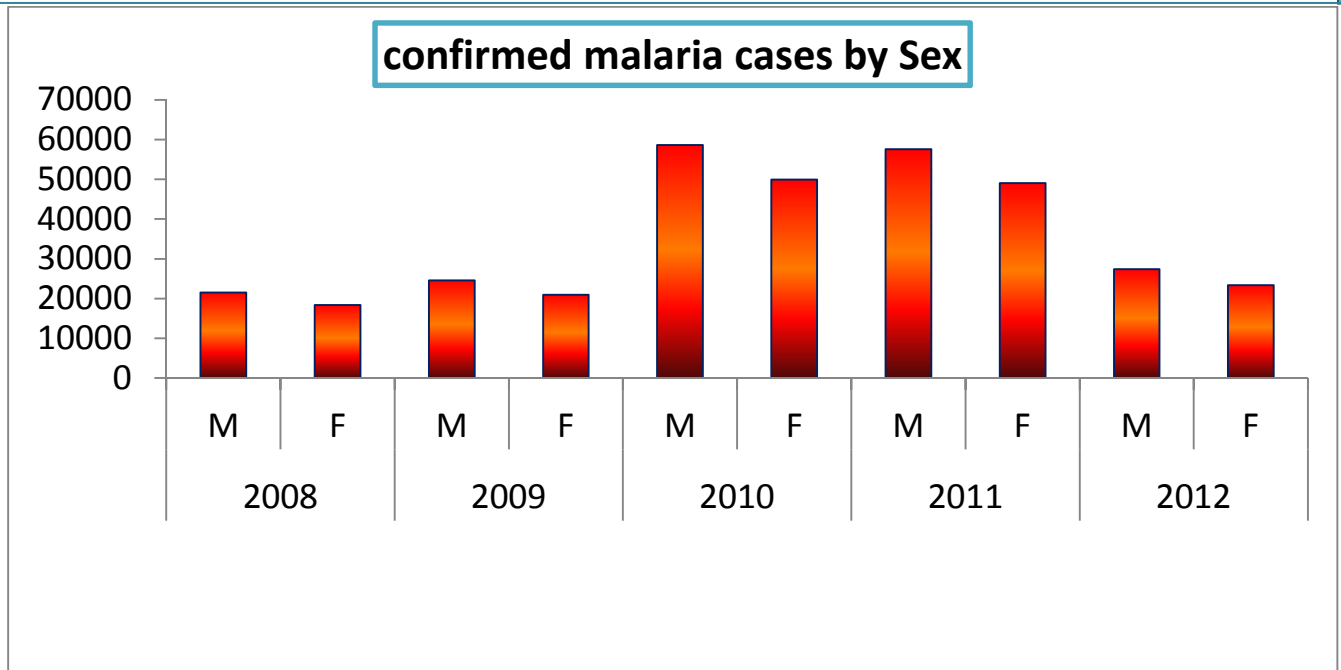


Figure2.1. 10: Confirmed malaria cases by sex in Oromia Region, West Shoa Zone from 2008-2012

Table-2.1. 6 Trend Of confirmed malaria by woreda in West shoa Zone, Oromia Region from 2008-2012

S.No	WOREDA	2008	2009	2010	2011	2012	threshold
1	Meta Robi	0	0	0	0	2140	0
2	Ambo town	1126	2019	3971	7866	37	3971
3	Ambo Rural	5	10	15	30	463	30
4	Dandi	51	164	1974	3533	1027	1974
5	A/G/Barat	52	32	289	1101	701	701
6	Nono	1101	23	0	3505	10583	3505
7	Jibat	60	261	794	569	1543	794
8	A/Barga	2	91	202	758	680	680
9	Mida	2	16	111	1972	2743	1972
10	Ilfeta	132	30	119	360	181	181
11	B/Tibe	499	1870	2795	4329	4954	4329
12	Chelia	196	158	646	643	121	643
13	Dano	361	432	1026	3944	2270	2270
14	Jaldu	10	10	319	2799	570	570
15	G/Barat	33	272	2955	6167	3162	3162
16	Ejere	9	138	357	435	916	2073
17	T/Kutaye	32	170	2073	2523	1301	2073
18	Ilu-galan	1103	5751	12669	7624	4957	7624
	Total	4774	11447	30315	48158	38349	36552

Average Confirmed malaria distribution in west shoa zone, Oromia region from 2008-2012

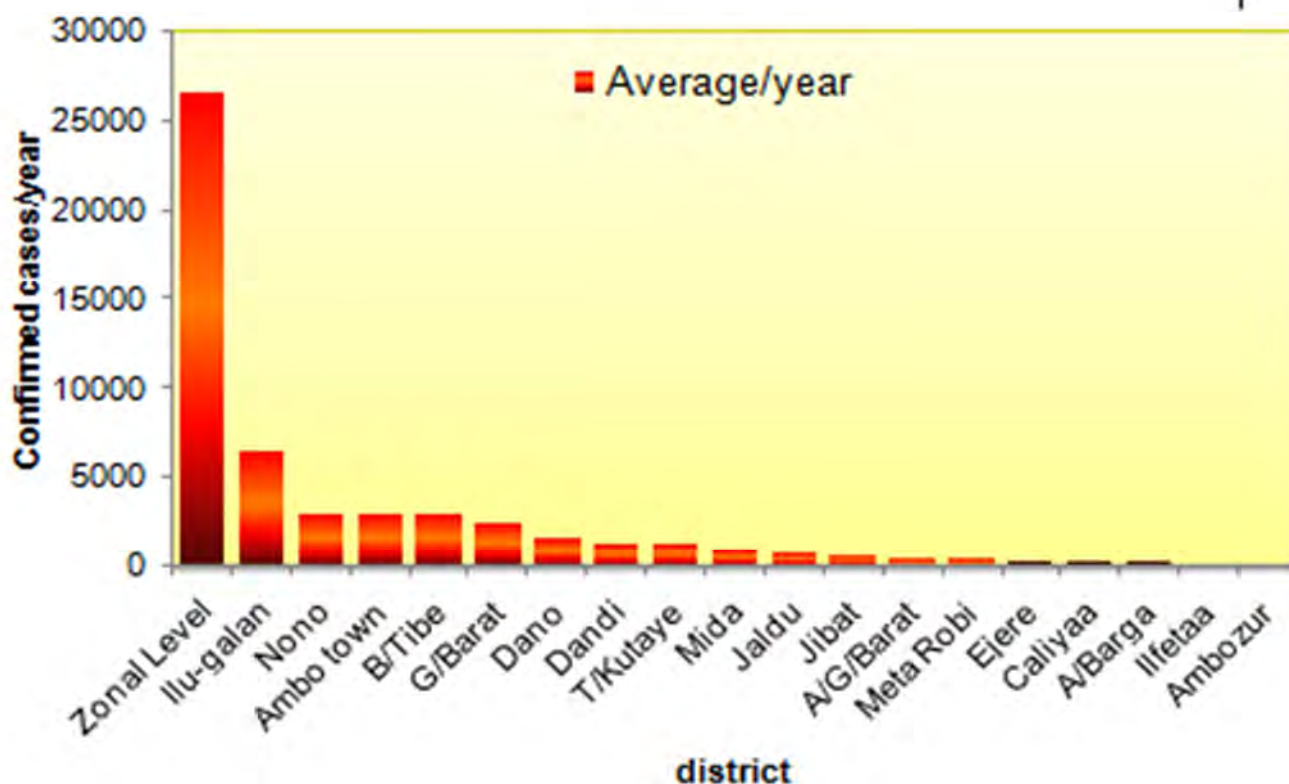


Figure2.1. 11: Trend Of malaria by place in West shoa Zone, Oromia Region From 2008-2012

From the figure 10 we are easily Understand Ambo Town (including the Hospital), Nono, Bako Tibe Euglena Reported the high malaria over the past five years except Ambo town the rest there were registered as the hot spot woreda's in this Zone. In general from this Figure the trained of malaria morbidity in the zone does not indicate the higher reduction but in case of inpatient and death shows a higher reduction in relative to the previous time

Table-2.1. 7 Percentage of plasmodium species in West Shoa Zone, Oromia Region by place from 2008-2012

S/N	WOREDA	2008	2009	2010	2011	2012	PF	PV	Mixed total	%of PF	%of PV	%of Mixed	Total
1	Meta Robi	0	0	0	0	2140	1698	424	18	79	20	1	100
2	Ambo town	1126	2019	3971	7866	37	1817	4857	8345	12	32	56	100
3	Ambo Rural	5	10	15	30	463	351	172	0	67	33	0	100
4	Dandi	51	164	1974	3533	1027	1788	4114	847	26	61	13	100
5	A/G/Barat	52	32	289	1101	701	1133	906	136	52	42	6	100
6	Nono	1101	23	0	5446	10583	8976	7420	757	52	43	4	100
7	Jibat	60	261	794	429	1543	2271	640	176	74	21	6	100
8	A/Barga	2	91	202	758	680	914	613	206	53	35	12	100
9	Mida	2	16	111	1972	2743	2449	1656	966	48	33	19	100
10	Ilfeta	132	30	119	459	181	513	380	28	56	41	3	100
11	B/Tibe	499	1870	2795	4575	4954	5411	7108	2174	37	48	15	100
12	Chelia	196	158	646	567	121	493	849	346	29	50	20	100
13	Dano	361	432	1026	4266	2270	3256	3400	1699	39	41	20	100
14	Jaldu	10	10	319	3056	570	2058	1649	258	52	42	7	100
15	G/Barat	33	272	2955	7176	3162	8919	3843	836	66	28	6	100
16	Ejere	9	138	357	435	332	459	712	100	36	56	8	100
17	T/Kutaye	32	170	2073	2075	1301	2555	2588	508	45	46	9	100
18	Ilu-galan	1103	5751	12669	8975	4957	15759	13761	3935	47	41	12	100
	Total	4774	11447	30315	52362	38349	60820	55092	21335	44	40	16	100

Table-2 .1.8 Percentage of plasmodium species in Oromia Region West Shoa Zone from 2008-2012

Year	PF	Pv	Mixed	Total cases	% of PF	% of PV	% of Mixed
2008	599	1691	1849	4139	14	41	
2009	6203	3407	1821	11431	54	30	
2010	15810	11327	5768	32905	48	34	
2011	18321	20925	9166	48412	38	43	
2012	19887	17742	2731	40360	49	44	
Average	12164	11018	4267	27449	41	38	

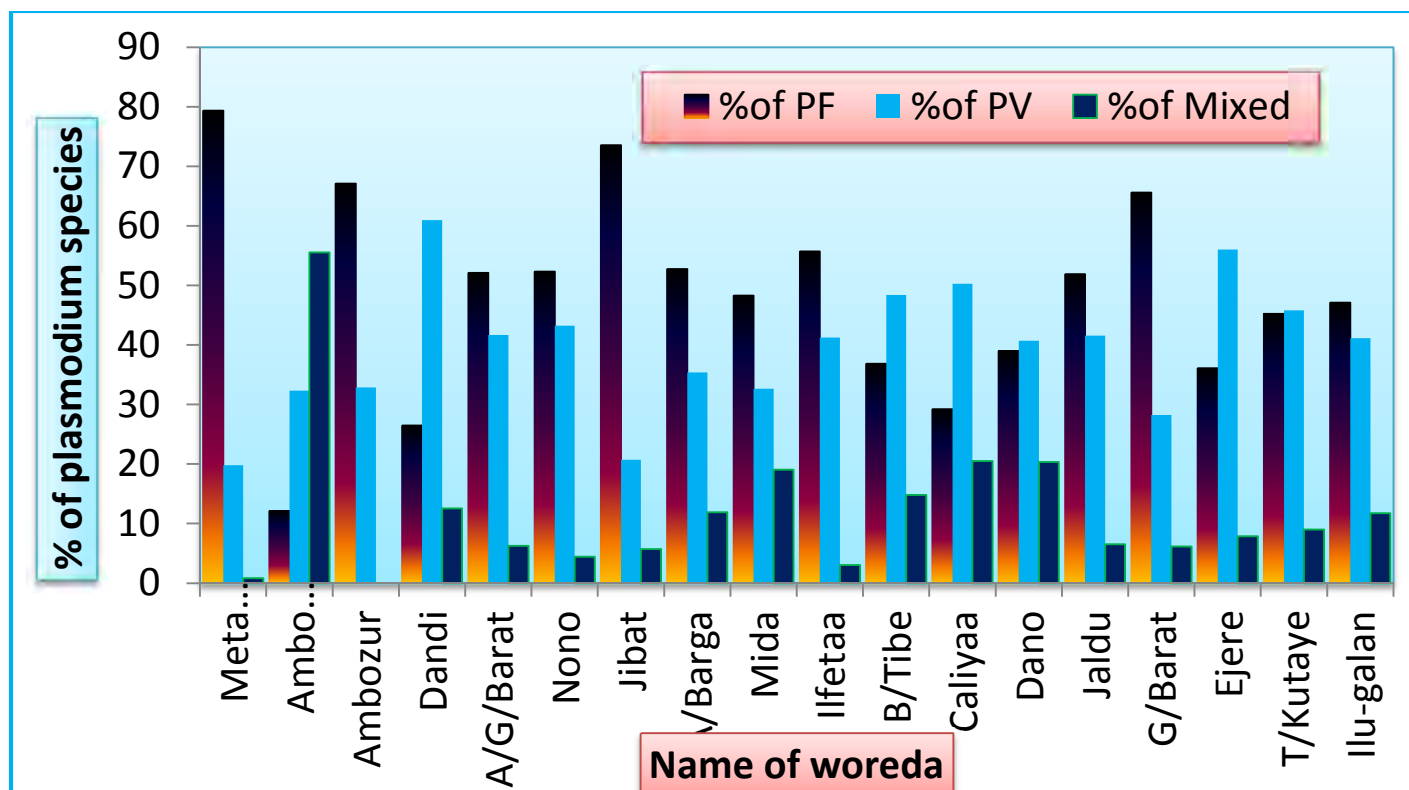


Figure2 .1.12: average Percent of plasmodium distribution in west shoa zone, Oromia region from 2008-2012

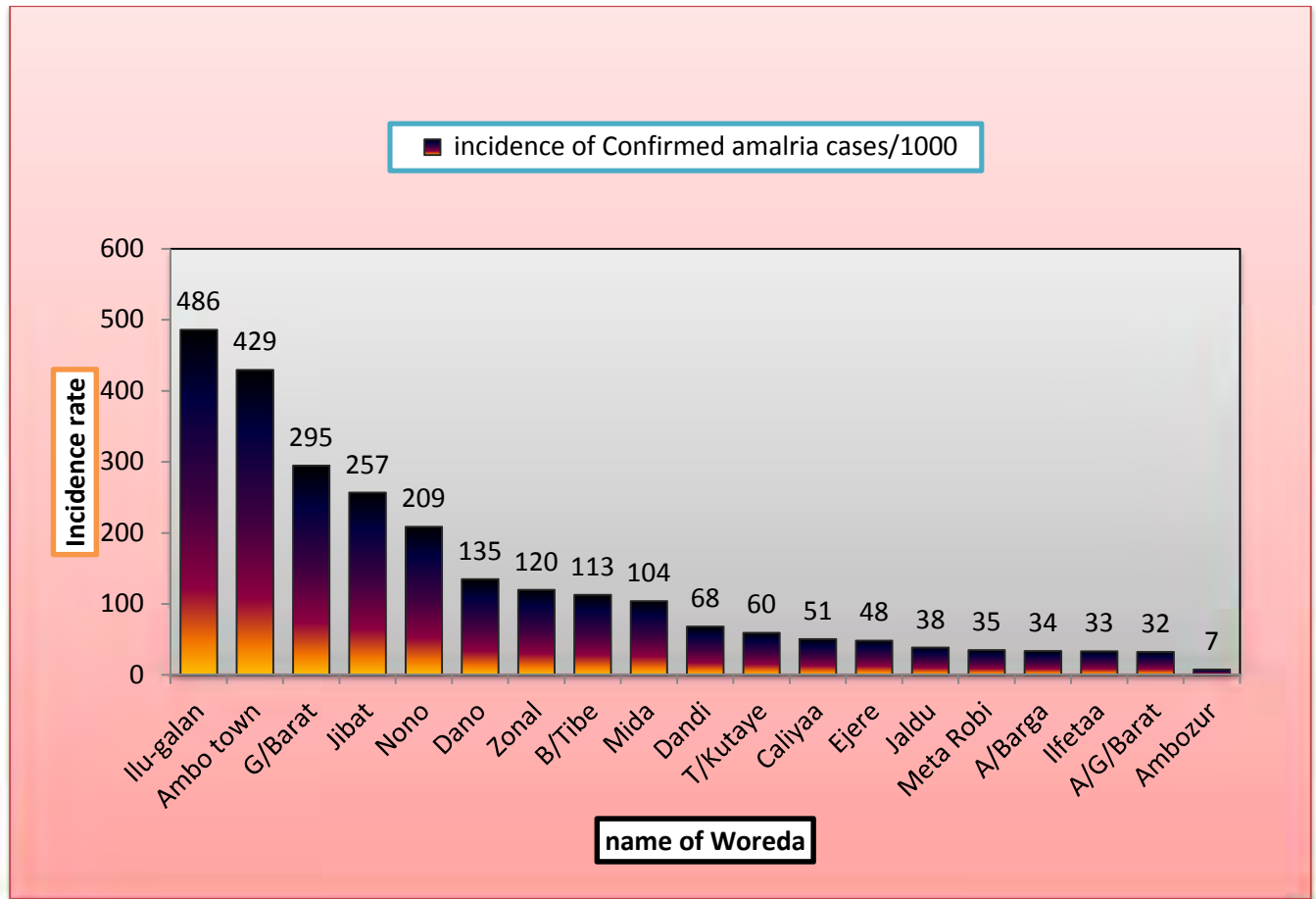


Figure2.1. 13. Malaria incidence rate in West Shewa Zone Per 1000 population, Oromia Ethiopia

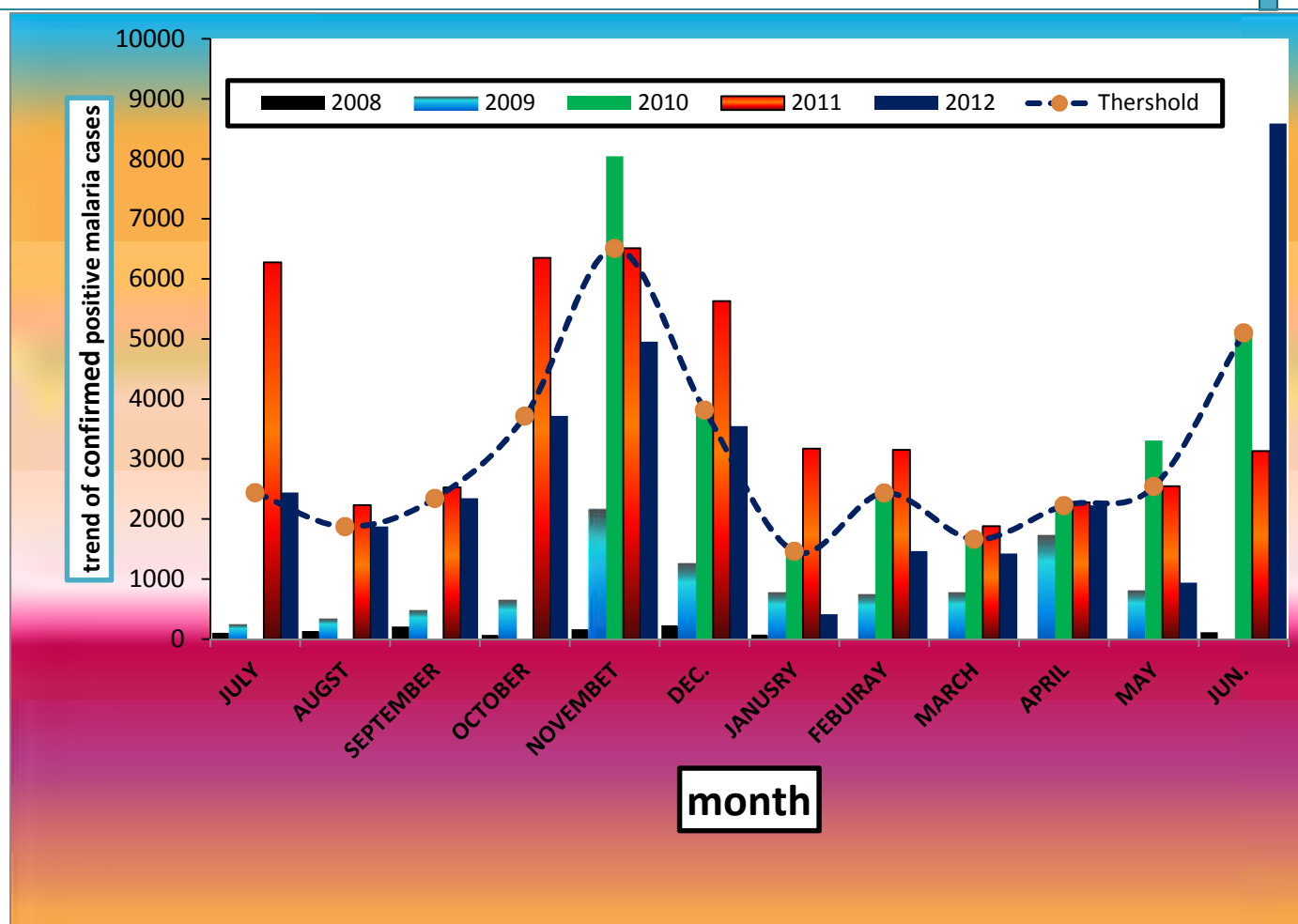


Figure2.1. 14 : Malaria cases compared to the Months Over the past five years in the West Shoa Zone from 2008-2012

Table-2 .1.9 Average Percentage of Plasmodium species distribution across the woreda in Oromia Region west shoa Zone From 2008-2013

WOREDA	% of PF	%of PV	%of Mixed	PF:PV ratio
Meta Robi	79	20	1	79:20
Ambo town	13	34	54	13:54
Ambo Rural	67	33	0	67:33
Dandi	26	61	13	26:61
A/G/Barat	52	42	6	52:42
Nono	52	43	4	52:43
Jibat	74	21	5	74:21
A/Barga	53	35	12	53:35
Mida	48	33	19	48:33
Ilfeta	57	42	1	57:42
B/Tibe	37	48	15	37:48
Chelia	31	53	16	31:53
Dano	40	42	17	40:42
Jaldu	52	42	6	52:42
G/Barat	66	28	6	66:28
Ejere	36	56	8	36:56
T/Kutaye	45	46	9	45:46
Ilu-galan	48	42	10	48:42
Average	43	39	18	44:39

The plasmodium falciparum is one of the cause for the occurrence of outbreak, provided that it important to know its distribution across the zone for its control and prevention, however the distribution of plasmodium species in some woreda varies from the prior knowledge of the falciparum to Vivax (60:40) ratio, so that the distribution of **plasmodium** species across the woreda in the zone is greatly vary from each other. From the data Ambo town, Dandi, B/Tibe, Cheliya, Dano, Ejere and Toke Kutaye are relatively the plasmodium Vivax is higher than that of Falciparum.

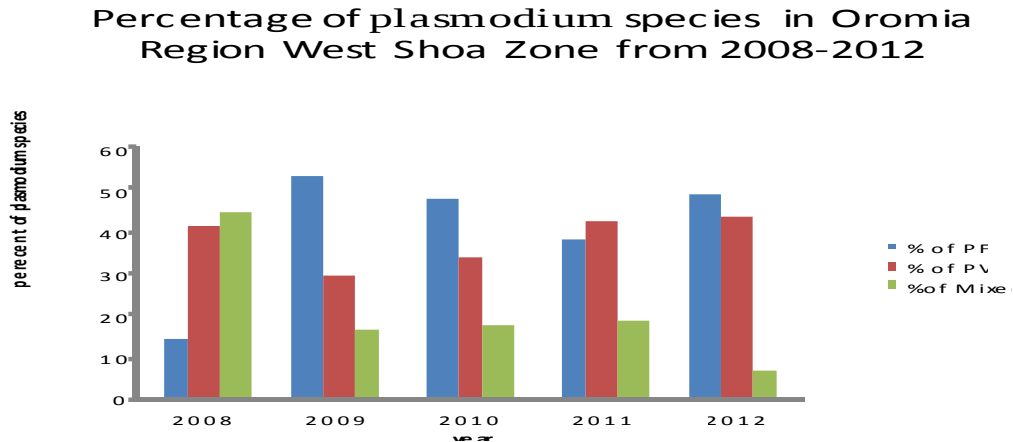


Figure2.1. 15 : Average Percentage of Plasmodium distribution across the woreda in Oromia Region west shoa Zone From 2008-2012

From the figure we easily Understand the malaria transimission is higher especially during the Harvest time of the year from October to December and May to June and hits its lowest peak during January and August.

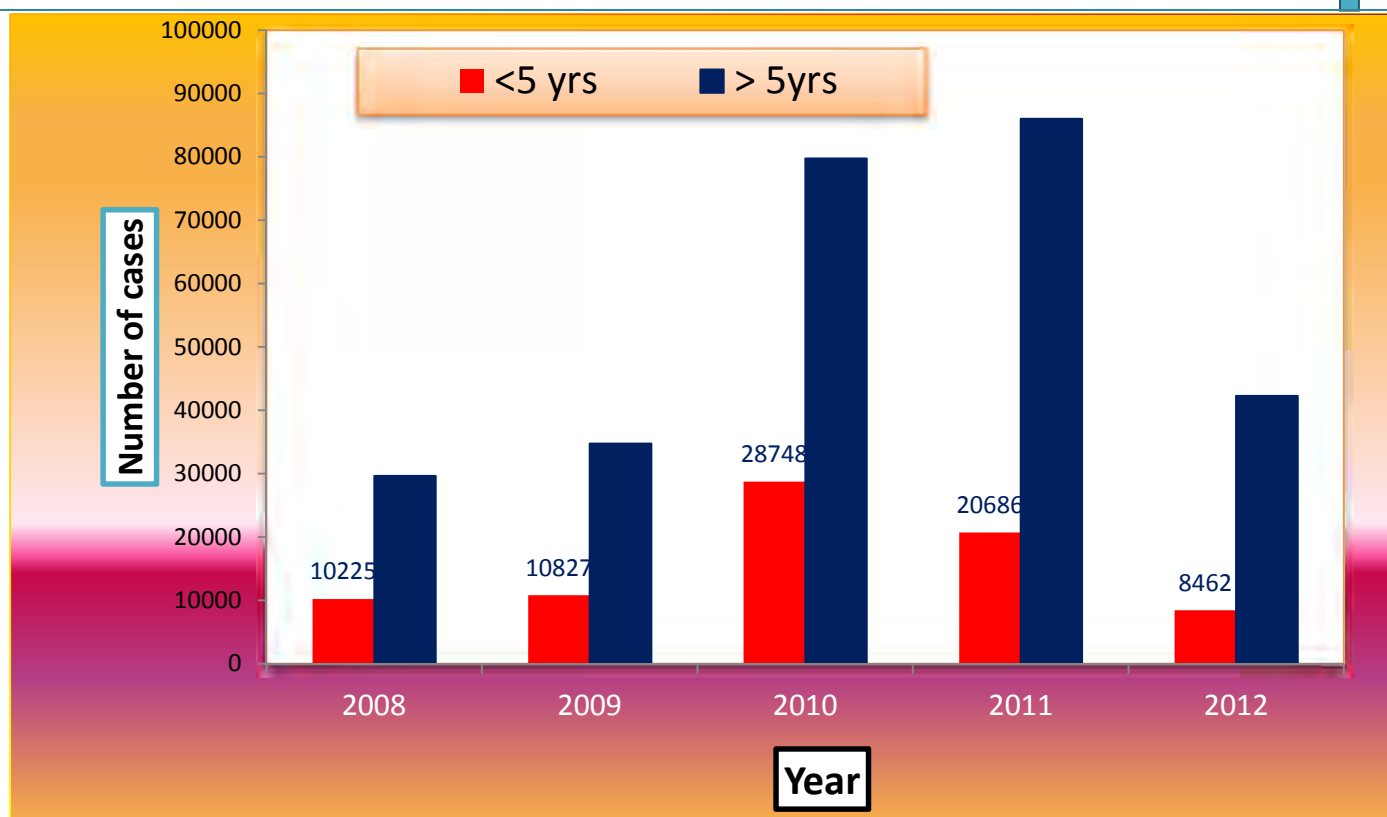


Figure2.1. 16: Malaria cases Distribution by age in Oromia Region, West Shoa Zone from 2008-2012

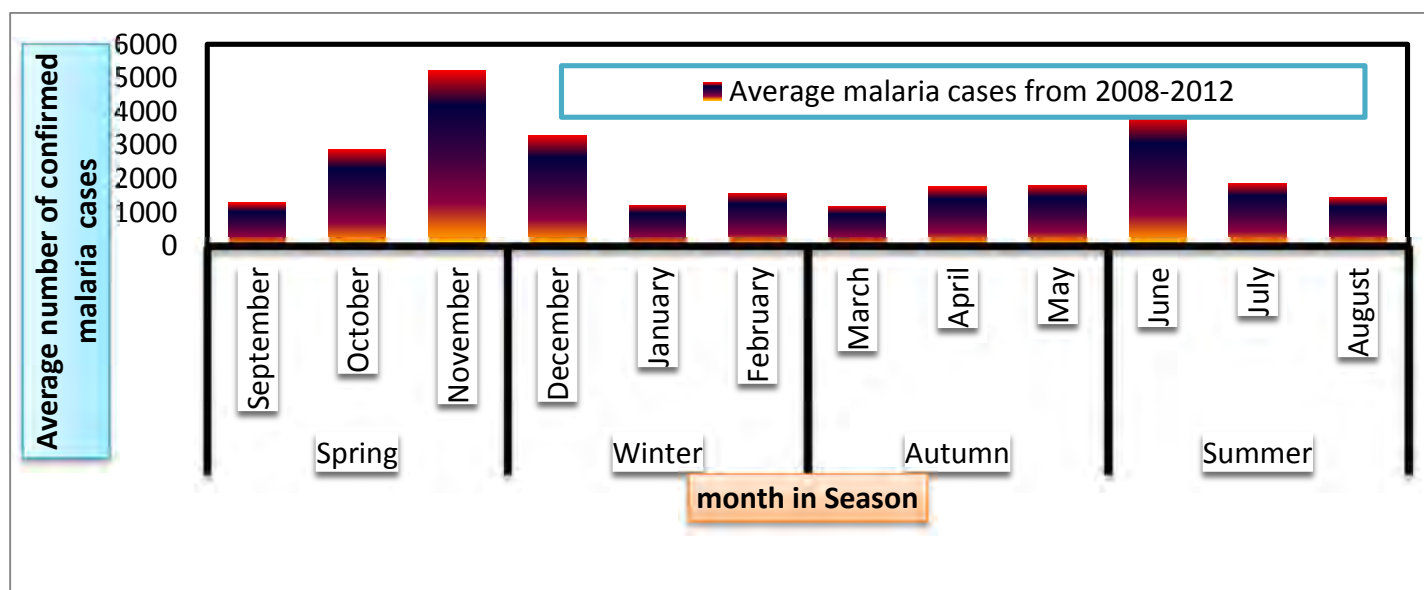


Figure2.1. 17: Average Seasonal Malaria distribution in West Shoa Zone from 2008-2012

2.1.5. Discussion

This data showed that malaria occurred throughout the year regardless of the woreda in the zone. However, the malaria diseases transmission is predominantly higher after the rainy season in this zone with varying incidence proportion among the woreda' which coincide with major planting and harvesting season for farmers which aggravates economic loss. The annual malaria total Incidence rate for the calendar years 2008 was 38/1000 population and reaches its highest point in 2010 which accounts for 98/1000 population is relatively two fold higher than that of 2012 43/1000 population. In addition to this the confirmed malaria Incidence rate in this zone was similarly raised from 5/1000 in 2008 to 33/1000 population in 2012. The increases in both result might be due to the increment of the facilities and strengthen of the malaria surveillance activities at each level in the zone or else there might be increased risk of malaria transmission to the higher altitude and lower altitude [9]. A study conducted in Kola Diba, North Gondar, indicated that there was an increase in the number of malaria cases from 2008–2010 with the peak number of malaria cases being reported most recently in 2010 [10]

Even though the malaria Morbidity increased over time in this zone the admitted patient and death rate decreased dramatically. For example, The IPD rates decreased from 12/10,000 in 2008 to only 1/100,000 in 2012 where as the death rate was 1/100,000 in 2010 and 1/100,000 in 2012. A recent study also showed that there has been a 54% and 55 % reduction in malaria admission and death, respectively as compared to baseline period of 2001-2004 [11]. The decreased risk might be due to the expansion of health center and health posts which facilitates the way for early identification and treatment of the cases in the health posts and health center. The plasmodium species also varies from woreda to woreda. When we see the their distribution of plasmodium (ratio of plasmodium Falciparum to Plasmodium vivax) in Jibat , Meta Robi and Gindebert Were 79:20 ,74:21 and 66:28 respectively which is relatively matches with the national standard of the plasmodium distribution of falciparum versus vivax which is in the ratio of 60 : 40 [4,5,8,15] . In another way round the distribution of plasmodium vivax species is higher than that of the distribution of falciparum which completely disagree with the national guideline standards. This woreda Includes Bako Tibe, Chelia and Dano. Some studies also supported these findings which dedicated an increased proportion of vivax malaria is consistent with a study at high altitude in the Butajira area [12], and a study in the Akaki area [13]. Recent

studies also show a shift from falciparum to vivax malaria [14, 15]. However, other studies report the consistent dominance of Plasmodium falciparum [9, 16-18]. The increase in vivax malaria in highland-fringe areas could be explained by the high transmissibility of P. vivax. In this zone also there is the shift of plasmodium falciparum to the vivax. When we analyzed the average plasmodium species from 2008-2012 GC is **43:39** which is relatively similar.

The malaria slide positivity rate (SPR) increases from 42% in 2008 to 50% up to the fourth quarter of 2012. The positivity rate attains its maximum point 70% in the year 2010. The increment of the slide positivity rate strongly predicts the raise of the incidence rate. So Slide Positivity Rate (SPR) is well associated with the raise of the case in the population, therefore this study also indicated that slide positivity rate helps as alarming tool for malaria outbreak.

2.1.5.1. Limitations

- ❖ The data segregated by sex and age was limited only to two categories; above and under 5 years.
- ❖ We use the secondary data/source.

2.1.5.2. Conclusion

Even though different malaria control strategies were designed to rollback to its minimum level the malaria status were increasing during the study period except slight decline in 2012. Therefore, the zonal health Department should assess and identify the reason why the malaria incidence rate was increased, unless otherwise this will be a threat for the community in the coming year.

2.1.5.3. Recommendations.

- ❖ The zonal health department should conduct training for the woreda PHEM officers especially on how to report and respond in emergency situation.

- ❖ The recent reporting format lacks some important indicator variables such as different age category for analysis so it should be incorporated.
- ❖ Supportive Supervision was important for routine surveillance by Prepare standardized and comprehensive supervisory check list to be used at all level
- ❖ Continuous monitoring and evaluation approach of the program intervention should be mandatory to know whether it were successful or not in the zone so as to know the effectiveness of each intervention.
- ❖ Close follow up and technical assistance should be needed when no reports are coming from the worda. Having complete report helps the analysis and interpretation to be more meaningful and acceptable.
- ❖ Not the least but the last, PHEM office in the zone were not recording, documenting and reporting well as of expected enough to detect the outbreak early as far as possible. The malaria surveillance data were not well integrated so as to monitor the occurrence of outbreak. Therefore, the concerned bodies should solve the assignment to overcome the challenges against burden of malaria in the community.
- ❖ Further study should be plan for prevention and control to come to elimination

2.1.6. References:

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Chapter III – Evaluation of Surveillance System

3.1. Evaluation of Public Health Surveillance System-East Wellega zone, Oromia, Ethiopia, 2013

Executive Summary

Introduction: Public health surveillance is an ongoing systematic collection analysis, interpretation and timely dissemination of information derived from the data regarding a health related event to undertake effective preventive and control in public health action to reduce morbidity and mortality.

Therefore this study was conducted to evaluated public health surveillance systems in Oromia region East Wollega zone to determine how well they operate to meet their stated purpose and goal and finally to yield specific recommendation for improving surveillance quality, efficiency and usefulness of the system. So, the aim of this study was to assess the performance of core activities and attributes of surveillance systems as a whole and particularly assessing surveillance system on selected 4 priority diseases (measles, malaria meningitis and AFP) in East Wollega Zone, Oromia Region in June 2013.

Methods: A cross-sectional descriptive study was conducted, in Oromia region of East Wellega zone, from June 6 – 21, 2013. The zone was selected purposively. The study subjects were health facilities, Woreda Health Office and ZHD. Convenient sampling was used for selection of Woredas and health facilities because of scarcity of resources and accessibility. The ZHD, six Woreda health offices, six H/Cs and 12 H/Ps were included in the sample. The surveillance system attributes examined in this evaluation were usefulness, simplicity, acceptability, flexibility, data quality, stability, timeliness and Representativeness of the surveillance system. Each attribute was rated using a separate set of criteria as described in the CDC Surveillance System Evaluation Framework. Additionally, special consideration was given for overall surveillance system starting from regional level to Health post. Observational and face to face self administered interview was used to collect the data. It was entered and analyzed using Epi Info and Microsoft Excel 2007.

Results: We reviewed public health Emergency management recorded data in cross checking with outpatient (OPD) registers during visit. The compiled register data were then compared to the facility's aggregate monthly summary reports and individual-level database.

A total of 25 sites, namely 12(48%) health posts, 6(24%) health centers, 6(24%) Woredas and 1(4%) zone were visited. The woreda's incorporated were Guto Gidda, Sasiga, Digga, Wayu Tuka, Gidda Ayana and KIRAMU woreda.

During 2011/12 and 2012/2013 297,096 and 407,290 confirmed malaria cases were reported in the Oromia region. From this, East Wollega contributes 8 %(22,845) and 14 %(51,623. This Report revealed that the increment of malaria cases in the region and zones too. Consequently, the confirmed malaria prevalence rate was 14 cases per 1000 population which were in turn increased to 21 cases per 1000 population in the 2012/2013 in the region.

Discussion: Surveillance activities are critical to detect diseases, address a new health related conditions to provide pertinent information to tackle and initiate early detection of cases or outbreak in given society. The study was incorporated 25 government health institution at different structure. From those health institution 16(64%) were with a comprehensive public health emergency management surveillance guideline like, Measles, meningitis and malaria outbreak control guidelines. However, the rest 9(36%) didn't have any standard guidelines for implementing public surveillance system at their level. 21(84%) of health institution took supervision from higher level, however 2(8%) and 2(8%) of the health Woreda and posts didn't took any supervision in the last 6 months on the surveillance activities and integrated supportive supervision from the higher officials respectively.

Providing regular feedback to healthcare providers and others who report cases reinforces the importance of participating in public health surveillance. Feedback should be timely, informative, interesting, and relevant to the provider's practice. Regarding the linkage between the feedback reports delivered in the zone from the higher officials was not uniform across the health facilities and also varies across the Woreda. 5(42%) of observed health post in the zone has zero feedback during the year. However, 1(8%) and 4(33%) receives one and 2 feedback reports respectively. The rest 2(17%) receives more than 3 feedback reports each. Even though there were feedback reports in some health facilities there is no follow up of implementation for action by the higher level. In all Observed health facilities, Public Health Emergency management core processes were not well integrated with the rest of the department for offering integrated supportive supervision. Moreover, supportive supervision should be strengthened for

health facilities with low infrastructure and hard to reach area, because 4(16%) of the health facilities were not get any supportive supervision in the past 6 month.

3.1.1. Background:

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health [1-4]. Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation, and formulating research hypotheses [1, 4]. For example, data from a public health surveillance system can be used to guide immediate action for cases of public health importance, to measure the burden of a disease (or other health-related event), including changes in related factors, the identification of populations at high risk, and the identification of new or emerging health concerns; monitor trends in the burden of a disease (or other health-related event), including the detection of epidemics (outbreaks) and pandemics; evaluate public policy; detect changes in health practices and the effects of these changes; prioritize the allocation of health resources; describe the clinical course of disease; and provide a basis for epidemiologic research[1].

It is carried out through a system which has legal support and extending from the central health authorities down to the peripheral health facilities and community level through sets of communication channels. These sets include upward and down ward reporting and feedback mechanism.

The development of the fundamental concepts of surveillance systems provides a basis on which to build a better understanding of monitoring and evaluation of both Public health intervention and the disease status in a country [6].

Ethiopia formulated different strategies to have operative and effective surveillance system. Too often, however, surveillance data for communicable diseases are neither reported nor analyzed on time. As a result, the chance to take action with an appropriate public health response and save lives was utilized. Even in cases where adequate information is collected, it is often not available for use at the local level. Aware of these problems African region adopted integrated disease surveillance (IDS) as a regional strategy (resolution AFRO/RC48/R2) for early detection and efficacious response to priority communicable diseases for the African region in September

1998, during the 48th Regional Committee for Africa meeting in Harare, Zimbabwe. Ethiopia as member state also endorsed this initiative and is using it with frequent revision of the list of priority diseases [7, 8]. public health surveillance system should be evaluated periodically to determine how well they operate to meet their objectives. Evaluating findings should provide specific recommendations for improving surveillance quality, efficiency and usefulness[9].

Currently, since 2008 the FMOH launched a new approach and restructuring of the health sector in to different core processes, and in particular the disease surveillance and response with the concept of BPR. This helps the surveillance of priority disease to be a dependable system as Public Health Emergency management (PHEM) center. This new structure is extended down to the regional, zonal, woreda and health facility level in their capacities. This is designed as a cutting edge for better tracking and monitoring of diseases of public health concerns. Moreover, as member state of the WHO, Ethiopia is on preparatory phase to implement the International Health Regulation (IHR) which was declared by member states in 2005[3]. These all are good opportunities to strengthen surveillance.

The FMOH of Ethiopia identified 20 top priority diseases which are epidemic prone, of international concern and diseases on eradication and elimination programs for surveillance activities. These diseases are monitored by a designated bodies through available means of communication- telephone, paper based reporting and electronic etc. These diseases are set to be reported as compulsory notification (which are immediately reportable) diseases and routine surveillance (which are to be reported weekly).

The surveillance evaluation assesses disease targeted for eradication, elimination and epidemic potential in our country of priority diseases reported as immediately (AFP/Polio, AWD/cholera) and weekly (measles, malaria). They are significant disease burdens to the public. Diseases like malaria are of the ten top diseases throughout the nation for more than a decade. Measles epidemic is becoming more frequent and dispersed to different corners of the country. The overall purpose of surveillance of these diseases is to monitor the trend against the expected tolerance limits, and pick any deviation from the limit at the earliest point in time and have prompt response.

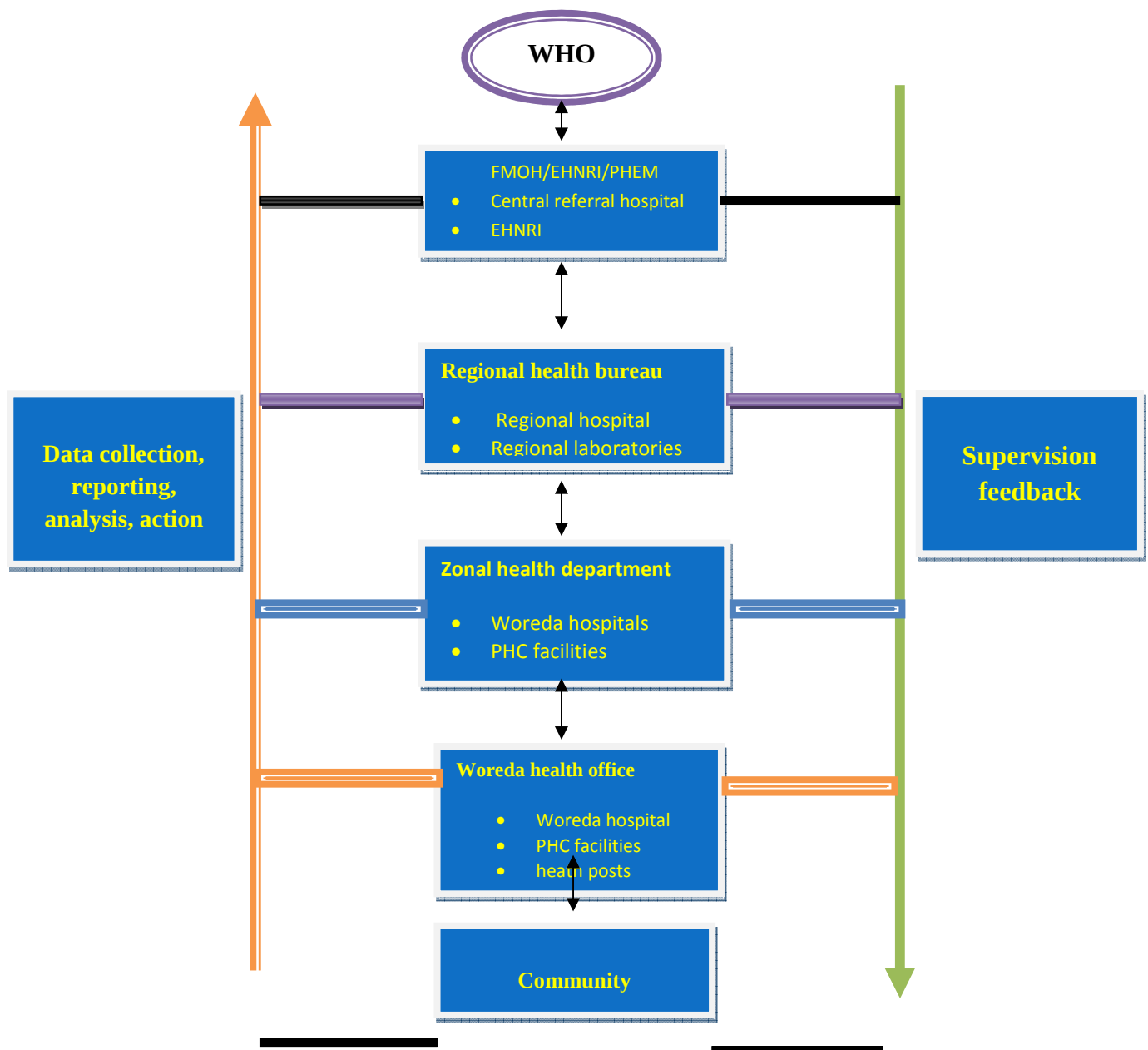


Figure 3.1.1. Data and information flow in public health surveillance indicating varying cycles at various levels (the surveillance loop)

Moreover as early warning system, it guides prevention and risk aversion actions like immunization, vector control and so on. For these purposes, each of these diseases has case definition(s) and integrated diseases reporting formats defined by the ministry of health and the WHO; and reporting is institutionalized into the health facilities and health offices. The general frame of work flow is shown below.

The PHEM has four major components namely preparedness, Early warning, Response and recovery).The major section of the early warning is the integrated diseases surveillance. As Surveillance is the cyclic process, it interacts and linked with other major components and activities.

