

ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE,  
SCHOOL OF PUBLIC HEALTH



Ethiopian Field Epidemiology Training Program (EFETP)

Compiled Body of Works in Field Epidemiology

By

Abere Muchie

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

June 2017

Addis Ababa

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## List of Abbreviations

<b>Admin.</b>	<b>Administrative</b>
<b>AFI</b>	<b>Acute Febrile Illness</b>
<b>AFP</b>	<b>Acute Flaccid Paralysis</b>
<b>AIDS</b>	<b>Acquired Immune Deficiency Syndrome</b>
<b>ANC</b>	<b>Antenatal Care</b>
<b>AOR</b>	<b>Adjusted Odd Ratio</b>
<b>ART</b>	<b>Anti-retroviral Therapy</b>
<b>AWD</b>	<b>Acute Watery Diarrhea</b>
<b>BCC</b>	<b>Behavioral Change Communication</b>
<b>BSC</b>	<b>Balanced Score Card</b>
<b>CBN</b>	<b>Community Based Nutrition</b>
<b>CBR</b>	<b>Crude Birth Rate</b>
<b>CDC</b>	<b>Center Of Disease Control</b>
<b>CDR</b>	<b>Crude Death Rate</b>
<b>CI</b>	<b>Confidence Interval</b>
<b>CMR</b>	<b>Child Mortality Rate</b>
<b>CSA</b>	<b>Central Statistical Agency</b>
<b>CTC</b>	<b>Cholera Treatment Center</b>
<b>Dr</b>	<b>Doctor</b>
<b>DRC</b>	<b>Democratic Republic of Congo</b>
<b>DRMFSS</b>	<b>Disaster Risk Management and Food Security Sector</b>
<b>EC</b>	<b>Ethiopian Calendar</b>
<b>EFETP</b>	<b>Ethiopian Field Epidemiology Training Program</b>
<b>EFY</b>	<b>Ethiopian Fiscal Year</b>
<b>EIS</b>	<b>Epidemic Intelligence Service</b>
<b>EOS</b>	<b>Enhanced Outreach Strategy</b>
<b>EPHI</b>	<b>Ethiopian Public Health Institute</b>
<b>Epi</b>	<b>Epidemiology</b>
<b>EPRP</b>	<b>Emergency Preparedness and Response Plan</b>

<b>ETB</b>	<b>Ethiopian Birr</b>
<b>FMOH</b>	<b>Federal Ministry of Health</b>
<b>GAM</b>	<b>Global Acute Malnutrition</b>
<b>GBV</b>	<b>Gender Based Violence</b>
<b>GIS</b>	<b>Geographical Information system</b>
<b>GOV</b>	<b>Governmental</b>
<b>GR</b>	<b>Growth Rate</b>
<b>H1N1</b>	<b>Human Influenza Subtype H1N1</b>
<b>HAPCO</b>	<b>HIV/AIDS Prevention and Control Office</b>
<b>HC</b>	<b>Health Center</b>
<b>HCT</b>	<b>HIV Counseling and testing</b>
<b>HIV</b>	<b>Human Immune Deficiency Virus</b>
<b>HP</b>	<b>Health Post</b>
<b>HSD</b>	<b>Health Sector Development</b>
<b>ICU</b>	<b>Intensive Care Unit</b>
<b>IDR</b>	<b>Integrated Disease Surveillance Report</b>
<b>IFRCRCS</b>	<b>International Federation of Red Cross and Red Crescent Societies</b>
<b>IHR</b>	<b>International Health Regulation</b>
<b>ILT</b>	<b>Influenza Like Illness</b>
<b>IRS</b>	<b>Insecticide Residual Spray</b>
<b>IRT</b>	<b>Integrated Refresher Training</b>
<b>ISS</b>	<b>Integrated Supportive Supervision</b>
<b>ITN</b>	<b>Insecticide Treated Net</b>
<b>KAP</b>	<b>Knowlgy, Attitude and Practice</b>
<b>Km</b>	<b>Kilo Meter</b>
<b>LCMS</b>	<b>Living Conditions Monitoring Survey</b>
<b>LLITN</b>	<b>Long Lasting Insecticide Treated Net</b>
<b>LP</b>	<b>Lumbar Puncture</b>
<b>MAM</b>	<b>Moderate Acute Malnutrition</b>
<b>MDG</b>	<b>Millennium Development Goal</b>
<b>MDSR</b>	<b>Maternal Death Surveillance and Report</b>
<b>MPH</b>	<b>Master of Public Health</b>
<b>MS</b>	<b>Micro Soft</b>
<b>MUAC</b>	<b>Middle Upper Arm Circumference</b>
<b>NGO</b>	<b>Non-Governmental Organization</b>
<b>NNT</b>	<b>Neo Natal Tetanus</b>
<b>NOAA</b>	<b>National Oceanic Atmospheric Administration</b>
<b>OPD</b>	<b>Out Patient Department</b>

<b>OPV</b>	<b>Oral Polio Vaccine</b>
<b>OR</b>	<b>Odd Ratio</b>
<b>ORS</b>	<b>Oral Rehydration Solution</b>
<b>OTP</b>	<b>Outpatient Therapeutic Program</b>
<b>PF</b>	<b>Plasmodium Falciparum</b>
<b>PHEM</b>	<b>Public Health Emergency Management</b>
<b>PITC</b>	<b>Provider Initiating Testing and Counseling</b>
<b>PLWA</b>	<b>People Living with HIV/AIDS</b>
<b>PMTCT</b>	<b>Prevention of Mother to Child transmission</b>
<b>PNC</b>	<b>Post Natal Care</b>
<b>PPE</b>	<b>Personal Protective Equipment</b>
<b>PTB</b>	<b>Pulmonary Tuberculosis</b>
<b>PV</b>	<b>Plasmodium Vivax</b>
<b>RDT</b>	<b>Rapid Diagnostic Test</b>
<b>RL</b>	<b>Ringer Lactate</b>
<b>RR</b>	<b>Relative Risk</b>
<b>RRT</b>	<b>Rapid Response Team</b>
<b>SAM</b>	<b>Severe Acute Malnutrition</b>
<b>SARS</b>	<b>Severe Acute Respiratory Syndrome</b>
<b>SIA</b>	<b>Supplementary Immunization Activity</b>
<b>SPH</b>	<b>School of Public Health</b>
<b>SPSS</b>	<b>Statistical Package for Social Science</b>
<b>STI</b>	<b>Sexual Transmitted Infection</b>
<b>TB</b>	<b>Tuberculosis</b>
<b>TBA</b>	<b>Traditional Birth Attendant</b>
<b>TFU</b>	<b>Therapeutic Feeding Unit</b>
<b>TSF</b>	<b>Therapeutic Supplementary Feeding</b>
<b>TT</b>	<b>Tetanus Toxoid</b>
<b>UNAIDS</b>	<b>The Joint United Nation Program on HIV/AIDS</b>
<b>UNESCO</b>	<b>United Nations Educational Scientific and Cultural Organization</b>
<b>UNICEF</b>	<b>United Nations Children`s Fund</b>
<b>URTI</b>	<b>Upper Respiratory Tract infection</b>
<b>USA</b>	<b>Unite Nations of America</b>
<b>VCT</b>	<b>voluntarily Counseling and Testing</b>
<b>WHO</b>	<b>World Health Organization</b>
<b>YLDS</b>	<b>Years Lived with Disability</b>
<b>ZHD</b>	<b>Zonal Health Department</b>

## Executive Summary

This compiled body of works have nine chapters accomplished during the two years residency period. It comprises outbreak investigations, surveillance data analysis report, surveillance system evaluation, health profile description report, scientific manuscript for peer reviewed journals, abstracts for scientific presentation, narrative summary of disaster situation visited, protocol or proposal for epidemiologic research project and other additional outputs. All the outputs during the residency period were compiled as single document.

The first chapter consists of outbreak investigations. Which were two outbreaks investigated, Seasonal Influenza outbreak in Bezawit Mariam Traditional School, Bahir Dar town in March, 2016 and Scabies outbreak in Dera district South Gondar zone in January, 2017. The second chapter is five years (2011-2015) HIV/AIDS data analysis report in Farta district, South Gondar Zone Amhara Regional State. Surveillance system Evaluation was conducted in East Gojjam Zone (D/Elias, Basoliben districts and D/Markos Administrative town), August 2016.

Health profile description report was conducted in Debretabor administrative town, South Gondar zone in January, 2016. One manuscript was prepared for peer reviewed journals and two abstracts were prepared. Summary narrative report of Meher assessment done in South Wollo and Oromia zones including nine districts, in November, 2016, Conducted together with other relevant sectors and partners, is included in the seventh chapter.

Proposal for epidemiologic research project is also prepared on Assessment of Knowledge, Attitude and Practice of Bed Net use towards Prevent and control Malaria, in Basoliben and D/Elias districts, East Gojam Zone, Amhara Region, Ethiopia, 2017.

Finally, other additional works like, supportive supervisions, trainings are included in this body of work. Skills on data management, Statistical software and conducting research acquired during the residency period. Supportive supervisions were conducted with two rounds; first round concerned on preparedness and early warning for Acute Watery Diarrhea outbreak response, second round on IRS operation in the malaria major season and endemic area of the region. Training was given to zonal, District public health emergency management officers, Hospital and Health Center PHEM focal persons from four zones and towns of region on PHEM overview, Early warning

system, Public health emergency preparedness, Response, Recovery, Surveillance, Epidemiology and case-management of selected diseases. The training was success full in participation rate and increasing knowledge of participants as identified by post - test. The trainings were organized by the Amhara regional health bureau, public health emergency core process and WHO/Ethiopia.

## Chapter I – Outbreak/Epidemic Investigations

### 1.1 Seasonal Influenza outbreak Investigation in Bezawit Mariam Traditional School, Bahir Dar Admin.Town, Amhara Region, Ethiopia, 2016

#### Abstract

**Introduction:** In April 2009, in the United States, the first 2009 pandemic influenza A (H1N1) virus infection were reported. On June 11 2009, the World Health Organization declared influenza pandemic because of widespread transmission worldwide. In Ethiopia 414 suspected cases were reported from Amhara, Arsi zone & Addis Ababa region. Regionally: a total of 354 influenza like illness cases were reported from Laygaint, Estie and Andabet districts of South Gondar zone in 2009.

Among them samples were collected from 54 patients and laboratory result turned positive for Influenza a H1N1 (2009 Pandemic). This makes the positivity rate 56 %.

**Method:** A suspected case of influenza like illness was defined as acute onset of fever ( $>38^{\circ}\text{C}$ ) with cough or sore throat and 2 confirmed case as influenza like illness case with throat swab positive for seasonal influenza A/H3N2. The study design was unmatched case control (control by simple random sampling from the neighbor). The demographic and clinical details were collected from traditional school students around church from March 19, 2016-April one, 2016 and the objective was to investigate the outbreak

**Result:** A total of 25 cases were reported and median age was 18 years (ranging: 10 to 25 years), and 68 % of the patients were greater than 15 years old. As laboratory result showed that two out of four samples tested positive for influenza A (H3N2). Living in a room with more than three people  $\text{OR}=3.37$ ,  $95\%\text{CI}=1.29-8.806$ ,  $P=0.013$  was associated independent risk factor with higher rate of disease.

**Conclusion:** Our finding showed that majority of symptoms were Headache, Cough and Fever, most of the patients were adults, and family size which live more than three peoples in one dorm was risk factor.

**Key word:** Seasonal influenza outbreak, traditional school, Bahir Dar

## **Introduction**

### **Back ground**

Influenza is an acute viral respiratory tract disease characterized by fever, headache, myalgia, prostration, coryza, sore throat and cough. Viruses are classified as influenza types A, B and C (1). Influenza virus may be transmitted among humans in three ways: (i) by direct contact with infected individuals; (ii) by contact with contaminated objects (called fomites, such as toys, doorknobs); and (iii) by inhalation of virus-laden aerosols. The contribution of each mode to overall transmission of influenza is not known. However, CDC recommendations to control influenza virus transmission in health care settings include measures that minimize spread by aerosol and fomite mechanisms. Nasal secretions, which contain virus particles, are responsible for transmission by direct contact or by contaminated objects. An infected person will frequently touch their nose or conjunctiva, placing virus on the hand. Intimate or non-intimate contact (e.g. shaking hands) will transfer the virus to another person, who will then infect themselves by touching their nose or eyes. When contaminated hands touch other objects, the virus is transferred to them (2). Influenza type A viruses can cause epidemic disease in humans, and type C viruses usually cause a mild, cold-like illness (1).

### **Statement of the Problem**

In the USA, 70% of influenza viruses detected were influenza A and 30% influenza type B. Of the influenza A viruses with subtype information, 99.5% were InfluenzaA (H3N2). In one study, 23-59% of objects from homes and day care facilities were shown to harbor influenza viral RNA (2). Since October 2012, the Centre for Disease Control and Prevention in the United States of America has antigenically characterized 140 influenza viruses. All 90 A (H3N2) influenza viruses were A/Victoria/361/2011-like, the virus contained in the current trivalent seasonal vaccines (3).

