Addis Ababa University, College of Health Sciences,

School of Public Health

Ethiopian Field Epidemiology and Laboratory Training Program (EFETP)

Compiled Body of Works in Field Epidemiology

By

Engdayehu Hailu

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 2015

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Advisors

1. Dr. Adamu Addissie

2. Mr. Haftom Teame

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Approval by Examining Board

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Chairman, School Graduate Committee

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Advisor

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Examiner

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Examiner

knowledgment

de to my mentors Dr. Adamu Addissie (AAU academic coordinator of Field Epidemiology Training Program) and Mr. Haftom Teame for their guidance, encouragement and support in all my outputs during the two years academic period so as to finish this program successfully.

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My special thanks go to Southern Nation, Nationalities and People Region Health Bureau for giving me the chance to join the EFELTP. In addition I would also like to thank Ethiopian Public Health Institute (EPHI) Public Health Emergency Management staffs particularly Dr. Daddi Jimma and Mr. Abyot Bekele for all their support, leadership and supervision during my residency period at EPHI and all regional health bureaus, Woreda Health offices, health facilities and community members for their support and cooperation during all my works. More over I would like to thank Ethiopia Field Epidemiology Training programme, Addis Ababa University and Ethiopian Public Health Association for their efforts in making the programme successful.

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	a University
ACT	Artemisia-based combination therapy
AFI	Acute Febrile Illness
AFP	Acute Flaccid Paralysis
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
AURTI	Acute Upper Respiratory Tract Infection
AWD	Acute Watery Diarrhoea
BCG	Bacillus Calmette-Guerin
BPR	Business Process Reengineering
CBR	Crude Birth Rate
CDC	Center for Disease Control
CDR	Crude Death Rate
CFR	Case Fatality Rate
CI	Confidence Interval
CSA	Central Statistics Agency
CSF	Cerebro Spinal Fluid
CTC	Cholera Treatment Center
DDT	Dichlorodiphenyltrichloroethane
E.C	Ethiopian Calendar
EHNRI	Ethiopian Health and Nutrition Research Institute
ELISA	Enzyme-Linked Immuno Sorbent Assay
EMM	Enhanced Meningococcal Meningitis

	ublic Health Association
	ublic Health Institute
EW	Early Warning
EWR	Early Warning and Response
EWRFS	Early Warning, Response and Food Security
FMOH	Federal Ministry of Health
FP	Family Planning
GDP	Gross Domestic Product
HC	Health Center
HEW	Health Extension Worker
HF	Health Facility
HIV	Human Immunodeficiency Virus
HMIS	Health Management and Information System
HOSP	Hospital
HPs	Health Posts
HW	Health Worker
IgM	Immune Globulin M
IMR	Infant Mortality Rate
IP	Incubation Period
IPMS	Improving Productivity and Market Success
IRC	International Rescue Committee
IRS	Insecticide Residual Spray
ITNs	Insecticide Treated Nets
IV	Intra Venus

	ncture
	n Development Goal
MDR	Multi Drug Resistance
MR	Mortality Rate
MSF	Medicine San Frontier
MUAC	Middle Upper Arm Circumference
NM.Y/W135	Neseria Meningitidis sero type Y/W135
NNT	Neonatal Tetanus
OCHA	Organization for Coordination of Humanitarian
OR	Odds Ratio
ORS	Oral Rehydration Salt
OTP	Outpatient Therapeutic Program
OTP	Outpatient Therapeutic Program
PCV	Pneumococcal Vaccine
PHE	Public Health Emergency
PHEM	Public Health Emergency Management
PHI	Public Health Institute
PIHCT	Provider Initiated HIV Counseling and Testing
PMI	President's Malaria Initiative
RDT	Rapid Diagnostic Test
RDT's	Rapid diagnostic tests
RHB	Regional Health Bureau
RTI	Respiratory Tract Infection
Rx	Treatment

	te Malnutrition
	Populations
SC	Stabilization Center
SCD	Standard Case Definition
SIAs	Supplementary Immunization Activities
SNNP	Southern Nations and Nationality People
SNNPR	Southern Nations, Nationalities and Peoples Region
SNNPRS	Southern Nations and Nationalities People Regional State
STI	Sexually Transmitted Infections
TB	Tuberculosis
TFP	Therapeutic Feeding Program
TVET	Technical and Vocational Education Training
UN	United Nation
UNICEF	United Nation Children's Fund
URTI	Upper Respiratory Tract Infection
US	United States
UTI	Urinary Tract Infection
WFP	World Food Program
WHO	World Health Organization
ZHDs	Zonal Health Departments

...cutive Summary

...ning program (EFETP) is a two year field based masters program. The school of public Health /Addis Ababa University, Federal Minister of Health, Ethiopia Public Health Institute (EPHI), Ethiopia Public Health Association (EPHA) and CDC Ethiopia are running the program together. The field work comprises seventy five (75%) of the program which called residence with the aim of learning by working in public health emergency management centre

This Body of work contains my out puts for the two years stay in the program**,** outbreak investigations, surveillance data analysis, surveillance system evaluation, description of health profile report, writing of scientific manuscript for peer review journal, abstracts submitted in scientific conferences, writing protocol/proposal of epidemiologic research project and a summary of disaster situation in selected area.

In the outbreak investigation chapter or section one outbreak investigated as first Author the outbreak investigation done in SNNPR Sidama Zone Bona Zuria District "Measles outbreak investigation" a case control study and "human Cutaneous anthrax outbreak Investigation " among Pastoralists in Benna Tsemay Woreda of South Omo Zone, SNNP Region a descriptive study.

Chapter two contains report of surveillance data analysis which was conducted on Comparative Analysis of Public Health Emergency Management and Health Management Information System Malaria Surveillance Data; it was a three year data being analyzed. Chapter three addresses Surveillance system evaluation of Malaria in Halaba District. Chapter four contains Health profile description of Halaba Special Woreda. In the chapter health and health related data of the district populations were presented. Chapter five contains Scientific Manuscripts for Peer reviewed Journals which resulted from the outbreak investigations which resulted from the outbreak investigations included. Chapter six contains abstracts of outbreak investigations and surveillance data analysis was presented. Chapter seven contains a report on narrative summary of disaster situation visited on selected districts of South Omo and Segen Area Population zones of SNNP region, the report conducted in collaboration with other team members, WHO, UN-OCHA, MSF and EW/Ethiopia and South Regions.

project in title “Assessment of Status of Health Service les Outbreak in a High Vaccination Coverage Reporting Setting: The Case of Halaba District, Ethiopia which is accepted and additionally Assessment of factors contributing for malaria surveillance data discrepancy at peripheral health facility level with emphasis on health workers knowledge, attitude and practice (KAP) about malaria surveillance and surveillance data importance in Halaba Special Woreda, Southern Ethiopia “were written and submitted

Chapter nine include other outputs and in this chapter training conducted on meningitis, malaria and measles. In addition summary reports of Ebola Surveillance and screening assessment at border land port, weekly PHEM bulletin and weekly IDSR feedbacks included.

Chapter I – Outbreak/Epidemic Investigations

Outbreak, Melgano Doya Kebele of Bona Zuria Ethiopia, 2014

Abstract

Introduction: Measles is an acute, highly contagious viral disease caused by measles virus. Measles is the fifth killer disease among <5 Yrs of age worldwide. Measles case account for 4% of childhood mortality in Ethiopia. Suspected outbreak of measles was investigated to determine risk factors associated with and to take preventive and control measures based on the findings.

Methods: We conducted a descriptive study followed by 1:1 unmatched case control study. EpiInfo7 were used for data processing and analysis.

Result: A total of 67 measles cases (5 IgM positive) with median age of 4 year (Q1=0.2; Q3=10) and no deaths reported. The overall attack rate in Kebele was 113 cases with <1, 1-4 and 10-14 year children recorded the highest attack rate of 343, 392 and 244 cases per 10,000 population respectively.

The odds of illness in those vaccinated were 0.16 times less than those who were not vaccinated [95%CI (0.07-0.34)]. Contact with the case [95%CI (1.95-8.35)] and <5 year malnutrition [95%CI (1.47-7.82) were significantly associated with the disease. Cases from households of family size $\geq$7 persons and illiterate parents were 3.02 times [95%CI (1.49-6.10)] and 4 times [95%CI (1.93-8.21)] more likely to develop measles respectively.

Conclusion: An outbreak of measles occurred in Melgano Doya Kebele of Bona Zuria Woreda. Un-vaccination, having contact with case, living in crowded room, <5 children malnutrition and illiteracy of parents were associated with contracting measles. <5 years children vaccination, case management, health education and active case search undertaken as prevention and control measure.

Keywords: Measles outbreak, Melgano Doya, Bona Zuria, Ethiopia

s viral disease caused by measles virus, a virus in the paramyxovirus family. It is characterized by small red dots appearing on the surface of the skin, irritation of the eyes (especially on exposure to light), coughing, and a runny nose. About 12 days after first exposure, the fever, sneezing, and runny nose appear. Coughing and swelling of the neck glands often follow. Four days later, red spots appear on the face or neck and then on the trunk and limbs. In two or three days the rash subsides and the fever falls. Measles is easily and rapidly transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva from one person to another through coughing, sneezing and close personal contact. Measles is the fifth killer disease among children under five years of age in the world (1-3). According to WHO region 2007 statistics, it was estimated that 51% of all measles deaths were occurring in South East Asia, 37% of them occurring in Africa while both Europe and America had the least rates <0.15% (4). In 2008, there were 164 000 measles deaths globally (5). The resurgence of measles outbreaks in Africa these last few years has caused much suffering and many deaths. More than 200,000 cases and 1,400 deaths were officially reported for 2010. Taking into account generalized underreporting, real numbers could be 10 or even 20 times higher (2). There is no specific treatment for measles and most people recover within 2–3 weeks. However, particularly in malnourished children and people with reduced immunity; measles can cause serious complications, including blindness, encephalitis, severe diarrhea, ear infection and pneumonia. More than 95% of measles deaths occur in low-income countries with weak health infrastructures. Many deaths are attributed to unvaccinated children as such measles vaccination coverage is used as an indicator to monitor progress. In 2008, all UN member states reaffirmed their commitment to achieving a 90% reduction in measles mortality by 2010 compared with 2000, from an estimated 733,000 deaths in 2000 worldwide to ≤73,300 by 2010. The World Health Organization (WHO) and UNICEF have identified 47 priority countries with the highest burden of measles for an accelerated strategy for measles mortality reduction. An estimated 4·3 million additional child deaths have been averted as a result of accelerated measles control efforts, including increases in routine measles immunization coverage and administration of more than 600 million doses of measles vaccine in mass vaccination campaigns. Estimates indicated that ually towards achieving Millennium Development Goal 4 eving a 90% reduction in measles deaths (6).

Currently outbreaks of measles reported in different states of the world. In US during January 1–August 24, 2013, a total of 159 cases were reported to CDC from 16 states and New York City. In South Africa between 2009 and 2011, with over 18,000 cases were recorded (7). In 2001, World Health Organization, Africa region launched an initiative aimed at mobilizing resources and provide support to the African Region to reduce measles deaths globally. The initiative was geared at providing the first dose measles vaccine through routine immunization as a first dose of measles vaccine to children of 9 months and older through routine immunization services. It also aimed at provision of a second opportunity for measles immunization though supplemental immunization activities (SIAs) to reach children that have never been vaccinated in the routine immunization program and children that have not been protected after the first dose and thirdly the initiative aimed at providing improved clinical management of measles cases which include providing supplemental doses of vitamin A to all suspected cases of measles and the appropriate and early management of measles complications (8). In Ethiopia measles is one of the vaccine preventable disease causing preventable morbidity and mortality in children. It accounts four percent of childhood mortality in Ethiopia (9). Ethiopia measles control activities included strengthening routine immunization, providing second opportunity for immunization through SIAs, surveillance and improved case management. However, measles outbreak occurred at various times affecting control activities included Emergency outbreak response campaigns from 2000 (targeting children 6 months to 5 years of age) until the national measles catch up SIA that occurred in a phased approach from between 2003 and 2005 (targeting children 6 months to 15 years of age). Three rounds of follow-up campaigns have been completed, the last occurring in October 2010-February 2011. Despite the control efforts, measles outbreaks have continued. Sub-national measles SIAs was implemented in late 2011, to protect children aged 6 months to 15 years of age in the Woreda at high risk for measles and with malnutrition and a further sub-national campaign in response to a large measles outbreak in Kefa Zone, SNNP in February 2012 (10).

Outbreaks of measles were reported in Melgano Doya Kebele, Bona Zuria Woreda of Sidama Zone from Oct.17-Nov.13/2014. To investigate the extent of outbreak and to identify possible risk of the outbreak and to undertake preventive and control uria Woreda Health Office was organized and deployed to the area.

Objectives

General Objective

To investigate and control the outbreak of measles in Melgano Doya Kebele Bona Zuria Woreda of Sidama Zone and recommend prevention measures.

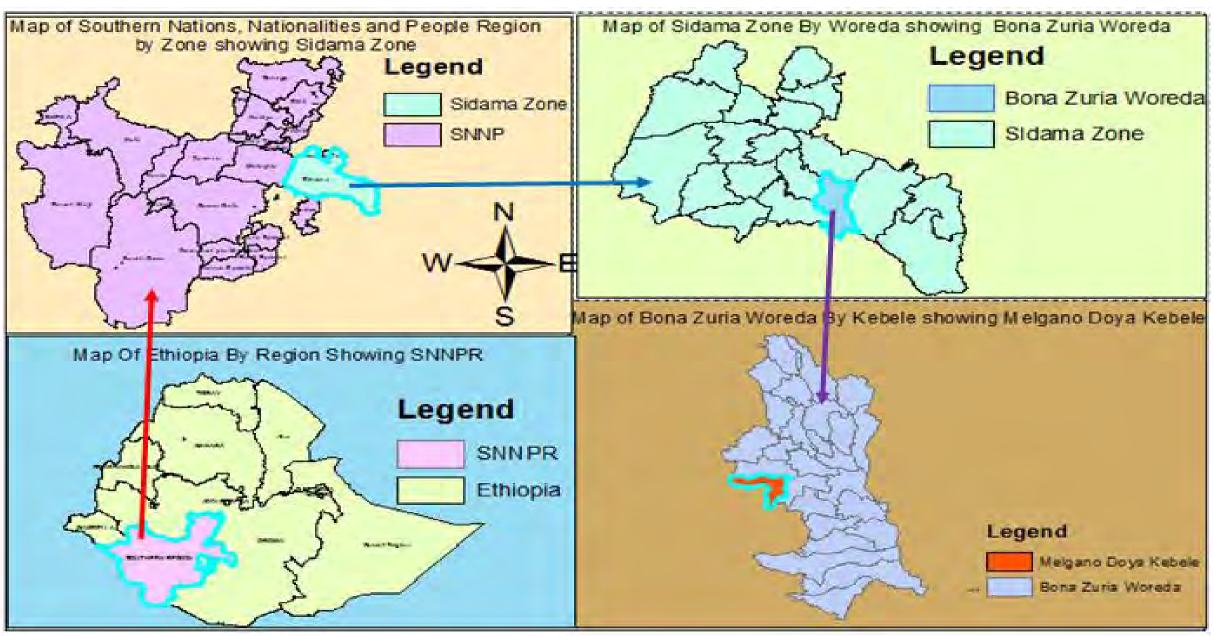
Specific Objectives:

- To describe the magnitude of the outbreak by place, person and time
- To determine the Risk factors for the outbreak
- To implement prevention and control measures for containment of the outbreak
- To propose possible recommendations for preventing similar epidemics in the future

Methods and Materials

Study Area, Population and Period:

The study was conducted in Melgano Doya Kebele in Bona Zuria Woreda of Sidama Zone. The Kebele has a population of 5,908 (2007: Census projection) during 2014/2015. The study was conducted from November 12-21/2014.



Individual's treated with measles in Melgano Health Centre and Melgano Doya Health Post and their control with the ratio of 1:1 from Melgano Doya Kebele residents. All 67 cases and 67 controls are our study sample size.

Inclusion and Exclusion criteria

Inclusion Criteria

- **Cases:** Any resident of Melgano Doya Kebele who had symptoms of measles generalized maculopapular rash and fever plus one of the following: cough or coryza (runny nose) or conjunctivitis (red eyes) from October 17- November 13/2014 and who agreed to participate in the study was included.
- **Controls:** Any resident of Melgano Doya Kebele during the study who was a neighbor to a case and who did not develop signs and symptoms of measles and agreed to participate was included.

Exclusion criteria

- **Cases:** Those who refused to participate or were unconscious were excluded.
- **Controls:** Those who refused to participate and family members from the same household were excluded.

Study Design:

We conducted a descriptive study followed by unmatched case control study to investigate the outbreak in the Melgano Doya Kebele.

Case Definitions:

- **Suspected Measles Case:** anyone residents of Melgano Doya Kebele during Oct. 17–Nov. 13/2014 whom a clinician suspects measles infection, OR with fever and maculopapular rash, and cough, coryza (i.e., runny nose) or conjunctivitis (i.e., red eyes).

case: Is defined as a case that meets both the suspected ve laboratory test result for IgM antibody using a standard ELISA.

- **Epidemiologically linked measles case:** A suspected measles case that has not had a specimen taken for serologic confirmation and is linked (in place, person and time) to a laboratory confirmed case; i.e., living in the same or in an adjacent Woreda with a laboratory confirmed case where there is a likelihood of transmission; onset of rash of the two cases being within 30 days of each other.
- **Laboratory-confirmed outbreak:** Is defined as reporting of 3 or more laboratory confirmed cases occurring in a health facility or district in one month.
- **Outbreak threshold:** WHO-AFRO defines an outbreak of measles as the occurrence of 3 or more IgM positive measles cases in a health facility or district in one month OR the occurrence of 5 or more reported suspected cases of measles in a health facility/district in a month.
- **Controls:** Any resident of Melgano Doya Kebele during the study who was a neighbor to a case and who did not develop signs and symptoms of measles. Cases and controls were interviewed to obtain Information on risk factors.

MUAC Measurement:

- < 11 Cm MUAC measurement = Severely Malnourished
- 11-12.4 Cm MUAC measurement = Moderately Malnourished
- 12.5 MUAC measurement = Normal

Data Collection:

Quantitative and qualitative data were collected from cases and their controls as well as Health Post, Health Centre and Woreda Health Office through observation, document review and interviewer administered questioner (an outbreak investigation checklist).

Data Processing and Analysis:

administered questioner and line list was entered to ls ratios with 95% confidence intervals were calculated to compare risk factors among cases and controls.

Result

From Oct.17-Nov.13, 2014, a total of 67 measles cases and no deaths were reported from Melgano Doya Kebele, Bona Zuria Woreda of Sidama Zone (Figure 2). From the total cases reported 5 were laboratory confirmed and 62 were epi-linked with median age of 4 year (Q1=0.2; Q3=10). The epi-curve shows the outbreak is a propagated one with many peaks showing a possibility of person to person transmission (Figure 2).

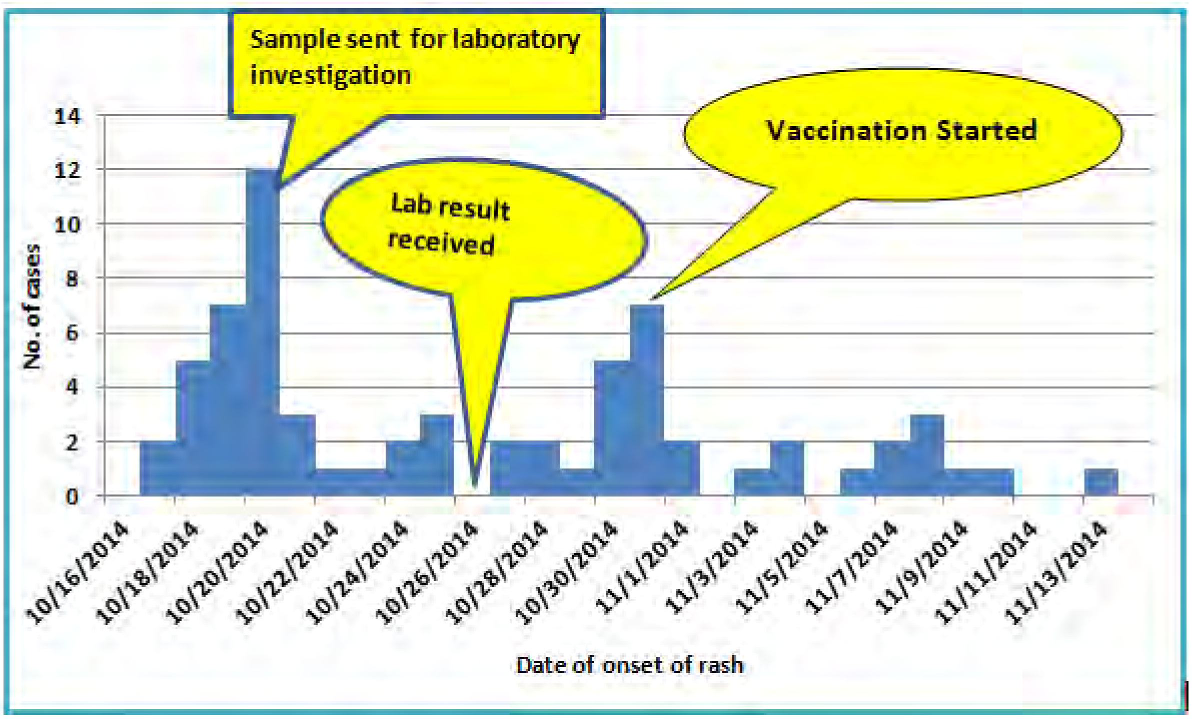


Figure 2: Measles case by date of onset of rash, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

The age group with the highest proportion of cases was children aged <5 and 10-14 years, comprising 37 (55.2%) and 20(29.9%) respectively of the 67 measles cases with age information and the least proportion of cases was children aged ≥15 years comprising 3 (4.5%) of the 67 measles cases.

:e of measles cases-Melgano Doya Kebele, Bona Zuria,

Age group	Pop.	Cases			AR/10,000
		Number	%	Cumulative (%)	
<1yr	204	7	10.4	10.4	343
1-4yrs	765	30	44.8	55.2	392
5-9yrs	1022	7	10.4	65.6	68
10-14yrs	820	20	29.9	95.5	244
≥15yrs	3097	3	4.5	100.0	10
Total	5908	67			113

The overall attack rate of the disease in Bona Zuria Woreda was 114 cases per 10,000 populations. However < 1, 1-4 and 10-14 year age groups were the highest recorded attack rate of 343, 392 and 244 cases per 10,000 populations respectively (Table 1 above). 37 (55.2%) and 30(44.8%) of the cases were males and females respectively (Figure 3 below).

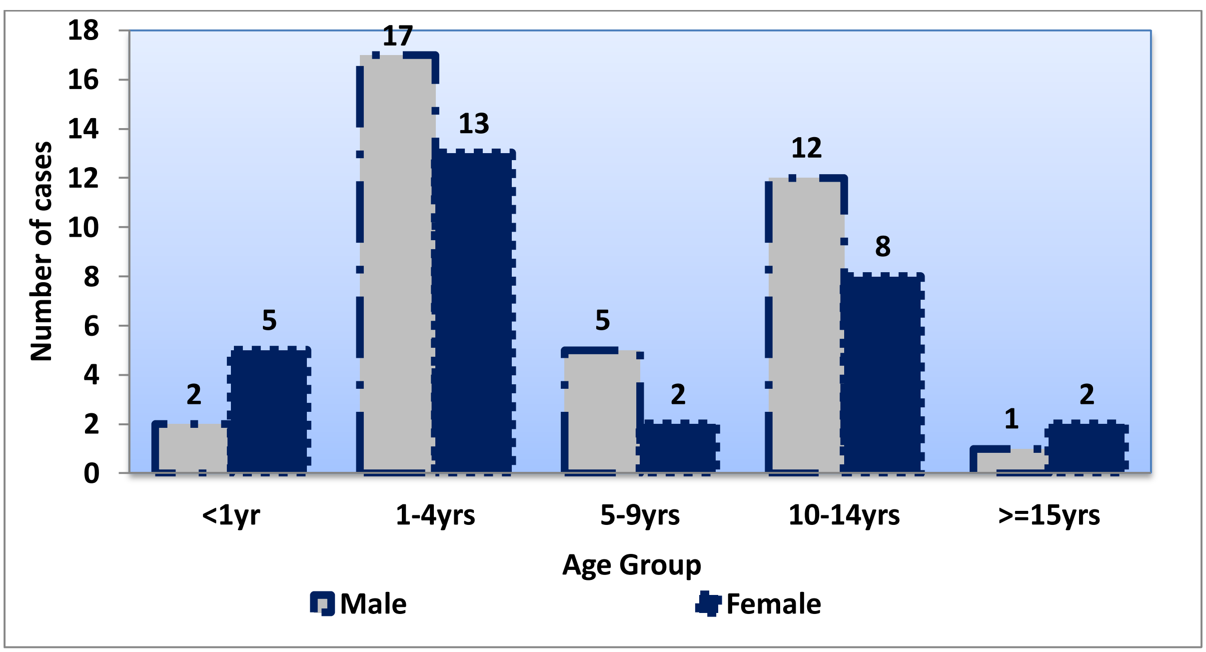


Figure 3: Measles case by age group & sex, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

...re unvaccinated against measles. Only 22.4% and 14.9% of ...f vaccine respectively (Table 2). In Melgano cluster health center where Melgano Doya Kebele found, measles vaccination coverage during 2013/2014 E.C were 108% and the district's coverage was 104% (Source: Bona Zuria District health Office HMIS report).

The most affected village in the Kebele was Gerbicha Sine (83.6% of cases) followed by Andegna Hama (10.4% of cases) and Huletegna Manse (6% of cases) villages over the course of the outbreak out of the 16 villages in the Kebele as shown in figure 4.

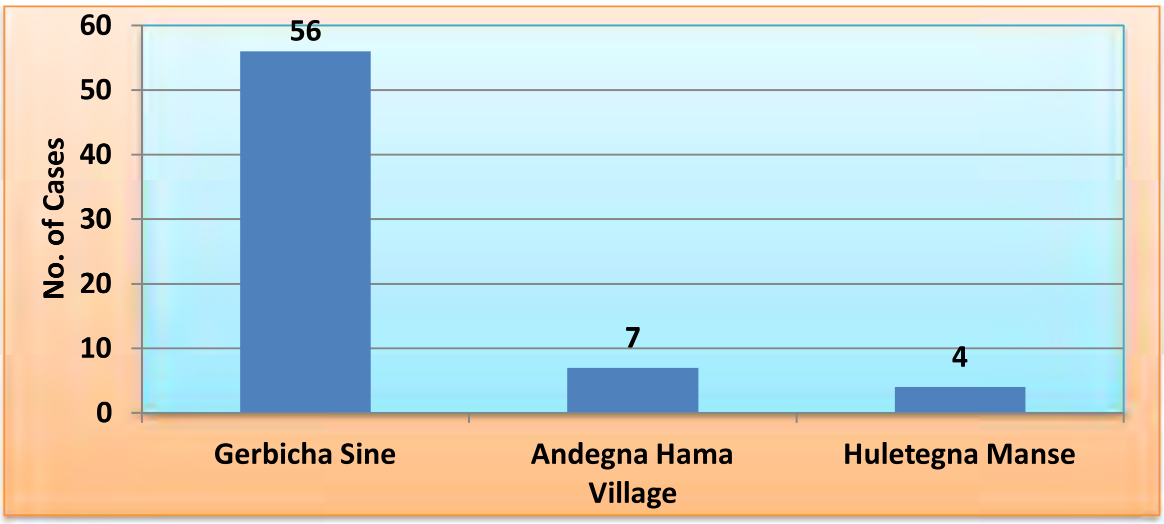


Figure 4: Measles case distribution by village, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

The health center responsible to support and supply vaccination logistics were visited for observation of vaccine cold chain. While the team arrived at the health center, one of the refrigerators used for vaccine storage supposed to supply all catchments health post, were observed with the temperature reading very high i.e. more than the recommended limit for a long time which could affect the potency of the antigen.

The health post is said providing vaccination sessions regularly but there is very unethical conditions observed in the health post that to mention some of the issues vaccination coverage of the Kebele for the past consecutive years not documented, data quality of the immunization in question because monthly report and data in the register don't complement and even since May

ated children in the register, no tally sheet being used but
e vaccinated children.

Table 2: Cases and controls by vaccination status in age groups, Melgano Doya Kebele, Bona Zuria, Sidama, 2014.

Age group	Case			Control		
	One dose	≥ 2 dose	Zero dose	One dose	≥ 2 dose	Zero dose
<1yr	1	**3**	3	6	**0**	1
1-4yrs	10	**0**	20	9	**12**	9
5-9yrs	3	**1**	3	6	**1**	2
10-14yrs	1	**6**	13	2	**16**	2
≥ 15yrs	0	**0**	3	1	**0**	0
Grand Total	**15**	**10**	**42**	**24**	**29**	**14**

Patients visit health facilities very late after getting severe illness and stay at home very long time which makes the early detection and containment of the outbreak (shown at Figure 5 and Figure 6 respectively) difficult. Median duration for seeking treatment after onset of illness was four days (Q1=2; Q3=5). Twenty one (41.8%) of cases sought treatment within three days of onset of illness whereas most of the cases (58.2%) sought treatment later than three days.

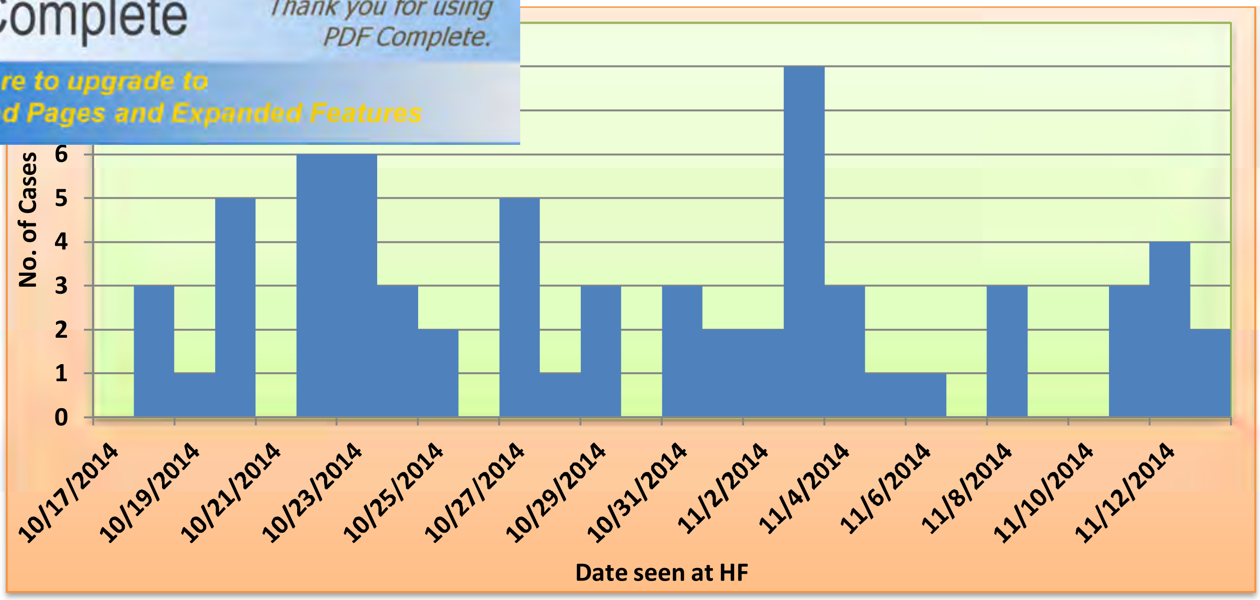


Figure 5: Measles case by date of HF visit, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

The index case was 15 year old female who is IgM positive for measles specific antibody. She had history of travel in Getama Kebele of Hagere Selam Woreda where there is confirmed measles outbreak.

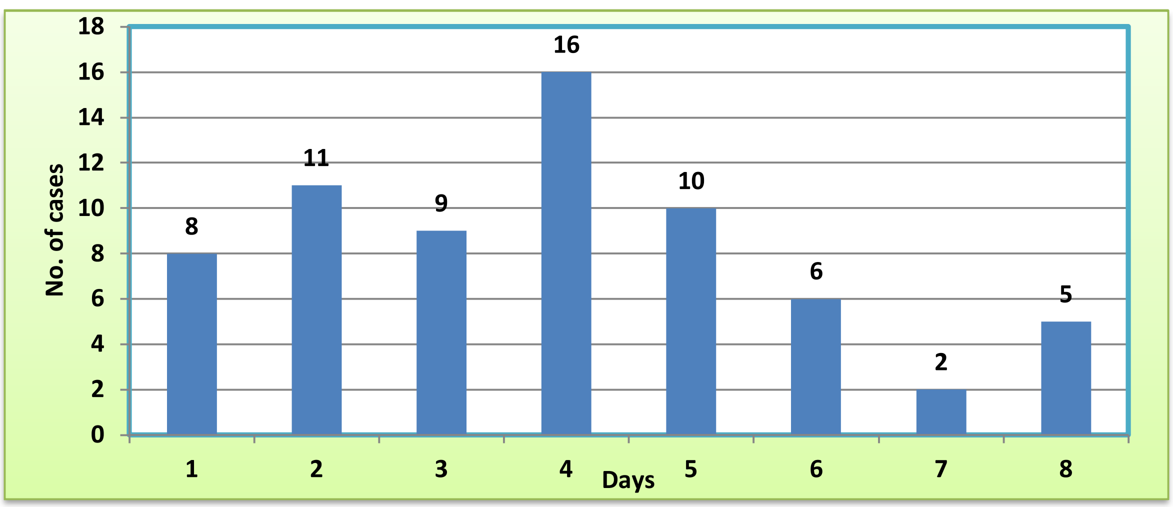


Figure 6: Number of days patients stayed at home before visiting HF's, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

All of the cases had shown the main signs and symptoms of measles fever and rash; 61(91%), 57(85%) and 45(67%) of the cases had shown cough, conjunctivitis and runny nose (Coryza)

9%) and 10(15%) of the cases had also shown the infection and pneumonia respectively.

Table 3: Bivariate analysis for various exposures, Melgano Doya Kebele, Bona Zuria, Sidama Zone, 2014

Exposure		Cases (%)	Controls (%)	OR	CI (95%)	P-Value
Sex	Female	30(57.7)	22(42.3)	1.66	(0.8-3.3)	0.21
	Male	37(45.1)	45(54.9)			
Educational Status of parents	Illiterate	41(68.3)	19(31.7)	**4.0**	**(1.93-8.21)**	**0.0002**
	Literate	26(35.1)	48(64.9)			
Marital Status	Married	59(48.0)	64(52.0)	0.35	(0.09-1.36)	0.12
	Widowed	8(72.7)	3(27.3)			
Occupation of the respondent's	Farmer	66(50.4)	65(49.6)	2.03	(0.18-22.9)	0.56
	Employed	1(33.3)	2(66.7)			
Family size $\geq$ 7	Yes	41(64.1)	23(35.9)	**3.02**	**(1.49-6.10)**	**0.003**
	No	26(37.1)	44(62.9)			
Contact with cases	Yes	49(64.5)	27(35.5)	**4.03**	**(1.95-8.35)**	**0.0002**
	No	18(31.0)	40(69.0)			
Vaccination	Yes	25(32.1)	53(67.9)	**0.16**	**(0.07-0.34)**	**< 0.0001**
	No	42(75.0)	14(25.0)			
MUAC Measurem-ent in < 5 Year	$\leq$ Moderate	25(71.4)	10(28.6)	**3.39**	**(1.47-7.82)**	**0.005**
	Normal	42(42.4)	57(57.6)			

We have found a number of factors associated with measles – both factors that increase the risk and decrease the risk (were protective).

In Bivariate analysis, the odds of illness in those vaccinated were 0.16 times less than those who were not vaccinated [OR=0.16, 95%CI (0.07-0.34), P-value < 0.0001], contact history with the case [OR=4.03, (95% CI 1.95-8.35), P=0.0002]. The odds of illness in <5 year age severe and moderate MUAC measurement was 3.39(1.47-7.82) times higher than in those who had normal MUAC measurement with P-value <0.0001 Showing significantly associated. Cases from households of family size $\geq$ 7 persons were 3.02 times [95% CI (1.49-6.10), P = 0.003] more likely to develop measles compared to family size < 7 persons and cases whose parents not educated (illiterate)

= 0.0002] more likely to develop measles compared to

bove.

Table 4: Multivariate analysis for risk factors, Melgano Doya Kebele of Bona Zuria, Sidama, 2014.

Exposure	AOR	95% CI	P-Value
Being vaccinated (Yes/No)	0.11	0.04-0.29	0.0000
Contact with suspected or confirmed case (Yes/No)	3.16	1.34-7.46	0.009
MUAC Measurement ≤ Moderate (Yes/No)	4.04	1.39-11.74	0.01
Family size of ≥ 7 (Yes/No)	4.07	1.62-10.2	0.003
Educational Status of Parent: Illiterate (Yes/No)	3.01	1.20-7.54	0.02

The risk factors that are statistically significantly associated with illness in bi variate analysis remained also significantly associated with the illness on multivariate logistic regression analysis as presented in table 4 above.

Intervention/ Actions Taken/

To stop the spread of the measles outbreak, officers from zonal health department, district health offices and catchment health centre staffs were deployed to the area and provided technical support as a response implementing the three primarily recommended strategies; case management, enhancing routine vaccination and strengthening surveillance system in the affected Kebele.

Health education was given to public at large at religious places (Church), schools, markets and other population gathering areas.

Health extension workers and 2 Nurses from the catchment HC assigned were going house to house for active cases searching; provide treatment for new cases and creating awareness/ teach the community about measles.

Providing mass vaccination campaign for children <5 years old.

at were associated with contracting measles in Melgano Doya Kebele, Bona Zuria district of Sidama Zone. Among the total cases reported, 62.7% was unvaccinated against measles can be attributed to measles outbreak and this finding is in line with the findings of Zaka district, Zimbabwe (11). However, according to District health office HMIS data, the cluster health center and District health office administrative measles coverage in 2013/2014 was 108% and 104 % respectively. Data for the Kebele not completely found at the source in the health post i.e., we found only incomplete data on the EPI registration book until mid of May 2014 but the report in District health office shows complete report for the year until June 2014 contrary to the reality on the ground looks like mischievous and unethical. With regard to this report source, the HEWs have no words to say for this falsified report and ashamed of themselves. As it is well known, measles antibodies develop in approximately 85% of children vaccinated at 9 months of age, 95% of children vaccinated at age of 12 months of age, and 98% of those vaccinated at 15 months of age (12). However in areas of such unreliable coverage is observed the probability of accumulation of unvaccinated children could be very high. These in turn show us children who will have seroconvert to measles disease in the area could be very low so that an epidemic could arise. As a result of limited protection rate of the vaccine, a second dose of measles vaccine is given to boost the immunity of the child through SIA targeting children's aged 6 month to 14 years in Ethiopia (13). This study also revealed among all 67 cases 22.4% took one dose of measles vaccine prior to their illness and all of them were below the age 14 years from which only 19.4% of them could develop protective immunity. On the other hand 14.9% of the cases received two doses of vaccine but developed the disease indicating that there could be failure in the potency of the vaccine as a result of different reasons.

Measles is a highly contagious disease transmitted by respiratory droplet or air born spread. Secondary attack rate among susceptible household contact reach 75% - 90%. Our study also revealed that being having contact with a measles suspected or confirmed case was found to be one of the risk factor for contracting measles in the area. The finding was similar with another study conducted in measles outbreak investigation in Zaka, Masvingo Province, Zimbabwe, that cases were high in contact with measles case (11).

...eater than seven persons are more than three times higher ... develop an illness which is similar to the study of ministry of health of Zimbabwe, which states that children who live in crowded places are at high risk of contracting measles, and that a person with measles can infect others for several days before he/she develops symptoms (11).

Our study indicates the bimodal age distribution of cases with a peak incidence in 1-4 years and in 10-14 years, similar to a study in Harare (14).

In this study, about 15-73% of the subjects had suffered from a post-measles complication. The most common complication observed in this study was diarrhea (73%), mouth ulcer (52%) followed by ear infection and pneumonia.

The odds of illness in <5 year age severe and moderate malnutrition MUAC measurement was 3.39 times higher than in those who had normal MUAC measurement. Complications are more common in young children below 5 years of age and complication rates are increased in persons with immune deficiency disorders, malnutrition, vitamin A deficiency, and inadequate vaccination status (13). Measles and its complications are particularly severe among malnourished or immune-compromised children [15].

Cases whose parents have no education (illiterate) are four times more likely to develop illness than those born to literate parent similar to the study finding conducted in India which showed that children whose mothers have no education are more likely to develop illness than those born to educated mother (16, 17).

Limitation of the study

The investigation period was very short to detect more new cases as well as to follow controls that might develop measles after our data collection in between one - two weeks in which they could be an asymptomatic cases that are difficult to recognize or know them and these respondents could consider themselves as though they had no contact history with measles cases. In addition vaccination history was also collected based on individual recall which might be due to recall bias of the respondents. There erview which we used translators so that direct ıot be interpreted to us.

Conclusion

An outbreak of measles occurred in Melgano Doya Kebele of Bona Zuria Woreda. This study points out that a large proportion of measles cases occur among the unvaccinated population in the area. Being having contact with a measles suspected or confirmed case, greater family size living in crowded rooms, malnutrition in under 5 children and parents having no education were associated with contracting measles. Cases vaccinated more than one times point to vaccine failure, which could be due to improper cold chain management. Data management and documentation problem and unethical working condition observed. Vaccination of children's aged <5 years, case management, health education and active case search undertaken as prevention and control measure. Discussion made with responsible bodies of health centre, Woreda health office and Zonal health department for further improvement of the problems observed and action to be undertaken.

Recommendation

- Improve immunization: routine vaccination should be intensified.
- Regular supportive supervision at health post and health center be conducted
- Data quality validation mechanism should be designed and implemented and documentation at all level should be improved
- Continuous promotion of awareness in the community using different health education strategies particularly on measles prevention, control and early treatment seeking
- Health Extension Workers should conduct screening of malnourished children and therapeutic feeding supplied so that nutritional status of children be improved
- District and Zonal health offices should avail therapeutic feeding supplies at health post level regularly (Plumpy'nut)
- Health Extension Workers should provide regular health education for parents how to prepare balanced diet at household level and feed their children

ents to isolate their sick children at household level and communicability periods i.e. keep their sick children out of school and playing

- In large family size households the possibility of virus circulation and transmission could be high. Therefore overcrowding should be avoided and adequate ventilation in the house is important.

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x Outbreak Investigation among Pastoralists in ;outh Omo Zone, Southern Region, 2015

Abstract

Background: Anthrax is primarily a disease of herbivores and is a bacterial disease caused by the spore-forming Bacillus anthracis, Gram positive, rod-shaped bacterium. From April 29–May 12/2015 an investigation of anthrax outbreak was conducted in Benna Tsemay Woreda with the main objective to confirm the existence of an outbreak and recommend control measures.

Method: A Descriptive study design was used to describe the outbreak from 29 April - 12 May 2015.

Results: A total of 133 human cases were identified with no death reported from March 12 and April 30, 2015. About 104 cattle died showing symptoms of anthrax. The onset of the outbreak was on 09 March 2015 and 6 Kebeles of the Woreda were affected. Males 73(54.9%) were more affected than females 60(45.1%). Majority of the cases 76(57%) were age groups of 15-44yrs followed by 5-9yrs old 30(22%). The mean age was 20 years (SD-13). The overall attack rate in the district was 20.8 per 10,000 populations. Duma and Bolla Kebeles were highly affected as compared to the others with an attack rate of 428.04 and 288.53 per 10,000 people respectively.

Conclusion: The clinical presentation and epidemiological evidences indicated that cutanious anthrax was a possible cause of illness among human being and death in livestock of the area. The outbreak has more dominantly affected two Kebeles (Duma and Bolla) than the other four. Awareness creation and conducting routine immunization of animals should be implemented to protect both human beings and livestock.

Key word: Anthrax, Benna Tsemay, Pastoralists**,** SNNPR,

ivores although few, if any, warm blooded species are entirely immune to it. From earliest historical records until the development of an effective veterinary vaccine mid-way through the present century together with the subsequent advent of antibiotics, the disease was one of the foremost causes of uncontrolled mortality in cattle, sheep, goats, horses and pigs worldwide. Humans almost invariably contract anthrax directly or indirectly from animals (1).

Anthrax is a bacterial disease caused by the spore-forming Bacillus anthracis, a Gram positive, rod-shaped bacterium. When conditions are not conducive to growth and multiplication of the bacilli, they tend to form spores. The spore forms are markedly resistant to biological extremes of heat, cold, pH, desiccation, chemicals (and thus to disinfection), irradiation and other such adverse conditions. Therefore, the spore forms are the predominant phase in the environment and it is very largely through the uptake of spores that anthrax is contracted. Within the infected host the spores germinate to produce the vegetative forms which multiply, eventually killing the host. A proportion of the bacilli released by the dying or dead animal into the environment (usually soil under the carcass) sporulate, ready to be taken up by another animal. The major sources of human anthrax infection are direct or indirect contact with infected animals, or occupational exposure to infected or contaminated animal products. Other possible sources are rare and epidemiologically trivial (1, 2).

Humans become infected in one of three ways- percutaneous, inhalation and gastrointestinal. In Cutaneous route, the organisms gain access through small abrasions or cuts and multiply locally with an inflammatory response (3). Incubation period varies from few hours to even up to 60 days. For Cutaneous anthrax, Incubation period(IP) ranges from few hours to 3 weeks but most often it is 2 to 6 days; for gastrointestinal anthrax the average IP is 3-7 days. In inhalation anthrax, the median incubation period is 4 days, but may be up to 10 or 11days (1, 3).

Anthrax infection in humans provides permanent immunity and second attacks are rare. Though in general, the case fatality rate (CFR) due to anthrax has been reduced due to antibiotics but all three forms are potentially fatal if untreated and CFR is substantial in situation of use anthrax as biological weapon.

…han 95% of human cases. It begins 2-5 days after infection …bite developing within a few days into a vesicle filled with dark bluish black fluid. Rupture of the vesicle reveals a black Eschar at the base with a very prominent inflammatory ring around the Eschar. This is sometimes referred to as malignant pustule. The lesion is classically found on the hands, forearms or head and is painless. It is rarely found on the trunk or lower extremity. Generally, cutaneous lesions are single, but sometimes two or more lesions are present. The Cutaneous form is more often self–limiting and with treatment, CFR is < 1% cases are fatal (3).

There are approximately 10-100 thousand human incidences annually throughout the world with significant numbers of cases in Chad, Ethiopia, Zambia, Zimbabwe and India. Anthrax is endemic throughout Africa, causing considerable livestock and wildlife losses and severe, sometimes fatal, infection in humans. Predicting the risk of infection is therefore important for public health, wildlife conservation and livestock economies. However, because of the intermittent and variable nature of anthrax outbreaks, associated environmental and climatic conditions, and diversity of species affected, the ecology of this multi host pathogen is poorly understood (4).

Zambia has experienced an outbreak of Anthrax which had a total of 233 suspected cases and 6 community death (CFR: 2.6%) reported from Chama district, Eastern Province between August and September 4, 2012. All patients have a history of contact (by ingestion or touch) with Hippo meat mysteriously dying in the upstream of the Luangwa River. The majority of cases have been presenting with skin lesions compatible with Cutaneous Anthrax (5).

Animal anthrax is an endemic disease in Ethiopia which occurs in May and June every year (anthrax season) in several farming localities of the country, although suspected cases of livestock anthrax are reported from several districts, few of those are officially confirmed (6).

In Ethiopia there was Anthrax outbreak in Afar region in 9 August 2000. WHO has received reports of clusters of cases of suspected anthrax in the region; no systematic epidemiological investigation has been carried out (7).

The common use of traditional medicine for anthrax in Ethiopia indicates that the disease is well recognized by rural communities but little is known about its prevalence, epidemiology and public

... the Fedral Democratic Republic of Ethiopia Ministry of ... 96 suspected human anthrax cases and 16 deaths (with a ... regions (Tigray, Amhara, Oromia, and SNNP) during 2010/11 (11).

On Weekly PHEM report from SNNPR, large number of suspected anthrax report was submitted consecutively in WHO epidemiological weeks 15 and 16 to the national. The report was indicated in Benna Tsemay Woreda of South Omo Zone. Under the Ethiopian Surveillance System, one case of anthrax is an outbreak and must be reported to Ministry of Health immediately. We tried to communicate the regional health bureau PHEM officers in SNNPR the existence of an outbreak in the above mentioned Zone and Woreda and if so to send us the line lists of cases. However, the regional PHEM officers confirmed us the existence of the outbreak but line lists of cases from the Zone not yet received due to various reasons mentioned by the officer such as no fax and email access for communication. We received the South Omo Zone Health Department head and both PHEM officers land line and cell phone numbers, repeatedly for about 4 days tried to get them but their phones didn't respond parallel contacted the region for consecutive days and no report were sent to national. As a result of late unsent report from all side, on 29 April 2015, a team of two residents went to the Zone and District to investigate the outbreak.

General Objective

The main objectives of the study were to investigate the outbreak and recommend control measures among the residents of affected Kebeles from Benna Tsemay Woreda of South Omo Zone.

Specific Objectives

- To verify the existence of the outbreak in the Woreda
- To describe the magnitude of outbreak
- To support the local efforts already on the ground and take appropriate intervention measures

Background of Bena Tsemay Woreda

Bena Tsemay Woreda is one of the Woredas in the Southern Nations, Nationalities, and Peoples' Region of Ethiopia. It is named after Banna and Tsamai People who are living at this Woreda. Part of the Debub Omo Zone, Bena Tsemay is bordered on the south by Hamer, on the west by Selamago, on the north by Bako Gazer and Male, on the northeast by the Derashe Special Woreda, on the east by the Konso Special Woreda, and on the southeast by the Oromia Region; the Weito River separates it from Konso Special Woreda and Oromia Region. Western part of this Woreda is included in the Mago National Park. The administrative center is Key Afer 42 Km far from Jinka, capital town of the Debub Omo zone with a total of 64,075 populations. 90% of the populations reside in rural Kebeles and the remaining in urban. The majority of the inhabitants practiced traditional beliefs, with 74,5% of the population reporting that belief, 10.87% were Protestants, and 7.74% practiced Orthodox Christianity. It is situated on 1500 meter above sea level with an average 33^{o}c temperature. The Woreda has a total of 32 Kebeles from which 28 are pastoralists and the remaining 4 agro pastoralists. There are 3 ethnic groups in the Woreda namely Benna, Tsemay and Ari respectively in their population size rank. The main food sources for households in this livelihood area are market purchase (sorghum and maize), livestock products (milk, butter, meat and blood from goats and cattle) and own crops. Cow's meat consumed in this livelihood area is almost exclusively from dying animals, as it is culturally frowned upon to kill cattle except in extreme circumstances. Blood is also consumed by people in the livelihood Woreda, mixed with milk. Various varieties of wild foods are also consumed, both in normal and bad years, across all months of the year. Sleeping materials of the communities is cattle hide and wooden bed. Six rural Kebeles near to Hammer Woreda (boundaries) are affected with human Cutaneous Anthrax outbreak.

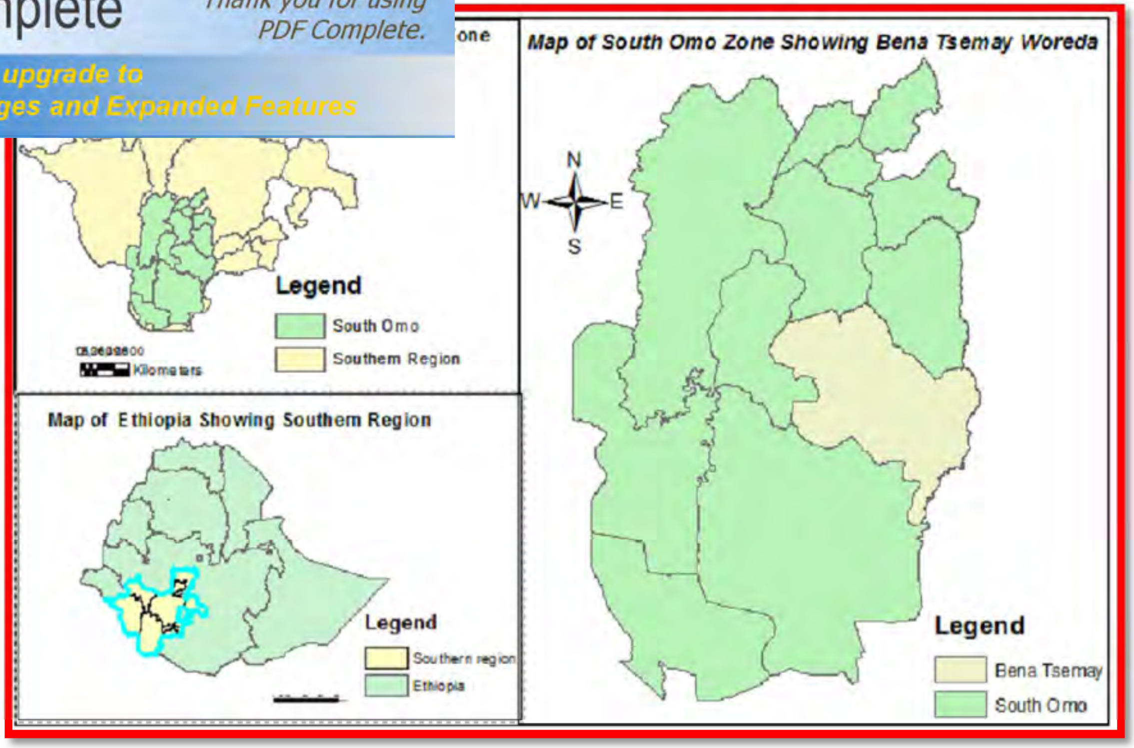

Figure 7: Map of SNNP Region and South Omo Zone Showing Benna Tsemay Woreda, 2015

Study design

A Descriptive study design was employed to describe the disease from April 29 – May 12, 2015.