Therefore this study was conducted to evaluated public health surveillance systems in Oromia region East Wollega zone to determine how well they operate to meet their stated purpose and goal and finally to provide specific recommendation for improving surveillance quality, efficiency and usefulness of the system.

3.1.2. Objectives:

3.1.2.1 General objective:

To review the core indicators attributes of the surveillance system in East Wollega Zone; Oromia Region.

3.1.2.2 Specific Objectives:

- To assess the core activities such as case detection, reporting analysis and response of surveillance system in the study area.
- To describe surveillance system on selected diseases malaria, measles, meningitis and AFP.
- To provide possible recommendation for action.

Map Of East Wollega Zone, Oromia-Ethiopia, January 2014

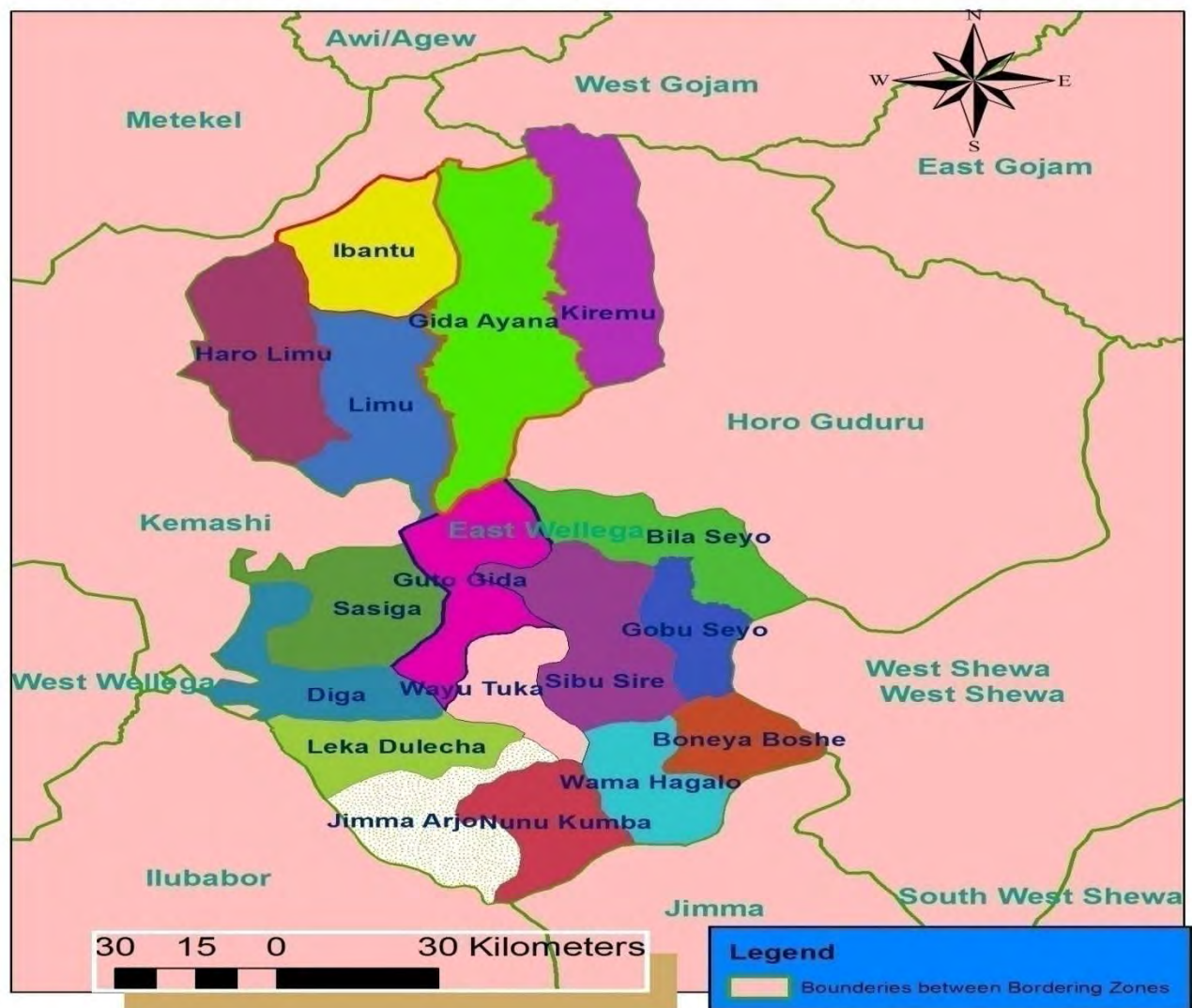


Figure 3.1. 2. A map showing East Wollega zone by Woreda

3.1.3. Methods and Materials

3.1.3.1 Study Design

Descriptive cross sectional study design were used to collect the data.

3.1.3.2 Study Area

East Wollega zone is one of the 18 administrative zones of Oromia National Regional state administratively, located in the Western part of Oromia Region. This zone is bounded with West Shewa and East Wollega zones in the East, West Wollega in the West, Benishangul Gumuz Region in North East, Horo Guduru zone and Amhara Regional State in the South and Ilubabora zone in North West. It covers an area of 13959.22 squares Km. Geographically the altitude varies from 750 up to 3020 meter above sea level. The zone is classified into three agro ecological zones; namely, highlands (4.91%), Midlands, (53.17%) and lowlands (41.92%). The temperature reaches a daily maximum of 28 degree centigrade. The capital town of the zone is Nekemte which is about 331 KMs far from Addis Ababa to the west. The catchment areas of East Wollega zone extends from Gibe river to Didessa river east to west, and again from Abay River to Didessa, North to south having varied topography. According to 2007 census, the total population of the zone is 1,291,134. 11% of the population lives in urban and 89% in rural residents. Administratively the zone is divided in to 17 Woredas, 367 kebeles of which 26 urban and 287 rural kebeles.

3.1.3.3 Study period

Public health emergency management data of East Wollega zone and health facilities were collected from June 6-21/2013.

3.1.3.4 Population under surveillance

According to the National PHEM guideline, the total population living throughout the country set to be under surveillance for all the twenty priority diseases. Thus East Wollega Zonal Health department follows the same structure, with a total population of more than 1,345,862 of whom 671,585 and 674,277 male and females respectively were people to be under surveillance (Table below indicates projected from the 2007 national census).

Table-3.1. 1: The Population under Surveillance in the assessed region and administrative areas Oromia region - East Wollega zone, 2012/2013

Serial Number	Area under assessment	Total population (Projected from the 2007 cense)
1	Zonal population	1,345,862
2	Gidda Ayana	124,349
3	Guto Gidda	105,332
4	Sasiga	93,071
5	Kiramu	65,080
6	Wayu Tuka	72,593
7	Digga	79,070

3.1.3.5. Study Subjects: The study subjects were Zonal Health Office, Woreda Health office, Health Centers and Health Posts

3.1.3.6. Source Population: All Population in Oromia Region is taken as a source population for our study.

3.1. 3.7. Study population: All population living in East Wollega zone was taken as the study population

3.1.3.8 Sample Size

Purposive sampling was used to select one Administrative Zone from the Regional Health Bureau. Six Woreda health offices, six health centers and 12 health posts were selected conveniently . Out of 17 woreda 6(35%) of the Woreda was selected as the study subject. From 55 Health center and 314 health post in the zone 6(11%) and 12(4%) of health center and health post was selected in the study unit.

3.1.3.9 Sampling technique

Selection criteria of the study subjects were done as in the steps below:

1. From the region one zonal health department were selected purposively.
2. From the zone six Woredas were selected and the Woreda health offices were included in the study
3. From each selected Woreda one health center were selected
4. From the five health posts under each selected health center, two was selected.

3.1.3.10. Ethical consideration

This data were collected after having written consent letter from Oromia Regional Health Bureau to zone. After all, discussing the purpose and method of the study with zonal health office head and PHEM department, they were convinced to write a letter for selected health Woredas.

3.1. 3.11 Data collection procedure

Observational and face to face self administered interview was used to collect the data. It was collected on timeliness, completeness and epidemic preparedness and response using questionnaire and observation of some practical tools for surveillance. WHO Guideline, Protocol for the Assessment of National Communicable Disease Surveillance and Response Systems WHO/CDS/CSR/ISR/2001.2 were used and adapted in the questionnaires from the generic questionnaire in Annex 1 of these protocols and from the CDC surveillance Evaluation Guideline [1] according to our objectives.

3.1.3.12 System of Data Analysis:

We entered data and analyzed using the Epi Info 7.1.0.6 and Microsoft Excel 2007 and summarized qualitative data to complement the quantitative findings.

3.1.3.13. Data dissemination:

Written report (both hard and soft copies) was prepared and shared to Addis Ababa University/School of Public Health, Ethiopia Field Epidemiology Training Program Resident advisors and coordinators, Oromia Regional Health Bureau, and finally to East Wollega Zone Health department and all visited Woreda health offices.

3.1.3.14 Operational Definitions

Accuracy: Degree to which a measurement or an estimate based on measurements represents the true value of the attribute that is being measured.

Accessibility; Ease with which statistical information can be obtained from the agency. This includes the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which the information can be accessed. The cost of the information may also be an aspect of accessibility for some users.

Willingness of persons and organizations to participate in the surveillance system. And it will be measured quantitatively through reviewing completeness of report forms for the past three months and timeliness of data reporting

Simplicity; the simplicity of a public health surveillance system refers to both its structure and ease of operation. Surveillance systems should be as simple as possible while still meeting their objectives

Data Quality: Data quality reflects the completeness and validity of the data recorded in the public health surveillance system

Flexibility: A flexible public health surveillance system can adapt to changing information needs or operating conditions with little additional time, personnel, or allocated funds. Flexible systems can accommodate, for example, new health-related events, changes in case definitions or technology, and variations in funding or reporting sources. In addition, systems that use standard data formats (e.g., in electronic data interchange) can be easily integrated with other systems and thus might be considered flexible.

Sensitivity: The sensitivity of a surveillance system can be considered on two levels. First, at the level of case reporting, sensitivity refers to the proportion of cases of a disease (or other health-related event) detected by the surveillance system. Second, sensitivity can refer to the ability to detect outbreaks, including the ability to monitor changes in the number of cases over time.

Specificity: Measure of how infrequently a system detects false positive health events, i.e., the number of individuals identified by the system as not being diseased or not having a risk factor, divided by the total number of all persons who do not have the disease or risk factor of interest.

Positive Predictive Value: Predictive value positive (PVP) is the proportion of reported cases that actually have the health-related event under surveillance.

Representativeness: A public health surveillance system that is representative accurately describes the occurrence of a health-related event over time and its distribution in the population by place and person.

Timeliness: Interval between the occurrence of an adverse health event and (i) the report of the event to the appropriate health agency, (ii) the identification by that agency of trends or outbreaks, or (iii) the implementation of control measures.

Completeness: proportion of all expected data reports that were actually submitted to the public health surveillance system.

Stability: Stability refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system.

Validity: Degree to which statistical information correctly describes the phenomena it was designed to measure.

Usefulness: How helpful the system is to public health staff in taking actions as a result of interpreting and analyzing its data.

Suspected acute flaccid paralysis (AFP): Any child under 15 years of age with AFP or any person with paralytic illness at any age in whom the clinician suspects [8]

Confirmed acute flaccid paralysis: A suspected case with wild poliovirus isolation in stool.

Suspected Measles: Any person with fever and maculopapular (nonvascular) generalized rash and cough, coryza or conjunctivitis (red eyes) OR any person in whom clinician suspects measles.

Confirmed Measles: A suspected case with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed Cases in an epidemic

Suspected Meningitis case: Any person with sudden onset of fever ($>38.5^{\circ}\text{C}$ rectal or 38°C axillaries) and one of the following signs: neck stiffness, altered consciousness or other meningeal sign.

Confirmed Meningitis case: A suspected case confirmed by isolation of *N. meningitis* from Cerebrospinal fluid or blood [8].

3.1.4 Results

3.1.4.1 Sites visited and agreement with stakeholders

We reviewed public health Emergency management recorded data in cross checking with outpatient (OPD) registers during visit. The compiled register data were then compared to the facility's aggregate monthly summary reports and individual-level database. I compared database records with register entries for data entry accuracy, and also reviewed supervision checklists. The purpose of the document review was to understand and assess the data reporting process, and to compare data across different sources to identify any problems with data quality, consistency, completeness, and compilation. the visited site includes Zonal health department, 6 woreda health offices, 6 health centers and 12 health posts accordingly. In the surveillance systems assessment checklist, four epidemic-prone diseases were included.

Name and number of sites assessed in East Wollega zone of Oromia regional state were presented below (**Table 1**). A total of 25 sites were visited, of which 12(48%) health posts, 6(24%) health centers, 6(24%) Woredas and 1(4%) zonal PHEM were our study subject. The woreda's incorporated were Guto Gidda, Sasiga, Digga, Wayu Tuka, Gidda Ayana and KIRAMU Woreda. The Zonal PHEM unit and Woreda Health offices targeted on 20 priority diseases (13 immediately and 7 weekly reportable diseases) same as to Regional and National levels. (Table 1). The data flows routinely transfer from health post to health center then passed to woreda afterward passed to Zonal health department.

Table-3.1. 2: List of PHEM immediately and weekly reportable diseases

Immediately reportable diseases	Weekly reportable diseases
1. Acute Flaccid Paralysis (AFP) /Polio	14. Dysentery
2. Anthrax	15. Malaria
3. Avian Human Influenza	16. Meningococcal Meningitis
4. Cholera	17. Relapsing fever
5. Dracunculiasis / Guinea worm	18. Severe Malnutrition
6. Measles	19. Typhoid fever
7. NNT	20. Typhus
8. Pandemic Influenza A	
9. Rabies	
10. Smallpox	
11. SARS	
12. VHF	
13. Yellow fever	

Table-3 .1.3: Name and number of sites assessed in East Wollega zone, Oromia region, June 2013.

S.No	Name of woreda	No. of HC (n=6)	No, of HP (n=12)	Woreda Health office (n=6)	Total (n=25)
	Sasiga	1(4%)	2(8%)	1(4%)	4(16%)
	Digga	1(4%)	2(8%)	1(4%)	4(16%)
	Wayu Tuka	1(4%)	2(8%)	1(4%)	4(16%)
	Kiramu	1(4%)	2(8%)	1(4%)	4(16%)
	Gidda Ayana	1(4%)	2(8%)	1(4%)	4(16%)
	Guto Gidda	1(4%)	2(8%)	1(4%)	4(16%)
	East Wollega Zonal Health office				1(4%)
	Total	6(24%)	12(48%)	6(24%)	1(4%)
	Grand Total				25(100%)

3.1.4.2 Core Function of Surveillance System

3.1. 4.2.1 Case detection

With regard to case detection 17(131%) suspected AFP/polio and 22 measles cases were detected in the zone. In addition to this no meningitis cases were reported in the respective woreda's and as well in the zone. 18(72%) of site were using standard case definition while the rest 7(28%) were without any of the 20 nationally identified case definition, from this health post shares the highest percent performing without standard case definition. Moreover, 16(64%) the visited site were sent report based on national public health emergency guidelines, where as the rest health facilities have no public health emergency guidelines. from this 8(77%) and 1(17%) of health post and Health center respectively were without public health emergency management guidelines.

Table-3 .1.4: Health facilities with Public Emergency management Guideline in East Wollega Zone-Oromia Region June 2013

S/No	Name of health facility	Health Facility with manual	Health Facility without manual	%
1	Zonal	1	0	100
2	Woreda	6	0	100
3	HC	5	1	83
4	HP	4	8	33
	Total	16	9	36

As indicated in the table 3 from 25 health facilities visited 16(64%) of them were with at least one nationally identified diseases guidelines. However, the rest 9(36%) of the health institution were without any of the nationally identified reportable diseases guide lines during observations. To Verify and evaluate the Performance of public health Emergency management system in the zone I tried to state some of the weekly and immediately reportable cases in the zone. for the sake of time I tried to show only the glance summary of the four selected nationally identified diseases as indicated right as follows.

3.1.4.2.2 Malaria: Approximately 52 million people (68%) live malaria-endemic areas in Ethiopia, mainly at altitudes below 2,000 meters in the same way, in Oromia region, around 75% of the land mass malarious putting down 21,804,280 of the population at risk of infection. During 2011/12 and 2012/2013; 297,096 and 407,290 confirmed malaria cases were reported in Oromia Region respectively. In addition to this, East Wollega shares 8 % (22,845) and 14 % (51,623) in the 2011/2012 and 2012/13 respectively. This also indicates the increment of malaria cases both in the region and zones. Consequently, the malaria prevalence rate was 14 cases per 1000 population which were in turn increased to 21 cases per 1000 population in the 2012/2013 in the region. In both areas in both year plasmodiums falciparum species were the leading cause of morbidity. The malaria Death in 2004 EC was 2/10,000 where as in 1/10,000 in 2004 E.C. The slide positivity rate (SPR) of malaria in 2004EC was 35% where as 30% in 2005 E.C

Table-3 .1.5: Malaria cases in Oromia Region and East Wollega Zone in 2011-2013

Malaria cases in Oromia Region and East Wollega Zone in 2011-2013								
Health Facilities	Total confirmed malaria	2011/2011			2012/2013			
		PF	Pv	Death	Total Confirmed	Pf	Pv	Death
Oromia	297,122	158,168	138,954	44	407,290	248,765	158,525	52
East Wollega	22,845	14265	8580	11	51623	37437	14186	16

As Indicated in the table above a total of 22,845 and 37,437 confirmed malaria cases were reported from the zone in 2011/12 and 2012/2013 respectively.

3.1.4.2.3 Meningitis:

From July 2011 to June 2013, 1170 meningococcal meningitis cases were reported to Oromia regional health bureau of these 23 were died making case fatality rate 2%. From this, East Wollega reported 7 cases in 2011/2012. No confirmed meningococcal meningitis cases was reported from east Wollega zone in 2005 E.C even though the border zones like Horro Guduru Wollega encounter a serious outbreak. West Arsi and Horro Guduru Wellega Zone shared the highest number of suspected meningitis cases 247(46%) and 164(30%) in the region by 2013 respectively.

Table-3.1. 6 : AFP, Measles and Meningitis cases in Oromia Region and East Wollega Zone in 2011-2013

Diseases	Oromia Region						East Wollega Zone					
	OPD		IPD		Death		OPD		IPD		Death	
	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13
AFP/Polio	327	249	0	0	0	0	17	17	0	0	0	0
Measles	3143	4277	0	0	0	8	18	22	0	0	0	0
Meningitis	468	100	175	427	16	7	2	0	5	0	0	0

3.1.4.2.3 AFP/Polio: 249 NP-AFP suspected cases were reported to Oromia Regional Health Bureau of these 17(7%) NP-AFP suspected cases were reported from East Wollega zone among less than 15 years age-group from July 2012 to June2013.

3.1.4.2.4 Measles: Measles was also a serious problem which occurs as an outbreak in the region. Right through July 2011 to June 2012, 3143 measles cases with case fatality rate of 26(0.8%) reported to Oromia Regional Health Bureau. But in this year it was increased to 4331with case fatality decrement to 8(0.2%) from which East Wollega Zone Health Department shared 22(0.5%) cases and no death throughout the year.

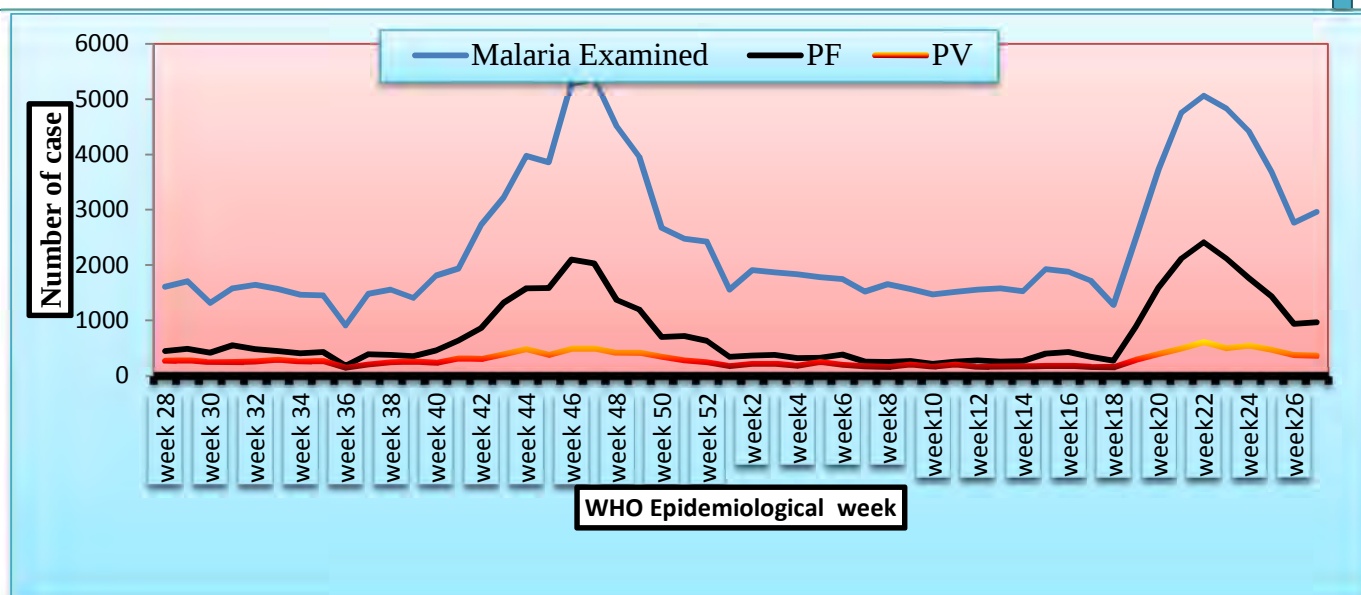


Figure 3.1. 3: Malaria trend in East Wollega zone-Oromia Region by WHO Epidemiological week of 2012/2013(2005E.C)

As indicated in the figure 4, malaria cases were increased in the WHO Epidemiological week 40 to week 48/2012 then decreased. However, in addition to this it also starts to rises again in week 18/2013 attaining its highest level in the week 22/2013 then slows down in the next consecutive weeks. As indicated in the graph plasmodium Falciparum species was the leading cause of morbidity followed by the plasmodium Vivax in all over the year.

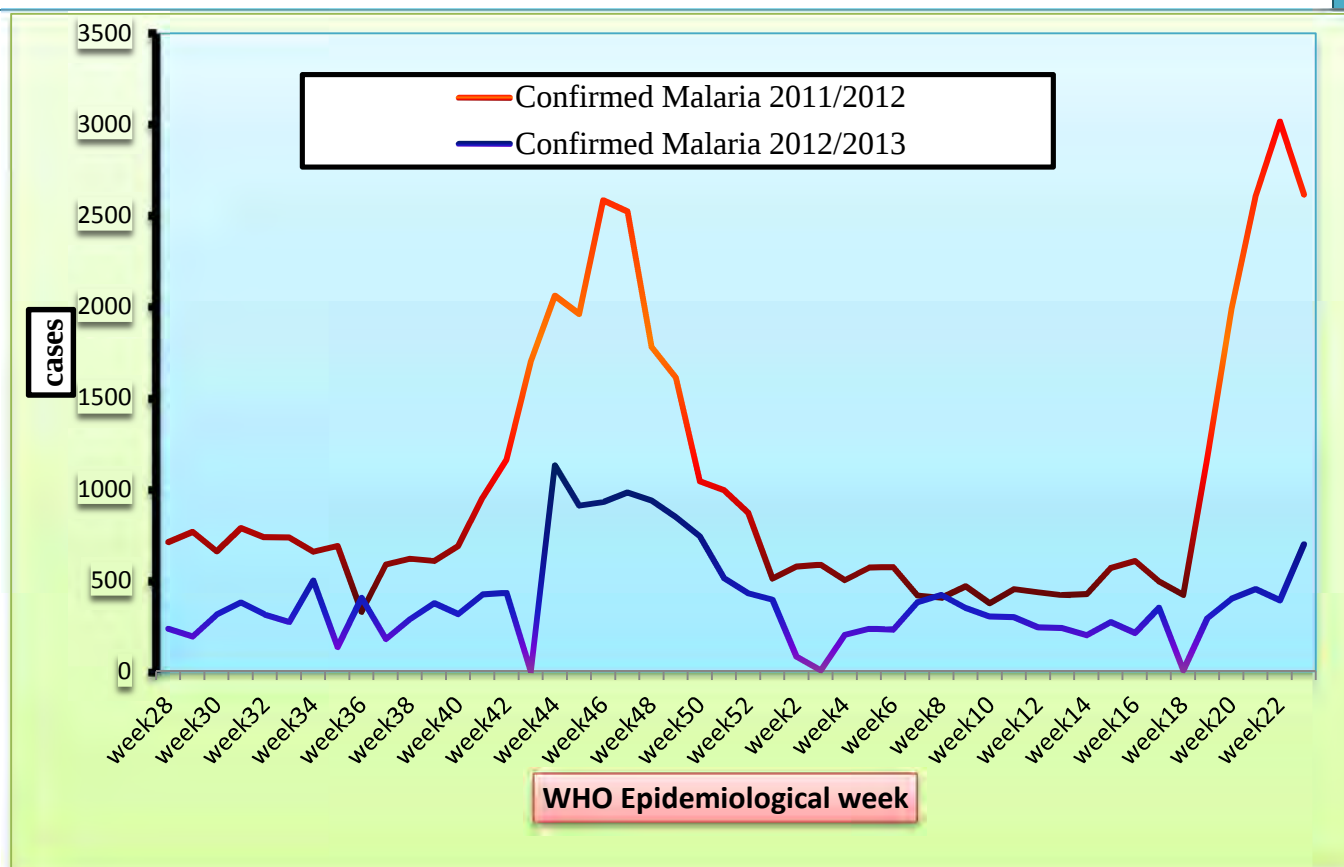


Figure 3.1. 4: Malaria case detection in East Wollega zone by WHO Epidemiological week of 2011/2012 and 2012/2013

As indicated in the figure 4, when we compare malaria trend in 2011/2012 and 2012/2013, its trend were higher all over the year in 2011/2012 compared with the same WHO Epidemiological week. There were two peaks in the zone which causes an outbreak in some woreda's in the year. These week were between WHO Epidemiologic week 35-46 and 18-22 in 2011/2012 and 2012/2013 respectively.

3.1.4.3 Case confirmation

Case/outbreak confirmation refers to the epidemiological and laboratory capacity for confirmation of this notifiable disease in the zone. The Capacity of the referral linkage between health facility for case confirmation, appropriate specimen transportation and collection like stool, sputum and blood for routine activities in the zone in the health center was 100%. All visited health center in the zone were incapable to collect and transport the CSF specimen for further confirmation. For more information it was displayed in the table 6 below.

Table-3.1. 7: Means of specimen collection and Case confirmation in East Wollega zone- Oromia Region from June 6-21/2013

S/No	Health facilities	Health Facilities with national manual for surveillance	Capacity to transport specimens to a higher level lab?	have guidelines for specimen collection, handling and transportation	fully employed focal person On PHEM
1	Zonal Health Department (n=1)	1(100%)	1(100%)	1(100%)	2(100%)
2	Woreda Health office(n=12)	6(100%)	6(100%)	4(67%)	3(50%)
3	Health center (n=6)	5(83%)	6(100%)	2(33%)	67%
4	Health Post(n=12)	4(33%)	NA	NA	NA

Table-3 .1.8: Three month Data Reporting System in East Wollega zone- Oromia Region from June 6-21/2013

Name of woreda	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40	Week 41	Week 42	Week 43	Week 44	Week 45	Week 46	Week 47	Expected	Total Reported	Completeness
	17	6	6	6	7	7	7	7	7	7	8	8	8	204	85	42
G/Gida	37	29	35	35	33	33	35	33	33	35	53	35	29	444	417	94
Sasiga	50	47	47	50	50	50	50	49	49	50	47	50	50	600	589	98
Digga	29	16	19	15	15	17	19	22	12	19	18	16	22	348	211	61
Gidda Ayana	53	39	28	28	33	28	23	27	26	32	35	25	27	636	350	55
Kiramu	36	28	30	32	26	31	30	31	28	27	30	31	33	432	356	82

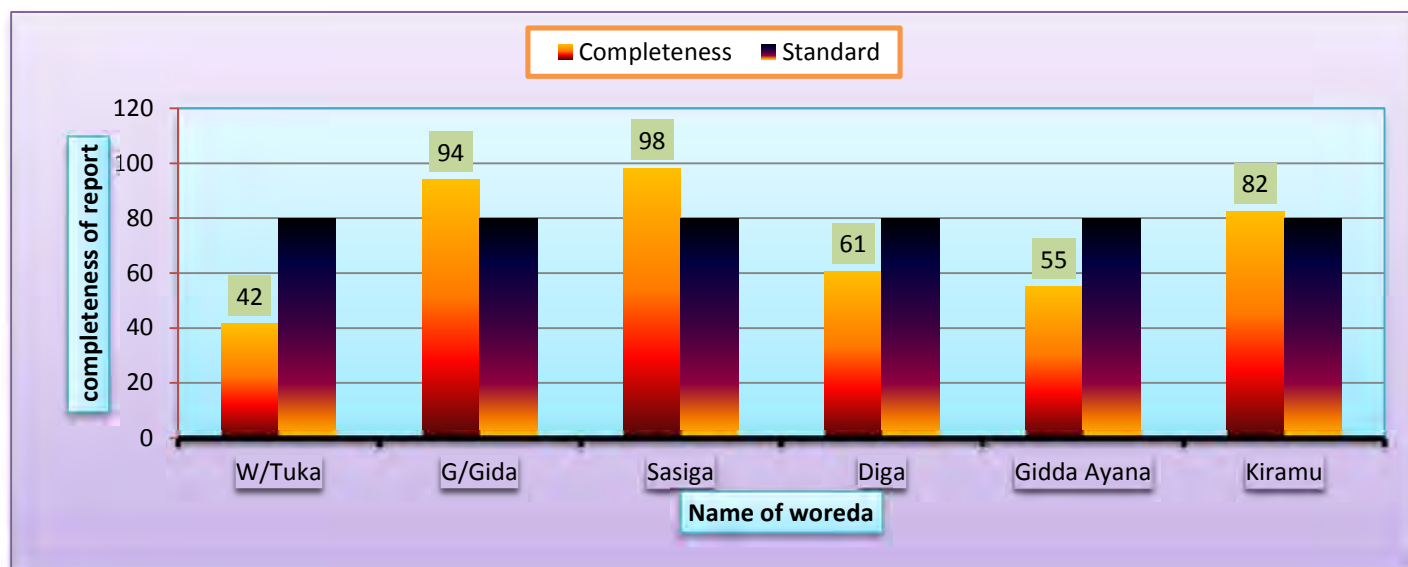


Figure 3 .1.5. Graph indicating report completeness in the selected woreda in east Wollega zone the last three month in 2013

As everyone looks in the chart above the Woreda reporting completeness varies with high gap. Completeness of reporting has been varied from 42% in Wayu Tuka to 98% in Sasiga Woreda across the Woreda in the past three month from WHO Epidemiologic week 35 to 46.

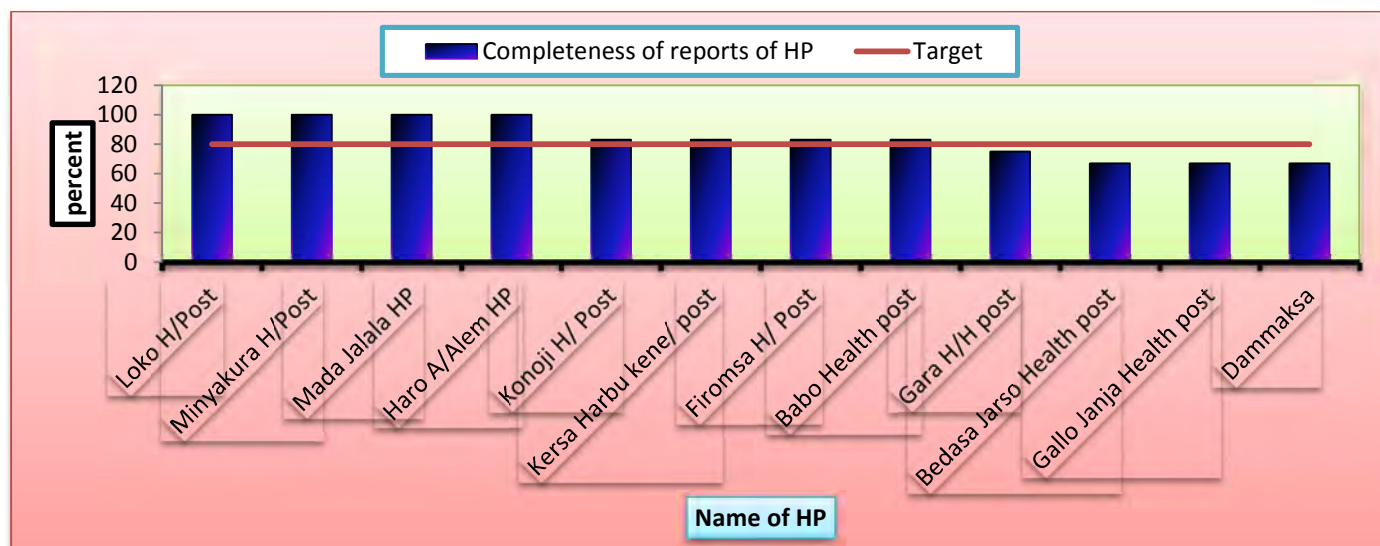


Figure 3 .1..6. Completeness of Health post in the past three month in East Wollega zone-Oromia region June 2013

3.1.4.4 Reporting

Even though reporting format is prepared and distributed at central level, there was shortage of reporting form in 4(16%) visited health post in the past 6 months. Due to this reasons those health facilities used manually prepared reporting format other than distributed forms from the center for weekly reporting in the health post.

In the 21(84%) of the Health facilities, there was no shortage of appropriate surveillance forms in the past six months in zone. All the reporting sites collect the immediately and weekly reportable cases using weekly reporting format on weekly basis and all health facilities have a remain of copy of reported cases for administrative and other official purpose. The reports were sent to the next higher level via hard copy and telephone. Zero reporting is one of the main criteria in the surveillance. From 25 health facilities visited 22(88%) of reports in all study units clearly indicted zero report. However, Only 3(12%) of the health posts did not indicate a zero report. They report as blank space report in the last three months.

Table-3.1. 9 :completeness of reports in the health post in the past three month in East Wollega zone, Oromia, June 2013

Line	Name of Woreda	Name of Health post	Expected report	Number of reports reported in the past three month	Completeness of reports of
1	Guto Gidda	Loko Health Post	12	12	100
2	Gidda Ayana	Konoji Health Post	12	10	83
3	Wayu Tuka	X health post	12	9	75
4	Sasiga	Bedasa Jarso Health post	12	8	67
5	Gidda Ayana	Kersa Harbu kene health post	12	10	83
6	Wayu Tuka	Minyakura health post	12	12	100
7	Sasiga	Gallo Janja Health post	12	8	67
8	Digga	Dammaksa	12	8	67
9	Digga	Firomsa Health Post	12	10	83
10	Guto Gidda	Mada Jalala	12	12	100
11	Kiramu	Babo Health post	12	10	83
12	Kiramu	Haro Addis Alem	12	12	100

*****The report of those respective HP was collected from nearby linked health center.***

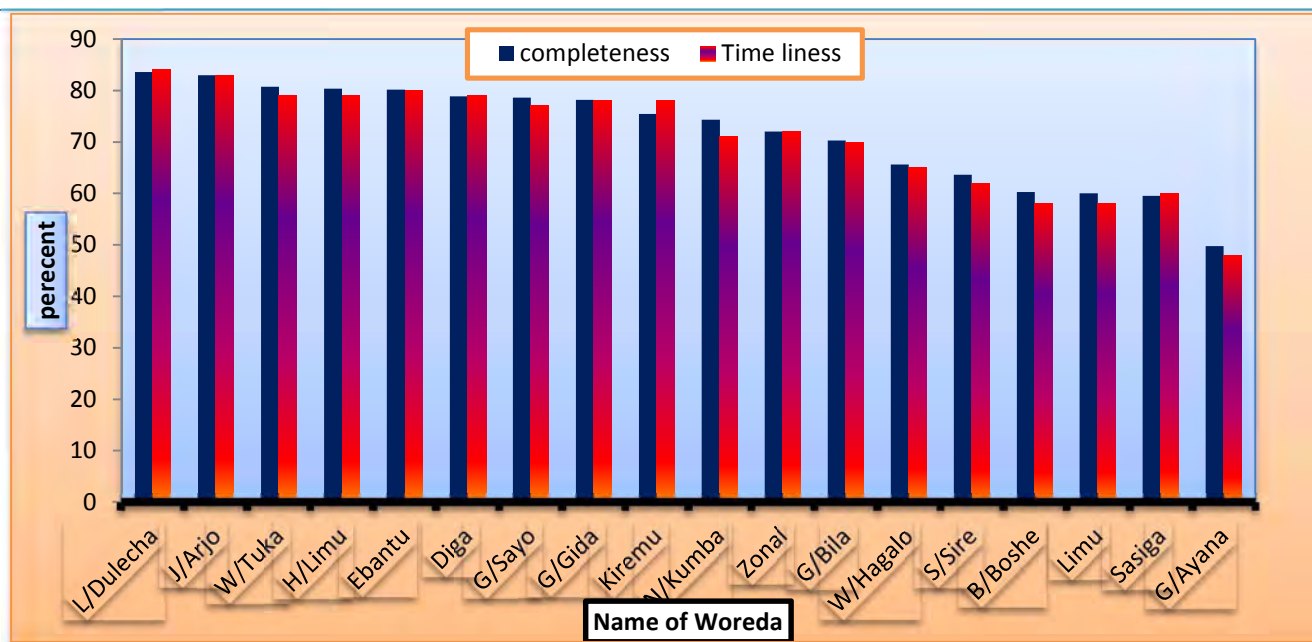


Figure 3.1. 7: Percentage distribution of woreda's completeness and timeliness in East Wollega zone Oromia region June 2013

** The Woreda's completeness and timeliness was collected from the zonal PHEM department



Figure 3.1. 8 : Percentage distribution of woreda's completeness and timeliness in East Wollega zone Oromia region in last three month, June 2013

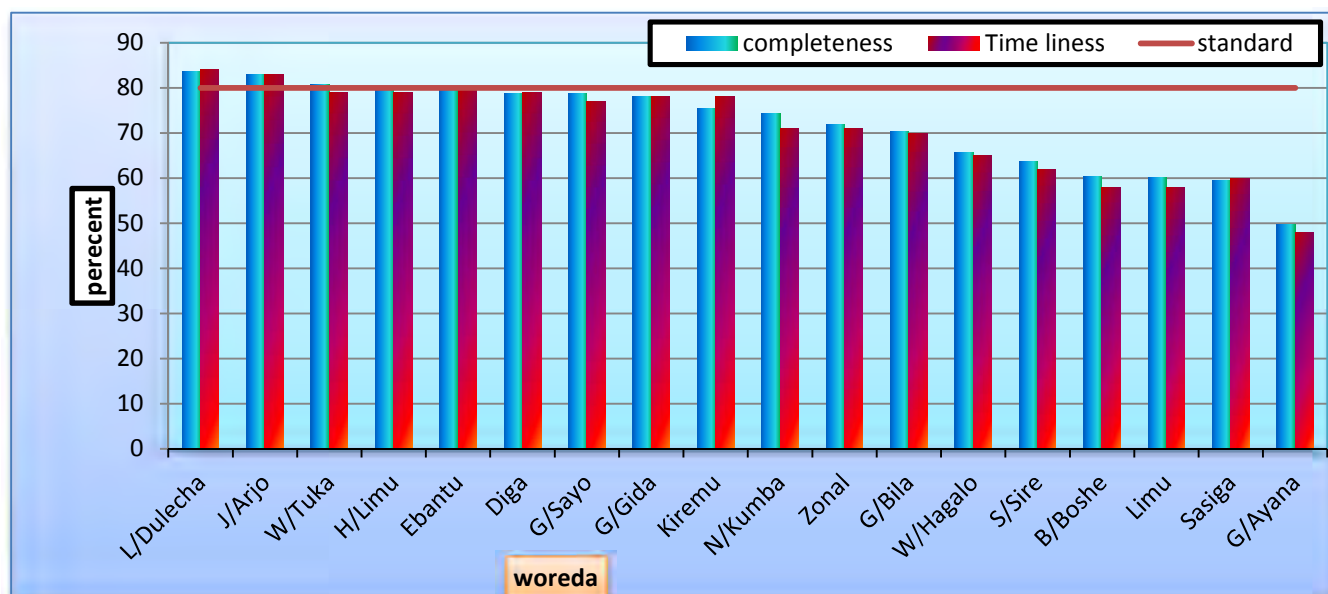


Figure 3 .1.9: Percentage distribution of Zonal completeness for 2012/2013 East Wollega zone Oromia region, June 2013

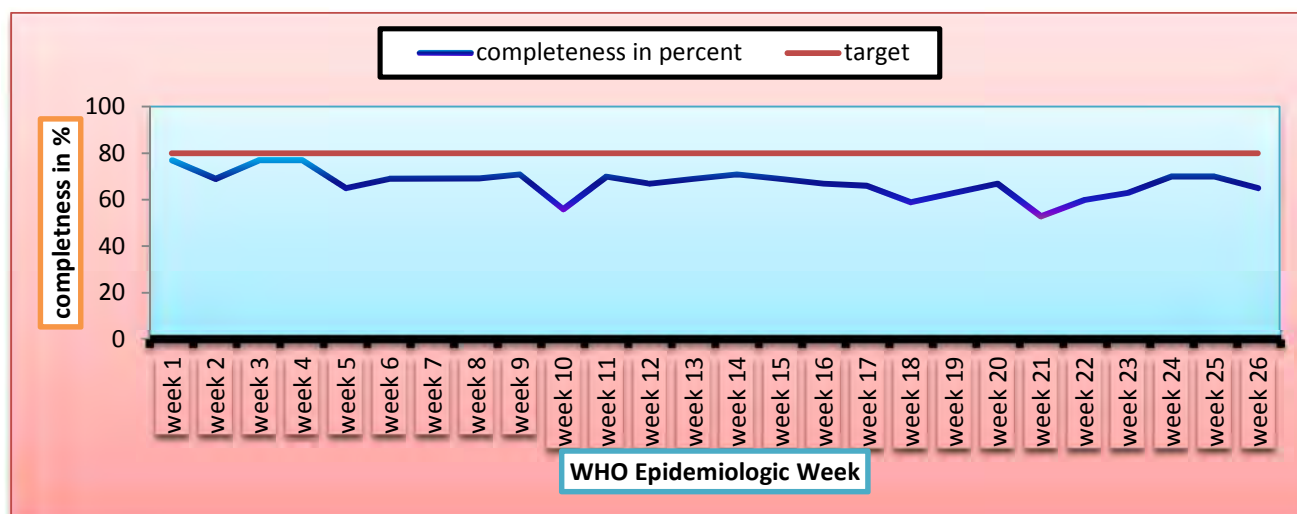


Figure 3.1. 10: Trend of completeness of Oromia Region the last six month for WHO week 1-26/2013 June 2013

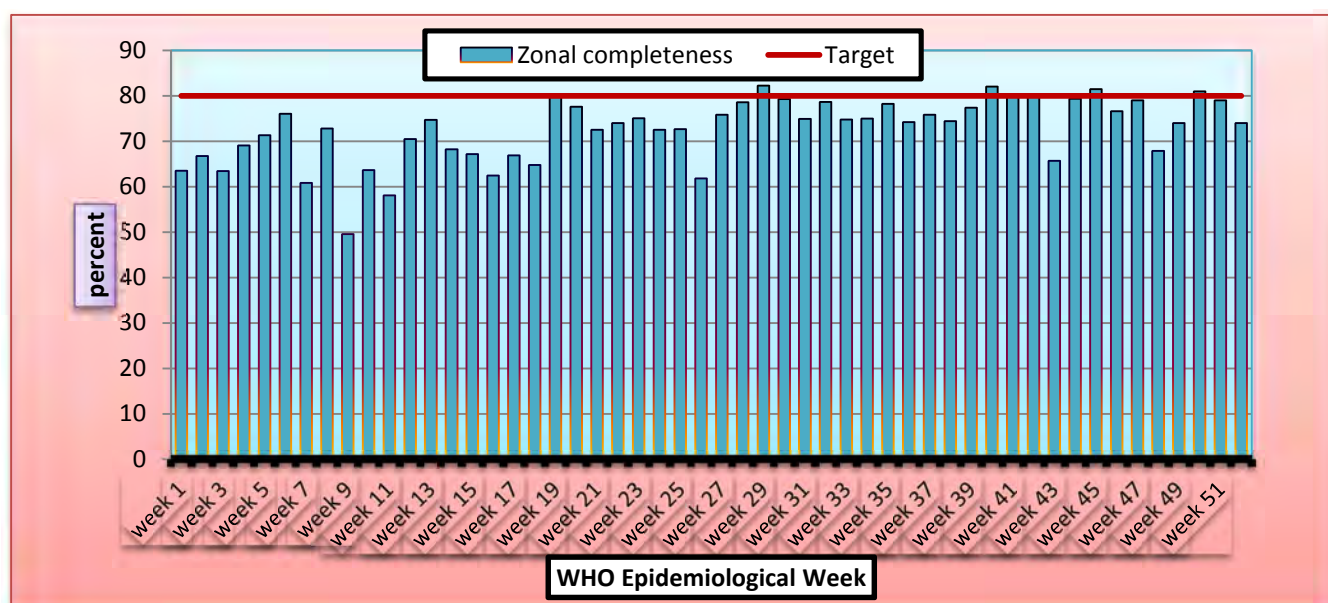


Figure 3 .1.11: East Wollega Zone Report Completeness of 2012/2013(2005 E.C) Oromia Region June 2013

Table-3.1. 10: Reporting Rates by Health Facilities in The past Six month of 2012/2013 In East Wollega Zone, Oromia Region, June 2013

WHO Epid. Week	H/Post	HC		Hospital		NGO HF		Others		
	**No	*R	**No	*R	**No	*R	**No	*R	**No	*R
28	288	211	51	39	1	1	7	6	140	34
29	288	225	51	45	1	1	7	6	140	27
30	288	214	51	46	1	1	7	4	140	26
31	288	238	51	46	1	1	7	6	140	27
32	288	245	51	47	1	1	7	4	140	28
33	288	252	51	48	1	1	7	3	140	48
34	288	201	51	41	1	1	7	1	140	30
35	288	242	51	49	1	1	7	6	140	37
36	288	166	51	37	1	1	7	4	140	34
37	288	206	51	42	1	1	7	4	140	43
38	288	188	51	38	1	0	7	3	140	34
39	288	232	51	47	1	0	7	5	140	43
40	288	251	51	49	1	1	7	4	140	49
41	288	248	51	50	1	1	7	4	140	37
42	288	247	51	46	1	1	7	1	140	45
43	288	224	51	49	1	1	7	6	140	33
44	288	240	51	51	1	1	7	1	140	31
45	288	228	51	48	1	1	7	3	140	50
46	288	257	51	53	1	1	7	4	140	45
47	288	274	51	54	1	1	7	3	140	59
48	288	259	51	52	1	1	7	4	140	50
49	288	254	51	54	1	1	7	3	140	57
50	288	259	51	54	1	1	7	1	140	63
51	288	261	51	47	1	1	7	4	140	53
52	288	251	51	51	1	1	7	6	140	52
1	288	184	51	46	1	1	7	6	140	75

** No is number of report expected per Week, *R is number of reported during the week.

**This data was taken from the zonal PHEM department

Table-3 .1.11: Reporting Rates and completeness by Government and Non- Government health facilities in the past Six month of 2012/2013 in East Wollega Zone, Oromia Region, June 2013

WHO Epi. Week	total Expected	Total report	complete ness	Gov't expected	Gov't Reported	Completeness	NGO and private Expected	NGO and private reported	NGO and private Completeness
28	487	291	60	340	251	74	147	40	27
29	487	304	62	340	271	80	147	33	22
30	487	291	60	340	261	77	147	30	20
31	487	318	65	340	285	84	147	33	22
32	487	325	67	340	293	86	147	32	22
33	487	352	72	340	301	89	147	51	35
34	487	274	56	340	243	71	147	31	21
35	487	335	69	340	292	86	147	43	29
36	487	242	50	340	204	60	147	38	26
37	487	296	61	340	249	73	147	47	32
38	487	263	54	340	226	66	147	37	25
39	487	327	67	340	279	82	147	48	33
40	487	354	73	340	301	89	147	53	36
41	487	340	70	340	299	88	147	41	28
42	487	340	70	340	294	86	147	46	31
43	487	313	64	340	274	81	147	39	27
44	487	324	67	340	292	86	147	32	22
45	487	330	68	340	277	81	147	53	36
46	487	360	74	340	311	91	147	49	33
47	487	391	80	340	329	97	147	62	42
48	487	366	75	340	312	92	147	54	37
49	487	369	76	340	309	91	147	60	41
50	487	378	78	340	314	92	147	64	44
51	487	366	75	340	309	91	147	57	39
52	487	361	74	340	303	89	147	58	39
1	487	312	64	340	231	68	147	81	55

3.1.4.5 Data Analysis

Zonal and Woreda health offices as well as health facilities were analyzing surveillance data (Table 10). The zone analyzes data in terms of time, place, person and also perform trend analysis for malaria, Measles and AFP. However, from 6 investigated Woreda 2(33%), 3(50%), 1(16%) of them describe data in terms of place, time, person and 6(100%) perform trend analysis for malaria, measles and AFP. There was no meningitis cases reported in the Woreda in the studied area. Majority of Woredas did not describe data by time place, person and diseases over time. Moreover, zonal health department have an action threshold for epidemic monitoring system. When come to the woreda level and health facilities, only a single Woreda have both alert and action threshold level for epidemic management system. However, the rest five Woreda and the health facilities (health center and health post) did not have any document expressing alert and action threshold lever for early detection of an outbreak. It is expressed well. (See table 10).