In spite of all the efforts made by some of the epidemiologists, scientists, governments and public health officials around the world, the H1N1 influenza could not be restricted from emerging as a pandemic. In March and April 2009, hundreds of cases of respiratory illness were reported in Mexico that was suspected to be caused by a novel swine influenza virus. The first reported cases in the United States came from San Diego County and Imperial County in California and Guadalupe County in Texas (CDC, 2009a). Reports from other states rapidly followed, and the disease spread rapidly around the globe. The WHO has officially declared the 2009 H1N1

influenza to be a pandemic on June 11th, 2009 (WHO, 2009b) (4). By June 2009, CDC estimated that more than 1 million Americans were infected with H1N1 influenza. By August 2009, H1N1 influenza cases were reported from more than 170 countries and territories (5).

In Ethiopia, There is abnormal increment of Influenza like illnesses in different areas of the country. Addis Ababa: A total of 23 suspected Influenza cases were reported from different hospitals in Addis Ababa. Among them Throat samples were collected from 20 patients and nine were turned positive for influenza A H1N1 (2009 Pandemic). Of the cases six were died. Four of the dyed cases had comorbidity (two diabetic, one Asthmatic and one TB). Currently there is no new case. Arsi Robe Prison: A total of 65 suspected cases influenza like illness with no death are reported and samples collected from 19 patients (5).

Amhara Region: The flu like illnesses have been reported from Laygaint, Estie and Andabet districts of South Gondar. So far, a total of 354 influenza like illness cases were reported from Amhara region different districts Among them samples were collected from 54 patients and the laboratory result was positive for Influenza a H1N1 (2009 Pandemic), With positivity rate 56 % (6). This study tried to identify the possible risk factors for contracting scabies pertaining to socio demographic characteristics living conditions, contact history and level of education, and access to water.

### **Literature Review**

Researches done on Influenza Surveillance showed that, between 2006 and 2010, the number of influenza like illness and sever acute malnutrition sites in 15 African countries increased from 21 to 127 and from 2 to 98, respectively. Children 0–4 years accounted for 48% of all influenza like illness and sever acute malnutrition cases of which 22% and 10%, respectively, were positive for influenza. Influenza peaks were generally discernible in North and South Africa. Substantial circulation of influenza A and B occurred most years (7).

A study assessed 1203 papers, reviewed 104, and included 49 articles, 1–25% of outpatient ARI visits were caused by influenza, whereas 0.6–15.6% of children admitted to hospital for ARI had influenza identified (8). Another finding in U.S. National Institutes of Health attack rates for the 60 outbreaks ranged from 1.3% to 65% with an unadjusted mean of 28%. Among 17 outbreaks that did not implement intervention measures (9).

## **Objective**

### **General Objectives**

To investigate the influenza outbreak of Bezawit Mariam Traditional School, Bahirdar Administrative Town, Amhara Region, 2016

### **Specific objectives**

- ❖ To confirm the existence of the outbreak
- ❖ To describe the data in terms of place, person and time
- ❖ To identify potential risk factors of disease transmission
- ❖ To identify the causative agent of the outbreak
- ❖ Based on our finding to take possible intervention measures to contain the outbreak and prevent occurrence of further cases

### **Method and Materials**

The team of the investigators were deployed to the field ,developing questionnaires and equipped with necessary materials(from regional laboratory Institutes, regional PHEM core process, field epidemiology residents and additional health professional also deployed from the Administrative Town health office and health center.

**Study Area:** Amhara region is one of the nine ethnic divisions of Ethiopia, containing the homeland of the Amhara people (10). The city is located approximately 578 km north-northwest of Addis Ababa, (11). Bahirdar Administrative Town has population of 318698 which Females account 51%, projected from 2007 population and housing census (12).

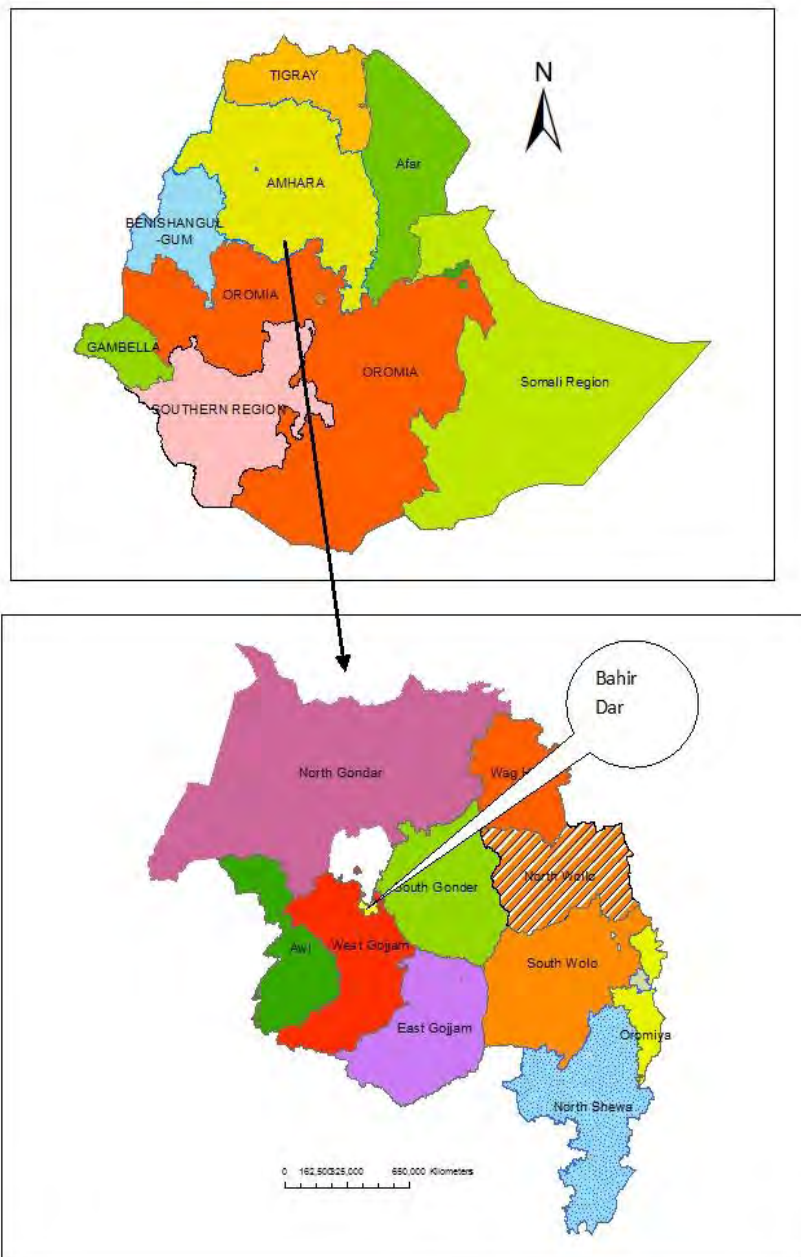


Figure 1 : Map of Bahirdar administrative town, Amhara Region, 2016

**Study Period:** The study was conducted from March 19, 2016-April 1, 2016

**Study design:** We conducted unmatched Case-control study with ratio of one cases for three controls.

**Target population:** All populations in Bahir Dar Administrative Town where cases and controls found.

**Study population:** Cases and controls in Bezawit Mariam Traditional School selected to be included under the study.

**Sample size:** all cases were selected from the line list and recruited into the study. Controls were neighbors of cases who did not develop influenza during the period of the study. Sample size was calculated using manually and Epiinfo 7, for unmatched case-control study by taking Two sided confidence level  $(1-\alpha) = 95\%$

Power (% chance of detecting) = 80%

Ratio of controls to cases = 3:1

Proportion of cases with exposure = 25% (18)

When the sample size is calculated using manually and Epiinfo 7a total of 100 samples 25 total cases, and 75 controls were selected using a control to case ratio of 3:1.

**Data collection:** Structured questionnaire was used to collect data for case-control study and additional data were collected by line listing which used for the descriptive analysis and cases were identified using WHO standard case definitions.

**Data quality control:** The data was primarily collected by principal investigator and co-investigator. Prior to entering the data in to the computer the missing variables and consistency of filling of questionnaires and completeness of data was checked every day during data collection

**Laboratory investigation:** Prior to the investigation period four blood samples were collected and sent to national Influenza laboratory (EPHI). Two out of four samples were positive for InfluenzaA/sub-Type H3N2/.Since outbreak was unusual occurrence no need of ethical consideration was needed.

### **Descriptive Epidemiology**

**Suspected outbreak:** any person, child or adult with: sudden onset of fever  $>38$  and, cough or sore throat in the absence of other diagnosis.

**A laboratory confirmed case:** Is the case that meets the clinical case definition is laboratory confirmed (laboratory results must be positive for influenza virus). Blood sample was taken from four suspected influenza cases and sent to the national reference laboratory EPHI for laboratory confirmation. We reviewed line lists from Bahir Dar Health department. We conducted an active case investigation from March 19, 2016-April one, 2016 in the affected site using questionnaires by visiting three traditional schools (Kidassie, Zema&Akuakuam). After the investigation we identified additional patients associated with the outbreak and followed up suspected cases with interviews of the patient and close contacts.

### **Case Control Study**

From March 19-April 1, 2016, we conducted unmatched case-control study and compared case with three control subjects recruited from the closest household. We designed a structured questionnaire in English and interviewed them within Amharic language. We made house-to-house investigations to identify influenza cases and administer the questionnaire. Socio demographic characteristics, Clinical history, risk factors for influenza transmission, and treatment outcome and preventive measurement information were collected for both cases and controls in the questionnaire.

### **Environmental Investigation**

We conducted a key informant interview with traditional school leaders, students, and health professionals in the towns to determine if there had been recent travelers that could have contributed for transmission of cases and assessed the compound to check & sustain environmental management.

### **Enrolment of cases and controls**

**A.Cases :** those that have clinical sign and symptom of influenza based on WHO case definition that were either laboratory confirmed or epidemiologically linked to the laboratory confirmed cases.

**B. Controls:** controls are selected from the same site (Traditional School). Three controls were selected per each case and recruited from the closest household with voluntary participation.

## **Data analysis**

Data was entered into Epi-Info version 7 if records were found out of range; it was rechecked with the corresponding questionnaire, accordingly correction methods were taken. Data was transferred in to SPSS & analysis also done using the software Microsoft Excel. Descriptive statistics and Odds ratios with 95% confidence intervals were calculated to compare risk factors among cases and controls. Attack Rates were calculated by taking population of the Bahirdar administrative Town. Binary regression was utilized to identify independent risk factors associated with contraction of influenza Variables that had significant associations in the analysis.

## **Variables**

### **Dependent variable**

Influenza cases

### **Independent variables**

- ❖ Age
- ❖ Contact history
- ❖ Travel history
- ❖ Educational status of family

## **Result**

We identified 25 suspected cases and 0 deaths in one kebele of Bahirdar admin.town, from March 19, 2016-April one, 2016. The attack rate was 160.25 per 1000 (when target population taken from traditional school only) but from total population of the Town the attack rate was 0.078 per 1000 population. The age specific attack rate 5-14 and 15+years were 0.086 and 0.093 per 1000 population respectively. There were two laboratory confirmed and 23 epidemiologically linked cases. Two out of four the blood were positive for influenza (H3N2).



Figure 2 : Picture that taken at the Time of Investigation of influenza cases Bahirdar administrative town, Amhara Region, Ethiopia 2016

During Outbreak investigation the team was composed of regional laboratory technologist, malaria officer, field epidemiology resident from Addis Ababa University(one principal and one Co-investigator), WHO emergency officer, Bahirdar health department public health emergency management early warning officer and Hidar 11health center clinician. The median age of the influenza patients was 18 years (range: 10 to 25 years) and aged younger than 11 years was comprised 12 %( 3). Seventeen of the patients (68%) were aged 15 years or older. More cases were between the ages of 11-15 and 16-20 years.

Table 1: Age specific attack rate in seasonal influenza of Bahir Dar administrative Town, Amhara Region 2016

Age group	Total Population	Cases	ASAR/ per 100,000 Population
<1 Years	9912	0	0
1-4 Years	33112	0	0
5-14 Years	92837	8	8.6
15+Years	182837	17	9.3

Over all	318698	25	7.8
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The epidemic curve showed a propagated pattern (Fig 3)

The index case was seen at Bezawit Mariam traditional school on 7th March, 2016 with developed Cough, difficult in breezing and chills within a person who has travelling history came from the first influenza outbreak area that appeared in the academic year Farta district Gondar Zone, Amhara region.

The peak numbers of cases were on 19th March 2016 also zonal and regional investigation team conducted during 18 and 19 March 2016 respectively. We learned from interviews with patients and their family sizes that there were more than three people living in one dormitory in the traditional school (20% of the cases) confirming at the time of investigation.

Influenza outbreak stopped March 20<sup>th</sup>, 2016, and active and passive surveillance continued for two weeks and no additional influenza cases reported in the affected administrative town after.