Case Definition;

Suspected case: - Even though we didn't take a specimen for laboratory confirmation, the suspected case of anthrax was any person living in all affected 6 Kebeles with acute onset characterized by several clinical forms which are: - **localized form of Cutaneous**: skin lesion evolving over 1 to 6 days from a popular through a vesicular stage, to a depressed black Eschar invariably accompanied by edema that may be mild to extensive

Data collection method

We conducted discussion with the community members and officials, discussion with Zonal health office, Public health emergency management (PHEM) officer and Zonal and Woreda Livestock Resource Development office heads, reviewing the surveillance data, and reorienting the case definitions to the specific type of anthrax.

d analysis of the data and Arc GIS was used for mapping.

Ethical Issues

Support letter was obtained from Ethiopian Public Health Institute (EPHI). A letter was submitted for Zonal and Woreda health offices in order to obtain their approval for data collection. Consent was also secured from study participants. Confidentiality was assured throughout by not writing participant's names. Participants were treated with respect and willingly participated in the study with no payment or cohesion. Verbal consent to take photographs was obtained from parents or guardians for cases below 18 years while participants above 18 years were asked for their own consent.

in the Zone

Between March 12 and April 30 2015, the Zone health department received 124 anthrax cases from Benna Tsemay Woreda six Kebeles, namely Duma, Bolla, Luka, Bura, Enchete and Gisma. However after our team arrival and searching for active cases an additional 9 cases from Bolla and Duma Kebeles were found.

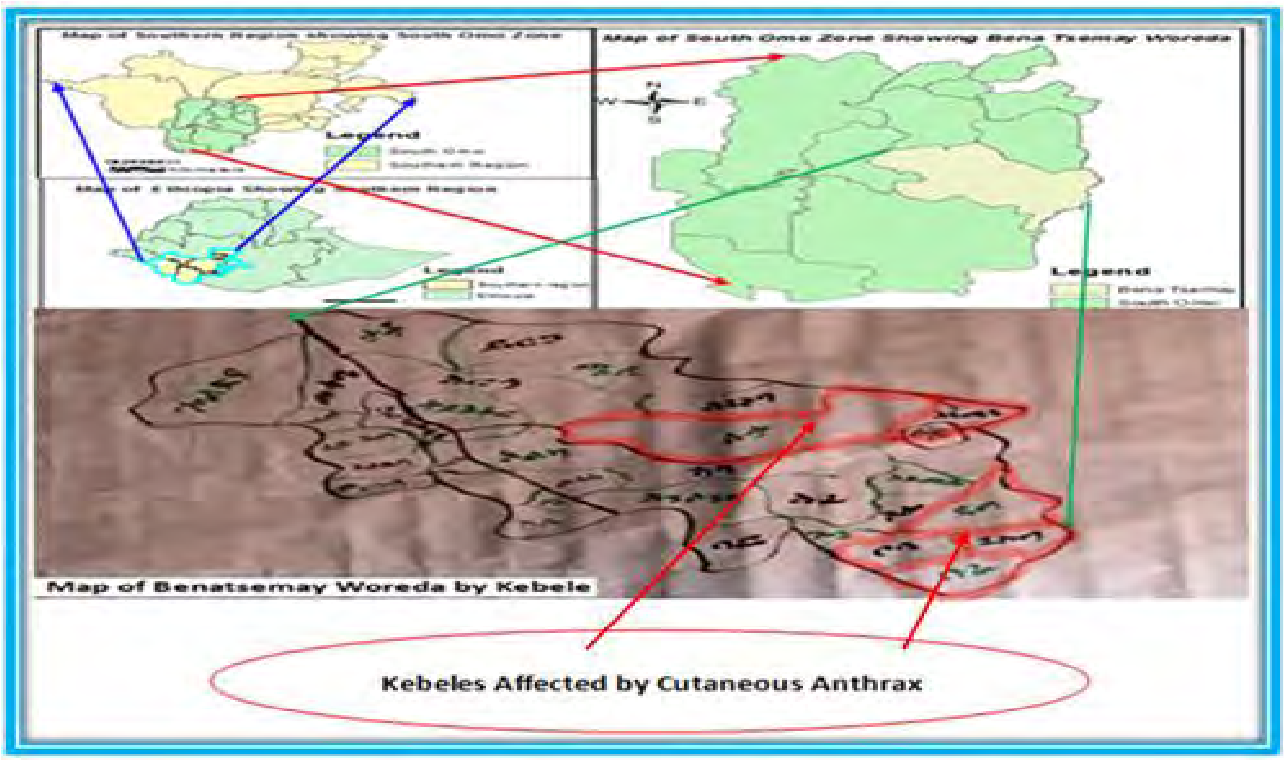

Figure 8: Map of SNNP Region, South Omo Zone and Benna Tsemay Woreda showing Cutaneous Anthrax outbreak affected Kebeles, 2015

Totally 133 suspected human anthrax cases were identified with no death between March 12 and May 13, 2015. The onset of the outbreak was on 09 March 2015 but reported on 12 March, 2015 as index case.

Cutaneous anthrax was clinically diagnosed as the cause of the reported anthrax, both from the index case medical records, observation of cases found during the investigation and discussion

…als and PHEM Coordinators, the probable cause of the …of slaughtered dead cattle meat being shared among their …hide or skin for sleeping purposes. This practice was observed in all the interviewed cases of this pastoralist community which they responded that even though they are seeing the cattle is dying by discharging blood from nose and mouth, which killed more than 104 cattle (officially reported number from the Zonal Livestock Development Office) they used to eat slaughtering. As shown in the figure below, the epidemic curve indicates the pattern of epidemic was a single point exposure type with different peaks.

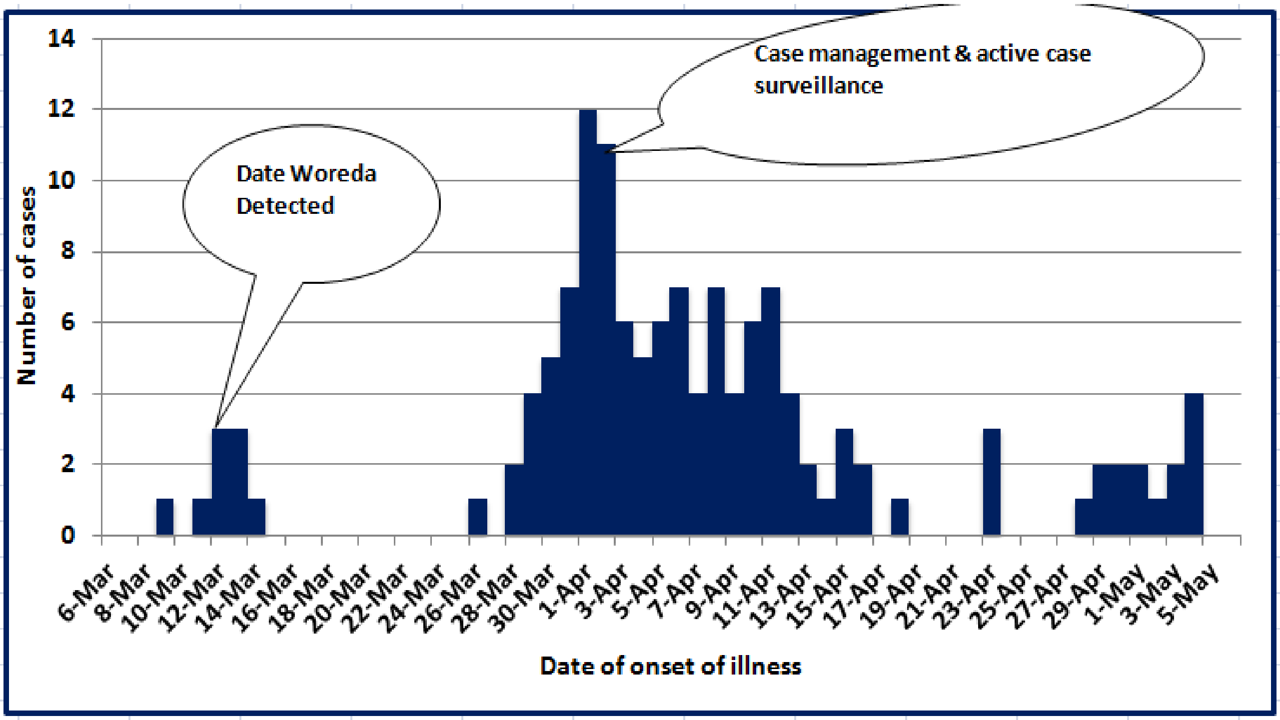

Figure 9: Number of Cutaneous Anthrax cases by date of onset, Benna Tsemay Woreda of South Omo Zone, 2015

persons (34) was illiterate and unable to read and write.

Figure 10: Hide or Skin of the slaughtered animal used as sleeping material, Duma Kebele of Benna Tsemay Woreda, 2015

Luka is the first affected Kebele in the Woreda totally reporting 10 cases since March 12 up to April 20, 2015 where as Duma Kebele reported 69 cases from April 2-May 6, Bolla Kebele reported 38 cases from March 16-May 5, Bura Kebele reported 7 cases from April 17-19, Enchete Kebele reported 5 cases from April 7-18 and Gisma Kebele reported 4 cases from March 17- April 17, 2015. As mentioned above the majority of cases were from Duma and Bolla Kebeles.

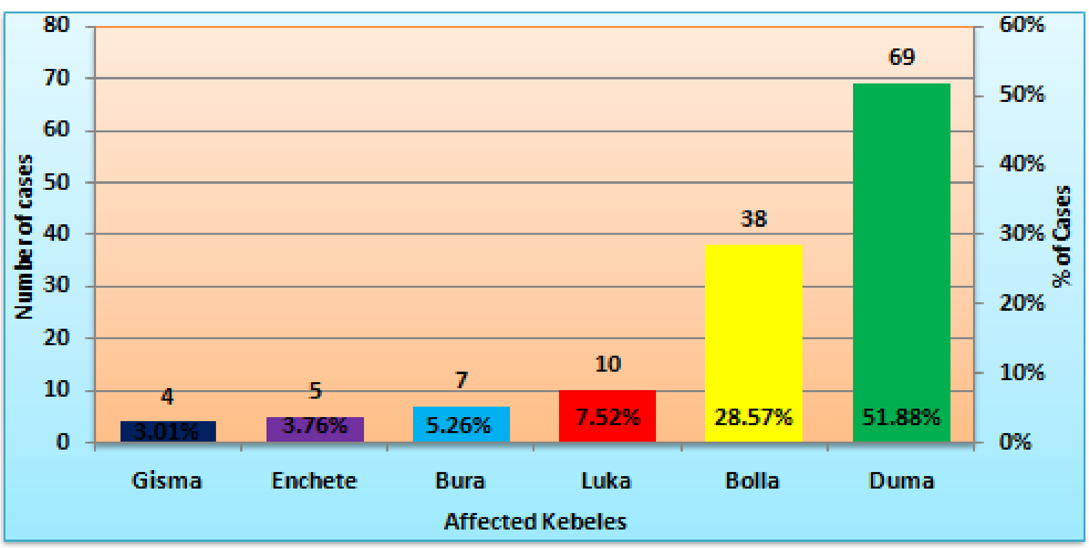

Figure 11: Distribution of Cutaneous Anthrax outbreak affected Kebeles in Benna Tsemay Woreda of South Omo Zone, 2015

e males by gender in which more affected than females

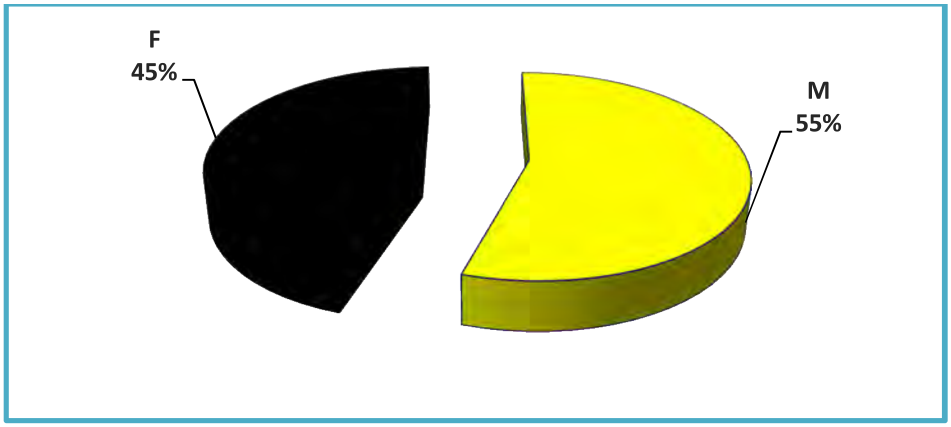

Figure 12: Proportion of cases by sex, Benna Tsemay Woreda of South Omo Zone, 2015

Majority of the cases were 15-44 and 5-9 yrs old comprising 76(57%) and 30(22%) respectively. 17 (13%) cases were ages of 10-14 years old and the remaining 10 cases were ages 1-4 and ≥ 45 years incorporating 5% each. The mean age was 20 years (SD-13).

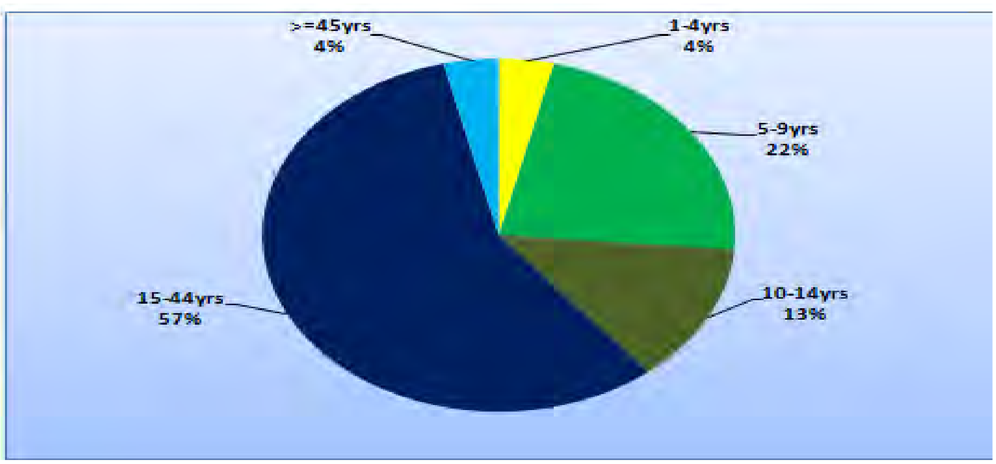

Figure 13: Proportion of cases by age group, Benna Tsemay Woreda of South Omo Zone, 2015

The overall attack rate in the district was 20.8 per 10,000 population with males highly affected than females (Table 1).

n Cutaneous Anthrax by sex in Benna Tsemay Woreda of

Sex	Total Population	Cases	Attack rate per 10,000
Male	31,845	73	22.9
Female	32,230	60	18.6
Overall	64,075	**133**	20.8

When we see the attack rate by affected Kebele per 10,000 populations, except Gisma Kebele nearly equal to the overall district attack rate, the rest all Kebeles recorded ever highest attack rates particularly Duma and Bolla Kebeles were highly affected compared to the others with the attack rate of 428.04 and 288.53 per 10,000 people respectively.

Table 6: Attack rate of Suspected Human Cutaneous Anthrax by Kebele, Benna Tsemay Woreda of South Omo Zone, SNNP Region, 2015

Kebele	Population	Number of Cases	Attack Rate/10,000
Gisma	1915	4	20.89
Enchete	1942	5	25.75
Bura	1110	7	63.06
Luka	2819	10	35.47
Bolla	1317	38	288.53
Duma	1612	69	428.04
Total	**10715**	**133**	**124.13**

During our visit of the affected Kebeles nine active cases were found showing typical signs of cutaneous anthrax. The majority of this active cases 8(89%) presented a typical anthrax skin lesion oozing and edematous. The most affected organ was the back side of body 2(22.2%).

Suspected cases except the new active cases have been given antibiotics Amoxacyciline, Doxcycline and Erythromycin to which anthrax is sensitive for 14 days however in our visit we found that some of the cases (15) were not provided full dose treatment as a result they are not completely cured. We asked the health workers and focal of the area why this is happened, they told us due to shortage of drug and lack of support from the region, according to the zonal and Woreda officials. There were no laboratory investigations done at the time of the investigations since many of the cases identified were already on treatment and recovering from the infection, therefore no samples were taken.

Figure 14: Some of the active cases in Bolla Kebele of Benna Tsemay Woreda, 2015

Public Health Intervention

Major activities during our visit

At South Omo Zone Health Department

- ... n regarding the outbreak (Anthrax outbreak) occurred in ... and discussion with zonal health department officials (representative of head and Benna Tsemay Woreda focal officer)
- During discussion we learned presence of Anthrax in the Zone and they told us they reported to the region about the situation but there was no any response and support yet.
- We obtained line-list of 92 cases with hard copy from zonal health office, which is not organized and compiled properly but the remaining 32 cases were not available
- We reviewed line-list to footprint Kebeles/areas most affected by the outbreak in Benna Tsemay Woreda where all of the cases reported
- We encourage the zonal health officials to keep up good communication with regional health bureau as well as FMOH-PHEM unit for early responses and resources pooling while ensuring prompt cases management

After we reviewed the available line-list and confirmed the occurrence of the suspected outbreak in Benna Tsemay Woreda, we recommended the zonal health department to alert all Woredas and initiate active surveillance for early cases detection including ourselves part of them.

At Benna Tsemay Woreda Health Office

- Conducted discussion with Woreda health officials about the situation
- We obtained line-list of additional 32 cases from the Woreda not sent to the zone
- The Zonal and Woreda health offices health workers, health extension workers, and livestock development health workers in the community have sensitized the community on prevention and control activities against eating dead animals and that they should notify the authorities, and bury all dead animals immediately.

While awareness rising activity conducted in the community

Figure 15: While awareness rising activity conducted in the community, Duma and Bolla Kebeles of Benna Tsemay Woreda, 2015

…given for all cases and for those whom full dose treatment …nt additional drug requesting some of the health center in the zone to be returned when the region provide an emergency drug

Å Conducted an active case search in collaboration with the community level women development army leaders.

Å The veterinary (livestock development) office has extensively carried out a mass vaccination for animals in all the affected areas (until May, 2015 a total of 33,144 were vaccinated and still being conducted vaccination).

Å Awareness to avoid the herd animals from the known contaminated area by the fluids of dead or slaughtered sick cattle's

Gaps Identified

- According to the national PHEM guideline, timely reporting of outbreak at all level not functional
- Early response were not provided from the region, until our arrival to the zone
- Shortage of emergency drugs at all level (zonal-Woreda)
- Shortage of transport particularly at Woreda level in Benatsemay Woreda (only one motor cycle for all health service activities of the whole 33 Kebeles)
- Surveillance data analysis for action was not done timely
- Livestock resource development office
    - o didn't conduct livestock vaccination in its schedule for a long period of time
    - o has shortage of saline water for diluting the vaccine i.e., they do have about 600,000 doses of vaccine at hand but the saline water they are provided was only 40,000

      Has shortage of refrigerator for vaccine storage and management at Woreda level and zonal level as well. However there is one very large refrigerator provided from the Federal Early Warning office in which it couldn't start functioning since 2011 with simple installation problem of the provider according to the Zonal Livestock Resource Development office head saying.

Figure 16: Picture of Very large livestock vaccine storage refrigerator kept without functioning since 2011 at Zonal Livestock Resource Development Office, Jinka, 2015

Discussion

Totally 133 suspected human anthrax cases were identified with no death during the investigation period and such huge number of anthrax cases was for the first time to be reported in this area where almost all of the community members are pastoralists in which their day to day life is with animal breeding.

Even though there is vaccine for animals to prevent the disease high number of deaths in animals due to lack of vaccinating domestic animals in scheduled regularly and shortage of vaccine diluents to cascade vaccination brought such consequences on human as well as livestock resource loss whose impact not only on the owners but also the country as well.

Taking into consideration the fact that the exposure of cattle might be attributed to anthrax spores in the soil while grazing, the outbreak of the human cases could be due to contact with cattle products. Anthrax cases had not been previously reported in the current outbreak area; however, it is possible that undiagnosed cases in livestock or wildlife might have occurred previously in those areas. It is also possible that known carcass sites further away could have been nsported through waterways, natural drainage patterns to

In this outbreak the majority of cases were 15-44 and 5-9 yrs old comprising 76(57%) and 30(22%) respectively. 17 (13%) cases were ages of 10-14 years old and the remaining 10 cases were ages 1-4 and ≥ 45 years incorporating 5% each. The mean age of affected people in our study was 20 years (range between 2 - 50 years and SD-13) of age which is almost similar with study done in Bangladesh have mean age 21.4 (12).

In our investigation study, seventy three (54.9%) of the cases were males by gender in which more affected than females 60(45.1%) in which it was different from the report of Cutaneous anthrax in Bangladesh, Dermatology Outpatient Department of Rajshahi Medical College Hospital, between April and August, 2011 with a male to female ratio of 1:1.14 (12).

It is observed that there is problem in the surveillance system of the zone. Surveillance data were not in place in timely and complete manner which contradict the national PHEM guideline standard.

Limitation of the study

The existence of the outbreak in the area was not reported timely and line list not organized into softcopy for analysis so that the investigation was conducted late, there was no electric power for about 15 days in the surrounding areas to enter the hardcopy line lists ourselves for descriptive analysis which challenged us not to do all our activities in preparing daily performance reports, security problem in borderline of the outbreak affected Kebeles and the other side Hammer Woreda Kebeles hinders us not to collect our data confidentially in the community, the study was not supported with laboratory test and very short period of time to conduct the investigation so that doing and incorporating the analytic study result was not possible.

Conclusion

The clinical presentation and epidemiological evidences indicated that anthrax was a possible cause of illness among human being and death in livestock of the area even though there is no ak has more dominantly affected two Kebeles (Duma and

nent with antibiotics prevented complications and death in

humans.

Recommendation

- Coordinated effort is needed on changing the behavior of the community towards the mode of transmission of the disease.
- There should be routine vaccination of livestock in the area since their day to day life depends on them
- Both health and livestock development offices at Zone and Woreda should strength the surveillance system and conduct active surveillance regularly.
- The regional livestock development office should access the vaccines support with supplies like refrigerators

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Chapter II – Surveillance Data Analysis Report

…alysis from Data collected through PHEM (Public …) and HMIS (Health Management Information System) Sections during 2011-2013, Halaba

Abstract

Background: Ongoing analysis of surveillance data is important for detecting outbreaks, monitoring disease trends, evaluating the effectiveness of disease control programs and policies and to determine efficient allocation of public health resources. The aim of study was to show the malaria surveillance data discrepancy comparing data reported through Public Health Emergency Management(PHEM) and Health Management Information System(HMIS) sections of Halaba Special Woreda during 2011-2013.

Methods: Descriptive cross sectional study using secondary data reported through PHEM and HMIS. Data analysis was done using MS Excel.

Result: A total of 123,344(22.4%) malaria cases difference between PHEM and HMIS sections were reported. The average malaria incidence rate was 390 and 247 cases/1,000 populations per year in PHEM and HMIS sections, respectively. Of the total confirmed malaria cases reported to PHEM, 94,517 (48.2%) of 196,261 and 101,744 (51.8%) of 196,261 and to HMIS, 63,466 (43.4%) of 146,084 and 82,618 (56.6%) of 146,084 were plasmodium falciparum (PF) and plasmodium vivax (PV) respectively. Overall, malaria positivity rate using PHEM data was 55.6%. The number of malaria cases declined by 11.1% in all ages and 10.1% in <5 years. However, admissions increased by 301 cases in < 5 years and by 1,788 in all ages of malaria inpatient cases. The average mortality was 2.8/100,000. 83% of cases were reported from health centers only.

Conclusion: Malaria morbidity has declined but admissions were inclined. Also, a shift in the proportion of plasmodium species was observed. The increment in admission could be due to the increasing number and capacity of health facilities (like bed, professionals, and medical kits). Due to the discrepancies in PHEM and HMIS data, data quality should be evaluated and action should be taken.

Key words: Malaria, Mortality, Incidence, Admission, Halaba

disease of humans and other animals caused by parasitic protozoan (a type of unicellular microorganism) of the genus plasmodium. Commonly, the disease is transmitted via a bite from an infected female Anopheles mosquito, which introduces the organisms from its saliva into a person's circulatory system. In the blood, the protists travel to the liver to mature and reproduce. Malaria causes symptoms that typically include fever and headache, which in severe cases can progress to coma or death. The disease is widespread in tropical and subtropical regions in a broad band around the equator, including much of Sub-Saharan Africa, Asia and the Americas.

Malaria is caused by five species of parasites of the genus Plasmodium that affect humans (P. falciparum, P. vivax, P. ovale, P. malariae and P. knowlesi). Malaria due to P. falciparum is the most deadly form and it predominates in Africa; P. vivax is less dangerous but more widespread, and the other three species are found much less frequently. Malaria parasites are transmitted to humans by the bite of infected female mosquitoes of more than 30 anopheline species. The zoonotic species P. knowlesi, prevalent in Southeast Asia, causes malaria in macaques but can also cause severe infections in humans. Malaria is prevalent in tropical and subtropical regions because rainfall, warm temperatures, and stagnant waters provide habitats ideal for mosquito larvae. Disease transmission can be reduced by preventing mosquito bites by using mosquito nets and insect repellents, or with mosquito-control measures such as spraying insecticides and draining standing water (1, 2).

Malaria is mainly seasonal with unstable transmission in the highland fringe areas and of relatively longer transmission duration in lowland areas, river basins and valleys. Malaria transmission peaks bi-annually from September to December and April to May coinciding with major harvesting season with serious consequences for the subsistence Economy of Ethiopia’s countryside, and for the nation in general. In addition, major epidemics occur every five to eight years with focal epidemics as the commonest form.

important for detecting outbreaks and monitoring disease 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. The purpose of this analysis is to assess and compare the malaria morbidity and mortality from data collected through the PHEM and HMIS sections of Halaba Sp. Woreda over a three-year period 2011- 2013 in order to get valuable input for the improvement of the system in the Woreda and to determine appropriate and efficient allocation of resources.

Literature Review:

Malaria is the leading cause of morbidity and mortality in the world and continues to be a major global treat to health, social and economic development (3-5). Globally, an estimated 3.4 billion people are at risk of malaria in 2012 (6). Each year, there are an estimated 300-500 million clinical cases. In 2013, there are 97 countries and territories with ongoing malaria transmission, and 7 countries in the prevention of reintroduction phase, making a total of 104 countries and territories in which malaria is presently considered endemic. WHO estimates that 207 million cases of malaria occurred globally in 2012 and 627 000 deaths. Most cases (80%) and of the estimated deaths, most occur in sub-Saharan Africa (90%) and in children under 5 years of age (77%) (6).

Sub-Saharan Africa represents the devastating effects of malaria. The disease is endemic in 45 of the 46 countries within the WHO African region, an area which annually contributes about 85% of all the world's malaria cases (7). Between 2000 and 2012, estimated malaria mortality rates decreased by 45% worldwide and by 49% in the African Region; they are estimated to have decreased by 51% in children under_5 years of age globally and by 54% in the African Region (6).

As for most of the countries in SSA, malaria is the leading cause of morbidity and mortality in Ethiopia, and causes a significant challenge to the country's underdeveloped health care system.

Malaria is ranked as the leading communicable disease in Ethiopia, accounting for about 30% of the overall Disability Adjusted Life Years lost (8). Approximately 75% of Ethiopia's landmass is

primarily associated with altitude and rainfall (8-10) with
in areas at risk of malaria (8, 11-12).

In 2009/2010, malaria was the leading cause of outpatient visits and health facility admissions, accounting for 14% of outpatient visits and 9% of admissions (8, 13-14). In 2010, the Federal Ministry of Health (FMOH) reported 4,068,764 clinical and confirmed malaria cases to the World Health Organization (WHO) as recorded in the 2011 World Malaria Report (15). The estimated annual number of malaria-related illnesses, however, may range even higher (7 to 8 million per year), considering there is only 40% reporting completeness by Public Health Emergency Management (PHEM) (8).

Historically, there have been an estimated 10 million clinical malaria cases annually. Since 2006, however, cases have reduced substantially (11). The FMOH estimates that there are between 5–10 million clinical malaria cases each year. However, only about one million malaria cases are officially reported (16). According to FMOH reports, approximately 70,000 people die of malaria each year in Ethiopia (12).

Plasmodium falciparum and Plasmodium vivax are the two predominant malaria parasites, distributed all over the country and accounting for 60%-70% and 30%-40% of malaria cases, respectively. Reports indicate that clinical malaria accounts for 10%-40% of all out patient consultations, with corresponding proportional morbidity among children under 5 years in age being 10% - 20%(11). Plasmodium falciparum is responsible for the vast majority of severe malaria and almost all deaths associated with the disease. Malaria is not only the major public health problem, but also a major impediment to the socio-economic developments of many countries in tropical areas.

Despite the low malaria parasite prevalence compared to many African countries, malaria remains the leading communicable disease seen at health facilities in Ethiopia. Historically, malaria has forced people to inhabit the less agriculturally productive highlands. Given that the country’s economy is based on agriculture and peak malaria transmission coincides with the planting and eavy economic burden on the country. Previously, the tion of 2000m, except during epidemics (11, 17-19).

From 2010 to 2012, the proportion of suspected malaria cases receiving a diagnostic test in the public sector increased from 37% to 61% in the African Region, and from 44% to 64% globally (6) and in Ethiopia the proportion of malaria cases that were confirmed with a diagnostic test increased from less than 10 percent in 2000 to 83 percent in 2012 (20).

In 2012, routine health information systems detected only 14% of the cases estimated to occur globally. Case detection rates were lowest in countries with the highest numbers of malaria cases (6).

Malaria surveillance has become a very critical element of all malaria programmes (21) particularly routine malaria surveillance data is useful for assessing incidence and trends over time, and in stratification for targeting of malaria control (22). Even though most countries have routine morbidity and mortality reporting systems, distrust of their quality for malaria surveillance is widespread (22-24).

Recent data appear to indicate a drop in malaria morbidity and mortality compared to 2000-2004, with an apparent low point of outpatient malaria morbidity in 2007, and an estimated 30% increase in malaria outpatient morbidity since 2007. While no large malaria epidemics were reported in 2006 and 2007, there are signs suggesting an increase in malaria transmission in some parts of the country, including several focal outbreaks reported in SNNPR, Amhara, Tigray, and Oromia in the last five years. Despite this apparent increase in morbidity, annual inpatient malaria cases, malaria deaths, and malaria epidemics in Ethiopia have substantially decreased through 2012, compared to the baseline year of 2004.

been made to control and prevent malaria including establishing strategies, preparing guidelines and collaboration of stakeholders; and had also been declining devastating malaria epidemics; it is a major public health challenge in burdening health facilities. Since malaria is a major challenge to the country and African continent due to climate changes and global warming, continuous surveillance and data analysis is an important measure to monitor and evaluate the trends of malaria related intervention measures in controlling and preventing of the disease.

According to the national malaria surveillance report; Jima et al. (22), Halaba Special Woreda of SNNPR has the highest average reported confirmed malaria incidence than all other Woredas in Ethiopia at 73.2/1000/year and the highest malaria hotspot Woreda in the region.

OBJECTIVE

General Objectives

To assess and compare the distribution and magnitude of malaria surveillance data collected through PHEM and HMIS sections in Halaba Special Woreda, Southern Region of Ethiopia from 2011- 2013.

Specific Objectives

- To describe the surveillance data by time, place and person
- To identify magnitude of malaria morbidity & mortality in the Woreda
- To verify the malaria species distribution
- To compare magnitude of malaria using PHEM & HMIS malaria data sources
- To give recommendation i.e. use findings to undertake evidence based interventions

Halaba Special Woreda of SNNP Region, a total population of 305,555, from which male 154,454 and 151,101 females during 2013/2014 (projected from census 2007). The Study was conducted from March 3 -7/2014.

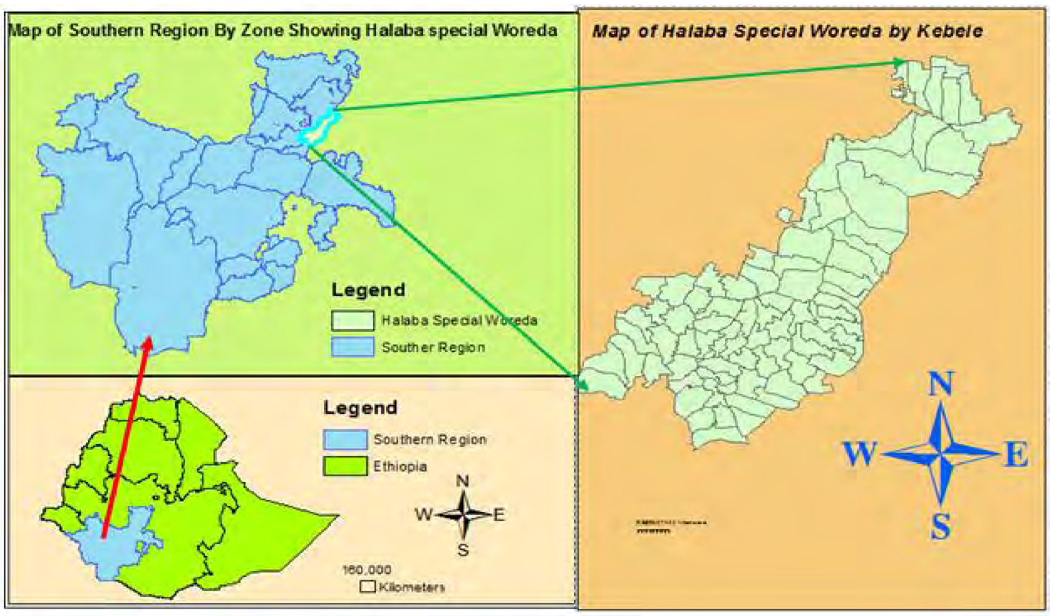

Figure 17: Map of Halaba Special Woreda in SNNP Region, 2014

Source of data

- Secondary data obtained from Woreda Health Office PHEM & HMIS reports.
- PHEM Data- 20 reportable from HPs (Health Posts), HCs (Health Center) and Hospitals to Woreda Health Office weekly
- HMIS Data – Health Posts all case report including the 20s PHEM reported cases to Health Centers which is reported to Woreda Health Office monthly
- HF's data was missing during data collection & went to that HF's to obtain those missing data

Study Design

- Descriptive cross sectional method of study was conducted cases reported during 2011-2013 were included

Statistical Analysis

- Analysis was started after official approval of the proposal from mentors and supervisors. Data cleaning and descriptive analysis was done using Microsoft Excel Program.

Dissemination of Data

- The result of the study submitted to the SPH- AAU, Regional Health Bureau and Woreda Health Office with a hard copy

Result

Morbidity (PHEM & HMIS Malaria Cases Reported)

A total of 336,501 and 213,157 malaria cases were reported to PHEM & HMIS sections respectively in three years of the study with a total difference of 123,344 (22.4%) cases. The mean number of cases reported to PHEM per year were 112,167 ranging from 82,950- 142,789 cases & 71052 cases per year were reported to HMIS, ranging from 58,684 - 88,875. The average annual incidence of reported total malaria in the overall population was 390 per 1000 persons & 247 per 1000 persons per year in PHEM and HMIS data respectively and of confirmed malaria was 227 per 1,000 persons & 169 per 1,000 persons per year in PHEM and HMIS data respectively over the study years.

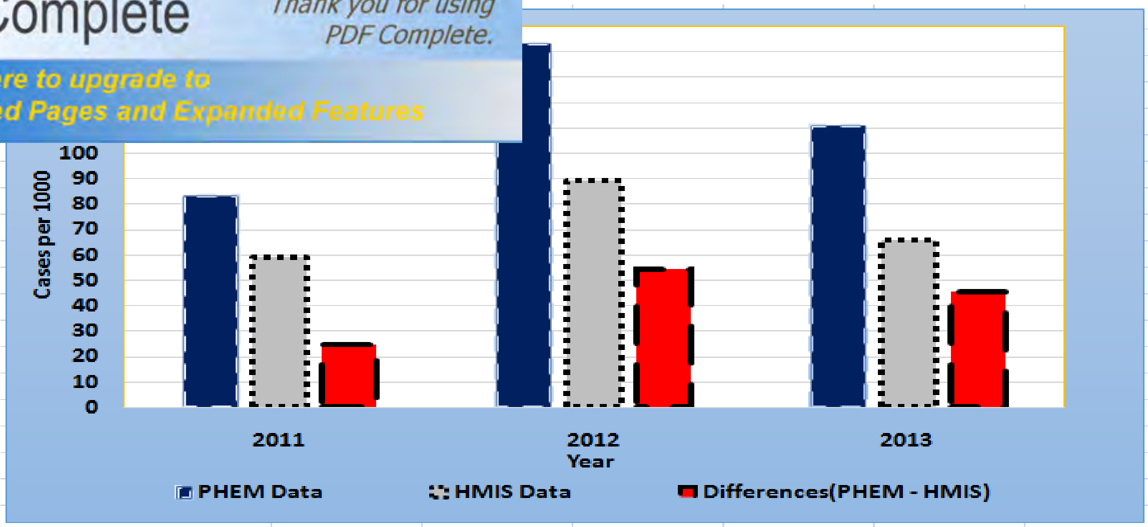

Figure 18: Total Malaria Cases (Clinical & Confirmed) and Its Discrepancy Reported by PHEM & HMIS Sections, Halaba, 2011-2013

Of the total 336,501 malaria cases reported to PHEM, on average 140,240 (41.7%) were clinically diagnosed (44.3%, 42.5% & 38.7% in respective years) and 196261 (58.3%) laboratory confirmed and of the total 213,157 malaria cases reported to HMIS, on average 67,073 (31.5%) were clinically diagnosed (35.6%, 31.4% & 27.9% in respective years) and 146,084 (68.5%) laboratory confirmed. Of the total cases reported to PHEM, the highest incidence was 49.6% in 2012 and the lowest 29.7% in 2011. On the other hand of the total cases reported to HMIS, the highest incidence was 30.9% in 2012 and the lowest 21% in 2011.

Of the total confirmed cases reported to PHEM, P. falciparum accounted for 48.2% (94,517/196,261) of all cases and P. Vivax 51.8% (101,744/196,261) and of the total confirmed cases reported to HMIS, P. falciparum accounted for 43.4% (63,466/146,084) of all cases and P. Vivax 56.6% (82,618/146,084).

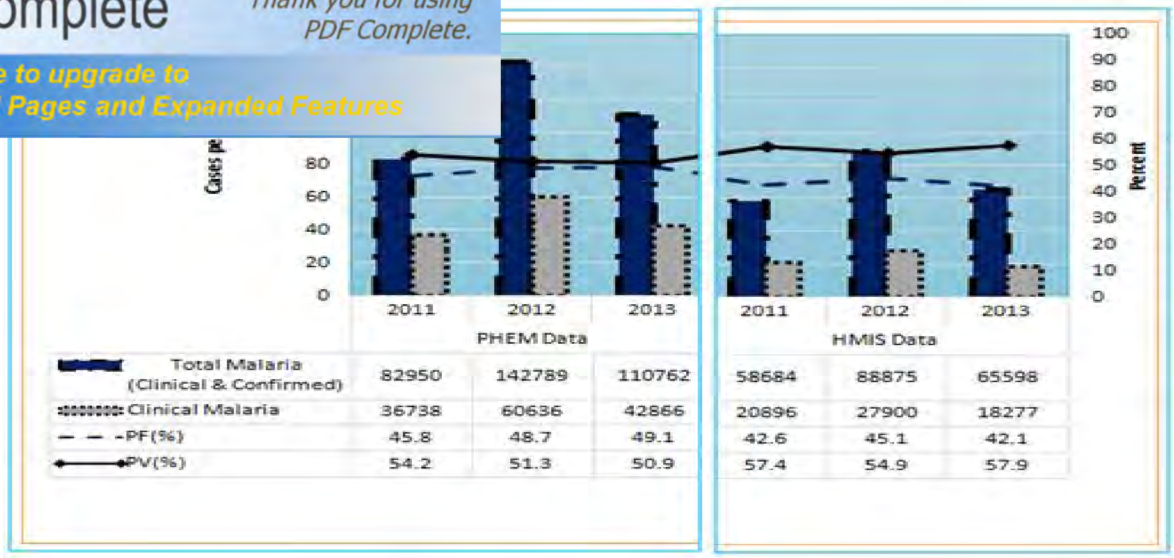

Figure 19: Confirmed and Clinical Malaria Cases Reported from PHEM and HMIS, Halaba, during 2011-2013.

According to PHEM data, the overall malaria positivity rate during the study period shows that 55.6% (69.7%, 57.5% and 47.1% in respective years of 2011 to 2013). However the overall percentages of suspected malaria cases that receive parasitological test were 71.6% (64.3%, 70.2% and 77.1% in respective years). It is not possible to see data of malaria positivity rate and parasitological test from HMIS data.

According to HMIS data, females were found to be slightly more affected than males in total confirmed malaria (50.4% versus 49.6% respectively) but males were more treated as clinical malaria and confirmed plasmodium falciparum in 50.5% and 50.3% respectively.

From the two reports, PHEM report lacks variable such as age, sex and place for analysis whereas HMIS report has incorporated such variables age, sex and health facilities which can be used as place because they include health posts representing Kebele and health centers incorporating cluster Kebeles, due to this condition the next report is based on the HMIS data.

Malaria Morbidity by Age, Sex and Health Facility Type

213,157 malaria cases reported to HMIS; 60,415 (28.3%) 211,104) and 29.1 % (597/2053) of malaria cases were <5 year children from all outpatient and inpatient cases respectively.

Table 7: Total Malaria Cases from Out Patient & In Patient by Age from HMIS, Halaba, 2011-2013

Year	Outpatient Case		Inpatient Case		Outpatient and Inpatient Case	
	All age	<5 Yr	All	<5 Yr	All	All <5 Yr
2011	**58560**	**17340**	**124**	**35**	**58684**	**17375**
2012	**88470**	**24140**	**405**	**162**	**88875**	**24302**
2013	**64074**	**18338**	**1524**	**400**	**65598**	**18738**
Total	**211104**	**59818**	**2053**	**597**	**213157**	**60415**

It is difficult to talk about decline or incline using a three years of data, no significant change has been observed in the malaria incident of the Woreda in < 5 year and ≥ 5 year age population while looking at 2011-2012 & 2012-2013 difference increase by 34% and decrease by 35% in total malaria and increase by 38% and decrease by 29% in confirmed malaria of HMIS data respectively as well as increase by 42% and decrease by 29% in total malaria and increase by 44% and decrease by 21% in confirmed malaria of PHEM data respectively during 2011-2012 & 2012-2013. Number of total malaria cases during 2011-2012 & 2012-2013 in < 5 year children from HMIS data shows that increase by 29% and decrease by 30% in total malaria and increase by 34% and decrease by 23% in confirmed malaria.

atient & In Patient by Age from HMIS; Halaba; 2011-2013

			2012		2013		Total	
			Number	%	Number	%	Number	%
0-4 years	17375	29.6	24302	27.3	18738	28.6	60415	28.34
5-14 years	10902	18.6	18410	20.7	13589	20.7	42901	20.13
>=15 years	30407	51.8	46163	51.9	33271	50.7	109841	51.53
Total	58684	100.0	88875	100.0	65598	100.0	213157	100

Malaria inpatient admission in the same time period has increased from 35 cases in 2011 to 400 cases of less than 5 year in 2013 and from 124 cases of all age in 2011 to 1524 cases in 2013, averaged 23.8/10,000 per year in overall population.

Table 9: All Malaria Admission by Age and Sex from HMIS, Halaba, 2011-2013

Year	Male				Female				All Age and Sex	All <5 Yr
	<5 Yr	%	≥5 yr	%	<5Yr	%	≥5 yr	%		
2011	25	71.4	37	41.6	10	28.6	52	58.4	124	35
2012	94	58.0	104	42.8	68	42.0	139	57.2	405	162
2013	263	65.8	559	49.7	137	34.3	565	50.3	1524	400
Total	382	64.0	700	48.1	215	36.0	756	51.9	2053	597

28% male less than 5 years and 9.4% females ≥5 years of age were more attacked by malaria during the study period.

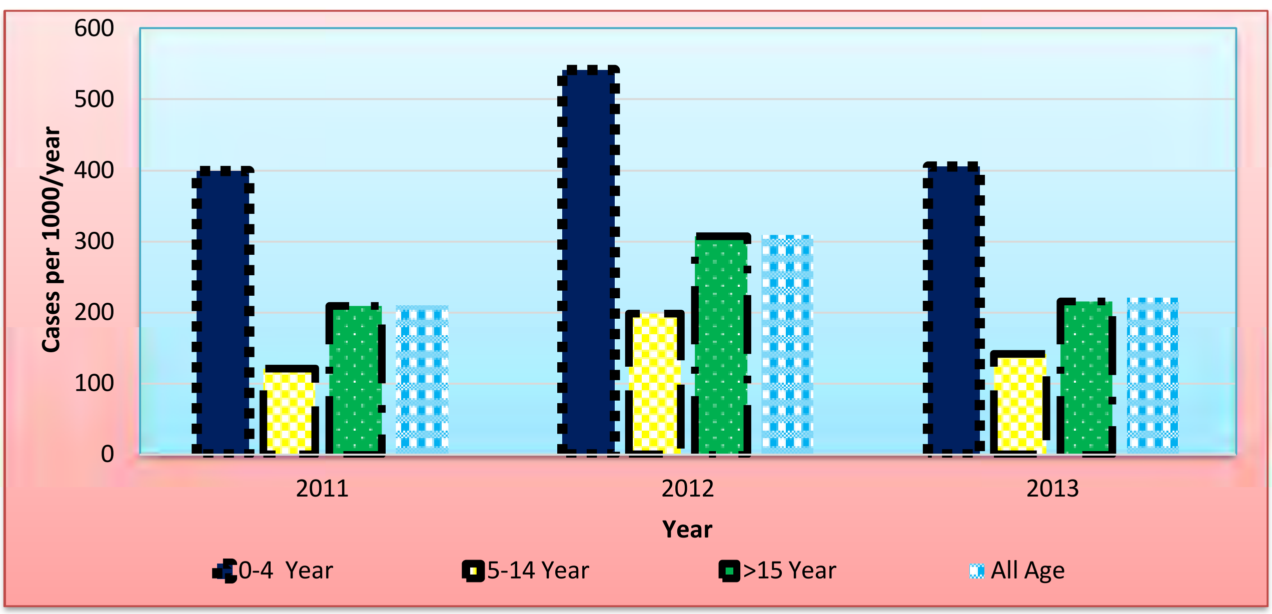

Figure 20: Total Malaria Case/1000/Year by Age Group (HMIS Data), Halaba, 2011-2013.

...observed that 0-4 year age were more affected and 5-14 ...ulation age groups.

Table 10: All Malaria Cases (Clinical & Confirmed) Seen in OPD & IPD by Sex, Age & HF Type (HMIS Data), Halaba, 2011-2013.

HF Type	Male			Female			Total		
	0-4 years	5-14 years	>=15 years	0-4 years	5-14 years	>=15 years	0-4 years	5-14 years	>=15 years
Health Center	**2749**	**18773**	**42048**	**23842**	**16909**	**47855**	**51261**	**35682**	**89903**
Hospital	**3006**	**1987**	**5899**	**2293**	**1599**	**7937**	**5359**	**3586**	**13836**
Health Post	**2116**	**1861**	**3212**	**1679**	**1772**	**2890**	**3795**	**3633**	**6102**

According to HMIS 3 year data by health facility type, the majority of malaria cases reported were from health centers with 83% (176,846/213,157) and the remaining 10.7% (22,781/213,157) and 6.3 % (13530/213,157) from hospital and health posts respectively.

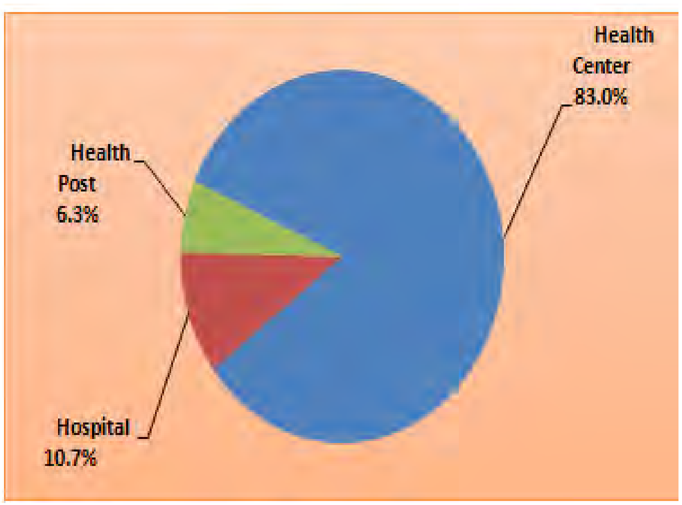

Figure 21: Total Malaria Cases Reported to HMIS by HF Type; 2011-2013; Halaba

Since the PHEM data summary at Woreda level lacks data by health post type it is difficult to compare both data sources by HF. However for comparison reason one year data for PHEM were collected by health facility type as follows: malaria cases reported to HMIS during 2013 that 76.4% (50,132/65,598) cases were reported from HC and 16% (10,492/65,598) and 7.6% (4974/65,598) were reported from Hospital and Health Posts respectively. But malaria cases reported to PHEM

409/110,762) of cases were reported from HC and 34.2% ,762) from Health Posts and Hospital respectively (Figure 22 & 23).

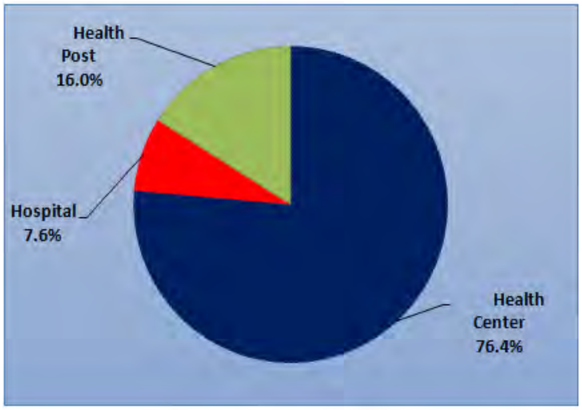

Figure 23: Proportion of all Malaria Cases Reported to HMIS during 2013 by HF Type; Halaba

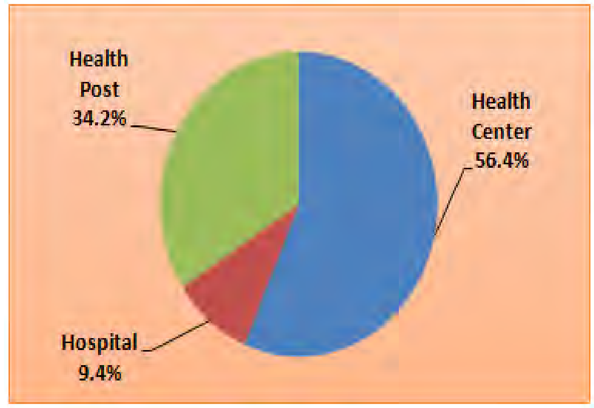

Figure 22: Proportion of all Malaria Cases Reported to PHEM during 2013 by HF Type; Halaba

Regarding to the monthly trends of Confirmed and total malaria from both data sources, Figure 24 & 25 using one year data for comparison reason is presented as follows below.