Table-3.1. 12: Number of sites analyzing surveillance data in East Wollega Zone Oromia region 2012/2013

Serial Number	Name Of Health Facility	Described By Place	Described by time	Described by time	Perform trend Analysis	Have an action threshold
1	Zonal(n=1)	1(100%)	1(100%)	1(100%)	1(100%)	1(100%)
2	Woreda(n=6) Health	2(33%)	3(50%)	1(16%) 1(16%)	6(100%)	1(16%)
3	Center(n=6) Health	2(33%)	1(16%)	1(16%)	2(33%)	0
4	Post(n=12)	1(8%)	3(25%)		3(25%)	0

3.1.4.6 Epidemic preparedness and Response

Three suspected malaria outbreaks were observed in the zone in last year of which two of them were in our study area. All the suspected outbreaks were not investigated. Regarding to Epidemic preparedness for potential epidemic control mechanism activities only 2(33%) of the visited Woreda were with epidemic preparedness and response plan while the rest 4(66%) of the Woreda were without epidemic preparedness and response plan. 6(100%) of the visited site has an Epidemic management committee, however none of the observed Woreda epidemic

management committee evaluated their plan and preparedness. There was no data indicating epidemic management committee evaluated their plan accordingly in all visited Woreda. 5(83%) of the Woreda has RRT committee while according to our Observation Sasiga Woreda were the only Woreda without RRT. Concerning to emergency stock of drugs and supplies in the Woreda only one Woreda reported as a shortage of supplies in the last 1 year.

Table-3.1. 13: Woreda and zone health office epidemic preparedness in Oromia region - East Wollega Zone 2012

S/No	Variables	Woreda (n=6)	Zone (n=1)
1	Availability of emergency stocks of drugs and supplies %	(5)83%	1(100%)
2	Epidemic Management committee	6(100%)	1(100%)
3	Health Facility with plan for Epidemic	2(33%)	1(100%)
4	Experienced shortage of drugs during recent epidemic	(1)83%	0
5	Presence of budget line for epidemic response %	0	1(100%)
6	Have you ever conducted an outbreak	(4)67%	1(100%)
7	Establishment of Rapid Response team committee(RRT)	6(100%)	1(100%)

3.1.4.7 Feedback:

Providing regular feedback to healthcare providers and others who report cases of vaccine-preventable diseases reinforces the importance of participating in public health surveillance. Feedback should be timely, informative, interesting, and relevant to the provider's practice.

Feedback is an important element of all surveillance systems. 5(42%) of observed health post in the zone has no feedback at all during the year. However, 1(8%) and 4(33%) receives one and 2 feedback reports respectively and the rest 2(17%) receives more than 3 feedback reports in the previous year respectively. Similarly except one all woreda health office also provides feedback to health center on routine surveillance and the overall activities of the health center. Likewise, the Zonal Health office also delivers feedback report for respective Woreda health office on quarterly basis. I observed hard copy report feedback sent by zonal PHEM department in the respective Woreda to realize evidence based report.

3.1.4.8 Supervision

From 25 health institution observed 21(84%) of them take supervision from higher level, however 2(8%) and 2(8%) of the health posts and Woreda didn't took any supervision in the last 6 months on the surveillance activities and integrated supportive supervision from the higher officials respectively.

3.1.5. Supporting Functions of Surveillance System

3.1. 5.1 Communication facilities

In order to support the function of reporting, appropriate and effective medium for communication at each level is advantageous for early detection of outbreak of diseases. In this regard 6(100%) Woreda, 6(100%) Health center, 10 (83%) of health posts and 1(100%) zone offer report with telephone. on the other hand, 2(17%) of the health post sent their report to linked health center with hard copy. In another way round only 10(83%), 4(67%) and 2(33%) of the Health post, Health center and Woreda sent their report to their respective higher level with hard copy respectively.

Table-3 .1.14 Important logistics and means of reporting system in six Woreda of East Wollega zone Oromia region 2013

Serial Number	Data management & logistics resource the Woreda	Frequency (n=6)	Percent
1	Telephone	6	100.00 %
2	Calculator	5	83.33 %
3	Stationary	5	83.33 %
4	computer	4	66.67 %
5	motor cycle	4	66.67 %
6	printer	4	66.67 %
7	Ambulance	2	33.33 %
8	Hard Copy	1	16.67 %
9	Mail	1	16.67 %
10	Bicycle	0	0.00 %
11	Electronic	0	0.00 %
12	Fax	0	0.00 %
13	Radio	0	0.00 %
14	statistical package	0	0.00 %

3.1.5.2 Resource

Resources for data management, communication, and other logistics were comparatively available at the Zonal level. However, they all became limited down in the hierarchy. 2(33%) of the Woreda have only a single computer for overall office activities in the health office. In addition to this none of the woreda public health emergency management focal person has their own computer for effective data management and analysis. similarly, 2(33%) of health center were without any computer. the rest health facilities were have a gap of computers skill for data analysis and interpretation. 2(33%) of the Woreda were with Vehicle/ambulance in the visited six woreda's the rest were without any emergency management transportation. The logistic and budget constraints were complained by all health institution in the respective woreda's.

3.1.5.3 Training

Conduct training on disease surveillance, outbreak investigation, Surveillance data analysis and response is the back bone for early detection and confirmation of the cases, consequently 2(100%) of health personnel in zone get training on public health surveillance system. Whereas, 6(100%) and 5(83%) of the Woreda and health center was already get training on surveillance system respectively. While the HEWs in the health post did not got any training regarding to some of the components of surveillance but the woreda focal person responded that all Extension workers in all site get integrated refreshment training (IRT) including Public health surveillance system.

3.1.6.4 Description of Quality and attributes of surveillance system

3.1.6.4.1 Simplicity

The simplicity of a public health surveillance system refers to both its structure and ease of operation. Surveillance systems should be as simple as possible while still meeting their objectives. To apply and understand the case definitions diseases of Public Health Emergency management are simple for all level of health workers. In terms of implementing the system, the amount and type of information collected, ease of collection, compilation, analysis, reporting, and ease of using the reporting format should all be understandable while analyzing the data for action is not highly implemented in the respective woreda's.

3.1.6.4.2 Flexibility

The format can accommodate enough types of disease and still possible to add new disease in it as well to discard and to report other new cases and also possible for modification of the reporting frequency, requirement needs, etc all occurred without difficulty in visited health unit in the zone .

3.1.6.4.3 Acceptability

Acceptability of a system is a reflection of the willingness of the Public Health emergency staff to implement the system from the zonal to the grass root level. The zonal focal person told me that all immediately and weekly reporting cases reported on weekly bases. In addition the zonal health office also reports this to the regional health bureau accordingly. Case definition, tools, and data were acceptable to all stakeholders. The flow of data was clearly indicated, quarterly feedback to Woredas level, and health facilities. Good data utilization at zonal level was observed from the available trend analysis. All the respondents understood the system's objective and operation. Thus, the system was acceptable.

3.1.6.4.4 Representativeness

Representativeness refers to the degree to which the reported cases reflect the occurrence and distribution of all the cases in the population under surveillance. Geographical representativeness and health service physical accessibility in the zone is particularly greater important in an early warning system to ensure detection of outbreaks nationally notifiable diseases. In addition it is related to the potential health service coverage of visited Woredas in the zone was above 85-100%, provide that the surveillance system in zone was representative.

3.1.6.4.5 Stability

Refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system. I tried to assess the stability of the system related to the budget needed to undertake, the human resource employed, sufficient amount of the time required for the system to collect or receive data, run the data including collate, analyze and interpreted storage and release of the data. Even though, the budget allocated for the public health emergency management was not adequate to run all the necessities activities in the PHEM at all level the public health emergency focal person was strongly committed to strengthen and continuous the whole system without any interruption.

3.1.6.4.6. Timeliness and completeness

Timeliness of the public health surveillance is usually considered that time interval between the onset of health-related event and the reporting of the event to the public health agency responsible for immediate control effort, prevention of continued exposure or program planning. The weekly reporting rate (completeness) of the woreda in the zone in 2005 EFY were 72% which were below the regional target. However, the Achievement of report completeness of five Woreda's in the zone were more than the regional target in 2005 EFY. Among them Leka-Dulecha and Jimma Arjo scored the highest reporting completeness with coverage of 84% and 83% respectively. Even though, Gidda Ayana and Sasiga Woreda has the highest target population under surveillance, they underscore the lowest completeness of 50% and 60% respectively in 2005EFY.

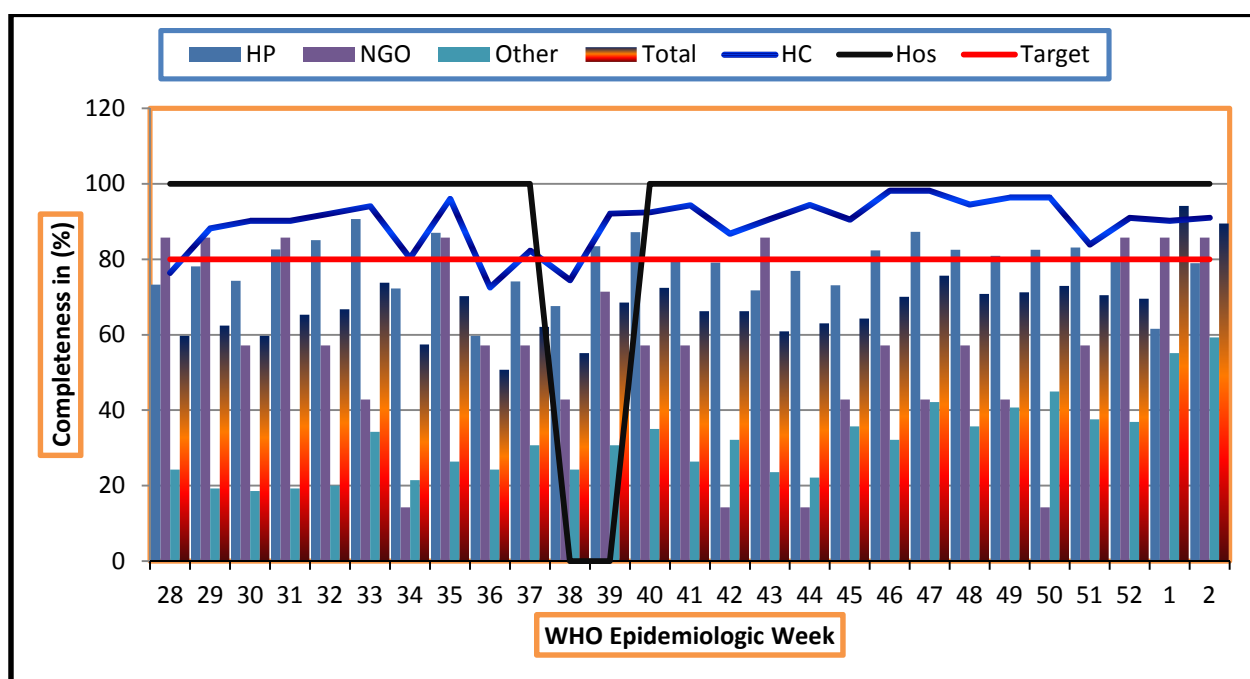


Figure 3.1. 12: Reporting Completeness trend by Health Facilities in the Past six month of 2012/2013, in East Wollega Zone, Oromia 2013

3.1.6.4.5 Sensitivity and Posetive Predictive Value

Sensitivity can be well thought-out on at least two levels I) at the level of case reporting, it refers to the proportion of cases of a diseases or event detected by the system. ii) It can refer to the ability to detect outbreaks over time. Assuming that reporting cases through public health

surveillance system were correctly classified accordingly, it is possible to estimate it because sensitivity primary emphasis on the proportion of total number of cases in the population under surveillance being detected by our system. However, the measurement of sensitivity requires a collection of or access of data usually external to the system to determine the true frequency of the condition and validation of data collected by the system. For this reason, it is difficult to calculate the exact value of sensitivity and predictive value Positive from the existing data.

3.1.7. Discussion

Surveillance activities are critical to detect nationally identified diseases and gaining information to help control or address a new problem. 25 health institutions were observed during our visit. From this 16(64%) of the health institution were with a comprehensive public health emergency management surveillance guideline, However the rest 9(36%) were without any standard guidelines for implementing surveillance system. Most of the health facilities without the manual were health posts. For this reason, providing and updating new versions of surveillance guidelines for health facilities are mandatory for ease implementation of the system.

Providing regular feedback to healthcare providers and others who report cases of National Notifiable Diseases Surveillance System reinforces the importance of participating in public health surveillance. Feedback should be timely, informative, interesting, and relevant to the provider's practice [10]. Regarding to the interlink between the feedback reports delivered in the zone from the higher officials was not uniform across the health facilities and also varies across the Woreda. 5(42%) of observed health post in the zone has zero feedback during the year. However, 1(8%) and 4(33%) receives one and 2 feedback reports respectively. The rest 2(17%) receives more than 3 feedback reports in the previous year respectively. Even though there were a feedback reports in some health facilities there is no follow up of implementation for action by the higher level. In all Observed health facilities, Public Health Emergency management core processes were not well integrated with the rest of the department for offering integrated supportive supervision. Moreover, supportive supervision should be strengthened for health facilities with low infrastructure and hard to reach area, because 4(16%) of the health facilities were not get any supportive supervision in the past 6 month.

Malaria still remains one of the most important parasitic diseases of the developing world although it is known to human kind since ancient times in different forms [11]. Similarly, this data also revealed that malaria was a serious health problem both as region and as East Wollega zone.

From the data collected confirmed malaria cases in 2005 EFY was increased by 72% from that of 2004 EFY in Oromia Region. Similarly, in East Wollega zone malaria was increased by more than 2.5 fold in 2005 EFY than previous year. This indicates the increment load of malaria as a region and as zone too. Even though different malaria control strategies were designed to rollback to its lowest level, the malaria cases were not decreased as expected that the incidence rate of total malaria and confirmed malaria cases would be not only high but also rising from all through 2004 to 2005 EFY. Therefore, the Region in collaboration with the respective zonal health department should evaluate again their impact and success of the program intervention the reason why the malaria incidence rate was elevated from time to time unless otherwise this will be a threat for the community in the future. When we compare the regional and zonal completeness, it was 68% and 72% respectively. In addition to this it showed improvement as a region but decrement in the zone in the current year. It was 53.6% and 81.9 % in the region and in zone respectively in 2004 E.C. From those health facilities reporting to the regional level the private and NGO has the least reporting completeness which accounts for 33% as region and 54.4% in east Wellega zone in 2005 E.C. When we compare the reporting completeness by the health facilities in the past 6 month by WHO Epidemiological Week 28/2012 to Week 2/2013 the Hospital achieved the highest percent 93%,where as the private clinics sent the lowest report(32%). The rest health facilities NGO, Health Post and Health Center was 57%,78% and 90% respectively. From this result it varies from time to time, from place to place. Still reporting completeness is continuous to be under national target. This has an impact on decrement of number of cases reported by system. Special Concern Should be given for private health sector because their reporting rate was not only below the target, but also it is below 50%.Therefore all concerned bodies should actively work on it to minimize the gap between reporting completeness.

3.1.8. Conclusion

Even though the public health surveillance system (PHEM) in our country is young , the way of reporting, case detection , supportive supervision and feedback delivery system, communicating both in horizontal and vertical direction(chain of command), outbreak investigation , monitoring and evaluation of the surveillance system is well established and shows a great improvement from regional to grass root level. However, still there is a long journey between where we are and where we are going to be. With a simple instance, the regional completeness and east Wellega zone completeness of 2005 EFY is respectively is 68% and 72% which shows us we were running below the initial desired level of performance (target). Therefore to arrive at our vision all stakeholders including community, governmental and Non-governmental framework should proactively participate to minimize the gap in the public health surveillance system to achieve the maximum goals. Rapid Response Teams (RRTs) are the right hand of the epidemic management committees established in all over the Woreda and the zonal health office as well. However, not operational at all levels therefore need to be reactivated. Conduct training on disease surveillance, outbreak investigation, Surveillance data analysis and response for newly assigned focal persons and health extension worker is the cornerstone for early detection and confirmation of the cases .As well also there is a gap on training of basic computer skills in all focal persons how to analyze and interpret data on timely basis for immediate actions so train is mandatory.

3.1.8. Limitation of the Study:

- We use the secondary data/source.
- The data of the health post was not representative the fact that smaller sample size was taken due time constraints and resource scarcity during the study period.

3.1. 9. Recommendation:

Monitoring and evaluation, supervision and delivering feedback should be strengthening at all levels at all time which desire special consideration. Besides the woreda administration office in collaboration with different stakeholders should give priority for budget allocation for public health emergency management system. The zonal and woreda health office should be given special concern on weekly and immediately reportable diseases to improve the completeness and timeliness. Refreshment training on describing data by place, person, time and performing data analysis in all level should be given priority area to secure early detection and immediate action of outbreak. The zonal health office and Woreda health office should integrate their supervision, giving feedback to all health facilities to keep the reporting time and also ensure data documentation at different levels using electronic and other modern technologies for easy access and fasten communications. The Woreda health office and the health center should continuously support and update the private clinics (the underscored area which need special attention) in every aspect of the system to accelerate and activate the public health surveillance system as a wholesome.

3.1.10. References

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Annex 3.1.1. Surveillance system evaluation Questionnaire of 2013

I. Regional /Zonal Level/Woreda/Health facility Questionnaire

Background Information of Region/Zone

1. Name of Region/Zone_____
2. Number of Zone/Woreda:_____ 1. Total_____ 2. Urban_____ 3. Rural_____

I. Availability of a National Surveillance Manual

1. Is there a national manual for surveillance?
1. Yes 2. No 3. Not applicable 4. Unknown
2. If yes, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

3. Is surveillance/IDSR included in the annual health plan (EFY 2005) of the zone/Region?
1. Yes 2. No

II. Case Detection and Registration

4. Do you have standard case definitions for the Country's priority diseases like Meningitis, AFP /polio, malaria, Meningitis Neonatal tetanus and measles? (Observed the standard case definition for each priority disease)

III. 1. Yes 2. No 3. Unknown 4. Not applicable

IV. Data reporting

5. Is the Zone /region responsible for providing surveillance forms to Woreda/Zones? 1. Yes 2. No 3. Unknown 4. Not applicable
6. If yes, is there shortage of appropriate surveillance forms at any time during the last 6 months?
7. 1. Yes 2. No 3. Unknown 4. Not applicable
8. What are the reporting units for the surveillance system?
1. Public health facilities

2. NGO health facilities
 3. Military health facilities
 4. Private health facilities
 5. Others_____
9. Number of Zonal/Woreda reported (either directly or through an intermediate level) received each reporting period at the regional/zonal level during the past 3 months:
Number of reports in the last 3 months compared to expected number
- Weekly: _____ /12 times the number of Woredas
Immediately: _____ /----- times the number of Woredas
10. On time (use national deadlines)
Number of weekly reports received on time: _____ /12 times the number of Woredas
11. Was there any report of the immediately reportable diseases in the past 1 month?
1. Yes
 2. No
12. If yes, with in what time is the report received after detection of the case/ diseases?
1. Less than 1 hour
 2. 2-24 hour
 3. 1- 2 days
 4. 3- 7 days
 5. After 1 week
13. Means of reporting to next level by:
1. E-mail
 2. Telephone
 3. Fax
 4. Radio

V. Data analysis

Does the regional level/Zonal Level

14. Describe data by person (case based, outbreaks, and sentinel)? Observed description of data by age and sex:
1. Yes
 2. No
 3. Unknown
 4. Not applicable
15. Describe data by place? Observed description of data by Woreda (tables, maps)
1. Yes
 2. No
 3. Unknown
 4. Not applicable
16. Describe data by time? Observed description of data by time:
1. Yes
 2. No
 3. Unknown
 4. Not applicable

17. Perform trend analysis? Observed line graph of cases by time

1. Yes 2. No 3. Unknown 4. Not applicable

18. List disease(s) for which line graph is observed

19. Have an action threshold defined for each priority disease? (Meningitis, Measles, AFP/polio, malaria)

1. Yes 2. No 3. Unknown 4. Not applicable

20. Who is responsible for the analysis of the collected data? _____

21. How often do you analyze the collected data?

1. Daily
2. Weekly
3. Every 2 weeks
4. Monthly
5. Quarterly
6. As needed.....

22. Have appropriate denominators? Observed presence of demographic data (E.g. population by Woreda and hard to reach groups)

1. Yes 2. No 3. Unknown 4. Not Applicable

VI. Outbreak Investigation

23. Number of outbreaks suspected in the past year: _____

24. List the diseases: _____

25. Of those, number of investigated outbreak: (Observe reports & take copies)

26. Number of outbreaks in which risk factors were looked for: _____

27. Number of outbreaks in which findings were used for action: [Observe report] _____

28. Number of Woredas that looked for risk factors [observe in reports]

29. Number of Woredas that used the data for action [observe in final report]

VII. Epidemic preparedness(relevant for epidemic prone diseases)

30. Does the Region/Zone have a written emergency preparedness plan for any of the outbreak disease relevant to the area? (Observed a written plan)

1. Yes 2. No 3. Unknown 4. Not applicable

31. Existence of emergency stocks of drugs, vaccines, and supplies at all times in past 1 year:

Has the region/Zone had emergency stocks of drugs, vaccines, and supplies at all times in past 1 year?

1. Yes 2. No 3. Unknown 4. Not applicable

32. Has the Region/zone experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)?

1. Yes 2. No 3. Unknown 4. Not applicable

33. Do you have a standard case management protocol for Meningitis, Malaria, AFP (polio), measles (Observed the existence of a written case management protocol for at least 1 priority disease)

1. Yes 2. No 3. Unknown 4. Not applicable

34. If yes, list:_____

35. Is there a budget line for epidemic response?

1. Yes 2. No 3. Unknown 4. Not applicable

36. Is there a regional/Zonal epidemic management committee? Observed minutes (or report) of meetings of epidemic management committee

1. Yes 2. No 3. Unknown 4. Not applicable

37. Does the region/Zone have a rapid response team for epidemic?

1. Yes 2. No 3. Unknown 4. Not applicable

VIII. Response to epidemics

38. Does the region/Zone respond within 48/24 hours of notification of most recently reported outbreak: Observed that the region/zone responded within 48 hours of notification of most recently reported outbreak (from written reports with trend and intervention)

1. Yes 2. No 3. Unknown 4. Not applicable

39. Has epidemic management committee evaluated its preparedness and response activities during the past year (Observe written report to confirm)?

1. Yes 2. No 3. Unknown 4. Not applicable

IX. Feedback

40. How many feedback reports has the regional/zonal level produced in the last year?
Observed the presence of a report that is regularly produced to disseminate surveillance data

1. Yes 2. No 3. Unknown 4. Not applicable

X. Supervision

41. How many supervisory visits have you made in the last 6 months? _____

Obtained required number of visits from regional/zonal level _____

42. The most usual reasons for not making all required supervisory visits. (Text)

XI. Training

43. What percent of your subordinate personnel have been trained in surveillance?

44. Have you been trained in disease surveillance?

1. Yes 2. No 3. Unknown 4. Not applicable

45. If yes, specify when, where, how long, by whom?

XII. Resources

Percent of sites that have:

46. Data management

Computer	1. Yes	2. No	3. Unknown	4. Not applicable
Printer	1. Yes	2. No	3. Unknown	4. Not applicable
Photocopier	1. Yes	2. No	3. Unknown	4. Not applicable
Data manager	1. Yes	2. No	3. Unknown	4. Not applicable
Statistical package	1. Yes	2. No	3. Unknown	4. Not applicable

47. Communications

Telephone service	1. Yes	2. No	3. Unknown	4. Not applicable
Fax	1. Yes	2. No	3. Unknown	4. Not applicable
Radio call	1. Yes	2. No	3. Unknown	4. Not applicable
Satellite phone	1. Yes	2. No	3. Unknown	4. Not applicable

XIII. Surveillance

48. Do you have a computerized surveillance network at this level?

1. Yes 2. No 3. Unknown 4. Not applicable

49. Is there a budget source for surveillance in the Regional/zonal level?

1. Yes 2. No 3. Unknown 4. Not applicable

50. If yes, what is the proportion: % _____

51. How could surveillance be improved? (Opportunities for strengthening surveillance)

XIV. Surveillance Co-ordination

52. Is there a focal unit for surveillance at the regional/zonal level? [Observe organo-gram to confirm]

1. Yes 2. No 3. Unknown 4. Not applicable

53. What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)?

XV. Questionnaire for Attributes and level of Usefulness in 2012

54. What is the incidence / Prevalence of priority disease in your area

S/ N	Diseases	2008		2009		2010		2011		2012	
		cas e	Deat h	Cas e	Deat h	cas e	Deat h	cas e	Deat h	cas e	Deat h
1	Meningitis										
2	Malaria										
3	AFP										
4	Measles										

55. Does the surveillance system help for these selected priority diseases?

1. To detect outbreaks of these selected priority diseases early?

1. Yes 2. No

2. To estimate the magnitude of morbidity and mortality related to these diseases, including identification of factors associated with these diseases?

1. Yes 2. No

3. Permit assessment of the effect of prevention and control programs?

1. Yes 2. No

4. Interventions and diseases trends analyzed

1. Yes 2. No

XVI. Describe Each System Attributes:

I. Simplicity:

1. Is the case definition of Meningitis, malaria, AFP (polio), neonatal tetanus, Meningitis and measles easy for case detection by all level health professionals?
1. Yes 2. No
2. What are the organizations which need to receive reports of the surveillance data?
3. Do you feel that additional data collected on a case are time consuming?
1. Yes 2.No
4. How long it takes to fill the format? 1. <5 minute 2. 10-15minuts 3. >15 minutes
5. How long does it take to have laboratory confirmation of
 - A. MENINGITIS _____
 - B. Measles _____
 - C. AFP (Polio) _____
 - D. Malaria _____

II. Flexibility:

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?
1. Yes 2. No
2. Do you think that any change in the existing procedure of case detection, reporting, and formats will be difficult to implement?
1. Yes 2. No

Comment: _____

III. Data Quality: (Completeness of the reporting forms/and validity of the recorded data)

1. Are the data collection formats for these priority diseases clear and easy to fill for all the data collectors/ reporting sites?
1. Yes 2. No
2. Review the last months report of these diseases

- A. Average number of unknown or blank responses to variables in each of the reported forms

- B. Percent of reports which are complete(i.e. with no blank or unknown responses) from the total reports

IV. Acceptability:

1. Do you think all the reporting agents accept and well engaged to the surveillance activities?
 1. Yes
 2. No
2. If yes, how many are active participants (from the expected)? _____
3. If No, what is the reason for their poor participation in the surveillance activity?
 1. Lack of understanding of the relevance of the data to be collected
 2. No feedback / or recognition given by the higher bodies for their contribution; i.e. no dissemination of the analysis data back to reporting facilities
 3. Reporting formats are difficult to understand
 4. Report formats are time consuming
 5. Other

V. Representativeness:

1. What is the health service coverage of the zone/ region? _____%
2. Do you think, the populations under surveillance have good health seeking behavior for these diseases?
 1. Yes
 2. No

3. Do you think is well represented by the surveillance data?

1. Yes 2. No

VI. Stability:

1. Was the new BPR restructuring affect the procedures and activities of the surveillance of these diseases? 1. Yes 2. No

2. Was there lack of resources that interrupt the surveillance system? 1. Yes 2. No

WOREDA (INTERMEDI LEVEL) QUESTIONNAIRE

Identifiers

Assessment team_____

Woreda_____

Date_____

region/province_____

Interviewer _____

country_____

Respondent_____

surveillance system_____

Is the Woredas has available national surveillance manual?

1. Is there a national manual for surveillance at this site?

Obs Observe national surveillance manual:

Yes € No € unknown € Not Applicable €

I. Case confirmation

Is the Woredas has the capacity to transport specimens to a higher level lab

2. Does the Woreda have the capacity to transport specimens to a higher level lab?

3. Yes € No € unknown € Not Applicable €

4. Does the Woreda has fully employed woreda focal person On PHEM?

Yes € No € unknown € Not Applicable €

5. Does the Woreda have guidelines for specimen collection, handling and transportation to the next level?

Yes € No € unknown € Not Applicable €

II. Data reporting

6. Have you lacked forms recommended for the country at any time during the last 6 months?

Yes € No € unknown € Not Applicable €

7. Number of reports received in the last 3 months compared to expected number

Weekly: _____/12 times the number of health facilities

Immediately: _____/----- times the number of health facilities

On time (use national deadlines)

8. Number of weekly reports submitted on time: ____/12 times the number of health facility

9. Number of immediately reports submitted on time: _____/3 times the number of health facilities

10. Is the Woredas have means for reporting to next level?

How do you report:

a. Mail

b. Fax

c. Telephone

d. Radio

e. Electronic

f. Other

Strengthening reporting

11. How can reporting be improved?

III. Data analysis

12. I. Is the Woreda Describe data by person (case based, outbreaks, sentinel)

Obs Observed description of data by age and sex

Yes € No € unknown € Not Applicable €

13. Describe data by place

Obs Observed description of data by place (locality, village, work site etc)

Yes € No € unknown € Not Applicable €

14. Describe data by time

Obs Observed description of data by time

Yes € No € unknown € Not Applicable €

15. Perform trend analysis

Obs Observed line graph of cases by time

Yes € No € unknown € Not Applicable €

16. List:

17. Have an action threshold for each priority disease

Does the Woreda you have an action threshold for any of the country priority diseases?

Yes € No € unknown € Not Applicable €

18. If yes, what is it? _____cases _____% increase _____rate

(Ask for 2 priority diseases)_

19. Have appropriate denominators

Does the Woreda have demographic data at site (E.g. population <5 yr, population by village, total population)

20. Yes € No € unknown € Not Applicable €

21. Who is responsible for data analysis? _____

22. How often does the Woreda analyze the collected data?

- a.** Daily
- b.** Weekly
- c.** Every 2 weeks
- d.** Monthly
- e.** Quarterly
- f.** As needed

IV. Outbreak investigation

23. Does the Woredas were investigated outbreaks in the past 6 months?

Yes ☐ No ☐

Number of outbreaks suspected in the past 6 months: _____

Investigated _____?

have you ever conducted an outbreak investigation

Has your Woreda ever investigated an outbreak?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

V. Epidemic preparedness

24. have your Woreda a plan for epidemic preparedness and response?

(Obs) Observed a written plan of epidemic preparedness and response

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

25. have your Woreda have emergency stocks of drugs and supplies at all times in past 1 year?

Obs Observed the stocks of drugs and supplies at time of assessment

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

26. Has the Woreda experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

27. Is there a budget line or access to funds for epidemic response?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

28. Does your Woreda that have an epidemic management committee?

Obs Observed minutes (or report) of meetings of epidemic management committee

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

29. Does the Woreda have a rapid response team(RRT) for epidemics?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

VI. Responses

30. Does the Woreda implemented prevention and control measures based on local data for at least one reportable disease or syndrome?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

31. In how many time do you respond to Epidemic situation?

Obs Observed that the Woreda responded within 48 hours of notification of most recently reported outbreak (from written reports)

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

32. Does your Woreda achieved acceptable case fatality rates (e.g. 10% for Meningococcal CSM 1% for Cholera) during the most recent outbreak?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

Obs What was the case fatality rate for most recent outbreak ?(Observe from outbreak report)

33. Has epidemic management committee evaluated their preparedness and response activities during the past year? (observe written report to confirm)

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

VII. Feedback

34. Does the Woreda gives written feedback to the lower/higher level in the last year?

Yes ☐ unknown ☐ Not Applicable ☐

Obs Observed the presence of a written report that is regularly produced to disseminate surveillance data (Woreda and higher)

35. How many feedback bulletin or reports has the Woreda received in the last year from the higher level? a) 1 b) 3 c) 6 d) 9 E) 12 F) Not received

VIII. Supervision

36. How many times have you been supervised by the higher level in the last 6 months?

Obs Observed supervision report or any evidence of supervision in last 6 months

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

37. Number of Observed appropriate review of surveillance practices in the Woreda in the past 6 month? _____

38. How many supervisory visits have you made in the last 6 months?

Expected ☐ Achieved: ☐ Not Done: ☐

(Obtain required number of visits from central level) _____

39. The most usual reasons for not making all required supervisory visits. (Text)

Reason 1 _____

Reason 2 _____

Reason 3 _____

IX. Training

40. Number of health personnel (in position of responsibility) trained in disease surveillance?

41. If yes, specify when, where, how long, by whom?

40. Number of Health personnel in the Woreda have been trained in surveillance and epidemic management? _____

X. Resources

42. I. Do the Woreda have Important Logistics?

- a.** Electricity
- b.** Bicycles
- c.** Motor cycles
- d.** Vehicles/ambulance

43. Data management

- a.** Stationery
- b.** Calculator
- c.** Computer
- d.** Printer
- e.** Statistical package

44. Communication

- a.** Telephone service
- b.** Fax
- c.** B radio
- d.** Computers that have modems

45. Information education and communication materials

- a.** Posters
- b.** Megaphone
- c.** Flipcharts or Image box
- d.** VCR and TV set
- e.** Generator
- f.** Screen
- g.** Projector (Movie)
- h.** Other:

46. Hygiene and sanitation materials

- a.** Spray pump
- b.** Disinfectant

XI. Surveillance co-ordination:

47. Is there a surveillance co-ordination focal point within the Woreda epidemic management committee?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

XII. Satisfaction with surveillance system

with surveillance system

48. Are you satisfied with the surveillance system?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

49. If no, how can the surveillance system be improved?

50. Opportunities for integration

What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)

HEALTH FACILITY [Hospital/Health Center] QUESTIONNAIRE

Identifiers

Assessment team_____

Type of health facility_____

Date_____

Woreda Name_____

Interviewer_____

Region/province_____

Respondent_____

Country_____

Name of health facility_____

Surveillance system _____

-
1. Is there a national manual for surveillance at the Hospital? Health center?

Obs Observe national surveillance manual:

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

I. Case detection and registration

2. Does Hospital/Health Center that have a clinical register?

Obs Observed the existence of a clinical register ?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

3. Does the Health Center/Hospital correctly register cases?

Obs Observed the correct filling of the clinical register during the previous 30 days

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

4. Does the health center/Hospital has fully employed focal person On PHEM?

5. Yes € No € unknown € Not Applicable €

6. Does the Health Center/Hospital have standardized case definitions for priority diseases(Meningitis, AFP (polio), measles, malaria?

Yes_____ No _____ unknown _____ Not Applicable_____

II. Case confirmation

7. Does the Hospital/Health center have the capacity to collect specimens (sputum stool, blood/serum and CSF)?

Are you able to collect sputum Y: € N: € U :€ N/A:€

Stool Y: € N: € U :€ N/A:€

Blood Y: € N: € U :€ N/A:€

CSF at this facility? Y: € N: € U :€ N/A:€

8. Does the Hospital/Health Center have necessary materials required to collect specimen?

Stool ? Y: € N: € U :€ N/A:€

blood/serum Y: € N: € U :€ N/A:€

CSF Y: € N: € U :€ N/A:€

9. Does The Hospital/Health Center have the capacity to handle specimens like sputum, stool, blood/serum and CSF until shipment?

Y: € N: € U :€ N/A:€

10. Does the Hospital/health Center have proper cold chain management during shipment?

Y: € N: € U :€ N/A:€

11. Does the Hospital/health Center have the capacity to ship specimens to a higher level lab?

Y: € N: € U :€ N/A:€

12. Does the Hospital/health Center have packing materials for shipment of specimens at health facility?

Y: € N: € U :€ N/A:€

III. Data reporting

13. Does the Hospital/health Center have appropriate surveillance forms for that site at all times over the past 6 months?

Y: € N: € U :€ N/A:€

14. Does the Hospital/health Center have accurately report cases from the registry into the summary report to go to higher level?

Observed that the last monthly report agreed with the register for 4 diseases (1 for each targeted group [eradication; elimination; epidemic prone; major public health importance])

a. Obs Measles Y: € N: € U :€ N/A:€

b. Obs Malaria Y: € N: € U :€ N/A:€

c. Obs AFP (polio) Y: € N: € U :€ N/A:€

a. Obs Meningitis Y: € N: € U :€ N/A:€

15. Does the Hospital/health Center have reported each reporting period to the next higher level during the past 3 months?

Number of reports in the last 3 months compared to expected number

Obs Weekly: /12 times the number of sites

Obs immediately: /-- times the number of sites

16. On time (use national deadlines)

Obs Number of weekly reports submitted on time:-_____/12 times the number of sites

Obs Number of immediately reports submitted on time: ____/-- times the number of sites

17. Does the Hospital/health Center have have means for reporting to next level by e-mail, telephone, fax or radio

How do you report?

a. Mail

b. Fax

c. Telephone

d. Radio

e. Electronic

f. Other

18. Strengthening reporting

How can reporting be improved?

IV. Data analysis

Percent of sites that:

19. Does the Hospital/health Center have describe data by person (outbreaks, sentinel)?

Obs Observed description of data by age and sex

Y: € N: € U :€ N/A:€

20. Does the Hospital/health Center have describe data by place

Obs Observed description of data by place (locality, village, work site etc)

Y: € N: € U :€ N/A:€

21. Does the Hospital/health Center have describe data by time ?

Obs Observed description of data by time

Y: € N: € U :€ N/A:€

22. Does the Hospital/health Center have Perform trend analysis?

Obs Observed line graph of cases by time

Y: € N: € U:€ N/A:€

23. Does the Hospital/health Center have an action threshold for each priority disease?

Do you have an action threshold for any of the Country priority diseases?

Y: € N: € U :€ N/A:€

24. If yes, what is it (Ask for 2 priority diseases)? _____cases ____ % increase _____rate

25. In the Hospital/health Center Who is responsible for data analysis?

26. In the Hospital/health Center have How often do you analyze the collected data?

- a.** Daily
- b.** Weekly
- c.** Every 2 weeks
- d.** Monthly
- e.** Quarterly

f. As needed.....

27. Does the Hospital/health Center have appropriate denominators

Obs Observed presence of demographic data at site (E.g. population <5 yr., population by village, total population)

Y: € N: € U :€ N/A:€

V. Epidemic preparedness

28. Does the Hospital/health Center have a standard case management protocol for epidemic prone diseases

Obs Observed the existence of a written case management protocol for 1 epidemic prone disease

Y: € N: € U :€ N/A:€

VI. Epidemic response

29. Does the health Center/Hospital implemented prevention and control measures based on local data for at least one epidemic prone diseases

Y: € N: € U :€ N/A:€

30. Does your Hospital/health center achieved acceptable case fatality rates? (e.g. 10% for Meningococcal CSM 1% for Cholera) during the most recent outbreak

Obs Observed that the health facility achieved an acceptable case fatality rate for most recent outbreak

Y: € N: € U :€ N/A:€

VII. Feedback

Does your Hospital/health center have received a report or bulletin from a higher level during the past year on the data they have provided?

Y: € N: € U:€ N/A:€

31. How many feedback bulletin or reports has the health facility received in the last year? ____

32. Does your Hospital/health center conducted at least semi-annual meetings with community members to discuss results of surveillance or investigation data ?

Y: € N: € U:€ N/A:€

How many meetings has this the Hospital/health Center conducted with the community members in the past six months? _____

VIII. Supervision:

33. How many times have you been supervised in the last 6 months? _____

34. Of those supervised in the previous 6 months, percent of individuals for which the supervisor from the next higher level reviewed surveillance practices appropriate to their level

Obs Observed supervision report or any evidence for appropriate review of surveillance practices

Y: € N: € U:€ N/A:€

IX. Training

35. Does health personnel In Hospital/Health center trained in disease surveillance and epidemic management?

Y: € N: € U :€ N/A:€

36. Number of Health Personnel trained _____

37. If yes, specify when, where, how long, by whom? _____

X. Resources

38. Number of Hospital/Health center that have Logistics

- a.** Electricity
- b.** Bicycles
- c.** Motor cycles
- d.** Vehicles

39. Data management in Health Center/Hospital

- a.** Stationery
- b.** Calculator
- c.** Computer
- d.** Software
- e.** Printer
- f.** Statistical package

40. Communications in Health Center/Hospital

- a.** Telephone service
- b.** Fax
- c.** Radio call
- d.** Computers that have modems

41. Information education and communication materials in Health Center/Hospital

- a.** Posters
- b.** Megaphone
- c.** Flipcharts or Image box
- d.** VCR and TV set
- e.** Generator
- f.** Screen
- g.** Projector (Movie)
- h.** Other:

42. Hygiene and sanitation materials in Health Center/Hospital

- a.** Spray pump
- b.** Disinfectant

43. Protection materials (list) _____

XI. Satisfaction with surveillance system

44. Satisfaction with the surveillance system in Health Center/Hospital

Are you satisfied with the surveillance system?

45. Y: € N: € U :€ N/A:€

If no, how can the surveillance system be improved? _____

46. Opportunities for integration

What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)

Health Post Level Questionnaire

Identifiers

Assessment team	Type of health facility
Date	Woreda
Interviewer	Region/province
Respondent	Country
Name of health facility	Surveillance system

1. Number of Health Post with national surveillance manual

Is there a national manual for surveillance at Health Post?

Obs Observe national surveillance manual:

Yes No Unknown Not applicable

I. Case detection and registration _____

2. Does the Health Post that have a clinical register ?

Yes No Unknown Not applicable

3. Does the Health Post correctly register cases during the previous 30 days?

Yes No Unknown Not applicable

4. Does the Health Post have standardized case definitions for the priority diseases (each priority disease) Meningitis, AFP (polio), measles, malaria?

Yes No Unknown Not applicable

II. Data reporting _____

5. Does the Health Post have appropriate surveillance forms for that site at all times over the past 6 months

Yes No Unknown Not applicable

6. Does the Health Post reported accurately cases from the registry into the summary report to go to higher level

Observed that the last monthly report agreed with the register for 4 diseases (1 for each targeted group [eradication; elimination; epidemic prone; major public health importance])

a. Obs Measles	Y	N	U	N/A
b. Obs Malaria	Y	N	U	N/A
c. Obs AFP (polio)	Y	N	U	N/A
d. Obs Meningitis	Y	N	U	N/A

7. Does the Health Post that reported each reporting period to the next higher level during the past 3 months?

Yes_____ No_____ no Known_____ Not applicable_____

8. Number of reports in the last 3 months compared to expected number

Obs Weekly: /12 times the number of sites

Obs immediately: /-- times the number of sites

9. On time (use national deadlines)

Obs Number of weekly reports submitted on time:-_____ /12 times the number of sites

Obs Number of immediately reports submitted on time: ____/-- times the number of sites

10. Does the Health Post have means for reporting to next level by e-mail, telephone, fax or radio

How do you report?

- a. Mail
- b. Fax
- c. Telephone
- d. Radio
- e. Electronic
- f. Other

11. Strengthening reporting

How can reporting be improved?

III. Data analysis_____

Percent of sites that:

12. Does the Health Post describe data by person (outbreaks, sentinel)

Obs Observed description of data by age and sex

Yes No Unknown Not applicable

13. Does the Health Post describe data by place

Obs Observed description of data by place (locality, village, work site etc)

Yes No Unknown Not applicable

14. Does the Health Post describe data by time

Obs Observed description of data by time

Yes No Unknown Not applicable

15. Does the Health Post Perform trend analysis

Obs Observed line graph of cases by time

Yes No Unknown Not applicable

IV. Epidemic response_____

16. Does the Health Post implemented prevention and control measures based on local data for at least one epidemic prone disease for at least one epidemic prone disease?

Yes No Unknown Not applicable

V. Feedback_____

17. Does the Health Post have received a report or bulletin from a higher level during the past year on the data they have provided

Yes No Unknown Not applicable

18. How many feedback bulletin or reports has the health facility received in the last year?

19. Does the health post receive at least 1 report or bulletin from a higher level during the past year on the data they have provided ?

Yes No Unknown Not applicable

20. Does the health post conduct at least semi-annual meetings with community members to discuss results of surveillance or investigation data?