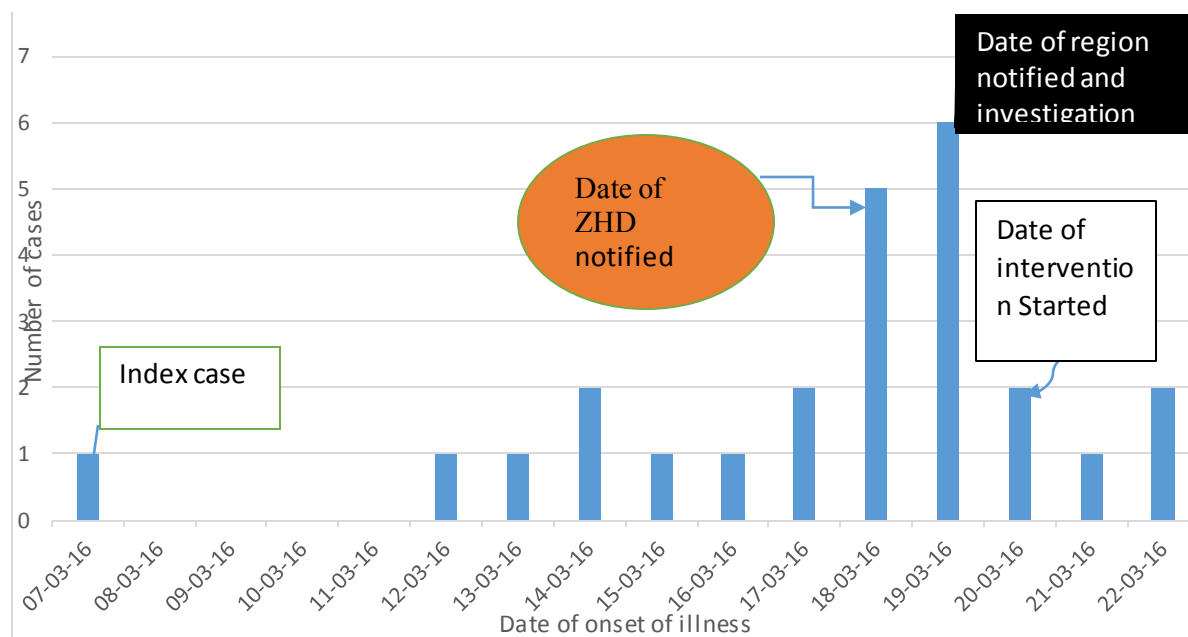


Figure 3 : Number of influenza cases by date of onset of illness, Bahirdar administrative town, Amhara Region, 2016

From our investigation, the result indicated that majority of the influenza cases in terms of educational status were accounts illiterate 16 (64%) compared to elementary 9(36%), High school and above (0%).

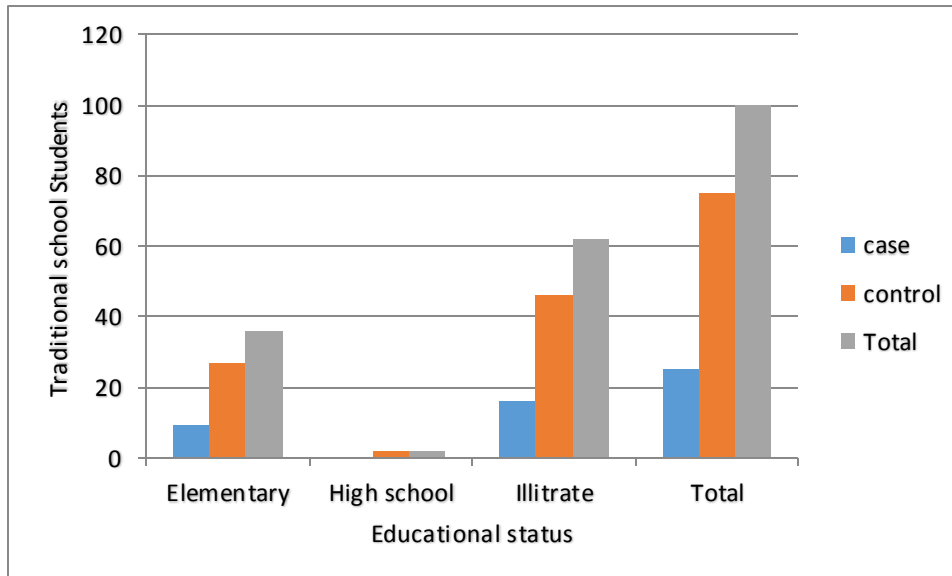


Figure 4 : Number of influenza cases by Educational Status, Bahirdar administrative Town, Amhara Region, 2016

### Case-control study

We included 25 total influenza cases (median age 18years) and 75 controls for the case-control study. Based on the finding from the case-control study, living in a room with more than three people OR=3.37, 95%CI 1.29-8.806, P=0.013 was associated risk factor with higher rate of disease.

Table 2 Crude analysis of influenza cases and controls in regard to different variables, Bahirdar administrative town, Amhara Region, Ethiopia 2016

variable		cases (n=25)	controls (n=75)	OR(95%CI)	P-value
Knowledge of causes influenza	Yes	1(4%)	3(4%)	1.00(0.0993-10.0732)	1.00
	No	24(96%)	72(96%)		
Living in a room with more than three people	>3 persons	17(68%)	29(38.7%)	3.37(1.29-8.806)	0.013
	≤3 persons	8(32%)	46(61.3%)		
	Yes	2(8%)	6(8%)	1.00(0.189-5.3)	1.00

Recent travel to areas with influenza cases	No	23(92%)	69(92%)		
Educational status	Illiterate	16(64%)	46(61.3%)	1.121(0.43-2.85)	0.905
	Literate	9(36%)	29(38.67%)		
Age	<15Years	8(32%)	18(24%)	1.464(0.465-4.609)	0.378
	=>15 Years	17(68%)	57(76%)		

## Discussion

The outbreak occurred early March 2016, the attack rate was 0.078. Pararally the age specific attack rate b/n 5-14 and 15+years were 0.086 and 0.093 respectively. Another finding in U.S. National Institutes of Health (K22 AI092150) attack rates for the 60 outbreaks ranged from 1.3% to 65% with an unadjusted mean of 28% (9). Our finding implied that more affected age group was adult (68%) when compared to the total cases. Similarly, Flu season can begin as early as October and last as late as May or June. The period of illness usually peaks between late December and March but the level of activity and severity of the virus is not predictable every year is different. During the 2012-2013 flu seasons, 60 percent of deaths occurred in children who were at high risk of developing serious flu-related complications, but 40 percent of these children had no recognized chronic health problems. This is consistent with what has been seen in previous years (13). Unlikely, research which was done on Influenza Surveillance showed that, between 2006 and 2010, the number of ILI and SARI sites in 15 African countries increased from 21 to 127 and from 2 to 98, respectively. Children 0–4 years accounted for 48% of all ILI and SARI cases of which 22% and 10%, respectively (7).

During investigation 25 seasonal InfluenzaA (H3N2) cases were found from total population of 156 (when taken from traditional school population only), two laboratory confirmed and the rests are epidemiologically linked. Other finding week 07 of 2016, a total of 22 patients complaining of

ILI or SARI were reported with throat swab samples from predesigned influenza sentinel sites. Among them nine were tested positive for Influenza A H1N1 (2009 Pandemic), Starting from week 49 of 2015 the positivity rate of Pandemic Influenza H1N1 is increasing. In Addis Ababa: A total of 23 suspected Influenza cases were reported from different hospitals. Among them Throat samples were collected from 20 patients and nine turned positive for influenza A H1N1 (2009 Pandemic). Of the cases six died. Four of the dead cases had comorbidity (two diabetic, one Asthmatic and one TB).

Arsi Robe Prison: A total of 65 suspected cases influenza like illness with no death are reported and samples collected from 19 patients. Laboratory result is pending.

Amhara region: The flu like illnesses have been reported from Laygaint, Estie and Andabet districts of South Gondar. So far, a total of 354 influenza like illness cases were reported from Amhara region different districts. Among them samples are collected from 54 patients and the laboratory result was turned positive for Influenza a H1N1 (2009 Pandemic), this makes the positivity rate 56 % (8). In our investigation of seasonal influenza A sub-Type H3N2 mortality is 0%, but the 1997 outbreak of avian influenza A (H5N1) virus in Hong Kong was the first confirmed example of a purely avian influenza virus crossing the species barrier into man – apparently without any adaptation in an intermediate host (e.g. the pig).

The mortality was over 30% (6 deaths out of 18 confirmed cases) and dramatically alerted the influenza community to the very real possibility of direct zoonotic transfers of animal influenza viruses directly from their animal host to humans (14).

Influenza causes seasonal epidemics of disease resulting in an average of 14.8 deaths per 100 000 or 600 deaths in Singapore each year (USA-19.6, Hong Kong-16.4) (15).

During our seasonal influenza outbreak our data showed that major symptoms were headache (80%), cough (56%) and fever (40%) compared to other. From the study 24% of the patient showed only headache but not cough. Similarly Analyses of human influenza A (H5N1) cases in Hong Kong, Vietnam, Thailand and Cambodia have revealed that fever and cough were the most common initial symptoms (14). As our descriptive analysis layout the median age of the patients was 18 years (range: 10 to 25 years) and aged younger than 11 years was comprised 12 % but did not admit in hospital, unlikely a study assessed 1203 papers, reviewed 104, and included 49

articles, 1–25% of outpatient ARI visits were caused by influenza (11 studies; mean 9•5%; median 10%), whereas 0•6–15•6% of children admitted to hospital for ARI had influenza identified (15 studies; mean 6•6%; median 6•3%) (8).

Fortunately from our finding no any case admitted neither at health center nor hospital ,all of the patients treated at OPD in the traditional temporary site. But studies display, In the United States, among patients who were hospitalized with pandemic influenza, 32-45% under the age of 18 years, with approximately 9-31% requiring admission to an intensive care unit (ICU). Approximately 25-50% of patients with 2009 A (H1N1) virus infections who were hospitalized or died had no reported coexisting medical conditions. Underlying conditions that were associated with complications from seasonal influenza were also risk factors for complications from 2009 A (H1N1) virus infections. In the UK 13% of hospitalized patients were admitted to a high dependency or intensive care unit and 5% died - 36% of these deaths were in patients under the age of 16 years. Non-white and pregnant patients were over-represented and 45% of patients had at least one underlying condition, mainly asthma. Young children appear to be particularly vulnerable to the 2009 A (H1N1) virus infection. They present with marked irritability, severe lethargy, poor oral intake, dehydration resulting in shock, and seizures. (14). Studies varied substantially on the basis of the number of years of assessment, age-groups included, number of influenza isolates obtained, testing methods implemented, and clinical case definitions used.

From 1980 to 2009 there was a modest increase in the number of studies published each year. Although studies originated from 14 countries, only South Africa and Madagascar produced more than five included studies, and seven countries produced only one study each (8).

In our finding, the adults those changeable generation were affected; similarly in epidemiology for public health practice indicate that influenza out break may be reflected in massive school absenteeism (16). Unfortunately, Influenza occurs globally with an annual attack rate estimated at 5%–10% in adults and 20%–30% in children. Illnesses can result in hospitalization and death mainly among high-risk groups (the very young, elderly or chronically ill). Worldwide, these annual epidemics are estimated to result in about 3 to 5 million cases of severe illness, and about 250 000 to 500 000 deaths.

In industrialized countries most deaths associated with influenza occur among people age 65 or older. Epidemics can result in high levels of worker/school absenteeism and productivity losses. Clinics and hospitals can be overwhelmed during peak illness periods (17).

In the crude analysis we found that literate populations were most protective of disease transmission. Most of the cases were not only adults but also uneducated (64%), living in a room with more than three people was associated with higher rate of disease. Recent travel to areas with influenza cases (Active influenza cases) were high independent risk factors influenza cases because the OR was above one. But association was not created b/n Knowledge about causes of influenza and patients.

### **Limitation**

The sample size of 25 case-patients for the case-control study was small. But these were all of case-patients those interviewed, because they were living in crowded village and accessible locations. In case, all controls and cases were males these were difficult to analyze necessary variables such as sex specific attack rate and status of pregnancy.

Some of the patients in our investigation had along last cough prior to influenza cases had been appeared. The investigation was tired full in order to taking the previous history because most of residents came from different areas of the region.

### **Conclusion**

We have confirmed that influenza outbreak with high attack rate primarily in adults of traditional school and major symptoms were headache, cough and fever compared to other.

The two cases which had history of travel to areas with influenza cases were included in adult age category.

Living in a room with more than three people were associated with higher rate of disease. Especially one case came by one single adult who came from farta district that the first 2016 influenza cases appeared in Amhara region was the index case.

### **Recommendation**

**Bahir dar administrative town health department must;**

- ❖ Supervise the Traditional School regularly
- ❖ Improve surveillance approach for early case detection.

- ❖ Deliver health education to the community to create awareness regarding influenza mode of transmission and control mechanisms.

**Bezawit Mariam Traditional School should;**

- ❖ Create awareness for every newly imported student about hygiene and sanitation
- ❖ Plan regular environmental management around the school per week.

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## **1.2 Scabies Outbreak investigation in Dera District, South Gondar Zone, Amhara Region, Ethiopia, 2017**

### **Abstract**

**Introduction:** Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. *hominis*.

Human scabies is a microscopic mite that burrows into the upper layer of skin where it lives and lays its eggs. Community settings such as malnutrition, poor hygiene and other disasters are at increased risk of scabies outbreaks. The primary mode of transmission of the human scabies mite is direct skin contact between two individuals. Mites are good crawlers and can crawl up to 2.5 cm ~ 1 Inch per minute on the surface of the skin. Scabies, due to infestation with the *Sarcoptes scabiei* mite, has been estimated to affect approximately 300 million people worldwide each year. The highest rates of scabies in the world were in Pacific Island countries.