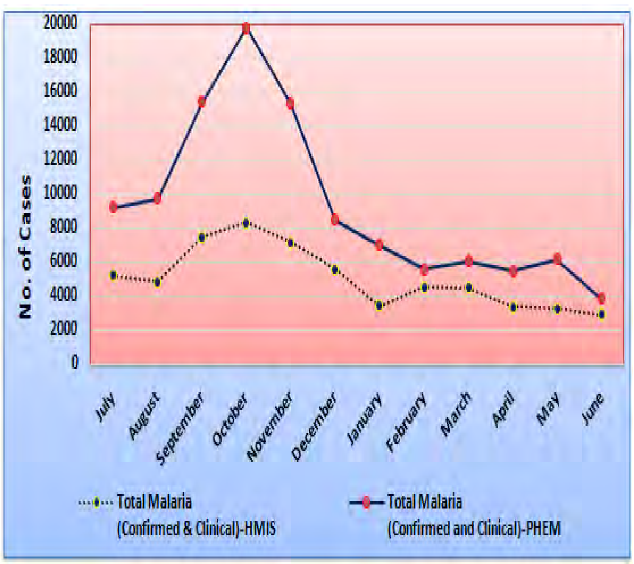

Figure 25: Total Malaria Cases; PHEM Vs HMIS Data; Halaba; SNNP; 2012/2013

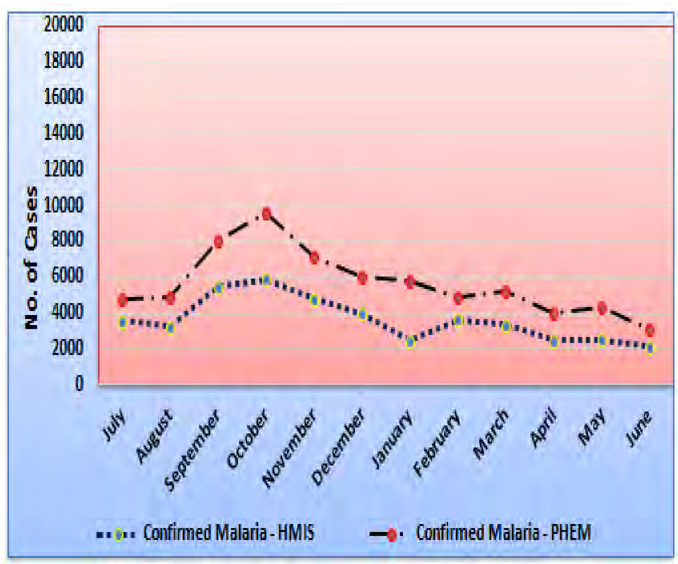

Figure 24: Confirmed Malaria Cases; PHEM Vs HMIS Data; Halaba; SNNP; 2012/2013

ring the study period of which 12 deaths were less than 5 years of age and the remaining 12 deaths ≥ 5 years of age in HMIS data but in PHEM data only 16 deaths reported.

Table 11: Malaria Inpatient cases and mortality by Age and Year (HMIS Data); Halaba 2011-2013

Year	Admission		Death	
	<5 Year	≥ 5 Year	<5 Year	≥ 5 Year
2011	35	29	1(2.9%)	3(10.3%)
2012	162	243	8(4.9%)	7(2.9%)
2013	400	1124	3(0.8%)	2(0.2%)
Total	597	1396	12(2.0%)	12(1.0%)

The average mortality per 100,000 people during the study period was 2.8. The overall high proportion of deaths registered were 5.8 per 1000 cases in < 5 year and the least 2.4 per 1000 cases in 5-14 age patients. Of all cases admitted to inpatient, the highest death were 8.4 per 1000 cases of < 5 year age children who were admitted as clinical malaria and plasmodium falciparum and plasmodium vivax were 6.1 & 1.9 per 1000 cases respectively in the same age group i.e. < 5 year age children.

Table 12: Inpatient Admission & Death by Age Group and Case Status (HMIS Data); Halaba 2011-2013.

Malaria Type	0-4 year		5-14 year		≥ 15 year		Total		Death per 1000		
	Case	Death	Case	Death	Case	Death	Case	Death	0-4 Year	5-14 Year	≥ 15 Year
Clinical Malaria	213	6	152	2	350	3	715	11	8.4	2.8	4.2
P.f	226	5	156	2	433	3	815	10	6.1	2.5	3.7
P.v	158	1	78	1	287	1	523	3	1.9	1.9	1.9
Total Malaria	597	12	386	5	1070	7	2053	24	5.8	2.4	3.4

e in understanding data quality problem in the study area in which the result could be reflected in the region and country too. It has been recognized that even having such quality problem in the data, malaria is the most important health problem of the study area, indicating us the importance of very strong malaria prevention and control effort.

This analysis has shown that, in the study area, it is observed that high number of discrepancies of malaria cases reported to PHEM & HMIS sections from the health facilities in the Woreda which should be almost similar data is reported to both data sources. As it is well known that data sources for both sections (PHEM & HMIS) are all health facilities available in the Woreda which the only difference be reporting period i.e. weekly for PHEM and monthly for HMIS aggregation of weekly report should bring us monthly data but in the study the result finding showed us there is variation in data between both sources which brings distrust of the quality of morbidity and mortality reporting system for malaria surveillance (22-24). Routine analysis of surveillance data should report estimates of basic epidemiologic parameters that can be explained intuitively (25).

In this study, from both data sources the average annual incidence of reported total malaria in the overall population (390 per 1000 persons per year in PHEM & 247 per 1000 persons per year in HMIS) was very high and of confirmed malaria (227 per 1,000 per year in PHEM & 169 per 1,000 per year in HMIS) respectively over the study years. In a study conducted at national level using PHEM/IDSR data, the highest reported average confirmed malaria incidence per 1000 per year were 73.2 /1000/year in the same region and the same Woreda i.e. Halaba Sp. Woreda. A separate source of malaria incidence estimates the Health Management Information System (HMIS), Federal Democratic Republic of Ethiopia, in which the estimated annual incidence of reported malaria for the whole country was 107 per 1,000 in 2004 and 55 per 1,000 in 2009 which is very low as compared to the findings of our study (22).

Among malaria cases reported to PHEM and HMIS, high proportion of cases were treated as clinical malaria in about 41.7% and 31.5% cases respectively inflating total malaria cases of the Woreda. According to the National Malaria Guideline (11), malaria treatment based on clinical there is no availability of RDTs or microscopy and patients roscopy do not need anti-malarial medications.

The highest malaria incidence during the study period was registered in both data sources in 2012 and the lowest in 2011 following the increase in number of health facilities and report completeness respectively. Even though it is difficult and impossible to talk about decline or incline using a three years data, no significant change has been observed in the malaria incident of the Woreda in < 5 year and ≥ 5 year age population while looking at 2011-2012 & 2012-2013 difference increase by 34% and decrease by 35% in total malaria and increase by 38% and decrease by 29% in confirmed malaria of HMIS data respectively as well as increase by 42% and decrease by 29% in total malaria and increase by 44% and decrease by 21% in confirmed malaria of PHEM data respectively during 2011-2012 & 2012-2013, showing that up and down in both data source with no clear decline and this result is supported by the study of Jima et al (22). 28% male less than 5 years and 9.4% females ≥5 years of age were more attacked by malaria during the study period. In general 0-4 year age was more affected and 5-14 year age least affected than the rest population age groups. However reports from other study conducted in Ethiopia have documented declines in malaria morbidity across the country and surveillance from2000–07 demonstrated a 70% reduction in both outpatients with slide-confirmed malaria and children less than 5 years old admitted to hospital for malaria (26, 27).

In both data sources of this study shows that the proportion of plasmodium species is shifting being P. vivax dominating in contrast to a study conducted by Manuel Ramos J, Reyes F, Tesfamariam A., a shift from predominantly P vivax cases to 73% Plasmodium falciparum cases (28). But in a study done by Gebremariam N. Malaria: In Zein ZA, Kloos H (eds) and Ghebreyesus TA, Witten KH, Getachew A et al, the seasonal pattern of infection by species is clearly seen on review of monthly laboratory data, with the proportion of P. vivax infection increasing in the hot and drier months from January to May (29, 30). The seasonal increase may be due to Vivax relapse when enabling conditions for transmission of both species wane, or to continued transmission of P. vivax when conditions for falciparum transmission are unfavorable (30). It should be supported with an additional study at monthly and weekly base to see the seasonal pattern.

rage malaria positivity rate during the study period shows espective years of 2011 to 2013) and the three year trend shows declining of positivity rate and lower than the national coverage of 83% (20). The overall percentage of suspected malaria cases that receive parasitological test were 71.6% (64.3%, 70.2% and 77.1% in respective years). The three year parasitological test trend shows better performance as compared to 64% globally and 61% in African region (6). But from HMIS data, it was not possible to see malaria positivity rate and parasitological test data.

According to the HMIS data, females were found to be more affected than males in total confirmed malaria (50.4% versus 49.6% respectively) different from Ethiopia Malaria Indicator Surveys 2011 (8), in which males were found to be more affected than females. On the other hand males were more treated as clinical malaria and confirmed plasmodium falciparum in 50.5% and 50.3% proportions respectively.

From the 3 year HMIS data by health facility type, the majority of malaria cases reported were from health centers with 83 % followed by 10.7% from hospital and 6.3 % health posts showing that very low reporting from health posts in which more cases are expected because those are the health facilities nearest to the community than health centers and hospitals having large network in the population. Since PHEM data at Woreda level do not aggregate data by health facility level, comparing both data source by health facility level in overall study period was not possible. However, due to this incompleteness of report for comparison, one year data (2013) for both HMIS and PHEM were compared that cases reported to HMIS during 2013 that 76.4% cases were reported from HC and 16% and 7.6% cases reported from Hospital and Health Posts respectively. But cases reported to PHEM during the same year were 56.4% of cases were reported from HC and 34.2% and 9.4% from Health Posts and Hospital respectively. In this case more cases were reported from HP to PHEM than HMIS.

Reported malaria in-patient admissions and deaths averaged 23.8 per 10,000 and 2.8 per 100,000 per year respectively in the overall population and 44.3 per 10,000 and 8.9 per 100,000 per year respectively in < 5 years of age children. Of all cases admitted to inpatient, the highest deaths registered were 8.4 and 6.1 per 1000 cases of < 5 year age children who were admitted as clinical pectively. The high number of malaria admissions could be alth facility i.e. hospital report than previous periods.

Limitations

- There was no case based database of routine reports at all level so that to analyze by place person and time
- The existing routine report format misses most of the variables of interest of study particularly PHEM doesn't consider age, sex and place variables
- Documentation problem to get previous years data and missed data not only soft copy but also hard copy
- Absence of private health facility report

Conclusion

- High Discrepancies b/n PHEM and HMIS sections reported
- Shift in the proportion of plasmodium species was observed (P. Vivax dominating)
- High proportion of clinical malaria cases reported
- Data quality of routine report is in question
- The majority of malaria cases (83% for 3 years & 76.4% for 1 year from HMIS & 56% for 1 year from PHEM) reported were only from HCs rather than HPs where nearer to large communites

Recommendations

- Number of discrepancies of malaria cases reported to PHEM & HMIS sections at all level should be avoided
- Tracking progress in increasing coverage of key interventions and reducing the malaria burden is a major challenge as malaria surveillance systems may detect only a small percentage of the true number of cases. Therefore, improving monitoring of cases and data on diagnostics and case management is critical.
- Stronger malaria surveillance systems are also needed to enable a timely and effective malaria response

storing and processing routine data at least at Woreda ...nd Hospital so that can be used for better analysis and interpretation to be more meaningful and acceptable.

- Quality improvement of data collection and analysis as well as avoid data incompleteness and data be kept at secured place in every level
- The current PHEM reporting format should incorporate the most important variables mainly age, which is a powerful, no modifiable biological determinant for the risk of many health events; sex and place which helps for better data analysis and to take actions.
- Further study on plasmodium species distribution at monthly and weekly base to see the seasonal pattern
- PHEM and HMIS data should be Harmonious (be consistent)
- Both Section (PHEM and HMIS) officers and HIS technicians should validate reporting sources in case of discrepancies before reporting to higher level.

pedia

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Chapter III- Evaluation of Surveillance System

rveillance System in Halaba Special Woreda, nd People Region

Executive Summary

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. Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation. Malaria surveillance has become a very critical element of all malaria programmes particularly routine malaria surveillance data is useful for assessing incidence and trends over time, and in stratification for targeting of malaria control. To realistically embark on the road towards malaria control and elimination as well as to facilitate for rational deployment of interventions, timely and up to date provision of accurate malaria surveillance data is necessary. Malaria is the leading cause of morbidity and mortality in the world and ranked as the leading communicable disease in Ethiopia.

Public health surveillance systems should be evaluated periodically to assure the effectiveness and efficiency of the systems and in Halaba the surveillance system evaluation was not done previously, so that the strength and weakness of the surveillance system in the Woreda is not known.

The objective of evaluation was to assess Surveillance system key attribute and the performance of the surveillance system and suggest recommendations based on gaps identified for the improvement.

We conducted cross-sectional descriptive study from January 21 – February 4/ 2015 on 25 health facilities. Information on system attributes were collected using semi structured questionnaire interview and document review. Data collected were analyzed using Microsoft Excel 2007.

The engagement of the reporting agents was very satisfactory and all health facilities accepted that the surveillance system is very useful to detect outbreaks, determine magnitude of morbidity and mortality, and evaluate the effectiveness of prevention and control programmes. Reporting

d to accommodate newly occurring health events without se definition of malaria is simple and easy to understand and understanding of this case definition at those visited health facility was good. The Woreda surveillance timeliness and completeness were found very well. Surveillance data analysis was not analyzed by place and person which is difficult for intervention or taking action. Problem in data quality particularly at health post level is found. Only 36% of HF's had national PHEM guideline. The Woreda health office has Emergency Preparedness and Response Plan which was not supported with the budget required to respond in case an emergency occurred but all health facilities don't have EPRP. Multi-Sectorial Committee which lacks functionality and rapid response team was established and had meeting when an outbreak occurs. The overall functionality of surveillance system in the assessed district was satisfactory to achieve the intended objective of surveillance for public health action. Surveillance data should be analyzed by place, person and time at all level for public health action. Regular supportive supervision should be conducted at all level to increase the quality of the surveillance system, political leaders should participate in EPRP implementation and allocate budget.

ing, 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, 2). Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation (2).

Objectives of surveillance: Early detection of changes in disease incidence and distribution indicating an incipient epidemic or health problem provides opportunity for early and more effective intervention, measuring trends and patterns of disease to set priorities assist in planning, implementation and evaluation of health interventions and to describe basic epidemiology and natural history of a disease to develop a hypothesis about causation this can be tested with epidemiologic studies (3).

A communicable disease surveillance system serves two key functions; early warning of potential threats to public health and programme monitoring functions which may be disease specific or multi-disease in nature. The early warning functions of surveillance are fundamental for national, regional and global health security. The programme monitoring function of surveillance of communicable diseases encompasses a variety of goals such as eradication or elimination. Surveillance systems also serve to monitor trends of endemic diseases, progress towards disease control objectives, and to provide information which may be used to evaluate the impact of disease prevention and control programmes (1). The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively (2).

In Ethiopia 20 diseases (13 are immediately reportable whereas 7 are weekly reportable) are selected to be included into the routine surveillance. Malaria is one of the 20 nationally notifiable diseases (4).

Malaria surveillance has become a very critical element of all malaria programmes (5) particularly routine malaria surveillance data is useful for assessing incidence and trends over time, and in ontrol (6). To realistically embark on the road towards as to facilitate for rational deployment of interventions, timely and up to date provision of accurate malaria surveillance data is necessary [7-9].

The capacity of malaria surveillance systems to provide accurate information on the distribution of and trends in malaria varies widely across the globe. It is influenced by the extent to which patients seek treatment, whether patients use public sector health facilities, the proportion of patients that receive a diagnostic test, and the completeness of recording and reporting systems (10).

Improved surveillance for malaria cases and deaths helps ministries of health to determine which areas and/or a population group are most affected and enables countries to monitor changing disease patterns. Strong malaria surveillance systems also help countries design effective health interventions and evaluate the impact of their malaria control programmes (11).

Malaria is the leading cause of morbidity and mortality in the world and continues to be a major global threat to health, social and economic development (12-14). Globally, an estimated 3.4 billion people are at risk of being infected with malaria and developing disease in 2012, and 1.2 billion are at high risk (15, 16). Each year, there are an estimated 300-500 million clinical cases. In 2013, there are 97 countries and territories with ongoing malaria transmission, and 7 countries in the prevention of reintroduction phase, making a total of 104 countries and territories in which malaria is presently considered endemic (15).

Malaria is ranked as the leading communicable disease in Ethiopia, accounting for about 30% of the overall Disability Adjusted Life Years lost (17). Approximately 75% of Ethiopia's landmass is malaria-endemic; areas of disease are primarily associated with altitude and rainfall (17-19) with about 68% of the total population living in areas at risk of malaria (17, 20-21). There are four major eco-epidemiological malaria transmission strata in Ethiopia: 1) malaria-free highland areas above 2,500-meter altitude; 2) highland fringe areas between 1,500 and 2,500 meters (affected by frequent epidemics); 3) lowland areas below 1,500 meters (seasonal pattern of transmission); and smission; limited to the western lowlands and river basins)

Plasmodium falciparum and Plasmodium vivax are the two predominant malaria parasites, distributed all over the country and accounting for 60%-70% and 30%-40% of malaria cases, respectively. Reports indicate that clinical malaria accounts for 10%-40% of all out patient consultations, with corresponding proportional morbidity among children under 5 years in age being 10% - 20% (20).

To reduce the overall burden of morbidity and mortality due to malaria in Ethiopia, a comprehensive approach to vector control, early diagnosis and prompt treatment and surveillance, prevention and rapid management of malaria epidemics when and where it occurs are being implemented by incorporating in the country health sector development program since 1999 (23).

Halaba Special Woreda is one of the Woredas in the Southern Nations and Nationalities People Region (SNNPR) and well known/listed as one of those top malaria hotspot Woreda in the country. Hence, this evaluation was conducted to evaluate the gaps, attributes and purposes of the surveillance system.

Rationale

Public health surveillance systems should be evaluated periodically to assure the effectiveness and efficiency of the systems and in Halaba Special Woreda surveillance system evaluation was not done previously, so that the strength and weakness of the surveillance system in the Woreda is not known. Therefore, we conducted a surveillance system evaluation in the Woreda to determine the efficiency and effectiveness of the surveillance system in picking up and responding to public health problems in the district so that actions could be implemented to improve the gaps.

Objectives

General Objective

...urveillance system and to evaluate the performance of ...ial Woreda in line with its objective, and suggest recommendations based on the gaps identified for the improvement of the surveillance system

Specific Objectives

- To evaluate the attributes of malaria surveillance system of the district
- To assess the performance of the surveillance system in line with the set objectives
- To give possible recommendations for better improvement of the surveillance system

Methods and materials

Study area and population

The evaluation was carried out in Southern Nations and Nationalities People Region (SNNPR) Halaba Special Woreda. The Woreda is located at a distance of 315 Kilo meters South West of Addis Ababa and 89 Kilo meters far from the regional town, Hawassa. It has 84 administrative Kebeles of which 79 rural and the remaining 5 urban Kebeles.

The study population will be the total population of Halaba Special District, which are 314,416 of whom 158,780 are men and 155,636 are females during 2014/2015 (projected from census 2007) that will be target population for the study. About 87.8% (276,057) of the population is rural dwellers while the remaining 12.2% (38,359) are urban dwellers.

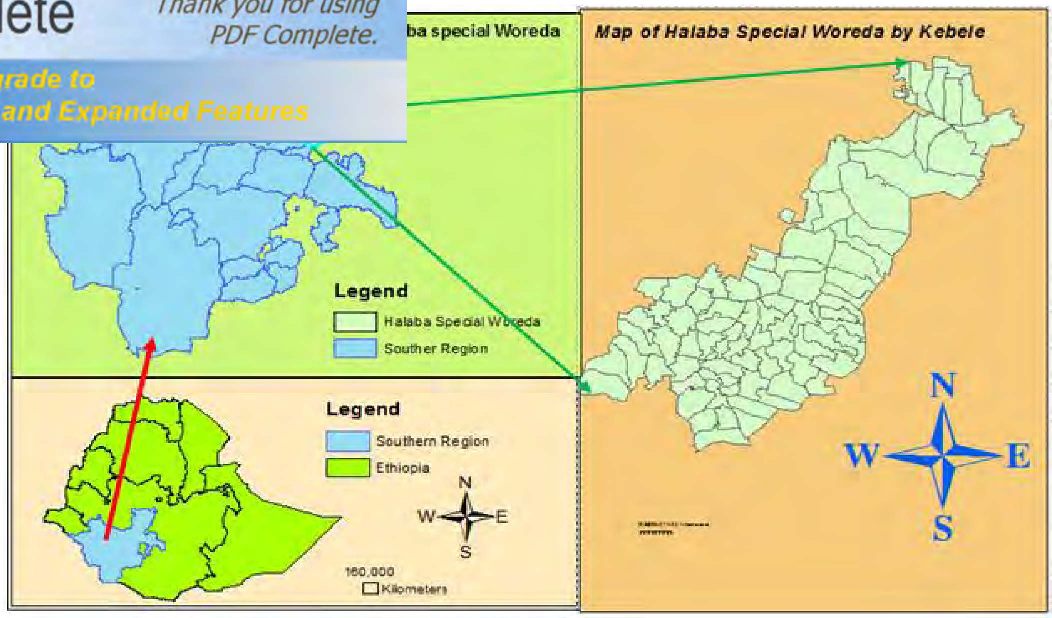

Figure 26: Map of Halaba Special Woreda, SNNPR, Ethiopia, 2015

Study design and period

A cross-sectional descriptive study was conducted from January 21 – February 4/ 2015.

Sample size, sampling technique and Study units

The Woreda was selected purposively based on its malaria case burden compared with other Zones in the region and a convenience method was used to select the health facilities. We conducted the study in Halaba Special Woreda. The study units were Woreda health office and health facilities. A total of 25 study sites were included in the study, these include governmental health center (8) and health posts (16) and Woreda health office (1). From this Woreda 8 health centers (Halaba health Center, Guba health center, Dinokosa health center, Arsho health center, Ajo heath center, Tuka heath center, Konicha heath center and Besheno heath center) and a total of 16 health posts in which 2 health posts in each respective heath center catchments (Gedeba, Alemtena, Gofessa, Debeso, Dinokosa, Chambula, Tach Arsho, Misrak Gortancho, Ajo Huluko, Negele Wedesha, First Tuka, Second Tuka, First Teffo, Second Konicha, Bendo Choloksa and Udana Mieno health Posts) including the Woreda health office.

re questionnaire and using an observation check-list. We interviewed surveillance officers and health institution staff with these tools. Secondary data sources such as surveillance report completeness and timeliness as well as malaria surveillance data, supervision report, written feedbacks, preparedness plans and malaria monitoring charts were also reviewed. Information on system attributes were collected using CDC surveillance system evaluation guideline. Data collected through the prepared questionnaire was transferred in to electronic version and analyzed using Microsoft Office Excel 2007.

Ethical clearance

A letter of support was obtained from Ethiopian Public Health Institute and provided for the selected health office, health centers and health posts for their participation on the study.

Operational definitions

Simplicity: The simplicity of a public health surveillance system refers to both its structure and ease of operation as a surveillance system.

Flexibility: Is the ability of the system to adapt to changing needs such as incorporating of a new disease, leave out less important diseases, change reporting frequency, change or modify data source, the collection of additional data, and change in case definition.

Data quality: Is the completeness and validity of the data recorded in the public health surveillance system.

Acceptability: Is a reflection of the willingness of surveillance staff to implement the system, and the end users of the data to accept and use the data generated by the system.

Sensitivity: Sensitivity is the capacity of the system to detect the highest proportion of true cases

Predictive value positive: Is the proportion of reported cases that actually have the health-related event under surveillance.

Representativeness: Is the ability of the system to accurately describe the occurrence of a health related event by place and person over time in a given population.

persons without the disease that are considered by the ease.

Reliability: is the degree to which the results obtained by a measurement/procedure can be replicated.

Timeliness: Is the ability of the system to trigger appropriate action in time.

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.

Usefulness: Refers to the relevance of the system in terms of feeding information for action.

Completeness: Proportion of all expected data reports that were submitted to public health surveillance.

Case detection: is the process of identifying cases and outbreaks.

Case registration: is the process of recording the identified cases.

Case/outbreak confirmation: refers to the epidemiological and laboratory capacity for confirmation.

Reporting: Refers to the process by which surveillance data moves through the surveillance system from the point of generation.

Epidemic preparedness: Refers to the existing level of preparedness for potential epidemics.

Stakeholders: The organizations or individuals that generate or use surveillance data for promotion of health, prevention and control of diseases

Case definition: is a set of criteria used to decide if a person has a particular disease, or if the case can be considered for reporting and investigation

Standard case definition: is a case definition that is agreed upon to be used by everyone within the country. Standard case definition can be classified as confirmed, probable, and possible or suspected.

ion, registers and forms availability

9(36%) of 25 HF's (Woreda health office, 3 health centers and 5 health posts) had national PHEM guideline however the remaining 5 health centers and 11 health posts didn't have the national PHEM guideline. All health facilities including the Woreda health office had reporting formats (case investigation form, line list, weekly reporting format and daily epidemic reporting format) during the past 6 months. All Health facilities and health offices had the case definitions posted for disease under eradication and elimination (i.e. Measles, AFP/polio, and NNT were posted). 80% of the visited sites (except 5 health posts) had standard malaria diagnosis and treatment and malaria epidemic prevention and control guidelines. In all visited sites there was no rumor log book.

Case Detection

Standard case definition for malaria disease was available in all visited health facilities and understanding of this case definition at those visited health facility was good as explained by some of health workers working in examination rooms during the time of field visit. On the other hand from all the assessed health posts only 12(75%) of 16 had the community case definition for malaria. Though the case definition is not present in 4 of the health posts the health extension workers used the malaria module they got during their training for detection of cases. The health professionals were detecting any suspected cases of malaria using the case definition and laboratory investigation was done using microscopes at the health center level and Rapid Diagnostic Tests (RDT) at health post level. However in all the health posts visited health extension workers complained of RDT that it is not properly detecting cases and obliged to refer most of the cases to health center for microscopic investigation.

cord the basic data elements of malaria at all the visited sites. All the health centers properly register case records using standard registers however in most of the health posts though there are registers, cases were not properly recorded. Evaluation of health posts 4 week reports (one month reports) submitted to the higher level (health center) against the register recordings showed a difference of 85 cases of malaria in a month period i.e. not reported but available on register. In addition it is observed that in most of the health posts for longer period of time cases were not registered on registration book but reported in weekly reports showing that there is data quality problem.

Case Confirmation

Whenever suspected malaria cases were reported to the HFs, the health workers collected blood samples and did laboratory tests using microscopy at the health center level or using RDT at health posts level.

Reporting

There was no shortage of reporting form in the past 6 months in all visited health facilities and health offices. The weekly reporting rates of the visited health facilities over the past 12 weeks prior to assessment were 100% (25/25). The overall reporting rates of the visited Woreda to the Regional Health Bureau in 2013/2014 were 100%.

All the reports were sent to the next level via paper based, telephone and electronic.

- From health Post to health centers via paper based and telephone report
- From health center to Woreda health office via paper based and telephone call
- From Woreda health office to the Regional Health Bureau via paper based telephone call, fax, and electronic database (e_IDSR).

posts where there were no telephone services is very nal mobile phones charging by themselves and they are the expense they are charging their mobile.

Reporting time: from health Post to health centers every Monday afternoon and from Woreda health office to the Regional Health Bureau every Tuesday afternoon.

Training: 5(62.5%) of 8 assessed health center focal person assigned for surveillance responded that all working on surveillance units got short term training or workshops of 3-5 days by the Regional Health Bureau and WHO but the one working in the Woreda health office PHEM Core Process didn't get any training of the duty she is assigned to work despite her non professionally assigned to this position. At the health facilities level health care providers and health extension workers did not get orientation.

Data analysis

In all the visited health office and health facilities, there was a responsible person for data analysis. In the assessed health facilities data analysis made on quarterly basis by PHEM officers, focal health workers and at health post level by health extension workers for the purpose of reporting only to answer requests of higher bodies and the analysis was not complete i.e. done only by time (not incorporating place and person) at all level using malaria epidemic monitoring chart. The information collected was utilized to monitor threshold which is done only by doubling previous year cases but not using the third quartile of the five years morbidity data.

Epidemic Preparedness and Response:

The Woreda health office had a plan for epidemic preparedness and response but in all visited health centers and health posts has no epidemic preparedness and response plan. The Woreda health office had shown the required budget for emergency but the allocated budget was less than 1% of the plan. However, in case of experiencing any emergency, the Woreda mobilized the budget for response activity and drugs for epidemic response not available but they told us the of the assessed health facilities have rapid response team t committee. We observed the presence of epidemic management committee meeting minute but had no regular meeting, are activated only when there is an event.

There was no malaria outbreak in the past six months but there was measles outbreak not investigated timely and acted up on. There was no vehicle assigned for emergency response. Emergencies were responded by integrating with other activities. At Woreda health office and all visited health centers there is malaria monitoring chart regularly updated to detect the trend of malaria cases in order to monitor if there is an epidemic or not. This monitoring chart is more feasible to be implemented at health post level but in all the health posts it is not regularly updated and used to monitor the case.

Feedback and Supervision

Feedback is an important function of all surveillance systems and the way of encouraging, an individual or staffs working in the surveillance system. Appropriate feedback can be maintained through supervisory visits. Discussion with the Woreda experts revealed that both verbal and written feedback was practiced, incorporated with routine integrated supportive supervision together with other departments, a practice of giving feed back in all direction shows the strength and weakness of health facility and Woredas health PHEM office surveillance systems. Every quarterly all health centers and selected health post had an integrated regular supportive supervision from the Woreda health office but not specifically for surveillance. Written feedback was given in all assessed health facilities during supervision on monthly basis and regularly from Woreda health office PHEM Core Process every weekly and sometimes every fortnight but there is inconsistencies and documentation problems. We observed the written feedback in all assessed health facilities but not complete.

:tem presented in all assessed health institutions was able to determine the magnitude of the disease for planning and intervention. Malaria trend analysis was made in Woreda health office and health centers only to detect epidemic which shows weekly count of malaria cases and epidemic threshold and posted at respective health facilities mentioned above to monitor epidemic. However visited health posts didn't updated their monitoring chart so that they are not able to detect an epidemic (Figure 27).

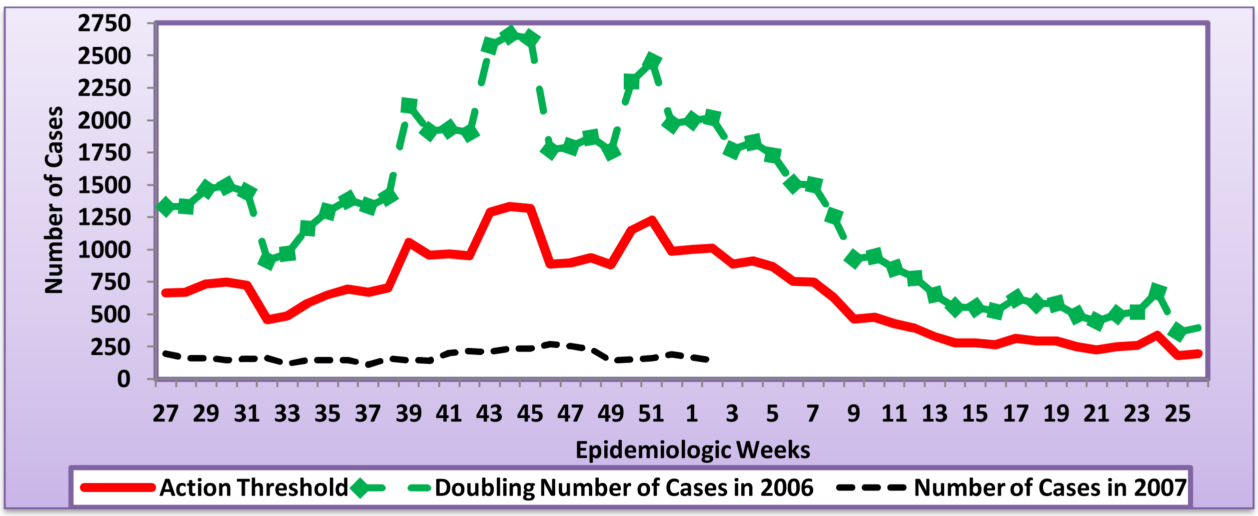

Figure 27: Confirmed malaria cases in Halaba Special Woreda by epidemiologic week, 2014/2015

Simplicity: All respondents in the assessed health facilities agreed the case definition of malaria is simple and easy to understand. There are two type of case definitions; community and standard case definitions. Both case definitions are very simple and interpreted in Amharic and local languages which could easily be used by those who can read that language and is mainly used by front line workers particularly by health extension workers and health agents at village level. The reporting formats being used are also very easy to understand, fill data by all health workers and took less than 15 minutes. The process started with the generation of a notification report by a health worker when a case was diagnosed at health facilities (HFs). Data generated at health facility level passed through defined reporting route using the standard reporting formats as set by the guideline. Collection of data at Woreda level by paper based should be converted to electronic form as a result it took long time to send for higher level.

…s were more flexible to report and to accommodate newly … and the formats were said to be easy and comprehensive to record and report.

Acceptability: The acceptability of the surveillance system was assessed based on the engagement of the reporting agents and their active participation in case detection and reporting. The engagement of the reporting agents was very satisfactory and the reporting rate of all health facilities were 100% over the past 12 reporting weeks and all health facilities accepted that the surveillance system is very useful to detect outbreaks, determine magnitude of morbidity and mortality, evaluate the effectiveness of prevention and control programmes.

Representativeness: The representativeness of the surveillance system was assessed by health service coverage and by health seeking behavior for the disease. In the district all rural Kebeles has their own functional health post (79) 10 HCs and 1 hospital are available with health service coverage of 79.5%. Malaria is the common disease in the district and the population has good health seeking behavior for the disease. The surveillance system has the capacity to pick all public health emergencies in the community regardless of age, sex, religion, and ethnicity, other social and economic status. However the weekly reporting formats lack some important variables like age (only incorporated less than 5 and above 5 year), sex and other possible risk factors which is different from HMIS reporting formats but very important epidemiological variables that help to study and generate information in order to take appropriate actions as need arises.

Sensitivity: Sensitivity of surveillance system refers to the ability of the system that can detect actual cases in a population and notify through the system. All health facilities reported that the case definitions used now particularly the malaria case definition is well stated and clear that can pick every malaria cases correctly. The community based case definition helps particularly the health extension workers (HEWs), and health development army (HAD) to identify and notify early all suspected malaria cases and notifiable priority diseases at the community level. Sensitivity of the detection of events for public health response refers to the proportion of cases detected and this couldn't be measured as the total number of persons

ıot ascertained.

Predictive Value Positive: The predictive value positive is difficult to calculate as the total number of persons actually with disease was not determined.

Timeliness: The single most important measure of timeliness is whether data are submitted in time to begin investigations and implement control measures. Thus, timeliness of reporting was measured according to the PHEM guideline i.e., the proportion of the total sites reporting on time divided by the total sites expected to report. The surveillance report timeliness of the district was 95%. Since the primary objective of surveillance is to take an action, late reports are less important for Public health emergency management.

Completeness: The Woreda surveillance report completeness is 100%.

Stability: All health facilities responded that any restructuring did affect the surveillance activities demanding to have different capacity building. Staff high turnover and lack of resources had affected surveillance activities. When trained surveillance personnel leave the position there will be difficulties in data collection and reporting. Because untrained staffs were not volunteer to fill the vacant position as the system has no incentives of different type such as trainings.

Discussion

We aimed to evaluate the surveillance system of Halaba Special Woreda by describing the system and measuring the usefulness, simplicity, data quality, acceptability, representativeness, timeliness and stability of the system for the selected disease malaria.

Surveillance is a systematic collection, analysis, and interpretation of health and health related data. The use of this data is to monitor health problems for public health action. The main aim of the surveillance system is to detect outbreaks before causing any damage to the public, according to the set objective.

ndicators to determine whether the surveillance system is he weekly surveillance report completeness is higher than the WHO target expected (80%), i.e. 100% showing that all the visited health centers and health post report to their respective level as per the standard in the national guideline.

As indicated in the result, the Woreda reporting timeliness was 95% which is higher than the national target. This is an important indicator for detecting a problem and conducting a prompt and effective response early. Timely reports will give timely information which helps to predict future outbreaks, trends of diseases occurrence, cases for further studies, future impact of diseases surveillance and action for problems identified on time. Problem in data quality particularly at health post level is found to be in question and needs improvement.

Surveillance is information for action. Analyzing and interpreting public health surveillance data are the links between the design and operation of a surveillance system and the use of data from the system to implement public health action and disease control program. Surveillance data are used to detect epidemics, suggest hypothesis, characterize trends in disease or injury, evaluate prevention program, and project future public health needs. In general, analyzing and interpreting surveillance data should be of primary importance, resisting the urge to allow the time consuming problems of collecting, managing and storing surveillance data to supersede the analysis itself. Thus, analysis should be implemented as part of a routine surveillance program so results can be monitored over time (24). According to this, the practice of data analysis and monitoring trend of malaria was observed at the district level by time only. However, any data collected from the surveillance system should be analyzed by time, place and person regularly.

Analyzing data by place shows where the outbreak/case build up occurred and provide information on its geographical extent and help for availing intervention measures on the affected area and by person shows which population group affected more to prioritize intervention measures. In the assessed health facilities the collected information were not interpreted by place and person particularly at health post and health center level.

...ness and response Plan (EPRP) that states all the potential ...ne resources required and the gaps to be filled and the possible contributors is essential and the basic action prior to the occurrence of any health related events. Thus epidemics could be predicted and contained promptly without causing major loss. The aim of preparedness is to strengthen capacity in recognizing and responding to public health emergencies through conducting regular risk identification and analysis, establishing partnership and collaboration, enhancing community participation and implementing community-based interventions and strategic communication during the pre-emergency phase and ensuring their monitoring and evaluation (4). In the visited area, the Woreda health office has Emergency Preparedness and Response Plan which was not supported with budget required to respond in case an emergency occurred but the rest health facilities don't have prepared this EPRP.

Establishing Multi-Sectorial PHEM committee and rapid response team is the primary steps of preparedness at each level [4]. In addition, this established committee should be oriented or trained on epidemic preparedness and response (especially for RRT). The committee should have a regular meeting as monthly basis for Multi-Sectorial Committee and RRT will meet regularly when there is an outbreak.

In the visited sites even though there is an established Multi-Sectorial Committee it lacks functionality or regular monthly meeting at all level. On the other hand, rapid response team/ technical committee were established and had meeting when an outbreak occurs as observed on meeting minute however most of the team members were not trained on epidemic preparedness and response.

In the assessed Woreda and health facilities feedback was given to their respective health facility verbally and paper based. We observed the written letter of feedback. However the feedback should be improved to be epidemiologically analyzed and interpreted for action incorporating important variables. Surveillance officer turn over at district level and health facilities is observed to be high and person who has no training and any exposure to the activities of PHEM having non health professional background were assigned at district level.

…me capacity building plays pivotal role. To increase the … and reporting system formal or on job training and refreshment training is important to update and upgrade the health workers knowledge.

To strengthen and to create a well stabled surveillance system specific supportive supervision and feed backing system is a must. However supportive supervision in most of health posts was not conducted at a regular time interval.

Limitation of the Study

Unavailability and incompleteness of data at health facility level to see trends. Difficulty to get officials and focal persons of office and health centers to get permission which affected us to conduct the assessment according to the timetable scheduled.

Conclusion

The overall functionality of surveillance system in the assessed district was satisfactory to achieve the intended objective of surveillance for public health action but there is lack of data analysis with respect to place and person. At Woreda level EPRP is not complete and supported with the appropriate budget for rapid response and health facilities don't have the plan and participate in preparing the Woreda EPRP plan. Timeliness and completeness of report was found to be very good. Specific supportive supervision was not conducted at lower health facility particularly health posts.

Recommendations

- Surveillance data should be analyzed by place, person and time at all level for public health action
- Regular training and workshop on surveillance and surveillance-related activities is required since there is high staff turnover in the Woredas
- PHEM guideline should be distributed to health facilities

uld be conducted at all level particularly health post level to
nce system

- Political leaders should participate and take ownership of EPRP implementation and allocate budget for emergency
- Health facilities should prepare their own EPRP and participate while the Woreda EPRP is being prepared
- Regular revision of epidemic preparedness plan and local capacity and resource mapping should be done and budget for emergency be allocated
- Budget should be allocated for surveillance to ensure the sustainability of the system.
- Appropriate personnel for district health office PHEM section be assigned and the existing officer should be trained
- Rapid response teams and Multi-Sectorial Committee be oriented or trained on epidemic preparedness and response and regularly meet

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Chapter IV- Health Profile Description Report

Executive Summary

Health profile is a quantitative and qualitative description of the health of citizens and the factors which influence their health. It identifies problems, proposes areas for improvement and stimulates action. Health profile provides a lively, scientifically-based account of health in the district; it can stimulate public interest and political commitment; and it can identify targets for the future and monitor progress towards them. Profiles include both indicators and health-related measures with an analysis of the information. A profile can help in many ways: the collaboration which is needed to produce it can help cement alliances for health; the information it contains can highlight health problems and bring partners together to find solutions; and presentation of the profile can stimulate public and media interest and improve general understanding of health issues. From March 10-17, 2014 health and health related data were collected in Halaba Special Woreda. Interview and standard check list were the main tools for data collection. The data source was the Woreda Health Office, Education Office, Finance Office, Water Office, Agricultural Office, and reports from National Central Statistics Agency of 2007 Census. Finally data was compiled and analyzed using Microsoft Excel. Halaba Special Woreda is administratively organized into 84 Kebeles (the lowest administrative unit) from which 79 are rural and 5 (five) are Urban Kebeles of Kulito town. As of July 2012/2013 Halaba Sp. Woreda has a projected total population of 296,540 of whom 149,753 are men and 146,787 women in 60,518 households. The Woreda town, Kulito and the 2 developing town (Guba and Besheno), has 24 hrs electric supply, mobile and cable based telephone services. Total school enrollment of the year was 62526 of which 44.5% were female and the remaining 55.5% were males. First and second cycle primary schools (grade1-8) have a total student population of 56,524; with a total of 25,648 (45.4%) females. There are a total of 3,893 students in grade 9-10 of which 1,245 (32%) females and 509 students in the preparatory (grade 11-12) school from which 178 (35%) are female. 39 (37.5%) schools have latrine with separate male and female; 65 (62.5%) has common latrine (for both sex) but most of the common latrines are not constructed in a standard type of latrines. The districts potential health service coverage is estimated to be 75.9% based on physical health facility accessibility and health service

% (9104) surviving infants were planned to cover in penta- ... he achievement were 94% (8566/9104), 92% (8347/9104), 90% (8215/9104) respectively. PCV1 and PCV3 were 97% (8835/9104) and 94% (8548/9104) respectively. Proportion of skilled delivery was 38% (3647/9724), new and repeat family planning acceptance was 44% (18836/43229). Safe drinking water supply coverage of the Woreda during the year 2012/2013 both in rural and urban population were 43% and 90% respectively. With regard to latrine utilization, about 78% of the community in the Woreda are using latrine and about 31 Kebeles (39% of total Kebeles) have celebrated open defecation free.

Malaria is the first in the top public health problems of the district for decades and the top leading causes of outpatient visits. A total of 65,598 (clinically and Confirmed) patients were treated for malaria in which 72.1% (47,321) of them were positive [P. falciparum (42.1%) and P. vivax (57.9%)] and 27.9% (18,277) were clinically treated. Average Trends of IRS coverage since 2008 was 56 Kebeles with a range of 31 (2008) to 76 (2009) Kebeles. ITNs distribution also increased and currently about 80% of the households are covered however utilization coverage is not well studied and not known. A total of 14,827 people were screened and counseled of which 7,365 (22.5% from plan) has got voluntary counseling & testing service and from these 28 (0.38%) were positive for HIV. With regard to PIHCT service, from 59368 health facility visitors, about 52,637 (88.7%) were provided the service and from these tested 73 (0.13%) were positive. Smear positive pulmonary TB detection rate and treatment success rate of the Woreda during 2013 were 68% (201/297) and 91% respectively. Cured, treatment Completed, Died, Failure, Transferred out Pulmonary Positive TB Outcomes were 83% (152/159), 13 (8. %), 13 (8%), 3 (1.8%), and 1 (0.6%) respectively. Number of OTP cases very high (1794 cases in 2012/2013). 389 Severely malnourished children were screened and treated during the year. Malaria is the primary & leading cause of morbidity and public health problem of the Woreda. Shortage of safe water supply is also one of the contributing factors for diarrhea, intestinal parasitosis and typhoid. Proportion of delivery attended by skill health personnel and family planning acceptance was low. Therefore prevention and control measures should be strengthened to reduce the morbidity of malaria, diarrhea, and other priority diseases and improve mother’s health. The quality of IRS and the actual ITNs utilization coverage should be studied to complement the existing malaria situation, malnutrition and 'chat' utilization impact has to

Introduction

A health profile is a quantitative and qualitative description of the health of citizens and the factors which influence their health. It identifies problems, proposes areas for improvement and stimulates action.

Health profile provides a lively, scientifically-based account of health in the district/Woreda; it can stimulate public interest and political commitment; and it can identify targets for the future and monitor progress towards them. Profiles include both indicators and health-related measures with an analysis of the information. They identify in writing and graphs health problems and their potential solutions.

A profile can help in many ways: the collaboration which is needed to produce it can help cement alliances for health; the information it contains can highlight health problems and bring partners together to find solutions; and presentation of the profile can stimulate public and media interest and improve general understanding of health issues.

A good profile describes a city/district and the factors affecting its citizens' health in a way that they will instantly recognize, and sets out proposal for change that will generate enthusiasm and energy. It should provide a focus for both community involvement and political support. It is very vital for prioritizing prominent health and health related problems of the community at any level.

A health profile is not a one-off document. A series of profiles should be planned for publication at regular intervals. Ideally they should be produced annually, but where resources are limited a two-year cycle may be more appropriate. Regular publication enables target for progress to be set, the implementation of recommendations to be monitored, and achievements measured and recorded.

It is basic for planning and for appropriate intervention; and is an entry point for operational research. Stake holders of health and health related issues will access evidence based information

...wever in low income countries like our country, such ...reda level is usually not available if so, not complete and comprehensive.

Therefore the main purpose of this health profile document is to fill such gaps, stimulate action to improve health by providing accurate, up-to-date, unbiased and independent information about the citizens' health; analyzing the information with respect to its impact on health and inviting community participation in planning for health. It is intended for use by Woreda Health Management Teams, regional and federal governments and other development partners. Most of the information is provided in tabular format with short explanatory captions and minimum text to provide a 'picture' of the current demography and disease burden. The data source is the district health, education, agriculture, and water and finance offices; however, specific in this report (those data lacking at Woreda and regional levels) has been taken from CSA 1994 & 2007.

Rationale

Health profile assessment is a way to gain a snapshot of a community's current assets and needs by examining and recording community strengths, challenges, and resources. However in low income countries like Ethiopia such information especially at district level is usually not complete and comprehensive. Therefore, an assessment of current health profile of a Woreda is important to provide a way for a coalition to get a better understanding of the community's health and what the current needs may be. There for this study was conducted to generate health information which help Halaba Special Woreda and other stakeholders to improve the public health.

General Objectives

To assess and describe health and health related information including health status, health indicators of Halaba Special Woreda and to identify problems for priority setting

Specific Objectives

- To describe health problems of Halaba Special Woreda
- To compile health and health related indicators of the Woreda.
- To assess the current health infrastructure

rmation and communicate the local burden of disease and

practical, accessible format

- To set recommendations based on the identified findings

Methods

Descriptive study was conducted from March 10-17, 2014 in Halaba Special Woreda. A structured questionnaire was prepared to collect data from all relevant sectors in the Woreda. Support letter was written to the Woreda health office from the region and from the Woreda health office to respective sector offices i.e., for Agriculture, Finance, Education, Water sectors and the Woreda administration to cooperate with us during the data collection period. All these sector offices were visited and asked to fill the questionnaires that relates to their respective office. The data sources were all the above mentioned Woreda Health Office, Education Office, Finance Office, Water Office, Agricultural Office, Administration offices annual, mid-year and quarter summary reports, publications and reports from National Central Statistics Agency of 2007 Census were reviewed. The major components of the questionnaire are: demographic characteristics, political and administrative information, economical, Education and information on vital health statistics and major health programs and other important information were gathered completely. Finally data were compiled and analyzed using Microsoft Excel.

Variables:

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

Child mortality rate: The number of births occurring in 2004 per 1000 women in the reproductive ages (i.e. women aged 15-49).

Crude birth rate: The number of births in a population during 2004is divided by the number of person-years-lived by the population during the same period. It is frequently expressed as births per 1,000 populations.

…ns in a population during 2004is divided by the number of …uring the same period. It is expressed as births per 1,000 populations.

Infant Mortality Rate (IMR): The ratio of the number of deaths under one year of age occurring in 2004 to the number of births in the same year

Proportion of births attended by health extension workers at Health Post (Clean and safe delivery): Proportion of births attended by health extension workers at health post

Contraceptive prevalence rate: Proportion of women of reproductive age (15-49 years) who are using (or whose partner is using) a contraceptive method

Contraceptive acceptance rate: Proportion of women of reproductive age (15-49 years) who are not pregnant and are accepting a modern contraceptive method (new and repeat acceptors).

Skilled delivery: Proportion of deliveries attended by skilled health attendants; A skilled birth attendants an accredited health professional – such as a 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 newborns.

Antenatal coverage: Proportion of pregnant women attended, at least once during the current pregnancy, by a health professional, for reasons related to pregnancy.

Antenatal care coverage – First visit: The percentage of women that received antenatal care at least once during the current pregnancy.

Antenatal care coverage – four visits: The percentage of women that received antenatal care four or more times during the current pregnancy.

Early postnatal care coverage: Proportion of women who attended post natal care at least once during the early post-partum period (within 7 days after delivery).

...rtion of women who seek care at least once during ...m skilled health attendants including HEWs for reasons relating to post-partum

Full immunization coverage (< 1 year): Proportion of surviving infants who receive all doses of vaccines before their first birthday.

Tuberculosis (TB) case detection rate: Number of new smear positive TB cases detected, among the new smear-positive TB cases estimated to occur in the Woreda.

TB treatment success rate: Percentage of a cohort of new smear positive TB cases registered in a specified period that successfully completed treatment. Successful completion entails clinical success with or without bacteriological evidence of cure.

TB cure rate: Percentage of a cohort of new smear-positive TB cases registered in a specified period that was cured as demonstrated by bacteriologic evidence (a negative sputum smear result recorded during the last month of treatment and on at least on one previous occasion during treatment).

TB defaulter rate: Percentage of a cohort of new smear-positive TB cases registered in 2004 that interrupted treatment for more than 2 consecutive months.

TB death rate: Percentage of a cohort of new smear-positive TB cases registered in a specified period that died during treatment, irrespective of the cause.

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)

Leading causes of morbidity: The frequently occurring causes of morbidity (10) among patients, of which the greatest number of cases have been reported during the year.

frequently occurring causes of mortality (10) under which n reported during a given year.

Maternal mortality rate: The number of maternal death while pregnant or within 42 days after termination of pregnancy from any cause related to pregnancy or its management per 100,000 populations

Results

Historical Background and Culture:

Halaba Kulito, the capital town of the Woreda, is believed to have been found towards the end of 20th century (around 1895) "Alaba Pilot Learning Site Diagnosis and Program Design" IPMS Information Resources Portal - Ethiopia (15 July 2005). Originally Alaba special Woreda was part of the adjacent Kembata Tembaro Zone, which was then known as the Kembata, Alaba and Tembaro Zone, but in 2002 it was separated to become a Special Woreda.