Yes No Unknown Not applicable

21. How many meetings has the health post conducted with the community members in the past six months? _____

Obs Observed the minutes or report of at least 1 meeting between the health facility team and the community members within the six months

Yes No Unknown Not applicable

VI. Supervision: _____

22. Is HEWs supervised in the past 6 months?

Yes No Unknown Not applicable

23. How many times have you been supervised in the last 6 months? _____

24. Of those supervised in the previous 6 months, percent of individuals for which the supervisor from the next higher level reviewed surveillance practices appropriate to their level

Obs Observed supervision report or any evidence for appropriate review of surveillance practices

Yes No Unknown Not applicable

VII. Training _____

25. Number of HEWs trained in disease surveillance and epidemic management?

Yes No Unknown Not applicable

26. If yes, specify when, where, how long, by whom? _____

VIII. Resources _____

27. Does the Health post have

- a. Electricity
- b. Bicycles
- c. Motor cycles
- d. Vehicles

28. Data management

- a. Stationery
- b. Calculator
- c. Computer
- d. Software
- e. Printer
- f. Statistical package

29. Communications

- a. Telephone service
- b. Fax
- c. Radio call
- d. Computers that have modems

30. Information education and communication materials

- a. Posters
- b. Megaphone
- c. Flipcharts or Image box
- d. VCR and TV set
- e. Generator
- f. Screen
- g. Projector (Movie)
- h. Other:

31. Hygiene and sanitation materials

- a. Spray pump

b. Disinfectant

32. Protection materials (list) _____

IX. Satisfaction with surveillance system

33. Satisfaction with the surveillance system

Are you satisfied with the surveillance system?

Yes No Unknown Not applicable

34. If no, how can the surveillance system be improved? _____

35. Opportunities for integration

What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)

Chapter IV – Health Profile Description Report

4.1.1. Woreda health profile description-Adea Woreda, Oromia, Ethiopia, 2013

Executive Summary

The Health profiles provide a snapshot overview of community health which gives valuable tool for local authority and health service provider in helping them to understand their community's needs so as to improve community health to reduce morbidity and Mortality. Therefore, this health profile provides a glance summary of the situation and trends of priority health problems, including key issues, information's and bottlenecks in Adea Woreda located Oromia Region in East Shoa Zone.

Methods - Descriptive cross-sectional study design was used to assess Health and health related indicators in the Woreda. Data were collected from February 3-9/2013. Interviews and standard questionnaires used as tools for data collection. Sources of data were Woreda health office, education sector, Agricultural Office, Finance and Economic Department, Tourism and Culture Office, and national housing and population census (CSA) of 2007. Data were compiled and analyzed using Microsoft excels 2007.

Results

Adea Woreda has an area of 89,543.83 hectare divided into 27(87%) rural and 4(13%) urban kebele's which was further divided in to 91 Kebele zones and 804 Health Development Army. It has organized political and administrative structure. The estimated Woreda total population was 152,682 of whom 79088 (51.7%) were males and the rest 73,593(48.3) were females. The Woreda Health Office divided into five clusters according to the distribution of health center and it's networked by satellite Health posts staffed by Health Extension Workers. The potential health service coverage is 100%. Measles coverage is above 80% over the past five consecutive years .In addition, the contraceptive prevalence rate was above 100% in 2012. Totally 25,495 students enrolled for 2012/2013 in the Woreda.

Conclusion

The Administrative health service coverage in the Woreda is high however, skilled delivery was low. Therefore, the Woreda Health Office should work to improve skilled delivery to contribute to the reduction of child and maternal death.

4.1.1. Introduction

Health profile is a system of collecting and organizing, summarizing health and others health related events to describe health and health related conditions, demographic, socio-economic, political, cultural and others aspect of a particular geographic areas. In epidemiologic point of view, it is crucial to prioritizes health and health related condition occurred within the communities. These summarized and prioritized data is important for public health surveillance officials, as they can uses it as a frontline of planning, implementation and evaluation of public health surveillance program conducted at communities level.

4.1.2. Objectives

The aims of this document are:

- To assess the health and health related condition of the Adea Woreda
- To describe Woreda health status, health indicators and to identify problems for priority setting
- To determine disease burden and communicate findings.

4.1.3. Methods

Descriptive cross-sectional study design was used to assess health and others health related indicators. Data was collected in Adea Woreda Oromia Region, East Shoa Zone from February 03-09/2013. Interview and standard questionnaires were used as tools for data collection. Data source was from Woreda health office, education sector, Woreda water resource office ,Agricultural Office, Woreda Administrative office, Economic and Finance office and national housing and population census of 2007 G.C. Data was compiled and analyzed using micro-soft excel 2007.

4.1.4. Results

4.1.4.1 Historical background and culture

Adea Woreda is one of the Woredas in East Shoa Zone; Oromia Region, and its capital is located in Bishoftu town. Before getting this current name it were passed different stages at different time. Before 1993 its one of the provinces in eastern part called Adea Awuraja from Yerer and Kereyu including Gimbichu and Liban Chukala. But after 1993 up to 1998 it was also called Adea Liban Woreda. But from 1998 onwards Liban Chukala Woreda was separated from the Adea woreda. Starting from that Adea Woreda was established with its own woreda administration by dividing in to 31 different governmental Organization.

The Woredas were divided into 27(87%) rural and 4(13%) urban kebele's and then it divides in to 91 Zones and 804 sub kebele's and 4020 network structured farmers.

4.1.4.2 Geography and climate

Adea woreda is one of the eleven (11) woreda's of East Shoa Zone in Oromia Region located 47 kilo meters east of the capital city of Ethiopia Addis Ababa and 52 Km from the Zonal Adminstrative town Nazethret. The woreda is surrounded by four Woredas: Gimbichu Woreda in the North, Liban Chukala in the south, Lume Woreda in the East and Akaki woreda in the west and totally surrounds the beautiful city of Bishoftu town. It is the center of the beauty natural feature of the Environment consists of different natural waters which serves as the cultural belief and provides the center of tourism in national and international communities. Its Administrative council is situated in the Bishoftu town. The Woreda is 6% and 94%, kola and Wiena Dega with mean annual temperature of which ranges from 16-24°C respectively .The minimum and the maximum level of temperature thresholds ranges from 13°C and 27°C. Average annual rainfall of the Woreda was **839mm³** with elevation of 1600-3100 meter above sea level.

4.1.2.6. Natural Resource

The total land area of the Woreda is **89,543.83** Hectare of which 2693.4 hectare serves for grazing animals 6528.98 hectares are covered by forests purpose .The Woreda is bordered and bounded by Beautiful lakes like , kilole Lake, Arsadi, kuriftu, Hadho Lake ,Bishoftu, Hora and Chalalaka lake and manmade lake like Balbala are also found in the this Woreda. The soil futures of the

woreda include black soil accounts for 63.7%, 9% san soil, 24% gonbore and 3% other soil type. Additionally the woreda can rear different livestock animals like 101,086 cattle, 136,187 goat and sheep and 191,455 hens.



Figure 4.1.1. Map of Adea Woreda

Mountains like, Tulu Dimtu, and Ereri (Ereri mountains located at the latitude of $8^{\circ}32'23.15''$ and $38^{\circ}51'40.30''$ at the Elevation of 3100m above sea Level).The geographical features of the Woreda is 10% mountainous and hilly, 25% is plateaus and the 65% of the land is Up and down hilly features.

4.1.4.3 Administrative and political structure

Adea Woreda has twenty seven (27) rural and four (4) urban kebele's (planned to be under Bishoftu town). Despite the Bishoftu administrative town situated in the Woreda, it has well organized political and administrative structure working harmonically with different governmental and Non Governmental Organization (NGO). The Woreda Health office was strongly committed for their mission provides that they were awarded different certificate from this organization which I witnessed that it was well posted on the wall of their bureau. All sectors of the Woreda were found in the town in dispersed manner.

The Woreda has several investments and industrial factory of governmental and private sectors such as lodges, Flower factory, milk factory, steel industry and Food complex industries which plays a great important roles in the development of the woreda and the country as whole. There are others medium and small investments working in the woreda. The Woreda was supported by NGO like **Ratson, KaleHiwot Church**.

4.1.4.4 Demographic Information

In 2012/2013, the Woreda population estimated to be **152,682** of which 52% (79,088) of them were male; while 48 % (73,593) of them were females. From the total of 31 kebele's found in the Woreda 4 (13 %) and 87% (27) were found in Urban and rural kebele's respectively. The urban population is not demarcated from the rural population yet. Out of the total population, **4,840 (3.2%)** and **14,261 (9.3 %)** **22277(14.6%)** were under one, children less three and five years of age respectively. Women under reproductive age (child bearing women 15-49 years of age) constitute **35728 (23.4%)** of the population segment.

Table-4.1. 1 : Oromia Region East Shoa Zone Adea Woreda Target Population and some important indicators under the catchment of Godino Health center February 2013

S/N	Name of kebele	Total Population	Total HH	< 1 years	< 3yrs of Age	< 5yrs Of age	HH with Latrine	HH with Dust Hole	Model Farmers	Total Development Sub kebele's	1-5 Development Net work
1	Koftu	5091	1061	161	475	835	78	219	120	32	160
2	Y/Silasie	4330	902	137	407	710	280	201	255	24	120
3	Akako	6569	1369	208	614	1077	105	208	150	45	225
4	Godino	6101	1271	193	569	1001	35	39	120	34	170
5	Ganda Gorba	6750	1406	214	630	1107	744	566	744	54	270
6	Kataba	6135	1277	195	572	1006	26	26	56	39	195
7	Tadacha	6402	1334	203	598	1050	37	55	17	17	85
Total		41378	8620	1312	3865	6786	1305	1314	1462	245	1225

Table-4 .1.2: Oromia Region East Shoa Zone Adea Woreda Target Population and some important indicators under the catchment of Bakajo Health center February 2013

S/N	Name of kebele	Total Population	Total HH	< 1 years	< 3yrs of Age	< 5yrs Of age	HH with Latrine	HH with Dust Hole	Model Farmers	Total Development Sub kebele's	1-5 Development Networ k
1	GoloDertu	4566	951	145	426	749	270	250	26	26	130
2	Bakajo	6478	1350	205	605	1062	293	305	39	31	155

3	Golbo	3079	641	98	289	505	322	406	100	26	130
	Total	14123	2942	448	1319	2316	885	965	165	83	415

Table-4.1. 3: Oromia Region East Shoa Zone Adea Woreda Target Population and some important indicators under the catchment of Hidi Health center February 2013

S/ N	Name of kebele	Total Population	Total HH	< 1 years	< 3yrs of Age	< 5yrs Of age	HH with Latrine	HH with Dust Hole	Model Farmer s	Total Devel opme nt Sub kebel e's	1-5 Deve lopme nt Net work
1	Hidi	6339	1321	201	592	1040	55	133	51	31	155
2	Dako	5226	1089	166	488	857	136	342	75	32	160
3	Qatila	6368	1327	202	595	1044	368	368	450	42	210
4	T/Dimtu	4839	1008	153	452	794	195	130	129	28	140
5	Karfe	6781	1413	215	633	1112	258	669	531	34	170
6	Qaliti	4590	956	145	429	753	72	72	261	22	110
	Total	34143	7114	1082	3189	5600	1084	1714	1697	189	945

Table-4.1. 4: Oromia Region East Shoa Zone Adea Woreda Target Population and some important indicators under the catchment of Dire Health center February 2013

S/ N	Name of kebele	Total Population	Total HH	< 1 years	< 3yrs of Age	< 5yrs Of age	HH with Latrine	HH with Dust Hole	Model Farmer s	Total Devel opme nt Sub kebel e's	1-5 Deve lopme nt Net work
1	Dire	6015	1253	186	550	973	112	242	112	23	123
2	Dire Shoki	4866	1013	154	454	798	41	123	41	27	135
3	Chalaba Silase	3982	829	126	372	653	89	154	89	25	125

4	Dibayu	7542	1070	239	704	1237	272	110	272	28	140
5	Wajitu	8682	1808	275	811	1424	287	231	287	20	100
	Total	31087	6476	985	2904	5098	801	860	801	123	615

Table-4 .1.5: Table: Oromia Region East Shoa Zone Adea Woreda Target Population and some important indicators under the catchment of Dankaka Health center February 2013

S/ N	Name of kebele	Total Population	Total HH	< 1 years	< 3yrs of Age	< 5yrs Of age	HH with Latrine	HH with Dust Hole	Model Farmer s	Total Devel opmen t Sub kebele 's	1-5 Deve lopm ent Netw ork
	Ude	5090	1060	161	475	835	47	47	0	36	180
	Dankaka	7839	1633	248	732	1286	89	0	0	31	155
	Gobasaye	4041	842	128	377	663	46	419	0	24	120
	Garbicha	5521	1150	175	516	905	359	0	0	25	125
	Giche	4586	955	145	428	752	36	0	0	22	110
	kurkura Dambi	4874	1015	155	455	799	367	0	0	27	135
	Total	31951	6656	1013	2984	5240	944	466	0	165	825

Table-4.1. 6: Oromia Region East Shoa Zone Adea Woreda Target Population and some important indicators under the catchment of each Health center in the Woreda February 2013

S/ N	Name of Health Center	Total Population	Total HH	< 1 years	< 3yrs of Age	< 5yrs Of age	HH with Latrine	HH with Dust Hole	Model Farmer s	Total Devel opmen t Sub kebele 's	1-5 Develo pment Networ k
1	Godino	41378	8620	1312	3865	6786	1305	1314	1462	245	1225
2	Bakajo	14123	2942	448	1319	2316	885	965	165	83	415
3	Hidi	34143	7114	1082	3189	5600	1084	1714	1697	189	945
4	Dire	31087	6476	985	2904	5098	801	860	801	123	615

5	Dhankaka	31951	6656	1013	2984	5240	944	466	0	165	825
1	Godino	41378	8620	1312	3865	6786	1305	1314	1462	245	1225
2	Bakajo	14123	2942	448	1319	2316	885	965	165	83	415
Woreda Total		152682	31,808	4840	14261	25040	5019	5319	4125	804	4020

There are different ethnic groups of population in Adea Woreda even though compiled data exists. However, the most prominent ethnic group in the area was Oromo, Amharic and Tigre. There is no exact data that shows on each ethnic group. But the majority of the people lived in the area was Oromo. Besides this the woreda did not have any information on religion status of the society but it is estimated that higher number of the population is Christian Orthodox followed by local religion called Wakefata.

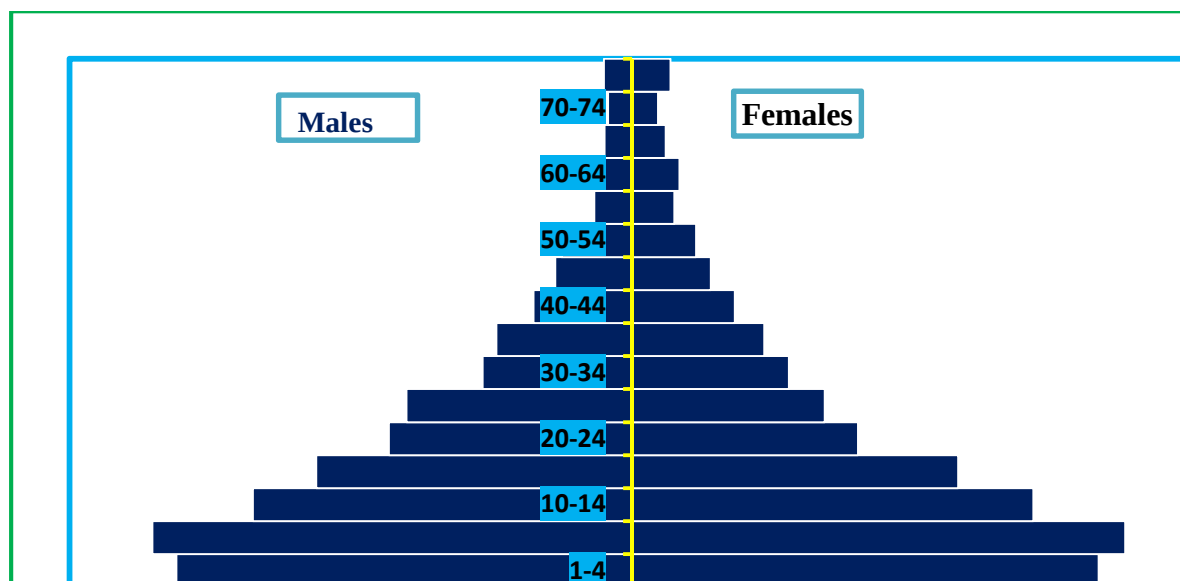


Figure 4.1.2: Estimated Population Pyramids of Adea Woreda in 2012

4.1.4.5. Productivity and Income

The Woreda is green and fertile land suitable for agriculture. About 87 % of the Woreda population living in the rural kebele's and they are agriculture dependent. Teff, Sorghum, wheat and barley and other fruits and vegetable product crops are the main products cultivated in the Woreda in their descending order. The data on cultivated hectares, the amount of crops produced using the summer rain in 2011/2012 1,659,866kuntals and the woreda's agricultural office told me depending up on our previous production they are planned to double the production rate of the crops in 2012/2013 production year to 2,013,576kuntals to halt the extreme poverty and hunger .the estimate the number of income from the production year 2011/2012 was **3471.14** dollar per year per one farmer.

4.1.4.6. Education

Table-4.1. 7: Number of students enrolled in Adea Woreda-Oromia Region, East shoa Zone February 2013

S/N	school	Total School	Total students	Male	Female	Female %	% Male
1	kindergarten	12	282	158	124	44	56
	1-4 primary						
2	school	39	16532	8574	7958	48	52
3	5-8 grade	25	8049	4167	3882	48	52
3	9-10 grade	1	632	342	290	46	54
		77	25495	13241	12254	48	52
	Total						

Adea woreda has 12 kindergarten in which 282 children enrolled in the school of which 124(44%) is female, and 158(56%) of them are males. Additionally the woreda contains 39 and 25 are 1-4 and 5-8 schools totally 64 primary schools and 1 high school from 9-10 high school in the woreda.. In 2013 25,213 students were enrolled to school in the Woreda. First cycles elementary schools (grade 1-4) have a total students of 16,532 of which 8574(52%) with 7958 (48%) were female. Second cycle school (grade 5-8) have total students of 8049; with 4167(48%) and 3882(48%) are males and female respectively. The only secondary school in the Woreda has total of 632 with 290 (46%) and 342(54%) were females and males students. The majority of students enrolled in school were male13083 (52%) in which the females accounts for 12130(48%). But this difference was due to the woreda's male to female ratio in the Woreda.

Out of 65 schools (both 5-8 and secondary) in the Woreda 22 (34 %) of them have provisional safe water supply, and 29 (45%) have functional latrines for both male and female. All schools eligible for HIV/AIDS (5-8 and one secondary school) of the woreda have anti-HIV/AIDS clubs .In other word; the Woreda has 100% provision of anti-HIV/AIDS clubs services in each school.

4.1.4.7 Facilities

Electricity is one of the modern sources of energy used as source of power in industries and at resident's level. 14 (45%) of the kebele's in the Woreda has a provision of electric power supply. There were **31,808 households** in the Woreda of which only 13,122(49%) of them has had electric power supply. Besides to the above from 5 Health center and 27 health post in the Woreda 4 (80%) and 5(19%) of them were using 24hour electric power supply respectively.

There was a cables base telephone and mobile service in the Woreda. A mobile service functioned well in the Woreda except in 3(12%) network were not working everywhere in the kebele's while the rest of 27(88%) of the kebele the mobile is functioning well.

Regarding transportation, the Woreda is crossed by big road running from Addis Ababa to Eastern part of Ethiopia crossing the woreda's in to two and 21(68%) of the kebele has accessibility to transportation both in rainy and dry season.

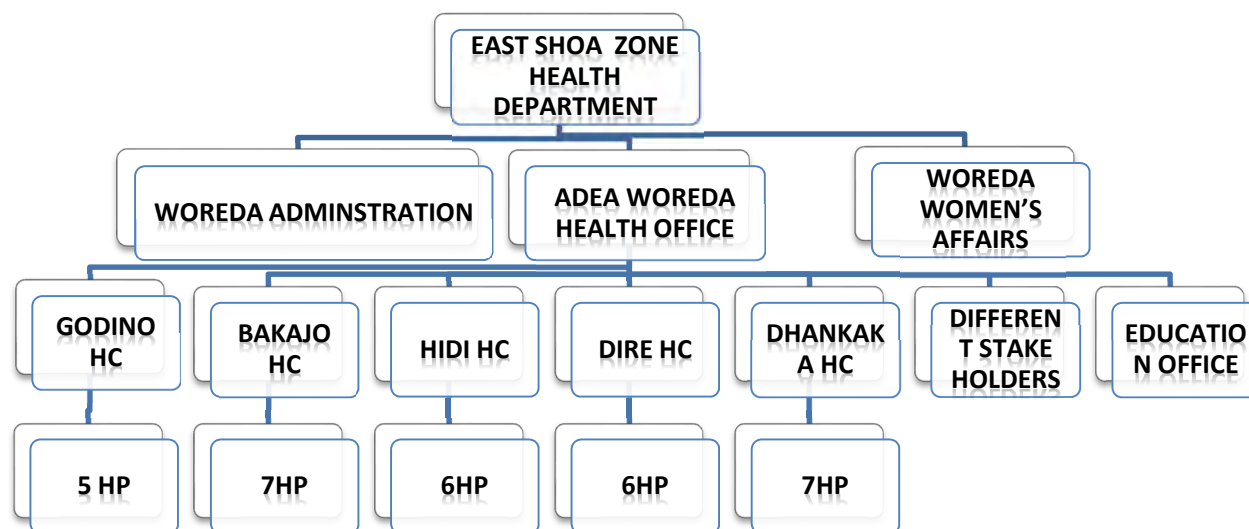


Figure 4.1. 2 Adea Woreda Organizational framework of health delivery system Adea Woreda – Oromia region, March.2013

The Woreda health office structure is well organized and is part of the woreda administrative council cabinet. the Woreda health officials were implement BPR early to bring significant Improvement in Health service delivery mode but now a days they are implementing the Balanced score card for each individual workers and every one were evaluated with this system. The health workers in the health centers were integrated together with the health center head for supportive supervision of the HEWs and the Woreda Health office expert were working very hard to achieve the designed target together with woreda Administration office, women's affair office starting from the lower hierarchy to the head of the woreda health department they were supporting the health extension workers accordingly and finally evaluates the overall process and delivers feedback for respective structures to solve the problem early. The Woreda health services coverage was 100 % estimated from 5 (five) functional health centers and 27 health posts. Previously in 2012 no health center in the woreda was delivering the inpatient /admission services because of in availability of training and lack of health center equipments for IPD services like Bed, Foam and some facilities. But now days they were already starting to deliver

the expected services in respective health centre in the woreda. The Adea woreda was fully implemented the health management Information system (HMIS) both in the health center and woreda health office with better system of data flow and management and Evaluation system

Table-4 .1.8: Availability of health facilities by type in Oromia Region, East Shoa Zone, and Adea March.2013

S/N	TYPE	NUMBER			
			Functional	Non Functional	Under construction
1	Woreda Hospital	0	✓		
2	Health Center	05	✓		
3	Private HFs (clinics, diagnostic lab)	10	✓		
4	Rural Drug vendors	01	✓		
	Health posts (HPs)	27	✓		

4.1.4.8. Health indicators and vital statistics

The overarching goal that any country should strive is achieving great improvement in the health of every citizen in the country. To achieve this lofty goal, countries should address, along with the provision of health care, the environmental factors that contribute to the society's collective health and illness by placing particular emphasis on the determinants of health. Health indicators and vital statistics are important for estimation of country or Woreda growth. In Adea Woreda, there are no data on vital statistics like infant deaths, fewer than five, Maternal Mortality rate and others crucial data.

Table-4.1. 9: Distribution of vital statistics in-Oromia Region East Shoa zone, Adea woreda march.2013

S/No	Target Health Indicators	Male	Female	Total	Remark
1	< 1year of age	2517	2323	4840	
2	<3 yr age group	12276	6383	12276	
3	Under 5 year child population	22277	11584	22277	
4	6 – 59 months age group	20119	10462	20119	
5	24 – 59 months age group	16368	8511	16368	
6	Women in reproductive age (CBA) 15 -49 years	35728	18578	35728	
7	Total number of estimated pregnancies / Births	5041	2621	5041	
8	Non-pregnant women in fertile age	30687	15957	30687	
9	Estimated deliveries	4582	2383	4582	
10	<15 yr age group	68676	35712	68676	
11	15-59 age group	76601	39832	76601	
12	TB Prevalence	165	86	165	
13	15-24 age group	31423	16340	31423	
14	Severely malnourished	4275	2223	4275	
15	IMR/1000	No data	No data	No data	
16	CMR/1000	No data	No data	No data	
17	MMR/100000	No data	No data	No data	
18	Diarrhea Prevalence among <5 years children	3664	1905	3664	
19	Diarrhea Episode among <5 years children	458046	238184	458046	
20	Pneumonia Prevalence among <5 years children	4275	2223	4275	
21	Pneumonia Episode among <5 years children	458046	238184	458046	
22	STI prevalence	2840	1477	2840	

Table-4.1. 10 : key important key Indicators coverage in the past five years and the current status of EPI

Activities	2000			2001			2002			2003			2004			2005		
	Plan	Cove rage	%	Plan	Cove rage	%	Plan	Cove rage	%	Plan	Cove rage	%	Plan	Cove rage	%	Plan	Cove rage	%
Pent1	5350	5032	94	5060	4823	95	5360	5156	96	5111	4796	94	5207	4802	92	2573	2287	89
pent3	5350	5001	93	5060	4697	93	5360	5031	94	5111	4726	92	5207	4956	95	2573	2443	95
Measles	5350	4554	85	5060	4389	87	5360	4647	87	5111	4316	84	5207	4499	86	2573	2066	80
Fully Vaccinated	5350	4210	79	5060	4389	87	5360	4647	87	5111	4295	84	5207	4397	84	2573	2066	80
ANC	3341	2716	81	6102	3088	51	NA	NA	NA	5549	4955	89	5653	5530	98	2825	2932	104
Skilled Delivery	3341	625	19	3051	237	8	NA	NA	NA	1387	200	14	2544	372	15	2573	229	9
PNC	3341	673	20	6102	1922	31	NA	NA	NA	5549	2931	53	5653	3586	63	2573	1595	62

4.1.4.9 Immunization coverage

The Woreda has conducted both static and outreach immunization services in 2012/2013. Out of 5207 targeted populations, immunization coverage for children less than one year of age was, 92 % (4956) for penta1, 95%(4802) for pent3,4499(86%) for measles and 4397(84%) for fully vaccinated. The Woreda contraceptive acceptance rate was 61% for women in the reproductive age.

Table-4.1 11: Important EPI Indicators coverage in the past five years and the current status of EPI in the Oromia region, East shoa, Zone Adea Woreda March 2013

S/No	Activities	2000	2001	2002	2003	2004	2005(half year)
1	Pent1	5032	4823	5156	4796	4956	2443
2	Pent3	5001	4697	5031	4726	4802	2361
3	measles	4554	4389	4647	4316	4499	2066
4	Fully Vaccinated	4210	4389	4647	4295	4397	2066
5	DOR of Pent1-Pent3 in %	1	3	2	1	3	3

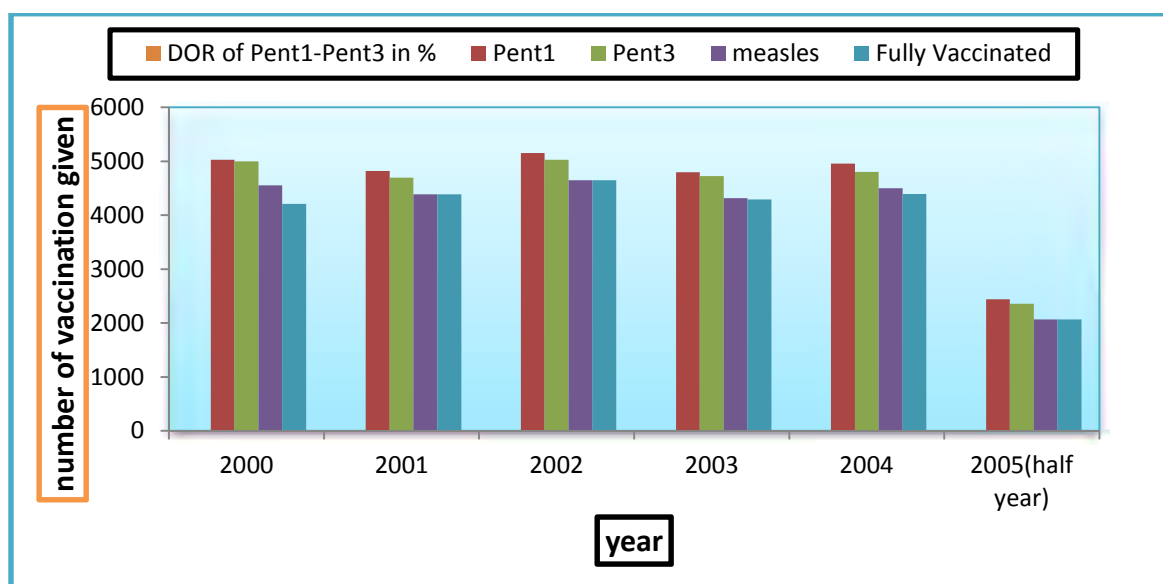


Figure 4.1. 3: Important EPI Indicators coverage in the past five years and the current status of EPI in the Oromia region, East shoa, Zone Adea Woreda March 2013

Table-4.1. 12: Adminstrative vaccination Coverage in Adea Woreda_ Oromia Region February 2013

S/No	Activities	Academic Year				
		2,000	2,001	2002	2003	2004
1	pent1	94	95	96	94	92
2	pent3	93	93	94	92	92
3	Measles	85	87	87	84	86
4	Fully Vaccinated	79	87	87	84	84
5	DOR pent1-pent3	6	3	2	1.5	3
	Pent1-Measles	9	8	9	11	9

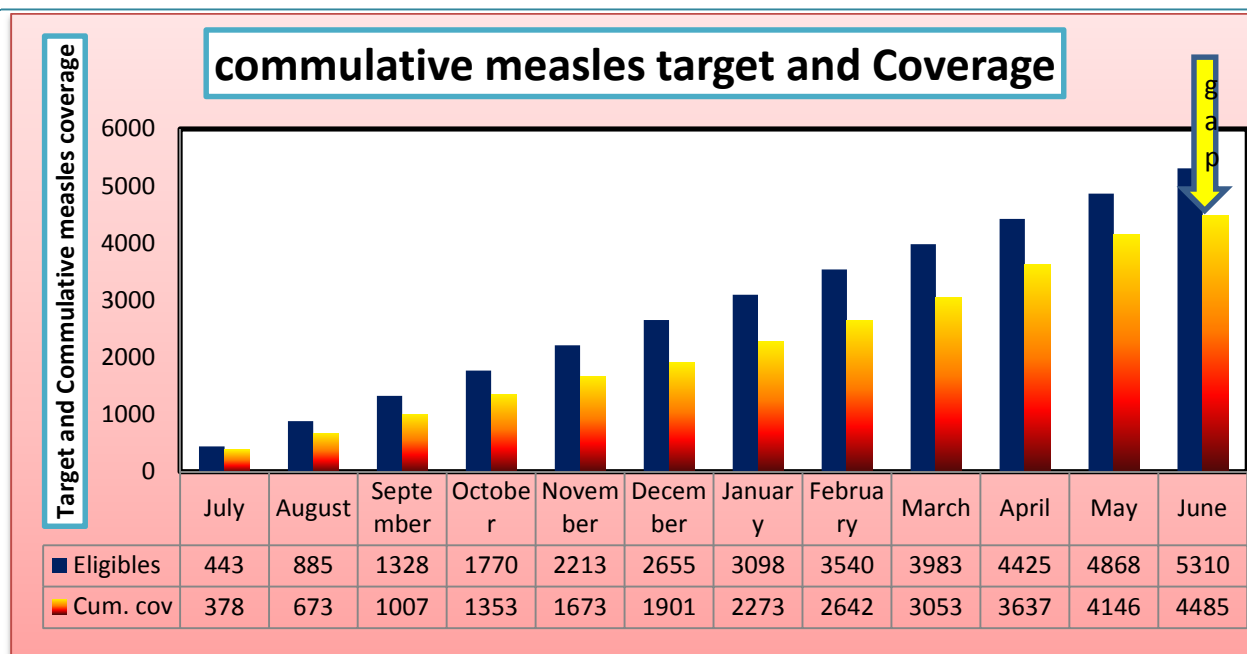


Figure 4.1. 4: Measles Immunization Coverage and the Expected targets in 2004 EC in Oromia Region East Shoa Zone, Adea Woreda March 2003

4.1.4.10 Mothers Health Services Coverage

Regarding ANC services, 64% (410/642) pregnancies women were received the services. Sixty three percent of deliveries were attended by skilled health personnel.

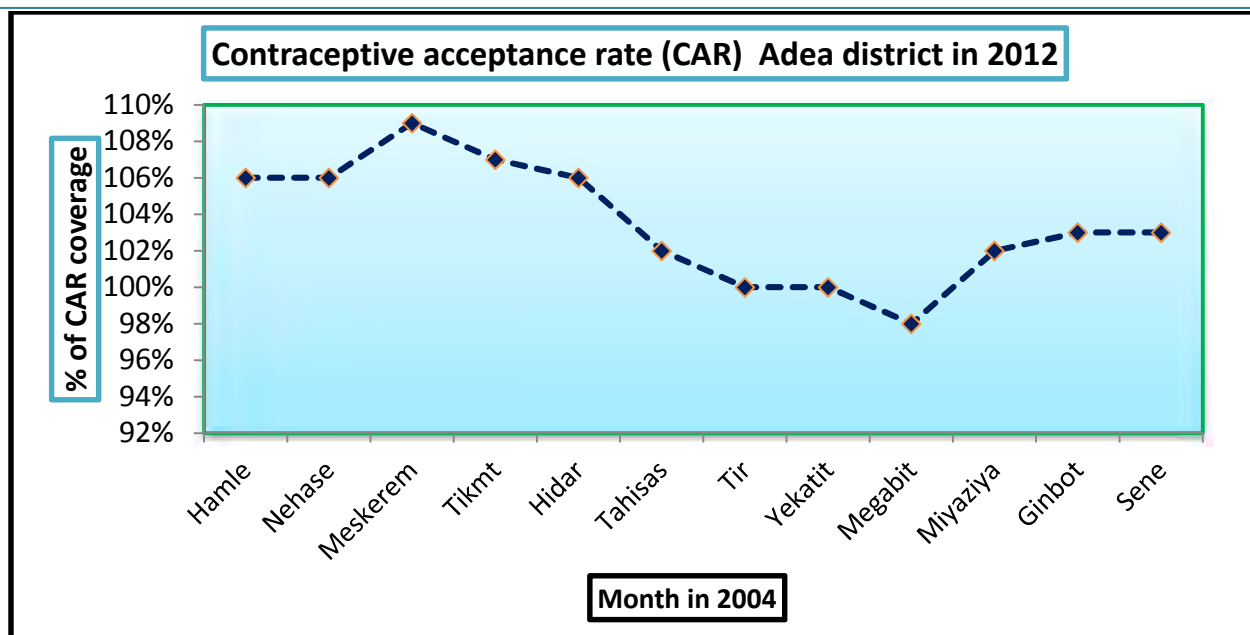


Figure 4.1. 5: Contraceptive acceptance rate Oromia Region East Shoa Zone, Adea Woreda of 2011/2012

The contraceptive acceptance rate in Adea Woreda is more than 100% in the month July to November 2012. However, comes down from December to April 2012.

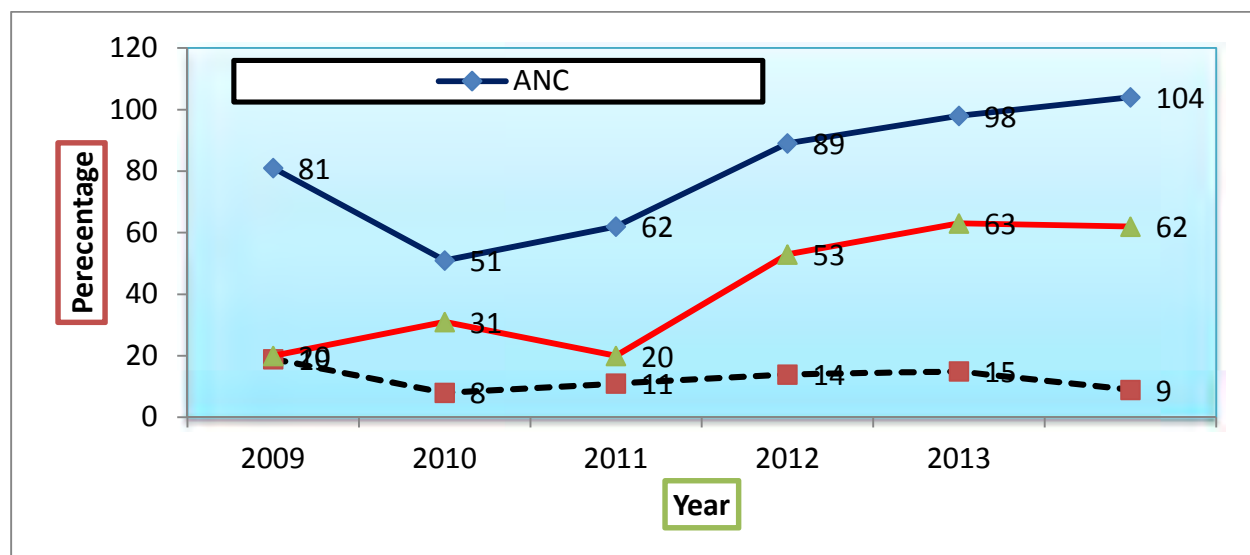


Figure 4.1. 6: Focused Antenatal Service Coverage (ANC) of Oromia Region East Shoa Zone, Adea Woreda of 2012

4.1.4.11 Water supply and Sanitations

Water circulates through our blood and lymphatic system, transporting oxygen and nutrients to cells and removing wastes through urine and sweat. Water also maintains the natural balance between dissolved salts and water inside and outside of cells. Our joints and soft tissues depend on the cushioning that water provides for them. While water has no caloric value and therefore is not an energy source, without it in our diets we could not digest or absorb the foods we eat or eliminate the body's digestive waste. Physiological needs: 70% of our body by weight; about 2.0-2.5 liters per day needs; survival without water very hard; most food contains water: milk about 90%, fish about 80%.

Water is a life and lack of safe adequate water supply is still a major problem globally and nationally. Globally, 23% urban and 64% of rural population in developing countries lack safe water. This is the main cause for the occurrence of More than 80% of diseases in developing countries is due to lack of safe water supply and sanitation; dysentery, typhoid fever, diarrheal diseases, helminthiasis, skin and eye infections are the leading causes of morbidity due to lack of safe adequate water supply in developing countries. The Woreda water resource office has been working towards environmental sanitation and provision of safe water supply.

The health office environmental health teams in collaboration with HEWs created communities awareness of the Woreda on the important of personal hygiene and environmental sanitation. The Woreda latrines coverage and utilization rate is very minimum even though a lot of jobs were done by the Woreda which is 37%.

In 2011/2012, the provision of safe water supply improved up to 75% coverage. This is because of equity distribution of constructed boreholes among kebele's. Distribution of boreholes among kebele's is shown in table. The Average distance travelled to fetch water in urban and rural setting is 0.5 and 1.5 km in the Adea Woreda.

Table-4 13: Family Planning status in Adea Woreda in 2012

Month	July	Aug	Sept	October	Nov	Dec	Jan	Feb	March	April	May	June
Eligible's	2302	4604	6905	9207	11509	13811	16113	18415	20716	23018	25320	27622
Total new & repeat	2440	2459	2654	2317	2305	1965	1964	2226	2043	3174	2630	2279
Cum. Total	2440	4899	7553	9870	12175	14140	16104	18330	20373	23547	26177	28456
Cum. coverage	106%	106%	109%	107%	106%	102%	100%	100%	98%	102%	103%	103%
Achieve vs. plan in	106%	106%	109%	107%	106%	102%	100%	100%	98%	102%	103%	103%

Table-4 .1.14: Focused Antenatal Service Coverage (ANC) of Oromia Region East Shoa Zone, Adea Woreda of 2011/2012

August	Sept	Oct	Nov.	Dec	Jan	Feb	March	April	May	June
958	1436	1915	2394	2873	3352	3831	4309	4788	5267	5746
441	478	493	450	405	505	397	550	685	570	531
782	1260	1753	2203	2608	3113	3510	4060	4745	5315	5846
82%	88%	92%	92%	91%	93%	92%	94%	99%	101%	102%
82%	88%	92%	92%	91%	93%	92%	94%	99%	101%	102%

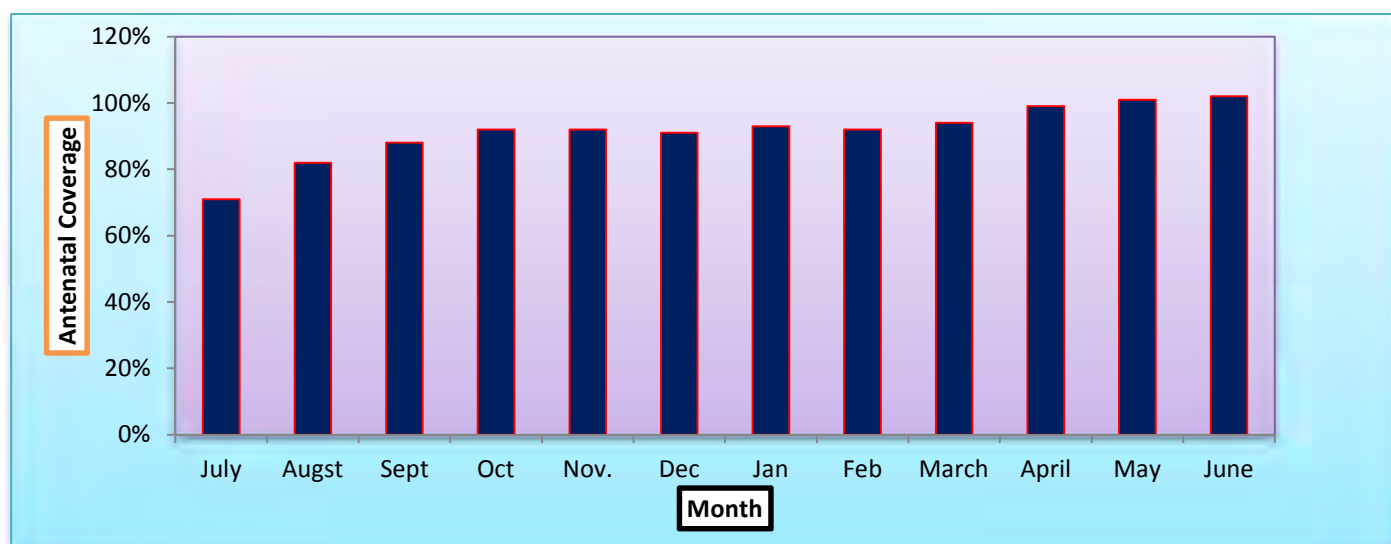


Figure 4.1. 7: Trend of ANC, Skilled Delivery and PNC in Oromia Region, East Shoa Zone, Adea Woreda form 2009-Dec/2013

Table-4.1. 15 Distribution of boreholes (both functional & non-functional) by kebele's in Adea Woreda _ East shoa Zone Oromia region march 2013

S/N	Kebeles	Total Number		Remarks
		Functional	Non-Functional	
1	Dirre Hararti	2	2	
2	Dirre Shoki	2	2	
3	Hidi	5	5	
4	Wajitu	1	1	
5	Qajima	0	0	
6	Golboo	2	2	
7	Calaba Silasie	1	1	
8	Bakajo	2	2	
9	Golo Dertu	1	0	
10	Godino	3	0	
11	Ude	3	0	
12	Dankaka	8	1	
13	Kaliti	4	0	
14	Kurkura danbi	3	0	
15	Y/Silasie	8	0	
16	Ganda Gerba	6	2	
17	Akako	3	1	
18	Dako	4	0	
19	Tulu Dimtu	1	0	
20	Kataba	1	0	
21	Karfe	3	0	
22	Gobasaye	3	0	
23	Garbicha	3	0	
24	Qoftu	5	0	
25	Katila	8	0	
26	Xadacha	5	0	
27	Giche gara babo	0	0	
	Total	87	19	

4.1.4.13 Top leading causes of outpatients Morbidity

In 2012 Acute upper Respiratory Infection are the most leading causes of outpatient morbidity in greater than five years which a total of 2298(19.08%) people followed by Acute Febrile illness 1619(13%) was affected The sequential order

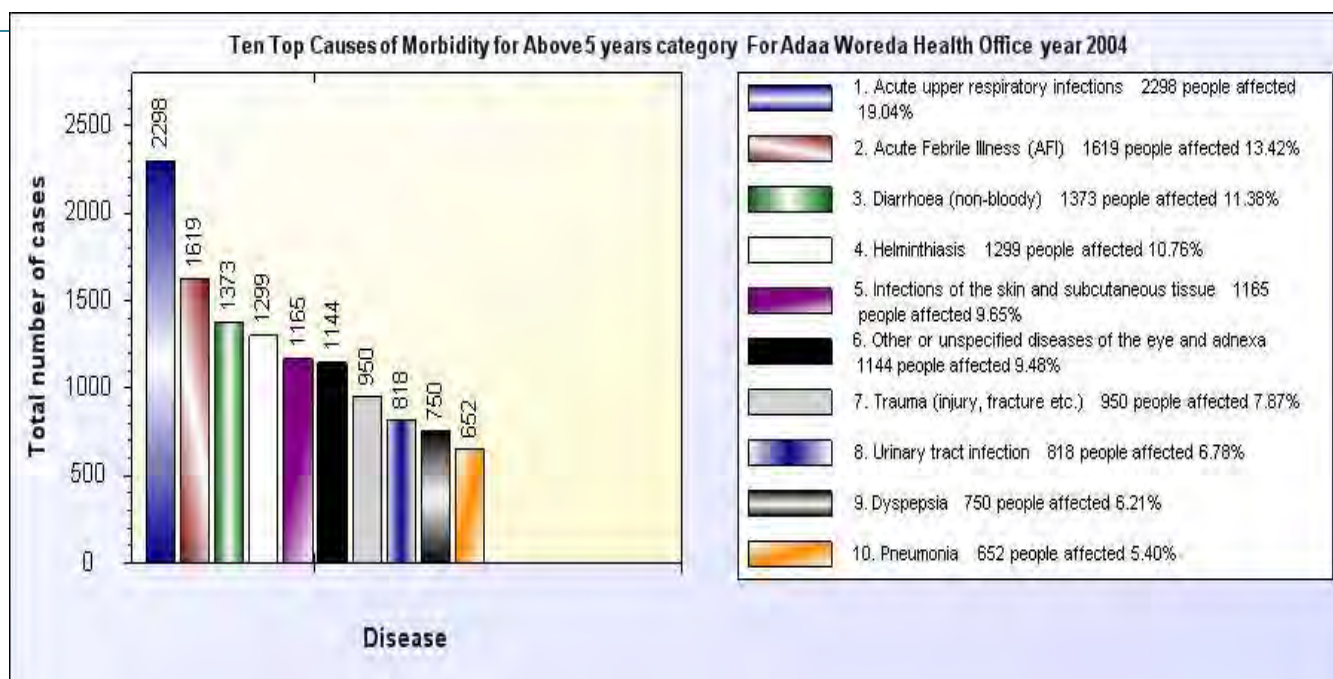


Figure 4.1. 8: Top Ten Causes of Morbidity for above Five years category of 2011/2012 Adea Woreda Health office March 2013