**Method:** We conducted an unmatched case control study from January 16-30/2017 in Dera District, South Gondar zone. We included 40 cases and 80 controls from the study population. We define cases as those any resident in Dera District that has papular pruritic rash. We collected the data using structured questionnaire. Data was entered into Epi Info 7 and analyzed using SPSS version 20, and Arc GIS.

**Result:** A total of 5417 scabies cases with no death were identified during the outbreak and the attack rate was 1.87% from risk populations. Forty cases with median age 14.5 (range, 3-57 years), and eighty community controls with a median age of 19 (1-70 years) were study subjects. Body parts that highly affected were on the hand followed by groin 20.41% and the least was at breast (1.02%) and majority of cases with degree of scabies infection were Moderate (6-10) lesions. When analysis was done by bivariate and multivariate, Sleeping with contacted persons OR 5.56 = (95% CI 2.43–12.73), Sex OR 3.86 (95% CI=1.7-8.9) & Family size OR 2.2 (95% CI= 1.01– 4.8) were highly independent risk factors. On the other hand, Educational status OR = 0.274 (95%CI=0.124-0.6) were protective factors. Infrequent bathing, infrequent changing cloths and infrequent washing clothes have no statistically significant at  $p$ -value  $\leq 0.05$ .

**Conclusion:** The highest risk factors were high family size, sleeping with contracting scabies case & sex. Reduce family size and increasing knowledge about scabies diseases transmission are the proper methods for controlling scabies in the community.

Training people about scabies, correct/prompt diagnose, treatment, the importance of washing and changing clothes.

**Key words:** Scabies, Outbreak, Dera, Ethiopia

## **Introduction**

### **Background**

Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. hominis (1).

Human scabies is a microscopic mite that burrows into the upper layer of skin where it lives and lays its eggs. Community settings such as malnutrition, poor hygiene and other disasters are at increased risk of scabies outbreaks (1).

Scabies is transmitted primarily through prolonged, direct skin-to-skin contact with an infected person, and may also be transmitted through shared clothing, towels, bedding, linens, carpets, and furniture(2). The primary mode of transmission of the human scabies mite is direct skin contact between two individuals. Mites are good crawlers and can crawl up to 2.5 cm ~ 1

inch per minute on the surface of the skin (3). *Sarcoptes scabiei* undergoes four stages in its life cycle: egg, larva, nymph and adult. Females deposit 2-3 eggs per day as they burrow under the skin (4). Infestation begins when one or several pregnant female mites are transferred from the skin of an infected person to the skin of an uninfected person (5). The adult female scabies mites burrow into the upper layer of the skin (epidermis) where they live and deposit their eggs.

The microscopic scabies mite almost always is passed by direct, prolonged, skin-to-skin contact with a person who had already infested.

An infected person can spread scabies even if he or she has no symptoms. Humans are the source of infestation; animals do not spread human scabies (6). The most common signs and symptoms of a typical scabies infestation are intense itching (pruritus), especially at night, and a pimple-like (papular) itchy rash. The rash may contain tiny blisters (vesicles) and scales. Tiny, raised, crooked

grayish-white or skin-colored burrows are sometimes seen on the skin. The itching and rash may affect any part of the body, or may be limited to common sites like the webbing between the fingers, wrist, elbow, armpit, shoulder blades, breasts, waist, genitals, buttocks, and knees(7).

Symptoms usually occur four to six weeks after infestation in someone who has not previously experienced scabies. An infected person can transmit scabies, even if they do not have symptoms (8). The rash is an allergic reaction of the body to the mite, its waste products and the eggs deposited by the mite under the skin. The allergic reaction may not correspond with the site where the mite may be found (9).

### **Statement of the Problem**

Scabies, due to infestation with the *Sarcoptes scabiei* mite, has been estimated to affect approximately 300 million people worldwide each year. The highest rates of scabies in the world were in Pacific Island countries. In a population based survey in Fiji, 24% of participants had scabies, with particularly high prevalence in young children (10). In resource-poor communities worldwide, scabies prevalence in the general population is up to 10%. In remote Aboriginal communities in Australia's Northern Territory, scabies is endemic, with up to 50% of children and 25% of adults infested at some times (11). Globally, it affects more than 130 million people at any time. Rates of scabies occurrence vary in the recent literature from 0.3% to 46%. In the developed world, outbreaks in health institutions and vulnerable communities contribute to significant economic cost in national health services. However, in resource-poor tropical settings, the sheer burden of scabies infestation, as well as their complications, imposes a major cost on health-care systems.

In 2010, it was estimated that the direct effects of scabies infestation on the skin alone led to more than 1.5 million YLDS (years lived with disability), and the indirect effects of complications on renal and cardiovascular function are far greater (12). The highest incidence is in tropical climates, with rates of up to 25% overall and up to 50% in some communities in the South Pacific and northern Australia (13). Prevalence was highest in children aged five to nine years (43.7%, adjusted odds ratio, OR, 3.7 when compared to those aged over 49 years. Scabies was nearly twice as common in iTaukei Fijians (24.7%, adjusted OR 2.7 when compared to the Indo-Fijian population). Scabies was most prevalent in people living in the Northern division (28.5%), in people living in rural areas (25.6%) and in females (24.8%). Taking into account the census

distribution of age and geographical location by direct adjustment, the estimated national prevalence of scabies was 18.5% (95% CI 14.7–22.9). There were no cases of crusted scabies detected in this study. Similar to scabies, impetigo prevalence was twice as high in the iTaukei Fijians (22.8%, adjusted OR 2.4), in females (20.5%), in people living in rural areas (21.4%) and in the Northern division (23.7%). The presence of impetigo was strongly associated with a diagnosis of scabies (relative risk, RR, 58.6, 95% CI 48.7–70.5) (14). In many tropical developing areas, especially in sub-Saharan Africa where majority of the studies were carried out, the prevalence of scabies was 1-2 % (15). Following the current El-Nino event which affects many countries globally including Ethiopia, drought and extreme water shortage is prevailing in wide area of the country.

According to USA National Oceanic Atmospheric Administration (NOAA) El Nino has an 80% chance of lasting into early spring 2016, and hence, this extended period will escalate the number of vulnerable groups to such diseases(16).

In the study by Ukonu and Eze, performed at a referral center in Mekelle (an urban area of Northern Ethiopia) on adults and children, scabies was the fifth cause of dermatological conditions attended and the first cause of admission due to dermatological diseases. However, in a study performed at a referral hospital in Addis Ababa, scabies was present in 0.9% of cases.

In studies among school children in resource-poor communities, its prevalence ranged from 1% to 5%. Moreover, in a recent systematic review, the prevalence of scabies ranged from 0.2% to 71.4% (17). The scabies outbreak in Amhara region needs urgent cross-sector intervention.

A scabies outbreak is reported in 20 districts in East Gojjam, North Gondar, South Wollo and Waghimra, zones (Amhara region). Eighty eight thousand nine hundred five cases were reported in six districts of Waghimra zone (18). According to South Gondar zone health department there were a total of 12879 & 31875 scabies cases were reported in 2015 & 2016 respectively from different districts of the zone. Zonal weekly report showed that Dera district is the most scabies affected district in 2017 (19).

### **Justification of Study**

Among scabies affected districts in Amhara region Dera district was the leading in south Gondar zone due to this reason investigation was needed in that district in order to identify risk factor and find solutions to prevent and control in addition to case management activities.

## **Objectives**

### **General objective**

To investigate the outbreak and identify the risk factors in Dera district, South Gondar Zone, Amhara Region 2017

### **Specific objectives**

- ❖ To describe the magnitude of the disease in the district
- ❖ To confirm the existence of an outbreak
- ❖ To describe the outbreak by time, place and person
- ❖ To analyze risk factors and measure the attack rate of the outbreak.

## **Materials and Methods**

### **Study area and population**

**Study area:** Dera district is one of the districts in South Gondar zone, Amhara region Ethiopia. It is located at a distance of 119 kms from zonal town Debretabor and 494 kms from Addis Ababa. The district shares boundaries with Fogera district to the North, Andabet to the east, on the northeast by Este, on the south by the Abay River which separates it from the West Gojjam Zone, on the west by Lake Tana. Towns in Dera include Amba Same, Arb Gebeya, Hamusit, and Qorata. The catchment area of the district is 1,525.24 square kilometer. The district has total population of 289113 over half of (50.2%) were males and 39146 (13.54%) under five years, 9743 were pregnant and 68173 child bearing age (15-49yrs), and the district has 10HCs, 36 Health posts.

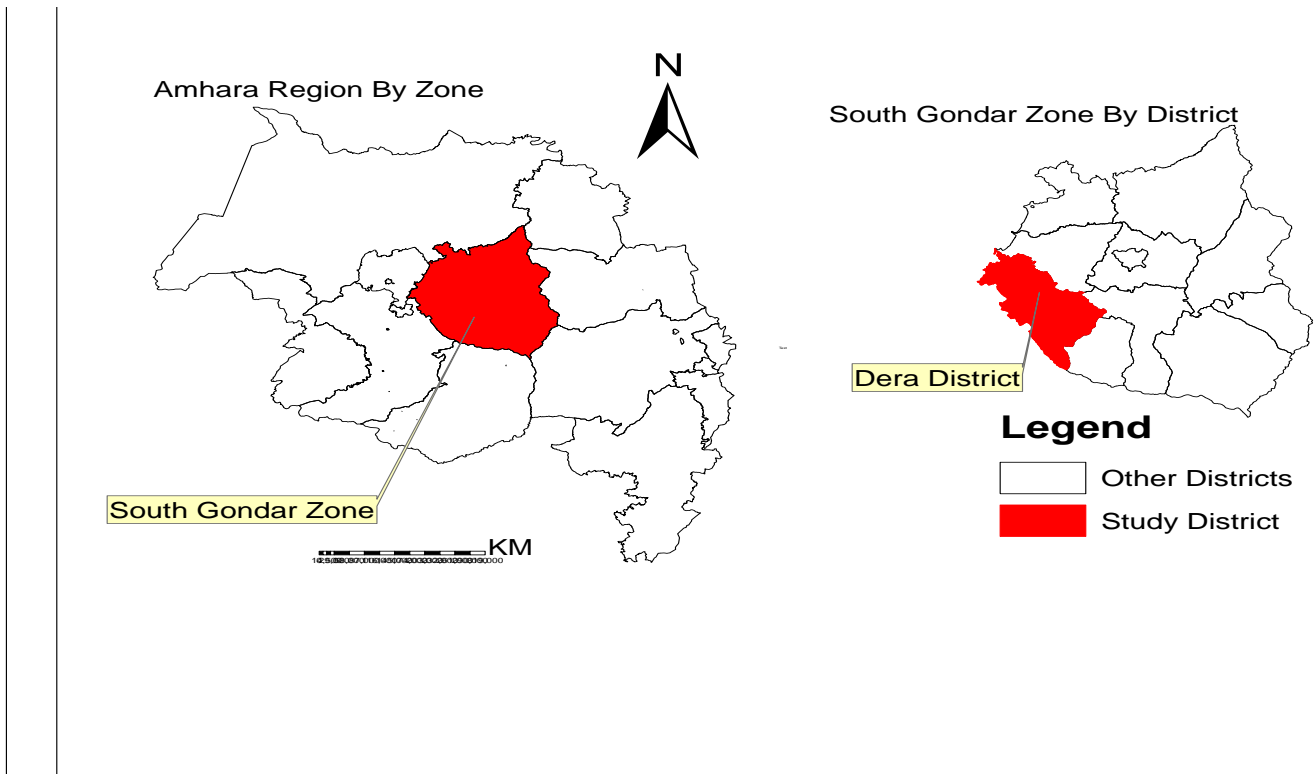


Figure 5 : Map of Dera district, South Gondar Zone, Amhara Region, Ethiopia, 2017

**Study period:** the study was conducted from January 16-30, 2017.

**Study Design:** Unmatched case-control study was conducted.

**Target population:** All population in Dera district.

**Study population:** All cases and populations from who controls were recruited

**Sample size:** Simple random sampling method was employed to recruit cases and controls. Sample size was calculated Epi-info 7 stat calc for unmatched case-control study

Two sided confidence level  $(1-\alpha) = 95\%$

Power (% chance of detecting) = 80%

Ratio of controls to case= 2:1

Proportion of controls with exposure = 10 % (13)

Least extreme odds ratio to be detected = 4.5 (20)

Proportion of case with exposure = 33.3 %

Therefore, the sample size was calculated using Epi info stat calc, 120 samples, 40 cases and 80 controls were selected.

### **Standard Case Definitions**

**Suspected case:** A person with signs and symptoms consistent with scabies.

**Confirmed case:** A person who has skin scraping in which mites, mite eggs or mite feces have been identified by trained health care professional.

**Contact:** A person without signs and symptoms consistent with scabies that has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in the two months preceding the onset of scabies signs and symptoms in the case.