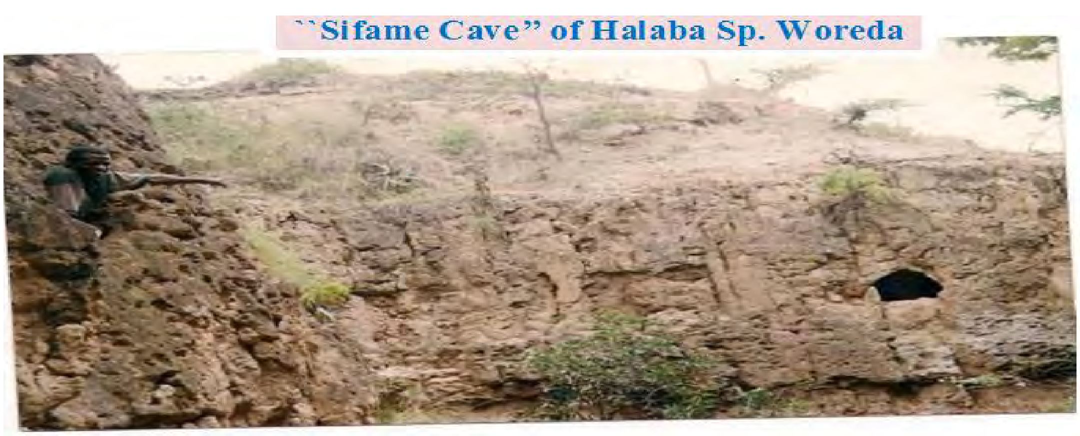
According to the 1994 national census reported, the five largest ethnic groups reported in Halaba Special Woreda were the namesake Halaba (53.07%), the Silte (33.01%), the Kambata (7.36%), the Amhara (2.13%) and the Hadiya (1.58%); all other ethnic groups made up 2.85% of the population. Halabigna is (the main language of the Woreda which falls between semi-Semitic and semi Cushitic linguistic group) spoken as a first language by 53.88%, 32.48% speak Siltigna, 5.77% Kambatigna, 5.13% Amharic, and 1.27% speak Hadiyigna; the remaining 1.57% spoke all other

...al language (work language) is Amharic. 93.84% of the ...2% practiced Ethiopian Orthodox Christianity, and 1.2% were Protestants (1994 Population and Housing Census of Ethiopia: Results for Southern Nations, Nationalities and Peoples' Region, Vol. 1, part 1)

In a village (rural Kebele) named Layignaw Arsho, which is around 12 km far from the Woreda capital Kulito town on the main road from Halaba to Hosanna, there is Hot Spring Water known as ``Arto Fil Wuha'' which most of the Woreda, neighboring Woredas and zones community use it as traditional holy water for many problems as relief and it is becoming as tourist attractive place also.

Figure 28: Arto Natural Hot Spring of Halaba Special Woreda, SNNPR, 2014

In addition to this, there are also places used as a tourist attractive place such as `` Sifame Cave''



a Special Woreda, SNNPR, 2014

religious celebration area where people throughout the country came and collectively celebrate every year.

Figure 30: Nurala Ahmed Mosque of Halaba Special Woreda, SNNPR, 2014

Geography and Climate

Halaba is one of the Special Woredas of the Southern Nations, Nationalities and Peoples Regional State (SNNPRS). The special Woreda's Capital is Alaba Kulito town, which is located at a distance of 315 kilometers south west of Addis Ababa, along the Addis – Arbaminch highway road and 89 kilometers far from the regional town, Hawassa.

Halaba Special Woreda is situated in the Great East African rift valley at a cross connection between 07^0 05' N (latitude) and 38^0 35' E (longitude). The Woreda is bounded by Silte zone (Sankura & Lanfuro Woredas) of SNNPR in the North, Hadiya Zone (East Badawacho Woreda) in the South, Kembata & Tembaro zone (Kedida Gamela & Damboya Woredas) and Hadiya Zone (Shashego Woreda) of SNNPR in the West, Oromia Region to the East (Adami Tulu Jido Kombolcha & Arsi Negele Woredas in the North East and Siraro & Shala Woredas in the South East).

The Woreda has topographic features of 70% plain area, mountain 27% and sloppy terrain 3% with an altitude (elevation) that ranges from 1554-2149 meters above sea level. Agro-ecologically, the Woreda is classified as temperate or locally called Woina-Dega. The mean annual temperature is

...al rainfall reaches 857 – 1085 mm. The area receives a ...e between March and April while the main rains are from July to September ("Alaba Pilot Learning Site Diagnosis and Program Design" IPMS Information Resources Portal - Ethiopia (15 July 2005)).

Administrative and Political Organization

Halaba Special Woreda is administratively organized into 84 Kebeles (the lowest administrative unit) from which 79 are rural and the remaining 5 (five) are Urban Kebeles of Kulito town i.e. one of the 22 reform town of SNNP Region. Currently, the Town Administrative Council governs the urban Kebeles whereas the rural Kebeles are administered by the Woreda administrative council. There are also 2 developing town (Guba and Besheno) in the Woreda.

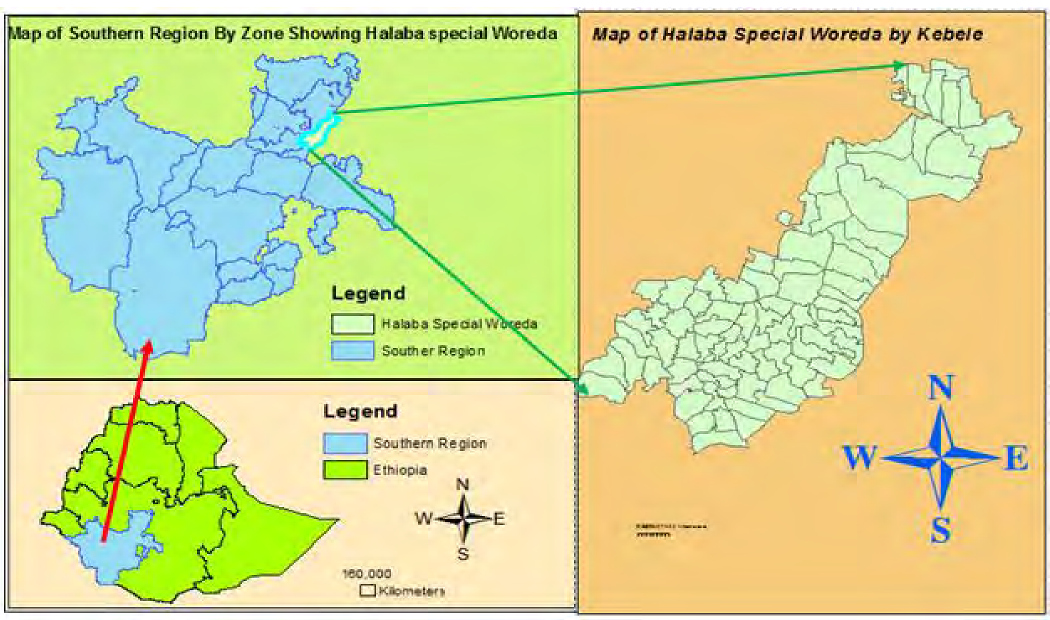


Figure 31: Administrative Map of Halaba Special Woreda, 2014

Demographic Information

Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), as of July 2012/2013 Halaba Special Woreda has a projected total population of 296,540, of whom 149,753 are men and 146,787 women in 60,518 households. Sex composition of the population is proportionally divided into 50.5% male and 49.5% female population. According to the census

...opulation is living in rural areas (CSA 2007) while the ... /ith an area of 994.66 Square Kilometers the average population density of the Woreda is 248.3 people per square Kilometers (Census 2007 Tables: Southern Peoples, Nations and Nationalities Region).

When we look at the proportion of mothers and children in the Woreda by age, Women in the reproductive age group (15-49 yrs.) constitute 69094 (23.3**%)** of the total population, children under one year account for 9667 (3.26**%)**, surviving infants 9104 (3.07%), under two years 15361 (5.18%) children, under three years 24643 (8.31%) children and under five years 46260 (15.6%) children, under fifteen years 141,954 (47.87%).

Facilities

The Woreda town, Kulito and the 2 developing town (Guba and Besheno), has 24 hr electric supply, mobile and cable based telephone services. Kulito town has also postal service and Bank (Commercial Bank of Ethiopia, Dashen and Buna Bank). Of the total 84 Kebeles of the Woreda, 75 (89.3%) have access to mobile telephone. Kulito, the Woreda's capital, is linked to the regional capital, by a first class road (Asphalt). All other feeder roads in the entire district are gravel and earth tracks which are accessible by motor vehicle and four wheels drives (during dry season only in earth track roads) as well.

Education

The district has a total of 104 schools of which governmental 31 first cycle and 61 second cycle primary schools, 2 secondary, 1 Preparatory and one technical and vocational education training (TVET) schools and private 4 first cycle and 5 second cycle primary schools. Total enrollment of the year was 62526 of which 44.5% were female and the remaining 55.5% were males. First and second cycle primary schools (grade1-8) have a total student population of 56524; with a total of 25648 (45.4%) females. There are a total of 3893 students in grade 9-10 of which 1245 (32%) females and 509 students in the preparatory (grade 11-12) school from which 178 (35%) are female. 39 (37.5%) schools have latrine with separate male and female; 65 (62.5%) has common

ommon latrines are not constructed in a standard type of s which is difficult for cleaning and privacy while using it.

Productivity and income

Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), about 88% of the Woreda's population is living in rural areas (CSA 2007) (Census 2007 Tables: Southern Peoples, Nations and Nationalities Region). The economy is largely based on subsistence agriculture in the form of dry land farming and raising livestock. The main cultivated cash crops are Pepper the prominent cash crop of the Woreda (15.7%), Maize (28.5%), Teff (10.9%), Sorghum (6.8%), Dagussa (7.4%), Wheat & Barley (7.7%), haricot beans (19.4%), Potato (2.8%) & others (0.8%). The total land area of Woreda is 64,116.25 ha of which 48,337 ha (75%) are considered suitable for agriculture. Currently, there are two irrigation sites developed. These irrigation schemes, Bedene Alemtena and Lebeko irrigation schemes are using Bilate and Ebala rivers, respectively. ("Alaba Pilot Learning Site Diagnosis and Program Design" IPMS Information Resources Portal - Ethiopia (15 July 2005)).The common staple foods of the Woreda community include Maize, Teff & Sorghum. There are also about 67 Farmers Training Centers in the Woreda which provide trainings on new and updated agricultural mechanisms for better production. Total crop production during the year (all in Belg, Meher and Irrigation production) was 57.5 Quintal per Hectare (Total GDP).

District Health System

Organogram of District Health Office

According to the new Business process reengineering (BPR) concept structure of the organization the Woreda has 5 main core process and 3 support process each having its own coordinator d of the main and deputy head of the Woreda office and a its own process coordinator with a total sum of 11 (8 filled and 3 vacant post) officers and 3 support process with a total sum of 10 officers as shown on the graph below. About 90 % of work position in the Woreda health office is occupied. The only vacant work position in the Woreda health office is PHEM officer and Health and Health Related Supplies Regulatory officer positions yet.

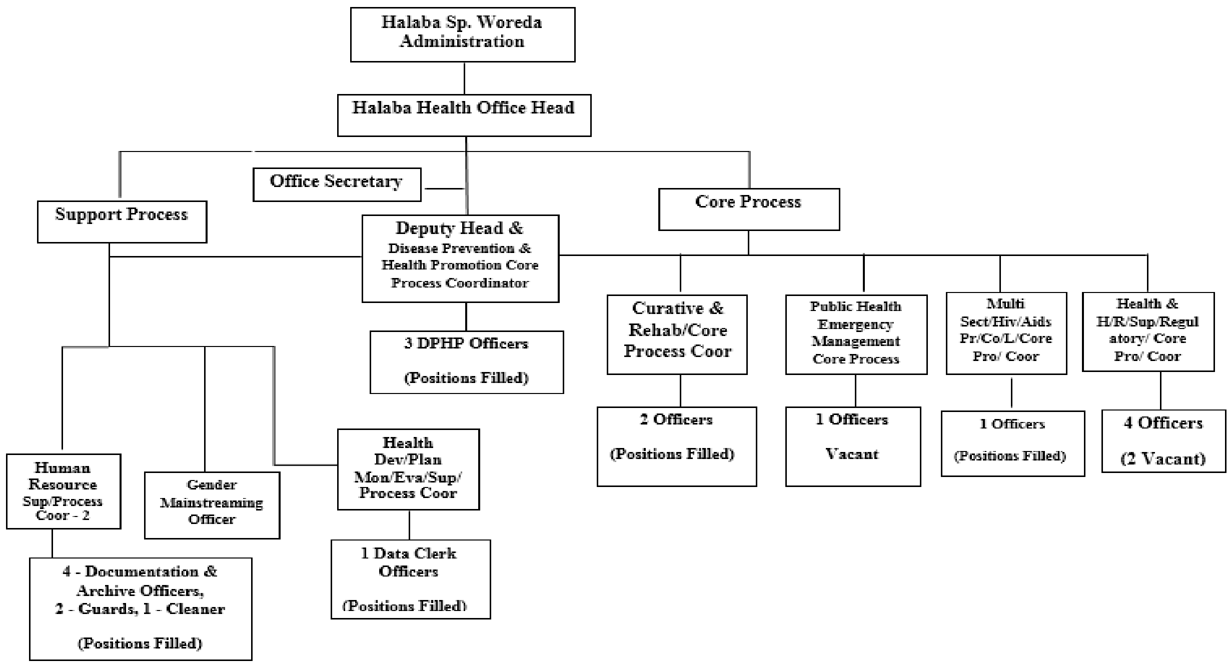
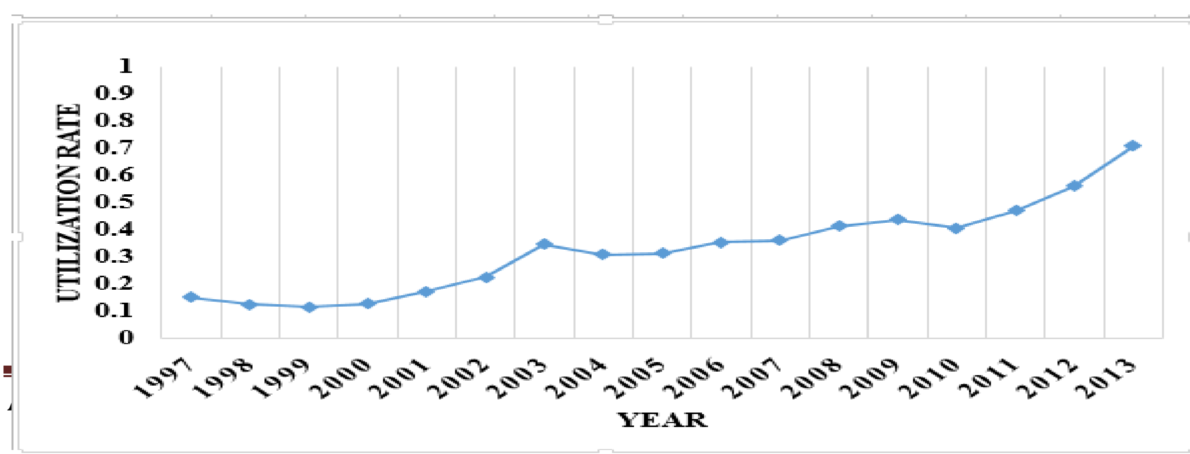


Figure 32: Organizational Structure of Halaba Sp. Woreda Health Office, Kulito, 2012/2013

Health Services Institutions

The districts potential health service coverage is estimated to be 75.9% based on physical health facility accessibility i.e. one health center with 5 satellite health post could serve for 25 000 people and health service utilization rate of the year was 0.71.



ation Rate since 1997; Halaba Sp. Woreda

ion in the Woreda, there are two types of health facilities by their ownership status. They are governmental and privately owned but there is no NGO owned HF in the Woreda.

Governmental health facilities as shown in the Table 13 below there are a total of 84 functional health facilities and 1 hospital is under construction (for detail refer to Table 13**).**

Table 13: Types of Governmental Health Facilities in Halaba Sp. Woreda, 2012/2013

Health Facilities	Number
Hospital Functional	1
Hospital Under Construction	1
Health Centre	10
Health Posts	73

Two health centers found in Kulito town and Guba sub town are providing inpatient/admission services. In addition to the government health facilities, those privately owned ones are playing their major role in serving the Woreda community. These are totaled to 32 facilities different types (clinic, pharmacies and diagnostic laboratory).

Table 14: Types of Private Health Facilities in Halaba Sp. Woreda, 2013

Health Facilities	Number
Private Clinics	
- Middle	**2**
- Lower	**6**
Private Pharmacy	
- Pharmacies	**1**
- Drug stores	**9**
Rural drug vendors	**7**
Private Laboratory	
Lower Diagnostic Lab	**7**

s to population and the targets expected for the period ommunity level but for HC and Hospital not yet met i.e. there is still gap to be filled(See Table 15 below).

Table 15: Health Facility to Population Ratio, 2012/2013, Halaba

Health Facilities	Number of Health Facilities	HF to Population Ratio	Standard
District Hospital	**1**	**1:296,540**	**1:100,000**
Health Center	**10**	**1:29,654**	**1:25,000**
Health Post	**73**	**1:4,062**	**1:5,000**

Vital Statistics and Health Indicators

Since Vital statistics like total death, total births, under one, under three, under five deaths and other data are not collected and difficult to collect & record in the Woreda regularly and therefore the target health indicators and vital statistics report of CSA 2007 for SNNP region is assumed to be similar and taken from that estimates and projection.

Table 16: Distribution of population groups and vital statistics, Halaba Sp. Woreda, 2012/2013

Ser. No.	Parameter	Total in		Remark
		Number	(%)	
1	Total population	296540		
2	Male	149753	50.5	
3	Female	146787	49.5	
4	Urban	35595	12	
5	Rural	260945	88	
6	Under 1 years old	9667	3.26	

		Total in		Remark
		46260	15.6	
		141954	47.87	
9	Female 15-49 years old	69094	23.3	
10	Pregnancy	10675	3.6	
11	Live birth	9104	3.07	
12	Non pregnant women	58418	19.7	
13	Average house hold size	60518	4.9	
14	IMR/1000*	59		* Source: Ethiopia Demographic and Health Survey(2011 EDHS)
15	Under 5 MR/1000*	88		
16	CBR/1000/year*	34.5		
17	CDR/1000/year*	31		

Vaccination Coverage

During 2012/2013, 9104 surviving infants were target population for immunization and 100% (9104) surviving infants were planned to cover in penta-3, measles, and fully immunization and the achievement were 94% (8566/9104), 92% (8347/9104), 90% (8215/9104) respectively. PCV 1 and PCV 3 were 97% (8835/9104) and 94% (8548/9104) respectively.

Table 17: Vaccination coverage by antigen type, Halaba Sp. Woreda, 2012/2013

Activity	Eligible	Annual			Coverage
		plan	performance	%	
BCG	**9667**	**9667**	**8799**	**91**	**91**
Penta 1	**9104**	**9104**	**8863**	**97**	**97**
Penta 3	**9104**	**9104**	**8566**	**94**	**94**
Measles	**9104**	**9104**	**8347**	**92**	**92**
Fully	**9104**	**9104**	**8215**	**90**	**90**
PCV 1	**9104**	**9104**	**8835**	**97**	**97**
PCV 3	**9104**	**9104**	**8548**	**94**	**94**

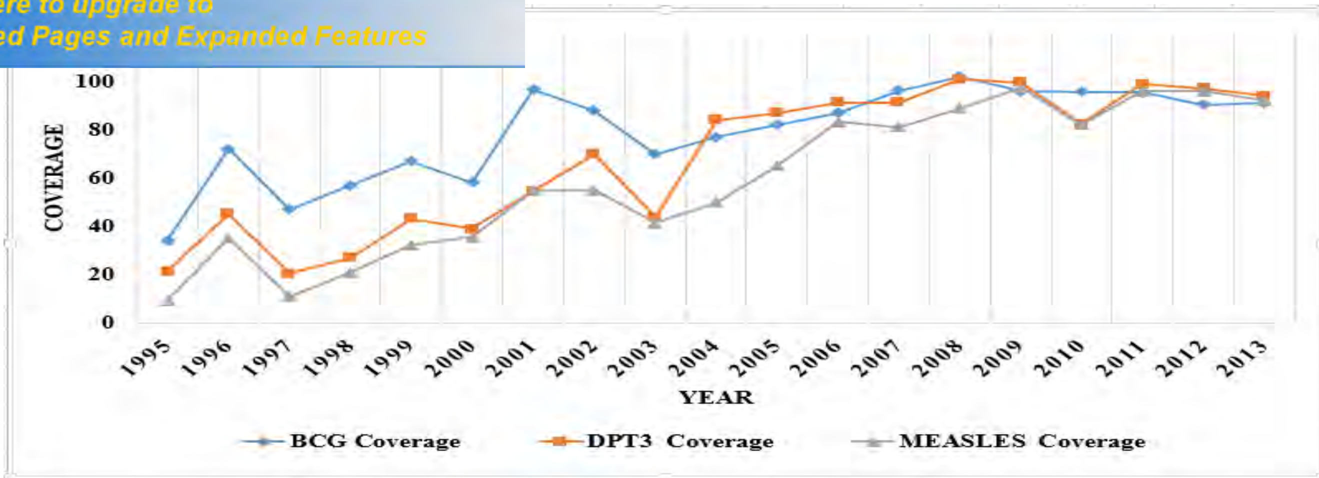


Figure 34: Trends of Immunization Coverage since 1995; Halaba Sp. Woreda

Maternal Health Service Coverage

During 2012/2013, based on 1-4 times visit of pregnant women health facility for ANC service, the achievements were >100% (11929/10675) and 42% (4487/10675) ANC first visit and 4th visits respectively.

Table 18: Maternal health service coverage, Halaba Sp. Woreda, 2012/2013

Activity	Eligible	Annual			Coverage
		plan	performance	%	
Births Attended by Skilled Health Personnel	**9724**	**4381**	**2028**	**46**	**21**
Births Attended by HEW	**9724**	**5343**	**1619**	**30**	**17**
Institutional Delivery	**9724**	**9724**	**3647**	**38**	**38**
ANC 1st Visit	**10675**	**10675**	**11929**	**112**	**112**
ANC 4th Visit	**7908**	**7908**	**4487**	**57**	**57**
FP (Contraceptive Acceptance Rate)	**69164**	**43,229**	**18,836**	**44**	**27**

s 38% (3647/9724) from which births attended by skilled hs attended by HEWs 17% , new and repeat family planning acceptance was 44% (18836/43229).

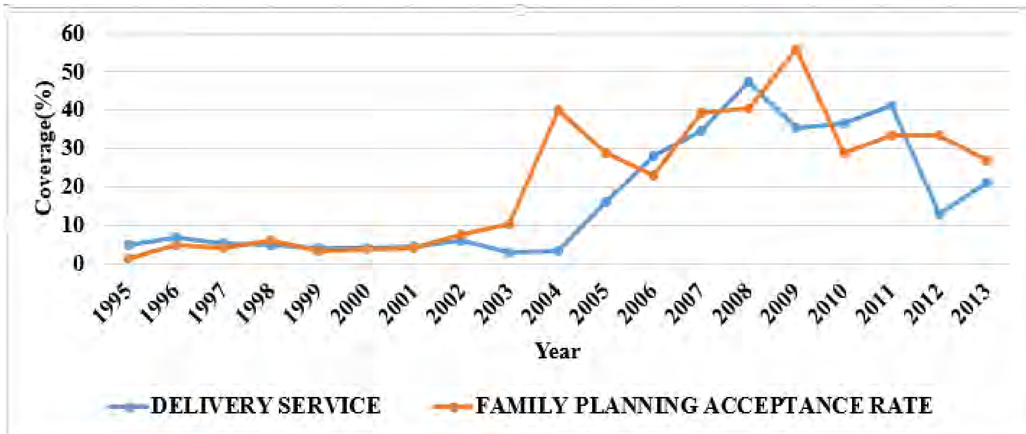


Figure 35: Trends of Family Planning Acceptance Rate & Delivery Service Coverage since 1995; Halaba Sp. Woreda

Water, Hygiene and Sanitation

Safe drinking water supply coverage of the Woreda during the year 2012/2013 both in rural and urban population were 43% and 90% respectively. The Woreda's water coverage progress/trend in the last three years as it is shown below (Table8) the progress particularly in the rural community is very sluggish. Due to this problem the community is obliged to use unsafe water sources like pond and river.

With regard to latrine utilization, about 78% of the community in the Woreda are using latrine and about 31 Kebeles (39% of total Kebeles) have celebrated open defecation free.

Table 19: Drinking water coverage in rural and urban community by year, Halaba, 2012/2013

	2011	2012	2013

	2011	2012	2013
[illegible]	279,333	287,802	296,540
Urban	32,409	33,965	35,595
Rural	246,924	253,837	260,945
Urban Water Beneficiary	22,988	24,091	32,036
Rural Water Beneficiary	99,313	102,093	112,206
Total Water Beneficiary	122,301	126,185	144,242
Total Water Coverage	43.78 %	43.84 %	48.6 %
Urban Water Coverage	70.93 %	70.93 %	90 %
Rural Water Coverage	40.22 %	40.22 %	43 %

Drinking Water Sources

The only safe water supply source option available in the Woreda is ground (borehole) water to be extracted by machine and pump which incurs very high cost of more than 2.5 million birr. The existing water sources in the Woreda are a total of about 39 boreholes of which only 30 were functional during the year and the remaining 9 were non-functional sources. The ground water table depth of the existing bore holes range 97- 362 meters. Due to this high depth of bore holes and high temperature of the area most of the pumps become frequently stops functioning and stays very long time to be maintained as a result of very high cost of maintenance.

Since the Woreda is located in the Great Rift Valley, the ground water source in most places is with high mineral contents of mainly fluoride. The other water source options available in the Woreda are those unsafe supply sources like river water (2 in number - Blatie and Ebala River) and unprotected pond water in which most of the Woreda rural community is utilizing which exposes the consumers for water borne diseases.

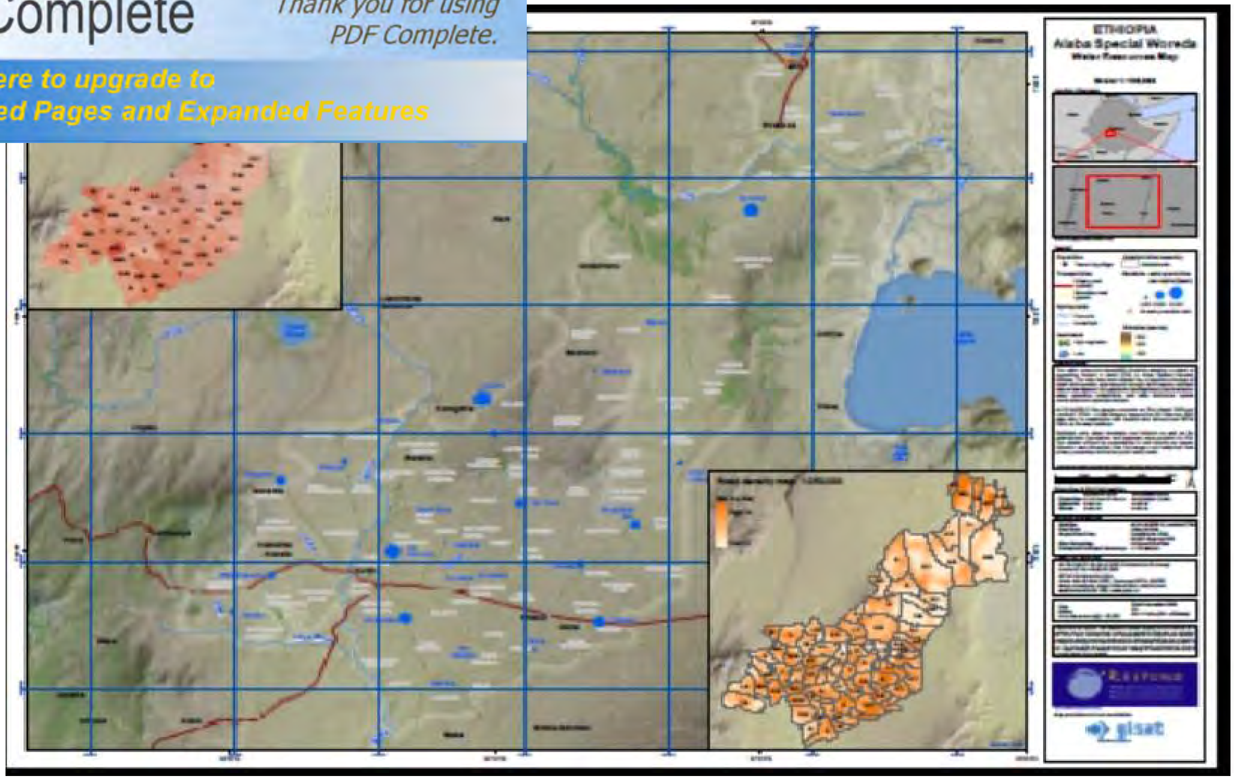


Figure 36: Map Water Resource, Halaba, 2012/2013

Health Education

The health facility and house to house Health Education is given by Health Care Providers at health center and hospital level and the HEW at community and schools level for about 224,430 people including repeat. The topics covered during the year were HIV/AIDS, Tuberculosis, Malaria, diarrheal diseases, safe water, hygiene and sanitation, Family planning, nutrition, harmful traditional practice, essential drug use.

Leading Causes of Outpatient Visit

Malaria is the first in the top public health problems of the Halaba Special Woreda every year for decades and the top leading causes of outpatient visits. During 2012/2013, A total of 65,598 (clinically and Confirmed) patients were treated for malaria in which 72.1% (47321) of them were positive for plasmodium parasite [(P. falciparum 42.1%), (P. vivax 57.9%) and 18277 (27.9%)] were clinically treated (See at the Table below for the remaining 9 top cases).

atient visit Halaba Sp. Woreda, 2012/2013

		Total	Male	Female	%	Cum. Frq(%)
1	Malaria(Clinical & Confirmed)	65598	32627	32971	54.5	54.5
2	Pneumonia	11533	6157	5376	9.6	64.1
3	Acute febrile illness (AFI)	10982	5291	5691	9.1	73.2
4	Diarrhea	8806	4802	4004	7.3	80.5
5	Acute Upper Respiratory Infections	6832	3270	3562	5.7	86.2
6	Helmenthiasis	4907	2561	2346	4.1	90.2
7	Urinary Tract Infection	3,198	1,410	1,788	2.7	92.9
8	Dyspepsia	3150	995	2155	2.6	95.5
9	Trauma (injury, fracture etc.)	2,631	1,664	967	2.2	97.7
10	Typhoid fever	1,497	624	873	1.2	99.0
	All Other Cases	1,263	1,595	931	1.0	100.0
	Total	120,397	60,996	60,664	100	

Endemic Diseases

Malaria:

As it is well known, Halaba is one of the malaria endemic/hot spot/ areas in the country, known as high malaria hotspot area. Malaria is prevalent throughout the year in all Kebeles of the Woreda.

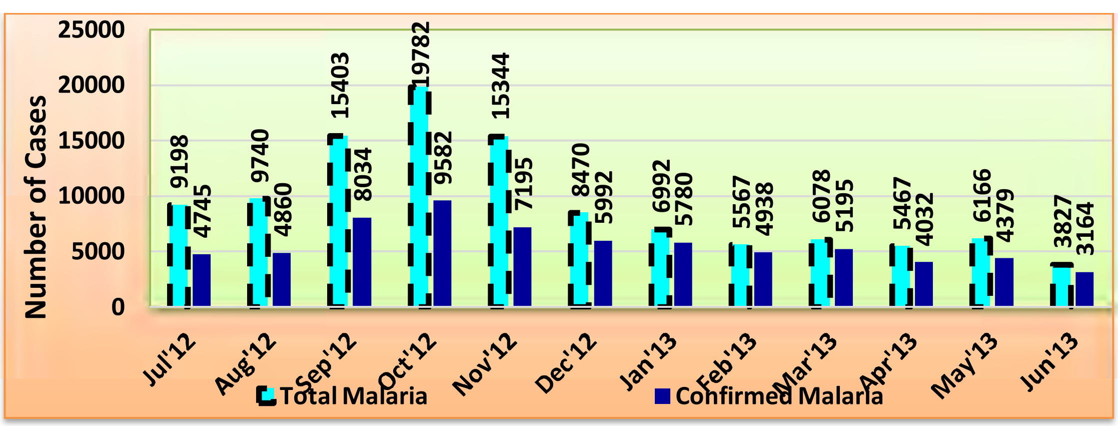


Figure 37: Total and Confirmed Malaria by Month during 2012/2013, Halaba

...aria cases were observed in October with an attack rate of ...nd 32 per 1000 people from confirmed malaria and the lowest was in Jun 2013 with 13 cases per 1000 from total malaria and 11 cases per 1000 people from confirmed malaria.

Table 21: Malaria Attack Rate per 1000 people by month during 2012/2013, Halaba

Attack Rate	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
From Total Malaria	**31.0**	**33.0**	**52.0**	**68.0**	**52.0**	**29.0**	**24.0**	**19.0**	**21.0**	**18.0**	**21.0**	**13.0**
Confirmed Malaria	**16.0**	**16.0**	**27.0**	**32.0**	**24.0**	**20.0**	**20.0**	**17.0**	**18.0**	**14.0**	**15.0**	**11.0**

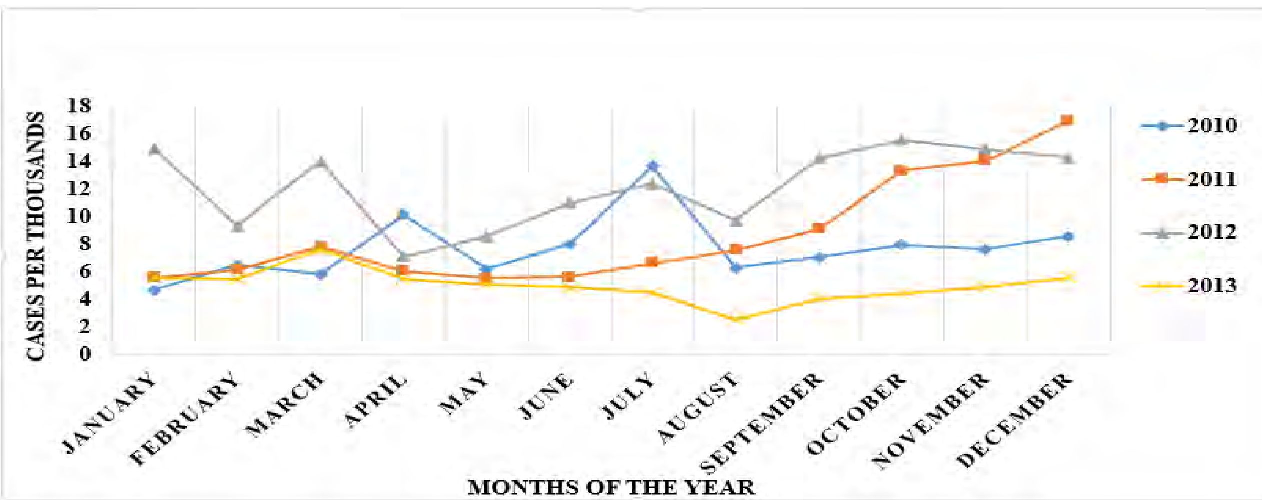


Figure 38: Trends of Total Confirmed and clinical Malaria cases by Month & Year, Halaba Sp. Woreda; 2010-2013

Number of total malaria cases decreased from an average 73,780 cases during 2011-2012 to 65,598 cases in 2013 with 11.1% decline and from an average of 20,839 cases of < 5 year children in the same time period has decreased to 18738 cases (10.1% decline).

Average Trends of IRS coverage since 2008 was 56 Kebeles with a range of with a range of 31 (2008) to 76 (2009) Kebeles. ITNs distribution also increased and currently about 80 % of the households are covered however utilization coverage is not well studied and not known. Since

da for IRS were DDT, Malathion, Deltametrine, Propoxere
n and Deltametrine have been stopped to be sprayed due
to resistance.

HIV/AIDS

A total of 14827 people were screened and counseled of which 7365(22.5% from plan) has got voluntary counseling & testing service and from these 28(0.38%) were positive for HIV. With regard to PIHCT service, from 59368 health facility visitors, about 52637(88.7%) were provided the service and from these tested 73 (0.13%) were positive. There were also 598 clients (25%of the plan) were tested for STI.

Tuberculosis and Leprosy

There were 352 all forms of TB (Pulmonary TB positive case 201 (Male 106 and Female 95), Pulmonary Negative cases 85 and Extra Pulmonary TB cases of 66) and 14 leprosy (14 Multi bacillary & 0 Paucibacillary) cases were registered in the Woreda. There was also 3 treatment Failure and 1 Confirmed MDR TB cases during the year. Smear positive pulmonary TB detection rate and treatment success rate of the Woreda during 2013 were 68% (201/297) and 91% respectively. Cured, treatment Completed, Died, Failure, Transferred out Pulmonary Positive TB Outcomes were 83% (152/159), 13 (8%), 13 (8%), 3 (1.8%), and 1 (0.6%) respectively.

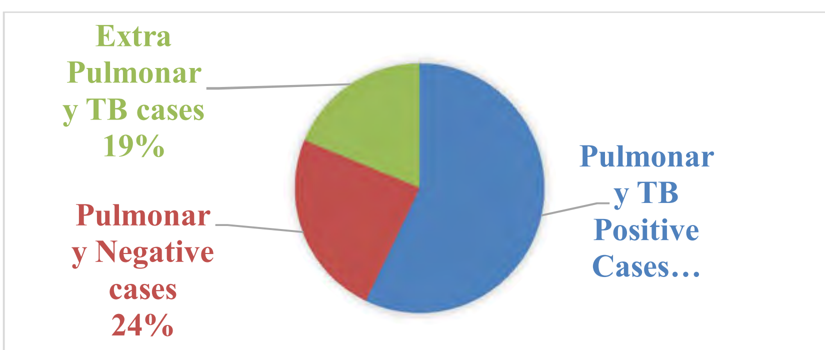


Figure 39: All forms of TB cases during 2012/2013, Halaba

There was Suspected Meningococcal Meningitis Outbreak in the Woreda during the year.

Description of the Outbreak

- No. of affected Kebeles: 29 out of 84
- No. of suspected Cases: 48 & 36 of them are from Halaba

Death: 1 in Halaba Sp. Woreda(Dinokosa) & 4 out of Halaba Sp. Woreda (1- Siraro 01 Kebele of Oromia; 2 First Kerenso Kebele of East Badawacho Woreda in Hadiya zone and 1 Regdina Kebele of Sankura Woreda Silte Zone)

- Index case: from Guba Sheraro Kebele for Halaba Sp. Woreda Cases but the first case was from Hadiya Zone(Bonosha and Jemaya Kebeles)
- Index case notified by: Focal HW from Hospital and came to the attention of the Halaba District Hospital and Woreda PHEM Coordinator
- Case Characteristics: Age group most affected: 5 to 35
- Suspected Outbreak start date : 12 /01/ 2013(10/05/05 EFY)
- CFR = 2.8%(For Halaba Case)
- Attack rate = <1%

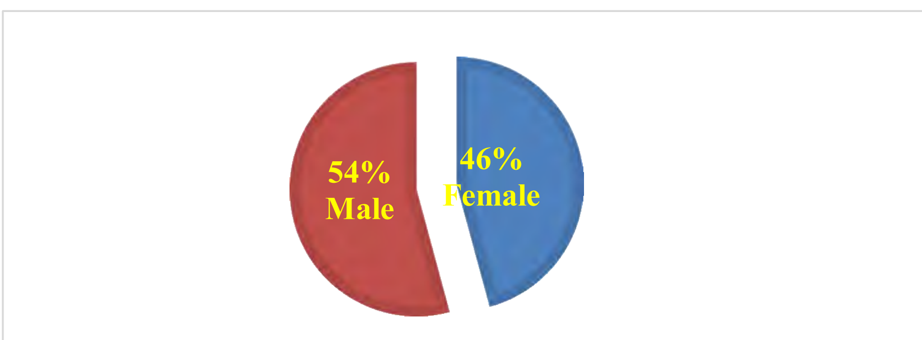


Figure 40: Reported Suspected Meningitis Case by Sex; Halaba Special Woreda; Jan 10th - April 19/2013

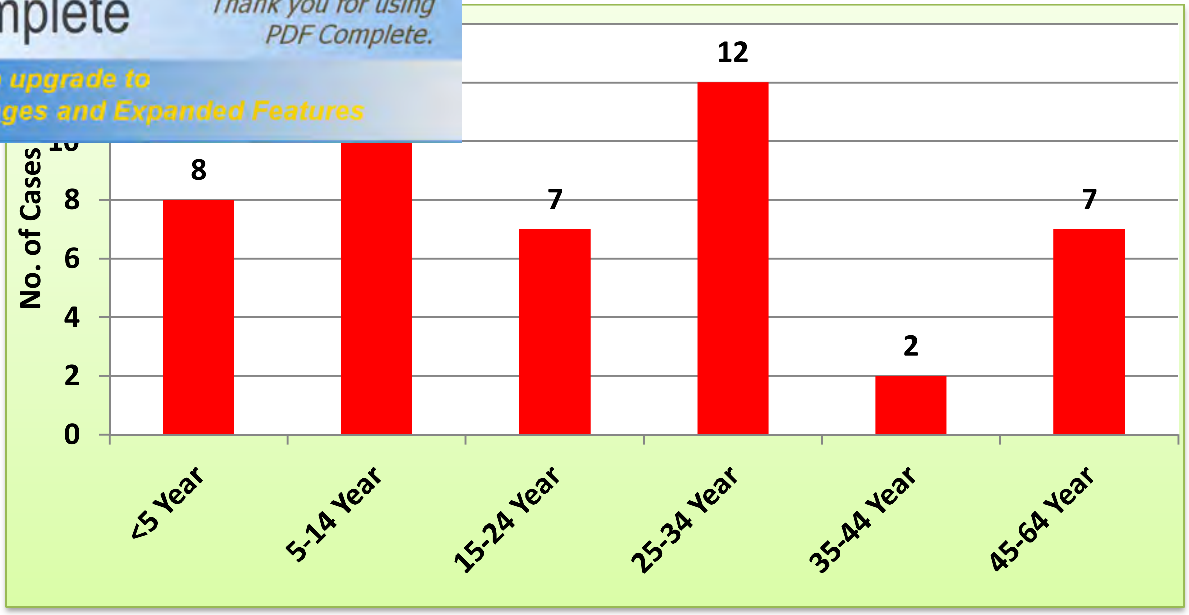


Figure 41: Reported Suspected Meningitis Case by Age Group; Halaba Special Woreda; Jan. 10th - April 19/2013

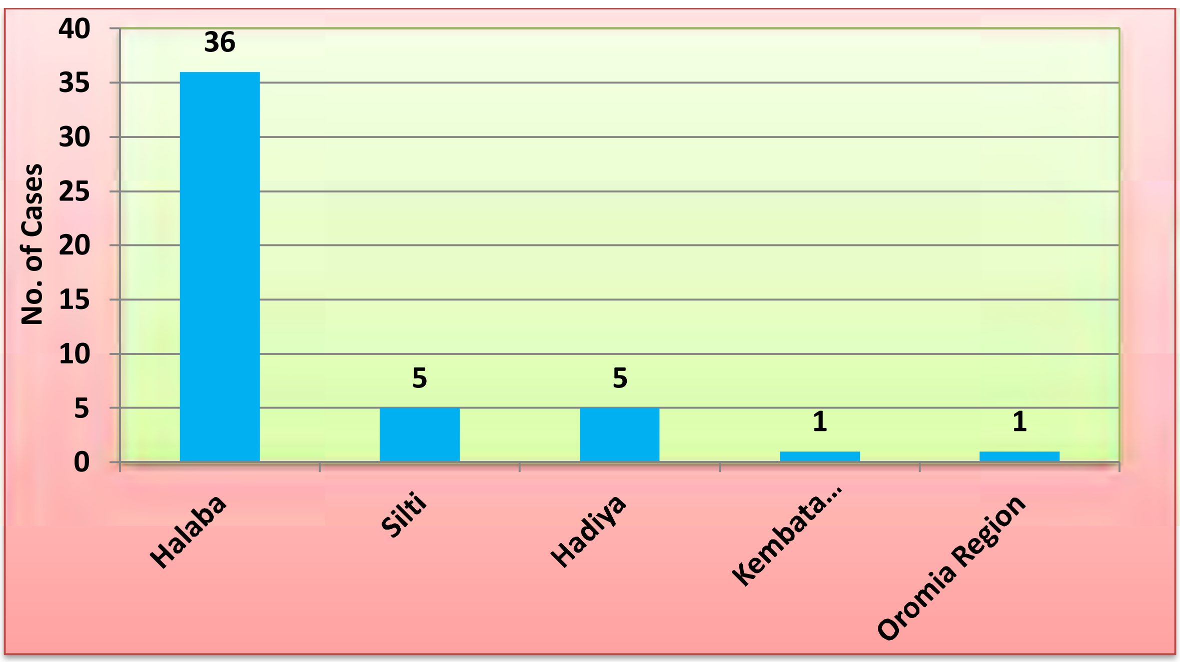


Figure 42: Reported Suspected Meningitis Case by Place; Halaba Special Woreda; Jan 10th - April 19/2013

- Detailed on-site investigation of index cases notified by Focal HW from Halaba District Hospital
- LP done and CSF collection from ten suspected cases(out of which nine cases are from Halaba) through Halaba Hospital and Halaba Sp. Woreda Health office; of which 10 results is Known 8 result negative and two result positive for Nesseria Meningitis(Sero Type - NM.Y/W135) from 1st Ashoka and Holegeba Kuke kebeles
- Based on the available data the situation indicate there is a cluster of sporadic cases but it doesn't surpass the alert threshold
- We are trying to monitor the alert threshold by cluster as well but still doesn't surpass the alert threshold
- Daily Communicate with the Region and Federal level about the situation

Surveillance

- **Building Capacity of Health Workers**
    - Staff orientation on EMM at all level (HF's health workers, HEWs), and video show on the techniques of LP procedure, and sample collection and transportation for Halaba District Hospital Workers have been undertaken and soft copy also provided
    - SCD on EMM and Mgt protocol distributed to all HF's
    - Prepared Micro Plan for training of staffs , advocacy, social mobilization and Vaccination
    - Revitalizing a rapid response team at Woreda and HF's level
    - Strengthened, Active case search and enhancing Health facility-based case detection by orienting health workers at facility levels.
    - Establishing a daily line listing of cases from all health facilities to Woreda:
    - Daily reporting of summary of cases to the RHB through the Halaba Special Woreda Health office from line lists

- Various community structures were used to create awareness of the community (Kebele Council and cabinet members both at Woreda Administration & Town Administration level)
- Notified to local administration neighboring Woredas and respective ZHDs on the magnitude of cases
- Provide Key Messages on Meningitis translated in Amharic for all levels(for public, Gov't HWs/HEWs and Private HF's)

Treatment and care of cases

- Prompt, appropriate treatment with antibiotics and care provided to all investigated cases
- Drug for treatment Purchased from the PHEM budget with 7,000 Eth. Birr and 100 vial from the region supported supplied to Halaba District Hospital

Vaccination:

- Vaccination Started from 24/07/05 E.C and about 74 Kebeles being covered
- 179, 857 Peoples Vaccinated During the campaign
- Monitoring of Interventions: Daily meeting at Woreda level for reviewing trends of suspected cases, interventions & their effects and challenges on performances with discussions on possible solutions

Immediately Reportable Diseases

During the year, of all immediately reportable diseases, three suspected AFP cases, 6 suspected measles cases and 3 NNT were reported and the expected number cases to be reported from the Woreda 100% target achieved. Stool and serum samples for both AFP & measles cases were

NRI for confirmation. Although the result feedback is not all negative.

Nutrition, Food Shortage and Any Other Disasters

Halaba is known in its drought frequent attacks. Weekly and monthly reports from health centers have shown that malnutrition cases during the dry period increases. Even though number of OTP cases from 2011/2012 decreases by 470 in 2012/2013, number of cases are still very high (1794 cases in 2012/2013). 389 Severe malnourished children were screened and treated during the year. The trend of SAM cases as compared to 2011/2012 has increased by 37 cases.

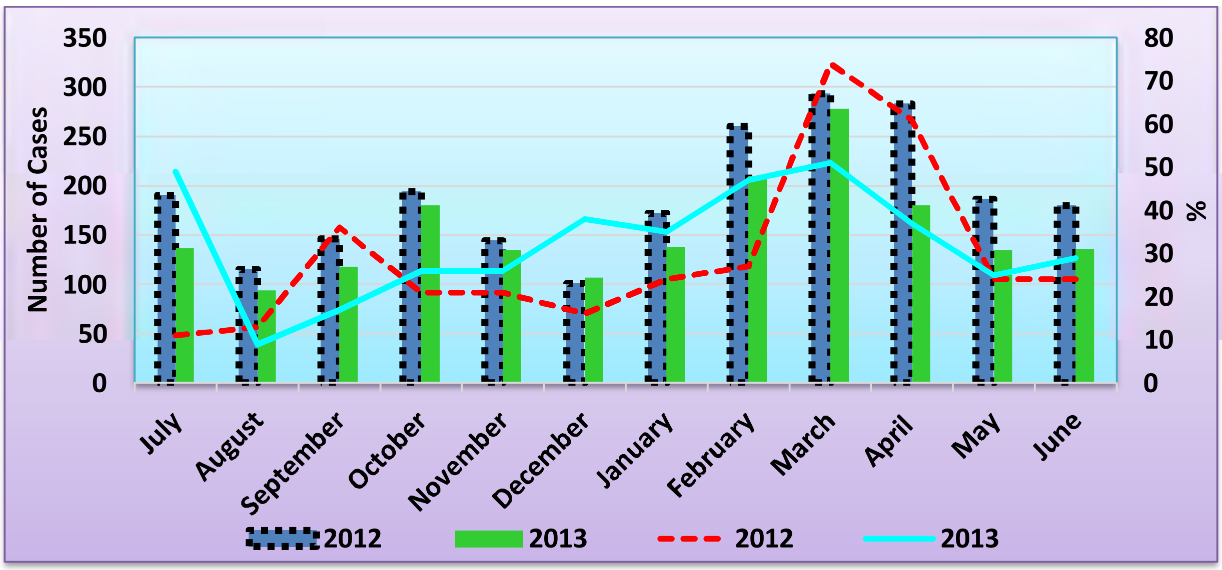


Figure 43: New admission cases of OTP & SC in 2011/2012 & 2012/2013, Halaba

Health Budget Allocation

The total budget for the Woreda health office including health facilities was 25,762,872.8 Eth. Birr in 2013. As shown in figure 44 below, the budget allocation trend shows increasing from 11.08% to 19.88% during 2010-2012/2013 both from government budget and more than 1.6 million Eth. Birr from donor's budget.

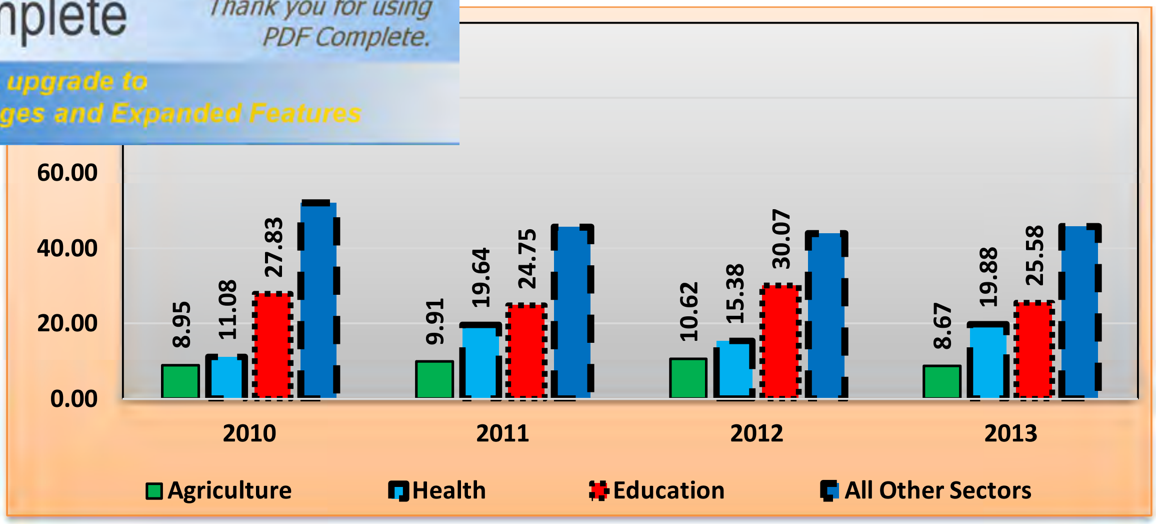


Figure 44: Trends of Proportion of Budget Distribution for Agriculture, Health & Education Sectors in Halaba Sp. Woreda; Since 2009/2010

Human resource; health workers and supportive staffs

The Woreda has a total of 403 (Male 146 & Female 257) health workers and 164 (Male 88 & Female 76) supportive workers (Lists of Professional Category on Table 22 Below).