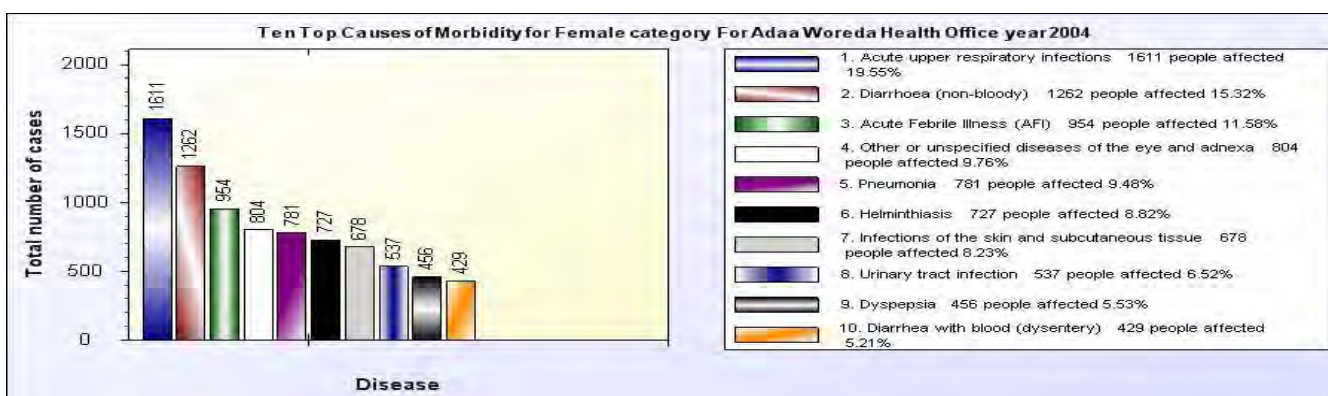


Figure 4.1. 9: Ten top cause of Morbidity for Females category for Oromia region East shoa zone, Adea Woreda as of 2013

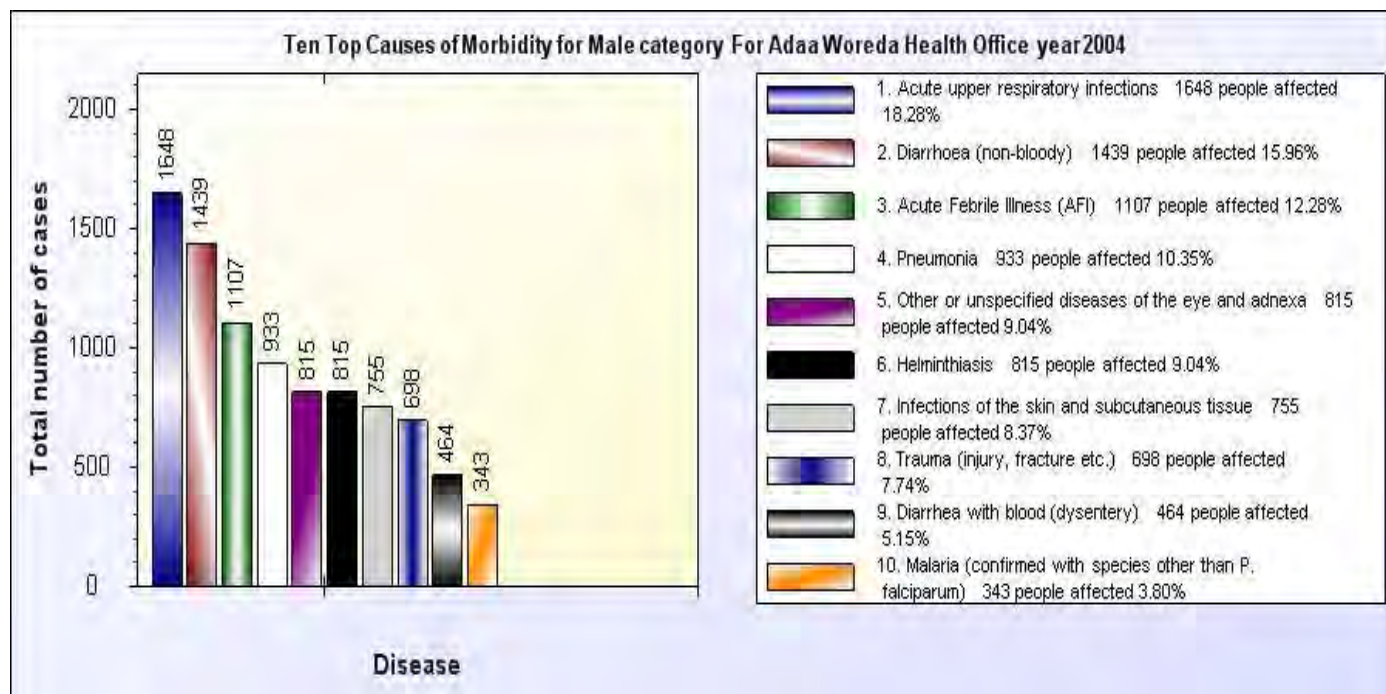


Figure 4.1. 10: Ten top cause of Morbidity for males category for Oromia region East shoa zone, Adea Woreda as of 2012

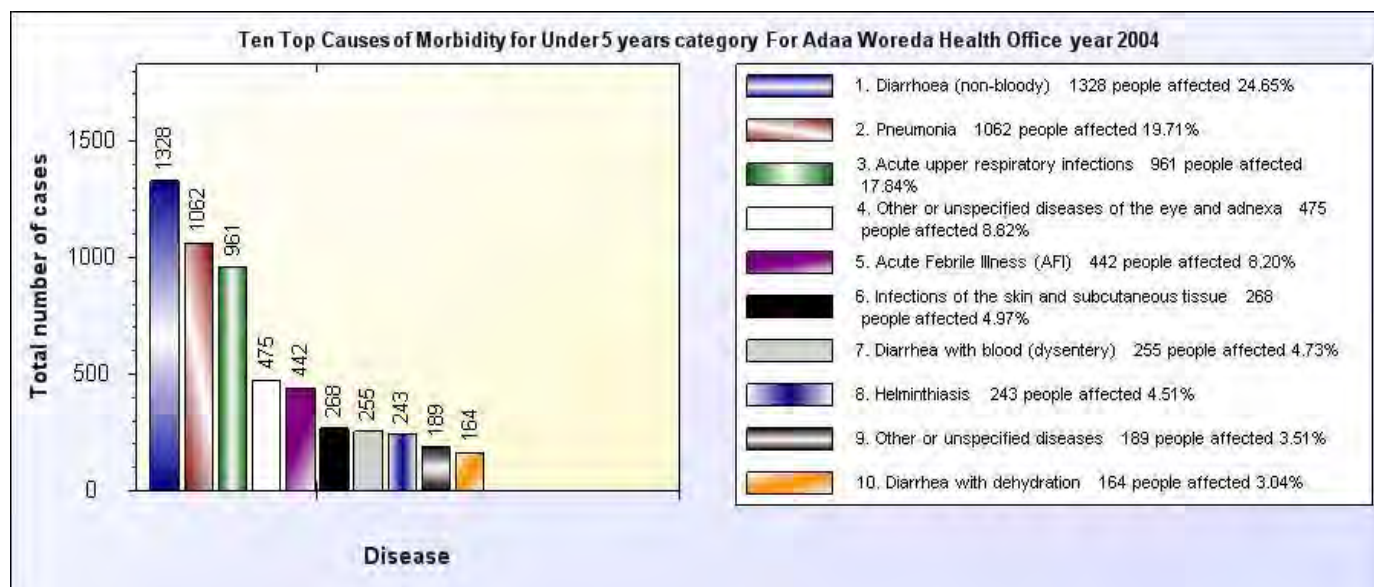


Figure 4.1. 11:: Ten top cause of Morbidity for underfives category for Oromia region East shoa zone, Adea Woreda as of 2012

we see the trend of malaria situation in the past four years the incidence rate were decreased dramatically from 45.7 in 2010 to the 13 per 1000 population up to second quarter of 2013. This decrement is due to woreda health office activities including the stake holder were working hard

on the removing the breeding site of mosquitoes by mobilizing the whole community , distribution of ITNs for the communities by continuous health education on the utilization of the ITNs and on prevention and control of the diseases by the health extension worker and the respective development agent. The Average yearly malaria incidence rate in this Woreda is 3083(23.7/1000) population /year.

Insecticide Treated Nets (ITNs) distribution was conducted and ITNs coverage was improved up to 100 % in the Woreda for the year of 2012. The Woreda has no shortage of coartem, RDT and others malaria supply.

Table-4.1. 16: The total malaria Morbidity by age in Oromia Region east shoa zone, Adea Woreda 2012

S/No	Year	July	August	Sept	October	Nov	December	January	Feb	Mar	April	May	June
1	>5yrs	186	207	319	496	276	236	92	75	100	87	79	78
2	<5 malaria	14	11	43	114	45	43	15	5	8	5	7	30
3	Total Malaria	200	218	362	610	321	279	107	80	108	92	86	108

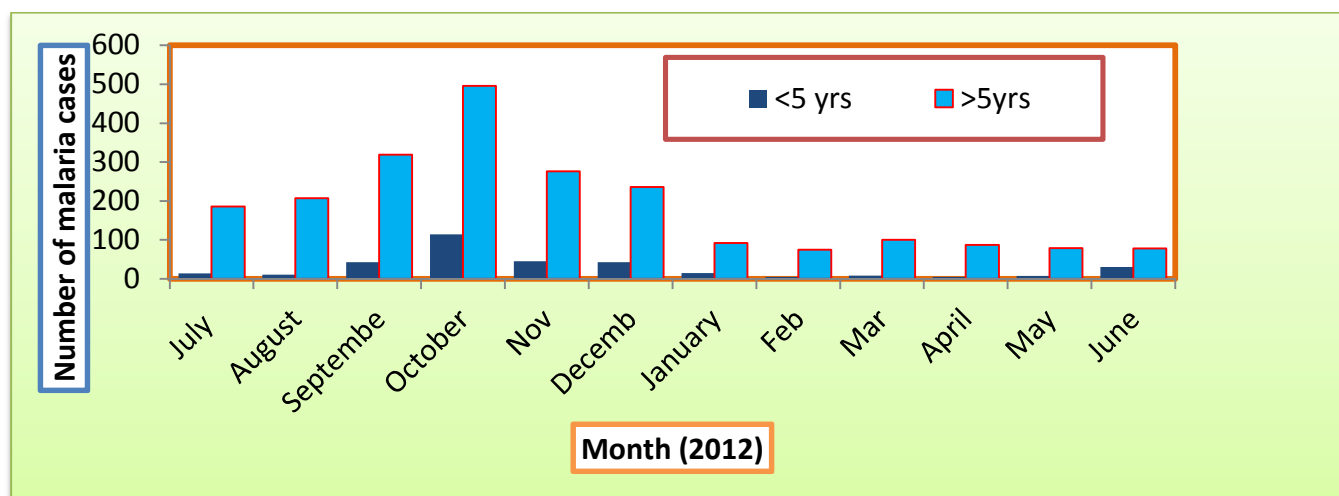


Figure 4.1. 12: The total malaria Morbidity by age in Oromia Region east shoa zone, Adea Woreda 2012

Table-4.1. 17: The malaria Slide Positivity rate (SPR), malaria Incidence rate /1000 of the past four years in Oromia Region East Shoa Zone, Adea Woreda March 2012

S/No	Year	Estimated population at risk	Examined	positive	Positivity rate	Incidence rate/1000
1	2010	126,212	16132	5767	36	45.7
2	2011	129,982	9749	2436	25	18.7
3	2012	133,864	9746	2331	24	17.4
4	2013	137,862	7996	1796	22	13.0
	Average	131980	10,905.75	3082.5	28	23.7

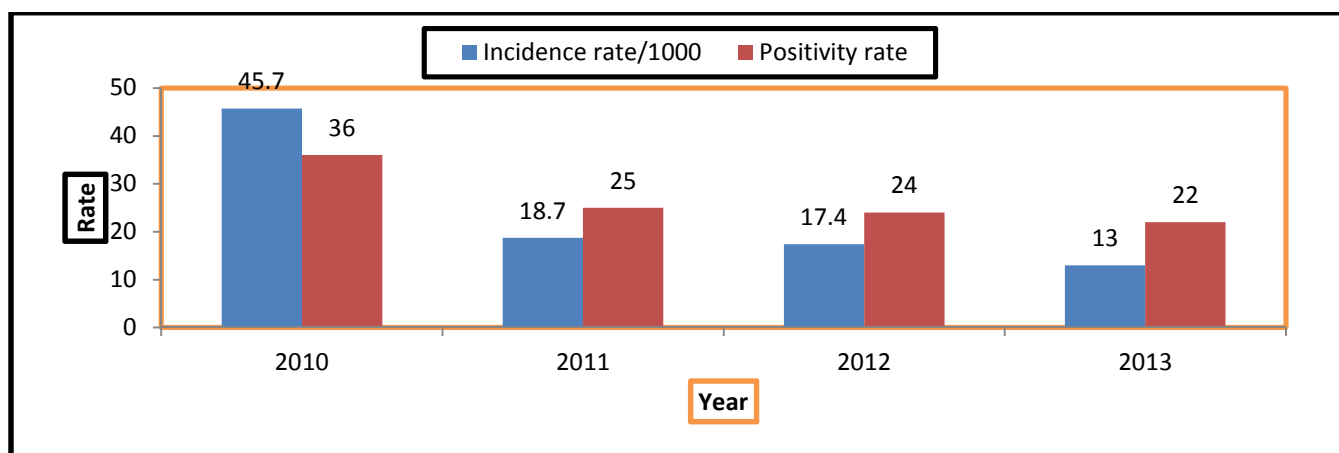


Figure 4.1. 13: The malaria Incidence rate /1000 of the past four years in Oromia Region East Shoa Zone, Adea Woreda as 2012

The woreda were also working hard to halt the burden communicable diseases so that the TB detection rate was 40%, a total of 63 Positive tuberculosis was identified. in addition to this 167 Extra pulmonary TB were enrolled in the woreda during the 2012. In general 230 all TB forms were enrolled for Tuberculosis treatment in Adea Woreda. No leprosy case investigated in Adea Woreda in this year.

4.1.5.3 HIV/AIDS

A total of 34,892 peoples (clients) were screened voluntarily for HIV in the last one year in the Woreda from which 19,280 (55 %) were males 15,612(45%) were female see the table below. Out of total screened, 162 clients were positive for HIV virus of which 92 (57%) and 70(43%) of them are males and females respectively. The incidence of HIV/AIDs is slight higher in males (4.5/1000 screed population) and 4.7/1000 in males. 517 cases were enrolled or on ART follow up in Adea woreda HC in 2012.

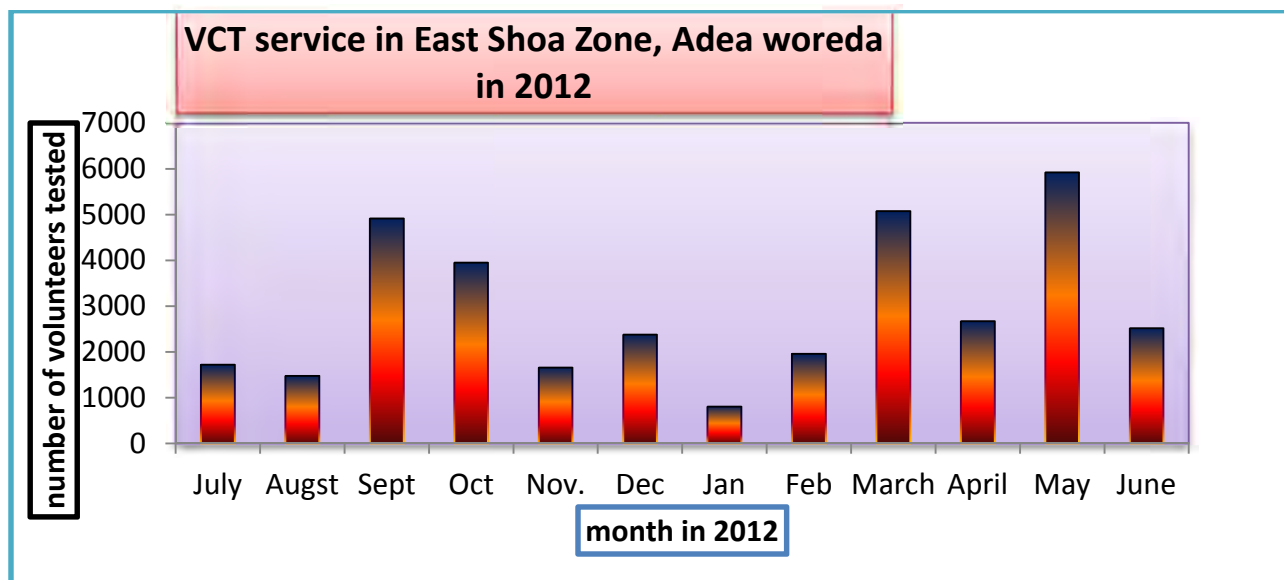


Figure 4.1. 14: VCT services in Oromia Region East shoa Zone, Adea Woreda in 2011/2012

Table-4.1. 18: The slide positivity rate of HIV/AIDS tested Volunteers and respective Incidence rate of HIV/AIDS by Age, Sex of Oromia region east shoa zone, Adea woreda 2011/2012

S/No	Age group	Tested			Tested			Total		Inc.Rate/1000
		male	Pos	Inc.Rate/1000	Female	Poset	Inc.Rate/1000	tested	Posetive	
1	15-24	3590	13	3.6	2442	10	4.1	6032	23	3.8
2	>25	6050	33	5.5	5364	25	4.7	11414	58	5.1
3	total	9640	46	4.8	7806	35	4.5	17446	81	4.6
	test									
	HIV	4.8		4.7			4.5	34,892	162	4.6
	Inc									
	/1000									
	pop									

Table-4.1. 19 provision of PICT, PMTCT, VCT service on HIV/AIDS in Oromia region east shoa Zone Adea Woreda in 2011/2012

S/No	PICT	PMTCT	VCT	Total	Inc.Rate/1000	Remark
------	------	-------	-----	-------	---------------	--------

					32167	
1	Tested	3577	1503	27086		
2	Posetive	33	14	127	176	5.68

4.1.5.4 Nutritional status and disasters

Number of OTP Health facilities providing OTP service in the Woreda is 32 and Number of health facilities providing NACS (nutrition assessment, counseling for PLWHA, TB, and OVCs) in the woreda is 01.

number of children screened for malnutrition in the Adea woreda targeted for service is 20742 with achievement of 19,013(91.6%) and number of new admission for SAM 225 is and reported as cure is 141 (62.6%) defaulter rate (1.3%) and no death rate. one of the limitation of the Woreda is the cases was not admitted in health center but they already planned to stabilize cases in the health center.Regarding disaster, the Woreda has not been experienced to any disaster so far, yet no health and other health related events occurred.

4.1.5.5 Health budget allocation

A total budget allocated for health activities (breakdown for all form of activities) in the past three years were shown in the following tables and the average annual budget for the Woreda was 3,180,891 (9.6%) from total woreda budget. The woreda health office budget was shown decrement in 2012 with shortage of budget encountered the woreda.

Table-4.1. 20: Adea Woreda Total Budget from 2011-2013

S/No	Year	Total Woreda Budget	Total Budget for Health	% of Budget allocated rate for health office	remark
1	2011	26,576,448	2,521,694	9.5	
2	2012	32,523,336	3,054,419	9.4	
3	2013	40,343,897	3,966,560	9.8	
4	Average Budget		3,180,891	9.6	

4.1.5.6 Human resource for health office (all type)

Table 8 below demonstrates human resource working under health office (including health center and health post)

TTBA=training traditional birth attendance, CHA=community health agency, CHP=community health promoter

Table-4.1. 21: Human resource working under Adea health office _Oromia Region, East Shoa Zone as of 2012

Human Resource Category	Human Resources		Number of health professionals to Household ratio
	Total number of health professionals	Health professional to population ratio	
All physicians	0	0	0
Specialist	0	0	0
General practitioners	0	0	0
Public health officers	7	1:21,812	1:4544
Nurses Bsc, & Diploma (except midwives)	36	1:4,241	1:884
Midwives (Senior)	10	1:15,268	1:3181
Pharmacists (02) BSC & druggist (03)	02	1:30,536	1:6362
Environmental HW	05	1:30,536	1:6362

Human Resource Category	Human Resources		Number of health professionals to Household ratio
	Total number of health professionals	Health professional to population ratio	
Laboratory technicians & technologists	10	1:15,268	1:3181
Health Extension Workers	51	1:2,994	1:624
TBA	12	1:12724	1:2651

4.1.6. Discussion:

The measles immunization coverage of the Woreda was above 85% except in 2003(84%) which was above the current national achievement in the same year (76.6%) [7]. The overall drop-out rate was below 10% except in 2011. There was a problem whenever the dropout rate was greater than 10% [6]. The Woreda was working very harder in immunization service to achieve the millennium development goals to reduce child mortality rate provided that there were no outbreak occurred in the Woreda in the past three years. In addition to this the Woreda Antenatal service coverage is above 100% which was higher compared to the national report of Ethiopia 2011/2012 which was 82 % but their institutional delivery was only 9%(which was by half below the national standard of the data compiled by the ministry of health in 2010 (16.6%)[8] . This low Coverage leads to the increases of maternal mortality rate which leads to UN achievement of the millennium development goals. National reproductive health strategy 2006-2015 also suggests that Current estimates of maternal mortality of the national level stand at 871 deaths per 100,000 live births, or 25,000 maternal deaths per year were recorded [7]. Consequently, this far disparities among Antenatal care and attended deliveries at health institution was not identified yet so that to solve this problem the woreda health office should be work hard to minimize the gap between this issue by delivering focused ANC to improve the skilled delivery to reach the designed level of the national plan in reducing maternal mortality rate. The contraceptive acceptance rate of the Woreda for the year 2012 was above 100% which was difficult to conclude because 100% contraceptive acceptance rate was to mean the General Fertility rate was very minimal when we compare this value with the national report of health indicator survey of 2011which is [61.7%] [8] which was by far different from each other

which needs further assessment to verify the reality of the coverage. Another data also indicated that, specifically, it calls for the reduction in the total fertility rate to 4 by 2015, increase in the contraceptive prevalence rate to 44% by 2015 and reductions in maternal, infant and child mortality and morbidity rates [9].

Diarrhea (non bloody) 1328(24.65%) was one of the top ten leading cause of Morbidity in outpatient department of the under five years of age in 2011/2012 Adea Woreda. Similar study also suggests that ARI and diarrhea contribute the first and second leading cause of main killer diseases of children fewer than five years of age especially in Africa. The percent of total deaths of children due to ARI and diarrhea, was about 37% and 41% respectively.[8]. Therefore, the Woreda Should focused on identifying the potential risk factors that will be associated with diarrheal morbidity and mortality like improving socio-economic status , improve personal and domestic hygiene , continuous maternal education and breastfeeding. Similar study also indicated that Diarrhoea was a leading cause of illness and death among children in developing countries, where an estimated 1.3 thousand million episodes and 3.2 million deaths occur each year in those under five years of age. Overall these children experience an average of 3.3 episodes of diarrhoea per year, but in some areas the average exceeds nine episodes per year. The median incidence of diarrhoea was greatest for infants aged 6 - 11 months (5 episodes /child /year). Where episodes are frequent children may spend 15% of their days with diarrhoea. 500 million cases of diarrhoea occur annually in children under five years old. One fourth to one third of all deaths in children is due to diarrhoea [8]. In developing countries like Ethiopia, a third of the paediatric beds are occupied by diarrhoea cases in which its incidence varied with regions and socio-economic conditions[8]. The Ethiopian health indicators 2011 also indicated that diarrheal diseases remains the top leading cause of Morbidity in outpatient department in children under five years of age [6]

Acute Upper respiratory Infection , Acute Febrile illness(AFI) and Diarrheal(non bloody) stands the first second and third ranks in the Ten top cause of morbidity in the Woreda which accounts for 2298(19.04%) ,1619(13.42%)and 1373(11.38%) respectively. Health And Health related indicators 2003 also indicates that acute Respiratory Infection was the second leading cause of morbidity next to malaria in 2003EFY/2011 which accounts for 1262908(5%)[8]. The increment of the Acute respiratory might be related to Ethiopian context include use of biomass

fuel for cooking, indoor air pollution, lack of a separate bedroom from for children the kitchen, lack of functional windows, increment of industries ,malnutrition and age.

When we see the trend of malaria situation in the past four years in the Woreda the incidence rate were decreased dramatically from 45.7 in 2010 to the 13 per 1000 population in 2013. This decrement is due to woreda health office activities including the stake holder were working hard hand in hand on removing the breeding site of mosquitoes by mobilizing the whole community , distribution of ITNs for the communities by continuous health education on the utilization of the ITNs and on prevention and control of the diseases by the health extension worker . The highest malaria cases in the Woreda were reported in October in 2012. Data also indicates Improving access for early diagnosis and treatment contributes to a significant decrease in death rates in under-five children [9]

6.1.The prioritized health problem

The burden of disease in Adea, measure by morbidity and mortality from all cases, comes of primarily from preventable cause and is dominated by communicable disease. The leading cause of morbidity and mortality in the zone are mostly attributed to lack of clean drinking water, poor sanitation, and low public awareness of environmental health and personal hygiene practices. Diarrhea is the leading cause of morbidity and public health problem of the in under five children's. This might be due to the low latrine coverage in the Woreda. it was only 37% which aggravates the occurrence of diarrheal diseases in the children. The Woreda health office and HEWs works hard to overcome the challenges in latrine coverage in the Woreda in collaboration with community development agents to create communities awareness among the communities.

The increment of the Acute respiratory might be related to Ethiopian context include use of biomass fuel for cooking, indoor air pollution, lack of a separate bedroom from the kitchen, lack of functional windows, increment of industries and also might be due to global climatic condition.

Therefore, the Woreda should focused on identifying the potential risk factors that will be associated with Acute respiratory system and diarrheal morbidity and mortality like improving socio-economic status , improve personal and domestic hygiene , continuous maternal education and breastfeeding.

4.1.6.1 Limitations

1. No vital statistics (birth and death) exist in the Woreda.
2. We use the secondary data.

4.1.6.2 Conclusion

Diarrhea was the leading cause of under five Morbidity where as acute respiratory infection was the leading cause of morbidity above five years of age. Therefore, the woreda Health office should identify major underlying cause for the occurrence diseases. But when we see the glance summary of the general health service coverage it was not only high but also rising except skilled delivery which was minimal. Hence, the woreda health office should work hard to review and evaluate their nucleus health service delivery approach to realize superior quality of health service.

4.1.6.3 Recommendations

1. The Health center in the woreda did not deliver IPD service. That will may increases the rate of Mortality of the patients. So the Woreda Health office should take the assignment to make the Health center to implement IPD service as soon as possible.
2. The ANC service was above 100% however, the delivery was very minimal below 10%. So the woreda health office should identify the potential gap why women's did not give birth at health institution's so as to decrease the maternal death

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Operational Definition

Contraceptive Accepters rate

The proportion of women of reproductive age (15-49 years) who are not pregnant and who are accepting a modern contraceptive method (new and repeat acceptors).

Antenatal Care coverage

Percentage of women who utilized antenatal care provided by skilled birth attendance for reasons related to pregnancy at least once during pregnancy as a percentage of live births in a given time period.

Health center

It is an establishment which provides both preventive and curative services. It comprises five satellite health posts and is expected to serve for 25,000 people.

Health post

One of the satellite facilities in the Primary health care unit which serves for 5,000 people (1 per Kebele).

Fully immunized

Surviving infants who receive all doses of infant antigens. The Infant Antigens are: BCG, Pentavalent (DPT-HepB, Hib), doses 1 -3; OPV, doses 1—3; and Measles.

Dependency ratio

The ratio of persons in the 'dependent' age groups (under 15 years plus 65 years and above) to those in the 'economically productive' age group (15-64 years), expressed as a percentage

Average household size

The mean number of members per household

Child mortality

The probability of dying between exact age one and the fifth birth day per 1000 children surviving to the first

Demography

The study of population and its characteristics, with reference to such factors as size, age structure, density, fertility, mortality, growth and social and economic variables.

Postnatal visits

Women attended, at least once during postpartum (42 days after delivery), by health professional including HEW's for reasons relating to post partum.

Potential health service coverage

The population covered in percentage based on the existing health centers and health posts in catchments' area.

Rate of National Increase

A measure of population growth (in the absence of migration) comprising addition of newborn infants to the population and subtraction of deaths. Expressed as a percentage per annum. This rate, which specifically excludes changes resulting from migration, is equal to the difference between the crude birth rate and the crude death rate.

Skilled Birth Attendant

An accredited health professional such as midwife, doctor or nurse who has been trained in the skills needed to manage normal (uncomplicated) pregnancies, child birth and the immediate postnatal period and in the identification, management and referral of complications in women and newborn. (Exclude TTBA and HEWs)

Special clinic

Provides specific medical interventions such as medical, surgical, obstetric gynaecology , ophthalmology, etc. and is assisted by specialists in various disciplines.

Total fertility rate

The average number of children that would be born per woman of all women lived to end of their childbearing years and born children according to a given set of age specific fertility rates.

Urban

Those working in urban areas or in planned metropolitan communities in developed areas designed to be self-sufficient, with their own housing, education, commerce and recreation.

Mortality rate

The probability (expressed as a rate per 1000 live births) of a child born in a specified year dying before reaching the age of five if subject to Current age-specific mortality rates.

Under five mortality rate

The probability (expressed as a rate per 1000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates.

Vital events

Births, deaths, marriages and divorces

Annex 4.1.1 Data collection tools for health Profile Description in Adea Woreda Of East Shewa Zone, Oromia Region, February 2013

Historical Aspects of the area (Culture & tourism office).

Woreda at a glance: where it is _____
The name (how & why) _____
How the woreda was formed _____
Any other historical aspect _____

1. Geography and Climate (including map, altitudes, Agro ecological zones etc...)

Woreda map _____
Location (distance and direction) _____
Altitude _____
Annual rain fall(average) _____, annual temp(average) _____
Climatic zones _____
Accessibility (main roads) _____

2. Administrative setup

Total no. of kebeles: rural _____ Urban _____
Woreda boundaries North _____ south-----
East _____ West _____

4. Demographic information

Population: Total _____ urban _____, rural _____
Male-----Female----- sex ratio-----
Under 1yrs _____. Under five yrs _____. < 15 years _____. >64 years _____
Women 15_49 years of age _____
Total population by kebele (each kebele pop) _____
Ethnic composition/language _____

3. Economy(mainstay of the economy, average income levels etc)

Main source of the economy _____
Average income per HH/year _____

4. Education and school Health

Schools: primary_____ Secondary_____

High schools_____, TVET/colleges_____

School health activities: water supply: schools with water supply_____

Toilets: _____ schools _____ with _____ functional latrines(male&female)_____

Schools with HIV/other Health clubs_____

5. Facilities (Transport, Telecommunication, Power supply, ...)

How many of the health posts have access to

transportation_____ (%)

telecommunication_____ (%)

Electric power_____ (%)

8. Health delivery system

8.1 Woreda **Health Structure**/organ gram

8.2 Health Facilities

type	Number	Total No. of beds
Hospital		
Health center		
Private HFs(clinics/diag.lab/drug stores)		
Health posts		

Health institution to pop ratio:

Hospital:Pop-----, HC:Pop----- HP:Pop-----

Health service coverage-----

8.3 **Human resource for health(all type)**

type	No.	Remark
Physicians		
Health officers		
Nurses		
Lab.		
Pharmacy		
Env. health		
HEWS		
others		

Doctor: pop ratio_____, Nurse: pop ratio_____ HEW:pop ratio_____

8.4. **Top causes of morbidity and mortality**

Top ten leading causes of OPD visit (morbidity):

	Adult	Pediatrics
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Top ten causes of admissions

	Adult	Pediatrics
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Top ten causes of deaths (mortality).

	Adult	Pediatrics
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

8.5 Vital Statistics and Health Indicators

Infant Mortality Rate (IMR) _____ (total <1yr deaths this yr_____)

PMR_____ (This 2003yr: Total live births_____ total still births_____

Total neonatal deaths_____)

Child Mortality Rate_____ (this year's total <15yr deaths_____)

Crude Birth Rate_____

Crude Death Rate_____ (total deaths this yr_____)

Maternal Mortality Rate_____ (this yrs total maternal deaths_____)

Contraceptive Prevalence rate_____

ANC rate (how many of the total expected pregnancies attended ANC) _____

Percentage of deliveries attended by skilled birth attendants_____

Immunization Coverage (for children);

BCG _____. OPV_____

Measles_____. Penta1_____. penta2_____

8.6 Health **budget allocation:** Gov't----- (break down to d/t activities)

NGO-----

(purpose/programs)_____

9. Disaster situation in the woreda

Was there any disaster (natural or manmade) in the woreda in the last one year?_____

Any recent disease outbreak/other public health emergency_____

If yes cases_____ and deaths_____

14 .Community Health Services;

Status of services provided by community health workers namely

TBAs_____ (no of TBAs)_____

CHWs/CHPs_____ (no. of CHPs)

HEWs_____

Others_____

12. Status of Primary Health Care Components – with focus on the eight PHC elements

MCH

FP _____

EPI: _____

Environmental Health & sanitation.

Latrine coverage_____ & utilization rate_____

water supply_____

others_____

Health Education

Endemic diseases;

Malaria:

Total malarious kebeles_____ & Pop at risk_____

ITNs coverage (including current dist)_____ is there IRS this year(No of
kebeles)_____

Total cases/yr_____ deaths/yr_____, <5yr cases_____ deaths_____

Malaria supplies (Coartem, RDT, etc) shortage _____

Other
issues_____

TB/Leprosy

Total TB cases_____ PTB negative_____ PTB positive____ Extra PTB _____

TB detection rate _____

TB Rx completion rate _____ TB cure rate _____

TB Rx success rate _____

TB defaulter_____

Death on TB Rx_____

Total TB patients screened for HIV_____

Total Leprosy cases_____ on Rx_____

HIV/AIDS;

Total people screened for HIV (last one year)_____

VCT_____ PITC_____ PMTCT_____

HIV prevalence_____

HIV Incidence (new cases/yr)_____

Total PLWHA_____

ON ART_____on Pre-ART

Other HIV prevention activities_____

Nutrition (malnutrition related OTPs,SC,TSF,CBN and PSNP activities)/HO & Early warning

Total OTP sites_____, total admissions to OTP/yr_____

Total SC sites,_____, Newly opened/yr_____, total admissions to SC/yr_____

Is there TSF (targeted supplementary feeding) program in the woreda_____

CBN program_____ PSNP_____ other_____

General food security condition_____

Essential drugs (shortage):

What do you think the major Health problem/s of the woreda?

13. Discussion of the highlights and the main findings of the health profile assessment and description

14. Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc

Chapter – V Scientific Manuscript for peer reviewed Journals

5.1. Rubella Outbreak Investigation and response in pastoralist community of the Ethio-Kenyan Boarder of Miyo Woreda-Borena zone, Oromia, Ethiopia, December 2013

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Abstract

Introduction; Rubella is an acute contagious infection caused by the Rubella virus. It presents fever with maculopapular rash similar to Measles. Rubella is usually mild in children. When woman contracts rubella early in pregnancy, serious consequences may occur including birth defects known as congenital rubella syndrome (CRS). Little is known about rubella epidemiology and the incidence of CRS in Africa. At present Rubella vaccine is not included in any vaccination program in Ethiopia. In November 2013, Miyo Woreda of Borena zone, Oromia - Ethiopia reported suspected Rubella cases and we investigated to confirm the etiology, identify potential risk factors and suggest control measures.

Methods: We defined a confirmed Rubella case as an illness characterized by acute onset of generalized maculopapular rash, fever, with arthralgia, arthritis, lymphadenopathy, conjunctivitis with positive serologic test for rubella immunoglobulin M (IgM) antibody in the blood specimen. We collected ten blood samples for laboratory confirmation. We conducted unmatched case control study to identify possible risk factors.

Result: We identified 183 suspected Rubella cases with zero death . The median age of the case was 6 years. The overall attack rate of this outbreak was 29 per 100,000 populations. We collected ten blood samples with 100% positivity rate for Rubella IgM antibodies. Travelling history to outbreak area (OR= 26.29, 95% CI= 9.15 -77.87), having contact with a person who had a recent illness consistent with Rubella (OR: 34.0, 95% CI: 11.44-104.90), living in unventilated house (OR=14.6: 5.59-38.14) were found to be significantly associated with rubella infection.

Conclusion; Finally we investigate rubella outbreak in arid- pastoralist society of Borena zone of Miyo Woreda. It is found that recent travel to an areas where cases of Rubella was reported, attending a school where the cases present and the housing condition with poor ventilation were significantly associated with rubella outbreak.

Key Words: Rubella, Rubella outbreak, CRS

5.1.1. Introduction

Rubella is usually a mild febrile rash illness in adults and children (1; 2; 3; 4; 5; 6) . Rubella also called German measles which is contagious disease of short duration, caused by virus infection. The disease is characterized by a rose-colored maculopapular rash and followed by other mild symptoms, such as fever, sore throat, and swelling of the lymph glands behind the ears. The maculopapular rash, which lasts from one to four days, first appears on the face and spreads rapidly to the chest, limbs, and abdomen. It is most common among teenagers and young adults. It has an incubation period of 12 to 23 days, more commonly 14 to 18 days. An attack of the disease usually confers lifelong immunity (1). During 2009, a total of 121,344 rubella cases were reported from 167 member states to WHO, an 82% decrease from 670,894 cases reported in 2000 from 102 member states. This report summarizes reported rubella and CRS cases globally and progress toward global introduction and use of RCV. In addition to this, 300 children still enter the world with the disabilities of CRS with spread of the virus throughout the body.

despite the availability of effective, safe and inexpensive vaccines (6; 7).

Following a widespread epidemic of rubella infection in 1941 the occurrence of congenital cataracts among 78 infants born following maternal rubella infection in early pregnancy. This was the first published recognition of congenital rubella syndrome (CRS). Rubella virus was first isolated in 1962 by Parkman and Weller. The first rubella vaccines were licensed in 1969. (1)

Rubella virus is classified as a toga virus, genus Rub virus. It is most closely related to group Arbo viruses, such as eastern and western equine encephalitis viruses. It is an enveloped RNA virus, with a single antigenic type that does not cross-react with other members of the togavirus group. Rubella virus is relatively unstable and is inactivated by lipid solvents, trypsin, formalin, ultraviolet light, low pH, heat, and amantadine. Following respiratory transmission of rubella virus, replication of the virus is thought to occur in the nasopharynx and regional lymph nodes. A viremia occurs 5 to 7 days after exposure. Transplacental infection of the fetus

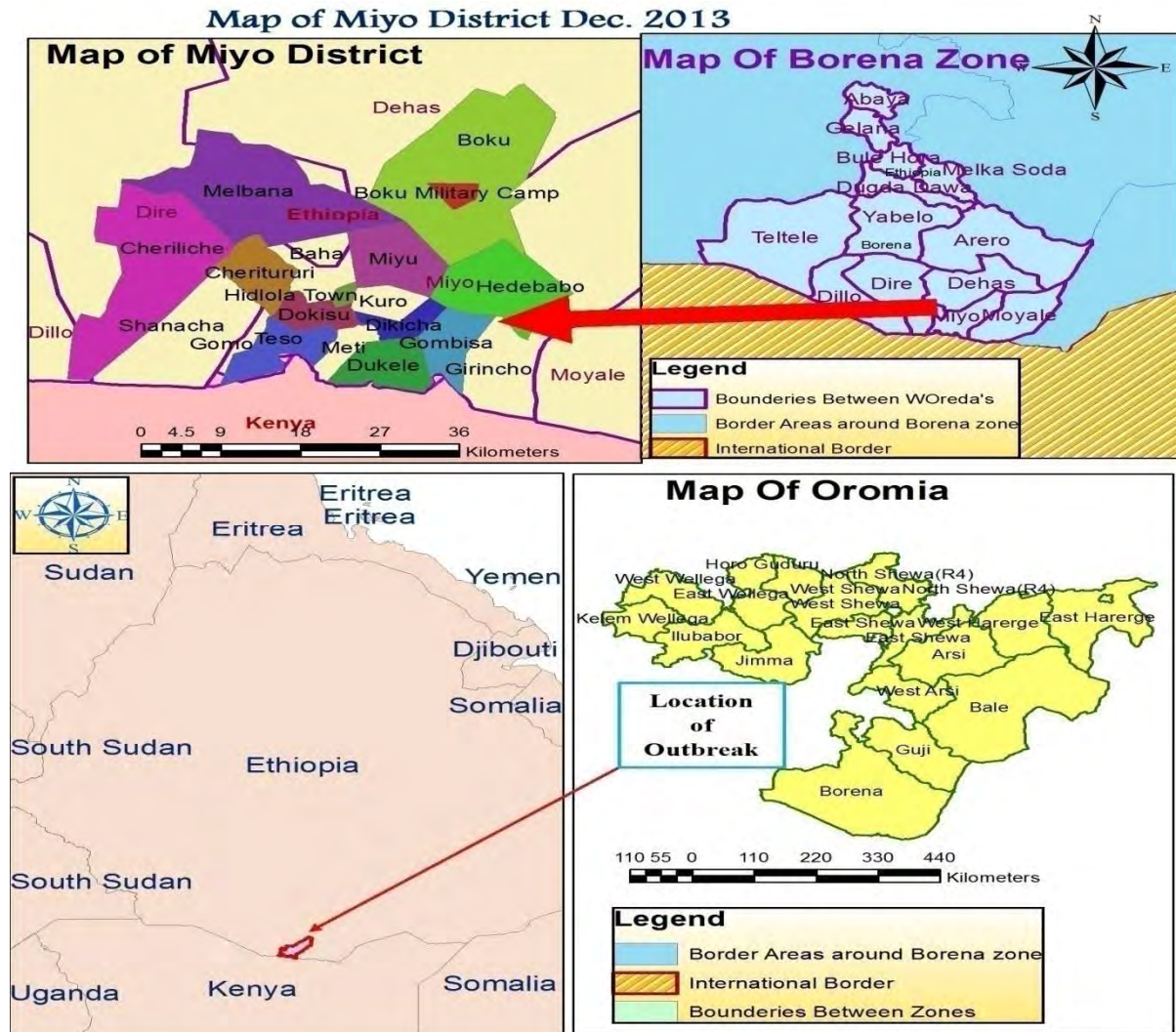


Figure 5. 1.1. Location of Miyo Woreda

Occurs during viremia. Fetal damage occurs through destruction of cells as well as mitotic arrest.

The incubation period of rubella is 14 days, with a range of 12 to 23 days. Symptoms are often mild, and up to 50% of infections may be subclinical or inapparent. In children, rash is usually the first manifestation and a prodrome is rare. In older children and

adults, there is often a 1 to 5 day prodrome with low-grade fever, malaise, lymphadenopathy, and upper respiratory symptoms preceding the rash. The rash of rubella is maculopapular and occurs 14 to 17 days after exposure. The rash usually occurs initially on the face and then progresses from head to foot. It lasts about 3 days and is occasionally pruritic.

Evidence of disease burden due to rubella is emerging from countries that have not yet provided rubella immunization (2). The US childhood rubella vaccination program was started in 1969; however, many other countries do not have, or have recently implemented, rubella vaccination programs (3). The countries that have already started immunization against rubella should 2012 indicates that by 2011, 130 Member States (67 per cent) were providing at least one dose of rubella-containing vaccine (RCV), an increase from 99 countries (52 per cent) in 2000. By the end of 2012, four more countries—Bangladesh, Lao People’s Democratic Republic, Nepal and Solomon Islands—had introduced RCV either in the routine programme, SIAs or both. This leaves 59 countries remaining that have not yet introduced RCV, of which 49 are GAVI-eligible as of 2013. Rubella vaccine coverage is almost identical to that of measles, as all countries except Tunisia use the vaccine combined with measles vaccines or measles and mumps vaccines. The burden of congenital rubella syndrome—estimated at about 103,000 cases in 2010—is greatest in WHO regions where most of the countries are not using rubella vaccine (8)

Surveillance for rubella or CRS does not exist in Ethiopia; however, the measles case-

integrate rubella surveillance with measles surveillance. This will help to ensure that all potential

Rubella cases and outbreaks are investigated and quantify the impact of rubella immunization (2). Measles and Rubella Initiative Annual Report by WHO

based surveillance system, established in 2004, includes laboratory testing for the detection of measles specific and rubella-specific antibodies. The measles case-based surveillance system has helped greatly in terms of documenting the epidemiology of measles in Ethiopia. However, little is known of the magnitude and distribution of Rubella cases. In African countries, including Ethiopia, CRS is widely under-recognized as a public health problem, and information on rubella and CRS epidemiology is very limited

5.1.3. 1. Methods and materials

5.1.3.1.1 Study area, population and period

5.1.3.1.2 Study Area: - an outbreak investigation was carried out in Miyo Woreda of Borena zone in Oromia Region from November 15 to 26/2013. Miyo woreda has 18 kebeles with the total

population 62,133. The major ethnic groups Pastoralists and live across the border on both sides of the Ethio-Kenyan border. There were five Health Centre and sixteen Health Posts. The Potential Health service Coverage in Health Center and Health Post was 100%.

5.1.3.1.3 Study design: Both descriptive and Analytical matched Case- control study design was used.

5.1.1.4 Sample Size:

matched case-control study in the ratio of 1:2 (37case and 74 controls) was conducted to describe potential household's risk factors for infection.

5.1.3.1.5 Cases Definition

5.1.3.1.5.1: Suspected Cases

Any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella or any other illness

5.1.3.1.5.2 Probable cases

In the absence of a more likely diagnosis, an illness characterized by acute onset of generalized maculopapular rash and temperature greater than 99.0° F or 37.2° C and arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and lack of epidemiologic linkage to a laboratory-confirmed case of

in the Woreda are the Oromo. They are rubella; and noncontributory or no serologic or virologic testing.

5.1.3.1.5.3 Confirmed Case definition

A case with or without symptoms who has laboratory evidence of rubella infection confirmed by one or more of the following laboratory tests: isolation of rubella virus; or detection of rubella-virus specific nucleic acid by polymerase chain reaction; or significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay; or positive serologic test for rubella immunoglobulin M (IgM) antibody;

OR An illness characterized by acute onset of generalized maculopapular rash and temperature greater than 99.0°F or 37.2°C arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and epidemiologic linkage to a laboratory-confirmed case of rubella.

5.1.3.1.6 Epidemic Threshold

5.1.3.1.6.1 Confirmed rubella outbreak

The epidemic threshold for this outbreak is defined as the occurrence of three or more confirmed rubella cases (at least two of

which should be laboratory confirmed; IgM positive) in a health facility/block/Woreda (approximate catchment population of 100,000) in a month. (9)

5.1.3.1.6.2 Mixed outbreak

If at least one case is positive for measles and at least one case is positive for rubella, the outbreak is designated to be mixed outbreak.