### **Operational Definitions**

Mild (5 or less) – 5 or less of body part affect by lesion or sore

Moderate (6-10) – 6-10 of body part affect by lesion or sore

Severe (11-49) - 11-49 of body part affect by lesion or sore

Very severe (50 – more) – 50 or more of body part affect by lesion or sore

Infrequent bathing – more than a week take shower

Infrequent washing clothes – more than a week wash clothes

Infrequent changing clothes – more than a week changing clothes

### **Variables**

#### **Dependent Variable**

Scabies diseases

#### **Independent Variables**

Age

Sex

Number of family

Frequency of bathing

Educational level of the family

Frequency of changing clothes

Sleeping with scabies patients

Source of water fetched

### **Data collection method**

The study was conducted by house-to-house search for scabies case in each selected kebeles and village. We used semi-structured questionnaires and interviewed cases and controls, and collected data such as demographic, clinical pictures, risk factors and skin examination and other related variables for scabies. Data was collected by principal investigator and co-investigator including Zonal health department PHEM officer, District PHEM officer, health center PHEM focal persons.

### **Qualitative data collection**

Interviews were conducted using a semi – structured interview with key informants of district health office and with community member. The interview were about food and water insecurity, identify causes of outbreak and control measures. Observational assessment was done, such as hygiene and sanitation, overcrowding, so, focus group discussion was done with community about food insecurity, water supply shortage and also scabies outbreak. In addition to this living condition of the families of both case and control like overcrowding is important factor in the spread of scabies, poverty also leads to other associated problems, such as poor nutritional status, which may in turn contribute to the immune status of the individual and level of disease within the community.

### **Data Quality Control**

Data was collected by principal investigator, co-investigator and PHEM focal persons. The collected data was verified on daily bases, during data entry in to the computer missing variables, consistency and completeness of data was checked.

### **Data entry and Analysis**

Data was checked, entered in to computer and analyzed using Epi info 7, MS- Excel, SPSS and Arc GIS. Descriptive and analytical analyses were under taken. Logistic regression analysis was conducted to find association of illness with risk factors and exposure outcome were measured and tested using OR, 95% Confidence Interval. Results were presented using graphs, tables, charts and attack rate were also calculated.

### **Inclusion &Exclusion criteria**

**Cases:** Any resident of Dera district who had popular pruritic/ itchy rash.

**Controls:** A control was any resident of Dera district during the study that did not develop signs and symptoms of scabies.

### **Ethical issue**

The outbreak investigation was done after the approval of Amhara regional health bureau Public Health Emergency Management Core Process. Informed Consent was taken from all respondents & their parents or guardians and study participants found scabies were linked to cluster health centers.

### **Results**

#### **Descriptive Epidemiology**

The outbreak started April 2016 although it was reported late. When the outbreak was reported to the region a team composed of different disciplines deployed to the district and confirmed the existence of scabies outbreak in the area and conducted a case control study.

Twenty six kebeles were affected from the total 32 kebeles of the district, totally 5417 scabies cases were reported from these, and we recruited 40 cases and 80 controls into the study. The median age of patients was 14.5 (3-57) years where as that of the controls was 19 years ranging from (1 to 70) years. The overall attack rate for all age categories was 2.35 % from the risk population. The first case was started on April, 18, 2016. The outbreak was reported in December 2016 and intervention was started on January 2017.

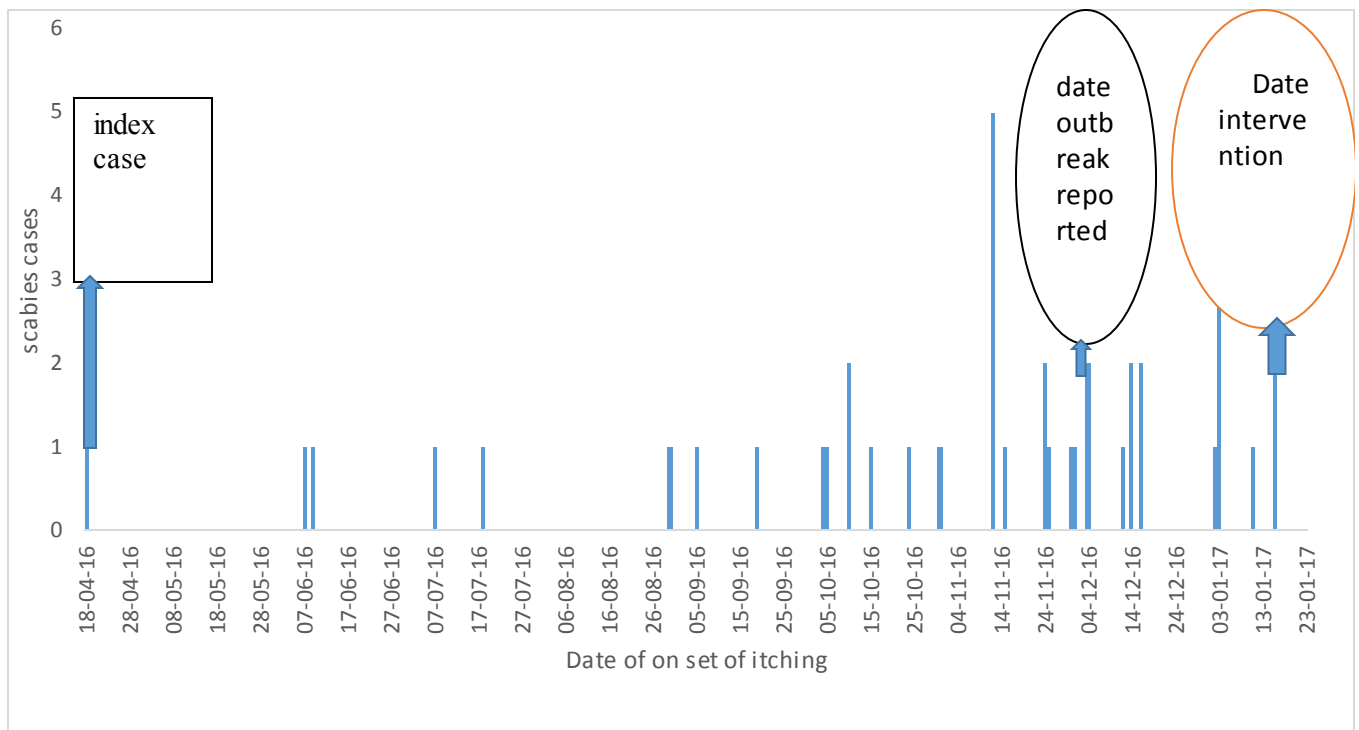


Figure 6 : Epi curve of scabies outbreak Dera district, South Gondar Zone, Amhara Region, Ethiopia, 2017

When we see the table below the highest prevalence was registered in Wutmera kebele (10.1) followed by Wogedame (8.5) but the least was in Mitsiley silasie (0.1).

Table 3: Scabies cases by kebeles, Dera district, South Gondar Zone, Amhara Region, Ethiopia, 2017

Seria l no.	Name of kebeles	Cases	Kebele population	Attack Rate (%)
1	Wogedame	409	4790	8.5
2	Tebabary	285	13300	2.1
3	Goha	645	13295	4.9
4	Emashenkoro	138	7620	1.8
5	Hamusit	84	12206	0.7
6	Wonchit	90	7880	1.1

7	Mitsiley silasie	11	11789	0.1
8	Zara	9	9258	0.1
9	Kulala gitba	66	10494	0.6
10	Arbgebeya	169	5745	2.9
11	Shime	131	14284	0.9
12	Agar	281	6251	4.5
13	Mecha atsedewoyn	134	10832	1.2
14	Miirafit	11	6417	0.2
15	Gedamgeregera	140	13793	1.0
16	Dewolk/ chirkos	470	8071	5.8
17	Kibeb	46	4147	1.1
18	Belabot/mereb	408	12254	3.3
19	Wofargf tamirie	321	8052	4.0
20	Deskua	395	6688	5.9
21	Afay	29	5677	0.5
22	Gelawudios	69	8637	0.8
23	Degol D/sina	74	7039	1.1
24	Wutmera	612	6068	10.1
25	Sana digustan	237	8060	2.9
26	Derba wochit	153	8123	1.9

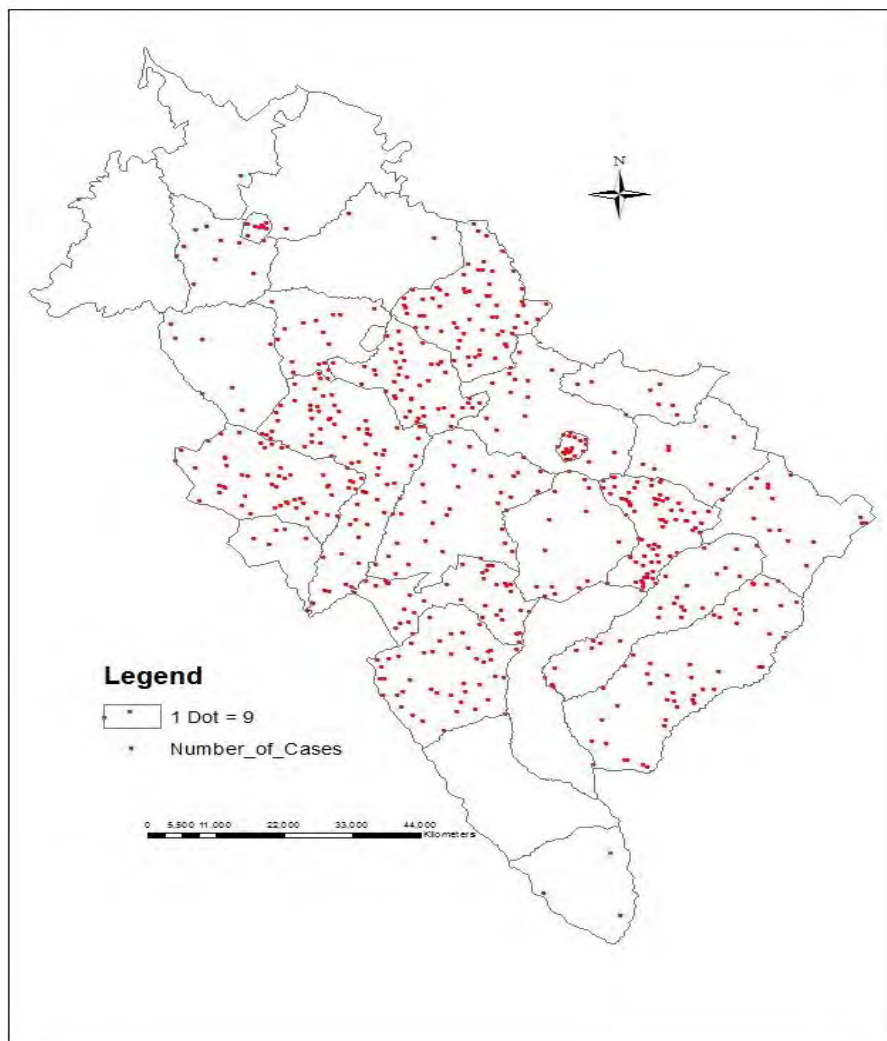


Figure 7: Distribution of scabies cases among kebeles of Dera district, South Gondar Zone, Amhara Region, Ethiopia, 2017

From the total study subjects 65(54.2%) were males. Hundred percent of the respondents were Orthodox Christianity followers and live in rural areas.

Source of water for most of the respondents were well (52.5%) water followed by river (35%). Although most of the protected respondents used soaps to take shower (50.8%), 10% scabies cases used water without soap to take shower.

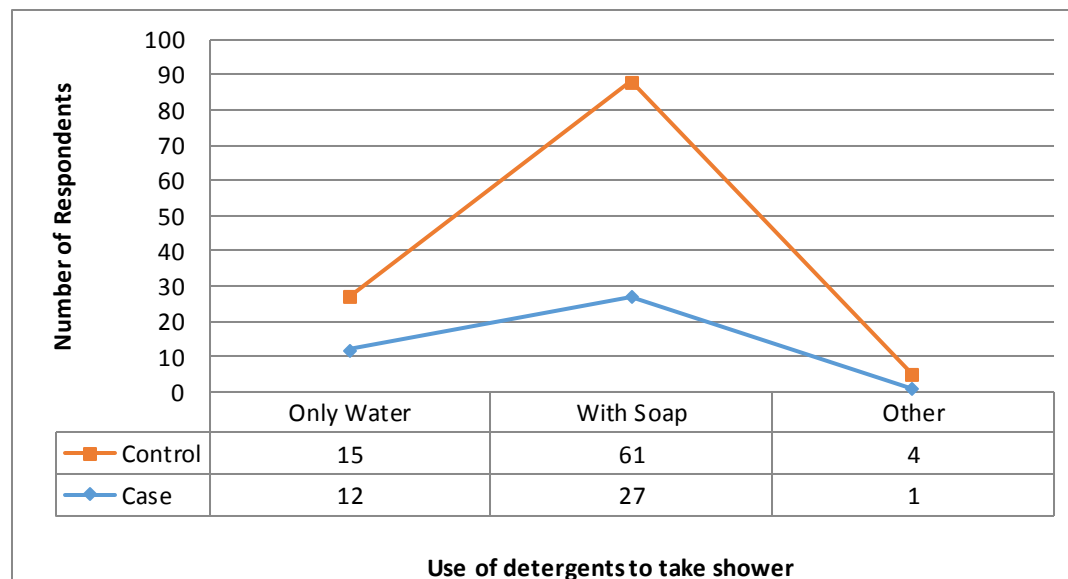


Figure 8 : Respondents regarding use of detergents to take shower, in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017

Majority 63(52.2%) respondents had family members 4 – 6 were the mean of the persons living in each room was 2.275 with SD of 0.64 (see table-4).