Table 22: Lists of health workers by profession category & supportive workers, 2012/2013, Halaba

Ser. No.	Professional Category	Number		
		Male	Female	Total
1	Physicians	11	0	11
2	Specialist (Surgeon)	1	0	1
3	Health officer	23	9	32
4	Nurse(Clinical & Public)	62	44	106
5	Midwife	2	26	28
6	Medical Laboratory Technologist	1	3	4
7	Medical Laboratory Technician	22	13	35
8	Pharmacist	1	1	2

	ory	Number		
		Male	Female	Total
9	Pharmacy Technician	10	7	17
10	Radiographer	2	1	3
11	Environmental Health officer	8	0	8
12	Environmental Health Technician	1	3	4
13	Ophthalmic Nurse	1	1	2
14	Health Extension worker	0	149	149
15	Health Assistant	1	0	1
16	Supportive Workers	88	76	164
	Total	234	333	567

As compared to standards of health professionals to population distribution ratio, physicians and midwife nurse ratio yet not met the standard

Table 23: Health Professional to Population Ratio in Halaba Sp. Woreda during 2012/2013

Professional Category	Total Number	Health Workers to Population ratio	Standard
Physician (all types)	11	1:26,958	1:10,000
Health Officer	32	1:9,267	1:10,000
Nurses (all types)	106	1: 2,798	1:5,000
Mid Wives	28	1:10,590	1:5,000
Health Extension	149	1:1,990	1:2,500 OR (2: 1 Kebele)

Essential Drugs and Other Supplies

During the year a total of 150,000 Eth. Birr was allocated by office for drug and medical supplies purchasing. In addition to this budget, health facilities by themselves purchase drug and medical supplies using internal revenue.

he district was malaria which accounts 54.5 % of the total causes of visits. Every year, malaria is the leading causes of outpatient visit despite the high intervention methods being conducted in the Woreda. The incidence of malaria in the Woreda was 374 per 1000 population per year based on only the outpatient visit records are still the highest. However as compared to previous years burden of cases has declined. Probably the reason is, as the number of health facilities being increasing and quality of health service relatively improved than previous years; early diagnosis and treatment has increased and/or death report might be missed or not recorded. IRS and ITNs coverage has also increased though this coverage increased number of cases is still leading which needs further investigation particularly on the quality of IRS implementation and ITNs utilization. On the other hand, there was no malaria death report.

Diarrhea, Helmenthiasis and typhoid diseases are among the 10 top diseases observed in the Woreda. Regarding safe water supply and sanitation, safe water supply coverage in the district is very low which is only 48.6% from which only 43% of rural Kebeles were accessed with potable water less than the national coverage of 50.8% (Central Statistics Agency (CSA). Addis Ababa, Ethiopia. Ethiopian Demography and Health Survey. 2011), quality control of the existing water supplies not regularly monitored and latrine utilization coverage is only 78% of which 39% of Kebeles were ODF. In the absence of water, low latrine utilization coverage and lack of hygienic behavior the risk of water borne and related diseases could be very high as it is reflected among the top leading causes of diseases seen in the district which needs very urgent solutions.

It is unquestionable that education is a corner stone countries` development. A country has nothing to do without educated human resource; this is why it is one of MDGs that are supposed to be achieved at the end of 2015. It is intended to achieve universal primary access coverage and also target is to alleviate gender disparity in attending schools. As a matter of fact the largest numbers of out of school children all over in the world are from Sub Saharan Africa, where half of out of school children are found. The region is with the smallest net adjusted enrollment rate which is about 77% in 2011(MDG report 2013). In Ethiopia tremendous progress has been observed in increasing access and enrollment since two decades ago. The nation has a Strategic

...ation Plan (GTP) so that the country became one of the ... he end of 2025. The nation has set targets in all sectors to bring what has been planned. The targets of Education sector Development program IV (2003 - 2007 E.C)/ESDP mainly focus on admission, Transition and internal efficiency. The country has targeted net intake rate in grade one to 97% and the Dropout rate and repetition rate for grades 1-10 to be 1% each.

The intimate linkage between health and education has been firmly established in a number of studies, which taken collectively, offer some ideas about how education and health could potentially reinforce each other towards the rapid socio-economic development of the country. Epidemiological and health service research in Ethiopia has shown that illiteracy is usually associated with high health risks and low health seeking behavior.

In 2012/13 E.C In spite of the fact that the Woreda had planned to enroll about 70,000 students there were about 62,526 students registered of whom 27824 (44.5%) were females and the rest were males and 60926 students completed with a dropout rate of 2.6% (1600) showing higher than the national target by 1.6%. The Woreda has devised to reduce the dropout rate by discussing with community leaders and parents. Water and sanitation facilities in schools where pupils spend more time during schooldays are highly vital to control the critical problems particularly communicable diseases. According to annual abstract of Minster of education 2007/2008 the latrine coverage in primary and secondary schools is estimated to be 90% and 100% respectively. Likewise in the Woreda all of the schools, 104 (100%) have pit latrines in which most (62.5%) are constructed in local materials difficult for cleaning and lacking privacy while using. Moreover almost all schools lack water supply facilities.

Due to the absence of water at their school the students take water to the schools for their daily consumption or they do not take. Hand hygiene is the most important measure of prevention and control of infection and can reduce the burden of diseases. However due to lack of water in the school, children cannot wash their hands exposing/risking them for fecal-oral diseases.

Antenatal care coverage is an indicator of access and use of health care during pregnancy. Antenatal care is more beneficial in preventing adverse pregnancy outcomes when received early n delivery. Early detection of problems in pregnancy leads gh-risk categories or with complications; this is particularly the ground fact in Ethiopia, where three-quarters of the population live in rural areas and where physical barriers pose a challenge to providing health care service. The fourth antenatal care visit is an indicator of quality and use of health care during pregnancy. The antenatal period presents opportunities for reaching pregnant women with interventions that may be vital to their health and wellbeing and to their infants. Receiving four focused antenatal care visits increases the likelihood of receiving effective maternal health interventions during antenatal visits. This is an MDG indicator.

In Halaba Woreda the proportion of pregnant women who had at least one ANC visit during the study period was >100% which indicates more than target population of the district may be due to repeated registration and clients served out side of the catchment population of the Woreda. However, contrary to high coverage of ANC first visit 4th visit ANC coverage was very low (57%) which is reflected in low institutional delivery of 38% leading the rest of pregnant women attending home delivery which could be risk factors for maternal and infant mortality. Combination of contraceptive use, improved transport, education and birth in a health facility can reduce 75% of maternal deaths (Elison R, Isabella P.Toilet for Health. London school of hygine and tropical medicine. 2012). A study conducted in Ethiopia showed that majority of delivery (78%) attended at home assisted by traditional birth attendants. The study revealed that the reasons for not preferring health institution delivery were traditional birth attendants are seen as culturally acceptable and competent health worker, women's reported poor quality of care and previous negative experience with health facilities in addition to having low awareness on the advantage of skilled attendance at delivery, having little role for making decision and also economic constraints during referral were reported as main reasons (Kumie A, Ali A. an Overview of enviromental health status in Ethiopia with particular emphasis toits organization, drinking water and sanitation: A literature survey. Ethiop. J. Health Dev. 2005; 19(2): 89-103). Another case control study conducted in Bahir Dar, Ethiopia showed that the likelihood of delivering at home was greater among mothers with inadequate knowledge of pregnancy related services, those who started attending ANC after 24 weeks of gestation, mothers having no formal education and rural women prefer home birth in Ethiopia. BMC pregnancy and nttral.com/471-2393/13/5).

The district has recorded sustainable immunization coverage during the current and previous year targeted to children less than one year old to prevent them from vaccine preventable diseases

Family planning reduces mortality and morbidity due to pregnancy and child birth. Family planning saves lives of women and children as well as improves the quality of life for all. It is one of the best investments that can be made to ensure the health and well-being of women, children, and communities. Family planning has great role in significant reduction of maternal mortality by reducing exposure to unintended pregnancy and unsafe abortion in developing countries where the majority of maternal deaths occur. The use of modern family planning methods has potential to reduce about 25%-40% of all maternal deaths in developing countries (Fantu A, Berhane Y. Factors associated with home delivery in Bahirdar, Ethiopia: A case control study. BMC research notes. 2012, 5:63. www.biomedcentral.com/17560500/5/655). In Halaba Special Woreda the contraceptive acceptance rate is found 27% (18,836) which is very low coverage. According to EDHS 2011, use of modern contraceptive methods among currently married women has increased from 6 percent in the 2000 EDHS to 27 percent in the 2011 EDHS (Central Statistics Agency (CSA). Addis Ababa, Ethiopia. Ethiopian Demography and Health Survey. 2011).

Physicians and midwife nurses shortage in the Woreda are obviously observed. Proportion of budget allocation in the Woreda both from governmental and non-governmental has increased compared to other sectors next to education office.

Limitation

Documentation problem on past performance and sources for the available data are not well established. No study document on the main socio economic status of the district is conducted. Absence of Vital registration specifically at district level and no sufficient data were found from Woreda Education Office.

em in the district and it is the leading causes of morbidity followed by pneumonia, diarrhea, helmenthiasis, and typhoid. IRS and ITNs implementation increased. Almost all of the schools in the Woreda do not have water supply facilities and lack of improved latrine facilities. Shortage of safe water supply coverage

There was better coverage of first visit ANC follow up as well as immunization coverage. However, 4^{th} visit ANC follow up, contraceptive acceptance rate and skilled delivery were found very low.

Recommendations

The Woreda have to strengthen the prevention and control activities to reduce the morbidity of malaria, diarrhea, and other priority diseases and improve 4^{th} visit ANC follow up, contraceptive acceptance rate and skilled delivery services.

The quality of IRS and the actual ITNs utilization coverage should be studied to complement the existing malaria situation.

The Woreda have to promote hygiene and sanitation activities in the community and have to work with other sectors which work in hygiene and sanitation to improve availability of water and toilet facility at schools.

Vital Registration should be regularly conducted at local level to evaluate the overall health service impact.

rt on health in your city; WHO Regional Office for Europe; ICP/HSIT/94/01 PB 02

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Chapter V – Scientific Manuscripts for Peer reviewed Journals

...utbreak, Melgano Doya Kebele of Bona Zuria ...ia, 2014

Engdayehu H. Gebetu[1], Adamu Addissie[2], Haftom Teame[3]

[1]Ethiopian Field Epidemiology Training Program Resident, [2]Addis Ababa University, [3]Ethiopian Public Health Institute

Name of FETP: Ethiopian FETP

Year of Entry: October 2013

Abstract

Introduction: Measles is an acute, highly contagious viral disease caused by measles virus. Measles is the fifth killer disease among <5 Yrs of age worldwide. Measles case account for 4% of childhood mortality in Ethiopia. Suspected outbreak of measles was investigated to determine risk factors associated with and to take preventive and control measures based on the findings.

Methods: We conducted a descriptive study followed by 1:1 unmatched case control study. EpiInfo7 were used for data processing and analysis.

Result: A total of 67 measles cases (5 IgM positive) with median age of 4 year (Q1=0.2; Q3=10) and no deaths reported. The overall attack rate in Kebele was 113 cases with <1, 1-4 and 10-14 year children recorded the highest attack rate of 343, 392 and 244 cases per 10,000 population respectively. The odds of illness in those vaccinated were 0.16 times less than those who were not vaccinated [95%CI (0.07-0.34)]. Contact with the case [95%CI (1.95-8.35)] and <5 year malnutrition [95%CI (1.47-7.82) were significantly associated with the disease. Cases from households of family size $\geq$7 persons and illiterate parents were 3.02 times [95%CI (1.49-6.10)] and 4 times [95%CI (1.93-8.21)] more likely to develop measles respectively.

Conclusion: An outbreak of measles occurred in Melgano Doya Kebele of Bona Zuria Woreda. Un-vaccination, having contact with case, living in crowded room, <5 children malnutrition and illiteracy of parents were associated with contracting measles. <5 years children vaccination, case

…tive case search undertaken as prevention and control

Keywords: Measles outbreak, Melgano Doya, Bona Zuria, Ethiopia

Corresponding Author: Engdayehu Hailu, **E-mail:** engdayehuh@gmail.com**, Tel No: +2512758896, Cell Phone:** +251916304410/+251911563152

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus, a virus in the paramyxovirus family. It is characterized by small red dots appearing on the surface of the skin, irritation of the eyes (especially on exposure to light), coughing, and a runny nose. About 12 days after first exposure, the fever, sneezing, and runny nose appear. Coughing and swelling of the neck glands often follow. Four days later, red spots appear on the face or neck and then on the trunk and limbs. In two or three days the rash subsides and the fever falls. Measles is easily and rapidly transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva from one person to another through coughing, sneezing and close personal contact. Measles is the fifth killer disease among children under five years of age in the world (1-3). According to WHO region 2007 statistics, it was estimated that 37% of all measles deaths were occurring in Africa (4). In 2008, there were 164 000 measles deaths globally (5). The resurgence of measles outbreaks in Africa these last few years has caused much suffering and many deaths. More than 200,000 cases and 1,400 deaths were officially reported for 2010. Taking into account generalized underreporting, real numbers could be 10 or even 20 times higher (2). There is no specific treatment for measles and most people recover within 2–3 weeks. However, particularly in malnourished children and people with reduced immunity; measles can cause serious complications, including blindness, encephalitis, severe diarrhea, ear infection and pneumonia. More than 95% of measles deaths occur in low-income countries with weak health infrastructures. Many deaths are attributed to unvaccinated children as such measles vaccination coverage is used as an indicator to monitor progress. The World Health Organization (WHO) and ries with the highest burden of measles for an accelerated n. An estimated 4·3 million additional child deaths have been averted as a result of accelerated measles control efforts, including increases in routine measles immunization coverage and administration of more than 600 million doses of measles vaccine in mass vaccination campaigns (6).

Currently outbreaks of measles reported in different states of the world. In US a total of 159 cases were reported to CDC from 16 states and New York City. In South Africa between 2009 and 2011, with over 18,000 cases were recorded (7). In 2001, World Health Organization, Africa region launched an initiative aimed at mobilizing resources and provide support to the African Region to reduce measles deaths globally. The initiative was geared at providing the first dose measles vaccine through routine immunization as a first dose of measles vaccine to children of 9 months and older through routine immunization services. It also aimed at provision of a second opportunity for measles immunization though supplemental immunization activities to reach children that have never been vaccinated in the routine immunization program, those not been protected after the first dose and providing improved clinical management of measles (8). In Ethiopia measles is one of the vaccine preventable disease causing preventable morbidity and mortality in children accounting 4% of childhood mortality (9). Routine immunization, supplemental immunization activities, surveillance and improved case management are the activities being implemented in Ethiopia for measles control. However, measles outbreak occurred at various times affecting control activities. Three rounds of follow-up campaigns have been completed, the last occurring in October 2010-February 2011. Despite the control efforts, measles outbreaks have continued. Sub-national measles SIAs was implemented in late 2011, to protect children aged 6 months to 15 years of age in the Woreda at high risk for measles and with malnutrition and a further sub-national campaign in response to a large measles outbreak in Kefa Zone, SNNP in February 2012 (10). Outbreaks of measles were reported in Melgano Doya Kebele – Bona Zuria Woreda of Sidama Zone from Oct.17-Nov.13/2014. The objective of this investigation was to identify possible risk factors responsible for the occurrence of the outbreak and to undertake preventive and control measures.

Methods and Materials

e study was conducted in Melgano Doya Kebele in Bona reda has a population of 152,500 during 2014/2015. The study was conducted from November 12-21/2014.

Study Subjects: Individual's treated with measles in Melgano Health Centre and Melgano Doya Health Post and their control with the ratio of 1:1 from Melgano Doya Kebele residents. All 67 cases and 67 controls are our study sample size.

Inclusion Criteria of Cases were any resident of Melgano Doya Kebele who had symptoms of measles generalized maculopapular rash and fever plus one of the following: cough or coryza (runny nose) or conjunctivitis (red eyes) from October 17- November 13/2014 and who agreed to participate in the study and controls who are resident of Melgano Doya Kebele during the study who was a neighbor to a case and who did not develop signs and symptoms of measles and agreed to participate was included. The exclusion criteria of case were those who refused to participate or those unconscious and Controls who refused to participate and family members from the same household were excluded.

Study Design: We conducted a descriptive study followed by 1:1 unmatched case control study to investigate the outbreak in the Melgano Doya Kebele.

Data Collection, Processing and Analysis: Quantitative and qualitative data were collected from cases and their controls as well as Health Post, Health Centre and Woreda Health Office through observation, document review and interviewer administered questioner (checklist). The data obtained through interview administered questioner and line list was entered to Epi.Info7. Descriptive statistics and odds ratios with 95% confidence intervals were calculated to compare risk factors among cases and controls.

Result

From October 17 to November 13, 2014, a total of 67 measles cases and no deaths were reported from Melgano Doya Kebele, Bona Zuria Woreda of Sidama Zone. From the total cases reported 5 e epi-linked with median age of 4 year (Q1=0.2; Q3=10). ropagated one with many peaks showing a possibility of person to person transmission (Figure 45).

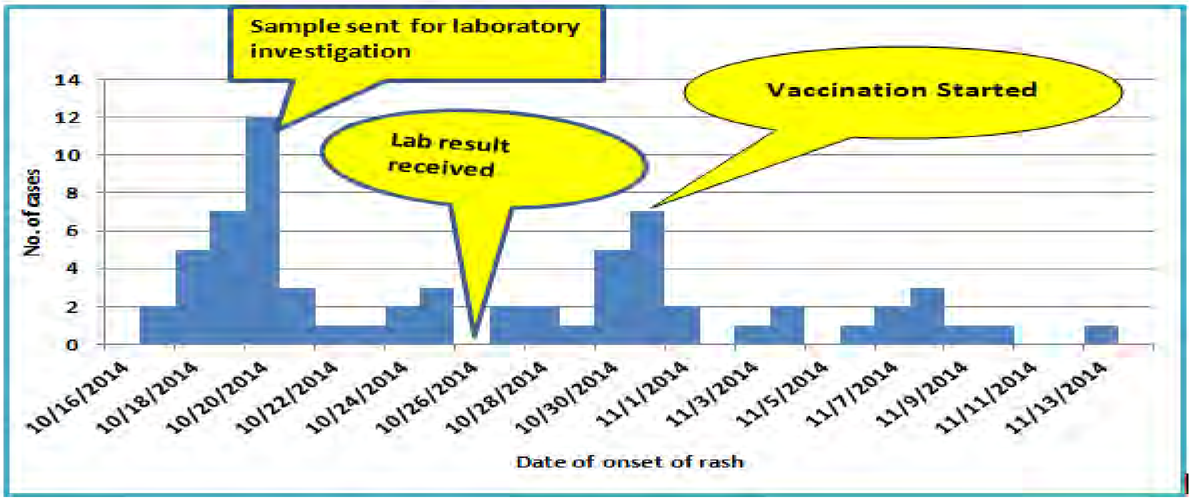

Figure 45: Measles case by date of onset of rash, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

The age group with the highest proportion of cases was children aged <5 & 10-14 years, comprising 37(55.2%) and 20(29.9%) respectively of the 67 measles cases with age information and the least proportion of cases was children aged ≥15 years comprising 3(4.5%) of the 67 measles cases.

Table 24: Age group specific measles cases- Melgano Doya Kebele, Bona Zuria, Sidama, 2014

Age group	Pop.	Cases			AR/10,000
		Number	%	Cumulative (%)	
<1yr	**204**	**7**	**10.4**	**10.4**	**343**
1-4yrs	**765**	**30**	**44.8**	**55.2**	**392**
5-9yrs	**1022**	**7**	**10.4**	**65.6**	**68**
10-14yrs	**820**	**20**	**29.9**	**95.5**	**244**
≥15yrs	**3097**	**3**	**4.5**	**100.0**	**10**
Total	**5908**	**67**			**113**

Bona Zuria Woreda was 114 cases per 10,000 populations. ups were the highest recorded attack rate of 343, 392 and 244 cases per 10,000 populations respectively (Table 24 above). 37(55.2%) and 30(44.8%) of the cases were males and females respectively. Among all the cases, 62.7% of them were unvaccinated against measles. Only 22.4% and 14.9% of the cases received one and two doses of vaccine respectively. In Melgano cluster health center where Melgano Doya Kebele found, measles vaccination coverage during 2013/2014 E.C were 108% and the district's coverage was 104% (Source: Bona Zuria District health Office HMIS report). The most affected village in the Kebele was Gerbicha Sine (83.6% of cases) followed by Andegna Hama (10.4% of cases) and Huletegna Manse (6% of cases) villages over the course of the outbreak out of the 16 villages in the Kebele. The health center responsible to support and supply vaccination logistics were visited for observation of vaccine cold chain. While the team arrived at the health center, one of the refrigerators used for vaccine storage supposed to supply all catchments health post, were observed with the temperature reading very high i.e. More than the recommended limit for a long time, this might affect the potency of the antigen.

The health post is said providing vaccination sessions regularly but there is very unethical conditions observed in the health post that to mention some of the issues vaccination coverage of the Kebele for the past consecutive years not documented, data quality of the immunization in question because monthly report and data in the register don't complement and even since May 2014 there were no measles vaccinated children in the register, no tally sheet being used but they are reporting monthly as if there are vaccinated children. Patients visit health facilities very late after getting severe illness and stay at home very long time which makes the early detection and containment of the outbreak (Figure 2) difficult. Median duration for seeking treatment after onset of illness was four days (Q1=2; Q3=5).

ation status in age groups, Melgano Doya Kebele, Bona

Age group	Case			Control		
	One dose	≥ 2 dose	Zero dose	One dose	≥ 2 dose	Zero dose
<1yr	1	**3**	3	6	**0**	1
1-4yrs	10	**0**	20	9	**12**	9
5-9yrs	3	**1**	3	6	**1**	2
10-14yrs	1	**6**	13	2	**16**	2
≥ 15yrs	0	**0**	3	1	**0**	0
Grand Total	**15**	**10**	**42**	**24**	**29**	**14**

Twenty one (41.8%) of cases sought treatment within three days of onset of illness whereas most of the cases (58.2%) sought treatment later than three days.

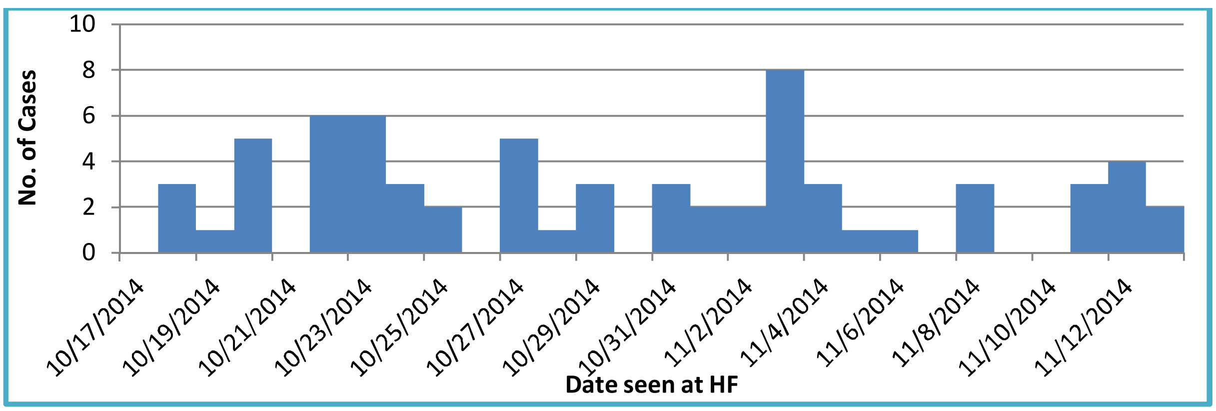

Figure 46: Measles case by date of HF visit, Melgano Doya Kebele, Bona Zuria, Sidama, 2014

The index case was 15 year old female who is IgM positive for measles specific antibody. She had history of travel in Getama Kebele of Hagere Selam Woreda where there is confirmed measles outbreak.

All of the cases had shown the main signs and symptoms of measles fever and rash; 61(91%), 57(85%) and 45(67%) of the cases had shown cough, conjunctivitis and runny nose (Coryza) respectively. 49(73%), 35(52%), 13(19%) and 10(15%) of the cases had also shown the complications diarrhea, mouth ulcer, ear infection and pneumonia respectively.

s exposures, Melgano Doya Kebele, Bona Zuria, Sidama

Exposure		Cases (%)	Controls (%)	OR	CI (95%)	P-Value
Sex	Female	30(57.7)	22(42.3)	1.66	(0.8-3.3)	0.21
	Male	37(45.1)	45(54.9)			
Educational Status of parents	Illiterate	41(68.3)	19(31.7)	**4.0**	**(1.93-8.21)**	**0.0002**
	Literate	26(35.1)	48(64.9)			
Marital Status	Married	59(48.0)	64(52.0)	0.35	(0.09-1.36)	0.12
	Widowed	8(72.7)	3(27.3)			
Occupation of the respondent's	Farmer	66(50.4)	65(49.6)	2.03	(0.18-22.9)	0.56
	Employed	1(33.3)	2(66.7)			
Family size ≥ 7	Yes	41(64.1)	23(35.9)	**3.02**	**(1.49-6.10)**	**0.003**
	No	26(37.1)	44(62.9)			
Contact with cases	Yes	49(64.5)	27(35.5)	**4.03**	**(1.95-8.35)**	**0.0002**
	No	18(31.0)	40(69.0)			
Vaccination	Yes	25(32.1)	53(67.9)	**0.16**	**(0.07-0.34)**	< **0.0001**
	No	42(75.0)	14(25.0)			
MUAC Measurement in <5 Year	≤ Moderate	25(71.4)	10(28.6)	**3.39**	**(1.47-7.82)**	**0.005**
	Normal	42(42.4)	57(57.6)			

In Bivariate analysis, the odds of illness in those vaccinated were 0.16 times less than those who were not vaccinated [OR=0.16, 95%CI (0.07-0.34), P-value < 0.0001], contact history with the case [OR=4.03, (95% CI 1.95-8.35), P=0.0002]. The odds of illness in <5 year age severe and moderate MUAC measurement was 3.39(1.47-7.82) times higher than in those who had normal MUAC measurement with P-value <0.0001 Showing significantly associated. Cases from households of family size ≥7 persons were 3.02 times [95% CI (1.49-6.10), P = 0.003] more likely to develop measles compared to family size <7 persons and cases whose parents not educated (illiterate) were 4 times [95% CI (1.93-8.21), P = 0.0002] more likely to develop measles compared to educated (literate) as shown in table 3 above. The risk factors that are statistically significantly ysis remained also significantly associated with the illness is.

Discussion

This study identified several factors that were associated with contracting measles in Melgano Doya Kebele, Bona Zuria district of Sidama Zone. Among the total cases reported, 62.7% was unvaccinated against measles can be attributed to measles outbreak and this finding is in line with the findings of Zaka district, Zimbabwe (11). However, according to District health office HMIS data, the cluster health center and District health office administrative measles coverage in 2013/2014 was 108% and 104 % respectively. Data for the Kebele not completely found at the source in the health post i.e., we found only incomplete data on the EPI registration book until mid of May 2014 but the report in District health office shows complete report for the year until June 2014 contrary to the reality on the ground looks like mischievous and unethical. With regard to this report source, the HEWs have no words to say for this falsified report and ashamed of themselves. As it is well known, measles antibodies develop in approximately 85% of children vaccinated at 9 months of age, 95% of children vaccinated at age of 12 months of age, and 98% of those vaccinated at 15 months of age (12). However in areas of such unreliable coverage is observed the probability of accumulation of unvaccinated children could be very high. These in turn show us children who will have seroconvert to measles disease in the area could be very low so that an epidemic could arise. As a result of limited protection rate of the vaccine, a second dose of measles vaccine is given to boost the immunity of the child through SIA targeting children's aged 6 month to 14 years in Ethiopia (13). This study also revealed among all 67 cases 22.4% took one dose of measles vaccine prior to their illness and all of them were below the age 14 years from which only 19.4% of them could develop protective immunity. On the other hand 14.9% of the cases received two doses of vaccine but developed the disease indicating that there could be failure in the potency of the vaccine as a result of different reasons.

Measles is a highly contagious disease transmitted by respiratory droplet or air born spread. Secondary attack rate among susceptible household contact reach 75% -90%. Our study also revealed that being having contact with a measles suspected or confirmed case was found to be measles in the area. The finding was similar with another investigation in Zaka, Masvingo Province, Zimbabwe, that cases were high in contact with measles case. Illness in households of family size of greater than seven persons are more than three times higher than in those who had less family size to develop an illness which is similar to the study of ministry of health of Zimbabwe, which states that children who live in crowded places are at high risk of contracting measles, and that a person with measles can infect others for several days before he/she develops symptoms (11). Our study indicates the bimodal age distribution of cases with a peak incidence in 1-4 years and in 10-14 years, similar to a study in Harare (14).

In this study, about 15-73% of the subjects had suffered from a post-measles complication. The most common complication observed in this study was diarrhea (73%), mouth ulcer (52%) followed by ear infection and pneumonia.

The odds of illness in <5 year age severe and moderate malnutrition MUAC measurement was 3.39 times higher than in those who had normal MUAC measurement. Complications are more common in young children below 5 years of age and complication rates are increased in persons with immune deficiency disorders, malnutrition, vitamin A deficiency, and inadequate vaccination status (13). Measles and its complications are particularly severe among malnourished or immune-compromised children [15].

Cases whose parents have no education (illiterate) are four times more likely to develop illness than those born to literate parent similar to the study finding conducted in India which showed that children whose mothers have no education are more likely to develop illness than those born to educated mother (16, 17).

gano Doya Kebele of Bona Zuria Woreda. This study points out that a large proportion of measles cases occur among the unvaccinated population in the area. Being having contact with a measles suspected or confirmed case, greater family size living in crowded rooms, malnutrition in under 5 children and parents having no education were associated with contracting measles. Cases vaccinated more than one times point to vaccine failure, which could be due to improper cold chain management. Late seeking of health facilities makes the early detection and containment of the outbreak difficult. If it had been sought earlier, a number of cases could have been avoided. Data management and documentation problem and unethical working condition observed. Vaccination of children's aged <5 years, case management, health education and active case search undertaken as prevention and control measure. Strengthen routine immunization, regular supportive supervision at health post and health center, designing and implementation of data quality validation mechanism and improve documentation at all level, continuous promotion of awareness in the community for early treatment seeking, prevention and control should be done. Health Extension Workers should conduct screening of malnourished children regularly and supply therapeutic feedings while availing at health post level. Provide awareness for parents during an outbreak to isolate sick children at household level and keep them at home during their communicability periods. In large family size households the possibility of virus circulation and transmission could be high. Avoid overcrowding and regularly ventilate houses adequately.

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ıent of factors associated with complete immunization ıonths: a cross-sectional study in Nouna district, Burkina

Chapter VI – Abstracts for Scientific Presentation

...utbreak Investigation in Bona Zuria Woreda-

Engdayehu H. Gebetu[1], Adamu Addisie[2], Haftom Teame[3]

[1]Ethiopian Field Epidemiology Training Program Resident, [2]Addis Ababa University, [3]Ethiopian Public Health Institute

Name of FETP: Ethiopian FETP

Year of Entry: October 2013

Abstract

Introduction: Measles is an acute, highly contagious viral disease caused by measles virus. Measles is the fifth killer disease among <5 Yrs of age worldwide. Measles case account for 4% of childhood mortality in Ethiopia. Suspected outbreak of measles was investigated to determine risk factors associated with and to take preventive and control measures based on the findings.

Methods: We conducted a descriptive study followed by 1:1 unmatched case control study. EpiInfo7 were used for data processing and analysis.

Result: A total of 67 measles cases (5 IgM positive) with median age of 4 year (Q1=0.2; Q3=10) and no deaths reported. The overall attack rate in Kebele was 113 cases with <1, 1-4 and 10-14 year children recorded the highest attack rate of 343, 392 and 244 cases per 10,000 population respectively. The odds of illness in those vaccinated were 0.16 times less than those who were not vaccinated [95%CI (0.07-0.34)]. Contact with the case [95%CI (1.95-8.35)] and <5 year malnutrition [95%CI (1.47-7.82) were significantly associated with the disease. Cases from households of family size $\geq$7 persons and illiterate parents were 3.02 times [95%CI (1.49-6.10)] and 4 times [95%CI (1.93-8.21)] more likely to develop measles respectively.

urred in Melgano Doya Kebele of Bona Zuria Woreda. Un- living in crowded room, <5 children malnutrition and illiteracy of parents were associated with contracting measles. <5 years children vaccination, case management, health education and active case search undertaken as prevention and control measure.

Keywords: Measles outbreak, Melgano Doya, Bona Zuria, Ethiopia

Corresponding Author: Engdayehu Hailu, **E-mail:** engdayehuh@gmail.com, **Tel No**: +2512758896, **Cell Phone**: +251916304410/+251911563152

…alysis from Data collected through PHEM (Public …) and HMIS (Health Management Information System) Sections during 2011-2013, Halaba

Engdayehu H. Gebetu[1], Adamu Addisie[2], Alemayehu Bekele[3], Haftom Teame[4]

[1]Ethiopian Field Epidemiology Training Program Resident, [2]Addis Ababa University, [3]Ethiopian Public Health Association, [4]Ethiopian Public Health Institute

Name of FETP: Ethiopian FETP

Year of Entry: October 2013

Abstract

Background: Ongoing analysis of surveillance data is important for detecting outbreaks, monitoring disease trends, evaluating the effectiveness of disease control programs and policies and to determine efficient allocation of public health resources. The aim of study was to show the malaria surveillance data discrepancy comparing data reported through Public Health Emergency Management(PHEM) and Health Management Information System(HMIS) sections of Halaba Special Woreda during 2011-2013.

Methods: Descriptive cross sectional study using secondary data reported through PHEM and HMIS. Comparative data analysis was done using MS Excel.

Result: A total of 123,344(22.4%) malaria cases difference between PHEM & HMIS sections were reported. The average malaria incidence rate was 390 and 247 cases/1,000 populations per year in PHEM and HMIS sections, respectively. Of the total confirmed malaria cases reported to PHEM, 94,517 (48.2%) of 196,261 and 101,744 (51.8%) of 196,261 and to HMIS, 63,466 (43.4%) of 146,084 and 82,618 (56.6%) of 146,084 were plasmodium falciparum (PF) and plasmodium vivax (PV) respectively. Overall, malaria positivity rate using PHEM data was 55.6%. The number of malaria cases declined by 11.1% in all ages and 10.1% in <5 years. However, admissions increased

ges of malaria inpatient cases. The average mortality was
d from health centers only.

Conclusion: Malaria morbidity has declined but admissions were inclined. Also, a shift in the proportion of plasmodium species was observed. The increment in admission could be due to the increasing number and capacity of health facilities (like bed, professionals, and medical kits). Due to the discrepancies in PHEM and HMIS data, data quality should be evaluated and action should be taken.

Key words: Malaria, Mortality, Incidence, Admission

Corresponding Author: Engdayehu Hailu, **E-mail:** engdayehuh@gmail.com, **Office no: +2512758896, Cell Phone:** +251916304410

Chapter VII – Narrative Summary of Disaster Situation Visited

...leeds Assessment of South Omo and Segen Area ...gion, 2014

Executive Summary

The government of Ethiopia has been conducting multi agency emergency health and nutrition assessment to forecast the magnitude of the emergency threats and accordingly to address the emergency health and nutrition need of the country. The assessment is conducted twice in a year following post harvesting season Belg and Meher. According to this, health and nutrition Belg need assessment was conducted in two zones five Woredas of SNNP region.

The main objective of this assessment is to identify areas where emergency health and nutrition assistance needed for the upcoming six months and to determent the gap in the capacity of the health system in addressing anticipated risks so as to develop response plan.

After orientation at regional Agriculture Bureau, our team was deployed to the respective field sites. The assessment was done by interviewing responsible persons from different units of health sector using the prepared check list as well as reviewing secondary health and nutrition data using the questionnaire developed by FMOH/EHNRI/PHEM. The data was entered and analyzed using Microsoft Excel.

The total assessment population size in both zone was 1,416,125 i.e. 7.7% of the regional population. The assessment was conducted in South Omo and Segen Area Populations Zones from June 23-July 5/2014.

Both Zones and all the selected Woredas except Alle Woreda in Segen Area Populations Zone have a functional Multi-Sectorial PHEM coordination forum but no regular frequency of meeting in all assessed Woredas and Zones, accessible emergency preparedness and response plan without allocated budget. However, all visited Zonal and Woredas Administration Office Heads confirmed us that budget will be allocated for epidemic responses in case happened.

[illegible] emic of Malaria and Rubela from Benatsemay and Malle [illegible] oples with malaria case and 3 deaths from Benatsemay Woreda and 39 Peoples with Rubela cases from Malle Woreda. Currently the outbreak is contained and now there is no any outbreak going on and didn't occur in the last 5 months of period except malaria case build-up in Dasenech Woreda. There was no Measles, Meningitis and AWD case and epidemic in the assessed Woredas and Zone. The number of malnourished children admitted in TFP increasing in Konso, Benatsemay, Alle, Derashe and Dasenech Woredas (sharply increasing in Konso and Benatsemay Woredas) but decreasing in Hamer Woreda. Malaria, measles, AWD, Flood and Drought were anticipated risk in the Zones. There was no Artemether IM (for malaria), RDT (Pastorex) and LP set for meningitis and absence of adequate therapeutic supplies (F100) in all Woredas and Zones for emergency.

Therapeutic supplies for malnourished children are urgently availed. Emergency drugs and supplies gap should be filled and budget for emergency response allocated.

Southern Nation, Nationalities, People Region is one of the big and diversified region of the country with a total of 15 zones and 136 Woredas with 4 special Woredas. The region is located Southern and South-Western part of Ethiopia. The total area of the region estimated to be 110,931.9 Sq. Km which is 10% of the country and inhabited by a population size of about 18,395,297 in 2013/14 G.C, 20% of the total population of the country. The population density of the region became 142 persons per sq.km, which makes the region one of the most populous parts of the country.

South Omo Zone

South Omo Zone is located in SNNPRS that borders Kenya from its southern parts. It is divided in to four livelihood Zones namely Southern Agro-pastoral (SAP), South Omo Crop (SOC), South Omo Pastoral (SOP) and Selamago Pastoral (SPO). The pastoral areas include the lowlands of Benatsemay, Dasenech, Hamer, Malle and Selamago Woredas whereas the Agro-pastoral livelihood zone belongs to the dry midlands of Hammer, Benatsemay, and Male Woredas'. The remaining parts of the zone are under the SOC livelihood Zone. The projected Zonal total population of the current 2014 year based on the 2007 population census is about 703,291.

Based on the altitude variation, the zone can be divided in to four main distinct agro-ecological Zones namely hot Zone (<500 meter above sea level), lowland (5001 – 1500 meter above sea level), midland (1501 – 2500 meter above sea level), and highlands (> 2501 meter above sea level). The percentage proportion of the aforementioned agro-ecologies in the zone is estimated to be about 34%, 60%, 5% and 1% respectively. This implied that the majority of the zone lies in the lowland and hot areas where pastoral and agro pastoral livelihood system is more common.

The total area of the zone is estimated to be about 2437380 hectares. The land proportion covered by forest and grass land (382414 ha), Grazing land (306119 ha), perennial and seasonal crops (273691 ha), arable land (382414 ha), uncultivable land (497883 ha) and other (595,529 ha) als, 29 Health Centers, & 216 Health Posts, totally 246 ble in the South Omo Zone.

Segen Area Population Zone

Segen zone is one of the 14 zones of SNNPR. The zone is established in 2011 combining four former special Woredas (Konso, Burji, Amaro and Dershe) and Alle Woreda established last year 2012 taking 7 Kebeles from Konso and 10 Kebeles from Derashe Woreda. The zone is divided into five distinct livelihood zones. This includes LCE (Southern Special Woredas Low land Cereal LZ), SAP (Southern Agro-pastoral LZ), SCE (Southern Cereal, Enset & Root crop LZ), GUT (Gumide Teff LZ) and ACE (Amaro Coffee and Enset LZ). Meher contributes only 25-30% to annual crop production in Konso, Alle and Burji Woredas and 30-35% in Derashe and Amaro Woredas. Major crops grown during Meher season are Maize, Teff, haricot bean, barely, Wheat, ratoon sorghum, pea, bean and sunflower. The projected Zonal total population of the current 2014 year based on the 2007 population census is about 712,834.

In the Zone there are 2 District Hospitals, 29 Health Centers, & 144 Health Posts, totally 75 governmental health facilities are available in the Segen Area Population Zone.

The government of Ethiopia has been conducting multi agency emergency health and nutrition assessment to address the emergency health and nutrition need of the country. The assessment is conducted twice in a year following post harvesting season Belg and Meher. The assessment is leaded by Federal Disaster Response Management and Food Security Coordination office in collaboration with the Ethiopian Ministry of Health, SNNP regional health bureau, SNNP regional early warning, National Metrology Agency and respective bureaus, WHO, UNICEF, OCHA, IRC, Red-cross and World vision.

The emergency health and nutrition need assessment (Belg assessment) in SNNP region conducted from June 23-July 5/2014. Our team was composed of members from EWRFS, OCHA, EW-SNNPR, EW- Federal, RHB and MSF Spain. We assessed 2 Zones and 5 Woredas of SNNP region.

effective humanitarian planning and responses to reduce morbidity, mortality and acute malnutrition in the most vulnerable areas of visited Zones and Woredas.

Specific Objectives:

- To assess the extent, types, magnitude, severity and likely of the different hazards (drought, human epidemics, water supply shortage, and sever and acute malnutrition, etc) and risks to the populations in the most vulnerable areas.
- To assess the existing capacity of the health services to address health and nutrition emergencies, likely to occur during the coming three months;
- To determine the shortcomings (gaps) in the capacity of the existing health services to address health and nutrition emergencies likely to occur between January and May 2014 based on the findings, to develop preparedness plans

Methodology

The assessment was conducted in both South Omo and SAP Zones (see the table below). From South Omo Zone three and from Segen Area Populations Zone two Woredas were selected based on emergency health and nutrition problems in consultations with the FMOH, RHB and ZHDs. The assessment was done by interviewing responsible persons from different units of health sector using the prepared check list as well as reviewing secondary health and Nutrition data using the questionnaire developed by FMOH/EHNRI/PHEM. The data was entered and analyzed using Microsoft Excel.

Briefing by different sectors of the zone was the initial activity before departing to the selected Woredas and also debriefing by the assessment team was done at last and discussions were undergone about the findings of the assessment.

sited during the assessment, 2014

	Woreda
South Omo	Dasenech, Hamer and Benatsemay
Segen Area Populations	Konso and Alle

Result (Assessment Findings)

South Omo Zone Summary

Coordination in South Omo Zone

All the selected Woredas (Dasenech, Hamer and Benatsemay) have a functional Multi-Sectorial PHEM coordination forum, accessible emergency preparedness and response plan without fund/budget. However all visited Zonal and Woredas Administration Office Heads confirmed us that budget will be allocated for epidemic responses in case happened.

Top five causes of morbidity in South Omo Zone (January - May 2014)

Malaria is considered as one of the top five diseases both in under five and over five years old in all Dasenech, Hamer and Benatsemay Woredas.

Table 28: Top five cause of morbidity in Dasenech Woreda by age group, 2014

S. No	Morbidity in under 5 years old	Morbidity in above 5 years old
1	Malaria	Malaria
2	Helmenthiasis	Pneumonia
3	Malnutrition	UTI
4	Pneumonia	Typhoid fever
5	RTI	Acute Febrile Illness

Table 29: Top five cause of morbidity of Hamer Woreda by age group, 2014

S. No	Morbidity in under 5 years old	Morbidity in above 5 years old
1	Malaria	Malaria
2	Intestinal Parasite	Pneumonia

[illegible]	[illegible] s old	Morbidity in above 5 years old
[illegible]	[illegible]	Diarrhoea
4	Diarrhea	Helmenthiasis
5	Conjunctivitis	AURTI

Table 30: Top five cause of morbidity of Benatsemay Woreda by age group, 2014

S. No	Morbidity in under 5 years old	Morbidity in above 5 years old
1	Malaria	Malaria
2	Diarrhoea	Acute Febrile Illness
3	All Types of Respiratory Diseases	Helmenthiasis
4	Pneumonia	All Types of Respiratory Diseases
5	Helmenthiasis	Trauma

Major Epidemic prone diseases in South Omo Zone (January - May 2014)

Malaria

Table 31: Malaria morbidity and mortality in Dasenech, Hamer and Benatsemay Woredas, 2014

Month	Dasenech		Hamer		Benatsemay	
	Cases	Death	Cases	Death	Cases	Death
January	295	2	164	0	125	0
February	187	0	155	0	293	3
March	178	0	276	0	129	0
April	170	0	231	0	91	0
May	143	0	211	0	141	0

In general the number of Malaria cases has shown reduction in all Woredas and 5 deaths (Dasenech 2 and Benatsemay 3) were reported related with Malaria. There is a significant reduction in the number of cases as compared with the number of last year in the same period except case load increase threshold was not reached.

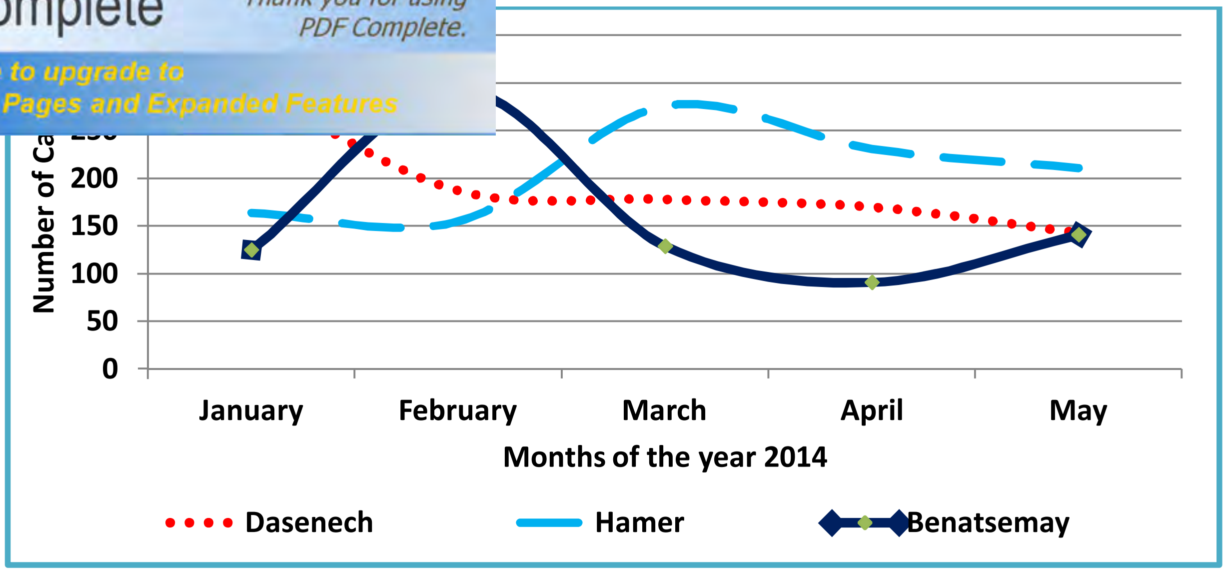

Figure 47: Malaria Cases in Dasenech, Hamer and Benatsemay Woredas of South Omo Zone from Jan - May 2014

Measles, Meningitis and AWD

Five suspected measles cases were reported from Benatsemay Woreda during March-May 2014 and treatment provided for patients and for confirmation of the causative agent samples were taken and sent to Federal PHI. But there was no any suspected case of AWD and Meningitis cases.

Outbreak in South Omo Zone (January - May 2014)

During January 2014 there was an epidemic of Malaria and Rubela from Benatsemay and Malle Woredas respectively affecting 336 peoples with malaria case and 3 deaths from Benatsemay Woreda and 39 Peoples with Rubela cases from Malle Woreda Currently the outbreak is contained and now there is no any outbreak going on and didn't occur in the last 5 months of period except malaria case build-up in Dasenech Woreda.

In all Woredas and Zonal health department there is an annual PHE preparedness and response plan but there is no budget allocated for emergency rapid response. Trained PHEM professionals in most of the Woredas are available but the Zonal PHEM coordinator has no training on emergency management however all plays a great role to adequately respond to public health emergencies as well as there are trained rapid response team.

Table 32: Emergency Drugs and Supplies available for one month stock at South Omo Zone 2014

S. No	Description	Total requirement	Available	Gap
Vaccine				
1	Meningitis vaccines	492,304	0	492,304
Drugs				
2	Coartem	20,000 dose	15,000	5,000
3	Oily CAF	0		
4	Doxcycline	200 Pk	0	200
5	Ringer Lactate	500	0	500
6	ORS	5,000 Sachet	3,000	2,000
7	Amoxil Suspension	2500 bottle	600	1900
8	Co-trimoxazole Ointment	2000	500	1500
9	Tetracycline Ointment	3000	700	6300
10	Vit. A (50, 000 IU)		28	
Lab Supplies				
11	RDT (Malaria)	4000 box	2600	1400
12	Pastorex (Meningitis)			
13	LP set			
14	TI Bottle			
CTC kit				
15	CTC kit (AWD)			
Medical Supplies				
16	Gloves	1000 box	400	600
17	Syringe	1000 box of 5 ml	50	950
18	PPE			

y - May 2014)

Malaria

Dasenech, Hamer and Benatsemay Woredas are endemic areas for malaria as a result of breeding sites, presence of potentially interrupting rivers and availability of regular flooding. All Kebeles in all three Woredas are considered as malarious Kebeles. LLIN coverage for Dasenech, Hamer and Benatsemay Woredas for 2012/2013 E.C is <80%, >80% and <80% respectively. IRS coverage for Dasenech, Hamer and Benatsemay Woredas for 2012/13 is N/A, 58% and N/A respectively.

Meningitis

There was no meningitis case and epidemic in the assessed Woredas and Zone. Vaccination campaign conducted during the first months of 2013/14 & therefore there is no risk.

AWD

No AWD epidemic has occurred in the Zone and assessed Woredas during the study period. The latrine coverage & utilization in Benatsemay Woreda until May was 23% and 10% respectively. Dasenech and Hamer Woredas data was not available. Cholera Outbreak control guide line is not available in all Woredas.

Measles

In all the assessed Woredas, there is no ongoing Measles outbreak.

Nutrition

The number of malnourished children admitted in TFP increasing in Dasenech and Benatsemay Woredas but decreasing in Hamer Woreda as shown in the graph below.

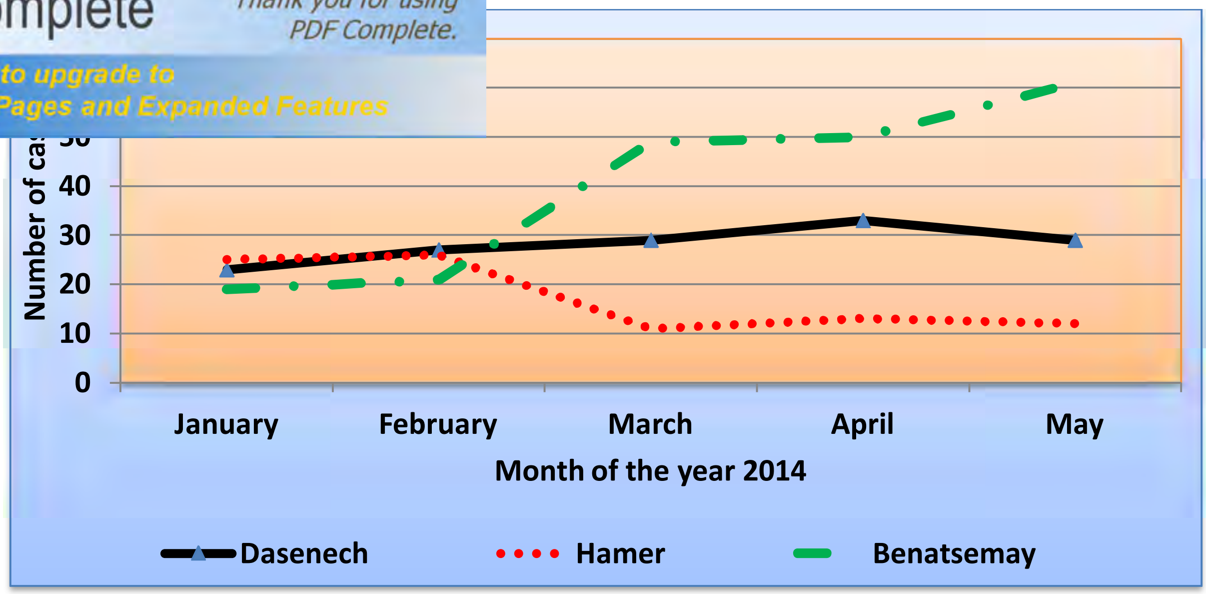

Figure 48: Malnutrition Cases in Dasenech, Hamer and Benatsemay Woredas of South Omo Zone from Jan - May 2014

In Dasenech, Hamer and Benatsemay Woredas, there is one Stabilization Centre (SC) in each Woreda respectively for admitting malnourished children with medical complication, and all OTP sites in health posts working on a daily basis. There was an adequate supply of PPN, F-75 from January till end of May 2014. But there was shortage of F- 100 during the assessment time.