5.1.3.1.7 Surveillance and Response

During the last Epidemiological week 45 of 2013 Miyo Woreda of Borena zone have been reported Suspected Rubella cases to regional health bureau public health emergency management through a weekly aggregated report.

As report was sent from the zonal PHEM focal person we communicate with concerned bodies for the verification of suspected outbreak. Having this, team was mobilized to the area. We communicate with Borena Zone Public Health Emergency Management focal person in collaboration with Woreda task force committee. After dealing some issue about the cause and early preparedness and response we directly discussed with woreda technical committee about the causes and how we proceed the way of the outbreak investigation. We directly contact with Woreda Health office

vice head and PHEM focal person and woreda except about the root cause and some aggravating factors relating to the outbreak and the response under action. Team were established for further control of the outbreak in the woreda and mobilized to the affected Kebeles. Five Case based measles surveillance was sent to EHNRI for laboratory confirmation and all specimen were resulted Rubella IgM positive.

Mean while additional five samples were taken to confirm for further verification of the cases and all of them were Rubella IgM positive. Line list was also created to collect information about cases and was maintained throughout the outbreak.

5.1.3.1.8. Data collection procedure

Information on potential risk factors was collected using semi structured a questionnaire, A questionnaire were prepared based on basic epidemiological information, symptoms, time onset of rash, medical care, measles vaccination history, housing condition, nutritional status, history of contact, travelled history and also Knowledge, attitude and Practice on Rubella transimission and prevention strategies.

5.1.3.1.9 Data analysis

All the quantitative data from questionnaires and line list were entered on a computer and analyzed using a computerized data base Epiinfo 7 and Microsoft office excel 2007. Arc GIS was also used to indicate the spatial distribution of the diseases. Data was cleaned and checked for inconsistencies and missing values. During the analyses P-value and 95% confidence interval (CI) for odds ratio were used in deciding the significance of the associations.

5.1.4.0 Result

5.1.4.1 Descriptive analysis

A total of 183 suspected rubella cases and no death were reported from 13 kebeles of the

Woreda starting from November 3, 2013 to December 15/2013. The overall attack rate was 29 per 10,000, with no case fatality rate. The index case was seen on 03/11/2013 at health facility. The median age of the case was 6 years old with range of 1-26. The attack rate among less than five years age group was 75 cases per 10,000 populations while 2 cases per 10,000 populations in the age of greater than five years. In addition, the attack rate between five and 15 years age was 5 cases per 10,000 population. There was no case fatality rate registered throughout the outbreak.

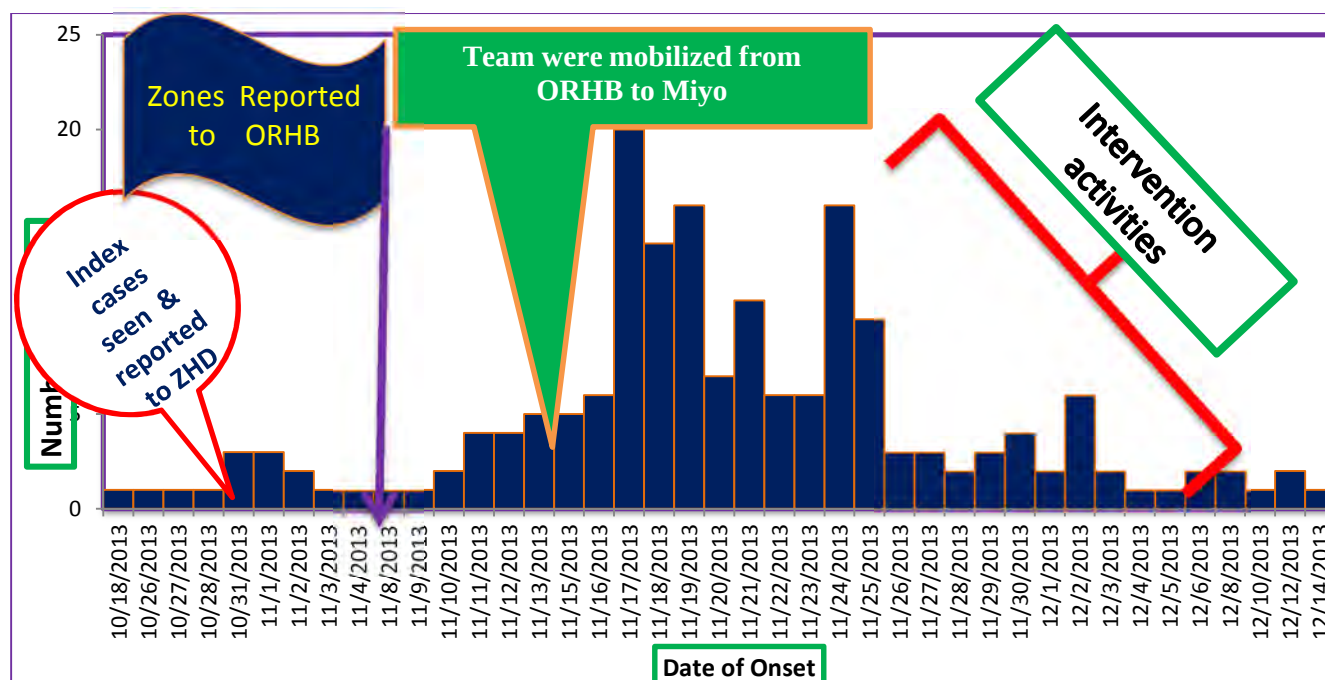


Figure 5.1. 2. Number of cases by date of Onset Miyo Woreda in Dec. 2013

5.1.3. Analytical Epidemiology

We compared 37 Rubella cases with 74 community controls matched by sex, age and place of residence. Descriptive statistics and odds ratios with 95% confidence intervals were calculated to compare risk factors among cases and controls. Analysis was performed using Epi Info version 7. A total of 31(83.78%) cases and 12(16.22%) of controls selected from the community having history of recent travel to the area where Rubella outbreak cases was reported and 9(24.42%) cases and 61(82.43%) controls had ventilated room during the observation and the rest 28(75.68%) and 13(17.52%) cases and controls have no Ventilated shelter during the visit respectively. About 26(70.27%) of

Rubella case patients and 62(86.11%) community matched controls had a recent history of measles vaccination. 28(75.68%) of the cases and 38(51.5%) of controls did not know any information on the way of transmission of rubella cases from one person to other. Using case-control study, recent travel to an areas where cases of Rubella was reported (Odds Ratio (OR): 26.69, 95% confidence interval: 9.0-77), attending a school (OR: 21.39, 95% confidence interval: 7.44-61.46) and the housing condition with having no ventilation (OR) 14.59, 95% CI 5.59 -38.14, $P=0.00000$ were associated with higher odds of rubella infections.

Table-5 .1.1 Risk factors for contracting Rubella in Miyo Woreda, Oromia-Ethiopia, Dec. 2013

Exposure	Yes/No	Case n=37(%)	Control=74(%)	Odds ratio	(95% CI)	P Value
History of travel	Yes	31(83.78%)	12(16.22%)			
two weeks prior	No	6(8.82%)	62(91.18%)	26.69	(9.15-77.87)	0
onset of illness	Yes	30(81)	9(12%)		11.56-	
Contact with case	No	7(19%)	65(88%)	34.84	104.90)	<0.05
Living in	Yes	28(75.68%)	13(17.57%)			
Unventilated house	No	9(24.32%)	61(82.43%)	14.60	(5.59-38.14)	<0.05
Being	Yes	26(70.27%)	63(85.14%)			
Unvaccinated for					(0.1592-	
Measles	No	11(29.73%)	11(14.86%)	0.4127	1.0698)	0.069
Contact with cases	Yes	27(72.97%)	11(14.86%)			
in School	No	10(22.03%)	63(85.14%)	15.46	5.87-40.70	<0.05
Contact with cases	Yes	20(54.05%)	8(8.81%)			
in Neighbours	No	17(45.95%)	66(89.19%)	9.70	3.65-25.80	<0.05

5.1.5.0 Discussion

Several factors may have contributed for the occurrence of this outbreak. The results of the investigation revealed that of the total number of rubella, 100% had never been vaccinated against rubella infection. Ongoing rubella outbreak among adolescents in Salaj, Romania, September 2011–January 2012 indicates that 98% had never been vaccinated against rubella infection. (10)

The index case was an unvaccinated teenager and 1,206 of the rubella case.

Rubella outbreak is not common to Ethiopia hence it is not targeted as priority disease and there is no set of prevention and control strategy. .As for measles, a safe, heat-stable, effective and inexpensive rubella vaccine exists, and substantial progress has been made towards rubella control activities. However, rubella infections remain one of the leading causes globally of preventable congenital birth defects. As of December 2010, 131 of the 194 WHO Member States included rubella-containing vaccines

(RCVs) in their routine immunization programmes, in the form of MR or MMR (6). However, Ethiopia did not introduce rubella vaccine yet. Similar outbreak also happened in Japan males aged 20–39 years, who were not included in the initial rubella vaccination program, accounted for 68% of the reported cases. However, with the introduction of 2 doses of Measles-Rubella vaccine into the national vaccination schedule in 2006 for both boys and girls and the successful catch-up vaccination program, children who currently are aged <15 years account for only 5.6% of the case. This might be one of the risk factors contributing for the occurrence of the outbreak.

Travelling history to outbreak area (OR= 26.29, 95% CI= 9.15 -77.87) Contact with rubella Symptom (OR: 34.0, 95% CI: 11.44-104.90, P=0.0000) were associated with rubella infections.

In addition to this travelling to schools was one of the significant risk factors for the propagation of the outbreak with odds ratio (OR) of 15.46 with CI 5.87-40.70.

In the outbreak situation, isolation of infected person with Rubella virus is the major prevention and control mechanism. In practical setup of Miyo woreda isolation was very challenging. Because their living style

is very crowded and there are many children in the family. Hence, if somebody infected with Rubella virus in the family, it is difficult to isolate the infected person from the family. This creates the ease transmission of the cases in the family. Vaccination of susceptible person to Rubella virus with Rubella vaccine is the other major activities. However, there is no vaccination strategy in Our country for Rubella virus. To minimize further complications case management should be conducted early and regularly. Case - contact tracing was done. Similarly in Miyo woreda the case management was good.

The other major activity is conducting active case search and treating the cases early. In Miyo woreda active cases search was conducted in each kebele every day including schools every morning and if they found new cases they do proper case management and proper isolation of the students from the school until he/she recovers. Health Education was continual given at the community level, at school community both in Elementary and High school students and teachers in the Woreda.

To control the outbreak effectively and in a short period of time, the prevention and control measures should be monitored regularly and timely.

5.1.6.0 Limitation of the study

These results are subject to few limitations. First, the case definition used to detect the rubella cases was designed for the measles case-based surveillance system and is specific for measles. Many individuals with rubella cases may not have any significant fever, and up to 50% of individuals with rubella cases may present without a rash or have subclinical illness. The sensitivity of this case definition is likely not high enough to identify all rubella cases.

5.1.7.0 Conclusion

We investigate rubella outbreak in arid-pastoralist society of Borena zone of Miyo Woreda. It is found that recent travel to an areas where cases of *Rubella* was reported, attending a school where the cases were present and the housing condition with poor ventilation were significantly associated with rubella outbreak.

5.1.8.0. Recommendations

5.1.8.1. Federal/Regional/Zonal Health

Department

The Regional Health Bureau in collaboration with the FMOH should plan together towards the introduction of rubella vaccine in to the country's immunization programme for the sustainable prevention and control of the

cases. Support additional operational cost for capacity building of Health workers and Health extension workers.

5.1.8.2 The Woreda Health Office

The Woreda Health Office should strengthen active surveillance system in order to detect case early as much as possible.

Rubella and CRS surveillance system should be established. Restocking emergency drugs and supplies that are running out Strengthen sensitization of Health workers and health extension workers Continue watchfulness on the already enhanced active surveillance Continues Health Education of the community on Ways of transmissions and prevention activities Intersectorial collaboration with other sector like administration, education bureau is mandatory to reverse the transmission of the cases.

5.1.9. References

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Chapter – VII

Narrative summary of disaster situation

7.1. Report on Meher Emergency Needs Assessment-North_ East and West Shewa Ethiopia, Oromia region, Ethiopia, (Nov.24 – Dec.14, 2013)

7.1.1. Introduction

Ethiopia, like other countries in the Horn of Africa, is subject to highly variable and variable Climatic conditions. Drought is a recurrent problem. Most parts of the country —normally have at least two rainy seasons in a year, but one or even both of these frequently fail. When this happens harvests are poor and livestock may die. Failure of food production or distribution systems, leading to sharply increased mortality due to starvation and associated disease. Food crises lead to malnutrition, and in some cases absolute starvation. Malnutrition greatly aggravates the risk of morbidity and related deaths (29)

Food security has improved in most parts of Ethiopia with the start of the Meher harvest in October. Food security between October and March is typically stable given that the Meher season harvest (October to January) contributes 90 to 95 percent of total annual crop production (30; 31). The La Nina phenomenon, which normally leads to below-normal rainfall in the eastern Horn of Africa including pastoral lowlands of Ethiopia, is expected to continue into 2011.

Furthermore, Somali Region and the pastoral and agro-pastoral areas of Oromia and Southern Nations, Nationalities and Peoples (SNNP) regions are already affected by poor dry rains. This is leading to unusually early livestock migrations, severe water shortages and deterioration of Livestock health. (32; 33; 34)

Systematic monitoring and assessment of food and non-food vulnerabilities are crucial in order to identify problems and provide an early response. Considering this situation, the Ethiopian Government-led a multi-sect oral seasonal assessment from 25st November 2013, to the 14th of Dec, 2013.

A team comprising of experts from ORHB, WFP, UNOCHA, Oromia Regional Disaster Preparedness and Prevention Commission and Catholic Church relief service (CRS), have participated in the assessment of cross-sectional survey type with objective of identifying humanitarian need for the coming 6 months of 2013. The assessment was conducted in the following sampled in North Shewa: Kuyu, Warra Jarso, and Debre Libanos from West Shewa Jaldu and Gindeberet Woreda, from East Shewa Fentale and Bosat Woreda were included during the assessment. In addition to visiting selected hot spot woreda's, all needed Information based

on our check-list was collected from the rest of all three zonal woreda's. Regional, zonal and woreda health officials were contacted during the assessments. The teams were expected to collect and analyze data at the regional level, and the compiled Assessment results was planned to be presented in the 2014 Humanitarian Requirements

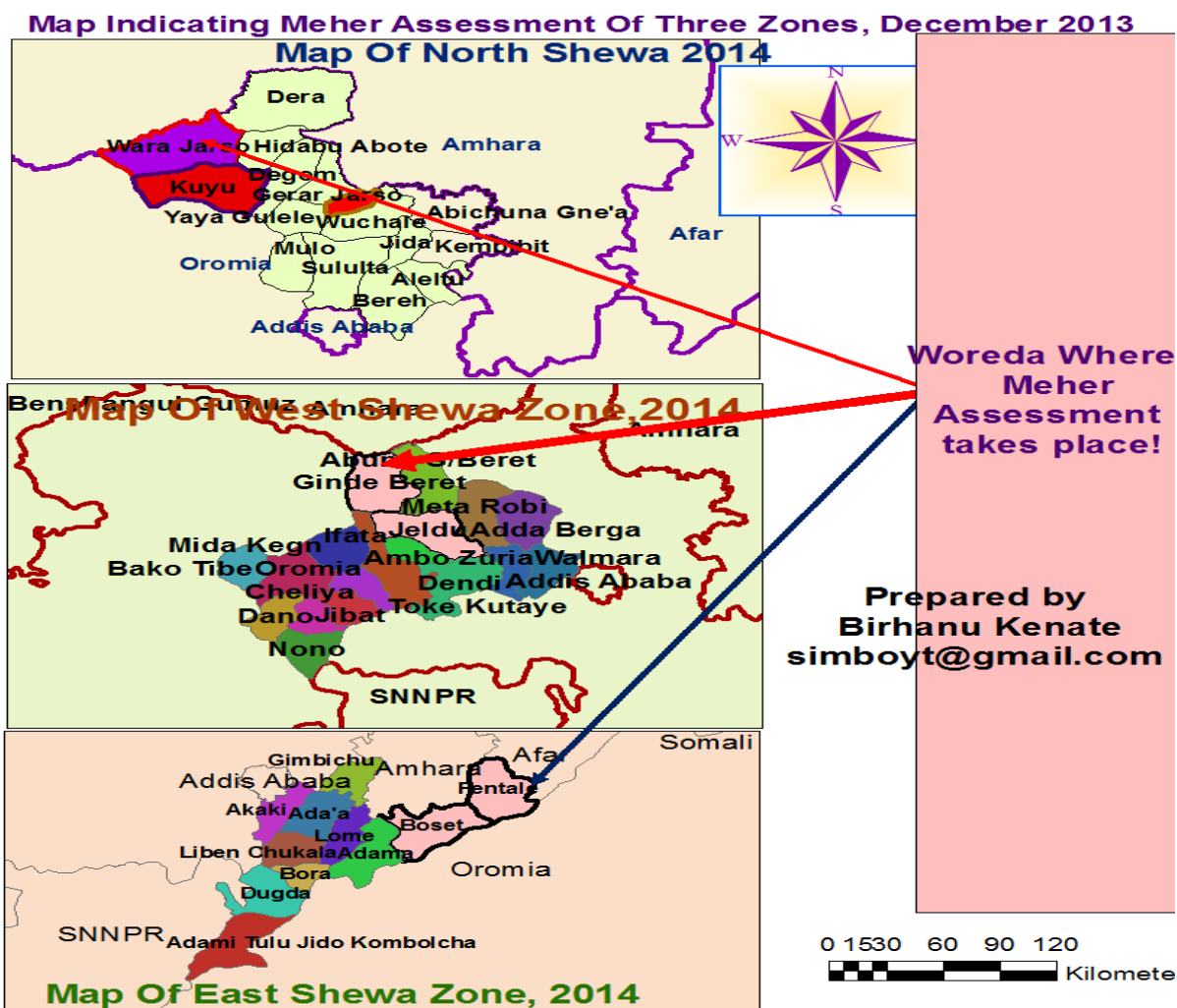


Figure 7.1. 1: Map of East, West and North Shewa for Meher assessment, 2013

7.1.2.0. Objectives

7.1.2.1 General Objective

To Assess the outcome of 2013 meher crop and potential risk factors for the anticipation of occurrence of Health Problems and food insecurity for ensuring appropriate and effective humanitarian planning and responses for reducing morbidity and mortality in the zone.

7.1.2.2. Specific Objectives

- To assess the extent, types, magnitude, severity and likely of the different hazards (drought, human epidemics, severe and acute malnutrition, etc) and risks to the populations for the occurrence of epidemic prone diseases considering health and nutrition emergencies in the zone.
- To assess the potential capacity of the health services to respond health and nutrition emergencies likely to occur during the second six months of 2013;
- To determine the shortcomings (gaps) in the capacity of the existing health services to address health and nutrition emergencies likely to occur between December 2013 and June 2014;
- To identify areas where health and nutrition emergency assistance might be needed during the coming six months due to acute problems and come up with reasonable estimates of the size of the population needing emergency assistance.

7.1.3.0 Methods and Materials

7.1.3.1. Study area:

The assessment was conducted in three zones in Oromia namely, North Shewa zone, West Shewa and East Shewa which is 112, 114 and 100 km from Addis Ababa the capital city of Ethiopia and located in the North, West and East part of the country respectively.

7.1.3.2. Study design/period:

Descriptive a cross sectional survey that was conducted in North Shewa zone, West Shewa and East Shewa zonal woreda's from Nov 25 –Dec14, 2013. Thus, the assessment was conducted on woreda and zonal health offices.

7.1.3.3. Data collection and management:

Review, in-depth interview, focus group discussion was held with community at PA level. Meetings were held to familiarize them with the purpose of the assessment and, through this, to get their assistance. Structured and semi structured questionnaire were designed for the assessment.

7.1.3.4. Data analysis and summarization:

Data analysis was carried out using EPI-INFO statistical software. Tables and graphs were used for demonstration of data. Even though site supervision was only conducted in hotspot woredas, these findings represented woredas of the entire visited three zones, since data was collected using check-list from all the woredas.

7.1.3.5. Assessment Procedure

Multi-Sectorial Meher needs assessment was conducted in the North Shewa, West Shewa and East Shewa zone in November 25, 2013. A team comprising of experts from ORHB, WFP, UNOCHA, Oromia Regional Disaster Preparedness and Prevention Commission and Catholic Church relief service (CRS), have participated in the assessment of cross-sectional survey type with objective of identifying humanitarian need for the coming 6 months of 2013. The assessment was conducted in the following sampled in North Shewa: Kuyu, Warra Jarso, and Debre Libanos from West Shewa Jaldy and Gindeberet Woreda, from East Shewa Fentale and Bosat Woreda were included in the assessment. They were selected depending on the availability of some pre early warning indicators for the occurrence of public health emergency.

In total, Seven Woredas in this zone have been included in the assessment. The overall procedure that the team followed was indicated below.

- Brief discussion was conducted for zonal Administrative and multisectorial sectors
- Primary and secondary data were collected using checklists
- Formal discussion and interview was made with respective officers
- Community Interviews and observations was conducted
- Debriefing was made on assessment findings to visited Woredas and zone

Before engaging into the actual assessment, the team provided orientation on the purpose of the assessment, and its tool. The assessment team was briefed on finding of the assessment that has been done by respective zonal and woreda multiagency task forces at zonal and woreda levels. And woreda's under potential risks were proposed accordingly. Direct face to face structured interview and semi structured interview method was used to collect data from zonal and woreda's health offices using zonal and woreda level questionnaire. Discussions were also conducted at both zonal and woreda administration offices.

Zonal summary report is developed by analyzing data from zonal and Woreda level questionnaire. This non-food summary report is separately submitted to the team leader of North-East-West Shewa of 2013 Needs meher Assessment. Final regional summary report is prepared by compiling the zonal summary reports.

7.1.4.0 Findings summaries of North Shewa Zone

7.14.1 General Conditions

7.1.4.1.1. Health

7.1.4.1.2. Coordination of EPR

In this zone there was no functional coordination forum and epidemic preparedness and response plan for the health sector for the early outbreak detection and response purpose. From 3 Woreda visited in the zone kuyyu and Wara Jarso Woreda, 2(67%) establish epidemic a coordination forum for public health emergency occurrence even though it was not functional well. However, debre Libanos did not establish the committee and does not have any epidemic prepardness and resspense plan.

7.1.4.1.3 Epidemic Situation

In North Shewa zone there was no outbreak in the 2013 in all respective woreda's

7.1.4.2. Epidemic Preparedness and Response Drugs and Supplies

7.1.4.2.1. Nutrition

In North Shewa zone Teff, Wheat, Sorghum, Maize, Milk and Barely and are main source of food. Screening is conducted every three month interval. In this Physical year starting from June 2005 up to November 2006, community health day (CHD) was carried out two times. From the 4th round screening of 2005, a total of 98,073 under five children were assessed. Of these, 511 (1%) of them were SAM (Edema and MUAC<11) cases and 3,879 (4%) children were MAM cases. In the first round screening of 2006 a total of 181,738 children were assessed and of these, 959 (1%) children were identified as SAM (Edema and MUAC<11) cases and 6,874 (4%) under five children were MAM cases. Over all the screened under five SAM and MAM cases were remains constant as compared to previous year. On the other hand, screening of pregnant and lactating women was carried out at the same time with under five children. At zonal level 15,566 PLW and 27822 PLW were assessed in the 4th round of 2005 and 1st round of 2006 and 5356 (10%), 1740 (11%) and 4347 (16%) pregnant and lactating women were identified as MAM (MUAC<21 cm) cases in the fourth round of 2005 and 1st round of 2006 respectively. According to this CHD screening result, the number of MAM cases and SAM cases was remains continues to be a problem compared to the 4th round of 2005. But it does not show any significant increases or decreases compared with the current first round of 2006. In addition to this PLW was increased by 5% in this first round of 2006(Figure 2).

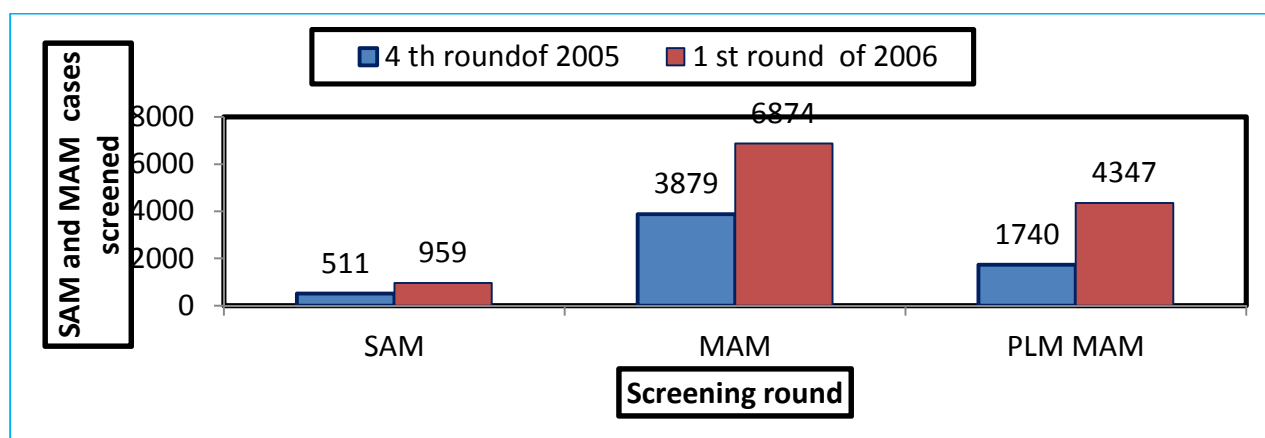


Figure 7.1. 2. Number of MAM and SAM cases in under five and PLW in North Shewa Zone in 2013

Trends of SAM cases in North Shewa Zone 2013

The trends of malnutrition are increasing at zonal level. Figure 2 shows the trends of SAM cases in North Shewa Zone from June 2013 to October 2013.

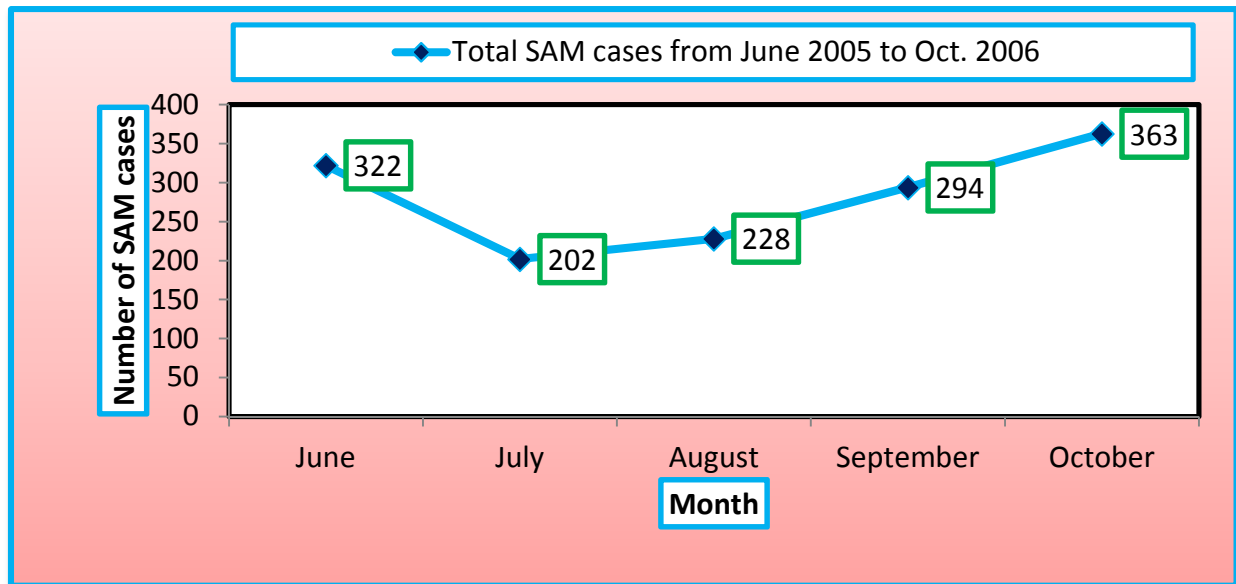


Figure 7.1. 3: Trends of SAM cases in West Shewa Zone in 2013

7.1.4.2.2. Malaria

Hence, in all of the 3 woredas malaria is still a health risk for some time and two Woreda's continue to be under health risk during the time of this assessment. Specifically in **Warra Jarso and Kuyu Woreda**. However, Dera Woreda in the zone reported the highest malaria cases in the zone starting from the first week of July to October. Case load have been increased over this time period but not out of the control of zonal health department and woreda health offices. There have been 2371 Malaria cases reported from the zone starting from June to October 2013. From this Kuyu, Warra Jarso and D/libanos Woreda shared 439(19%), 625(26%) and 17(0.7%) of Confirmed of total malaria cases.

7.1.4.2.3. Measles

Forty seven measles cases reported from the zone starting from June to October 2013.

7.1.4.2.4. Meningitis

Only one suspected Meningitis cases was reported in the zone starting from June to October 2013.

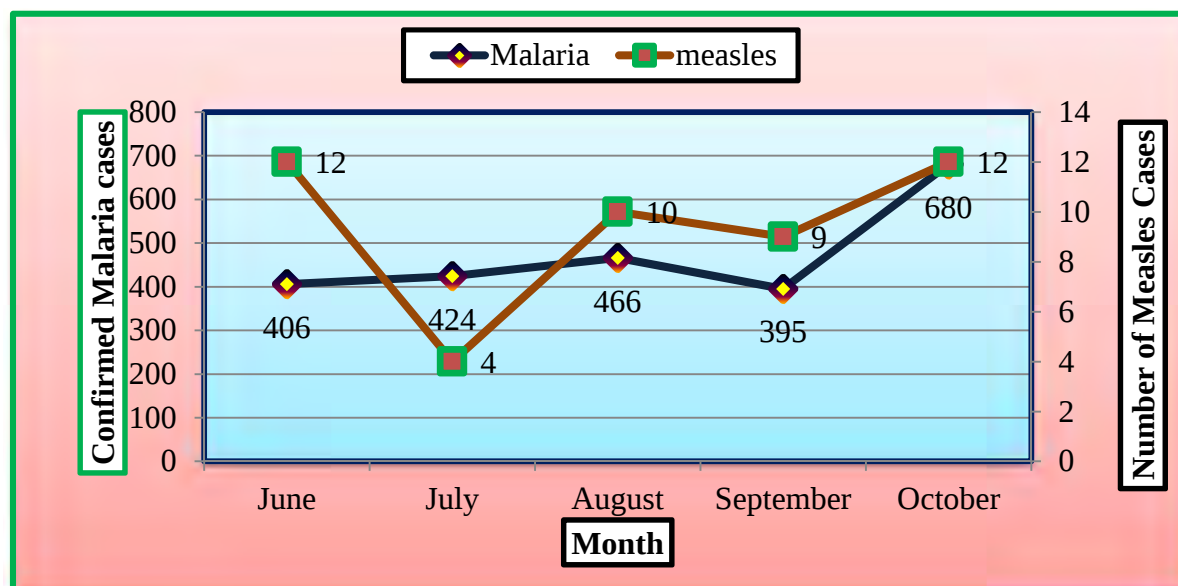


Figure 7.1. 4: Trend of Confirmed Malaria and Measles cases in North Shewa Zone from June to October 2013

7.1.4.2.5 WASH

The water coverage in the zone was estimated to be 82.15% regardless of the quality of the water supply. There is 3201 skim water source in the zone. Besides the inaccessibility of water supply in the zone, there are some logistic problem in treating water sources in the woreda's because of shortage of treatment chemicals like Chlorine and water Agar. It is a great challenge for the woreda's for the continual water treatment plant. In addition there is also a gap in close collaboration of multisectorial activity in ensuring quality of drinking water. Lack of budget in maintaining non functional water supply, skilled man power and designing in using other potential sources was some of the bottle necks encountered in increasing the accessibility of water supply in the zone.

7.1.4.3 Vulnerability Mapping of Epidemic Prone Diseases

7.1.4.3.1 EPRP Requirements

7.1.4.3.1.1. Nutrition

Due to drought and food insecurity that results from multiple factors, almost all Woreda's in the zone are affected with malnutrition with varying proportions. But according to the data from crop calendar the food insecurity problem was decreased in other woreda except in three woreda's in the zone. However, still routine therapeutic feeding program is established in all woreda's of North Shewa zone. The following table describes population risk and estimated SAM cases that require intervention in the next year.

Table-7.1. 1 Malnutrition Vulnerability Mapping and Plumpy Nut required, North Shewa zone, 2013

S.No	Woreda at risk	Total Pop.	Target Pop. (MAM)	Excepted SAM	Required Plumpy Nut/week
1	Abichu Gnea	90,115	17122	1802	25232
2	Aleltu	64,747	12302	1295	18129
3	D/Libanos	55,533	10551	1111	15549
4	Degam	120,032	22806	2401	33609
5	Dera	218,977	41606	4380	61314
6	Fitche Town	36,768	6986	735	10295
7	G/Jarso	80,938	15378	1619	22663
8	H/Abote	100,658	19125	2013	28184
9	Jida	64,520	12259	1290	18066
10	Kimbibit	90,904	17272	1818	25453
11	Kuyu	148,239	28165	2965	41507
12	W/Jarso	171,477	32581	3430	48014
13	Wachale	118,140	22447	2363	33079
14	Y/Gulale	66,476	12630	1330	18613
	Total	1,427,524	271230	28550	399707

Treatment of severe acute malnutrition cases is covered by routine nutrition program. In the next 6 months of 2013 an estimated case of 28550 will be affected.

Table-7.1. 2: Malnutrition Vulnerability Mapping and Vitamin A required, North Shewa zone, 2013

S.No	Woreda at risk	Total Pop.	Target Pop. (MAM)	Excepted SAM	6-11 month	12-59 month	Vit A requirement		Total	TIN/500
							100,000 IU	200,000IU		
1	Abichu Gnea	90,115	17122	1802	153	11841	153	23682	23835	48
2	Aleltu	64,747	12302	1295	110	8508	110	17016	17126	34
3	D/Libanos	55,533	10551	1111	94	7297	94	14594	14688	29
4	Degam	120,032	22806	2401	204	15772	204	31544	31748	63
5	Dera	218,977	41606	4380	372	28774	372	57547	57919	116
6	Fitchetown	36,768	6986	735	63	4831	63	9663	9725	19
7	G/Jarso	80,938	15378	1619	138	10635	138	21271	21408	43
8	H/Abote	100,658	19125	2013	171	13226	171	26453	26624	53
9	Jida	64,520	12259	1290	110	8478	110	16956	17066	34
10	Kimbibit	90,904	17272	1818	155	11945	155	23890	24044	48
11	Kuyu	148,239	28165	2965	252	19479	252	38957	39209	78
12	W/Jarso	171,477	32581	3430	292	22532	292	45064	45356	91
13	Wachale	118,140	22447	2363	201	15524	201	31047	31248	62
14	Y/Gulale	66,476	12630	1330	113	8735	113	17470	17583	35
	Total	1,427,524	271230	28550	2427	187577	2427	375153	377580	755

Table-7.1. 3 Other Important Drugs for Epidemic prone diseases in North Shewa zone Dec. 2013 for the coming six month

Plan proposal for AWD										
	Woreda	Total population	At Risk			Sever cases		LR in bags	ORS in sackets	Doxacilline in tabs
			%	No	Cases	%	Case			
1	Abichu Gnea	90,115	100%	90,115	1802	20%	360	2163	2343	1081
2	Aleltu	64,747	100%	64,747	1295	20%	259	1554	1683	777
3	D/Libanos	55,533	100%	55,533	1111	20%	222	1333	1444	666
4	Degam	120,032	100%	120,032	2401	20%	480	2881	3121	1440
5	Dera	218,977	100%	218,977	4380	20%	876	5255	5693	2628
6	Fitche Town	36,768	100%	36,768	735	20%	147	882	956	441
7	G/Jarso	80,938	100%	80,938	1619	20%	324	1943	2104	971
8	H/Abote	100,658	100%	100,658	2013	20%	403	2416	2617	1208
9	Jida	64,520	100%	64,520	1290	20%	258	1548	1678	774
10	Kimbibit	90,904	100%	90,904	1818	20%	364	2182	2364	1091
11	Kuyu	148,239	100%	148,239	2965	20%	593	3558	3854	1779
12	W/Jarso	171,477	100%	171,477	3430	20%	686	4115	4458	2058
13	Wachale	118,140	100%	118,140	2363	20%	473	2835	3072	1418
14	Y/Gulale	66,476	100%	66,476	1330	20%	266	1595	1728	798
15	Total	1,427,524	100%	1,427,524	28550	20%	5710	34261	37116	17130

7.1.5.0. General Findings in East Shewa Zone

7.1.5.1. General Conditions

7.1.5.1.1 Health

7.1.5.1.1.1 Coordination of EPR

Zonal multispectral taskforce is Non Functional. Similar report was also found at Woreda's level. However, coordination of the committee in preparedness and response was found very weak. The activities of the taskforce were not found to be functioning coordinated planning, implementing and evaluation of emergency preparedness and response activities. There is no regular meeting at all levels. All concerned government, NGOs and donors are also not represented where it exists.

Zonal and Woreda health offices claim availability of emergency preparedness and response plan, but there is assigned budget for preparedness. Training on PHEM was not conducted in the zone this year, and as a result there are untrained PHEM focal persons who replaced turnover positions. Rapid response team at Woreda health office is available in the visited Woreda's.

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7.1.5.2 Epidemic Situation

Currently there is No declared Outbreak in the zone. However Malaria cases were increased in Both Fentale and Bosat Woreda and Currently it was not beyond the capacity of the Woreda and zone.

7.1.5.3 Overflow of Beseka Lake in Fentalle Woreda

Gradual overflow of Beseka Lake in Fentalle Woreda is becoming a concern for the Metahara Town and surrounding Kebeles in Fentalle Woreda. In 2003 EC, drainage system was made by regional water office to decrease the risk of flooding and blockage of the main road. However, the drainage has affected surrounding villages by over flooding and drying plants Therefore, food insecurity and health problem related to the impact of the Lake Beseka and Drainage System is increasing and needs close monitoring and needs immediate follow up .

7.1.5.4 Flooding in Boset and Adama Woredas

Flooding as a result of heavy rain has occurred in Boset Woreda and Adama Woredas on July 01, 2013. This has affected more than 120 households out of which about 85 households have lost their shelter and are currently in temporary shelter. The levels of damage and health impacts are currently under study.

Water related diseases such as diarrhea/AWD and typhoid fever is also an epidemic prone disease in the zone.

7.1.5.5 Epidemic Preparedness and Response Drugs and Supplies

Most of drugs and supplies for preparedness and response of malaria and measles was reported to be adequate at Woreda level. However, zonal health office reported their inadequacy. Anti malaria drugs including the new anti-malaria drugs was found inadequate. ORS and IV fluids and other drugs for diarrheal diseases are also adequately available at Woredas visited but not reported from zone. Supplies for emergency reproductive health such as delivery kit and MVA are available at all Woredas visited. Minimum initial service package for RH training was also not given in the zone.

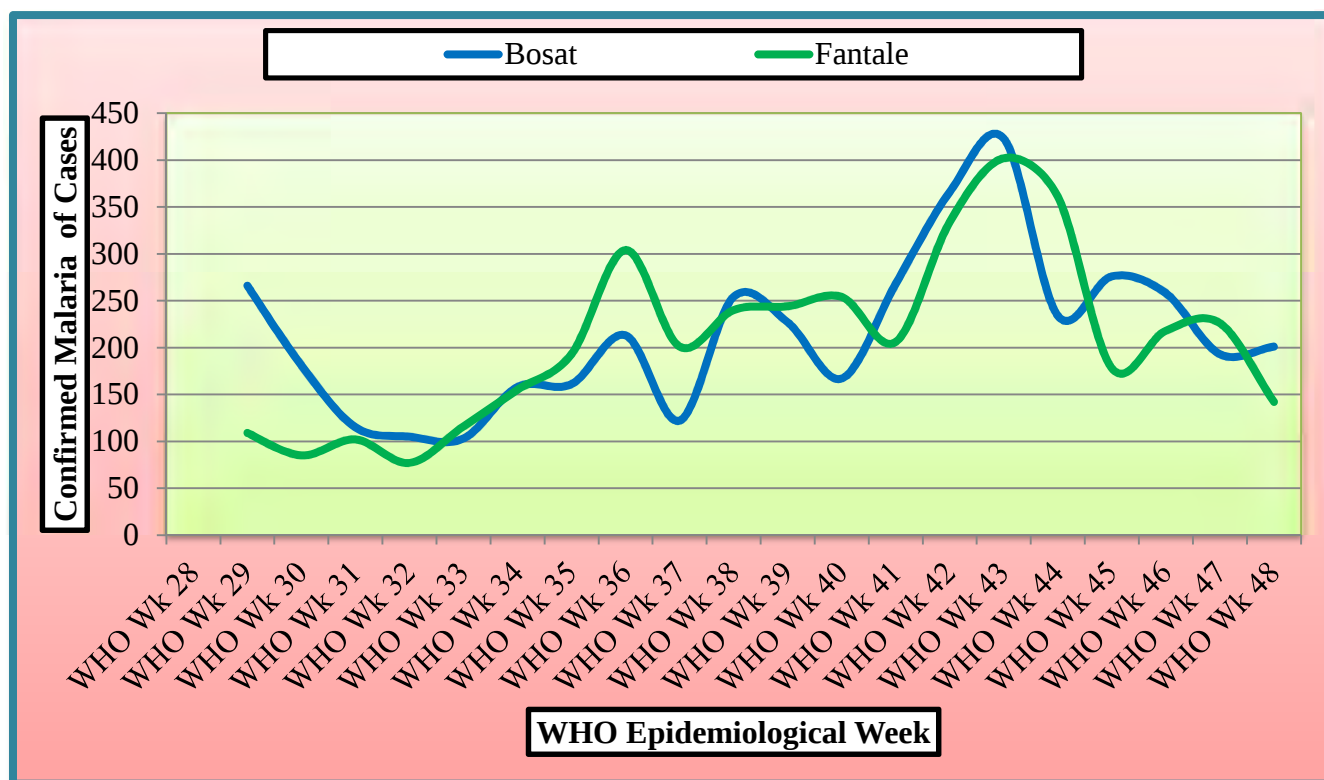


Figure 7.1. 5: Trend of Confirmed Malaria Cases in Bosat and Fantale Woreda From June to November 2013

A total of 4291 and 4147 confirmed malaria cases were reported from Bosat and Fantale Woreda from July to the late week of November 2013. In addition to this When we compare the malaria cases in 2005 and 2006 in the zone it was dramatically increased in all month from July to the end of November 2006. In July 2005, East Shewa Zone report a confirmed Malaria cases of 1671, However in July 2006 it was to 3274 increased by 32%. Likewise the zone reports 21,089 confirmed malaria cases from July to November in 2005, 26527 cases from July to November 2006 which was increased by 11%. From This data we verify that confirmed malaria cases were increasing in alarming rate in both woreda and zone. This is due to Favorable condition created for the breeding site of mosquitoes in the area. There are unprotected water sources in both Fantale and Bosat Woreda. Possibly there might be other potential risk factors like the coverage of both insecticide residual spray and insecticide treated nets distribution in this targeted woreda's. Unfortunately we are not lucky to get the data from both the woreda health offices and Zonal Health department for unknown reason. Whatever the cases is, even though there is not enough data to predict the future status of the malaria cases in this two woreda and in the Zone as

a whole it needs close Monitoring in all way round unless otherwise it creates an explosive epidemic typically in Fenatle and Bosat Woreda.

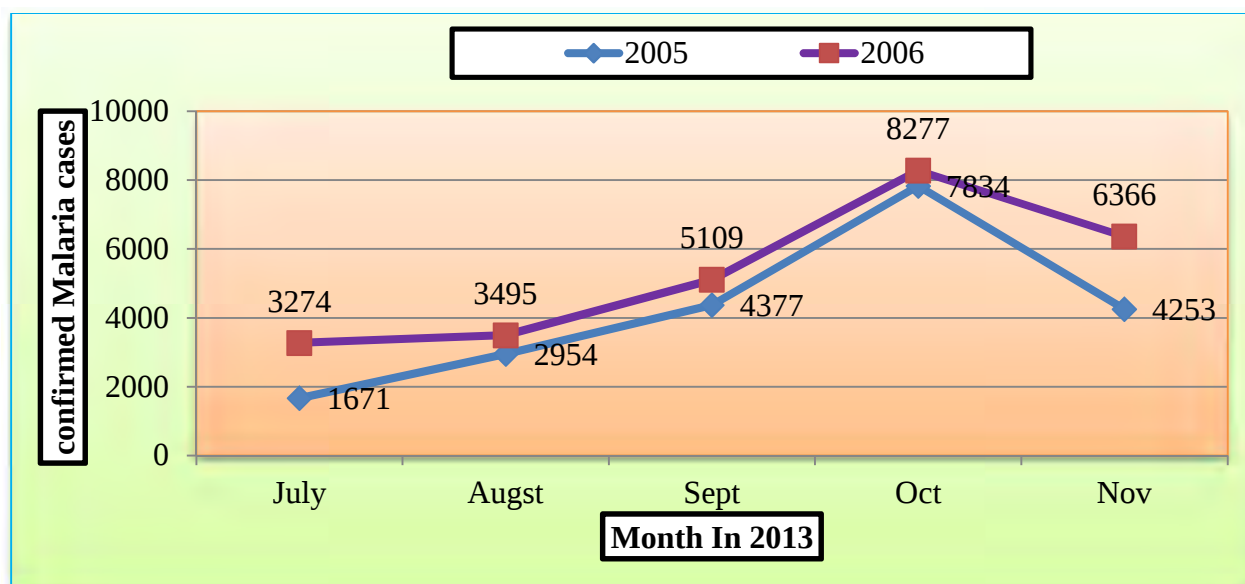


Figure 7.1. 6: Confirmed Malaria Cases In East Shewa Zone in 2005 and 2006 EC from July to November

7.1.5.6 Nutrition

In East Shoa zone malnutrition problem is common like other zones of Oromia region. Because of that routine outpatient therapeutic feeding program (OTP) is established in all kebeles and for admission of severe cases establishing center is prepared in three Health centers of some woredas. In addition to that, in all woredas community health day screening program carried out every three moth.