Table 4: Respondents distribution regarding number of persons living in each room, in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017.

Persons living per house	Number	Percent (%)
1-3	12	10%
4-6	63	52.5%
7-10	45	37.5%
<b>Total</b>	120	100%

When we see occupation of respondents 57(47.5%) farmers, 39(32.5%) student, 18(15%) other &6(5%) were house wives. Regarding marital status 70 (58.3%) were single, followed by 47 (39.2%) married and 3(2.5%) divorced.

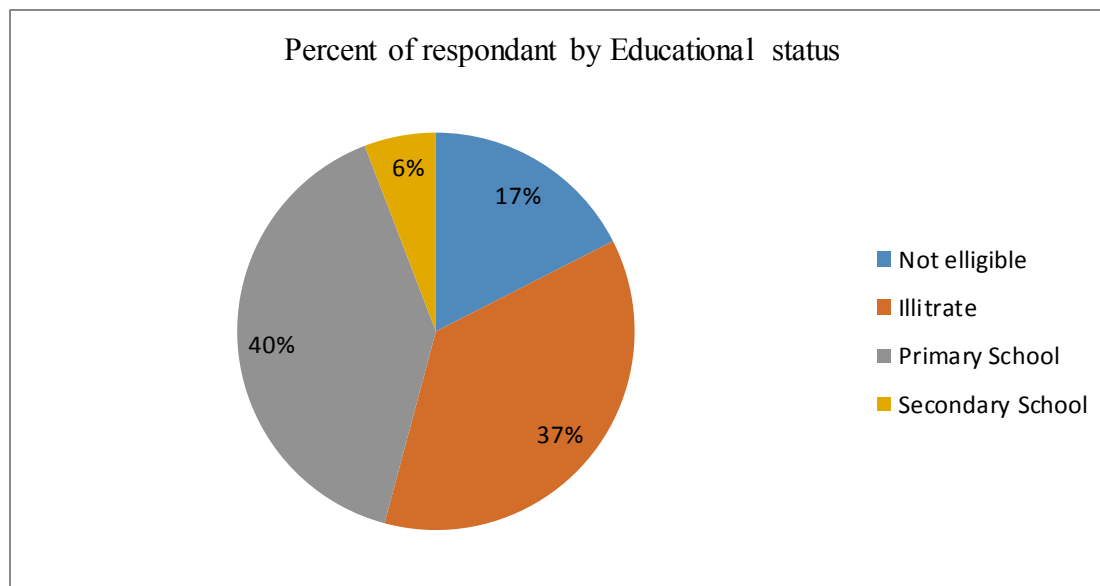


Figure 9 : Distribution of the respondents by their educational status in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017.

### Skin examination

Ninety eight percent of the respondents replied that they had intense itching during the night. About 37 (37.75%) cases reported that they had itching on the hand followed by groin 20 (20.41%).

Table 5: Body parts affected by scabies patients in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017

s.no.	Affected body parts	Frequency	percentage
1	Hands	37	37.75%
2	Elbow	8	8.16%
3	Groin	20	20.41%
4	Armpits	4	4.08%
5	Waist line	7	7.14%
6	Breast	1	1.02%
7	Wrist	9	9.18%
8	Other body parts	12	12.24%

Majority of cases were Moderate (6-10) lesions and mild (5 or less) sores and (See figure -6).

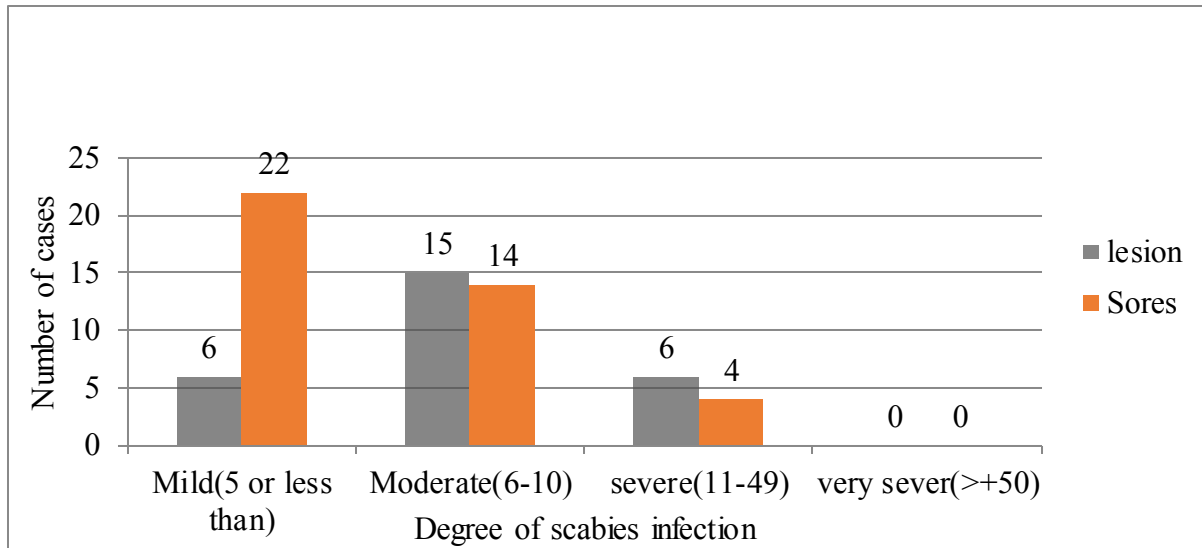


Figure 10 : Degree of scabies infection in body part Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017



Figure 11 : Picture of scabies patient in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017

### Analytic epidemiology

We recruited 40 cases and 80 controls into the study. The median age of patients was 14.5 (3-57) years where as that of the controls was 19 years ranging from (1-70) years.

The statically significant variables in bivariate analysis are sleeping with contacted persons OR 5.56 = (95% CI 2.43–12.73), Sex OR 3.86 (95% CI=1.7-8.9), Family size OR 2.2 (95% CI= 1.01–4.8) were risk factors. On the other hand, Educational status OR = 0.274 (95%CI =0.124-0.6) were protective factors. Infrequent bathing, infrequent changing cloths and infrequent washing clothes have no statistically significant at p –value  $\leq 0.05$ (see table 6). On multivariate logistic regression analysis, risk factors that remained statistically significantly associated with the diseases was Sex AOR 4.34(95%CI=1.64-11.46).But protective factors that remained statistically significantly associated with the diseases on multivariate logistic regression analysis were Age AOR 0.81 (95%CI=0.32-2.085), Family size AOR 0.47(95%CI=0.18-1.2) and shower taking frequency AOR 0.34(0.152-0.671)) (See table 6).

Table 6 Bivariate and multivariate analysis of risk factors for counteracting scabies in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017.

Serial no.	Variables	Category	Case(n=40)	Control=80)	COR (95%CI.)	P-Value	AOR (95%CI.)	P-Value
1	Sex	Male	30(75%)	35(43.75%)	3.86(1.66-8.94)	0.0012	4.338(1.643-11.458)	0.003
		Female	10(35%)	45(56.25%)				
2	Educational level	literate	14(35%)	53(66.25%)	0.274(0.1235-0.6)	0.001	0.34(0.152-0.671)	0.002
		Illiterate	26(65%)	27(33.75%)	Reference			
3	Family size	>6	20(50%)	25(31.25%)	2.2(1.009-4.792)	0.0455	0.472(0.183-1.22)	0.121
		=<6	20(50%)	55(68.75)	Reference			
4	Age	<15	20(50%)	30(37.5%)	1.667(0.77-3.59)	0.19043	0.812(0.316-2.805)	0.665
		=>15	20(50%)	50(62.5%)	Reference			
5	Sleeping with scabies cases	Yes	24(60%)	33(41.25%)	5.558(2.426-12.7345)	0.0000245	0.155(0.06-0.401)	P<0.0001
		No	16(40%)	47(58.75%)				

6	Infrequent Washing clothes	Yes	14(35%)	40(50%)	0.5385(0.2459-1.1790)	0.1194	-	-
		No	26(65%)	40(50%)		Reference		
7	Infrequent changing of clothes	Yes	18(45%)	41(51.25%)	0.778(0.363-1.667)	0.5185	-	-
		No	22(55%)	39(48.75%)	Reference			
8	Infrequent bathing	Yes	16(40%)	34(42.5%)	0.902(0.4166-1.9528)	0.7934	-	-
		No	24(60%)	46(57.5)	Reference			
9	Knowledge about scabies	Yes	16(40%)	33(41.25%)	0.95(0.44-2.059)	0.895	-	-
		No	24(60%)	47(58.75%)	Reference			

### Qualitative analysis

Discussion was conducted among affected people & contact cases, health workers, community leaders and Health Extension Workers. A community leader from Wogedame mentioned that to fetch water a women travel at least one hour from their residency.

### Interventions undertaken

Incidence of scabies cases in all of the affected kebeles 10.1% where most of the cases were less than 15% due to this reason cases & contacts were treated with ivermectin and sulfur ointment. In addition to this, awareness creation on all household contacts should be treated at the same time even if asymptomatic and Reapply the topical scabicide to the hands if they are washed during the treatment period (in 8 hours after application of the medication). Clothing, bedding, and linens used by an infested individual during the seven days prior to and during treatment should be washed or cleaned and dried sun or putting clothes in a plastic bag for two days and above is also effective in letting the mite die. Routine cleaning of the house and health education on prevention is important to avoid reinfection.

### Discussion

According to South Gondar zone health department 12879 & 31875 cases were reported in 2015 & 2016 respectively from different districts of the zone (19). In the same manner in our investigation result Twenty six kebeles were affected from the total 32 kebeles of the district, totally 5417 scabies case were reported and the overall attack rate for all age categories was 2.35 % from the

risk population and 65(54.2%) were males. There was difficulty to get the exact index case since report was too late. Hundred percent of the respondents were Orthodox Christianity followers and live in rural areas. Majority 63(52.2%) respondents had family members 4 - 6 the mean of the persons living in each room was 2.275 with SD of 0.64 .When we analyzed marital status of the respondents were seventy (58.3%) single which are the adult stage, 47 (39.2%) married and 3(2.5%) divorce.

Similarly one study in Fujii said Scabies was most prevalent in people living in the Northern division (28.5%), in people living in rural areas (25.6%) and in females (24.8%) (14).In our study most of the Literate communities less affected than illiterate, OR 0.274(0.1235-0.6)

In studies among school children in resource-poor communities, its prevalence ranged from 1% to 5%.Moreover, in a recent systematic review, the prevalence of scabies ranged from 0.2% to 71.4% (17). The highest prevalence was registered in Wutmera kebele (10.1) followed by Wogedame (8.5) but the least was in Mitsiley silasie (0.1), from the total kebeles only five kebeles were not affected. Similarly in resource-poor communities worldwide, scabies prevalence in the general Population is up to 10%.

In remote Aboriginal communities in Australia's Northern Territory, scabies is endemic, with up to 50% of Children and 25% of adults infested at some times (11).

But in population based survey in Fiji, 24%of participants had scabies, with particularly high prevalence in Young children (10). In our study result the most frequent site of the wound was hands about 37 (37.75%). The itching and rash may affect any part of the body, or may be limited to common sites like the webbing between the fingers, wrist, elbow, armpit, shoulder blades, breasts, waist, genitals, buttocks, and knees (7).Also our result discussed Patients reported that they had affected on the hand followed by groin 20 (20.41%) and the least was at breast (1.02%) and majority of cases with degree of scabies infection were Moderate (6-10) lesions, no case was very severe (>+50). When we compared with other study, in 2010, it was estimated that the direct effects of scabies infestation on the skin alone led to more than 1.5.million YLDS (years lived with disability), and the indirect effects of Complications on renal and cardiovascular function are far greater (12). When we assessed source of water that most of respondents fetched from well (52.5%) followed by river (35%).But when we compared the scabies infected persons each other 35% were fetched from river. Although most of the protected respondents used soaps to take shower (50.8%), ten percent of scabies patients took only with water from the total study subject.

Similarly following the current El-Nino event which affects many countries globally including Ethiopia, drought and extreme water shortage is prevailing in wide area of the country (16).

From our analytic epidemiological analysis statically significant variables in bivariate analysis are sleeping with contacted persons which had highest effect OR 5.56 = (95% CI 2.43–12.73), males were more affected than females OR 3.86 (95% CI=1.7-8.9), Family size which living more than six people in on living room were highly affected OR 2. 2 (95% CI= 1.01– 4.8) were risk factors. When Educational status were analyzed literate respondents were protective (72.6%) than illiterate with OR = 0.274 (95%CI =0.124-0.6). Infrequent bathing, infrequent changing cloths and infrequent washing clothes have no statistically significant at  $p$ -value  $\leq 0.05$ .