Segen Area Population Zone Summary

Coordination in Segen Area Population Zone

Only Konso Woreda have a functional Multi-Sectorial PHEM coordination forum, accessible emergency preparedness and response plan without fund/budget. However Alle Woreda has no functional Multi-Sectorial PHEM coordination forum. All visited Zonal and Woredas Administration Office Heads confirmed us that budget will be allocated for epidemic responses in case happened.

Top five causes of morbidity in Segen Area Population Zone (January - May 2014)

Malaria is considered as one of the top five diseases both in under five and over five years old in all Konso and Alle Woredas.

Konso Woreda by age group, 2014

	old	Morbidity in above 5 years old
1	Malaria	Malaria
2	Pneumonia	Typhoid Fever
3	Intestinal Parasite	Gastritis
4	Eye infection	Rheumatic Arthritis
5	Malnutrition	URTI

Major Epidemic prone diseases in Segen Area Population Zone

Malaria

Table 34: Malaria morbidity and mortality in Konso and Alle Woredas of SAP Zone, 2014

Month	Konso		Alle	
	Cases	Death	Cases	Death
January	2651	0	Data N/A	
February	1195	0		
March	2277	0		
April	1477	0		
May	693	0		

In general the number of Malaria cases has shown reduction in all Woredas and no death was reported related with Malaria according to the Zonal Health Department Deputy Head and data from Konso Woreda shows that too (See the figure below). Even though it is decreasing, IRS (26.3% Zonal sprayed during 2014) coverage is very low due to logistic shortage in terms of budget, chemical supply and pump supply. The Zonal ITNs coverage is 91.7%.

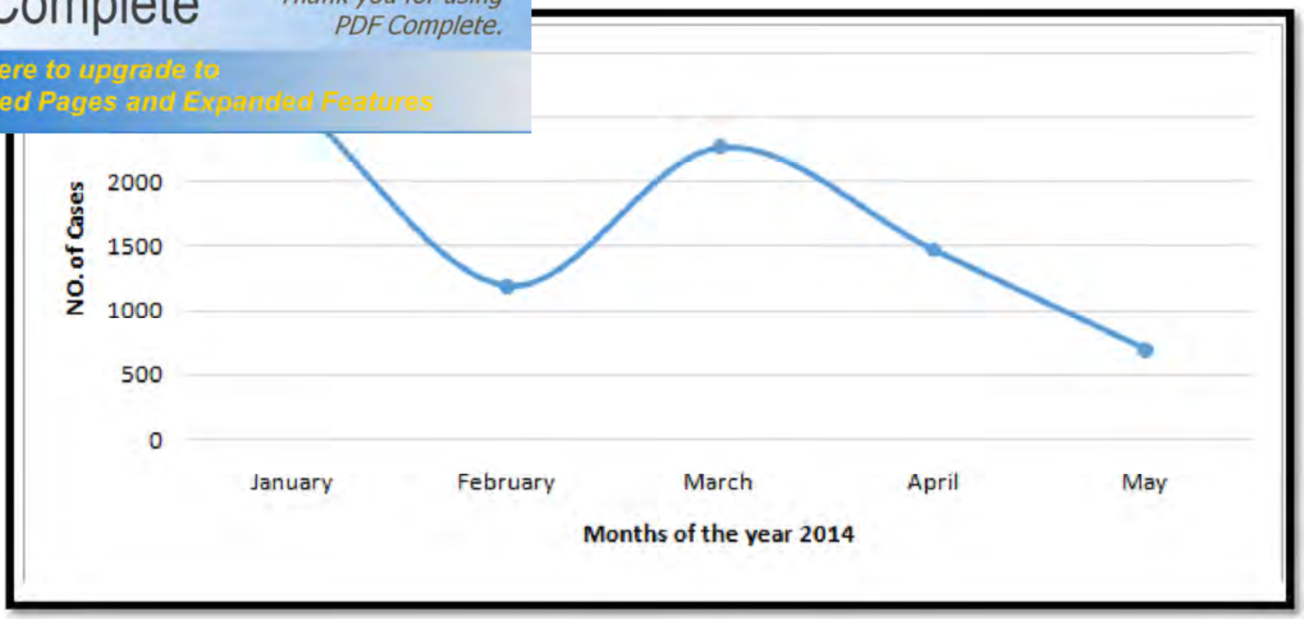

Figure 49: Malaria Cases in Konso Woredas of SAP Zone from Jan - May 2014

Measles, Meningitis and AWD

There was no Measles, Meningitis and AWD case and epidemic in the assessed Woredas and Zone.

Outbreak in Segen Area Population Zone

During the assessment there is no any outbreak going on and didn't occur in the last 5 months period.

Preparedness in Segen Area Population Zone

Table 35: Emergency Drugs and Supplies available for one month stock at SAP Zone 2014

S. No	Description	Total requirement	Available	Gap
Vaccine				
1	Meningitis vaccines	450	0	450
Drugs				
2	Coartem	90,000	64,080	25,920
3	Oily CAF	1900	0	1900

		Total requirement	Available	Gap
[illegible]	[illegible]	800	0	800
5	Ringer Lactate	1000	0	1000
6	ORS	35000	500	34500
7	Amoxil Suspension	2500	800	1700
8	Co-trimoxazole Ointment	2500	50	2450
9	Tetracycline Ointment	5000	0	5000
10	Vit. A (50, 000 IU)	800 tin	0	800
Lab Supplies				
11	RDT (Malaria)	1197	0	1197
12	Pastorex (Meningitis)	100	0	100
13	LP set	15	0	15
14	TI Bottle	30	0	30
CTC kit				
15	CTC kit (AWD)	4	0	4
Medical Supplies				
16	Gloves	200	30	170
17	Syringe	800	70	730
18	PPE	160	60	100

Risk Factors in Segen Area Population Zone

Malaria

All Woredas in the Zone are endemic areas for malaria as a result of many breeding sites, presence of potentially interrupting rivers. ITNS coverage for Zone is about 91.7% but specifically at Woreda level it is not well known and data were not found even in the assessed Woredas. Zonal IRS coverage is 26.5%.

There was no meningitis case and epidemic in the assessed Woredas and Zone. Vaccination campaign during 2012/13 conducted in the Zone but data on the total number of vaccinated people and coverage not available.

AWD

No AWD epidemic has occurred in the Zone and assessed Woredas during the study period. The latrine coverage & utilization in Konso Woreda until May was 67 % and 45% respectively. Data at zonal level was not available.

Measles

The Zonal Measles vaccination coverage for the past 9 months was about 70.1% and for Konso, Alle and Derashe Woredas measles vaccination coverage for the past 9 months was 68.7%, 67.4% and 65% respectively which is very low making high risk area for an epidemic to occur.

Nutrition

As shown in the table & graph below malnutrition cases are highly increasing in the mentioned 3 Woredas of the Zone which needs urgent solution because especially in Konso Woreda there are about 5 deaths reported during April and May.

Table 36: Malnutrition Cases in Konso, Alle and Derashe Woredas of SAP Zone, 2014

	Konso			Alle			Derashe		
	SAM	OTP	SC	SAM	OTP	SC	SAM	OTP	SC
January	108	85	23	42	34	8	22	22	0
February	107	91	16	34	15	19	43	31	12
March	117	83	34	65	51	14	32	23	9
April	180	141	39	83	64	19	54	42	12
May	239	183	56						

the health facilities per week in Konso Woreda highly rt is not included which shows us that there are a lots of number of cases unreported which could have the figure presented here might be very high. Due to this problem and other constraints particularly F-100 supply is almost not available and supplied as needed or requested, these areas need very close follow up and support.

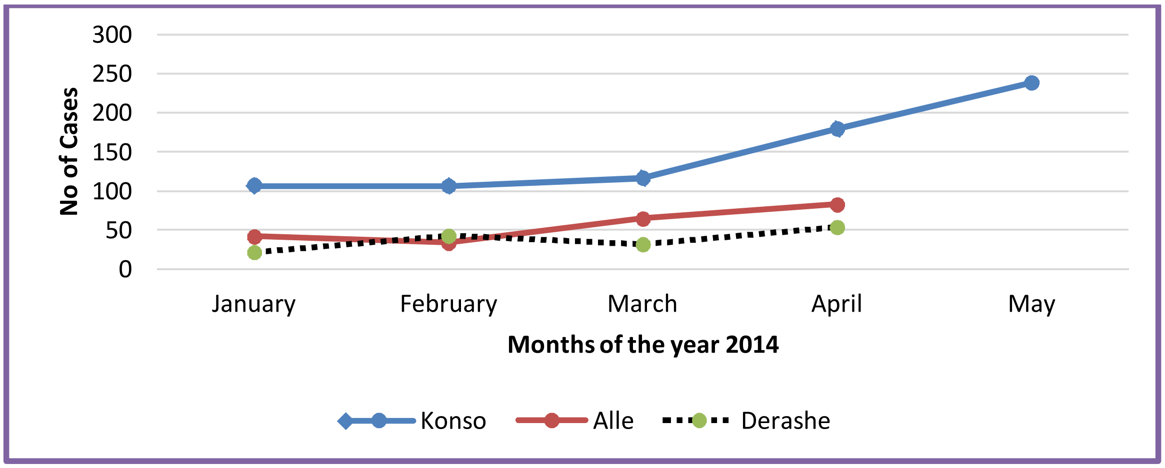

Figure 50: Trends of SAM Cases in Konso, Alle & Derashe Woredas of SAP Zone, 2014

Conclusion

- There was a functional Multi-Sectorial coordination forum but no regular frequency of meeting in all assessed Woredas and zones even though they are saying being conducted there is no tangible evidence of their regular meeting.
- In the last three months there was no report of outbreak of meningitis, measles and AWD however, Malaria outbreak was reported in Benatsemay Woreda, case build up in Dasenech Woreda and currently the outbreak is contained but the report on the existence of an outbreak couldn't be transmitted to higher body i.e. to the RHB.
- The number of malnourished children admitted in TFP increasing in Konso, Benatsemay, Alle, Derashe and Dasenech Woredas (sharply increasing particularly in Konso and Benatsemay Woredas) but decreasing in Hamer Woreda.

- nd Drought were anticipated risk in the zones and at risk dentified and summary of requirements or needs be estimated.
- There is Emergency preparedness and response plan at all level but not supported by budget.
- There was no Artemether IM (for malaria), RDT (Pastorex) and LP set for meningitis and absence of adequate therapeutic supplies (F100) in all Woredas and Zones.
- Lack of IRS support (budget and logistic)

Recommendations

- Strengthening the control and prevention of measles, malaria, AWD and meningitis
- Zonal and Woredas EPRP should be supported by budget and IRS activity be supported
- Planning for prepositioning of Pastorex test and LP set by the RHB, FMOH and partners
- Availing Artemether IM and Artesunate (injection) and Artesunate (rectal) for malaria
- Availing adequate therapeutic supplies

Challenges

- Number of days given for the assessment and report preparation was very short
- We faced car accident which makes our data collection time very tight
- Absence of complete data at all level as required
- Responsible person for interview were not available due to different reasons(most outside of their Office for supervision and Polio Campaign)

Chapter VIII – Protocol/Proposal for Epidemiologic Research Project

...Service Related Factors Contributing for Measles ... Coverage Reporting Setting: The Case of Halaba District; Ethiopia

Executive Summary

Measles is a highly contagious disease caused by a virus, which usually results in a high fever and rash, and can lead to blindness, encephalitis or death. Measles is the fifth killer disease among children under five years of age in the world. Immunization is amongst the most cost-effective public health interventions for reducing global child morbidity and mortality. The global effort to use vaccination as a public health intervention began when the World Health Organization (WHO) launched the Expanded Programme on Immunization (EPI) in 1974. The WHO UNICEF coverage estimates for measles vaccination for Ethiopia indicate an increase from 37% in 2000 to around 80% in 2010. But measles remain endemic with periodic epidemics in the Horne of Africa (including Ethiopia). In Ethiopia outbreaks of measles reported every year from different regions of the country.

In both routine and SIA's immunization, Halaba Special District has reported high coverage (>92%) continuously for about 4 years even higher than the national and regional average coverage. However, despite this high coverage of routine and SIA's immunization, the District is being affected by measles outbreak repeatedly since 2011.

The main objective of this study is to assess the health service related factors contributing for measles outbreak in this high vaccination coverage reporting district.

A cross-sectional descriptive study will be used and data will be collected using a structured questionnaire in-depth interview on immunization knowledge, attitude and practices of all health service providers (HEWs) and EPI Focal Persons at health facilities in the district. Observational visits will be arranged on actual vaccination days in selected health facilities for overall session process observation and cold chain management observation. A total of 113 health workers, 4 health centers and from each of this health centers catchment 2 (two) health posts will randomly

e Project will be completed in four months and a total of

study.

Introduction

Measles is one of the leading causes of death among young children. According to WHO region 2007 statistics, it was estimated that 51% of all measles deaths were occurring in South East Asia, 37% of them occurring in Africa while both Europe and America had the least rates <0.15% (1). In 2008, there were 164 000 measles deaths globally (2). Measles is caused by a virus in the paramyxovirus family. There is no specific treatment for measles and most people recover within 2–3 weeks. However, particularly in malnourished children and people with reduced immunity; measles can cause serious complications, including blindness, encephalitis, severe diarrhea, ear infection and pneumonia. More than 95% of measles deaths occur in low-income countries with weak health infrastructures. Many deaths are attributed to unvaccinated children as such measles vaccination coverage is used as an indicator to monitor progress. In 2008, all UN member states reaffirmed their commitment to achieving a 90% reduction in measles mortality by 2010 compared with 2000, from an estimated 733,000 deaths in 2000 worldwide to ≤73,300 by 2010. The World Health Organization (WHO) and UNICEF have identified 47 priority countries with the highest burden of measles for an accelerated strategy for measles mortality reduction. An estimated 4·3 million additional child deaths have been averted as a result of accelerated measles control efforts, including increases in routine measles immunization coverage and administration of more than 600 million doses of measles vaccine in mass vaccination campaigns. Estimates indicated that almost a quarter of all lives saved annually towards achieving Millennium Development Goal 4 were the result of progress towards achieving a 90% reduction in measles deaths (3).

Preventive and Control Strategies for Measles in Africa

In 2001, World Health Organization, Africa region launched an initiative aimed at mobilizing resources and provide support to the African Region to reduce measles deaths globally. The initiative was geared at providing the first dose measles vaccine through routine immunization as a first dose of measles vaccine to children of 9 months and older through routine immunization a second opportunity for measles immunization though IAs) to reach children that have never been vaccinated in the routine immunization program and children that have not been protected after the first dose and thirdly the initiative aimed at providing improved clinical management of measles cases which include providing supplemental doses of vitamin A to all suspected cases of measles and the appropriate and early management of measles complications (4).

The Measles Initiative has supported measles vaccination of over 395 million children in the African Region through measles supplemental immunization activities from 2001 - 2008. To date, 40 countries in the Region have been supported to establish case-based surveillance for measles as a strategy to monitor the impact of vaccination activities and to document the reduction of disease burden. Additionally, a network of 36 national measles laboratories and 4 Regional Reference Laboratories (RRL) has been established for the confirmation of measles cases and outbreaks as well as the isolation of locally circulating measles virus strains (4).

Preventive and Control Strategies for Measles in Ethiopia

Ethiopia measles control activities included strengthening routine immunization, providing second opportunity for immunization through SIAs, surveillance and improved case management according to IMNCI protocol. However, measles outbreak occurred at various times affecting control activities included Emergency outbreak response campaigns from 2000 (targeting children 6 months to 5 years of age) until the national measles catch up SIA that occurred in a phased approach from between 2003 and 2005 (targeting children 6 months to 15 years of age). Three rounds of follow-up campaigns have been completed, the last occurring in October 2010-february 2011. Despite the control efforts, measles outbreaks have continued. Sub-national measles SIAs was implemented in late 2011, to protect children aged 6 months to 15 years of age in Woreda's at high risk for measles and with malnutrition and a further sub-national campaign in response to a large measles outbreak in Kefa Zone, SNNP in February 2012 (5).

overage is about 75.9%. The District has 1 hospital (not yet alth centers (1 in urban and 9 in rural) & 73 health posts providing health services including immunization service.

During 2013/2014, 100 % <1 year children were planned for immunization, the coverage for the year in BCG, Penta-1, Penta-3, PCV-3, Rota-2, measles, and fully immunization were 91%, 99.6%, 97%, 97%, 36.3%, 97.1% and 96.6% respectively. The average measles routine immunization coverage for consecutive five years was 93.1% ranging from 84.4% in 2009/10 to 97.1% in 2013/2014. Supplemental Immunization Activities (SIAs) coverage during May 2013/2014 was also 101% (District unpublished report) in which both routine immunization and Supplemental Immunization Activities (SIAs) coverage was higher than the national and regional average coverage. Penta1-Penta3 and Penta1- measles drop-out rate were 2.7% and 2.5% respectively which is considered good.

Statement of the Problem

Low uptake of vaccination services has been associated with outbreaks of vaccine preventable diseases. Measles outbreaks have been linked with multiples of low coverage of routine immunization and SIA, leading to critical buildup of susceptible populations (6, 7). Contrary to the link between measles outbreaks with low vaccination coverage, reports from Halaba shows coverage level for measles vaccination is very high. Despite this high coverage of routine & SIA's immunization and less dropout rate (having good access and utilization), the District have been facing measles outbreak repeatedly. (In 2003 – more than 500 cases and since January 2006 E.C about 72 cases of which 17 IgM confirmed and 55 Epi- linked) (District unpublished report). There are no studies that have examined the factors contributing to the repeated outbreaks of measles despite very high overall immunization coverage reported. This study intended to assess the factors contributing for measles outbreak in the district.

Halaba Special District has reported high coverage (>92%) continuously for about 4 years. However, despite this high coverage of routine and SIA's immunization, the District is being affected by measles outbreak repeatedly since 2011. The results obtained from this study will be used to provide evidences that suggest gaps from the health service side in particular. This subsequently helps the decision makers at different levels to take sound public health interventions to improve the services and ultimately reduce measles related morbidity and mortality and its consequences in the district.

Literature Review

Immunization is amongst the most cost-effective public health interventions for reducing global child morbidity and mortality (8, 9). The global effort to use vaccination as a public health intervention began when the World Health Organization (WHO) launched the Expanded Programme on Immunization (EPI) in 1974. Over the years there have been several international efforts to increase EPI coverage, including Universal Childhood Immunization (10); the Global Alliance for Vaccines and Immunization (GAVI) (11); Millennium Development Goals (MDGs) (12); the Global Immunization Vision and Strategy (GIVS) (13); and most recently, the Global Vaccine Action Plan (GVAP) (14).

Immunization averts an estimated 2 to 3 million deaths every year from diphtheria, tetanus, pertussis (whooping cough), and measles. Global vaccination coverage—the proportion of the world's children who receive recommended vaccines—has remained steady for the past few years. For example, the percentage of infants fully vaccinated against diphtheria-tetanus-pertussis (DTP3) has held steady at 83% for the last three years. During 2012, about 110.6 million infants worldwide got three doses of DTP3 vaccine, protecting them against infectious diseases that can cause serious illness and disability or be fatal. By 2012, 131 countries had reached at least 90% coverage of DTP3 (15).

The access to measles vaccines, by the end of 2012, 84% of children had received one dose of measles vaccine by their second birthday (aged 12–23 months), and 145 countries had included a ization. More countries are now achieving high levels of) Member States reaching at least 90% coverage in 2012, up from only 43% in 2000. Between 2000 and 2012, the estimated number of total measles deaths worldwide decreased by 78% from 562,000 to 122,000 (16).

The WHO UNICEF coverage estimates for measles vaccination for Ethiopia indicate an increase from 37% in 2000 to around 80% in 2010. But measles remain endemic with periodic epidemics in the Horne of Africa (including Ethiopia).In Ethiopia outbreaks of measles reported every year from different regions of the country (17).

Measles is a highly contagious disease caused by a virus, which usually results in a high fever and rash, and can lead to blindness, encephalitis or death. Measles is the fifth killer disease among children under five years of age in the world. Sri Lanka, Latin America, Romania, and South Korea experienced outbreaks of measles in spite of sustained high coverage with single-dose vaccination strategy. Thus, the 2001–2005 WHO/UNICEF strategic plan for measles mortality reduction and regional elimination recommended achieving high routine vaccination coverage (>90%) in every district and ensuring that all children receive a second opportunity for measles immunization. The three phases of the strategy are measles control, outbreak prevention, and measles elimination (18).

Multiple studies demonstrate that 2–10% of those immunized with two doses of measles vaccine fail to develop protective antibody levels, and that immunity can wane over time and result in infection (so-called secondary vaccine failure) when the individual is exposed to measles. In an October 2011 outbreak in Canada, over 50% of the 98 individuals had received two doses of measles vaccine. Thus, measles outbreaks also occur even among highly vaccinated populations because of primary and secondary vaccine failure, which results in gradually larger pools of susceptible persons and outbreaks once measles is introduced. This leads to a paradoxical situation whereby measles in highly immunized societies occurs primarily among those previously immunized (19, 20).

coverage and sustained low measles transmission, in 2010 ak in more than two decades. During the 2010 epidemic, age groups ≥15 years contributed almost one-third of the cases, as expected in a setting with good, but not sustained, vaccine coverage and effectiveness (21). During the Malawi epidemic, MSF vaccinated through non-selective mass campaigns over 3.3 million children aged 6 months to <15 years, half of the country's total population for this age group. However, outbreak response efforts failed to control the epidemic because vaccination campaigns were implemented late in the course of the epidemic, and transmission was sustained by older individuals not targeted by the ORI campaign. Targeting individuals ≥15 years old would have had a greater impact on the transmission dynamics than did limiting vaccination to those <15 years old (22).

The quality of immunization data in many African countries is questionable. Various external evaluations have identified many inconsistencies in reported data suggesting that immunization data monitoring remains weak in most African countries (23-25). Cold chain management in resource-poor settings, where electricity is non-existent or erratic, coupled with a lack of adequate trained staff to administer vaccines present major challenges in most African countries. Furthermore, of those children who do receive the vaccines, many receive them late or at inappropriate timing and likely receive sub-optimal disease protection (26).

Issues of immunization awareness, demand for immunization, and level of trust in health system, adequate human resources, access, and timeliness of vaccinations, service delivery, poor infrastructure, and immunization monitoring are among the many challenges faced by most African countries, all requiring critical assessment and evidence-based interventions for an improved EPI performance (27-29).

To assess the health service related factors contributing for measles outbreak in a high vaccination coverage reporting district, Halaba; Ethiopia.

Specific Objectives:

- To assess the knowledge, attitude and practices of health service providers (HEWs) and EPI Focal Persons
- To assess cold chain management and vaccination procedure
- Based on the study findings to forward practicable recommendations for policy makers and service providers.

Methods

Study Setting

Study Area and Study Population

The study area will be Halaba Special Woreda/District of Southern Nations, Nationalities and Peoples' Regional State with an area of 994.66 km^2 located at a distance of 315 Kilo meters South West of Addis Ababa and 89 Kilo meters far from the regional town, Hawassa. It has 84 administrative Kebeles of which 79 rural and the remaining 5 urban Kebeles.

The study population will be the total population of Halaba Sp. District, which is 305,555, of whom 154,454 are men and 151,101 are females that will be target population for the study. About 87.8% (268,252) of the population is rural dwellers while the remaining 12.2% (37,303) are urban dwellers.

Study Design and Period

A cross-sectional descriptive study will be conducted from September 15 – December 15/ 2014. The study will be investigative and use both quantitative and qualitative designs. Secondary tained from governmental health facilities (health centers

Study Subject

There are 1 hospital (not yet providing immunization service), 10 health centers (1 in urban and 9 in rural) & 79 health posts providing health services including immunization service. About 134 rural Health Extension Workers (HEWs) of which 124 are working more than one years of service on their respective health posts (eligible for our study) and the remaining 10 HEWs are newly assigned about two months ago; each health center and the District health office has one EPI focal persons respectively. The study subjects are the health facilities (9 Health Centers and 79 Health Posts providing vaccination services excluding 1 health centre in which started its function recently about less than one year period and the hospital provided that it don't provide the service), 1 District Health Office and health centre EPI focal health workers and rural HEWs.

Inclusion and Exclusion Criteria

Inclusion

Rural Health Extension Workers, Health Center and District EPI Focal Persons who are employed before 2013/2014 and working in the district;

Health centers started providing health services before 2013/2014 and measles outbreak occurrence in its catchment for observation

Exclusion

Urban HEWs since they are not providing immunization services, facilities not providing immunization service and new HF's during 2013/2014, individuals not available at the time of data collection will be excluded from the study.

Operational Definition

- **Measles:** An infectious disease, especially of children, which produces small red spots all over the body.

ng protection against a particular disease by introducing especially using an injection.

- **Vaccination:** The administration of a vaccine to stimulate a protective immune response that will prevent disease in the vaccinated person if contact with the corresponding infectious agent occurs subsequently.

Variables

Dependent Variables

Knowledge of vaccination policy, Vaccine Vial Monitor (VVM), cold chain monitoring

Independent Variables

Educational level, Service of year

Sample Size

n = Z^2 p (q =1-p) / w^2; Where P= Proportion of Measles Vaccination Coverage, q =1-p,

n= required sample size, W= marginal error,

In the sample size determination 95%CI of α=0.05 was considered.

Z = 1.96 W = 0.05, P = 92% = 0.92, q =1-92%=0.08

n = $(1.96)^2$ 0.92 (0.08) / $(0.05)^2$

n= 113

Number of health facilities for observational study will be 4 health centers (Halaba HC, Guba HC, Arsho HC & Ajo HC) in which measles cases are reported from their catchment health posts and from each of this health centers catchment health posts, 2 (two) health posts randomly selected for an observational study.

Sampling Procedure

From 113 sample sizes 9 health centre and 1 district health office EPI focal persons will be interviewed and the remaining 103 samples will be those HEWs working at rural health posts will ed having the total name list from the district health office d for in depth interview.

Data Collection and Data Quality

After obtaining informed consent from interviewee, data will be collected using a structured questionnaire, prepared in English and translated into Amharic, administered by the investigator and assistant data collectors who will be trained by the investigator for in-depth interview. Observational visits using interview schedules and check lists in selected health facilities will be conducted. Observational visits will be arranged on actual vaccination day for overall session process observation and cold chain management observation.

Quality Control

Pre-test of the questionnaires for validity for use in the field will be conducted in a village located in another district in the same region. Questions which were ambiguous will be rephrased following the pretesting.

Data Entry and Analysis

Data entry will be started parallel with data collection and continue as the fieldwork progress. The data will be analyzed using Epi Info 7. A check program will be employed to minimize errors that occur while data entry. Data will be entered twice differently and will be cleaned before analysis. Results will be presented in tables, graphs and charts.

Expected Results

The findings from the assessment are expected to address the contributing factors related to health services for measles outbreak and quality of immunization services.

Ethical Consideration

Before data collection process is started, the investigator will obtain an ethical clearance letter from Addis Ababa University Medical Faculty Institutional Review Board (IRB), Regional Health Bureau and Halaba District Health Office permission for the study. Consent paper will be obtained r will be submitted to each responsible body ahead of data

Dissemination of Report

The study finding will be provided both in hard copy and soft copy to District Health Office, Regional Health Bureau, AAU School of Public Health, EPHA and AFENET. In addition workshop will be organized to present the result for all health service staffs and stakeholders at district level

Work Plan

Activities	Aug/Sep 2014	April 2015		May 2015				June 2015				July 2015				August 2015		Remark
		WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	WK-3	WK-4	WK-1	WK-2	
Writing proposal	**Completed**																	
Submission of finalized proposals	**Completed**																	
Prepare fieldwork		X	X															
Data collection				X	X	X	X											
Data entry and analysis								X	X	X	X							
Write up and submission of report												X	X	X				
Submission of compiled final version															X	X		
Final Presentation																X	X	

Activities	Quantity	Rate pay/day $USD	Duration of work /day	Total ($USD)
A. Training				**360**
1.Data collectors	5	10	3	150
2.Principal Investigator	2	25	3	150
3.Supervisors	2	10	3	60
4. Tea/ Coffee for trainees	**10**	**4**	**3**	**160**
B. Data collection				**1700**
1.Data collectors	5	10	20	1000
2.Principal investigator	1	15	20	300
3.Supervisors	2	10	20	400
II. Stationery and Hard disk for data back up				**500**
III. Transport / Driver and Fuel and oil/				**320**
			Grand Total	**3000**

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…ing for malaria surveillance data discrepancy at … with emphasis on health workers knowledge, attitude and practice (KAP) about malaria surveillance and surveillance data importance in Halaba Special Woreda, Southern Ethiopia

Introduction

Malaria is a mosquito-borne infectious disease of humans and other animals caused by parasitic protozoan (a type of unicellular microorganism) of the genus plasmodium. Commonly, the disease is transmitted via a bite from an infected female Anopheles mosquito, which introduces the organisms from its saliva into a person's circulatory system. In the blood, the protists travel to the liver to mature and reproduce. Malaria causes symptoms that typically include fever and headache, which in severe cases can progress to coma or death. The disease is widespread in tropical and subtropical regions in a broad band around the equator, including much of Sub-Saharan Africa, Asia and the Americas.

Malaria is caused by five species of parasites of the genus Plasmodium that affect humans (P. falciparum, P. vivax, P. ovale, P. malariae and P. knowlesi). Malaria due to P. falciparum is the most deadly form and it predominates in Africa; P. vivax is less dangerous but more widespread, and the other three species are found much less frequently. Malaria parasites are transmitted to humans by the bite of infected female mosquitoes of more than 30 anopheline species. The zoonotic species P. knowlesi, prevalent in Southeast Asia, causes malaria in macaques but can also cause severe infections in humans. Malaria is prevalent in tropical and subtropical regions because rainfall, warm temperatures, and stagnant waters provide habitats ideal for mosquito larvae. Disease transmission can be reduced by preventing mosquito bites by using mosquito nets and insect repellents, or with mosquito-control measures such as spraying insecticides and draining standing water (1-3).

Malaria is mainly seasonal with unstable transmission in the highland fringe areas and of relatively longer transmission duration in lowland areas, river basins and valleys. Malaria transmission peaks bi-annually from September to December and April to May coinciding with major harvesting ne subsistence Economy of Ethiopia's countryside, and for or epidemics occur every five to eight years with focal epidemics as the commonest form.

Ongoing analysis of surveillance data is important for detecting outbreaks and 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. The purpose of this study is to assess factors contributing for malaria surveillance data discrepancy at peripheral health facility level with emphasis on health workers knowledge, attitude and practice (KAP) about malaria surveillance and surveillance data importance in the district in order to get valuable input for the improvement of the system in the Woreda and to determine appropriate and efficient allocation of resources.

Literature Review

Malaria is the leading cause of morbidity and mortality in the world and continues to be a major global threat to health, social and economic development (4,-6). Globally, an estimated 3.4 billion people are at risk of being infected with malaria and developing disease in 2012, and 1.2 billion are at high risk (7, 8). Each year, there are an estimated 300-500 million clinical cases. In 2013, there are 97 countries and territories with ongoing malaria transmission, and 7 countries in the prevention of reintroduction phase, making a total of 104 countries and territories in which malaria is presently considered endemic (7). According to the latest estimates, 198 million cases of malaria occurred globally in 2013 and the disease led to 584 000 deaths, representing a decrease in malaria case incidence and mortality rates of 30% and 47% since 2000, respectively. The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, who account for 78% of all deaths. It is estimated that, globally, 670 million fewer cases and 4.3 million fewer malaria deaths occurred between 2001 and 2013 than would have occurred had incidence and mortality rates remained unchanged since 2000. Of the estimated 4.3 million deaths averted between 2001 and 2013, 3.9 million (92%) were in children aged under 5 years in sub-Saharan Africa. These 3.9 million averted deaths accounted deaths that would have occurred between 2001 and 2013 ...plied for each year between 2001 and 2013 (8).

Sub-Saharan Africa represents the devastating effects of malaria. The disease is endemic in 45 of the 46 countries within the WHO African region, an area which annually contributes about 85% of all the world's malaria cases (9).

As for most of the countries in SSA, malaria is the leading cause of morbidity and mortality in Ethiopia, and causes a significant challenge to the country's underdeveloped health care system.

Malaria is ranked as the leading communicable disease in Ethiopia, accounting for about 30% of the overall Disability Adjusted Life Years lost (10). Approximately 75% of Ethiopia's landmass is malaria-endemic; areas of disease are primarily associated with altitude and rainfall (10-12) with about 68% of the total population living in areas at risk of malaria (10, 13-14). There are four major eco-epidemiological malaria transmission strata in Ethiopia: 1) malaria-free highland areas above 2,500-meter altitude; 2) highland fringe areas between 1,500 and 2,500 meters (affected by frequent epidemics); 3) lowland areas below 1,500 meters (seasonal pattern of transmission); and 4) stable malaria areas (year-round transmission; limited to the western lowlands and river basins) (15). In 2009/2010, malaria was the leading cause of outpatient visits and health facility admissions, accounting for 14% of outpatient visits and 9% of admissions (10, 16-17). In 2010, the Federal Ministry of Health (FMOH) reported 4,068,764 clinical and confirmed malaria cases to the World Health Organization (WHO) as recorded in the 2011 World Malaria Report (18). The estimated annual number of malaria-related illnesses, however, may range even higher (7 to 8 million per year), considering there is only 40% reporting completeness by Public Health Emergency Management (PHEM) (10).

Historically, there have been an estimated 10 million clinical malaria cases annually. Since 2006, however, cases have reduced substantially (13). The FMOH estimates that there are between 5–10 million clinical malaria cases each year. However, only about one million malaria cases are officially reported (19). According to FMOH reports, approximately 70,000 people die of malaria each year in Ethiopia (14).

um vivax are the two predominant malaria parasites, ccounting for 60%-70% and 30%-40% of malaria cases, respectively. Reports indicate that clinical malaria accounts for 10%-40% of all out patient consultations, with corresponding proportional morbidity among children under 5 years in age being 10% - 20% (13). Plasmodium falciparum is responsible for the vast majority of severe malaria and almost all deaths associated with the disease. Malaria is not only the major public health problem, but also a major impediment to the socio-economic developments of many countries in tropical areas. Despite the low malaria parasite prevalence compared to many African countries, malaria remains the leading communicable disease seen at health facilities in Ethiopia. Historically, malaria has forced people to inhabit the less agriculturally productive highlands. Given that the country's economy is based on agriculture and peak malaria transmission coincides with the planting and harvesting season, this has placed a heavy economic burden on the country. Previously, the disease was known to occur below elevation of 2000m, except during epidemics (13, 20-22).

From 2010 to 2012, the proportion of suspected malaria cases receiving a diagnostic test in the public sector increased from 37% to 61% in the African Region, and from 44% to 64% globally (7) and in Ethiopia the proportion of malaria cases that were confirmed with a diagnostic test increased from less than 10 percent in 2000 to 83 percent in 2012 (23).

In 2012, routine health information systems detected only 14% of the cases estimated to occur globally. Case detection rates were lowest in countries with the highest numbers of malaria cases (7). Recent data appear to indicate a drop in malaria morbidity and mortality compared to 2000-2004, with an apparent low point of outpatient malaria morbidity in 2007, and an estimated 30% increase in malaria outpatient morbidity since 2007. While no large malaria epidemics were reported in 2006 and 2007, there are signs suggesting an increase in malaria transmission in some parts of the country, including several focal outbreaks reported in SNNPR, Amhara, Tigray, and Oromia in the last five years. Despite this apparent increase in morbidity, annual inpatient malaria cases, malaria deaths, and malaria epidemics in Ethiopia have substantially decreased through 2012, compared to the baseline year of 2004.

critical element of all malaria programmes (24) particularly eful for assessing incidence and trends over time, and in stratification for targeting of malaria control (25). To realistically embark on the road towards malaria control and elimination as well as to facilitate for rational deployment of interventions, timely and up to date provision of accurate malaria surveillance data is necessary [26-28]. Even though most countries have routine morbidity and mortality reporting systems, distrust of their quality for malaria surveillance is widespread (25, 29-30.).

Statement of the problem

The capacity of malaria surveillance systems to provide accurate information on the distribution of and trends in malaria varies widely across the globe. It is influenced by the extent to which patients seek treatment, whether patients use public sector health facilities, the proportion of patients that receive a diagnostic test, and the completeness of recording and reporting systems (31).

Improved surveillance for malaria cases and deaths helps ministries of health to determine which areas and/or a population group are most affected and enables countries to monitor changing disease patterns. Strong malaria surveillance systems also help countries design effective health interventions and evaluate the impact of their malaria control programmes. Malaria surveillance is currently weakest in countries with the highest malaria burden, rendering it difficult to accurately assess disease trends and plan interventions. At present, only one tenth of the 219 million cases that are estimated to occur each year are detected and reported through national malaria surveillance systems. Only 58 of the 99 countries with ongoing malaria transmission produce sufficiently complete and consistent data on malaria that allow a reliable assessment of malaria trends over time. WHO urges malaria-endemic countries to strengthen their disease surveillance, health information and vital registration system. The data generated through such systems are essential for evaluating and improving the effectiveness of health interventions (32).

Ethiopia's national malaria control strategic plan includes goals to eliminate malaria in low-transmission areas and achieve near zero deaths due to malaria by 2015. To monitor progress turing both local and regional transmission is essential. ective surveillance system that can target focal areas of infection, increase capacity to identify transmission hot spots, and monitor near real-time malaria data to rapidly identify changes in malaria transmission, morbidity and mortality.

Even though tremendous efforts had been made to control and prevent malaria including establishing strategies, preparing guidelines and collaboration of stockholders; and had also been declining devastating malaria epidemics; it is a major public health challenge in burdening health facilities. Since malaria is a major challenge to the country and African continent due to climate changes and global warming, continuous surveillance data analysis is an important measure to monitor and evaluate the trends of malaria related intervention measures in controlling and preventing of the disease.

According to Federal Ministry of Health (FMoH), the system will be strengthened to detect, verify and notify epidemic outbreaks, based on diagnostic- confirmed cases, within two weeks of the onset. The early detection system is currently based on surveillance data that includes clinical malaria cases and in-patient malaria mortality. A change to identification of diagnostic-confirmed malaria cases will be critical for an effective epidemic and response system. Health workers at health centers and hospital and HEWs at health post have a major role in monitoring this data, data management, analysis and interpretation of the existing epidemic monitoring system. HMIS, PHEM or IDSR, and other available data of diagnostic-confirmed malaria cases will be used to prepare malaria thresholds for epidemic detection by month and week at all levels (health posts, health centers and hospitals, Woreda, zone, region, federal) in line with the revised epidemic guidelines (33). However, the reality according to Comparative Analysis of Malaria Surveillance Data (34); large data discrepancy between PHEM and HMIS data reported showing that data quality in report is in question. Since the District is one of the highest malaria hot spot area in the country, such data discrepancy leads for improper decision and action or intervention.

There are no studies that have examined the factors contributing to malaria surveillance data discrepancy at peripheral health facility level as well as health workers knowledge, attitude and practice (KAP) towards malaria surveillance and surveillance data importance. This study intended urveillance data discrepancy and KAP of health workers in

Significance of the Study

According to the national malaria surveillance report, Jima et al (25), Halaba Special Woreda of Southern Nation and Nationalities People Region (SNNPR) has the highest average reported confirmed malaria incidence than all other Woredas in Ethiopia at 73.2/1000/year and the highest malaria hotspot Woreda in the region. In such highest malaria hotspot district trusted, accurate and quality data should be generated from the source for proper implementation of the malaria strategic plan towards elimination in the country.

The results obtained from this study will be used to provide evidences that suggest the factors that contribute for data discrepancy as a whole. This subsequently helps the decision makers at different levels to take sound public health interventions to improve the quality of malaria surveillance data and the capacity of health workers who day to day generate the data and use for action in the district.

General Objectives

To assess factors contributing for malaria surveillance data discrepancy and health workers knowledge, attitude and practice (KAP) about malaria surveillance and surveillance data in Halaba Special Woreda, Southern Ethiopia.

Specific Objectives

- To compare health facilities malaria surveillance data using PHEM & HMIS malaria data sources
- To assess the knowledge, attitude and practices of Health Workers about malaria surveillance and surveillance data
- Based on the study findings to forward practicable recommendations for policy makers and service providers.

Methods

Study Setting

Study Area

The study area will be Halaba Special Woreda/District of Southern Nations, Nationalities and Peoples' Regional State with an area of 994.66 km^2 located at a distance of 315 Kilo meters South West of Addis Ababa and 89 Kilo meters far from the regional town, Hawassa. It has 84 administrative Kebeles of which 79 rural and the remaining 5 urban Kebeles.

Study Population

The study population will be the total population of Halaba Special District, which is 314,416 of whom 158,780 are men and 155,636 are females that will be target population for the study. About 87.8% (276,057) of the population is rural dwellers while the remaining 12.2% (38,359) are urban dwellers.

Study Design and Period

e conducted from June 1 – November 30/ 2015. The study itative and qualitative designs. Secondary sources of data at the district and governmental health facilities (Hospital, Health Centers and Health Posts) will be obtained.

Study Subject

There are 1 hospital, 10 health centers (1 in urban and 9 in rural) & 79 health posts providing health services including malaria diagnosis, treatment, prevention and surveillance activities. About 128 rural Health Extension Workers (HEWs); each health centre and hospital has one IDSR and HMIS focal person respectively and the district health office has one PHEM officer and HMIS officer respectively totally 152 subjects who are eligible for KAP study. The study subjects for surveillance data comparison are all health facilities (1 hospital, 10 health centers and 79 health posts) providing malaria diagnosis, treatment, prevention and surveillance activities and generating both PHEM and HMIS malaria data.

Inclusion and Exclusion Criteria

Inclusion

District health office PHEM and HMIS officer, Hospital and Health Centre IDSR and HMIS focal health workers and Rural Health Extension Workers (HEWs) who are employed before one month of this study data collection period and working in the district working as surveillance officer or focal person.

Exclusion

PHEM officer and HMIS, Health facility IDSR and HMIS focal health workers and Rural Health Extension Workers (HEWs), who are employed after one month of this study data collection period and individuals not available at the time of data collection will be excluded from the study.

Variables

Dependent Variables

Knowledge of malaria surveillance and surveillance data,

Sample Size

$n = Z^2\ p\ (q = 1-p)\ /\ w^2$; Where P= Prevalence of Malaria, q =1-p,

n= required sample size, W= marginal error,

In the sample size determination 95% CI of α=0.05 was considered.

Z = 1.96 W = 0.05, P = 48% = 0.48, q =1-48%=0.52

$n = (1.96)^2 * 0.48 * 0.52 / (0.05)^2$

n= 384

Since the above sample is to be taken from a relatively small population, the required minimum sample will be obtained from the above estimate by making some adjustment using correction factor:

$n_{final} = n / (1 + n/N)$.

$= 384 / (1 + (384/152)) = 108.9 \approx 109$

Number of health facilities for surveillance data comparison study will be 50% of health centers and health posts respectively and both the hospital and district health offices are selected for the study.

Sampling Procedure

From 109 sample sizes 1 hospital, 10 health centers and 1 district health office 1 PHEM and HMIS officer respectively a total of 24 persons will be interviewed and the remaining 85 samples will be those HEWs working at rural health posts will be interviewed. 85 HEWs will be selected having the total name list from the district health office and randomly selected by lottery method for in depth interview.

n interviewee, data will be collected using a structured questionnaire, prepared in English and translated into Amharic, administered by the investigator and assistant data collectors who will be trained by the investigator for in-depth interview.

Surveillance data comparison study will be conducted by investigator using checklists and table prepared for PHEM and HMIS data comparison.

Quality Control

Pre-test of the questionnaires for validity for use in the field will be conducted in a village located in another district in the same region. Questions which were ambiguous will be rephrased following the pretesting.

Data Entry and Analysis

Data entry will be started parallel with data collection and continue as the fieldwork progress. The data will be analyzed using Epi Info 7 and Microsoft Excel. A check program will be employed to minimize errors that occur while data entry. Data will be entered twice differently and will be cleaned before analysis. Results will be presented in tables, graphs and charts.

Expected Results

The findings from the assessment are expected to address factors contributing for malaria surveillance data discrepancy at peripheral health facility level and malaria surveillance and surveillance data knowledge, attitude and practice (KAP) of health workers in the district.

Ethical Consideration

Before data collection process is started, the investigator will obtain an ethical clearance letter from Addis Ababa University Medical Faculty Institutional Review Board (IRB), Regional Health Bureau and Halaba District Health Office permission for the study. Consent paper will be obtained from each respondent. Permission paper will be submitted to each responsible body ahead of data collection.

th in hard copy and soft copy to District Health Office, Regional Health Bureau, AAU School of Public Health, EPHA and AFENET. In addition workshop will be organized to present the result for all health service staffs and those stakeholders who demonstrated an effective intervention on malaria at district, regional and national level.

Budget Breakdown

Activities	Quantity	Rate pay/day $USD	Duration of work /day	Total ($USD)
I. Personnel (A+B)				3696
A. Training				996
1.Data collectors	5	15	4	300
2.Principal Investigator	2	25	4	200
3.Supervisors	4	20	4	320
4. Tea/ Coffee for trainees	11	4	4	176
B. Data collection				2700
1.Data collectors	5	10	15	750
2.Principal investigator	2	25	15	750
3.Supervisors	4	20	15	1200
II. Supplies (Stationery and Camera for Picture capturing at field)				454
III. Transport / Driver and Fuel and oil/				850
Grand Total (I+II+III)				5000

Activities	June 2015				July 2015				August 2015				September 2015				October 2015				November 2015			
	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4
Prepare fieldwork																								
Training for data collectors																								
Pretest of Questionnaire																								
Correcting Questionnaire																								
Duplicate Questionnaire																								
Data collection																								
Data entry and analysis																								
Write up and submission of draft report																								
Submission of compiled final version																								
Final Presentation																								

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Chapter IX – Other Additional Output Reports

Management Training Report from Yirgalem, Hosanna and Mizan-Tefery Clusters-Southern Region, Ethiopia, 2014

Title of the training: Managing Epidemic Meningococcal Meningitis, Measles and malaria

The report includes the following training sites/Clusters/:-

1. Yirgalem
2. Hosanna and
3. Mizan Teferi Clusters

Objectives of Training:

General Objective

To create common understanding on PHEM Core process and its Principles among Zonal, Woreda, and Health Facility PHEM & IDSR Focal Persons and strengthen Public Health Emergency Management activities such as Early Warning, Preparedness, prompt response of epidemic and IDSR at the Facility Level on Meningococcal Meningitis, Measles and malaria

Specific Objectives:

To maximize knowledge and skill on the basic concepts of:

- Overview of Epidemic meningococcal meningitis
- Epidemic Investigation of meningococcal meningitis
- Laboratory surveillance for meningococcal meningitis
- Epidemic management of meningococcal meningitis treatment and care
- Epidemic management of meningococcal meningitis vaccination
- Post Epidemic evaluation of meningococcal meningitis
- Being Prepared for an Epidemic
- Meningococcal Meningitis Micro plan
- Overview of Measles, Epidemiology and Surveillance
- Measles Outbreaks Investigation & response

les, Measles prevention and control

- ➢ Overview of malaria
- ➢ Epidemiology and clinical features of Malaria
- ➢ Overview of malaria prevention and control measures
- ➢ Epidemic management of malaria
- ➢ Analysis of Weekly data and Threshold
- ➢ Case management of malaria

Methods used:

- Power point Presentation
- Group Work & Presentation
- Experience sharing
- Group discussion

Training Venues:

- FURA Institute of Development Studies for Yirgalem cluster participants
- Hosanna Health Science College for Hosanna cluster participants
- Mizan- Aman Hospital for Mizan- Aman cluster participants

Training Date:

- Yirgalem cluster participants from January 22 – 25/ 2014
- Hosanna cluster participants from Feb 4-7/2014
- Mizan- Aman cluster participants from Feb 28-Mar3/2014

Activities Summary

Participants of the training were:

- PHEM/IDSR focal Persons from ZHD, Woreda Health Office, Hospitals (both from Government & Private) and health centers of Sidama Zone Woredas and Hospitals (Governmental), Hawassa TA Health Desk, Hospital (Government & Private) and Health centers
- PHEM/IDSR focal Persons from ZHD, Woreda Health Office, Hospitals (both from Government & Private) and health centers of Bench Maji, Kaffa & Sheka Zones

m ZHD, Woreda Health Office, Hospitals (both from
alth centers of Hadiya, Kembata Tembaro, Gedeo, Segen
and Gurage Zones

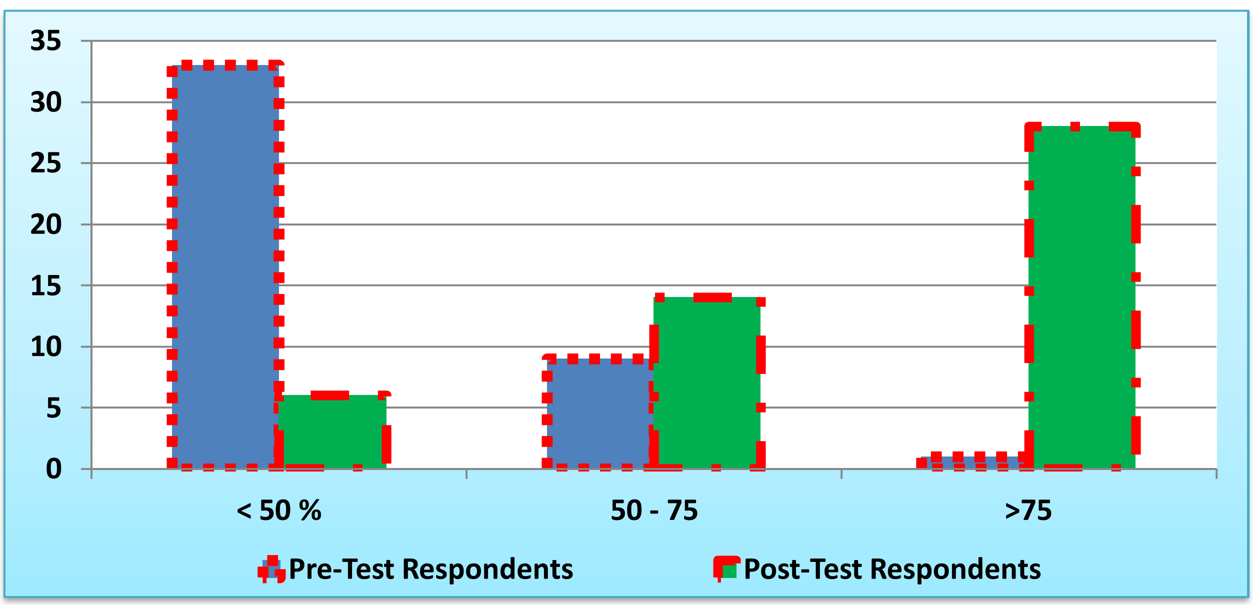
Duration of the training: four days in all clusters

Total Participants who took the Pre-test and Post-test and Result scored by cluster

1. **Yirgalem cluster participants**

Table 37: Summary of Participants Expected and attended the training and test results in Yirgalem clusters of SNNP, 2014

Test Result (%)	Pre-Test Result		Post-Test Result	
	Respondents	Proportion of Respondents (%)	Respondents	Proportion of Respondents (%)
< 50 %	**33**	**76.7**	**6**	**12.5**
50 - 75	9	21	14	29.2
>75	**1**	**2.3**	**28**	**58.3**
Total	43	100	48	**100**



and post test results in Yirgalem clusters of SNNP, 2014

2. **Hosanna cluster participants**

Table 38: Summary of Participants Expected and attended the training and test results in Hosanna clusters of SNNP, 2014

Test Result in %	**Pre-Test Result**		**Post-Test Result**	
	Respondents	Proportion of Respondents (%)	Respondents	Proportion of Respondents (%)
< 50 %	**30**	**55.6**	**7**	**12.3**
50 - 75	10	18.5	16	28.1
>75	**14**	**25.9**	**34**	**59.6**
Total	54	100	57	**100**

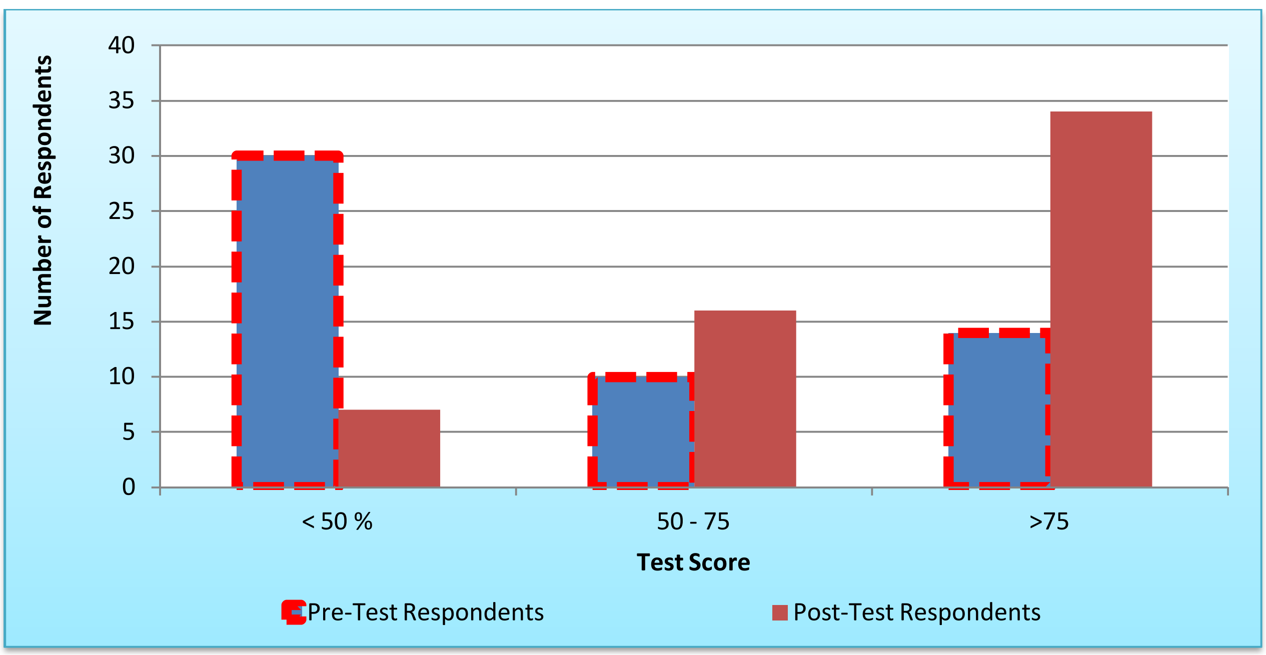


Figure 52: Summary of Participants pre and post test results in Hosanna clusters of SNNP, 2014

nts

Table 39: Summary of Participants Expected and attended the training and test results in Mizan- Aman clusters of SNNP, 2014

Test Result in %	**Pre-Test Result**		**Post-Test Result**	
	Respondents	Proportion of Respondents (%)	Respondents	Proportion of Respondents (%)
< 50 %	36	80	6	12.2
50 - 75	**8**	17.8	**7**	14.3
>75	**1**	**2.2**	**36**	**73.5**
Total	**45**	100	**49**	100

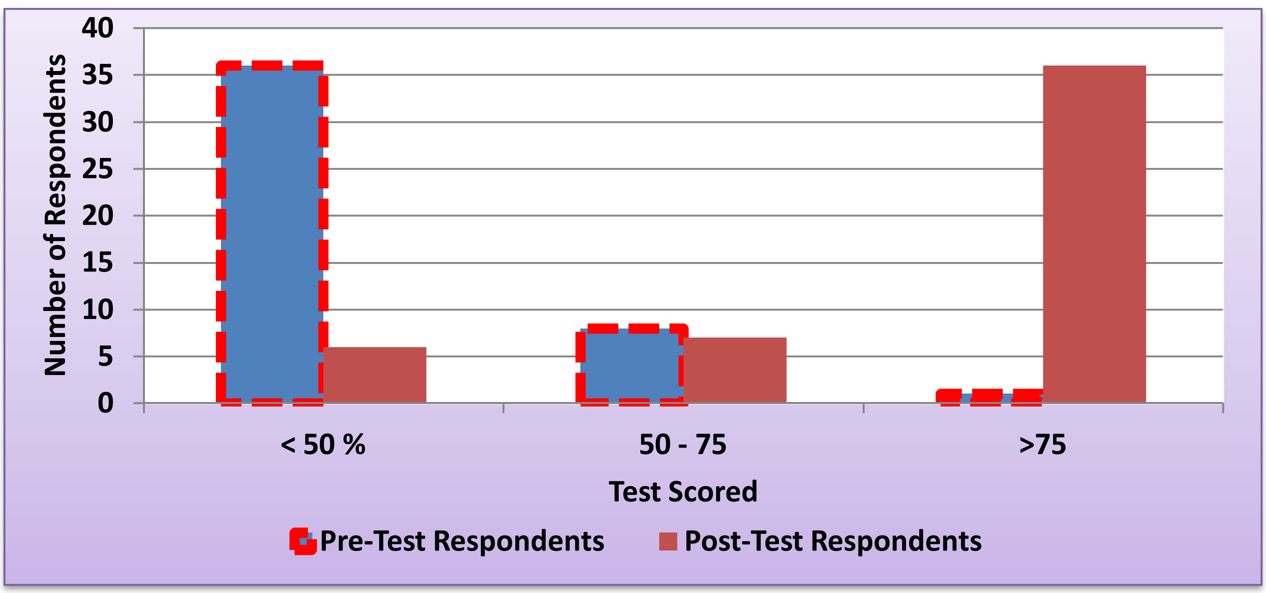


Figure 53: Summary of Participants pre and post test results in Mizan- Aman clusters of SNNP, 2014

Participants Summary:

A total of 170 participants were expected to attend the training from all the three (3) clusters but 161 participants (94.7%) from which 134 Male and 27 Female attended the training.