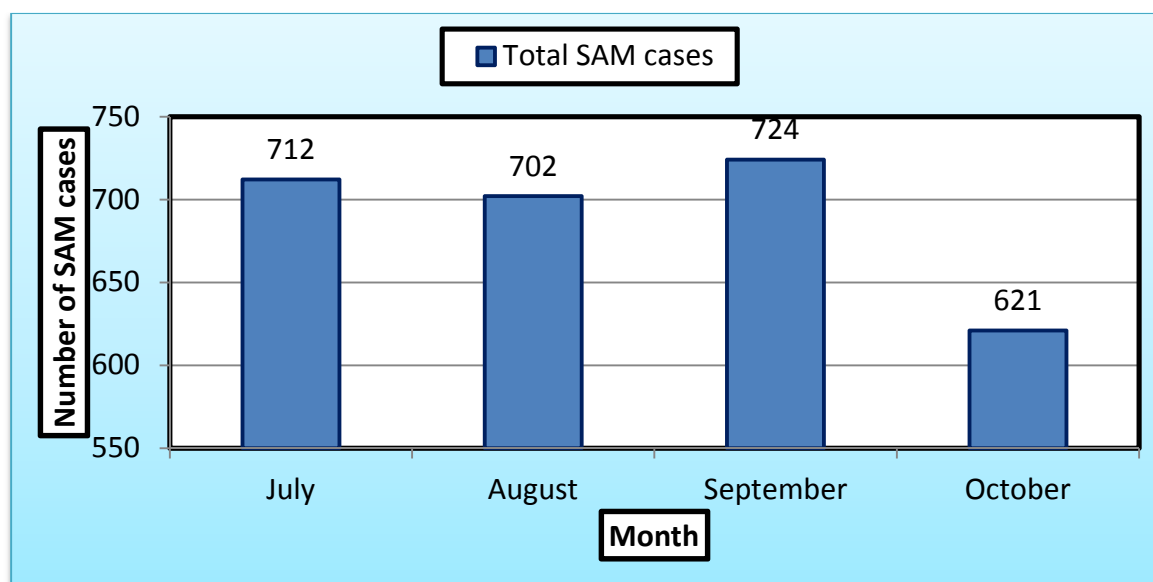


Figure 7.1. 7: Number of SAM cases in East Shewa Zone from July to October 2013

According to zonal routine malnutrition monthly report, starting from July 2013 to October 2013 (four month report) a total of 2759 SAM cases were admitted to the OTP program as East Shewa Zone.). Furthermore, the highest cases were reported during September (Figure 4 above).

Due to drought and food insecurity that results from multiple factors, almost all Woredas in the zone are affected with malnutrition with varying degrees. At this time routine therapeutic feeding program is established in all woredas of East Shoa zone. The following table 2 describes population at risk and estimated SAM cases that require intervention in the next year.

Table-7.1. 4: Malnutrition Vulnerability Mapping, East Shoa Zone, 2013

Woreda	Total Popn.	Target (MAM)	Pop. Excepted SAM
Adami Tulu	186202	37240	3724
Adae	152681	30536	3054
Adama	168412	33682	3368
Batu Town	56044	11209	1121
Bora	70106	14021	1402
Boset	169467	33893	3389
Dugda	173836	34767	3477
Fentale	71722	14344	1434
Gimbichu	102522	20504	2050
Liben	89779	17956	1796
Lume	103585	20717	2072
Metehara	26343	5269	527
Modjo	37928	7586	759
Total	1408627	281725	28173

7.1.6.0 Assessment findings in West Shewa Zone

7.1.6.1 Coordination

Even though a coordination activity among different sectors to respond to health emergencies like this is generally weak, at most effort has been underway by zonal health office to contain the case load increase in areas of supply mobilization, Logistical and technical support. The team has been told that even though a coordination committee which included different sectors for PHEM has been formed at some point in time there is no regular meeting to respond to emergency situations and neither an accessible PHEM Fund for response nor for preparedness has been allocated.

7.1.6.2 Epidemic prone diseases

7.1.6.2. 1. Malaria

As far as this zone is concerned Malaria is the major health risk. It has already started to threaten the population at risk and has occurred in the form of outbreak in few woredas even though it has started to subside by this time. The following is a graph showing cases due to malaria from the month of June to Nov. 2013.

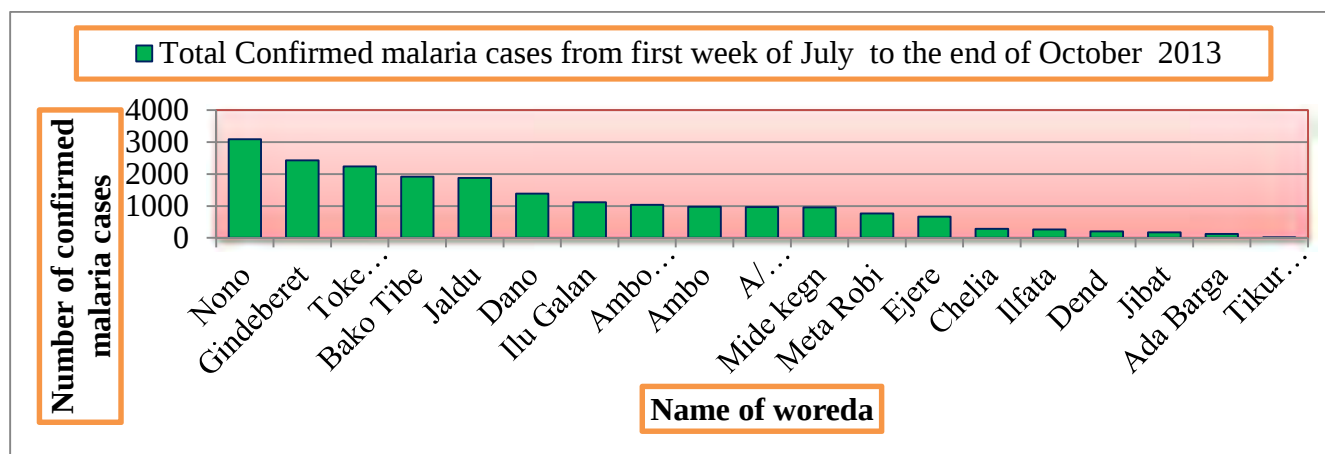


Figure 7.1. 8; Confirmed Malaria cases in West Shewa Zone from July to November 2013

The following is a table showing cases due to confirmed malaria cases confirmed by either Laboratory or microscope from the month of June to Nov. 2013.

Table-7.1. 5: Confirmed Malaria Cases in Starting from July to November 2013

Months	Gindeberet		Jaldu	
	Cases	death	cases	Deaths
Jul-13	606	0	466	0
Aug-13	533	0	270	0
Sep-13	465	0	332	0
Oct-13	630	0	349	0
Nov-13	676	0	233	0
total	2910	0	1650	0

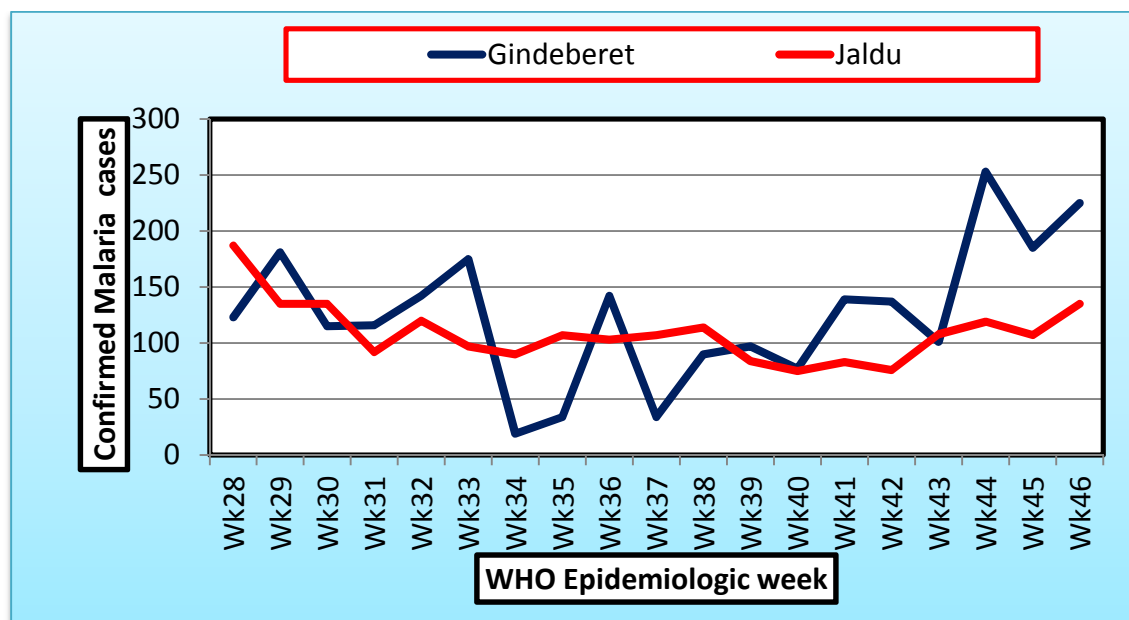


Figure 7.1. 9: Trend Confirmed Malaria Cases in West Shewa Zone from July to Nov. 2013

However, diseases like AWD have not been reported in the past 3 years as an outbreak or as a case. There was measles outbreak in Meta Robi Woreda.

6.2.2. Meningitis

No meningitis cases had been reported from West Shewa Zone woreda in the last six month.

6.3. Outbreaks

There has been a trend of increasing malaria case load from September to November 2013 in Gindeberet and attains its peak from late October to early November. However, the number of cases in Jeldu Woreda was relatively remains constant in the past six month. However, for the time being the cases show little sign of decreasing in Gindeberet. So there might be still an anticipated risk of malaria outbreak in this area. If close monitoring has not been it was threatening the community in the the woreda and other Woreda like Toke Kutaye, Nonno, Bakko Tibe and Elugelan.

6.3.1. Measles

Measles is also an anticipated health risk in this zone. 181 suspected cases have been reported from Meta Robi Woreda of West Shewa Zone of which 5 five cases were confirmed positive for Igm. A total of 181 measles cases with one death were reported from 23/01/2013-06/03/2013 from 12 kebeles of Metarobi Woreda. A majority of the cases (60,33%), (47, 26%) and (37, 20%) were reported from Goro, Subagajo and Iludanisa kebele respectively. The rest nine kebeles have accounted for only 20% of the total 181 cases; each had <10%. One death reported from subagajo and the case fatality rate was 0.55%. Whereas 168 (93%) of the 181 patient were not vaccinated, only 11 (6%) of 181 patients had one measles vaccine dose. One patien (1, 1%) had two doses and vaccination status was unknown for one (1%).

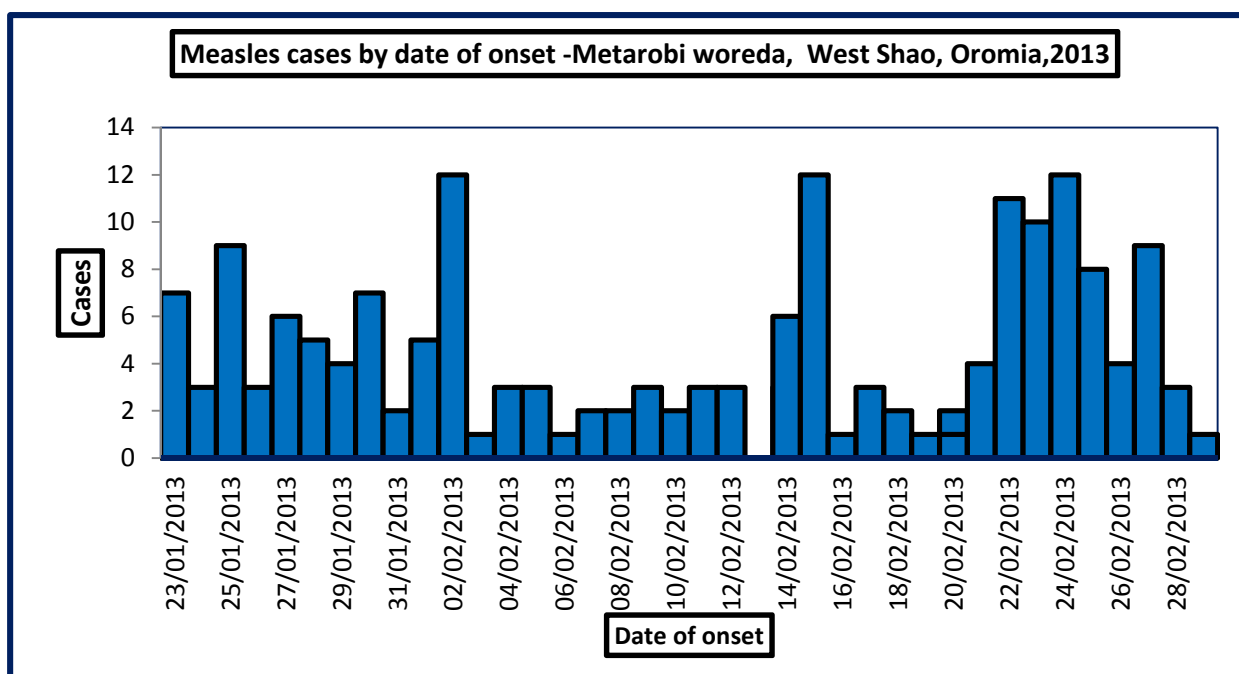


Figure 7.1. 10: Measles Outbreak in Meta Robi Woreda of West Shewa Zone, Oromia Region

No other epidemic prone diseases have been occurred in the form of outbreak.

In general terms as far as preparedness for anticipated outbreaks is concerned; emergency supplies such as pharmaceuticals and medical supplies for the treatment of measles and active surveillance should be strengthened in the zone.

6.4. Malaria supplies preparedness

Even though supplies are fairly enough for few days or weeks most of the woredas visited had reported that the supplies are not sufficient for the coming 1 or 2 months. Severe shortages have been reported with some anti_ malarial medicines and laboratory supplies including coartem and RDT supplies. Therefore appropriate measure should be taken for supplying of emergency drugs in the zone.

Table-7.1. 6: Level of preparedness supplies for six Months

Preparedness supplies	Gindebertet		Jeldu		Zone		
	yes	No	yes	No	Total Requirement	Available	Gap
Meningitis Vaccine	yes	No	yes	No	189,637 vial/10	0	189637 v
Ringer lactate		✓		✓	500 bags	0	500 bags
ORS		✓			11,000	1200	9800
Doxycycline	✓		✓		19,000 cap	0	19,000 cap
Amoxil susp.		✓	✓		1700 bott	0	1700 bot
Tetracycline oint.		✓	✓		400tube	0	400tube
Vit A		✓		✓	1080 tin	0	1800 tin
Coartem	✓			✓	787 box	197 box	590 box
RDT for malaria	✓		✓		1628 kit	407 kit	1221kit
RDT for Meningitis	✓			✓			
CTC kit available for AWD		✓		✓			
Budget		✓		✓			
	✓			✓			

6.5. Potential Risk factors

6.5.1. Malaria

Concerning malaria risk factors which include malaria endemicity, presence of malaria breeding sites, interrupting rivers and unprotected irrigation in the area are the major risk factors related to malaria. Low ITN and IRS Coverage are also reported to be contributing risk factors for the spread of malaria. In Gindebert Woreda 21(66%) out of 32 kebeles are malarious. while in Jaldū 26(62%) out of 42 villages are malarious. However, from 21 malarious kebeles in Gindebert Woreda only 7(27%) of the woreda was covered by insecticide residual spray in the 2005 with population protection of 12,051. Likely, Jaldū Woreda can covered only 13(50%) of the

malarious kebele during 2005 spray. The woredas health offices address reasons for low coverage of IRS in the malaria risk kebeles that low budget allocation to carry out spraying of anti-mosquitoes chemicals, low anti mosquitoes chemicals itself and less in mapping out of the malaria risk kebeles which needs a research. This all adds together to aggravate the problem of malaria case transimission in the Woreda. Not only had this but also in Gindebert Woreda ITN distributed before three years later which was already expired. Consequently, this all potential risk factors synergize to aggravate the malaria diseases transimission in the zone. Therefore this team kindly address to care of it early as far as possible as these diseases is deadly and brings both socio-economical and political impact on the development of the country.

6.5.2. Meningitis

In fact No cases of Meningitis have been reported in the 2005 in West Shewa zone. However, it was particularly reported from March to June 2004 EC around 37 suspected cases of meningitis were reported in Bako tibe woreda and referred for treatment to Ambo and Nekemte hospitals. So for such scenarios preparedness activities should be in place. But in actual cases supplies which are used for preparedness such as LP set and medicines for the treatment should have been available. So over all preparedness and supplying emergency drugs regarding to meningitis is totally weak in the zone.

6.5.3. AWD

Outbreak of AWD has not been reported for the last 3 years in the zone. Indictors for hygiene and sanitation are fairly improving over time. Even though a baseline data is lacking or not available on latrine utilization in some woredas latrine coverage has been improved. But still low latrine coverage is considered a risk for AWD.

Table-7.1. 7 : indicators latrine coverage and safe water coverage by woreda in West Shewa Zone

Indicators (%)	Jaldu woreda	Gindebert	Zone
Latrine coverage	66	43	36
Safe water coverage	52.9	65	69.4

6.5.4. Measles

As far as this zone is concerned measles have been one of the area concerns. This is because of some potential risk factors in the. The first one The Vaccine coverage of the zone in 2005 was 85% in which 10523 was not vaccinated for the measles vaccine in the zone. , For instance, Last year there is measles outbreak in Meta robi Woreda. When we see the measles vaccination coverage of 2004 it was 83% and currently coverage the coverage was decreased to 71% in 2005 performance in which 761 infants under one year of age was not vaccinated for the measles vaccine provide that there was nothing that keep away from the occurrence of outbreak in the Woreda this year also again. However, the zone has been conducted SIA campaign last year that might be probably minimizing the risk for the occurrence of measles. Any way active surveillance and strong follow up, preparedness activities should also be strengthened in this area.

Table-7.1. 8: Measles cases Risk Woreda's in West Shewa Zone compared with Vaccination, December 2013

Name of Woreda	Measles vacc. Coverage of 2004(%)	Target children Not Vaccinated in 2004	Measles Vacc. Coverage of 2005 (%)	Target children Not Vaccinated In 2005	Total Eligible Not vaccinated for Measles
Meta Robi	83	341	71	761	1102
Dendi	100	0	76	1788	1788
Elfeta	84	307	81	345	652
Mida Kegn	75	916	59	1306	2222
Nono	84	405	83	252	657
Tikur Inchine	82	311	78	456	767
Zonal Vaccination	94	6653	85	10523	17,176

In two years 17,176 children was not vaccinated with measles Vaccine in West Shewa Zone as shown in the above (Table 4)

6.5.5. Nutrition

Malnutrition cases are one of the problem and can be considered as public health risk in the zone. Now a days each woreda in the zone can perform community screening days every three month to screen out those the most vulnerable groups likely children between 6-59 months and Lactating and pregnant mothers whether they are malnurtioned or not. in the round 4 of CHD in 2005 SAM the screening program can filter 1543 SAM cases as West Shewa zone which was only 0.53 percent. However, this result was increased to one percent in Children under five. However, the nutritional status of Lactating and Pregnant mother was slightly increased by three percent compared with the round 4 CHD in 2005. Malnutrition screening has been carried out at CHD. Here also supply of plampynut is sufficient however supply of therapeutic formulas namely F75 and F100 used for the treatment of SAM cases is almost unavailable.

Table-7.1. 9 : CHD round 4 of 2005 and round 1 of 2006 in West Shewa Zone, Oromia Region

CHD	Name Of Woreda	Target pop. (15%)	Nb of children Screened	Screening Cov.erage	Nb of children MUAC 11-11.9cm	Nb of children MUAC <=11 cm	Nb of children with bilateral edema	% of SAM	Target Pop. PL/LM	NB of Pw/LM Screened	NB of Pw/LM Screening cov.	NB of PLW with MUAC < 21cm	SAM LPW (%)
2005	Gindebert	17874	17000	95.1	225	52	9	0.36	4457	4111	92.2	245	6
4 th round	Jaldu	35578	34344	96.5	221	83	17	0.29	8871	1284	14.5	33	2.6
CHD	Zonal	345398	292718	84.7	5321	1445	98	0.53	86117	44394	51.6	2344	5.3
2006	Gindebert	18369	17104	93	543	177	7	1.1	4209	4538	108	524	12
1 st round	Jaldu	35578	34167	96	339	39	10	0.14	8151	4062	50	16	0.4
CHD	Zonal	343615	322168	94	3268	683	35	1.12	35	46015	58	4176	9

7.0 General Recommendation

- An increasing malaria trend in some Woreda's in the zone indicates that extensive risk factors for the transimission of the disease .The IRS spray coverage were very law. ITNS was already expired, insufficient supply of treatment drugs. Therefore, insecticide residual spray at HH level and replacing expired Insecticide treated nets for those expired and distributing for those malaria risk area should be strengthened. More over through coordination with concerned PFSA Authorities supply of pharmaceuticals in particular ant malarial medicines should be increased. The supply for TFP Specifically F100 and F75 should be improved. Logistical challenges especially at woreda level should also be improved. Coordination among sectors to respond to emergency situations should also be improved.
- HIV AIDS continues to be a public health challenges in the North Shewa zone resulting from population movement from rural setting to urban areas then back again to the rural just for the sake of labor migration. This should be the area of concern for both government and NGO to reverse the problem to normal unless otherwise it should be a

threat for the community in North Shewa zone. I strongly recommend for that travel for seasonal harvest in to another area (to East Shewa) they should be counseled and tested for HIV before any sexual intercourse with their partner.

- In East Shewa zone, it was found that in relatively higher risk of epidemic prone diseases mainly malaria, meningitis and acute watery diarrhea. Besides, public health emergency preparedness and response program is not well coordinated and functioning at zonal and woreda level. Regarding EPRP was prepared, but it was not supported by budgeted in most Woreda's visited. Multi-sectoral coordination forum is not performing emergency preparedness activities in coordinated manner. Thus, strengthening PHEM coordination and multi-sectoral approach to preparedness is recommended. This includes training, data/report quality improvement, capacity building and budget allocation.
- The risk of Beseka Lake in Fentalle Woreda requires integrated response and multisectoral approach in risk reduction, preparedness and response to the condition.
- I strongly recommend the West Shewa zonal health office should capacitate the woreda public health emergency focal person at each level of the activity to minimize the risk of the following epidemic prone diseases.
- Humanitarian assistance to the flood affected population in Boset and Fentale Woredas is highly recommended, with emphasis to shelter (displaced population from Chelenko), food and water aid and prevention of communicable diseases.
- Diarrheal diseases (including AWD/cholera), malaria, measles and malnutrition are the most feared epidemic prone diseases in East Shoa zone. Preparedness and response activities should be given emphasis among these priority diseases.

8.0. Discussion

The occurrence of Public Health Emergency is the most common public health problem occurred largely due to natural or manmade activities. Therefore, to ensure identification of risks and timely detection of Public Health Emergency a system with an early warning mechanism agreed by all operational governmental and Non Governmental agencies is essential. Effective monitoring of events can contribute greatly in preventing occurrences of PHEs while the early detection of disasters can have a major impact in reducing the numbers of cases and deaths.

The purpose of early warning is to enable the provision of timely and effective information to the public and to responders, through identified institutions that allow preparing for effective response or taking action to avoid or reduce risk. This activity was done by regular monitoring to identify situations for which a public health action using early warning indicators.

For early response and management of an epidemic situation adequate medical supplies and Emergency drugs are very essential. However, on this assessment all zones and woreda's did not have adequate items in their stock. This has its own bottle neck implication on epidemic disease control and prevention activities. Malnutrition cases have been seen in all woreda's of the zones. Especially in West Shewa and East Shewa zone. Relapsing cases were highly prevalent. The already recovered cases were readmitted. This was because of poor household nutrition status; mothers could not feed their children properly. The presence of risk factors such as malaria endemic places, low measles vaccination coverage, LLINS <80%, increased number of malaria cases from time to time and Inadequate safe water source in the majority of zonal woreda's were the contributing factors for the occurrence of the epidemic prone disease such as malaria, measles and AWD, and likely to happen again if timely interventions are not implemented.

9.0. Limitations

1. During data collection, some parts of the check list were not filled-in by the interviewers; consequently of this some information was missed.
2. Limited woreda were included due to the shortage of time (low sampling)

10. Conclusions

Emergency drugs and supplies used for malaria, meningitis, and measles and AWD epidemic Available in stock of all woreda's were not adequate. Most Woreda Have no EPRP plan (especially West Shewa zone). Measuring the level of preparedness of the PHEM system at different levels is critical to know the capacity of the program to handle outbreaks and any other emergencies in an effective manner. However, surprisingly most of the Woreda's and the zones did not have an EPRP, unavailability of emergency stocks of drugs, vaccines and supplies during the assessment, non functional public health emergency task force either at zonal and woreda level is not organized.

11. Acknowledgements

I would like to thank North Shewa, West Shewa and East Shewa zonal and woreda health offices, Woreda Administrator, federal and Oromia Disaster risk management and food security sector (DRMFSS) for their appreciable support in all aspects during the field trip preparation. Moreover, my heartfelt goes to my supervisor Ato Tesfaye Deti, Oromia Regional Health Bureau PHEM core process Head and Residents Supervisor, and Dr Daddi Jima, and EPHA for their financial support during the assessment.

7.1.12. References

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Chapter- VIII

Protocol/Proposal for Epidemiologic research project

8.1. Assessment of proportion of Insecticide Treated Nets ownership by householders, utilization among the Household members and factors affecting utilization in Bako Woreda, West Shewa zone, Oromia Region, Ethiopia.

Executive summary

Background: Ethiopia is one of the most malaria epidemic-prone countries in Africa. Rates of morbidity and mortality increase dramatically (i.e. 3-5 fold) during epidemics. Despite the increasing distribution of long-lasting insecticide treated nets (LLINs), the LLINs use among LLINs owning households has not been satisfactory. Identifying the circumstances and the associated factors is necessary to achieve the Millennium Development Goal targets and Roll Back malaria Strategies. We intended to assess bottlenecks related with LLIN use at the household level in Bako Woreda of West Shewa Zone of Oromia Region, Ethiopia.

Objective: The study is aimed to assess the proportion of Insecticide Treated Nets ownership by households, utilization among the Household members and factors affecting utilization of in Bako Woreda Oromia, Ethiopia.

Method: Community based cross- sectional survey will be conducted during May 20 to June 30/2014. Primarily, the malarious villages will be stratified as rural and suburban kebeles. The existing households will be identified using registration list available at Woreda health office. Study units will be identified by Simple random sampling technique. A total sample of 1688 households will be proportionally selected. Both self-reported information and direct observations will be used to collect data. Data will be entered to the computer using Epi info Version 7 and will be analyzed by using STATA version 12. For further analysis SPSS 16.0 version statistical software will be used. Tables and figures will be used to present the data. Frequency distribution, percentages and Odds Ratio with 95% level of confidence will be calculated and interpreted accordingly.

Work plan: Data collection will be started on June 1, 2014 and ends on July 30, 2014. The study will be completed in September 2014.

Budget: The required cost for the study is estimated 57,443.4 ETH Birr.

8.1.1.0 Introduction

Malaria is a parasitic infectious disease caused by protozoan parasites of the genus *Plasmodium* and is transmitted by mosquito species *Anopheles arabiensis*, *An. pharoensis*, *An. funestus* and *An. nili*. It is characterized by recurrent symptoms of chills, fever and generalized body pain. The four *Plasmodium* species that infect humans are *P. falciparum*, *P. vivax*, *P. ovale* and *P. malariae* of which the *P. falciparum* and *P. vivax*, contribute for 60% and 40% of all cases (35)

Malaria still remains one of the most important parasitic diseases of the developing world although it is known to human kind since ancient times in different forms. It is caused by *Plasmodium* parasite and kills approximately 627 000 estimated malaria deaths globally (World Malaria Report by WHO 2013). And causes disease in 207 million malaria cases worldwide each year (36) of which 90% occurs in sub Saharan Africa (37). Pregnant women and children under five are the main risk group in most endemic areas of the world (38; 39; 40). The disease poses a major public health challenge, which restricts the development in the poorest countries (40)

Ethiopia is among the few countries with unstable malaria transmission. Consequently, malaria epidemics are serious public health emergencies. In most situations, malaria epidemics develop over several weeks, allowing some lead-time to act proactively to avoid larger numbers of illnesses and to prevent transmission. About 75% of the country's land surface is malarious and about two-thirds of the population at risk of malaria infection. Approximately, 68% of the total population of over 58 million people million lives in areas at significant risk of malaria. Malaria is mainly seasonal in the highland fringe areas and of relatively longer transmission duration in lowland areas, river basins and valleys. Although historically there have been an estimated 10 million clinical malaria cases annually, cases have reduced since 2006. Malaria is a public health priority problems and also have high Epidemic potential which causes high Outpatient morbidity which leads to high socio economic impacts in Ethiopia. (41; 42; 43)

The WHO global malaria control and elimination strategy aims to achieve a 50% reduction in the malaria burden by 2010 compared to the levels in 2000 and at least a 75% reduction in malaria incidence and near zero malaria-related preventable deaths by 2015. These goals are relevant for high-burden countries which implement malaria control programmes. (36)

Malaria has been a major challenge to both public health and socio-economic development particularly in countries sub-Saharan African. The nature of the topography, variations in

climatic conditions and concentration of populations in highland, malaria free areas indicates the long history of malaria in Oromia and the country a whole. Recognizing the disease as a priority health problem, organized intervention efforts were initiated during the late 1950s. Since then, strong malaria prevention and control activities have been carried out, and significant achievements were made through malaria control. Malaria has been a major cause of both morbidity and mortality in Oromia Regional State, and primarily occurs in epidemic forms from the months of September to December, peaking in October and November. Rainfall, temperature and humidity play a significant role in the transmission of malaria, and temperature is the most important factor in the highlands while rainfall and humidity determine its transmission in midland and lowland areas of the Region (44).

8.1.1 Statement of the Problem

Malaria has been a major challenge to both public health and socio-economic development particularly in countries sub-Saharan African. The nature of the topography, variations in climatic conditions and concentration of populations in highland, malaria free areas indicates the long history of malaria in Oromia and the country a whole (45).

In 2007, Ethiopia became one of the PMI focus countries, and in June 2010 it was chosen to be one of the first eight ‘GHI Plus’ countries. Malaria is ranked as the leading communicable disease in Ethiopia, accounting for about 30% of the overall Disability Adjusted Life Years lost. Approximately 68% of the total population with over 58 million lives in areas of at risk of malaria infections. According to Ethiopia’s Federal Ministry of Health (FMOH), in 2009/2010, malaria was the leading cause of outpatient visits and health facility admissions, accounting for 14% of reported outpatient visits and nearly 9% of admissions. Malaria was also among the ten leading causes of inpatient deaths among children under five years of age. Because a large proportion of the population does not have access to health care services, these figures probably under-estimate the true burden of malaria in the country (46).

The most recent Malaria Indicator Survey (MIS), in 2011, showed Comparison among regional states reveals that households in Amhara have the highest percentage of net ownership (73.7%), followed by Benishangul-Gumuz/Gambella (70.1%). Oromia was found to have the lowest net ownership (44.3%). However, the survey also showed that Oromia was lagging behind the other

regional states in key malaria intervention indicators. For example, in Oromia in 2011 only 55% of households were shown to own one or more ITNs; and only 28% of pregnant women and 26.5% of children under five years of age had slept under an ITN in the previous night. While this figure could be the result of the scale-up of malaria interventions, it needs to be interpreted with caution. Historically, Ethiopia has experienced cycles of malaria epidemics every five to eight years, with the last nationwide epidemic in 2003 (47).

Between 2005 and 2009, approximately 20 million long-lasting ITNs (LLINs) were distributed nationwide with support from the Global Fund, including 6.5 million LLINs in Oromia (46). The MIS 2011 showed that in areas <2,000m, 55.2% and 54.8% of households surveyed currently own a mosquito net or LLIN, respectively. In all areas <2,000m, the mean number of nets was found to be 0.8 per household. Net ownership at higher altitudes (>2,000m) was also found to be lower, with 37.9% of households reporting ownership of at least one net. By the end of 2011, the FMOH plans to distribute an additional 15 million free LLINs throughout Ethiopia in another mass national campaign (hoping to get closer to the RBM LLIN coverage target of 85%. PMI is procuring 3.2 million LLINs with FY2011 funding to contribute to this effort. An additional 1.9 million LLINs will be procured with PMI FY2012 funding to further support Ethiopia's national campaign. PMI LLINs will be delivered through ORHB channels and through networks of community-based (CBOs), faith-based (FBOs) and other non-governmental organizations (NGOs). LLIN distribution will be complemented by comprehensive social behavior change communication (SBCC) efforts, as well as targeted hang-up campaigns to ensure that LLIN use by the population is maximized (46). To roll back malaria the ministry of health set goals of the National Strategic Plan for Malaria Prevention, Control, and Elimination 2011–2015 which include By 2015, achieve malaria elimination within specific geographical areas with historically low malaria transmission and achieve near-zero malaria death in the remaining malaria-endemic areas of the country. (48)

In connection with these activities we thought, it is indispensable to investigate the distribution, actual levels of utilization and factors affecting ITNs use in the Woreda in order to meet the Millennium Development Goals (MDG's) and the Roll Back Malaria targets to take timely corrective actions.

8.1.1.2 Literature Review

The use of insecticide-treated nets (ITNs) is one of the main malaria control strategies in most malaria endemic countries to reach the Roll Back Malaria (RBM) targets to reduce the malaria burden by 50% in 2010 compared to 2000 levels and at least 75% by 2015 (49). Despite the large scale distribution of ITNs in many malaria endemic countries, there is a wide variation in the availability (50), and use of ITNs/LLINs at the household level.

Given the considerable disparity between household ITN possession and use observed malaria control programmes across sub-Saharan Africa (SSA) are developing strategies to promote ITN uptake and use. As such, contextually relevant village-based interpersonal communication (IPC) interventions are being developed to increase ITN possession and use. Such strategies have proven effective for modifying behaviour in a number of malaria endemic contexts thereby providing empirical justification for the intervention strategy described herein.

A study conducted in Oromia region East Hararghe revealed that Of the total surveyed households, 65.5% (1879) had at least one LLIN, However only 33.5% (630) LLINs owned households had used at least one LLIN the night before the survey (51)

In 2005, the FMOH developed a five-year (2005-2010) National Strategic Plan for Malaria Prevention and Control. According to the strategy, areas lower than 2,000 meters (<2,000m) were considered 'malaria-endemic' and targeted to receive key malaria control interventions, including long-lasting insecticidal nets (LLINs), indoor residual spraying (IRS), and prompt diagnosis, using microscopic examinations of blood smears and rapid diagnostic tests (RDTs) for malaria, coupled with prompt and effective case management with Artemisinin-based Combination Therapy (ACT). The strategy outlined an ambitious national goal of 100% household LLIN coverage in malaria-endemic areas, with a mean of two LLINs per household, to be achieved through distribution of about 20 million LLINs by the end of 2007 (52)

Insecticide-treated mosquito nets (ITNs) have proven to be highly effective in preventing malaria. Consistent use of ITNs can reduce malaria transmission by up to 90% and avert as much as 44% of all-cause mortality among children fewer than five years of age (53). Use of ITNs among pregnant women is associated with lower prevalence of malaria infection, fewer premature births and significant reductions in all-cause maternal anemia.

Comparison among regional states revealed that households in Oromia have the lowest percentage of net ownership (44.3%). While all individuals benefit from sleeping under a LLIN, young children and pregnant women are particularly vulnerable to malaria and hence are an important target for LLIN use. Oromia reported the lowest use of nets in children under five (55%) and pregnant women (27.5%) in malaria-endemic areas (<2,000m) (48) This study also indicated that In order to ensure consistent and efficient use of prevention tools 63.4% reported mosquito nets as a prevention method against malaria. Knowledge very slightly increased across the wealth quintiles from 60.7% in the lowest quintile to 66.8% in the highest quintile. (48) Indicated that even though nationally, progress has been observed in terms of net use among children U5 in households that owned nets, the percentage of children U5 who had slept under a mosquito net the night preceding the survey was 60.2% in 2007, increasing to 64.5% in 2011. Tigray demonstrated the highest increase, with 47.3% in 2007 and 67.7% in 2011. Oromia showed a decrease in net use by children U5 from 56.4 to 55%. Now, it's time for us to site to calculate the current status of ITNs utilization as well as to identify factors associated with low use of LLITNs in the Woreda.

8.1. 1.4 Significance of the Study

Despite different interventions, malaria is continuing to be one of the major public health problems in the Woreda. National strategies for malaria program have been designed to reach MDGs. Among the strategies ITNs utilization is internationally recognized standard to protect from malaria .However, Malaria indicators survey 2011 indicated that Oromia region is one of the regions with the lowest of ITNS utilization at household levels, Which was 55%. Moreover, ITNs utilization among high risk group, pregnant mother and net ownership were the lowest of all regions (27.5%) and 44.5% respectively (54). In addition there is shortage of evidences regarding factors affecting ITNs utilization in the Woreda too. Health planners and Decision makers are willing to have evidence regarding up on this issue due to malaria increment from time to time in the Woreda despite the higher intervention of the cases. This calls for a need to identify and calculate the pattern of ITN utilization and determine associated factors in rural and urban malaria-endemic of Bako Woreda.

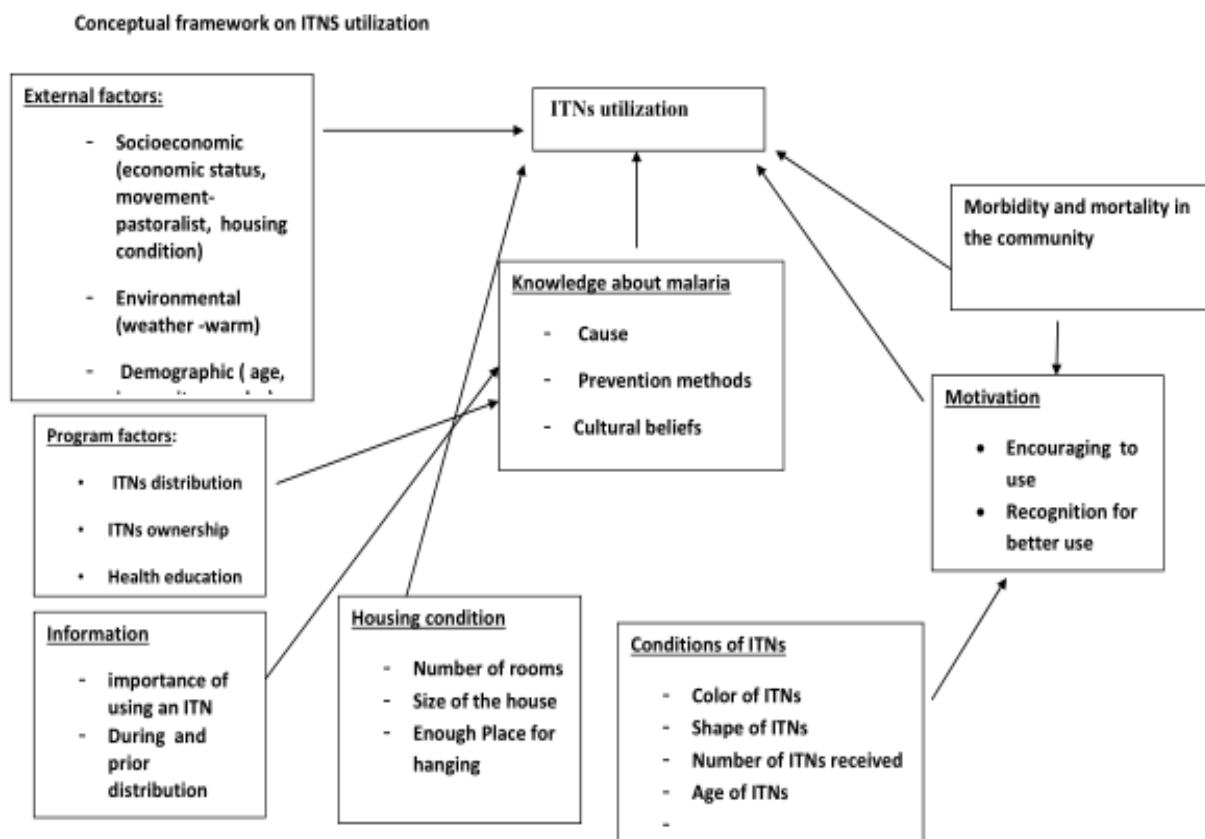


Figure 8.1.1; Conceptual Frame Work for Factors affecting LLITNs Utilization

8.1.2.0 Objectives

8.1.2.1 General Objective.

- To Assess the proportion of Insecticide Treated Nets ownership by householders , utilization among the Household members and factors affecting utilization in Bako Woreda, West Shewa zone, Oromia Region, Ethiopia

8.1.2.2 Specific Objectives

- To identify the proportion of households with Insecticide Treated Nets among householders in Bako Woreda
- To Calculate magnitude of recent ITNS Utilization among the households
- To identify factors affecting ITNS utilization among Households

8.1.3.0 Methods

8.1.3.1 Study area

Bako woreda is located in the Western part of Ethiopia at the distance of 265km from the capital city of Ethiopia Addis Ababa. It is one of 18 Woreda's of the West Shewa Zone with high prevalence malaria where Malaria Epidemic is repeatedly occurred and many deaths were happened in the History of the malaria in this Woreda. This Woreda has a special mark for this deadly Disease. Tibe town is the administration town (Woreda's capital city) . It is bounded by, Bila Sayo, Jimma Ganat and Jima Rare in North, Gobu Sayo Woreda and gilgel gibe river in West and Jimma Rare in and Cheliya in East. Bako Tibe Woreda is classified into highland (20%) and Midland (80%) agro climatic zones. The total population of **Bako** woreda is 146,702 according to the 2007 Central Statistics Agency population census projection. Population living in malarious area is expected to be 139,417(95%). The total number of households is estimated to be 29,045 with the assumption of average household size of 4.8. Land is used by subsistent farmers for the cultivation of Maize's, Mango, Sugar cane and different cash crops. Surprisingly this Woreda is bordered by two large rivers. Firstly, gilgel Gibe river which was used as Gilgel Gibe hydroelectric power. Secondly, bordered by a large river called Didessa serves small scale irrigation and small streams and mushy areas are also found in the Woreda.

MAP OF BAKO-TIBE DISTRICT OF OROMIA REGION WEST SHEWA ZONE



Figure 8.1.1 Map of Bako Woreda 2014

8.1.3.2 Study design

Community based cross-sectional study design will be conducted in Bako Woreda. Quantitative data will be collected from head of household members who had received LLITN in the past three years.

3.3. Sample size Determination

The sample size will be calculated using the standard formula for estimating a single proportion, Sample Size can be determined as;

$$\text{Sample Size (n)} = \frac{[z^2 \times p \times q]}{d^2}$$

Where: n = sample size

z = linked to 95% confidence interval (use 1.96)

p = expected prevalence (as fraction of 1)

q = 1- p (expected non-prevalence)

d = relative desired precision /tolerable error/ Maximum width (degree of accuracy)

$$\text{Non-response rate calculation} = \frac{\text{Number of Sample Calculated}}{1 - \text{Non Response Rate (NRR)}}$$

The assumptions taken are, an expected proportion (ITN utilization) of 55% (from the Ethiopia Malaria Indicator Survey (MIS) 2011), 95% confidence level and a 4% tolerable error.

$$\text{Sample size (n)} = \frac{(1.96)^2 \times 0.55 (1-0.55)}{0.04 \times 0.04}$$

$$n = 594 \text{ Households}$$

The study group will be multistage and the design effect was taken to be 2;

The total sample will be 2x594 Households= **1188 Households**

10% Non- response rate will be considered,

$$\text{Sample with non response calculation} = \frac{1188}{1 - 0.1} \quad \text{this gives a total of 1320 Households.}$$

Accordingly, the sample size required for this study is 1188 households. Adding 10% for non-response, the grand total sample size required will be 1320 households. The sampling will be carried out in two stages. First 7 kebeles will be selected randomly using the lottery method from malarious rural kebeles in which ITN's were distributed in the last three years and primarily, the malarious villages will be stratified as rural and suburban kebeles. Secondly, the existing households will be identified using registration list for LLITNS available at Woreda health office (used as sampling frame). The listing excluded institutional living arrangements and collective quarters (e.g., army barracks, hospitals, police camps, and boarding schools). Then finally using Systematic Sampling every sample at Kth -term will be incorporated in the sample. The numbers of households which included in the study in each kebele will be proportional to the total. A representative sample of 1320 households will be selected.

8.1.3.3 Study period

Data collection will be started during higher malaria transmission starts from September 20, 2014 to December 30, 2014

8.1.3.4 Source population

The study subjects will be all Households who received ITNS within the last three years in Bako Woreda

8.1.3.4.1 Inclusion and Exclusion Criteria

Households who received ITNS from Oromia region from year 2011- 2013 will be **included** in the study population, while the **household heads or respondents** those who are **severely sick** will be **excluded**.

8.1.3.5 Study Population

Randomly selected Households obtained from the source population (Number of Households with ITNS)

8.1.3.6 Sampling procedure

Seven kebeles will be selected by lottery method from 32 malarious kebeles found in the Woreda followed by systematic random sampling after the enumeration of the household members with LLITNs in respected seven kebeles.

8.1.3.7 Data collection instrument

Semi-structured household questionnaire will be administered to individuals in households. This tool is taken from Ministry of Health/Ethiopian Health and Nutrition Research Institute prepared by Malaria Indicator Survey Technical Working Group team members. The questionnaire will be composed of variables for socio-demographic (sex, age, occupation, educational status), environmental, knowledge, attitude and predictors of LLIN possession and utilization.

8.1.3.8. Data collection procedure

The study team will consists of two field supervisor with at least three years experienced in data collection technique based on qualification that have BSc in health and fourteen data collectors who have good experience of data collection course probably statistician with minimum of Diploma holder will be recruited. Experienced data collectors preferably who have health background and similar experience will be the bonus for the selection. After conducting training for three days data collectors will be deployed. The major sources of data will be household heads/house wives/persons whose age is above fifteen years of age.

8.1.3.9 Variables of the study

Dependant variables

- LLITNs utilization

Independent variables:

- Age
- Sex
- Place of residence
- Occupation
- Marital status
- Religion
- Educational status
- Income
- Family size
- Distance from health facilities

- Prior history of illness due to malaria
- Prior information on ITNs
- cause of malaria
- Source of information on ITNs
- Number of ITNs received
- Shape of ITNs
- Color of ITNs (blue, white and green)
- Number of ITNs hanged(One, two, more than three)
- Condition of ITNs (torn out, Have Holes, No holes)
- Age of ITNs(less than three years, greater than Three years)
- Number of rooms in a house (sleeping places)
- Season of malaria transmission
- Number of women development army available
- Number of functional women development army

8.1.3.10. Operational definitions

Target group-groups which are nationally identified as high risk and given priority for ITN utilization, these include pregnant women and children less than 5 years of age, community affected by emergency and all others living in malarious area.

ITN utilization- The use of standardized properly hanged (mounted) over the bed or the Sleeping area and less than 5 years of age child and pregnant women sleeping under the Mosquito net during the early morning of observation day.

An insecticide-treated net is a mosquito net that repels disables and/or kills mosquitoes coming into contact with insecticide on the netting material. There are two categories of ITNs: conventionally treated nets and long-lasting insecticidal nets:

- A long-lasting insecticidal net is a factory-treated mosquito net made with netting material that has insecticide incorporated within or bound around the fibers. The net must retain its effective biological activity without re-treatment for at least 20 WHO standard washes under laboratory conditions and three years of recommended use under field conditions.