On multivariate logistic regression analysis, risk factors that remained statistically significantly associated with the diseases was Sex AOR 4.34(95%CI=1.64-11.46). In another way, protective factors that remained statistically significantly associated with the diseases on multivariate logistic regression analysis were Age AOR 0.81 (95%CI=0.32-2.085) and Family size AOR 0.47(95%CI=0.18-1.2). In different studies Prevalence was highest in children aged five to nine years (43.7%, adjusted odds ratio, OR, 3.7 when compared to those aged over 49 years. Scabies was nearly twice as common in iTaukei Fijians (24.7%, adjusted OR 2.7 when compared to the Indo-Fijian population) (14). The outbreak was reported 8 months after the onset of the illness and treatment was started after one month of detection the delay in reporting and response might be due to the fact that health care providers were not informed that scabies should be reported as public health important problem.

### **Limitation**

- ❖ Due to long duration of the illness may result in recall bias on the date of onset of illness.
- ❖ There were limited studies or researches in scabies especially Ethiopia.
- ❖ There were data discrepancy in line list and total number of cases in the health facility

### **Conclusion**

In this study, the highest risk factors were high family size, sleeping with contracting scabies case and sex, Literate peoples were more protective than illiterate and Low safe water coverage was seen.

### **Recommendation**

- ❖ Education on scabies and different risk factors for scabies diseases should be given for the community and at regular school.
- ❖ The district should design strategies how the communities get safe water with good near infrastructure from their territory.
- ❖ Increase awareness of the community on the modes of transmission of scabies to avoid or minimize contact with cases.
- ❖ The regional health bureau should establish a mechanism to include scabies under the public health emergency management reporting system.

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## Chapter II-Surveillance Data Analysis Report

### 2.1 Five Years HIV/AIDS Surveillance Data Analysis in Farta District, Amhara Region, Ethiopia, 2016

#### Abstract

**Introduction:** According to UNAIDS in June 2015, 15.8 million people living with HIV were accessing antiretroviral therapy (ART) globally, up from 13.6 million in June 2014. At the end of 2012, 548 persons were known to be living in Montana with HIV infection.

According to FMOH 2008/09 Administrative report, the increase in health facilities have been from 801 to 1823 for (VCT) HCT, from 93 to 1023 for PMTCT and from 168 to 511 for ART.

Since Debretabor town is surrounded by Farta district, HIV/AIDS was public health problem of the district i.e. the town of HIV prevalence is high. Based on the situation we analyzed retrospective data to assess the prevalence of the case in the district.

**Methods:** We conducted a descriptive cross sectional study of HIV/AIDS retrospective data of 2011 to 2015 were reviewed. We used case definition and stages primary infection, stage-1, stage-2, stage-3 and stage-4

**Result:** We identified 55365 tested people; 52.4 %( 29,035) were males. Regarding distribution by voluntary counselling and testing (VCT) and PITC, 223 were positives for HIV and 26 deaths were reported due to HIV during 2011 to 2015, with annual range of 0 to 12 cases fatality..The age group 25+ years old (73%) were the most exposed, of this age group females account for 63.2% exposure. From total tested for both VCT and PITC, positivity rates were 5.7, 3.4, 3.5, 2.2 and 5.3 per 1000 respectively (2011 to 2015).

**Conclusion:** HIV/AIDS is a public health problem in Farta district. It is highly recommended creating awareness about means of transmission and prevention especially for the surrounded town. Surveillance system of the disease should be in place for estimating the real magnitude and launch preventive and control measures.

**Key Words:** HIV/AIDS case, Farta, Ethiopia

## **Introduction**

### **Background**

HIV attacks the body's immune system. The infection fighting cells are called T-cell lymphocytes. Months to years after a person is infected with HIV, the virus destroys all the T-cell lymphocytes. This disables the immune system to defend the body against diseases and tumors (1). Transmission: Sexual transmission, Injection drug use related HIV infection Transmission of HIV by blood, blood products, tissue transplantation and artificial insemination Vertical transmission. Clinical manifestations: Fever, Wasting, Oral manifestations of HIV disease, Dermatologic manifestations of HIV infection and Neurological dysfunction's (1).

Factors that make people vulnerable include: a lack of knowledge about HIV or lack of skills to avoid risk behaviors; inability to access condoms, clean needles, or other surveillance of HIV risk behaviors protection; gender and income inequality that prevent sexual negotiation or contributes to forced sex; and discrimination and stigma, which deter people from changing risk behaviors (2). In generalized epidemics, HIV is firmly established in the general population and HIV prevalence is consistently more than 1 percent in pregnant women (3).

Globally, according to WHO, there were approximately 36.9 million people worldwide living with HIV/AIDS at the end of 2014(4). Of these, 2.6 million were <15 years old and an estimated 2.0 million individuals worldwide became newly infected with HIV in 2014(4). This includes over 220,000 children. Most of these children live in sub-Saharan Africa and were infected by their HIV-positive mothers during pregnancy, childbirth or breastfeeding and an estimated 34 million people have died from AIDS-related causes so far, including 1.2 million in 2014(4).

According to UNAIDS in June 2015, 15.8 million people living with HIV were accessing antiretroviral therapy (ART) globally, up from 13.6 million in June 2014 (4). At the end of 2012, 548 persons were known to be living in Montana with HIV infection (5). Sub-Saharan Africa has the most serious HIV and AIDS epidemic in the world, in 2013, an estimated 24.7 million people were living with HIV, accounting for 71% of the global total (6). In the same year, there were an estimated 1.5 million new HIV infections and 1.1 million AIDS-related deaths. HIV prevalence

for the region was 4.7% but varies greatly between regions within sub-Saharan Africa as well as individual countries (6). According to the latest estimates from UNAIDS: There were 36.7 million people living with HIV in 2015(7). Global prevalence was 0.8% in 2015 and 1.1 million people died of AIDS in 2015. In 2015, approximately 11% of new TB cases occurred in people living with HIV. However, between 2004 and 2014 TB deaths in people living with HIV declined by 32%, largely due to the scale up of joint HIV/TB services(7).

In Ethiopia the estimated HIV prevalence rates for male and female have been 1.8 and 2.8, respectively but the overall, national point prevalence for 2009 was 2.3(8). During the same year, adult HIV incidence was 0.28 resulting in total AIDS related deaths of 44,751(8). Among urban settings, the epidemic varies greatly from 2.4% in Somali region to 9.9% in Tigray, 10.7% in Amhara and 10.8% in Afar Regions. Rural HIV epidemic also varies significantly among regions with rural HIV prevalence ranging from 0.4% in Somali R

egion to 1.5% in Amhara Region. There were also a total 855,720 AIDS orphans in the country (8). The two primary modes of HIV transmission in Ethiopia are heterosexual intercourse (87%) and vertical transmission from mother to child (10%) during pregnancy, delivery and breast-feeding (9). In one area of Ethiopia, 79% of 544 bars sampled had condoms available, either free in dispensers or, more commonly, for sale at the bar (10). Although there is a remarkable improvement in consistent condom use among female sex workers and uniformed forces, which reached as high as 90%, condom use among sexually active young people is still low (9). According to FMOH 2008/09 Administrative report, the increase in health facilities have been from 801 to 1823 for (VCT) HCT, from 93 to 1023 for PMTCT and from 168 to 511 for ART. The number of clients using (VCT) HCT services has gone up to a record of 8,295,483 persons as compared to the 564,321 in 1998(11).

Among regions, the highest proportion of PLHIV enrolled in HIV care is seen in Amhara, Oromia and Addis Ababa While, Harari region manages to enroll far more than the target (122%), and Somali region takes in hand only 13% of the eligible target (11). Similarly, Benishangul Gumuz, Dire Dawa, Addis Ababa, and Tigray are the regions that performed well enrolling 66%, 66%, 68% and 73% of targeted eligible respectively (11).

The study in SNNPR has shown that the prevalence of HIV among symptomatic STI cases was 10.6%. (12).

The purpose of this project is to assess and describe the prevalence of HIV/AIDS in farta district, Amhara region which will be help for understanding of the health problem and use it to address the current gaps for program planning, priority setting and intervention.

### **Rationale of HIV/AIDS data analysis**

Even though awareness of people about mode of transmission and prevention mechanisms of HIV/AIDS has been implemented in Ethiopia, there is limitation about use of ART in the district because of low behavioral change and feed back to health care providers. Therefore, this surveillance data analysis aimed to analyze or describes trend of HIV/AIDS in Farta district, Amhara Region, 2016

#### **Objectives**

##### **General Objective**

To analyze the five year HIV/AIDS trend (2011-2015) in Farta District, Amhara Region, 2016.

##### **Specific Objectives**

- ❖ To analyze trends of disease
- ❖ To describe the disease with respect to (person, place and time).
- ❖ To identify problems & gaps encountered of HIV/AIDS prevention systems in the district.
- ❖ To generate base line information for further assessment.

##### **Methods and Materials**

**Study area:** Farta is a district which found in South Gondar Zone and bounded by Debretabor admin. Town, it is also bordered in the North Libokemkem and Ebinat, by West Fogera, by East L/Gayint and South East Estie districts. The District totally has 43 kebeles 2 sub municipalities, 10 health centers from those only one has ART clinic, 56 health posts, and 2 preparatory and 5 high Schools.

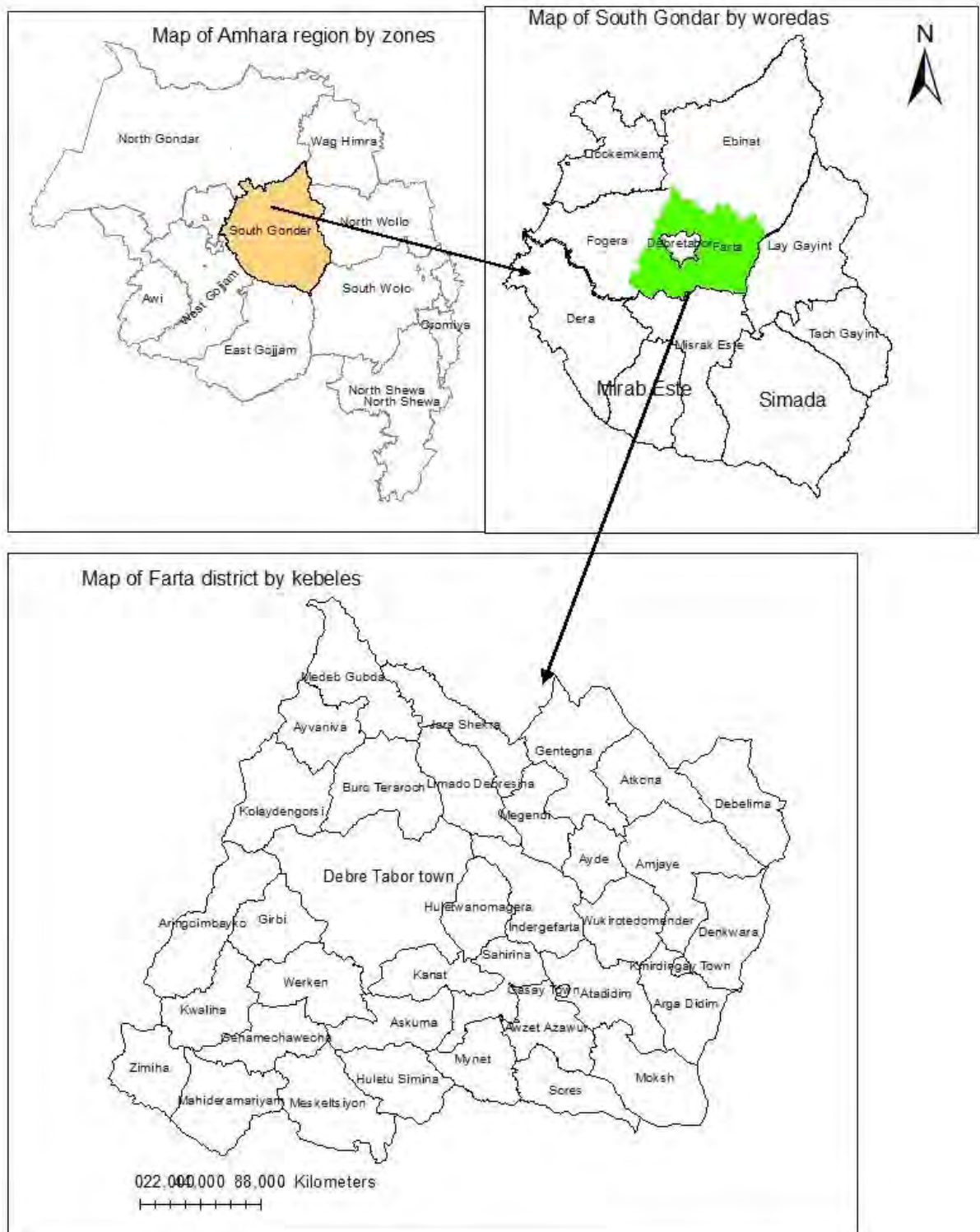


Figure 12 : Map of Farta district, Amhara Region, Ethiopia, 2016

**Study design and period:** Descriptive cross sectional study design has been employed on surveillance data and study period was conducted from 11-Feb- 15- March-2016 in Farta district.

**Data source:** Our data source was Farta district health office disease promotion and prevention core process and HIV/AIDS and other STI prevention and control officer.

**Numerator:** Number of cases and deaths (observations) in 2011 to 2015 in the district.

**Denominator:** We were used Farta district total population as denominator.

**Data collection instrument and procedure:** Data was collected from district health promotion and prevention core process, HIV/AIDS and other STI prevention and control officer and district health office head.