...ected and attended the training in all clusters of SNNP,

Clusters	Expected Number of Participants	Number of Participants	Percentage (%)
Yirgalem	50	50 (Male 35 & Female 15)	100
Hosanna	60	60 (Male 54 & Female 6)	100
Mizan- Aman	60	51 (Male 45 & Female 6)	85
Total	170	161 (Male 134 & Female 27)	94.7

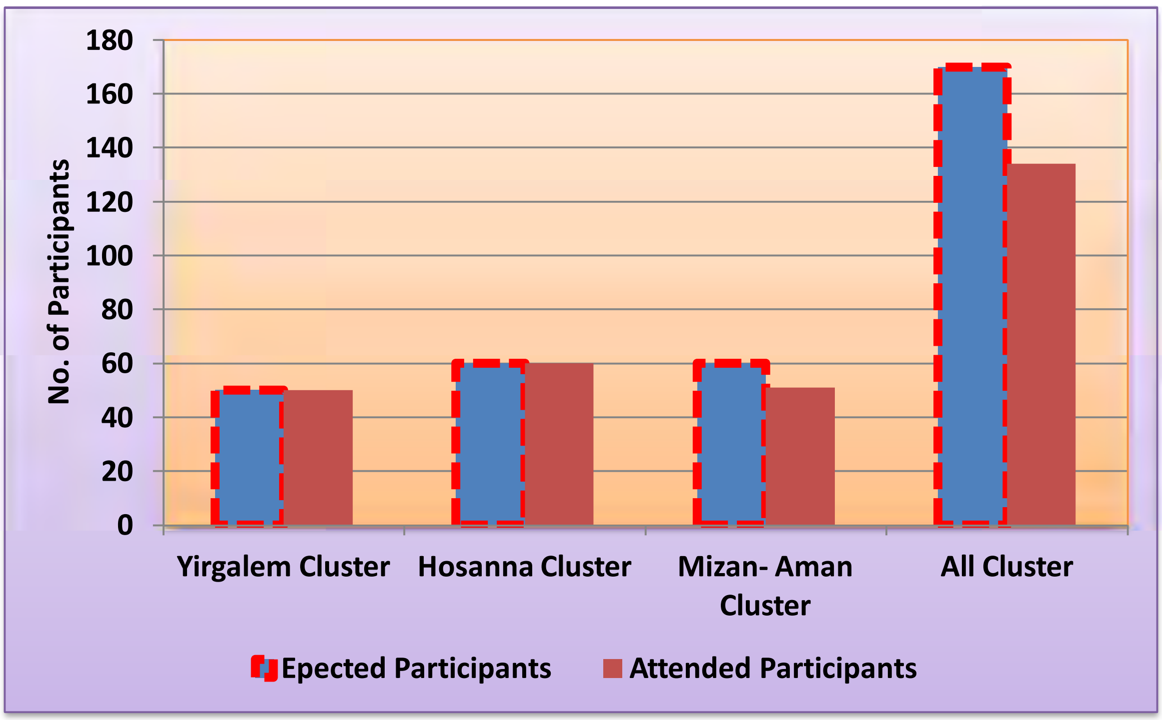


Figure 54: Participants Expected and attended the training in all clusters of SNNP, 2014

Strength

- 94.7% of expected participants attended the training
- Training was conducted as per the schedule
- Good experience sharing & hot discussion

nded

done properly at each level

- Integration with other core presses & partners should be strengthen
- Weekly IDSR report format shortage will be full filled by responsible bodies
- RRT & Epidemic management committee established & functioned properly at all level
- Process specific Supportive supervision should be conducted by Regional, Zonal & Woreda team at regular base
- Capacity building activities should be done on time before epidemic (at each disease case management & surveillance)
- Surveillance & laboratory feedback should be given on time by responsible bodies
- CBIDSR activities should be strengthen & linked with development army
- Special attention on capacity building should be given for health facility IDSR Focal

Figure 55: Pictures While Providing Public Health Emergency Management Training at Mizan-Aman cluster, 2014

…nt on Ebola Virus Disease (EVD) in Somali and Afar Region

(The report focuses on Somali Region only because Afar region not volunteer to respond)

Report Month: September, 2014

Date: September 13, 2014

Background

Somali Regional State was one of the Federal states of Ethiopia. It is the 2nd largest region which lies on >350,000 Km^2 (30% of the total land mass of the country). Nationally it has borders with Oromia in West and Southwest, and Afar in the Northeast. Internationally, it has borders with Kenya in the South, Somalia in the East and Djibouti in the northwest. Administratively, Somali region sub divided in to nine administrative zones. These nine zones are further divided into 68 Woreda and 4 towns.

The weather condition for the region is mostly hot throughout the year. Temperature ranges between 18 and 40 degrees Centigrade, whereas the annual rainfall is between 386 and 660 mm. The altitude is below 2000 sea level

The total population of Somali region is 5,312,893 in 2014. About 85% of the population is pastoralists and agro-pastoralists. The region has 8 Hospitals, 127 Health Centers, 905 Health Posts, and one Referral Hospital (Not yet completed).

Objectives

The objectives of our travel to the region were the following points:

1. Situational analysis on Ebola, whether the surveillance officers and RHB have developed awareness on Ebola

2. Assessing communication on Ebola status, communication with all relevant stakeholders and partners, with Central PHEM, by using free call/hotline number 8335 at (EOC) in

al Ebola Emergency Operation Center, EPHI

3. Assessing training gaps for surveillance officers on Ebola prevention and screening mechanism

4. Assess for any support required for Ebola surveillance as well screening

5. Assess for any risk factors, traveling issue, Migrants, any factor that can attribute Ebola virus disease (EVD)

Methods Used

- Meeting with Regional Health bureau officials
- Having interview with health facilities staff, Kebele leader, immigration official and custom authority officials
- Try to observe if there is any quarantine and isolation areas in the entry point
- Monitor the process of in and out in border area
- Observing if there is any PPE, or other protective materials in place in order to prevent infection from the disease of our concern
- Observe isolation center if screening process is established

Activities and findings

The team arrived at Jigjiga town on 07/09/2014 Sunday at night and the next day on Monday met the Regional Health Bureau Official and PHEM staff briefing the objective of our travel, started our assessment at RHB and at Lands Port.

At RHB and its downward structures nothing has been done with regard to EVD prevention and control activities

At the Land Port level

There were task forces that had established at the land port for other duties of the land port but recently incorporated follow up of EVD even though there is no tangible follow up orce is established including Kebele Administration head HACA staff as secretary and the rest immigration head, custom head, federal police and regional police heads as member of the committee. In the task force no one from RHB, Woreda Health Office or representative of health center at the land port was included.

The task force meet once per every week in Saturday as usual duty for discussion, during this time they said that there is discussion on EVD but in a situation where there is no activity what type of discussion is to be done is difficult and has no significance because what is to be discussed is to evaluate the activities being undertaken so that to sustain the good one and develop action for the draw backs observed, in this case the response we are provided is simply for saying only.

Even though the land port is working for no one to enter and go out of the country without legal permission, for example people in Ethio-Togo Wajaale when they need to bought or go Somalia Togo-Wajaale they freely bought their goods without screening and vice versa. We ourselves (the team) have proved that entered into Somali Land with no one requesting us our legal permit in to their country and the same thing to that of peoples from Somali Land enter into Ethiopia simply without being asked their permit to enter. This shows us that there is high population movement even in the official entry points that risk us for many health problems.

Officially on average 80 – 100 people enter (immigrate) into the country and 50-70 leave (emigrate) the country but through those informal inlets more than 1000 get in and out of the country; and most of the immigrants are citizens of Somalia, Djibouti, Europeans (both Somalia Europeans citizens and native European) and Kenyan citizens

Risk Factors and Gaps Observed

Risk Factors

oundary i.e. more than 105 informal entry points other ch case as it is well known many of the health problems are imported in these informal entry points that recent experience of polio cases are our good examples.

- Very mobile travel history of Somali that frequent travel to West African countries according to the RHB and Immigration office of the port land.
- There are peace keepers deployed in Mogadishu capital city of Somalia countries from different African country including West African troops, in which military might frequently travel to the west Africa and comeback to Somalia (further investigation is needed on this regard that from which specific countries are this peace keepers are deployed-cross border meeting mandatory)
- Five refugee camps are available in the region particularly in Dollo Ado from Somalia especially from Mogadishu town (holding more than 400,000 peoples) that there is frequent in and out of people
- Generally there is no follow up and screening activity at all level

Gaps identified

- No one knows about the existence of emergency free call number 8335 established for Ebola virus disease operational center at Addis Ababa EPHI) at all level starting from the Regional Health Bureau PHEM head & his all Officers up to community level (Kebele where the land port is situated and all task force members, health facility workers and randomly questioned peoples in the community)
- No one from the regional health bureau staff up to the down level surveillance officers has taken training on EVD except that the taskforce and health center staffs at the land port is provided with 30 minutes to 1 hr. orientation by WHO & FMHACA by passing the regional health bureau
- There is no any ongoing screening activity being conducted at the entry points.
- At all level there is no any PPE equipment in place

s deployed in Mogadishu capital city of Somalia who are ing those from West African Countries who are affected by EVD

- There are more than 105 informal entry points between Somalia and Ethiopia in which case people from both countries easily get in and out.
- There is no awareness creation activities being done at all community level due to fear of community panic may occur according to the RHB
- The task force committee established at the land ports is not functional as intended due to their low level of knowledge on Ebola virus disease screening and isolation activities. The composition of the task force members doesnot have incorporated the RHB/Woreda Health Office or Health Center Staffs at the port land as member. There is no job description delineated and reporting mechanism developed
- There was no collaboration activity between sectors

Strengths Observed

- The regional health bureau translating the Amharic brochure already prepared at the central level into Somali language which is being on the finalizing process
- The establishment of task force committee for Ebola virus disease at the port land even though it is not well functional as intended
- Orientation/sensitization provided by WHO and FMHACA

Action taken

- Awareness creation on the existence of this emergency disease at all level even though it is requested to provide detail training for all surveillance officers in the region which requires time and organized plan that is not to be done in such short rapid assessment period as well as requires higher official decision.
- Distributed brochures on Ebola disease at all level even though it is written in Amharic language in which the community as well as some health worker canot understand

using the emergency free call number 8335 for any ...t all level and any other question with regards to Ebola virus disease

- Expressed our readiness to fill the gaps providing detail training for all level surveillance officers (RHB and Woreda Health Office) according to the regional health bureau request

Request from the RHB

The region requested that:

- To be provided detail training for about 2-3 days for all surveillance officers including the regional health bureau PHEM staffs,
- Get permission to use the available public media in the region (both ESTV and Radio) for advocacy,
- Avail PPE (Personal Protective Equipment) and screening materials to establish screening center,
- IEC material (Brochure) in Somali language,
- Surveillance team to support and lead the surveillance activities particularly in the refugee areas and major porous boundaries to have coordinated action.

Opportunities

- There is universal Ethiopian Somali Television and local Somali Radio
- There is social mobilization committee at Kebeles level
- There are 24 Regional MHNTs (Mobil Health & Nutrition Teams) and 5 International NGOs MHTs (Mobil Health Teams) working in emergency situation
- There are different International NGOs working in health
- High number of Regional Public Health Emergency management staff in Ethiopian Somali region

Challenges faced

egion due to the problems already reported however our cussing with the people at the RHB who were trying to cooperate with us in searching responsible body to meet with us, nothing activities is being undertaken with regard to EVD except the information they had from the media.

- Frequent mobile and internet network connection problem particularly in Somali region
- Frequent interruption of our journey (in Afar region and on the way from Dire Dawa to Dewele which is inconvenient gravel road) due to vehicle Tyre losing its inflating air in need of repair, blocked us to reach our destination on time
- We were blocked to exit Jigjiga town for about a day interrupting our travel
- Geographic distance of the region in which some of the places like Dollo Ado (in which there are more than 400,000 refugee camp) 800 km away from Jigjiga and not able to be seen by the team due to the distance and shortage of time which must be seen

Conclusion

Somali region is one of the regions that have longest international border to the Somalia and Kenya. There is no screening activity being conducted with regard to EVD at land port areas and staffs didn't take training on Ebola disease which shows us serious gap that is to be acted up on urgently since the region is very vast with high number of inlet boundaries which needs very close monitoring.

Recommendation

I. For Somali Region

- Urgent training should be given for all RHB and Woreda Health Office surveillance officers and security persons so that they can take their responsibility for day to day monitoring and feedback
- Community level advocacy activities should be conducted strategically using the available Ethiopian Somali media in the region while translating the message already transmitted at National level into local language and stressing on properly using free

ich is serving 24 hr responding for any questions with

- All partner organizations that particularly servicing in health based in the region and national level should be given direction to actively involved in this emergency activity in terms of technical and financial support and response.
- IEC materials both in English and local language be supplied and distributed
- PPE (Personal Protective Equipment) and materials for primary screening purpose should be availed so that to start with and track the situation for further action and decision for the establishment of screening center.
- The situation of all the refugee camps in the region should be urgently assessed in order to get additional information about the immigrants since there are rumors that people new travel may come from Mogadishu especially Dollo Ado in addition communication and working with Refugee Administration Bureau is very important for all information update.
- The RHB and International NGO mobile health teams are used for social mobilization activities.
- Regular cross border meetings should be established for experience sharing and all the existing 110 polio cross border vaccination posts should be used for primary screening sites
- Health workers should be assigned at the proposed primary screening sites in order to start the screening activities.

II. Afar Region

Since the region is not assessed due to the reason already reported that should be reassessed in order to get the situation of the region as it is one of the entry points into the country in legally and also informally.

Prevention Activity Fortnight Brief Report of Galafi International Port in Afar Region

Report Month: October, 2014

Date: October 28, 2014

Galafi Land port

Galafi land port is one of the main international land port of the country which is under the national customs Authority which is 92 Km away from the capital city Samara in Afar Regional Government i.e. it is not located in Somali Region.

Tasks performed:

- This report is our second visit report in the region since mid of September 2014
- In the First visit the tasks performed were: Discussion was made with Regional Health Bureau Deputy Head, Disease Prevention and Health Promotion Work Process Head and its all Officers in the presence of PHEM unit staffs too about all the activities to be done at the regional level and down wards structures up to the land port
- Awareness creation and brochures distributed starting from the RHB up to Galafi land port.
- We visited the existing situation of screening activity in the other side of Galafi port in Djibouti even though there is no activity being conducted during our visit
- EBOLA committee has been established at all level starting from the region Task force and technical committee up to the land port.

During our visit as we have already reported that there was no screening activity being started in our part as well as no screening materials yet arrived at the regional health bureau and the land port particularly the non contact thermometer.

In our Second visit (this fortnight) the tasks performed were:

l Health Bureau Deputy Head which was very arguing us national with regard to screening material provision and training but we tried to brief him smoothly the activities being conducted from the national starting to provide the TOT training on EVD at Hawassa which has to be cascaded at all level up to screening materials distribution from EPHI through FMHACA as well as deployments of various teams to support the region since August 2014.

Meeting held with the regional health bureau EVD technical committee in the presence of partner organization representatives about the overall activities to be conducted at the region level to prevent the EVD not to enter into the country.

Figure 56: Meeting with Afar Regional Health Bureau EVD Technical Committee and Partner Organization Representatives, 2014

Decision was made to start the screening activity at the land port but there was no Infrared thermometer yet arrived at the region according to the RHB however we tried to convince them even though it is not yet arrived we should establish the screening site/ check point until we get over head/non contact thermometer and try to observe those peoples entering into the country in physical examination and history of their travel so that coming into agreement we started to select the screening site e presence of EVD Committee and established screening

Figure 57: Galafi Land Port Ebola screening site selection, clearing and establishing screening set up process, Afar, 2014

- Identified resources needed (both human and materials) for the screening site i.e. at least 2 tent (one for screening and second for temporary isolation of suspected persons), assign health workers for the screening work since the land port is working more than 17 hours and it is difficult to work with one or two HWs, PPE and assign focal worker who will work with us for coordinating the installment of the tent for screening and isolation work as well as to immediately respond for any additional resources to be requested in case necessary
- 2 large tents (one for screening and second for temporary isolation of suspected persons) has been provided from the region and transported to the land port however

ged us to conduct the screening activity according to the

- 2 clinical health workers assigned but not arrived on time
- The screening activity has already started with very challenging and lacking its standard way at least to start with all its draw back which need critical and day to day follow up

Figure 58: While monitoring temperature of people coming in from Djibouti, at Galafi Land Port, Afar, 2014

- Training provided for the assigned health workers as well as for about 20 Partner organization representatives who are working in the region different zones and Woreda with regard to health
- Cross border meeting conducted at Djibouti Galafi land port to closely work in both side and support each other and quick information dissemination in case any suspected cases seen

Cross Border Meeting at Djibouti Galafi Land Port

Figure 59: Cross-Border Meeting with Djibouti Galafi Land Port EVD Screening technical committee at Djibouti Galafi Land Port, Djibouti, 2014

- Regular meeting with the land port EVD committee was conducted to resolve problems observed while screening and for additional activities to be conducted

Figure 60: While discussing with Galafi land port EVD committee at Galafi Custom head office, Afar, 2014

- A discussion has been made with a delegate from FM HACA Directorate (Ato Getachew) and immediate corrective action was taken on the actual screening processes and sort of rearrangements made from his feedback then after.
- Feedback and verbal recommendations were given to the regional health bureau about what should the regional health bureau should do next.
- Additional two health professionals have been assigned to the land port for screening.
- The regional health bureau head has taken /promise the commitment to be involved in the following up the situation.
- Feedback about all activities done was presented/reported to the regional health bureau management committee in the presence of disease prevention and health promotion officers

Figure 61: While providing feedback to Afar regional health bureau EVD committee on the progress of screening activity of Galafi land port, 2014

Challenges

- Screening materials supplied from EPHI not arrived timely. Then after it is simply dumped at the health post found in Galafi land port without informing the RHB, the land port EVD Committee members and any responsible person.

ry difficult to work without shift with only 2 HWs in a available

- Necessary requests are not immediately getting solution
- We faced an accident while returning from Galafi land port to Samara hitting camel

Figure 62: Part of our challenge of travel accident on the way from Galafi to Samara, 2014

Recommendation:

- Since the land port is very crucial and the back bone of the country that is more than 2000 people's in and out, it needs day to day follow up and all gaps should be filled
- The RHB should own these activities and strengthen regularity of it.
- Screening should be initiated in all the refugees available in the region
- The regional Health bureau should take the commitment to cascade the awareness creation up to the community level in every zones, districts and Kebeles may be using an already established system that is health development army (HDA) and of course using public media Radio and Television with native language (Afar).

…isease (EVD) Awareness Assessment of Health Professionals in Ethiopia

Excusive Summary

Ebola virus disease is the disease with a high fatality rate and currently lacks proven safety and efficacy treatment or vaccine that makes the anxiety in health professionals and the community. More than 17, 942 suspected or confirmed cases and 6,388 deaths are reported in the West Africa EVD outbreak till December 10, 2014. The average fatality rate is 50%. Multiple weaknesses are observed in the health delivery system in the EVD countries that made difficult to control and prevent the outbreak. Health personnel, including clinical doctors and nurses, epidemiologists and social mobilization experts, are the Frontline deployed to control EVD outbreaks and to diagnose of the disease. The current EVD outbreak is unique from the previous outbreak that indicates any country cannot relax from strengthening readiness and response scheme to prevent the outbreak. Awareness about EVD is the crucial and vital issue for health professionals and the community to prevent and control of the disease. A cross sectional survey assessment will be conducted to assess the awareness of the health professionals in EVD. The purpose of this work is to identify the cracks in health professional awareness in EVD and policy makers should able to take necessary steps to avoid unnecessary anxiety, concern, and excessive reaction that is linked to EVD.

Ebola is a viral disease that is one of the Viral hemorrhagic fevers (VHFs) group illnesses that are caused by viruses of diverse families, including Lassa fever, Rift Valley Fever and Marburg viruses [1]. Ebola Virus Diseases (EVD) is a sever, often fatal disease caused by the family of RNA virus called the Filoviridae with a case fatality rate of up to 90% [2-4]. Ebola virus first detected in 1976 in Zaire and Sudan causing simultaneous epidemics of sever hemorrhagic cases (550 human cases) associated with 90 and 50 % of mortality rate in two epidemics respectively [3, 5] [6]. Originating in animals, EVD is spread to humans and among humans through contact with the blood, secretions, organs, or other bodily fluids of those infected [2].

Unlike previous outbreaks in east and central Africa that was controlled in short time fairly swiftly, the current outbreak occurred in West Africa is unique which broke the pattern of previous outbreaks and has become the worst in history [7]. According to WHO EBOLA RESPONSE ROADMAP SITUATION REPORT, the number of suspected or confirmed cases was peaking in 17,942 and 6,388 deaths between March, 2014, and December 10, 2014. The current EVD outbreak in West Africa has persisted and amplified in the last almost one year due to lack of early detected or not suspected which allowed the outbreak to spread to other countries; inadequate medical system; the site of the outbreak bordered three countries and spread to the capital cities rather than rural in previous outbreaks and the physical contact in traditional funerals accelerates the outbreak [7].

An infection in a health care worker might represent transmission from an Ebola patient in a health care facility, but might as well be a signal for transmission to and from health care workers in the community, and for facility-based transmission from patient to patient and from health care workers to patients or to other health care workers that makes to stay in the circle of outbreak [8]. Health personnel, including clinical doctors and nurses, epidemiologists and social mobilization experts, are the Frontline deployed to control EVD outbreaks. Therefore, health workers in the front line are at increased risk for infection for EVD outbreaks [8] and to contract Ebola by coming into contact with the body fluids of infected Ebola patients. Multiple problems and weakness had been faced in the public health delivery system of the 2014 EVD s, minimal isolation of wards, delayed initial response, atio, human resource shortage, logistics constraints like PPE and inability to involve members of the community [9]. A study conducted in Sierra Leone shows that health system gaps, including shortage or absence of trained health care staffs, PPE, safe patient transport and standardized infection prevention control protocols identified [10]. To have the knowledge and practice of use of adequate PPE and clothing while giving care directly or indirectly to EVD cases or deceased, through cleaning, and effective waste disposal, can substantially reduce the risk of infection to health personnel themselves and to other community. Otherwise providing care to EVD suspects without reasonable and adequate infection control process can cause filed to control the outbreak or exacerbation of the transmission (outbreak) that results extreme anxiety [1]. EVD has a wide and dramatic media coverage that provokes wide national and international interest that issued very aware about the professional fatalities in previous EVD outbreaks [1].

The unaffected countries should not relax by declared as Ebola- free of the two countries, Senegal and Nigeria after claiming of thousands of people including health professionals [9]. New transmission can occur at any time in any country or nation, even if there is a single lapse in the detection of an infectious case, or isolation of symptomatic contact, or a failure in infectious control or burial of disease [9]. The WHO proposed Regional Ebola Emergency Preparedness and Response Plan should adopted countries where no suspect or confirmed cases of Ebola has been detected till now [9]. This plan is a composed of provisions for mobilization of sufficient human resources, implement Ebola response measures; measures to ensure community participation; ascertaining laboratories for work related with diagnosis of Ebola; logistics support; infection prevention and control measures; travel and trade related recommendations; awareness campaigns for the community regarding different preventive measures; establishment of a data collection system; mechanism for surveillance and follow up; establishment of Ebola treatment centers; and guidelines to ensure coordination and crisis management at different levels [9]. This all made the health professionals (doctors, Nurse Staffs, Laboratory personals, etc) are critical to countries' efforts to protect their people from EVD.

ategies EVD. One of the strategies is making surveillance Air Ports and Land Ports. Creation awareness in the population, health education and training are also part of the prevention strategies. The aim of this study is to identify the gaps in health professional awareness in EVD and policy makers should able to take necessary measures to avoid unnecessary anxiety, fear, and excessive reaction that is linked to EVD.

Objective

General Objective:-

To identify EVD awareness of health professionals in the country

Specific Objective:-

- To gauge health professional perception of the capabilities of health facilities in managing cases of Ebola
- To strengthen EVD prevention and preparedness in the country
- To assess the confidence of health professionals on the ability of the Ministry of Health, Health Facilities and its authorities in prevention and preparedness EVD.
- To recommend necessary measures to full fill the gaps in EVD awareness in health professionals

Methodology

Study area

The study will conduct in Ethiopia, where health professionals working places, including hospitals, Health Centers and Clinics as well as other health related organizations and sectors. Ethiopia is located in East Africa. The capital city of Ethiopia is Addis Ababa that is also the AU center. In that location are nine administrative regions and two administrative towns. The health service in Ethiopia is structured in three tiers, with service delivery at primary, secondary and third level. Primary level is the most peripheral and basic facility staffed by two female health extension workers.

Cross sectional design will be conducted to assess the EVD awareness of health professionals in nine regions and two administrative towns. Health professionals (medical doctors, nurses, laboratory personals and other support staffs) whose work in governmental, private and NGO health facilities will interview used the structured self administrative questionnaire for distribution, risk factors, cause, mode of transmission and prevention and preparedness of EVD. The Federal Ministry of Health and WHO will participate in the study, which are the main responsibility to protect EVD. The study will conduct within five months since the EVD is seriously affected Africa, which makes the possible to spread to the country.

Study Population

The study population will be health professionals working in governmental and private health facilities as well as health related sectors and systems. For professionals whose work out of health facilities will exclude from the study due to the professional detail questions may be included in the questionnaire.

Sample Size

Epi info sample size determination formula for population study is utilized to set the sample size. Evidence for sample size calculation was used the US unpublished study.

Sampling Procedures

A multi-stage cluster sampling design with primary sampling units (PSUs) selected with probability relative to their size using stratified random sampling method will be used to hold the national wide study in the convenient (health professional) study population which may include hospitals, health centers as well as health posts. Regions and zones, those who have land ports and international air ports may consider as priority candidates for the study. All governmental and private hospitals and governmental health centers and health posts will be the target studies. Proportional numbers of health professionals will take from the selected health facilities.

ıt, personnel, Data Quality control)

We will accept two cases of data collecting processes. The foremost one is collecting data through applying the health association through email and the second type through data collectors that is the health professionals who can't address through their affiliation and email. Health professionals who are in health facilities will interview randomly in structures self questionnaire. Training will give to supervisors and data collectors. The training will focus on the importance and methods of filling and collecting the data as well as clear image of the variables.

Operational Definition

Health professional: - Health professional is an individual who provide preventive, curative, promotional or rehabilitation health care services in a systemic way to people or communities.

EVD: - a disease of humans and primates caused by Ebola viruses that causes an acute, serious illness which is often fatal if untreated.

Awareness: - the state or ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns.

Infection control: - a discipline aim to insure the prevention of who might have be vulnerable to acquiring an infection with the general community and while receiving care due to health problems, in a range of settings.

Management: - the function that coordinates the efforts of people to accomplish goals and objectives using available resources efficiently and effectively.

Data Processing and Analyzing

Data will enter, clean and analyzing using Epi info version 7.3.3.1 and Microsoft Excel program. Frequency tabulation will be identified, and then compared with each other.

Ethical Consideration

OH before interviewed of the participants. Addis Ababa stitutional Review Board (IRB-MF) will provide ethical clearance and approval for the study. Written and oral consent will be explained to the study participants.

Dissemination of results

After completion of the study the document will submit to AAU, School of Public Health and EPHI/FMOH. The finding of the study will present to the school community, EPHI/FMOH and responsible sectors and organizations. The report will disseminate to journals for publication.

1. Parkes-Ratanshi R, E.A., Mbambu B, Mayanja F, Coutinho A, et al, *Ebola Outbreak Response; Experience and Development of Screening Tools for Viral Haemorrhagic Fever (VHF) in a HIV Center of Excellence Near to VHF Epicentres.* PLoS ONE 2014. **9(7)**.

2. Salaam-Blyther, T. *The 2014 Ebola Outbreak: International and U.S. Responses* Congressional Research Service August 26, 2014 **7-5700**.

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4. 1, C., *Ebola virus disease (EVD), implications of introduction in the Americas* Pan American Health Organization, 13 August 2014.

5. Dan L. Longo, M., Dennis L. Kasper, MD et al, *Ebola and Marburg Viruses* Eighteenth Edition, ed. H.s.P.O.I. MEDICINE. 2012.

6. gateway, P.p. *Information on Ebola: Outbreak in West Africa*. June 2014.

7. Ki, M., *What do we really fear? The epidemiological characteristics of Ebola and our preparedness.* Epidemiology and Health, 2014. **36**.

8. Peter H. Kilmarx, K.R.C., Patricia M. Dietz, *Ebola Virus Disease in Health Care Workers — Sierra Leone, 2014.* Morbidity and Mortality Weekly Report, 2014. **63**.

9. Shrivastava SR, S.P., Ramasamy J, *Preventing the emergence of Ebola disease in unaffected countries: necessity of preparedness.* nt J Health Policy Manag 2014. **3: 417-418**.

10. Ishani Pathmanathan, Katherine A. O'Connor, et al, *2014.* Morbidity and Mortality Weekly Report, Rapid Assessment of Ebola Infection Prevention and Control Needs — Six Districts, Sierra Leone. **63**.

				4	Jan-15				Feb-15				Mar-15				Apr-15			
		V	V	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4
Phase I	**Proposal Writing**																			
	Draft preparation and Revision																			
	Finalizing the Proposal																			
	Ethical Clearance																			
	preparing Data Collection Instruments																			
	Supplies and assessment materials																			
	Data Collectors																			
	Recruiting Data collectors																			
	Training																			
	Pretesting data collectors tool																			
	Selecting individuals																			
	Prepare interview tips																			
Phase II	**Conduct the Assessment**																			
Phase III	**Data Analysis**																			
Phase IV	**Writing Report**																			
	Preliminary report writing																			
	Submission of the preliminary repot																			
	Writing the final report																			
	Present & disseminate																			

		Number/ quantity	Rate / Day	Duration Work Day	Total
A. Personnel Cost					Birr
1. Training					
Supervisors		11	400	2	880
Data Collectors		50	400	2	40,000
Breakfast/Tea/coffee	71	50	2	7,100	
2. . Data Collectors					
Data Collectors		50	400	10	200,000
Supervisors		11	500	10	55,000
Investigator		1	500	500X130	65,000
B. Equipment and supplies					
Paper	Desta	10		10X200	2000
Photo Copy		2000X1.50			3000
Printing the proposal	20X2.5			50	
Printing the Draft		200X2.5			500
Printing the final		200X2.5			500
Pencil		200X3			600
Pen		200X5			1000
Markers	pack	2X50			100
Clip Board		1			500
Chart Paper		4X500			2000
Eraser		100X2			200
Sharpener		100X5			500
Note book		100X20			2000
Mobile card		100X100			10,000
Soft Paper		100X10			1000
Soaps		100X10			1000
GPS		11X500			5,500
Cars		15X2500X10			375,000
Tag, Badge for data collectors	20X71			1420	
Total				774,850	

questionnaire for health Professionals in Ethiopia

This is self-response questionnaire is prepared and shared with you just to know your personal views about EBOLA and the prevention preparedness. You are not required to write your name and the facility you are working for. As your responses are highly valued for the better planning and implementing of the EBOLA prevention endeavor in Ethiopia; we highly appreciate getting your views on the following questions, the earliest time possible.

I. Demographic details

Profession	Educational level				Year of service			
	Diploma	BSC	MPH/MSC	MD	<1	1-5	5-9	>10
Nurse								
Midwife								
Lab personnel								
Environmental Health								
Health Officer								
Medical Doctor								
Other								

II. True and False questions

1. EBOLA virus is acquired through eating raw meat from fruit bath and other wild animals
   a. True b. false
2. EBOLA Virus affects only adults (men and women)
   a. True b. false
3. EBOLA is transmitted from human to human only
   a. True b. false
4. Do you think the health system of Ethiopia is ready in the preparedness of prevention of EBOLA outbreak?
   a. Yes b. No c. I do not know

ease give your reasons:______________________________

____

5. In case an EBOLA suspected case reports to the facility you are working, will you be ready to give the care and treatment needed?
   a. Yes b. No

III. Multiple Choice questions

6. EBOLA virus can be prevented by
   a. Avoiding touching the sick person without the protective devices
   b. Avoiding eating raw meat from wild animals
   c. Avoiding direct contact with blood, any fluid and soiled cloths of patient
   d. All of the above
7. Which of the countries in Africa first reported EBOLA outbreak in 2014
   a. Liberia
   b. Senegal
   c. Guinea
   d. None of the above
8. Which of the following signs and symptoms should be considered in EBOLA Viral Disease diagnosis
   a. Sudden onset of fever, headache and muscular pain
   b. Diarrhea , vomiting
   c. Bleeding only
   d. A and b
9. Do you think prevention and control of EBOLA is difficult?
   a. Yes b. no

   If yes, why:____

   ____

   If no, can you state how:____

   ____
10. Whose responsibility is preparedness, control and containment of EBOLA outbreak
    a. Governments, health care providers, communities

alth care providers

d. None of the above

11. Is it important to prepare for EVD response for Ethiopia since the disease is in West Africa? Yes/NO

12. If your answer is yes for Q 11 write the reason or risk factors to the spread to Ethiopia?

13. If your answer is no for Q 11, why?

14. What is the mode of EVD transmission?

- **a.** Contact with infected corpses (human or animal)
- **b.** social network
- **c.** Nosocomial transmission
- **d.** Contact with blood, urine, excreta, vomit, saliva, sweat, mother's milk, organs, body parts, secretions and sperm
- **e.** All

15. What is the route transmission of EVD? (You can choose multiple answers)

- **a.** Oral
- **b.** via the conjunctivae
- **c.** after mucous-membrane exposure: nose and mouth
- **d.** via sexual intercourse
- **e.** Via a penetrating object infected with body fluids of a patient

16. Do you think that the current undertakings in information dissemination about Ebola in Ethiopia are enough? please give the reasons for the choice you have made

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

17. Health care providers are the first responsible persons to treat Ebola Patients. Please give the reasons for the choice you have made

- a. Strongly disagree

d. Agree

e. Strongly agree

18. Health care workers are fully aware about prevention and control of Ebola. Please give the reasons for the choice you have made
    a. Strongly disagree
    b. Disagree
    c. Neutral
    d. Agree
    e. Strongly agree

Thank you for your response

Bulletin Prepared for Wk 21 and Wk 23, 2014

HEM Bulletin Week 21, 2014

1. Data completeness

In 2014, week 21, there were weekly surveillance reports submitted to the region from 15 zones and 4 special Woredas including GOs and NGOs Hospital. A total of 4638 governmental health facilities were expected to report, however 4305 health facilities have reported to regional PHEM, which brings the completeness into 93% (see Fig 63.)

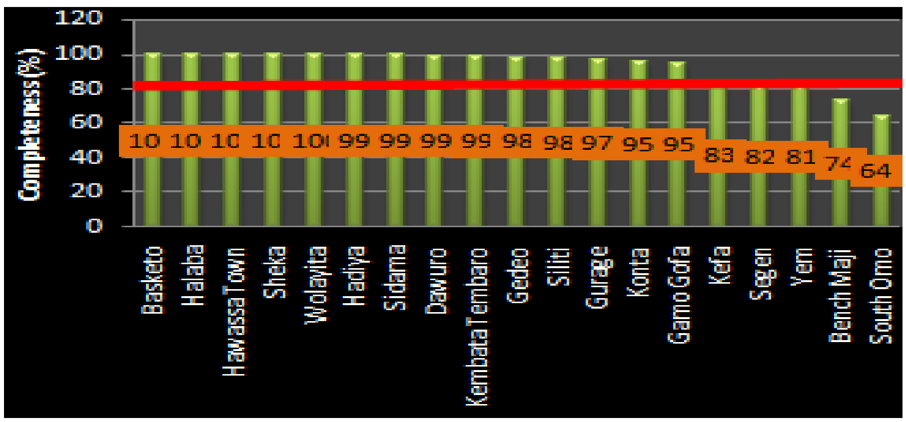


Figure 63: Showing PHEM report Completeness of zones and Special Woredas, SNNPR, Wk 21, May 2014

In week 21 zones & Sp. Woredas like Keffa, Segen, Bench Maji, S/Omo zone and Yem Sp. Woreda that reported below the WHO standard (completeness 90%) we recommend that should be improved for next weeks.

2. **Malaria**

In this week from a total of 30,163 suspected febrile cases examined by RDT/microscopy 7,645 cases were confirmed of which P. falciparum cases were 4,174(55%) and P. vivax cases were 3,471(45%).

There were a total of 8,057 confirmed and clinical cases of malaria reported of which 7,996(99%) were outpatients and 61(1%) were inpatient cases of malaria reported from all zones and Sp. Woredas and also there was **zero malaria deaths** reported the region.

cases was decreased by 1,244 compared to the previous

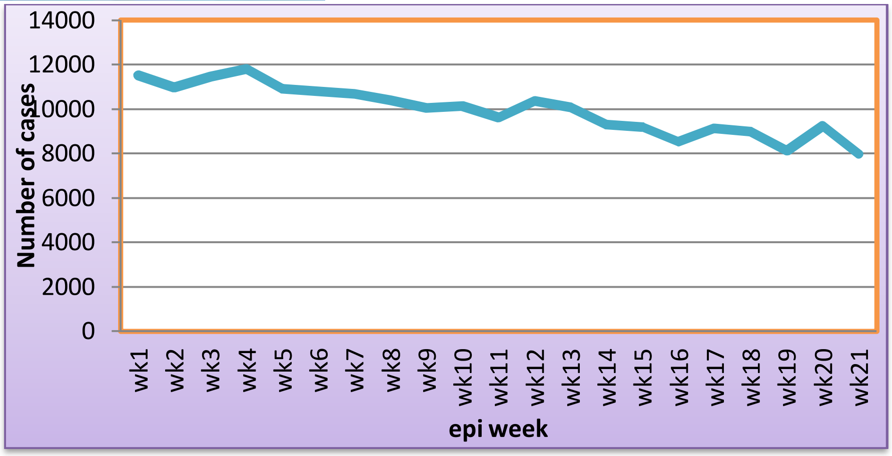


Figure 64: Number of Total Malaria Cases in wk1-21 in SNNPR, 2014

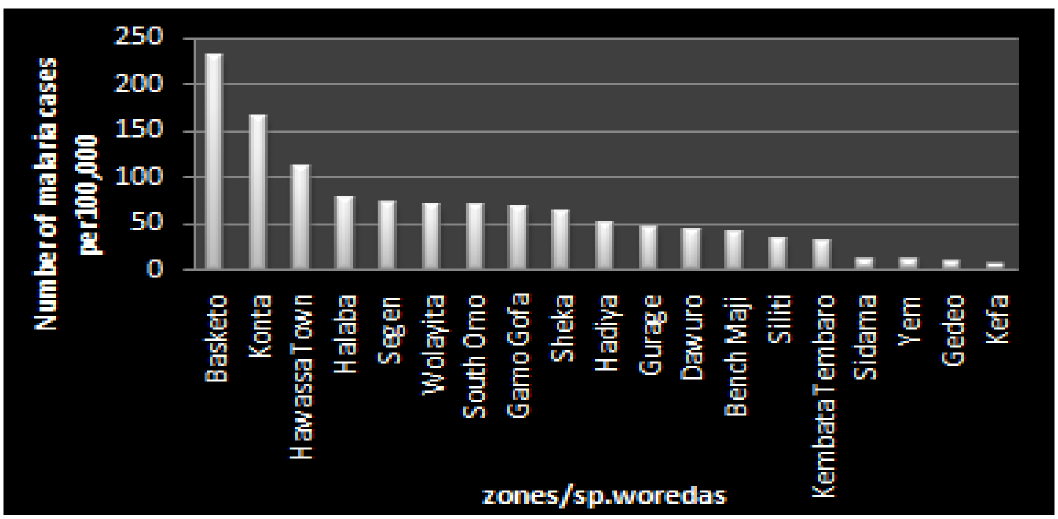


Figure 65: Malaria cases per 100,000 populations by zones & Sp. Woredas in SNNPR, WK21, 2014

Meningitis

In this week a total of 14 suspected Meningococcal meningitis cases and zero death reported. Among those cases reported in Gamo Goffa zone (6), Sidama zone (3), Hadiya zone (2) Wolayita zone (1) Keffa zone (1) Kembata Tembaro zone (1).From outpatient 8 cases and inpatient 6 cases were reported. When compared to the previous week (wk20) the numbers of cases were decreased by 3 cases.

zero death of Dysentery reported. Only 82 cases were reported as inpatient.

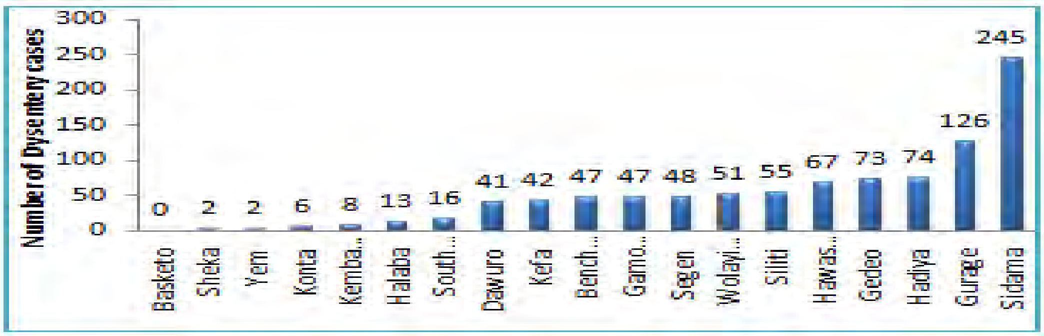


Figure 66: Number of Dysentery cases by zones/Sp. Woredas SNNPR, week 21, 2014.

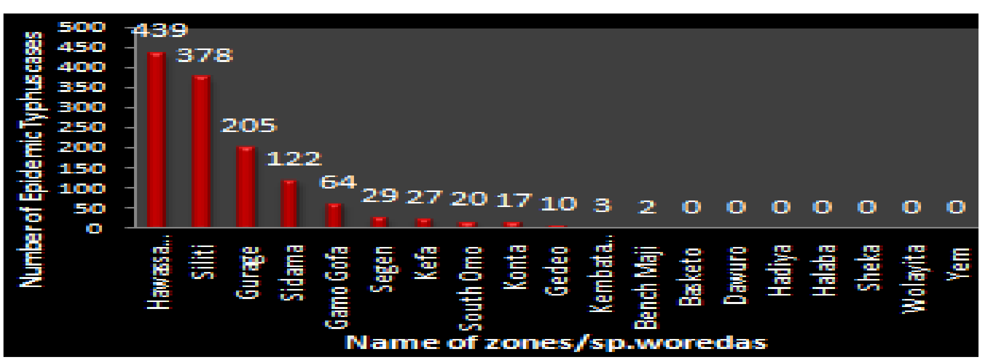
Though varied in number all of zones and special Woredas reported dysentery (See Fig 66). The reported cases were almost equal as compared to the previous week 20 (964 cases).

4. Relapsing Fever

In this week a total of 34 cases and zero death of Relapsing Fever were reported. The cases were reported from Bench Maji (13), Gurage (10), Gamo Goffa (7), Hawassa Town Adm. (2), Keffa (1) and Wolayita zones (1) cases were reported.

5. Epidemic Typhus

There were a total of 1316 suspected cases and zero death reported. Of which 1313 reported from outpatients and 3 cases from inpatient.



ases reported on week 21, SNNPR, 2014

There were 5,933 suspected cases with zero death of Typhoid fever reported of which 5,904 were outpatient cases and 29 was inpatient case.

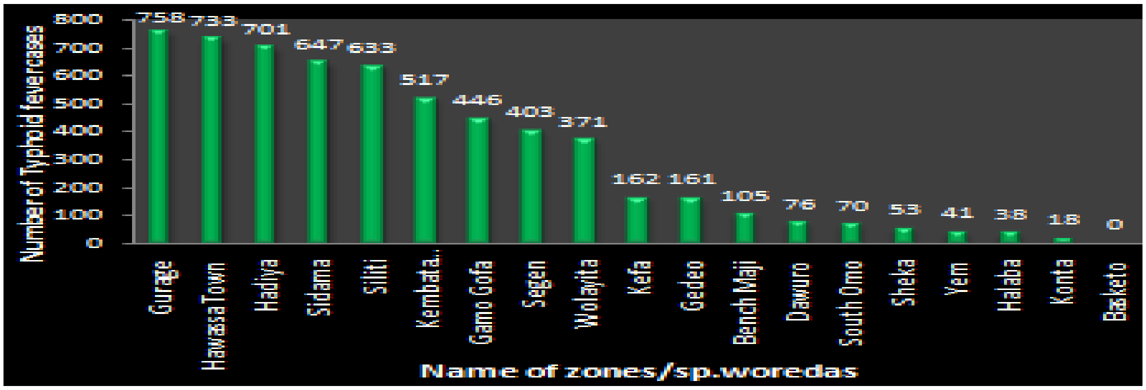


Figure 68: Number of Typhoid Fever cases reported on week 21, SNNPR, 2014

7. Severe Acute Malnutrition

There were a total of 807cases of severe acute malnutrition (SAM) cases and zero death reported. Of which 723 outpatient and 84 were in patient cases (see Table 41).

Table 41: Number of SAM by Zones/Sp. Woredas in SNNPR, WK 21, 2014.

Zones/sp. Woredas	No. of SAM OP cases	No. of SAM IP cases	Zones/Sp. Woredas	No. of SAM OP cases	No. of SAM IP cases
Sidama	240	27	South Omo	22	4
Wolayita	68	5	Halaba	18	3
Hadiya	68	4	Bench Maji	9	0
Gedeo	65	0	Hawassa Town	5	3
Segen	39	18	Dawuro	4	0
Gamo Gofa	49	7	Konta	2	0
Gurage	38	0	Basketo	0	0
Kem-Tembaro	34	3	Sheka	0	0
Kefa	31	5	Yem	0	0
Siliti	31	5	Region	723	84

Reported cases of severe acute malnutrition had increased by 98 cases from the last week report Wk20 (709).

were reported. The cases were from Segen (2), Hadiya (2) South Omo (1) and Basketo Sp. Woreda (1) and also the death from Kembata Tembaro zone reported. We recommend that conducting active surveillance & sensitization at health facility & community level should be addressed.

9. Measles

This week there were a total of 23 suspected cases with zero death of measles reported. .

Table 42: Number of Cases of measles by Zones/Sp. Woreda in week 21, SNNPR, 2014

Ser. No	Zones/sp. Woredas	Number of reported measles cases
1	Kembata Tembaro	14
2	Dawuro	3
3	Gurage	1
4	Sidama	1
5	Halaba	4
	Region	23

The number of reported measles cases was decreased by 20 cases compared to wk-20 (43 cases).

10. NNT

There was zero case and death of NNT reported from the region. To conducting active surveillance & sensitization at health facility & community level is recommend.

11. Rabies

A total of 2 cases and zero death of rabies reported in the region. The cases were from Dawuro zone (1) and S/Omo zone (1) reported.

12. Yellow Fever ,Anthrax, AWD, AHI, SARS, Pandemic influenza, Viral Hemorrhagic Fever, Guinea worm and Small pox

In week 21 zero cases and death reported from the region.

1. Data completeness

In **2014, week 23**, there were weekly surveillance reports submitted to the region from 15 zones and 4 Special Woredas including GOs and NGOs Hospital. A total of 4638 governmental health facilities were expected to report, however 4417 health facilities have reported to regional PHEM, which brings the completeness into **95.2%** (see Fig 69.)