Net utilization is defined as having slept under a net during the night preceding the survey.

8.1.3.11. Data entry and analysis

Data entry template will be designed in EPI-Info version 7.1. Data entry and cleaning will be done by principal investigator. Then, the data analysis will be done using SPSS then presented using descriptive statistical methods; with frequency distribution tables, percentages and graphs. Furthermore inferential statistics will be done to look into factors that influence the major outcome variables of LLIN's usage and other issues related to household knowledge and reasons for not use. For this computation 95% confidence intervals will be used.

8.1.3.12. Data quality assurance measures

The questionnaire will be prepared first in English and then will be translated in to local language (Afan Oromo) and back to English to ensure reliable information. To maintain the quality of the data structured and pre-tested questionnaires and check lists were used to collect information. Three days training was given to all data collectors, assistants and supervisors. The whole process of data collection was done under close supervision of the senior supervisors from Zonal health office. The collected information was frequently checked at the field by the supervisors. The overall supervision was done by the principal investigator. Questionnaires were checked for completeness every night at the time of data collection and incomplete ones were sent back to the data collector for check up under supervision. Feedbacks on previous day activities were given for both data collectors and supervisors.

Ethical clearance: will be obtained from review board of Addis Ababa University, Faculty of Medicine and Public Health. Permission will be sought from Oromia Regional Health Bureau's Public Health Emergency Management research core process. An informed verbal consent will be obtained from every eligible individual before inclusion into the study by explaining the objective of the research. Privacy and confidentiality will be ensured. The name of respondents will not be written on the consent form, thus the information you provide will not be known to others. There is no risk involved in participating in the study and the participation of individuals will be purely voluntary, and they can withdraw any time after they get involved in the study without compromising the services they ought to get from LLITNs control program.

8.1.3. 13. Dissemination of findings

Results (hard and soft copies) will be submitted to Addis Ababa University/School of Public Health Ethiopia Field Epidemiology Training Program, Oromia Regional Health Bureau, finally to West shoa Zone Health department and Bako Woreda Health office for the future LLITNs utilization improvement. One day conference will arranged at woreda level to present the study results. In addition effort will be exerted to publish the paper and disseminate it via presentation on different national and international conferences.

8.1.3.14. Expected outcomes

The Potential precipitating factors related to use of LLIN's will be clearly identified.

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Annex 8. 1.1 Research project implementation Work Plan Bako, Oromia, Ethiopia

S.No	Planned Activities	Responsibility	Feb. 2014	March. 2014	April. 2014	May. 2014	June. 2014	July 2014
1.	Prepare proposal and submit to donors	Principal Investigator						
2.	Select data collectors and research assistants	Principal Investigator						
3.	Approval of Research proposal	Principal Investigator						
4.	Conducting training for data collectors and supervisors	Principal Investigator						
5.	Pre-testing of the survey instrument	All Members						
6.	Prepare for field Work	Principal Inv						
7.	Data collocation	All Members						
8.	Data entry and cleaning	All Members						
9.	Data analysis and write up	Principal Investigator						
10.	Data Dissemination/ Prepare Work shop	(PI)						
13.	Hold workshop	PI+RA						

Feb.2014 2014

Annex 8.1. 2 Budget on Research project budget breakdown Bako Woreda, Oromia, Ethiopia, 2014

	Budget Category	Unit Cost	Total Quantity	Total Cost
Training				
	Principal investigator	400	3x300	900
	Field Supervisors	300	3x150	450
	Data collectors	149	149x3	447
	Data entry clerk	149	149x3	447
	Secretarial work	149	149x3	447
	Sub total		Personnel TOTAL	3391
2.	Transport	One liter cost	Number of km	
			Total Km Traveled Divided by 6(with one litre Go 6 km)	
	Fuel	20	605	12,100
	Sub total		Transport TOTAL	2,000.00
3.	Supplies	Cost per Item	Number	
	Questionnaire duplication	4 Birr/Quest.	1688	6752
	Flip chart paper	2	75	150
	1 pack Pen	190	1	190
	Pencil	1	17	17
	Eraser	2	17	34
	Sharper	2	17	34
	Marker	95	4	380
	Printing paper (pack)	110	4	440
	Printing and Binding	32	10	320
			Supplies TOTAL	8317
	Field Work			
4.	Project coordinator	Person x days	1*20*300	6000
	Field supervisor	Person x days	2*20*150	6000
	Data collectors	Person x days	14*20*70	19600
			Total	54708
			Contingency 5%	2735.4
			Grand Total	57443.4

Annex 8 .1.3 Consent form In English Version

**Addis Ababa University, Faculty of Medicine, School of Public Health, Department of
EFETP.**

The Questionnaire was prepared for *Assessment of proportion of Insecticide Treated Nets ownership, utilization and factors affecting ITNs utilization among households in Bako Woreda, West Shewa Zone , Oromia, Ethiopia*

I. Greeting:-

Hello, I am _____. I am working in the Oromia Regional Health Bureau. I come to you **for *Assessment of proportion of Insecticide Treated Nets ownership, utilization and factors affecting ITNs utilization among households in your kebele***. This is because despite different activities was undertaken in different parts of the country malaria is still a leading cause of morbidity. So to tackle the propagation of malaria in our community we designed to study factors related with ITNs utilization in your locality.

II. Informed consent

Read the following paragraph for the selected person. "To conduct our study, I would like to ask you some questions. I kindly request you to give me your sincere and truthful answer. All the information that you are going to give me will remain confidential and you don't need to mention your name."

Are you willing to participate in the interview?

Yes_____ No_____(Thank and stop)

Signature_____ Date_____

(Signature of the interviewer certifies that consent has been obtained verbally.)

Signature of the supervisor _____Date_____

Annex 8 .1.4 Questionnaires for Assessment of proportion of Insecticide Treated Nets ownership, utilization and factors affecting ITNs utilization among households in Bako , West Shewa , Oromia- _Ethiopia, March , 2014

I. Socio-demographic Characteristics

101. Place of the resident
1=urban 2= Rural
102. Woreda; Bakko
103. Gote/village_____
104. House number Code _____
105. Sex of the respondent Male=1, Female=2
106. Age of the respondent_____
107. Ethnicity
1=Oromo 3=Tigre
2=Amharic 4=Other
108. Educational level
1=Illiterate 3=Elementary
2=Read and write 4=Secondary 5= Above secondary
109. Occupation
1=Farmer 3=Student 5=Daily laborer 7=Merchant 2=House wife
4= Unemployed 6=Government
99= Other(specify)_____
- 110 Religion
1=Orthodox 3=Protestant 99=Others ,specify
2=Muslim 4=Catholic
111. Marital status of the respondent
1=Single 3=Divorce
2=Married 4=Widowed
112. Responsibility of the respondent in the house
1=Husband 3= Wife
2=Child 99=Other

113. How many people live in the house? _____
114. Estimated Monthly income _____ annual income of the household _____
115. Are there pregnant women and children less than 5 years of age? 1=Yes 2=No
116. If the response is yes for Q.116 how many pregnant women are there? _____
How many children below 5 years are there? _____
117. Does your household have?
- | | | |
|---------------|-------|------|
| A radio? | 1=yes | 2=No |
| A television? | 1=yes | 2=No |
| A telephone? | 1=yes | 2=No |

II. Risk Factors

201. Does your household have any mosquito nets that can be used while sleeping that is distributed in the last three years? 1= Yes 2= No
202. If Q201 is Yes How many mosquito nets does your household get?
1=one 2=two 3=three 4=greater than three
203. Observe How Many of the LLITNs were there in the household?
1=one 2=two 3=three 4=greater than three
204. If the Observed is less than expected (Q202 < Q203) Reasons for unavailability of ITNs?
1=sold 2=used for other purpose 3=give for others 4=stolen
205. Did you purchase the net? 1=Yes 2 =No 98=I don't know
206. If Q 206 is Yes, how much did you pay for the net when it was purchased?
1. = < 50 Birr 2= 50 – 100 Birr 3=. > 100 Birr 98=I don't know
207. Please observe or ask the general Conditions of the net.
1= Good (no holes) 2= Fair (no holes that fit a torch battery) 3= Poor (1-4 holes)
4=Unsafe (>5 holes that fit a 5= Unused (still in package 98= unknown
208. How long ago did your household obtain the mosquito net?
1= less than 3 years ago 2= more than 3 years ago
209. Did anyone sleep under this mosquito net last night (at least one of the available ITNs)?
1=Yes 2= No
210. If Yes in Q210 Who was slept under ITNS?

1= elderly people 2=head of household 5= who obtained / bought the net
3= young children 4=pregnant women 6= people who contribute the most
money to the household person other 98= I don't know

211. Frequency of using their ITNs?

1=Always 2=sometimes 3=If Mosquitoes is seen In the house 4=if somebody
was sick 5=during transimission season 99=other (specify)

212. If Q210 is No, Why did no-one sleep under this mosquito net last night?

1= no malaria 2=no nuisance/insects 3= no space for net
4=irritation due to chemical of ITN 5=suffocation / too hot 6=difficult hanging net
7=shape 8= absence from home 9= Absence of bed
99= other (specify) 98=don't know

213. How many separate rooms are in this household? Include all rooms, including kitchen, toilet, sleeping rooms, salon, etc? _____

214. How many rooms in this household are used for sleeping? Include only rooms which are usually used for sleeping. _____

215. How many sleeping rooms were ITNS hanged? _____

III. Knowledge and Practice question

301. Main transmission mechanism of malaria?

1= eating immature sugarcane 2= Mosquito bite 3=cold or changing weather
4= Drinking dirty water hunger 5= (empty stomach) 99=Other (Specify)

302. Have you ever caught malaria in the past two year? 1=Yes 2=No

303. Did anyone in your family travel away from home in the last one month? 1=Yes 2=No

304. If Yes, Did she/he use ITN while on travel? 1= Yes 2=No

305 How can we prevent malaria infection?

1= DDT spray 3= Drugs (prophylaxis) 5= Not known 6= drink alcohol
2= Source reduction 4= ITN s utilization 99= If other, specify

306. Ever heard/seen education messages about ITNs? 1=Yes 2=No

307 Think that sleeping under ITN have benefit. 1=Yes 2=No

- 308 sleeping under ITN have benefits. 1=yes 2=No, If yes what is the benefit?
1=don't get bitten by mosquito 3=don't get malaria 99=other
2=don't get bothered by other insects 4=To get warmth
- 309 Believe that sleeping under ITN has problem 1= Yes 2=No
- 310 If Q306 is yes Problems associated with sleeping under ITN
1= Difficult to get up at night 2= It is too hot 3= It takes time to tuck a net each night
4=No enough air when sleeping under 5=it Mosquito can still bite through ITN 6=No
comfort 99= other
311. How does ITNs prevent malaria transmission?
1= Physical barriers 3= irritate mosquito 5= If other, specify
2=Kills mosquito 4= Not known
312. Dose the household own ITNs? 1= Yes 2=No
- 313 .If **YES**, to 312 above, how many? 1 =One 2= Two 3= Three and above
314. Ever heard/seen education messages about ITNs? 1= Yes 2=No
315. Source of information for ITN
1= Mass media 2= Health Extension Workers 3=Kebele leader 4=Neighborhood 5=other
316. Did They Wash Their ITNS? In the last One year? 1= Yes 2=No
- 317.If Yes, frequency of Washing per year? _____
318. What color of ITNs do you prefer for use? 1=White 2= Blue
- 319 What shape of ITNs do you prefer for use? 1=conical 2= rectangular

IV. CHEKLIST FOR DIRECT OBSERVATION

S.No.	Category	Response
401	Number of beds or places of sleep	1= One 2=Two 3= Three and above
402	Number of bed nets observed in the Household	1=One 2=Two 3= Three and above
403	Number of beds /places of sleep observed with bed nets	1 = One 2= Two 3=Three and above
404	The type of bed net that household owned	1=Re treatable 2=Permanently treated
405	Is the bed net hanged(placed) properly over the bed or sleeping area	1=Yes 99= Other 2=No
406	Is there any hole(throne) in the bed net	1=yes 2=No
407	Did the child found sleeping under the net?	1=yes 2=No
308	Did the pregnant woman slept under the net?	1=yes 2=No

Annex 8 .1.5 Information sheet and consent in Afan Oromo (Local Language)

**Gaffii Qorannoo Haala Qabiyyee Saphana Siree, Uwwinsa Itti Fayyadama Saphana Siree
fi Sababooti itti fayyadamaa saphaana Siree irraatti dhibba gessisaan Godina Shawaa
Lixaa Aanaa Bakkootti, Bitootessa 2006 geggeeffamuuf Qopha'ee.**

Information sheet and consent in Afan Oromo

Ibsaa Qo'anna

Akkam jirtu? Maqaan koo _____. Aanaa kana keessatti haala Rabasa fi Itti fayyadama Saphana Siree Waliin wal qabatee hunderra qorrachuuf gaffi dhiyaateedha. Qo'annan kun Kan inni irratti xiyyeeffate Haala uwwinsa saphana siree walqabatee rakkowwaan mul'ataan qorrachuun fi xinxaluudhaan rakkoo Hawaasuma, fi siyaas dinaagdee Ummata keenya kan ta'ee dhibee buusa hir'isuudhaaf Qo'annoo dhiyaate dha. Ani warra daataa funaan keessa tokkodha. Gaaffilee tokko tokko waa'ee keessani fi waa'ee Saphana siree isin gaafachuufan dhufe. Hirmaachu keessanif jecha midhan isin irratti dhufu tokkolle hin jiru, deebii isin kenitaniif jecha fayyidan isin irra hir'atus hin jiru. Garuu, hirmaanan keessan rakko Gama buusadhaan dhuufu xiqqeessuudhaan fayya ummata keenya foyyeessudhaaf. Deebiin isin kennitan fedhii keessanin ala eeynumattu dabarfamee hin himamu, akkasumas, maqaa keessan himuun isin hin barbachisu. Itti dabalatanis qo'anna kana irratti hirmaachuun dirqama miti, gaaffi barbaaddan debisuu dhisuu ni danda'ama. Irratti hirmachuf fedhii qabduu?

Eeyyee_____ Lakki _____

Unka walii galtee

Waa'een Qo'anna kana sirritti na galeeraa, kayyo isaas hubadheeraa. Kanaaf irratti hirmaadhee deebii kennu koo mallatto koo tiin mirkaneessera.

Mallattoo _____ Guuyyaa _____

Gaaffi yoo qabatan teessoo kanaan wal qunnamuu dandeessu.

Birhaanuu Qanaatee

Mobaayila: +251911043813

Imeelii: simboyt@gmail.com.

I. Haala Jiruu fi Jireenyaa Hawaasumma

101. Bakka Jireenyaa
1=Magaalaa 2= Baadiyyaa
102. Aanaa; Bakko
103. Ganda _____ Garee-Misooma _____
104. Lakkofsa Manaa _____
105. Saala nama deebii kennee Dhiira=1, Dhalaa=2
106. Umurii _____
107. Saba
1=Oromo o 3=Tigree
2=Amhaaraa 99=Kan Biroo
108. Sadarkaa Barnoota
1=kan hin barannee 3=Kutaa 1-8ffa
2=Kan Dubbisuu fi barreessuu 4=Kutaa 9_12ffaa 5= 12ffa oli
109. Hojii
1=Qotee Bulaa 2=Barataa 3=Hojjeta humnaa 4=Daldalaa 5=Haadha warra
5= Hojii Dhabeenyii 6=Hojii mootummaa
99= Kan biroo
110. Amantii
1=Orthodoxii 3=Protestanti 99=Kan biroo
2=Isilaama 4=Wakeefata
111. Haala Ga'eela nama deebi deebisee
1=Kan hin fuune 3=Kan Hiikee/tte
2=Kan Fuudhee 4=Kan Jaala du'e/tte
112. Gahee kee mana keessatti maalii?Responsibility of the respondent in the house
1=Abba Mana 3= Haadha Warraa
2=Mucaa 99=Kan biroo
113. Baayinni Maatii mana kana keessa jiratu meeqaa? _____

114. Tilmaamni Gaalii ji'a meeqa? 1=<150birr 2=151-450birr 3=451-1500 4=1500 oli
115. Hadholiin ulfa fi Da'immaan waggaa 5 gadi mana kana keesa jiru? 1=Eyyee 2=Lakkii
116. Deebiin gaffii 115 'eyyee' yoo ta'e, Haadha Ulfa Meeqa_____?
117. Da'ima Wagga <5 gadii meeqa?_____
118. kan armaan gadii keessaa kan isin qabdaan Maalii?
- | | | |
|---------------|---------|---------|
| Radiyoo? | 1=Eyyee | 2=Lakki |
| A television? | 1=Eyyee | 2=Lakki |
| A telephone? | 1=Eyyee | 2=Lakki |

II. Haala Itti Fayyadama saphana siree Ilaalchisee

201. Saphana Siree Qabduu? 1=Eyyee 2=Lakki yoo Gaffii 201 '**Lakkii**' ta'ee gara gaffii **301**tti darbi.
202. Yoo Gaffiin '**Q201**' 'Eyyee' ta'ee, Saphana kana Enyu isiniif kenne?
- 1=Nan Bitee 2=Mootumma irraa 3=Mit_mootumma irraa 99=kan biroo
203. Gaffiin **Q201** irratti '**Eyyee**' yoo ta'ee, Saphana Siree meeqa?
- 1=tokko 2=Lama 3=Sadii 4=sadii ol
204. Mana Keessa Saphana siree jiru Ilaali, Meeqatu jira?
- 1=tokko 2=Lama 3=Sadii 4=sadii ol
205. Kan Isaniif kenname/bitanii Kan jiruun gadi yoo ta'ee (**Q203**<**Q204**) Sababiin isaa malii?
- 1=Ni gurguraatani 2=Faayida biroof olfatani 3=namaaf kennani 4=Jala Haatame
206. Gaffiin **Q202** irratti Saphana siree ni bitaani yoo ta'ee, Qarshii Meeqan bitanii?
- 1.=< 50 Birr 2= 50 – 100 Birr 3=. > 100 Birr
207. Haala Saphana Siree Isaani ilaalitu kan armaan gadii guuti.
- 1= Gaariidha (uraa hin qabu) 2= Miisha(Ura qaba garuu dhaga batirii hin galchu)
- 3= Gaarii miti (qawwa 1-4 holes qaba)
- 4=Uraa >5ol kan qabu 5= samsama keessa hin baafne(still in package) 98= hin beekamu
208. Erga Saphana siree kana fudhattanii Wagga meeqa ga'eera?
- 1= wagga 3 gadi 2= Wagga sadii oli
209. Haalkan edaa Namni Saphana siree jala bulee jiraa?
- 1=Eyyee 2= Lakki
- 210 Gaffiin **Q209**, yoo eyye ta'e, Enyu jala bulee?

- 1= Namoota dulloomani 2=Abba Warraa 5= who obtained / bought the net
3= Ijoollee Wagga<5 gadii 4=Haadha ulfa 6= Nama saphana kana bite
98 = hin Beeku

211.Saphana Siree kanatti yoom(2x) fayyadamtu?

- 1=Yeroo hunda 2=darbee darbee 3=yoo bookee busa mana keessatti mul'ate
4=namni tokko tokko yoo dhukkabsate 5=Arfasaa fi birraa 99=kan biroo

212. Gaffiin **Q209 yoo Lakkii** jettani , Maaliif Saphana siree Jala hin bullee?

- 1= Buusan waan hin jirreef 2=Bookeen waan hin jirreef 3= bakka itti dirannuu hin qabnuu
4= Qoricha isaa irra jiru waan nama gubuuf, 5=Waan ho'uuf 6=galgaala yeroo hunda
hidhuun rakkoo waan ta'eef 7=bocii isaatu namatti hin tolu 8= mana waan hin
bulleef home9= siree waan hin qabneef 99=kan biroo 98=hin beeku

213. Manni keessan kutaa meeqa qabaa walitti qabaatti? kuta cisicha,kuuta meesha,salooni...waliigala isaa.kkf?_____

214. Gaffii **213** keesaa kutaan cisichaa kan maatii hunda isaa meeqa?_____

215.Iddoo cisicha jiraan keessa kan saphaana sireen Golgamee meeqa?_____

III. Gaffiiwwaan Beekumsaa fi goochaa Ilaalchise Knowledge and Practice question

301. Dhibeen Busaa akkamitti nama qabaa?

- 1= Shonkoraa kichuu/xobbee nyaachuudhaan 2= Yoo Bokeen buusa nama hidditu
3=Qilleensa qorraa 4= Bishaan faalamee dhuguudhaan 5= yoo beel'aan 99=kan biroo

302. Waggaa lamaan darbaan keessatti dhibee busaatiin dhukkubsattetta? 1=Eyyee 2=Lakkii

303.Ji'a kana keessaa Maatii keessan keessa namni iddoo kana gara nannoo buusaan jirutti deeme jira? 1=Eyyee 2=Lakki

304. Gaffii **303** yoo Eyyee jette saphaana siree itti fayyadamee jiraa? 1=Eyyee 2=Lakki

305 Dhibee Buusa akkamitti of irra ittisuu dandeenyaa?

- 1= Biffaa DDT 3= Qoricha fudhachuun 6= dhuugaati nama macheessu dhuugu
2= Source reduction 4= saphana siree fayyadamuu 99= kan biroo 98= hin beeku

306. Saphaana siree keessa rafuun faayida qaba jette yaddaa?

- 1=Eyyee 2=Lakki

307. Gaffii **306** yoo Eyyee ta'ee faayidaan saphana siree Maalii?

- 1=akka Bokee buusadhaan hin hiddamne nama tasisaa.
2=Ilbisonni kan akka tafkii,sarariti nama hin jeeqne gargara.
4=qorra nama irraa ittisa 99=kan biroo
- 308 Saphana siree keesa rafuun rakkoon nama irraan gahuu jiraa? 1= Eyyee 2=Lakki
- 309 Gaffii **308** yoo Eyyee ta'ee, rakkoon saphana siree keessa rafuun dhufuu maalii?
1= Halkaan ka'uuf nama rakkisa 2= ho'aa waan dabaluuuf
3= Halkan yeroo diriirsanii rafan yeroo nama jalaa fixa 4= Nama ukkamsa
5=keessa bullus bokeen nama ni hidditi 6=namatti hin tolu 99= kan biroo
310. Saphanni siree akkaata kamiin bookee busaa namarra dhorka jettee yaaddaa?
1= Namatti dabarsuu dhorkuun ,3= Qorichi irra jiru ishee gubuun
2=Bookee ajjeesuun , 98= Hinbaramne , 99= kanbiraa_____
311. Barnoota waa'ee itti fayyadama saphana siree ibsu baratte beekta? 1= Eyyee 2=Lakkii
312. Gaffin **311** Eyyee ta'ee Enyuu isiin barsisee?
1= Midiyaa irraa 2= Hojjettota Ekst. Fayyaa irraa
3 =Caasa gandaa irraa 4=Ollaa irra 99=kan biroo
313. Saphana siree keessan waggaa tokko darbe keessa miccanii beektuu?
1= Eeyyee 2=Lakki
314. Yoo **Eeyye** jette waggaa keessatti si'a meeqaa? _____
315. Saphana Siree maal fakkatu fayadamuuf filataa? 1=Adii 2= semi fakkatu
316. Saphana Siree fayyadamuuf boccinni isaa kan akkamii filattaa?
1=Mataan Qalla Jalaan Bal'aa(biifa koonii) 2= Rog-afuree

IV. Gaffiiwwaan Armaan Gaditti Gaafatamaan Ilaaludhaan Guuti .

TL	Waanta ilaalamuu	Deebii Ilaalun Guutamu
401	Lakk. siree ykn bakka cisichaa	1= Tokko 2=Lamaa 3= Sadiifi isa oli
402	Baayinni Saphana siree irra jiru kan ijaan argitee meeqa?	1= Tokko 2=Lamaa 3= Sadiifi isa oli
403	Bakka cisichaa Saphana siree qabu argitte	1= Tokko 2=Lamaa 3= Sadiifi isa oli
405	Akka Ilaaltetti Saphanni siree sirritti bakka cisichaa jiranitti diriiree jira?	1=Eyyee 2=Lakkii 99= Kan biroo
406	Yeroo saphana siree dirire jiru ilaaltu uraa wayi qabaa?	1=Eyyee 2=Lakkii 99= Kan biroo
407	Daimminni saphana siree keessa cisa jiruu?	1=Eyyee 2=Lakkii 99= Kan biroo
309	Dubartonni Ulfaa Saphaana keessa cisa jiruu?	1=Eyyee 2=Lakkii 99= Kan biroo

Chapter – IX Other Additional Outputs

9.1. Narrative summary of training given to Zonal and woreda focal persons from East Shewa, West Arsi, Borena, Guji and Bale zones, April 2014

1. Introduction

Training is an educational process. People can learn new information, re-learn and reinforce existing knowledge and skills, and most importantly have time to think and consider what new options can help them improve their effectiveness at work. Effective trainings convey relevant and useful information that inform participants and develop skills and behaviors that can be transferred back to the workplace (55; 56; 57) The goal of training is to create an impact that lasts beyond the end time of the training itself. The focus is on creating specific action steps and commitments that focus people's attention on incorporating their new skills and ideas back at work. Training can be offered as skill development for individuals and groups. In general, trainings involve presentation and learning of content as a means for enhancing skill development and improving workplace behaviors (58)

Now a day's Public health Emergency management system is continually challenged by recurrent and unexpected disease outbreaks and is facing the challenge of managing health consequences of natural and human made disasters, emergencies, crisis, and conflicts. These problems continue to upset the health care system, while successful detection and response to these challenges is becoming complicated. Investigations of diseases are now more complex in nature than they were in the past because of a variety of new pathogens, risk factors and outbreaks. The best strategy for strengthening prevention & control of occurrence of outbreak, emergence of new infectious and re-emerging of communicable which provides evidence based decision on public health interventions. Importance of disease surveillance in guiding health planning and intervention was recognized long ago; nevertheless, current routine surveillance system is constrained by many factors such as shortage of trained personnel, poor data collection, non-recording, failure to report diseases of epidemic potential in time, incomplete and late reporting of notify able diseases and inadequate data analysis especially at peripheral level.

In order to achieve effective disease surveillance system and improve case management in our region we have to strengthen PHEM focal persons on general PHEM activities and outbreak investigation of selected epidemic prone diseases.

Training materials comprised of PHEM overview, Public Health surveillance, early warning, preparedness and response, Epidemiology, Prevention and Control of Malaria, AFP surveillance, Measles surveillance, Neonatal Tetanus surveillance, Meningitis surveillance, Epidemiology of AWD, AWD case management, Hygiene and CTC establishment and water treatment were prepared and delivered for these Health professionals.

9.1.2. Objectives of the Training

8.1.2.1. General Objective:

- To Capacitate PHEM focal persons on priority diseases in line with Public Health Emergency management system.

9.1.2.2. Specific Objectives:

- To enable participants to develop skills on early Warning system
- To enable participants to develop skills on Preparedness of selected priority diseases.
- To enable participants to develop the skills on Preparedness of selected priority diseases.
- To enable participants to develop the skills on response
- To enable participants to develop the skills on public health rehabilitation.
- To improve the health workers' ability on data recording and reporting system
- To improve recording and reporting system in the region.

9.1.3. Methods and Materials

- a. Place of training was Shashamene town.
- b. Training period was from 2/04/2014-07/03/2014
- c. Participants were from East Shewa, Bale, Borena, West Arsi, Guji and Shashemene town.
- d. Pre and post-tests were given to the participants and seen for improvements.

9.1.3.1 Teaching Methods

- Lectures (detail presentation on each topic)
- Group discussion (small and large)
- Brainstorming
- Recaping
- Group presentation
- Demonstration
- Pre and post test
- Questions and answers
- Pre and post-tests will be given to the participants.
- General discussion

9.1.3.2 Teaching Aid

- LCD projector
- Lap Top
- Flip Chart

9.1.4. Results

9.1.4.1 Descriptive Data

A total of 49 trainers were planned and 49 PHEM focal persons (100%) attended training.

Table-9 .1.1: Paired samples statistics of Pre and Post-test PHEM TOT training Result, Oromia, 2014

	N	Total	Mean	Variance	Std Dev	Min	25%	Median	75%	Max	Mode
Pretest	49	3420	69.7959	241.3741	15.5362	32	60	72	84	96	84
Post test	49	3932	80.2449	225.6054	15.0202	40	68	84	92	100	88

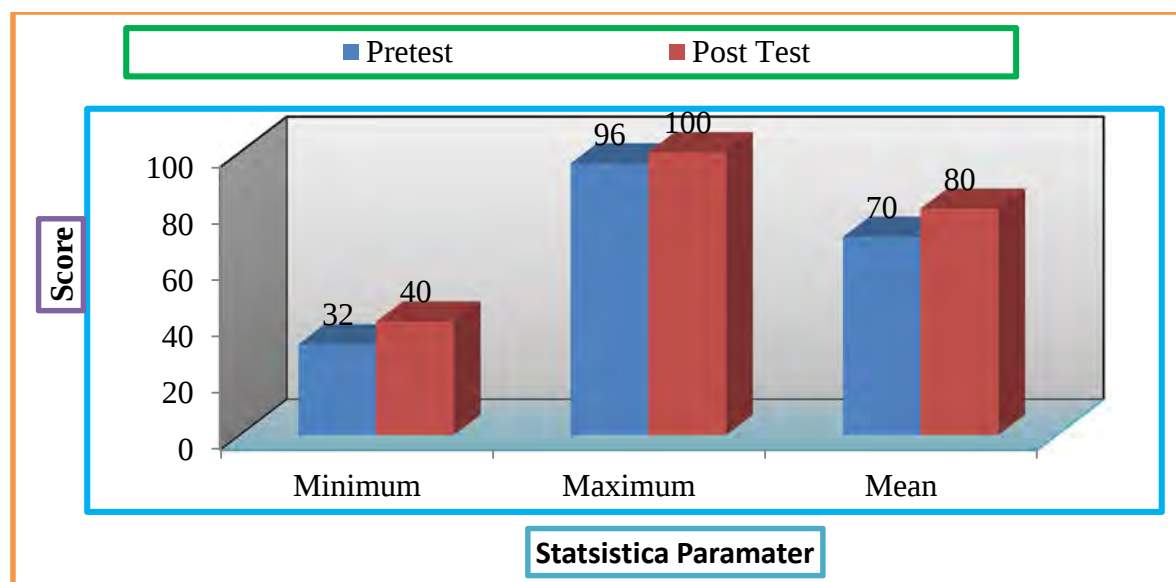


Figure 9. 1.1: Comparison of pre and post test result-Shashemene, Oromia, Ethiopia April 2014

- ☐ Mean pre-test score was 69.79% with standard deviation of 15.6
- ☐ Mean post-test score was 80.24% with standard deviation of 15.02
- ☐ Mean difference between post and pre-test was 10.4%

Table-9 .1.2: Paired samples statistics of Pre and Post-test PHEM TOT training Result, Oromia, 2014

Sr. No	Score Category	Score (100%)	Pretest (%)	Posttests (%)
1	<50		7(14.3%)	1(2%)
2	50_71		16(32.6%)	13(26.5%)
3	72_100		26(53.1%)	35(71.5%)
	Total		49(100%)	49(100%)

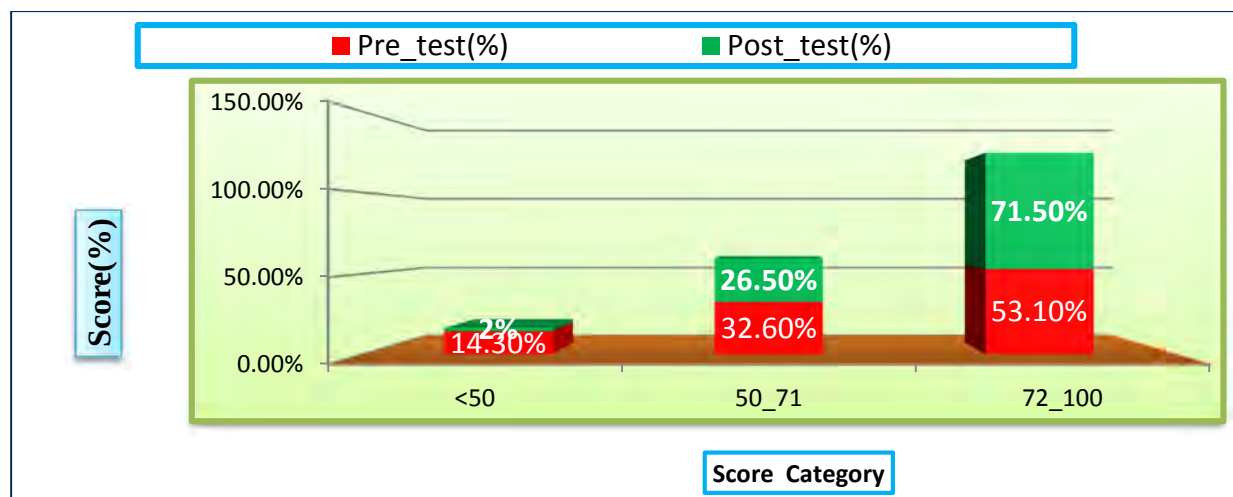


Figure 9.1. 2; Paired samples of Pre and Post-test PHEM TOT training Result by Score group Oromia, 2014

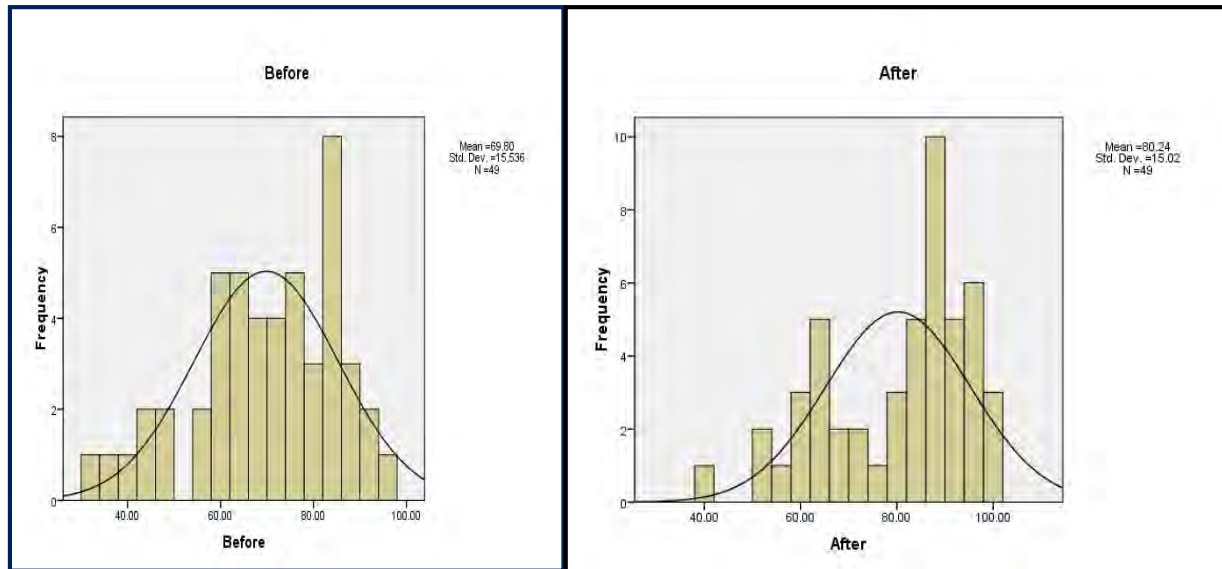


Figure 9 .1.3; Histogram Curve of pre test and Post test Score distribution Shashamane, Oromia, 2014

The score distribution in pretest examination is more also dispersed Compared to the of Post test. The graph in both cases it was skewed to the right indicating that more score were distributed to the right. In pretest the score distribution is highly distributed between 60 and 80 however in post this is shifted to 80 to 100(Figure).

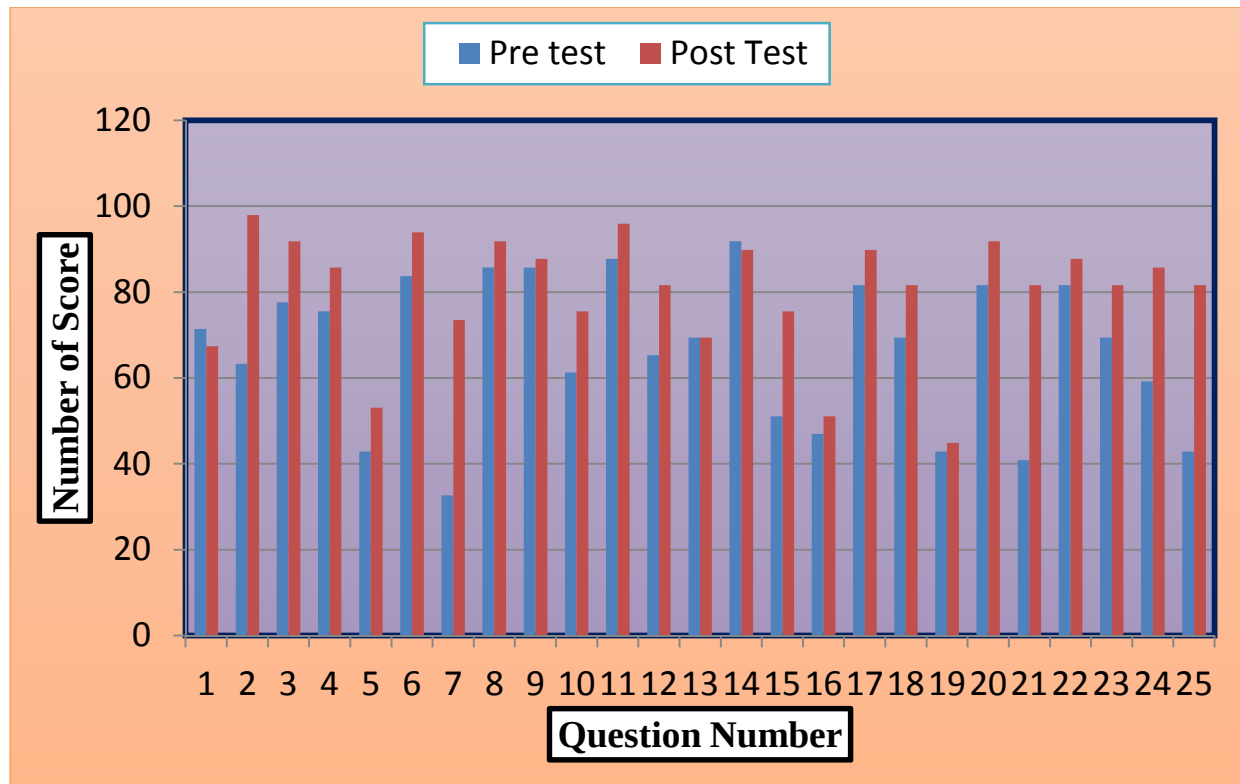


Figure 9.1. 4. The Graph Indicating Pre test and Post test paired with each question correctly answered in Shashamane Training on April 2014

The mean of the pretest and Post test is 69.8 and 80.25 respectively. The mean score Difference between post and pretest is 10.45 with standard deviation of 15 and 15.5 respectively (Table 1)

Table-9 .1.3; Paired Mean differences between Pre and Post-test PHEM TOT Training Result, Oromia, April 2014 G.C

		Mean	N	Std. Deviation	Std. Error Mean
Pair between	Post Test	80.2449	49	15.02017	2.14574
	Pre test	69.7959	49	15.53622	2.21946

9.1.4.2 Analytical Statistical Result

A paired sample t test was conducted to evaluate whether statically significance difference existed between the mean score of in the public health emergency management TOT training before and after remedial training course. The assumption is for testing there is no statically significance association between pre test and post test in line with training.

The results of Paired sample t-test were significantly associated with the training. That is to mean training the individuals with the course have a positive significant association on the trainees with $t(48)=5.3$ with P value of <0.0005 indicating that there is a significant increase from mean $X=69.8$, $Sd=15.5$, $N=49$ to the post test (Mean $X=80.2$ $Sd=15$) with the 95% confidence interval $CI(6.5-14.4)$. The effect size was large based cohen's convention (1988).Therefore there is a significant association between The test and TOT. Therefore we reject the null hypothesis stating that there is no deference between the two variables (Figure 4)

Table-9 .1.4: Paired differences of Pre and Post-test PHEM TOT Training Result, Oromia, April 2014 G.C

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Post - Pre test	1.04490 E1	13.58471	1.94067	6.54700	14.35096	5.384	48	.000

9.1.5.0. Discussion

Moreover, the majority of the trainees 35(72%) scored, grades of 70 and above in the post test. The mean difference between the pre-test score and the post-test score was statistically significant with standard deviation of 13.5 at 95%, C.I of (6.5 - 14.35). This Showed that how trainees had developed skill and acquired new knowledge during the stay of the training. This gave proof that a significant change witnessed that how change or improvement was seen.

9.1.6.0. Conclusion

There was a significant difference between pre and post test results showing that trainees had Acquired basic knowledge and skills to perform their duties as PHEM officers so that they could Conduct cascaded training for woreda Public health facilities.

9.1.7.0. Recommendations

- In any training, for the purpose of assessment of its progress, pre and post tests are necessary.
- Sufficient time should be allowed for the training to be captured by woreda PHEM officers for the future.
- The private health facilities should be included in the training in the future.

91.8.0 Acknowledgement

I would like to give my heartfelt gratitude to Oromia regional health bureau PHEM for facilitating conditions to give us such important training programme to enable me to participate in the training. I also thank EPHA for facilitating our attendance by providing the required financial support.

9.1.9.0. References

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Annex 9.1. 1Post Test on Selected Epidemic disease, PHEM, ORHB

Code_____

Instruction: Choose the best answer from the given options in the space provided.

_____1. Which of the following is true statement regarding standard case definition?

A standard case definition is an agreed upon set of criteria used to label an individual as having a disease of interest or not

A standard case definition does not help to identify cases of interest

A standard case definition facilitates screening of many sick persons in a short period of time

B and C are true

E) A and C are true

_____2. Currently how many diseases/conditions are reported under IDSR in Ethiopia?

19

B) 21

C) 22

D) 23

_____3. Which of the following condition is currently added under reportable?

A) Cholera

B) Meningitis

C) NNT

D) Maternal death

E) Non of the above

_____4. One of the following is an activity in Integrated Disease Surveillance and Response?

Detecting and reporting priority diseases
of feedback C) A &B D) A and C

B) Evaluation of disease control program Provision

_____5. Cholera is caused by shigella characterized by sudden onset of profuse painful watery diarrhoea or rice-water like diarrhoea, often accompanied by vomiting and may end up in severe dehydration and death. A) True B) False

_____6. Which of the following AWD case management at CTC is appropriate?

Patients those who come to CTC with some dehydration needs to have IV fluids.

Patients those who come to CTC with severe dehydration needs to have IV fluids.

Patients those who come to CTC with No dehydration need to have Rehydration.

Patients those who come to CTC with some dehydration needs to have antibiotics.

_____7. 2% chlorine solution is used for:

Disinfection of corpses (dead bodies), waste and Excreta

Disinfection of floors, objects, beds, footbath and clothes

C. Disinfection of hands and skin

D) None of the above

_____ 8) which of the following are the recommended measles control strategies?

Improved immunization coverage

B) measles surveillance

C) Case management including Vit.A supplementation

D) Measles SIAs

E) All of the above

F) Non of the above

_____ 9. What is the temperature range that is ideal for storing measles vaccine in a refrigerator?

0 to 8 degree cet.

B) 2 to 8 degree cet.

C) 2 to 10 degree cet.

D) It varies from vaccine to vaccine

_____ 10. What is the efficacy of measles vaccine given at the age of 9 months?

85%

B) 90%

C) 95%

D) 100%

_____ 11. Which of the following are recommended for polio eradication strategies?

Routine immunization

B) Polio SIAs

C) AFP surveillance

D) Mopping up activities in the areas of low coverage

E) All of the above

_____ 12) If you are working in the OPD which one of the following cases will you suspect as a case of AFP?

A) person who has weakness of one leg due to injection to the buttock

B) Person who has fever, weakness of both legs and swelling over the back due to Tuberculosis

C) Person who claims to fall down suddenly while playing and has weakness of one arm

D) All of the above

E) none of the above

_____ 13. Which of the following statements are good qualities of AFP surveillance?

A. Non-polio AFP rate of at least 2/100,000 in children under 15 years of age per annum

B. At least 80% of AFP cases have adequate stool specimen

C. Two stool specimens collected within 14 days of paralysis onset, at least 24 hours apart and

received in the lab in good condition

D. Appropriate geographic representation E) All of the above F) None of the above

_____ 14. Neonatal Tetanus is not an immediately reportable disease in Ethiopia.

A) True B) False

_____ 15. What is the dose of Vitamin A for Measles case management to children of 6 to 11 months of age?

A) 50,000 IU B) 100,000 IU C) 200,000 IU D) None

_____ 16. In nutritional screening

Nutrition screening should be done for all children 6-59 months, pregnant women and lactating mothers

Check for bilateral oedema in children 6-59months.

Take the MUAC measurement to children with and without oedema.

A and B are correct E) All are correct

_____ 17. It is true that Malnutrition is caused only due to food insecurity

A) True B) False

_____ 18. Anthropometric indices is not necessary to identify SAM; It is possible to identify child with

Malnutrition by looking at the face/body A) True B) False

_____ 19. The alert threshold level for meningococcal meningitis for a population of 30,000-100,000 per

Week is

5 cases/100,000 population B) 2 cases /100, 000 population

C) 15 cases /100.000 population D) 3 cases /100,000 population E) All can be the answer

_____ 20. The three pillar strategies for epidemic meningococcal meningitis control

Surveillance B) Early case detection treatment and patient care

C) Vaccination D) All are the answer E) A&B are the answer

_____ 21. The most common serotypes of meningococcal meningitis in Africa are

Serotype A B) Serotype B C) Serotype C D) Serotype W135 E) A&C are the answer

_____ 22. People who are at risk for severe malaria include:

Children under the age of five years B) Pregnant women C) People living with HIV

D) All members of the population in areas of unstable malaria transmission E) All

_____ 23. One is not true about malaria epidemiology in Ethiopia?

Adults are not at risk to develop severe malaria B) Transmission is seasonal and unstable

C) Major epidemics occurred every 5-8 years D) *P. vivax* & *P. falciparum* are the two dominant species

E) Transmission coincides with agricultural activity and it affects the economy

_____ 24. Malaria control prevention and elimination strategy of Ethiopia include:

A) Community empowerment and mobilization

Diagnosis and treatment of malaria within one week of onset of symptoms

Provision of ITN to only children and pregnant women

Indoor residual spraying all over the country E) Less attention to health system strengthening

_____ 25. The Gold standard test for the diagnosis of malaria is

A) Giemsa stained blood film (examined by light Microscope)

B) Molecular test C) Rapid diagnostic test D) A & B E) None

Declaration

I, the undersigned, declare that this is my original work and never been presented by another person in this or any other University and that all the source materials and references used for this thesis have been duly acknowledged.

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The thesis has been submitted for examination with my approval as a university advisor.

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