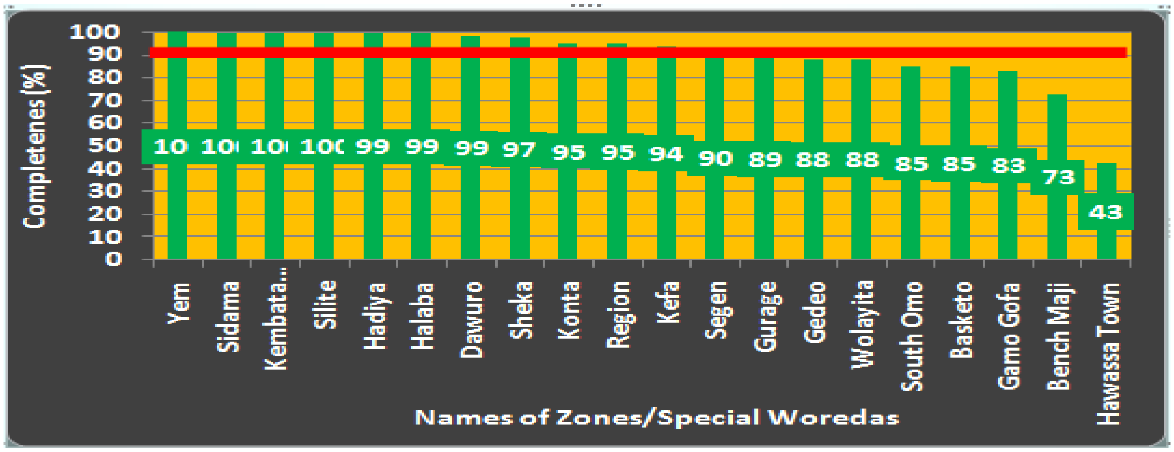


Figure 69: Showing PHEM report Completeness of zones and Special Woredas, SNNPR, Week 23, June, 2014

In week 23 zones & Sp. Woredas like Gedeo, Gurage, Bench Maji, S/Omo, Wolayita, Gamo Goffa Zones, Hawassa Town and Basketo Sp. Woreda that reported below the WHO standard (completeness 90%) we recommend that should be improved for next weeks.

2. Malaria

In this week from a total of 30,499 suspected febrile cases examined by RDT/microscopy 8,051 cases were confirmed of which P. falciparum cases were 4,624(57.4%) and P. vivax cases were 3,427(42.6%).

There were a total of 8,861 confirmed and clinical cases of malaria reported of which 8,791(99.2%) were outpatients and 70(0.8%) were inpatient cases of malaria reported from all zones and Sp. Woredas and also there was **zero malaria deaths** reported in the region.

ses was increased by 434 compared to the previous WK22

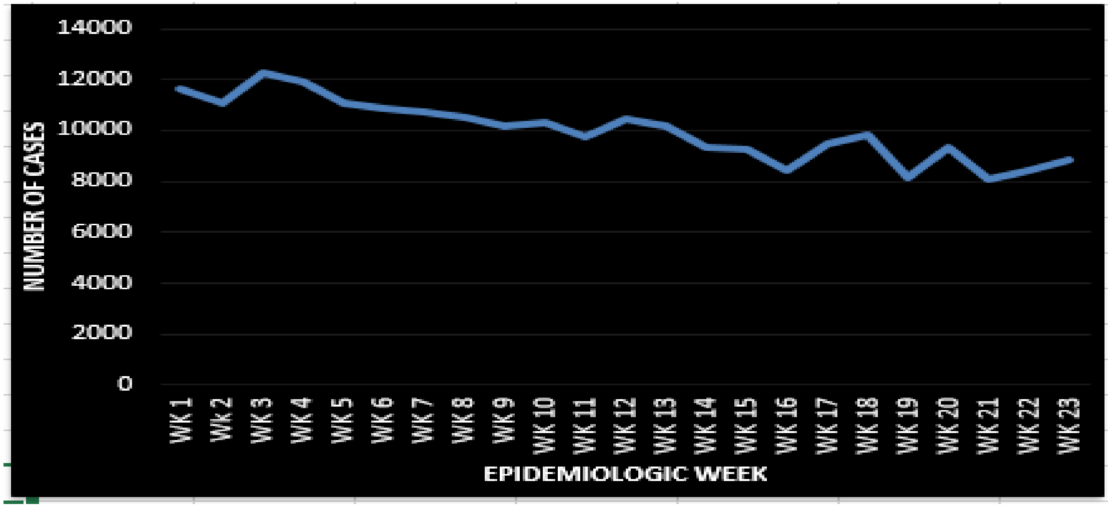


Figure 70: Number of Total Malaria Cases in Wk 1-23 in SNNPR, 2014

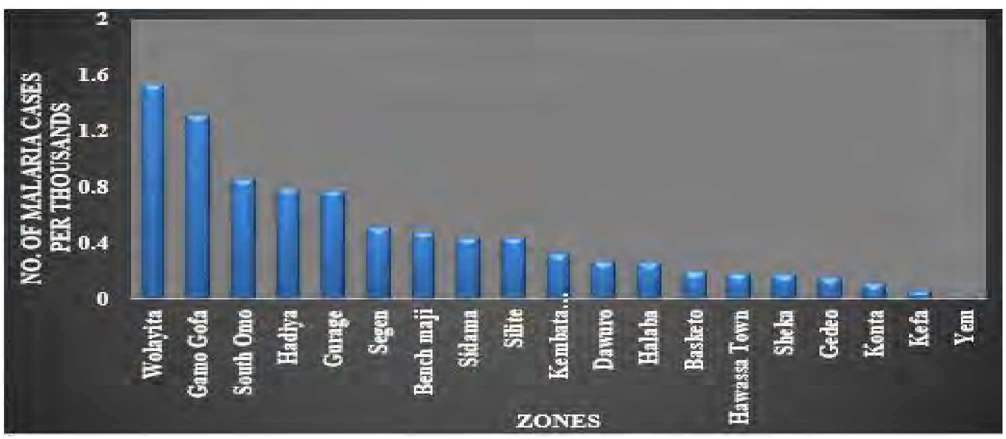


Figure 71: Malaria cases per 1,000 populations by Zones & Sp. Woredas in SNNPR, WK23, 2014

3. Meningitis

In this week a total of 19 suspected meningococcal meningitis cases and zero death reported. Among those cases reported in Sidama zone (6), Gamo Goffa zone (4), Hadiya zone (3), Kembata Tembaro zone (2), Konta (2), Wolayita zone (1) & Yem Sp. Woreda (1). From outpatient 5 cases and inpatient 14 cases were reported. When compared to the previous week (wk22) the numbers of cases were increased by 8 cases.

zero death of Dysentery reported. Only 20 cases were reported as inpatient.

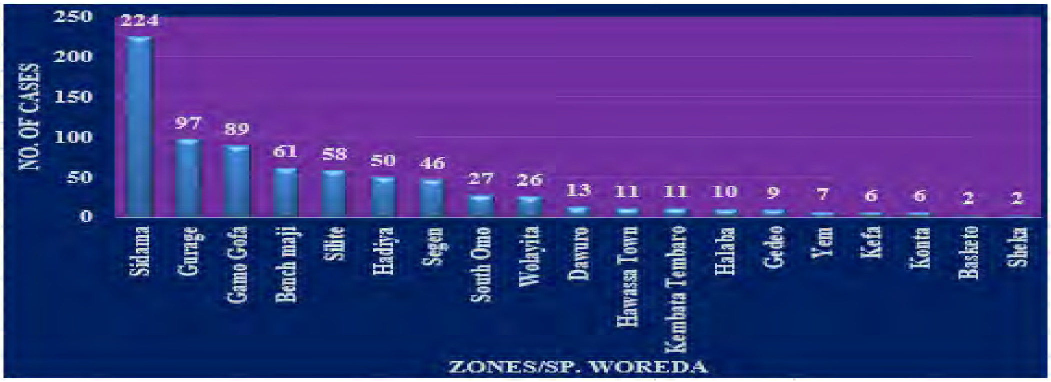


Figure 72: Number of Dysentery cases by zones/Sp. Woredas week 23, SNNPR, 2014.

Though varied in number, all zones and Special Woredas has reported dysentery (See Fig. 72). The reported cases decreased by 24 cases as compared to the previous week 22 (799 cases).

5. Relapsing Fever

In this week a total of 13 cases and zero death of Relapsing Fever were reported. The cases were reported from Dawuro (4), Gurage (2), Sidama (2), Hawassa Town Adm. (2), Bench Maji (1), Gamo Goffa (1), and Kembata Tembaro zones (1) cases were reported.

6. Epidemic Typhus

There were a total of 1121 suspected cases and zero death reported. Of which 1117 reported from outpatients and 4 cases from inpatient.

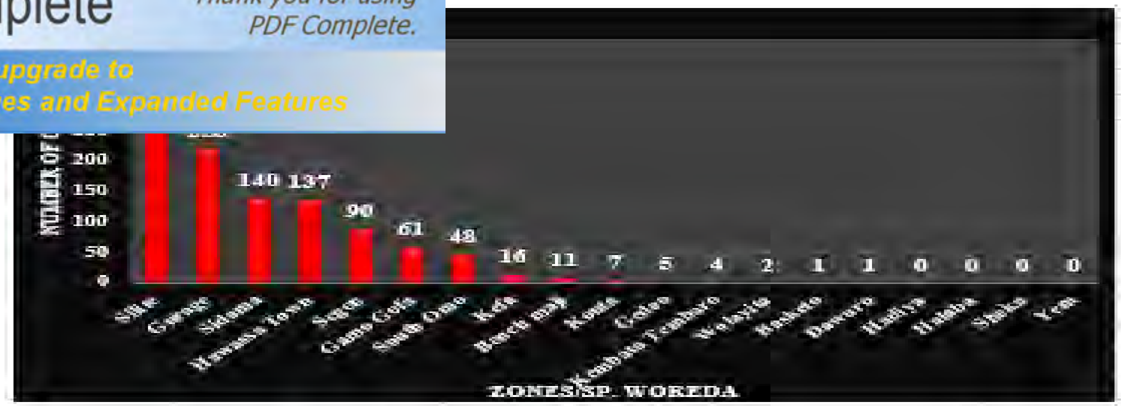


Figure 73: Number of Epidemic typhus cases reported on week 23, SNNPR, 2014

7. Typhoid Fever

There were 6,034 suspected cases with zero death of Typhoid fever reported of which 6,013 were outpatient cases and 21 was inpatient case.

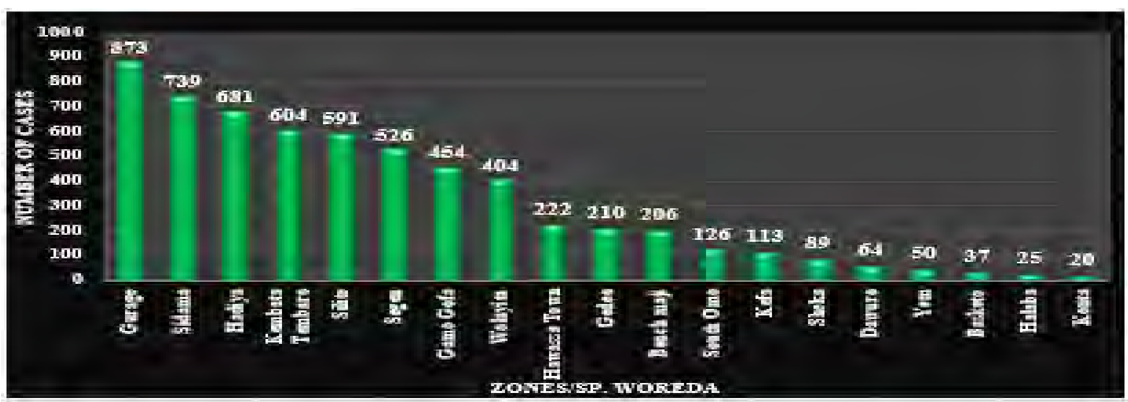


Figure 74: Number of Typhoid Fever cases reported on week 23, SNNPR, 2014

8. Severe Acute Malnutrition

There were a total of 791 cases of severe acute malnutrition (SAM) cases and zero death reported. Of which 696 outpatient and 95 were in patient cases (see Table 43).

Woredas in SNNPR, WK 23, 2014.

	Out nt C	Inpa C	De	Zones/ Sp. Woredas	Outpatient Case	Inpatient Case	Death
Sidama	189	27	0	Bench maji	20	0	0
Hadiya	95	5	0	Dawuro	18	0	0
Gedeo	66	4	0	Halaba	15	5	0
Wolayita	56	0	0	Hawassa Town	7	4	0
Kembata Tembaro	54	18	0	Kefa	7	1	0
Silite	42	7	0	Basketo	4	0	0
Segen	38	0	0	Konta	2	0	0
Gamo Gofa	35	3	0	Yem	1	0	0
South Omo	24	5	0	Sheka	0	0	0
Gurage	23	5	**0**	**Region**	**696**	**95**	

Reported cases of severe acute malnutrition had decreased by 88 cases from the last week report Wk 22 (879).

9. AFP

A total of four (4) AFP case and zero death were reported. The cases were from Kembata Tembaro (1), Gedeo (1), Gamo Goffa (1) and Gurage (1) zones. We recommend that conducting active surveillance & sensitization at health facility & community level should be addressed.

10. Measles

This week there were a total of 10 suspected cases with zero death of measles reported. .

Table 44: Number of Cases of measles by Zones/Sp. Woredas in Wk 23, SNNPR, 2014

S. N0	Zones/ Sp. Woredas	Number of reported measles cases
1	**Gurage**	**3**
2	**Halaba**	**3**
3	**Kembata Tembaro**	**2**
4	**Bench Maji**	**2**
	Region	**10**

vas decreased by 15 cases compared to wk 22 (25 cases).

There was zero case and death of NNT reported from the region. Conducting active surveillance & sensitization at health facility & community level is recommended.

12. Rabies

A total of zero cases and death of rabies reported in the region.

13. Yellow Fever, Anthrax, AWD, AHI, SARS, Pandemic Influenza, Viral Hemorrhagic Fever, Guinea worm and Small pox

In week 23 zero cases and death reported from the region.

Annexes

Investigation Questionnaire

Case Status = Case _________Control____________ Case ID--------------

Patient Name___________________ Date of Collection (MM/DD/YYYY: __/__/____

Region________ Zone_____ Woreda______ Kebele ______ Got__________

Respondent status: Case--------- Father--------- Mother--------- Other (Specify):----------------

1. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex of cases or control	1. Male 2. Female
1.2	Age of cases or control	years________ Months________
1.3	Occupation of respondent	Farmer House wife Student Unemployed Daily laborer Merchant Gov't Other (specify)_________
1.4	Educational level of respondent	Illiterate Read and write Elementary Secondary Above secondary
1.5	Marital status of respondent	Single Married Divorced Widowed Separated
1.6	Ethnicity of cases or control	Sidama 2.Other
1.7	Religion of case or control	Protestant 2. Christian. 3. Muslim 4.Other
1.8	Family size of a case or control	_____________
1.9	Is there any sick person with rash, fever, running nose/conductivities (illness)?	1. Yes 2. No
2.0	If yes, number of sick person	___________________

	s?	1.fever 2.Rash 3.cough, 4.coryza (runny nose), 5. conjunctivitis (red eyes) 6.Diarrhea 7.Ear discharge 8. pneumonia 9.Blidness 10. Laringo tracheal infection 11.Vomitting Others__________
2.2	Date of rash of onset	/ /
2.3	Date seen at health facility	/ /
2.4	Did you (he/she) take treatment?	1. Yes 2. No
2.5	If yes, treatment taken	1.ORS 2.Antibiotics 3.Vitamin A 4.Supplementary food 5. TTC ointment 6.Anti pyretic 7.Others given_______
2.6	Did you recovered after the treatment?	1.cure 2. partially 3. deteriorated/disabled 4.death

	sles?	1.Yes 2.No 3.Unknow 4.Not applicable
	If yes last vaccination date	1.patient recall________ dd/mm/yy 2. vaccination card_______ dd/mm/yy
3.2	Number of vaccine doses received	1.zero dose 2.one dose 3.two doses 4.three and above doses
3.3	Did you have any travel history 7-18 days to areas with active measles cases before onset of symptoms?	1.Yes 2.No If Yes where ____________
3.4	Do you have any travel history four days before and after rash onset	1.Yes 2. No If yes where ______________
3.5	Do you have any contact history with someone else four days before and after rash onset	1.yes 2.No If yes with whom________________
3.6	If Yes to question 3.5 place of travel	1.School 2.Neighbor 3.Market 4.Other________
3.7	Do you know modes of transmission for measles?	1.Yes 2.No 3. If yes specify________________________
3.8	Did you ever have measles infection?	1.Yes 2.No

		3. I Don't know
	cases/ MAUC measurement	1.Normal 2.Moderate 3.Severely malnourished
3.10	How many people are living together in one house with you:	________________
3.11	What is the estimated area of the house?	_____________
3.12	Where did you go first when you get ill with measles?	Health Facility Traditional Healers Holy Water Stayed at home Other :(Specify)_______________
3.13	Do you Know measles is vaccine preventable?	Yes No I Don't Know
3.14	Do you Know the right age for Measles Vaccination? If Yes, Tell Me:-----------------------------------	Yes No
3.15	Can You Tell me the sign and symptoms of Measles?	-
3.16	Can you Tell me How Measles Transmits?	
3.17	Can you tell me How Measles could be prevented?	
3.18	Do you think that treatment can reduce Measles complication, disability and death?	Yes No I do not know
3.19	Did you admitted in health facility	Yes No

cted Human Anthrax Outbreak Investigation

Human Anthrax Outbreak Investigation in Benatsemay Woreda, South Omo Zone, SNNP Region, Ethiopia

General Information:

Case Status = Case: ___ Control: ____Case ID: ____Date of Interview (MM/DD/YYYY): __/__/____

Address Region: ________ Zone: _____Woreda: _________ Kebele: ___________ Got: ___________

Respondent's Relation (if not a patient): Father_____ Mother_____ Other (Specify): ____________

Section 1: Socio-Demographic/Economic Characteristics

S. No	**Questions**	**Alternatives**
1.1	Sex	1. Male 2. Female
1.2	Age	years________ Months________ Date of Birth___/____/____
1.3	Occupation of the patients ***(Circle all the relevant answer)***	1. Pastoralist or Animal husbandry, 2. Farmer 3. House wife 4. Student 5. Butcher 6. Daily laborer 7. Merchant 8. Gov't work 9. Wool Sorter 10. Other (specify)_________
1.4	Family Occupation***(Circle all the relevant answer)****-if respondent is not the*	1. Pastoralist or animal husbandry 2. Farmer 3. House wife 4. Student

		rnatives
	patient	5. Butcher 6. Daily laborer 7. Merchant 8. Gov't work 9. Wool Sorter 10. Other (specify)_________
1.5	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Other (Specify)_________
1.6	Educational level	1. Illiterate 2. Read and write 3. Elementary 4. Secondary 5. Above secondary
1.7	Marital status	1. Single 2. Married 3. Divorced 4. Widowed

1.8. Is there any sick person who gets ill within 7 days after eating meat of sick animals or close contact with animals that have bleeding from nose, mouth and anus (suspected human case of anthrax) in the family?

1. Yes 2. No 3. Don't know_____

1.9. If yes (Question Number 1.8), number of sick person _______.

1.10. Did the animal dwelling separated from the human dwelling? 1. Yes 2. No 3. Don't know

1.11. If yes (Question Number 1.10), how much distance far from human dwelling_________,

1.12. Did the house have Window? 1. Yes 2. No 3. Don't know_____ v many window? ___

ilies have? _______.

1.15. What is the type of human living room floor? 1. Soil Sealed by dung 2.Cemented 3. Soil only 4. Other specify________________

Section 2 - General history of current illness (House-to-House Interview) (Cases Only)

2.1. Date of onset illness (when did you first feel sick?) ___/___/___					
2.2. Did you experience any of the following symptoms? 1. Yes 2. No (if yes, circle all the relevant answers)					
a. Headache	1. Yes 2. No 3. Don't Know	Onset date __/__/___	j. Bloody vomiting	1. Yes 2. No 3. Don't Know	Onset date ___/__/___
b. Fever	1. Yes 2. No 3. Don't Know	Onset date __/__/___	k. Abdominal pain	1. Yes 2. No 3. Don't Know	Onset date ___/__/___
c. Chills	1. Yes 2. No 3. Don't Know	Onset date __/__/___	l. Leaking wound (oozing)	1. Yes 2. No 3. Don't Know	Onset date ___/__/___
d. Loss of appetite	1. Yes 2. No 3. Don't Know	Onset date __/__/___	m. Swelling around injection site/ swelling of limbs	1. Yes 2. No 3. Don't Know	Onset date ___/__/___
e. Nausea	1. Yes 2. No 3. Don't Know	Onset date __/__/___	i. Itching	1. Yes 2. No 3. Don't Know	Onset date __/__/___
f. Vomiting (non-bloody)	1. Yes 2. No 3. Don't Know	Onset date __/__/___	n. General swelling (Swollen)	1. Yes 2. No 3. Don't Know	Onset date ___/__/___
g. Diarrhea (non-bloody)	1. Yes 2. No 3. Don't Know	Onset date __/__/___	o. Breathing Difficulties	1. Yes 2. No 3. Don't Know	Onset date ___/__/___
h. Bloody diarrhea	1. Yes 2. No 3. Don't Know	Onset date __/__/__	p. Other (describe below)	1. Yes 2. No 3. Don't Know	Onset date ___/__/___

Section 3 - Potential Exposures (Cases and Control)

3.1. Do your occupation associated with animals or agriculture? Yes___ No_____

3.2. If yes (Question Number 3.1), describe____

3.3. Do you have cattle's/Domestic animals? Yes___ No____ pecify ________________________________

gularly have taken vaccination? Yes___ No____

3.6. If yes (Question Number 3.5), how many times annually and when last Vac.? ___ & __/__/__

3.7. If No (Question Number 3.5), describe why? _____________

3.8. Is there sick animals suspected with anthrax (dead or slaughtered in your locality/area)? Yes___ No____

3.9. Have you contact with any products of dead/slaughtered animal of suspected/confirmed anthrax cases? Yes___ No____

3.10. If yes (Question Number 3.9), date of the animal died____,

3.11. Who disposed the dead animals/carcass: _________________

3.12. How the dead animals/ carcass disposed? ______________________________________

3.13. Where the animals/carcass disposed? ____

3.14. Did the dead/slaughtered animals vaccinated before? Yes___ No____ Don't know _____

3.15. If yes (Question Number 3.14), how many times/annually: ________________

The following questions relate to the 2 weeks prior to onset of illness:

3.15. Have you been involved in any activities that might expose wounds to soil e.g. gardening, renovation, camping, outdoor sports, recreational activities, etc., in the 2 weeks prior to illness?

1. Yes ___ 2. No _____ 3. Don't know _____

3.16. Have you had any contact with livestock/body fluids of livestock in the 2 weeks prior to illness?

1. Yes ___ 2. No _____ 3. Don't know _____

3.17. Have you had any contact with animal products such as untreated animal hair, wool, hides, or animal skin drums in the 2 weeks prior to illness? 1. Yes __ 2. No __ 3. Don't know _____

3.18. Have you eaten under cooked flesh or any products of suspected anthrax affected slaughtered cattle or other animal products in the 2 weeks prior to illness? 1. Yes ___ 2. No _____ 3. Don't know _____

3.19. Have you participated in disposing /slaughtering the suspected animal? 1 Yes 2 No 3 don't know es of activities involved: ____________________________

laughtered? (Describe area) _______________________

3.22. If municipal slaughtering place, does postmortem & ante mortem examination done? 1 Yes 2 No

3.23. Is there river downward from the slaughtered or disposed dead animal? 1 Yes 2 No 3 don't know

3.24. If yes (Question Number 3.23), how far slaughtered area from the surrounding river (in meter/Km)? _____

3.25. Was there rain after the animal slaughtered? 1 Yes 2 No 3 don't know

3.26. Have you fetched water after the death or slaughtering of anthrax affected animal from the specified river? 1 Yes 2 No 3 don't know

3.27. Have you travelled away from home or overseas in the 2 weeks prior to illness? 1 Yes 2 No 3 don't know

Section 4: Knowledge of the Community about Anthrax Disease

S/N	**Question**	**Answer**
4.1	Have You ever heard about anthrax disease?	1. Yes 2. No 3. Don't now
4.2	Do you know modes of transmission for Anthrax?	1. Yes 2. No 3. Don't now
4.3	If yes how?	A) Through direct contact to the animals B) Through consuming uncooked meat C) Through inhalation of powders, dusts, D) All
4.4	Where did you go first when you get sick?	1. Health Facility 2. Traditional Healers 3. Holy Water 4. Stayed at home 5. Other (Specify)_______________

		Answer
	affected by Anthrax?	1-Children of aged less than 5 years 2-Children of aged less than 18 years 3-Women of any ages 4-All people exposed to affected animal or product
4.6	How do you think people get Anthrax?	1. Contact with person sick in anthrax case 2. Direct Contact with the Domestic Animals (Cattle) affected by the anthrax Bacilli 3. Through consuming uncooked meat 4. Through inhalation of powder, dusts 5. Bad attitude of other people 6. Other(Specify)_____________
4.7	How do you think Anthrax can be Prevented?	1-Preventing oneself from contact with sick animals 2- By eating cooked meat 3- By regularly Vaccinating the Domestic animals 4- By protecting themselves from unimportant inhalation of drugs/cigarette/others 5- Properly disposing the dead animal 6- Practicing good Personal hygiene 7- I don't know 8- Other(Specify) ________

4.8. Please give details of any other signs associated with localized lesion ____________________

Section5–Visit HF's for Treatment and Hospital Admission History

5.0. Did you visit HF for treatment? 1 Yes 2 No. 5.1. If yes, did you get treatment? 1 Yes 2 No

5.2. Final outcome of treatment A. Cured B. Not completely cured C. Retreated

5.3. Was the patient hospitalized? 1 Yes 2 No. 5.4. If yes, date hospitalized__/__/__

Section 6 - Final patient outcome/status of hospitalization

6.1. Patient status: Discharged ____________ Died ________

6.2. Date died or discharged: __/__/__

6.3. Additional Comments, if any ____

EVALUATION QUESTIONNAIRE

------Region ----------------------Woreda------------------------

Interviewer: ----------------------- Interviewee: ---------------------Responsibility: ------------------------------------

I. DISTRICT (WOREDA LEVEL) QUESTIONNAIRE

Availability of national surveillance manual

1. Is there national guideline for Malaria and PHEM at this site?

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

2. Does the district have line list, epidemic reporting form, and rumor log book?

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

Data reporting:

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

    1. Yes   2.No   3.Unknown

2. 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)

3. Number of weekly reports submitted on time: ____/12 times the number of health facilities
4. Number of immediately reports submitted on time: __________/3 times the number of health facilities
5. How do you report (Multiple answers are possible):

    1. Mail   4. Telephone
    2. Fax   5. Electronic
    3. Radio   6. Others (specify)………….

6. How can reporting be improved?

____

____

1. Percent of sites that: Describe data by person, time and place (case based, outbreaks, and sentinel)

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

2. Do you have an action threshold for any of the country priority diseases?

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

3. If yes, what is it? __________cases _________% increase ________rate

____

____

4. Do you have appropriate denominators? Observe presence of demographic data at site (E.g. population <5 yr, population by village,)

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

5. Who is responsible for data analysis? ________________________

6. How often do you analyze the collected data?

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

<u>Outbreak investigation</u>:

1. Number of outbreaks suspected in the past 6months:_____________

2. Observe: Of those, number investigated (Observe reports and take copies if possible): _____________________

3. Has your district ever investigated an outbreak?

4.Not applicable

4. Existence of epidemic preparedness and response plan at district level

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

5. Do the districts have written plan of epidemic preparedness and response

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

6. Has the district had emergency stocks of drugs and supplies at all times in past 1 year?

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

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

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

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

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

1. Percent of districts that have an epidemic management committee

Observation: Observe minutes (or reports) of meetings of epidemic management committee

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

2. Does the district have rapid response team for epidemics?

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

Responses:

1. Has the district implemented prevention and control measures based on local data for at least one reportable disease or syndrome?

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

2. Does the district responded within 48 hours of notification of most recently reported outbreak (from written reports)

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

ee evaluated their preparedness and response activities

eport to confirm)

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

Feedback:

1. Is there written feedback reports has the district produced in the last year?

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

2. How many feedback bulletin or reports has the district received in the last year? _______

3. Supervision____

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

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

(Obtain required number of visits from central level)_______________

6. the most usual reasons for not making all required supervisory visits.

Reason 1____

Training ____

7. Percent of health personnel (in position of responsibility) trained in disease surveillance

8. Have you been trained in disease surveillance?

1. Yes2.No 3.Unknown 4.Not applicable

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

____

10 .What percent of your personnel in the district have been trained in surveillance and epidemic management? _______________________

Resources:

Percent of sites that have:

1. Logistics

es

2. Data management

1. Stationary 2.Calculator 3.Computer4.Printer

3. Communication

1. Telephone service 3. Fax

2. Radio 4.Computers that has modems

4. Information Education and Communication materials

1. Posters 2. Megaphone 3. Generator 4. Screen

5. Projector (Movie) 6. Others (specify):__________

5. Hygiene and sanitation materials

1. Spray pump 2.Disinfectant

6. Surveillance coordination:_______________________________________

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

8. Satisfaction with surveillance system____________________________

9. Are you satisfied with the surveillance system?

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

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

____

------Region ----------------------Woreda------------------------

Interviewer: ----------------------- Interviewee: --------------------Responsibility: -----------------------------------

Name of Health Center------------

<u>Availability of a national surveillance manual</u>

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

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

<u>Case detection and registration</u>

2. Percent of health facilities that have a clinical register

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

3. Percent of health facilities that correctly register cases filling of the clinical register during the previous 30 days

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

4. Do you have a standard case definition for: malaria?

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

<u>Case confirmation</u>

5. Do you have RDT to test Malaria at this facility

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

6. Do you have functional microscope to test for Malaria at this facility

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

7. Do you have Gemisa reagent to stain plasmodium species?

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

8. Do you have oil immersion at this facility?

4.Not applicable

9. Have you faced lack appropriate surveillance forms at any time during the last 6 months?

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

10. Is the last monthly report agreed with the register for malarial diseases; major public health importance Observation: Malaria 1. Yes 2.No 3.Unknown 4.Not applicable

11. Percent of sites that 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

Observe Weekly: /12 times the number of sites

Observe immediately: /-- times the number of sites

12. On time (use national deadlines)

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

Observe: Number of immediately reports submitted on time: ___/-- times the number of sites

13. How do you report?

1. Mail 4. Telephone
2. Fax 5. Radio
3. Electronic 6.Other(specify):_____________

14. Strengthening reporting

How can reporting be improved?

____

____

Data analysis

Percent of sites that:

15. Describe data by person ,place and time

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

Not applicable

es)? _______cases ____ % increase _____rate

18. Who is responsible for data analysis? _________________________
19. How often do you analyze the collected data?

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

20. Do you have appropriate denominators? Observe demographic data at site (E.g. population <5 yr., population by village, total population)

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

Epidemic preparedness

21. Is there written case management protocol for malaria epidemic prone disease

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

Epidemic response

22. Has the health facility implemented prevention and control measures based on local data for at least one epidemic prone disease?

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

Feedback and supervision

23. How many feedback bulletins or reports has the health facility received in the last year? ___
24. How many meetings has this health facility conducted with the community members in the past six months?
25. How many times have you been supervised in the last 6 months?

Training:

26. Have you been trained in disease surveillance and epidemic management?

Not applicable

by whom? ________________________________

____

Resources

Percent of sites that have:

28. Logistics

    1. Electricity 3. Motor cycles
    2. Vehicles 4.Bicycles

29. Data management

    1. Stationery 3.Computer

    2. Printer 4.Calculator

30. Communications

    1. Telephone 3.service Radio call
    2. Fax 4.Computers that have modems

31. Information education and communication materials

    1. Posters
    2. Megaphone
    3. Flipcharts or Image box
    4. Projector (Movie
    5. Screen
    6. Generator
    7. Other(Specify):____________

32. Hygiene and sanitation materials

    1. Spray pump
    2. Disinfectant

33. List protection materials _________________________________

    ____

34. Are you satisfied with the surveillance system?

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

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

    ____

Date of Interview: --------------------------------------Region ------------------------------ Woreda--------------

Name of Health Post: ------------- Interviewer: ----------------------- Interviewee: --------------------

Responsibility: --------------------------------------

Availability of National surveillance Manual

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

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

Case detection and registration

2. Is there a clinical register book health facility?

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

3. Do you have standard case definition for malaria?

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

Data reporting

4. Have you faced lack of appropriate surveillance forms at any time during the last 6 months?

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

5. Percent of sites that is accurately reported cases from the registry into the summary report to go to higher level? _________________

6. Percent of sites that 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

   Observe Weekly:

   Observe Immediately:

7. Percent of HF that have means for reporting to next level by e-mail, telephone, fax or radio?

   ____

8. How do you report?

   1. Mail 2.Fax 3. Telephone 4. Radio 5. Electronic 6.Others(specify):___________

ne graph of cases by time

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

Epidemic response

10. Has the health facility implemented prevention and control measures based on local data for at least one epidemic prone disease?

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

Feedback and supervision

11. How many feedback bulletins or reports has the health facility received in the last year? __

12. How many meetings has this health facility conducted with the community members in the past six months? ________________

13. How many times have you been supervised in the last 6 months? _________

Training

14. Have you been trained in disease surveillance and epidemic management?

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

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

    ____

Resources

Percent of sites that have:

16. Logistics

    1. Electricity 3. Motor cycles
    2. Bicycles 4.Vehicles

17. Data management

    1. Stationery 3.Computer
    2. Calculator 4. Printer

…call 3. Fax 4. Computers with modems

19. Information education and communication materials

1. Posters 4.Screen
2. Megaphone 5.Projector (Movie)
3. Flipcharts or Image box 6.Other(specify):_______

20. Hygiene and sanitation materials

1. Spray pump
2. Disinfectant

21. List protection materials _________________________________ ______ ________

____

Satisfaction with surveillance system

22. Are you satisfied with the surveillance system?

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

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

____

What opportunities are there for integration of surveillance activities? __________________________

naires

escription

Health Profile of Halaba Special Woreda/District

Name of the data collector: ____________________

Date: ------------------Respondent (s):---

1. Historical Aspects of the area (only if relevant)

____

____

____

2. Geography and Climate (including map, altitudes, agro ecological zones etc…)

Map of the Woreda--------------

Location __________________ _________________ ______________________

Altitude __________________

Annual rain fall________________

Mean annual temperature in ^{O}C ------------

Climatic zones__________________ ________________ _______________

The major crops in the area ---------------

Main food crops of the area--------------

3. Political and Administrative Organization

No of Kebeles------------------Urban-------------------Rural-------------------

Nearest Kebele---------------- (---------Km from the Woreda center)

Remote Kebele---------------- (----------km from the Woreda center)

List their names ____

____

Woreda boundary

North -------------------South----------------------East----------------------West

4. Population and population structures

Total population__________________ Total HH ---------------------------------

Population by Kebele ---

____

----Under 5yrs------------Under 15yrs-------------------

Women of childbearing age (15-49years) ---------Pregnant women -----------Above 64yrs. --------

Sex ratios________ urban_________ rural__________________,

Ethnic composition ______________ __________________ ___________________

Languages of the district--------------------------

Official language (Work language) ------------

Religion –Protestant------------Orthodox-------------Muslim---------catholic ------- other

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

Average income/year_____________________ Source

Economic status

High------------------------Low---------------Medium---------------- other

Productivity---

6. Education

6.1. Total Number of Schools __________ Gov.________ NGOs. ______ Private Schools _____

KG ______ Gov.________ NGO _Private Schools______

Primary ______ Gov.________ NGO _Private Schools______

Secondary ___ Gov.________ NGO _Private Schools______

Preparatory ___ Gov ________ NGO _Private Schools______

6.2. Total Enrollment

KG M__________ F_________ Total________

Primary M_________ F_________ Total________

Secondary M_________ F_________ Total________

Preparatory M________ F_________ Total________

6.3. School distribution by Kebele---

6.4. Number of Schools with access to water---

6.5. Reasons for absence of water for certain schools---

----

umber & Name) ______________________________

____

____

6.7. School clubs (activities) other than education and their major and current functionalities.

A. ____

B. ____

C. ____

D. ____

E. ____

6.8. Schools access to road--------------- Access to Tel. ------------- Access to electricity(Main and/or Generator Supply)--------

6.9. Literacy status (%) -----------------Illiterate (%) -------------------

6.10. Schools with Access to Latrine Facility:

A. One Block Latrine for the school as a whole:__________

B. Two Block Latrine for Male & Female Separated:____________

C. No Latrine at all: ______________

6.11. Total Dropout rate (Total Registered during the year - Total Completed)_______________

6.12. Proportion of Female dropout rate_______________

6.13. Possible reasons for dropout rate____

____

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

Woreda health structure

Number of health facility in the district

	Gov	NGOs	Private		Standard
HOSP	-------	--------	-------	Pop ratio---------	--------
HCS	-------	--------	-------	Pop ratio---------	--------
HPS	-------	--------	-------	Pop ratio---------	--------
Clinics		----------	-------		
Diagnostic lab		-----------	------		

How many of the health centers have access to ommunication---------- (%), Electricity__________ (%)

%)

How many HPs have access to transport-------, telephone---------- power --------- water

8. Water Sources

8.1. Types of Water supply Sources Available:____ _______

8.2. Number of Water schemes Constructed during the year:_______________

8.3. Functional water sources during the year_________

8.4. Non Functional water sources during the year ___________

8.5. Reason for non-functionality____ ____

8.6. Average Cost needed per Water scheme for construction:______________

8.7. Average service year/duration of one Water scheme:__________________

8.8. Number of Kebeles with Protected water supply source:_________(Lists of these Kebeles ____ ____ ____)

8.9. Water supply coverage of the Woreda during 2005:_______

8.10. What are the Water sources of population uncovered in the supply:_________________ ____ ____ ____

8.11. Possible reasons for the shortage of water_______________________________________ ____ ____ ____

9. Disaster Status in the area

Was there any disaster in the district in the last years? ____

------------Child Mortality Rate--------------------------

Crude Birth Rate---------------------------------Crude Death Rate----------------------------

Maternal Mortality Rate--------------------------Contraceptive Prevalence rate__________

ANC coverage-----------------------------------Delivery coverage---------------------------

PNC coverage ------------------------------

Immunization Coverage;

Polio3--------------Pentavalent3_____________Measles ---------------------

Health staff to population ratio for each profession

Health officers ----------Nurses --------Midwifery --------Medical lab_________

Pharmacy___________ Env'tal ___ HEWs, rural --------- Urban---------

Others--------------------------------

11. Health Services

Health institution to population ratio_________ Health service coverage: _________

Top and leading causes of OPD visit in adults and children

1. ______________________	1, --------
2. ______________________	2, --------
3. ______________________	3, --------
4. ______________________	4, ---------,
5. ______________________	5, ---------,
6. ______________________	6, others-----
7. ______________________	7, Admission causes in Children----
8. ______________________	8, Death cause--
9. ______________________	
10. _____________________	

12. Others---

----

14. Death cause---

Health budget allocation from last year------

Health budget for emergency condition------

15. Community Health Services;

Status of services provided by community health workers namely:

TBAs --

CHWs/ Dep't army--

HEWs --

Other ---

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

MCH/FP trend 3 or 5years (recent to last)

EPI

PV1 ---

Polio3 ---

Pv3--

Measles --

Environmental Health

Health Education

Endemic diseases;

Malaria

Identified malarious Kebele in the district ---

Recent trends of 3(5) yrs. malaria data. ---

Malaria prevention and control

IRS coverage trends (3/5) yrs

List of chemicals used since the start of IRS and their use of duration in the district.

ITNs distribution recent 3/5 year coverage

Environmental management

TB/Leprosy

Total TB cases________ PTB negative________ PTB positive____ Extra PTB ________

TB detection rate trend--

TB treatment success rate trend ---

TB cure rate---------------- TB defaulter rate ______Death on Treatment ______________

TB cases screened for HIV______________TB cases positive for HIV------------------------

Leprosy cases---

HIV/AIDS;

HIV tested/screened trend and population type (student, rural pop, urban pop, HF visitors)

HIV screened age group---

HIV positives trend and age group--

Pw screened trend ------------------------**Pw positive trend------------------------**

HIV Incidence trend --

Pw ever enrolled in PMTCT--

PLWHA ever enrolled in ART____________PLWHA currently enrolled in Art--------------

PIHCT screened ___________**PIHCT positive ---**

VCT screened-----------------VCT positive --

Nutritional status in the district

Malnourished cases admitted to OTP trend---

Sc admission trend---

Epidemic prone diseases --

What do you think the main problems of the district --

Discussion of the highlights and the main findings of the health profile assessment and description

----

----

17. Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc.

Annex 5: Operational Definitions

Standard cases definition

Suspected Malaria: refers to any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and Vomiting diagnosed clinically as malaria.

Confirmed Malaria: refers to a suspected case confirmed by microscopy or RDT for plasmodium parasite

Community cases definition

Malaria: refers to any person with fever or fever with headache, back pain, chills, rigor, sweating, muscular pain, nausea and vomiting or suspected case confirmed by RDT

by Kebele, Sex and distance from town during

Ser. No.	KEBELES	Male	Female	Total Population 2005 E.C	Distance from Kulito Town in Km
1	KULITO TOWN	17,976	17,620	35,595	**0 (Town)**
2	GALETO	1,022	1,002	2,024	2
3	WANJA	969	950	1,919	2
4	GEDEBA	1,261	1,237	2,498	4
5	SHEKATE	1,663	1,630	3,294	5
6	HAMATA	1,527	1,497	3,024	8
7	LAY LENDA	1,535	1,505	3,040	7
8	ALEMTENA	1,463	1,435	2,898	5
9	1st CHOROKO	1,465	1,436	2,901	3
10	2nd CHOROKO	1,504	1,475	2,979	4
11	HABIBO	1,345	1,319	2,664	8
12	KUFFE	2,283	2,238	4,521	8
13	TACH BEDENE	1,326	1,300	2,625	10
14	LAY BEDENE	1,609	1,577	3,185	11
15	TACH LENDA	1,442	1,414	2,856	7
16	GUBA	2,466	2,417	4,883	17
17	YEYE	3,268	3,204	6,472	21
18	GURURA	2,003	1,963	3,966	15
19	SHEWAKO HALABA	3,992	3,913	7,905	22
20	KUNCHE YEYE	1,729	1,694	3,423	20
21	1st HANSHA	1,804	1,768	3,572	13
22	2nd HANSHA	1,693	1,660	3,353	17
23	FELKA	1,449	1,421	2,870	19
24	DEBESSO	1,252	1,227	2,479	18
25	SINKELE BITENA	3,279	3,214	6,492	21
26	GOFESSA	1,646	1,613	3,259	18
27	KOBO CHOBARE	1,846	1,809	3,655	30
28	1st TEFFO	1,630	1,598	3,228	21
29	2nd TEFFO	1,324	1,298	2,622	22
30	1st KONICHA	1,244	1,220	2,464	25
31	2nd KONICHA	996	976	1,972	24
32	KOBO GETO	1,225	1,200	2,425	27
33	RUKENENE TEFFO	1,219	1,195	2,415	22

			Female	Total Population 2005 E.C	Distance from Kulito Town in Km
			1,407	2,843	18
35	HANTEZO	2,197	2,153	4,350	29
36	BESHENO	3,837	3,761	7,599	32
37	UDANA CHOLIKSA	1,491	1,462	2,953	38
38	UDANA MINO	1,213	1,189	2,402	36
39	CHOBARE MINO	1,956	1,918	3,874	34
40	SINBITA	1,446	1,418	2,864	42
41	WETETA	1,555	1,524	3,079	34
42	KULBI	2,191	2,148	4,339	34
43	BENDO	2,762	2,707	5,469	40
44	BUBISA	1,754	1,719	3,473	29
45	LAY ARSHO	2,452	2,404	4,856	12
46	TACH ARSHO	2,811	2,755	5,566	14
47	MISRAK GORTANCHO	1,869	1,832	3,701	6
48	MERAB GORTANCHO	2,260	2,215	4,475	7
49	HOLEGEBA KUKE	1,977	1,938	3,915	4
50	MEJA	1,510	1,480	2,989	14
51	1st ASHOKA	1,211	1,187	2,398	10
52	2nd ASHOKA	1,767	1,732	3,500	12
53	2nd MEKALA -A	689	675	1,363	8
54	2nd MEKALA -B	2,014	1,974	3,989	9
55	1st MEKALA	1,275	1,249	2,524	7
56	ASORE	1,338	1,311	2,649	9
57	MUDA MEYAFA	1,656	1,623	3,279	7
58	GEREMA	1,786	1,751	3,537	8
59	MUDA ELOLOKA	2,149	2,107	4,256	12
60	MUDA WISHAMO	1,861	1,824	3,684	11
61	CHAMBULA	1,624	1,592	3,216	4
62	MUDA DINOKOSA	1,788	1,753	3,541	8
63	1st TUKA	1,444	1,415	2,859	22
64	2nd TUKA	1,135	1,113	2,248	23
65	YAMBO	1,369	1,342	2,711	20
66	HAYMELE	1,512	1,482	2,994	18
67	TEFFO CHUFO	1,115	1,093	2,207	24
68	SORGE	2,019	1,979	3,998	17
69	GIRME	1,496	1,467	2,963	22

			Female	Total Population 2005 E.C	Distance from Kulito Town in Km
			2,195	4,435	26
71	ANSHEKORA BUTY	1,803	1,767	3,571	64
72	AJO HULKO	1,390	1,363	2,753	58
73	TITA LIBITORA	830	814	1,644	70
74	NEGELE WEDESHA	1,280	1,255	2,535	67
75	MITO DUBELA	1,169	1,146	2,315	92
76	BUKO TIBAME	1,026	1,006	2,032	92
77	YATO BARHO	1,113	1,091	2,204	94
78	WEJEGO YATO	1,046	1,026	2,072	96
79	ALEKE GERRO	819	803	1,621	90
80	DUDA BARHO	764	749	1,513	92
	GRAND TOTAL POP.	149,753	146,787	296,540	

aire 2014

Interviewer Name ___________________________

Interview Date: (dd) _____/(mm) _____/2014

Region:__________________________________

Zone: ________________Woreda__________________

Main contact at this location: Name:_____________ Position:_________ Tel:______________

SECTION I: SOCIO- DEMOGRAPHIC PROFILE				
1.1. Woreda total population:	M:__________F:__________		Under 5_______	Total:____
	No. of women of reproductive age (age 15-49 yrs.):__________			
	No. of pregnant women :_______________			
	No. of lactating women:________________			
	Total no. of PLW :______			
1.2. Special Population *(if any):*	Pastorals____	Refugees____	IDPs____	Migrant Workers___

SECTION II: HEALTH PROFILE	
2.1. Coordination	
Is there a functional Multi Sectorial PHEM coordination forum?	Yes□ No□
Is there a PHE preparedness and response plan?	Yes□ No□
Is there accessible emergency response fund	Yes□ No□
Is there fund allocated for Preparedness activities	Yes□ No□

2.2. Morbidity (List top 5 causes of Morbidity) in the year 2006 EC (Meskerem to Megabit) (2013-2014 GC)

a. Morbidity below 5 years	Morbidity above 5 years
1.	1.
2.	2.

	3.
	4.
5.	5.

2.3. List number of cases/deaths from Tir 2005 to Ginbot 2005 (Jan–May 2013)

Month	AWD		Malaria		Measles		Meningitis		Other(specify)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Jan 2014										
Feb 2014										
Mar 2014										
April 2014										
May 2014										

NB: Number of cases and deaths of the specific disease could be total case reported by the routine surveillance system during the period and not necessarily outbreak report

2.4. Outbreak?

Was there any outbreak in the last 3 months? (August- October)	Yes□ No□

If yes, specify the disease:

Disease outbreak ___________# of cases : _______Deaths ______(time period DD/MM/YY))_____________

Disease outbreak ____________# of cases : _____Deaths _______(time period DD/MM/YY)_____________

Is there any ongoing outbreak of any disease?	**Yes□ No□**

Disease outbreak __________________# of cases : _____________Deaths _________(Start date)_________

Disease outbreak _____________# of cases : _________Deaths _________________(Start ses : _____Deaths ____________________(Start date)__________

2.5. Preparedness: Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need? *(NB: Use the stock matrix to calculate this)*

Ringer Lactate (to treat AWD cases)	Yes□ No□
ORS (to treat AWD cases):	Yes□ No□
Doxycycline *(to treat AWD cases)*:	Yes□ No□
Consumables : Syringes, Gloves *(for AWD management):*	Yes□ No□
Amoxil susp (measles)	Yes□ No□
Tetracycline ointment (measles)	Yes□ No□
Vit A (measles)	Yes□ No□
Coartem for Malaria	Yes□ No□
Artesunate (rectal) for Malaria	Yes□ No□
Artesunate (Injection) for Malaria	Yes□ No□
Artemether IM for Malaria	Yes□ No□
Quinine (PO) for Malaria	Yes□ No□
Quinine (IV) for Malaria	Yes□ No□
Chloroquine for Malaria	Yes□ No□
Ceftriaxione (Meningitis)	Yes□ No□
Lab supply: RDT for Malaria	Yes□ No□
Lab supply: RDT (Pastorex) for Meningitis LP set	Yes□ No□ Yes□ No□
Number of CTC kit available: (for AWD)	Yes□ No□
Clinical Delivery Assistance kit PART A: Reusable Equipment	Yes□ No□
Clinical Delivery Assistance kit PART B: Drugs & Disposable Equip.	Yes□ No□
Mgt. of Complications of Abortion kit (Manual Vaccum Asp. Set)	Yes□ No□

esponse by the Woreda Health office?	Yes□ No□
Is PHEM guideline distributed to all Health institutions	Yes□ No□
Is there a trained Woreda Rapid Response Team?	Yes□ No□
Are there staffs trained on Minimum Initial Service Package for Reproductive Health?	Yes□ No□
If " Yes" please state the number of trained personnel : Male : ______ Female : _______ Total : ______	
Weekly Timeliness and Completeness (%) of Surveillance report for August – October	

Month	T/C (%)	T/C (%)	T/C (%)	T/C (%)
August 2013				
September 2013				
October 2013				

SECTION III: RISK FACTORS

Diseases	**Risk factors for epidemics to occur**	
Malaria	Malaria endemic area	Yes□ No□
	Presence of malaria breeding site	Yes□ No□
	Interrupted or potentially interrupting rivers	Yes□ No□
	Unprotected irrigation in the area	Yes□ No□
	LLINs coverage <80%	Yes□ No□
	Indicate the coverage of IRS 2005____	
	Depleted prevention and control activities	Yes□ No□
	Malaria Guideline (new)distributed to all Health facilities	Yes□ No□
	Health workers trained on the new Malaria guideline	Yes□ No□
	Number of malarious Kebeles and total population in these	Keb ____________

		Pop(F)______(M)______
	the last 3 years (If yes specify year)____________	
Meningitis	Has vaccination been conducted in the past 3 years	Yes□ No□
	If yes : Indicate the date and number of people vaccinated	Date__ No____
	Is there Meningitis outbreak control Guideline	Yes□ No□
	Are health workers trained on Meningitis outbreak management	Yes□ No□
AWD	Was there AWD epidemic in the last three years (If yes specify date)_________________________	Yes□ No□
	Latrine coverage	
	Latrine utilization	
	Safe water coverage	
	Is Cholera outbreak control Guideline distributed to all HFs	Yes□ No□
Measles	Is there ongoing measles outbreak	Yes□ No□
	What is the measles vaccination coverage of 2005, less than one year (Hamle 2004-Sene 2005)	
	Is Measles Guideline distributed to all Health facilities?	Yes□ No□
	Are health workers trained on Measles	Yes□ No□
	Has SIA been conducted in 2004 EFY	Yes□ No□
	If yes, Indicate the month and number of children vaccinated including the age group	Month___________ No. vaccinated____ Age group_______

Any other observations you made or any risks of epidemics?

____

____

____

____

What were the major challenges in your Epidemic response experience?

____
____
____
____

Section IV: Nutrition - TFP admissions at Woreda level January to May 2014

Month	Total new SAM Cases	Total No. of TFP (OTP /SC) in the Woreda	Number of SC.	Number of OTP.	Total Number of OTP / SC reported.	Therapeutic Supplies Y/N			Children discharge from TFP referred to SFP Y/N
						RUTF	F100	F75	
Jan									
Feb									
Mar									
April									
May									

Therapeutic Supplies enough for the next 1 month: YES___________; NO______________

Any comment

____
____
____
____

I, the undersigned, declare that this is my original work and has 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.

Name: **Engdayehu Hailu**

Signature: _______________________________

Place: _______________________________

Date of Submission: **May 15, 2015**

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisor: **Dr. Adamu Addissie**

Signature: _______________________________

Date: _______________________________