**Data quality control, processing and analysis:** The collected data has reviewed and checked for completeness before data entry and also conducted data cleaning was prior to analysis. Finally Descriptive statistics including Proportion, percentage, ratios, frequency distribution, data were checked, recorded and entered to excel printed and prepared reports. Data entry has made by the principal investigators. Frequency tables and diagrams were used for presenting the descriptive results.

### **HIV/AIDS Case Definition**

(WHO Clinical Staging of HIV/AIDS for Adults and Adolescent) Primary HIV Infection: Asymptomatic and acute retroviral syndrome

Clinical Stage 1: Asymptomatic, Persistent generalized lymphadenopathy

Clinical Stage 2: Moderate unexplained weight loss recurrent respiratory infections, Herpes zoster, Angular cheilitis, recurrent oral ulceration, popular pruritic eruptions, Seborrhea dermatitis and Fungal nail infections

Clinical Stage 3 : Unexplained severe weight loss, Unexplained chronic diarrhea for >1 month, Unexplained persistent fever for >1 month, Persistent oral candidiasis (thrush) , Oral hairy leukoplakia ,Pulmonary tuberculosis (current), Severe presumed bacterial infections, Acute necrotizing ulcerative stomatitis, gingivitis, or periodontitis, Unexplained, Neutropenia, Chronic thrombocytopenia

Clinical Stage 4:HIV wasting syndrome, as defined by the CDC, *Pneumocystis pneumonia*, Recurrent severe bacterial pneumonia, Chronic herpes simplex infection, Esophageal candidiasis, Extra pulmonary tuberculosis, Kaposi sarcoma, Cytomegalovirus infection, Central nervous system toxoplasmosis , HIV encephalopathy,Cryptococcosis, extra pulmonary, Disseminated no tuberculosis mycobacteria infection, Progressive multifocal leukoencephalopathy,Candida of the trachea, bronchi, or lungs,Chronic cryptosporidiosis (with diarrhea),Chronic isosporiasis,Disseminated mycosis, Recurrent nontyphoidal Salmonella bacteremia, Invasive cervical carcinoma, Atypical disseminated leishmaniasis,Symptomatic HIV-associated nephropathy,Symptomatic HIV-associated cardiomyopathy and Reactivation of American trypanosomiasis(13).

## Results

During the last five years a total of 55365 were tested, 223 cases, 12 drop out, 2 lost and 26 deaths were recorded. In 2015, a total of 153 patients were currently on ART those who were come from different kebeles and health facilities of the district in the respective years.

Table 7: Five years VCT performance in Farta district, S. Gondar, Amhara Region, 2011-2015

Years( EFY)	VCT										
	plan	Tested					Tested Positive				
		Age		Sex			Age		Sex		
		15-24	25+	Male	Female	Total	15-24	25+	Male	female	Total
2011	51000	2483	3420	3527	2776	6303	6	21	5	22	27
2012	51873	2577	3423	3302	2698	6000	7	20	6	21	27
2013	7890	2025	3069	2815	2779	5594	8	26	17	17	34
2014	16020	3337	2818	3407	2748	6155	4	12	5	11	16
2015	8960	2975	1849	2716	2108	4824	11	19	13	17	30

Table 8: Five years PITC performance in Farta district, South Gondar, Amhara Region, 2011- 2015

Years(E FY)	PITC										
	plan	Tested					Tested Positive				
		Age		Sex			Age		Sex		

		15-24	25+	Male	Female	Total	15-24	25+	Male	female	Total
2011	50000	1061	2107	1681	1487	3168	7	17	8	16	24
2012	45389	2268	5131	3991	3408	7399	4	13	9	8	17
2013	7890	2755	5430	4854	3331	8185	3	10	2	11	13
2014	16970	3790	4563	4626	3727	8353	6	11	6	11	17
2015	3006	2450	1662	2212	1900	4112	4	14	11	7	18

From the above two tables we were understand that the age 25+ (54.2%) were tested than 15-24(45.8%). Although, males (52.4%) are tested than females(47.5%). Females were affected than males because positivity rate of females (2.5/1000) were higher than males (1.5/1000) from tested.

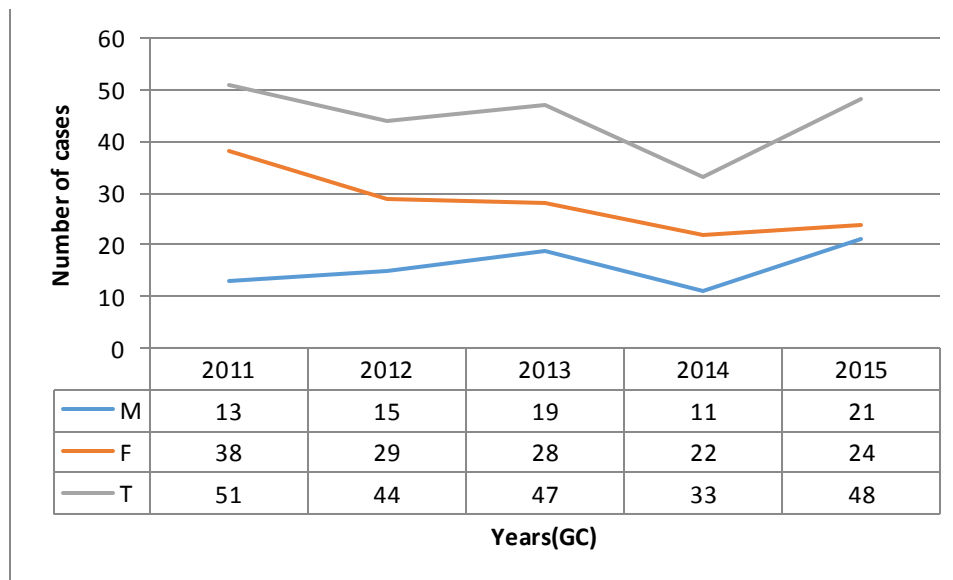


Figure 13 : HIV/AIDS case by Sex in Farta district, South Gondar, Amhara Region, 2011-2015

Table 9 Annual case and prevalence rate in Farta district, South Gondar, Amhara Region, 2011-2015

Years(EFY)	Total population	Annual case			prevalence rate per 1000
		M	F	T	
2011	248543	13	38	51	0.2
2012	251321	15	29	44	0.17

2013	255352	19	28	47	0.18
2014	282797	11	22	33	0.116
2015	276144	21	24	48	0.173

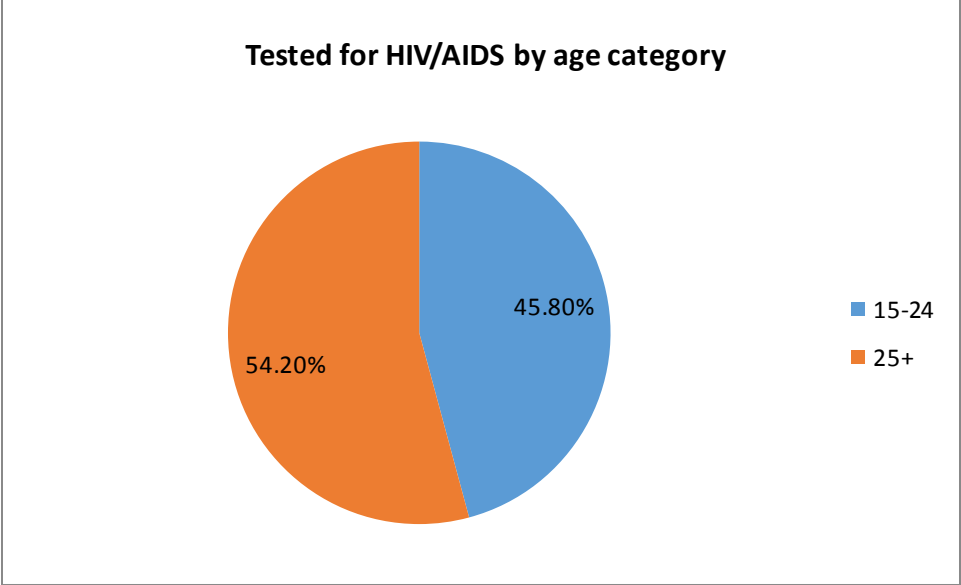


Figure 14 : Tested for HIV/AIDS by age category at farta district, South Gondar, Amhara Region, 2011-2015

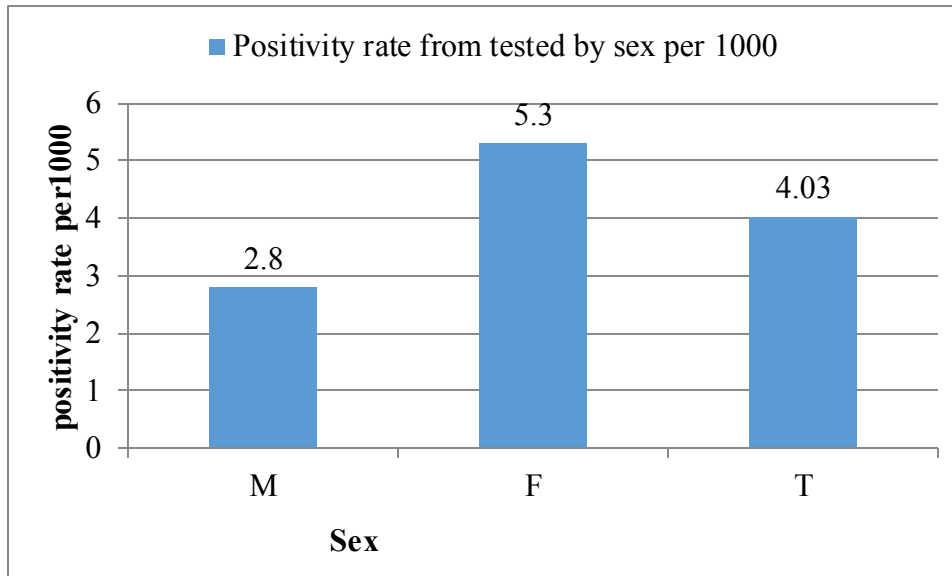


Figure 15 : HIV/AIDS positivity rate by sex at farta district, South Gondar, Amhara Region, 2011-2015

Table 10: STI cases Screened for HIV in farta district, South Gondar, Amhara Region, 2011-2015

Years( EFY)	plan	STI cases treated			STI cases screened for HIV			positive		
		M	F	T	M	F	T	M	F	T
2011	2519	29	44	73	29	44	73	No	No	No
2012	1508	82	96	178	82	96	178	HIV	HI	HIV
2013	1683	116	110	226	116	110	226	case	V	case
2014	1812	83	99	182	83	99	182		cas	
2015	400	179	175	354	179	175	354		e	

This table shows that all treated STI cases were screened for HIV and No any HIV case from STI cases treated in the respective years.

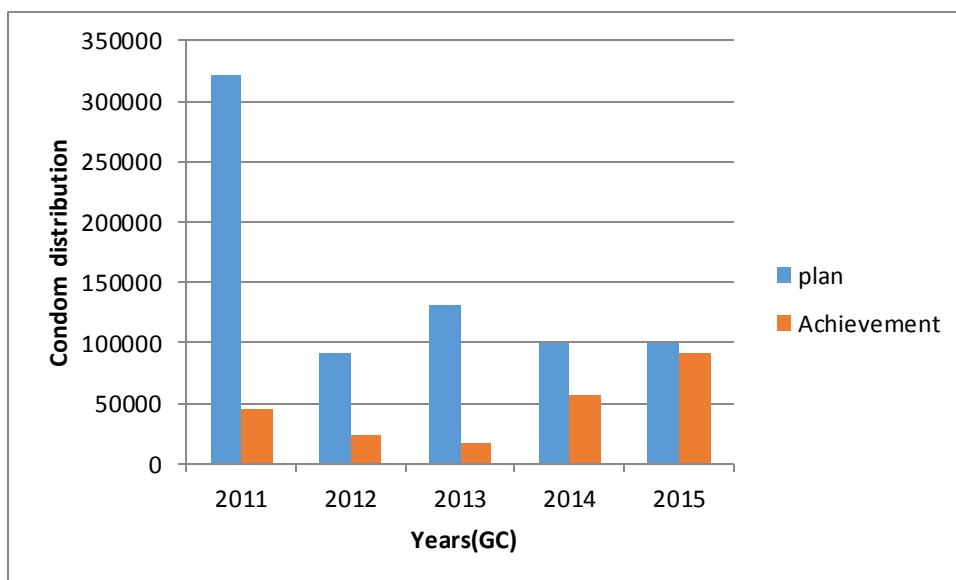


Figure 16 : Condom distribution at farta district, South Gondar, Amhara Region, 2011-2015

Table 11: Yearly performance Pre-ART and ART in farta district, South Gondar, Amhara Region, 2011-2015

Years(EFY)	plan	Pre-ART and ART						
		Ever enrolled	Ever started	Currently on ART	Drop out	Lost	Dead	Stop
2011	-	-	-	-	-	-	-	-
2012	74	36	10	51	0	0	0	0
2013	112	84	37	88	3	2	5	0
2014	82	116	78	141	3	0	9	0
2015	83	135	94	152	6	0	12	0

NB.no document of 2011 from health office above table.

Up to 2015 1.PLHIV transferred in from other health facility=101

2. PLHIV transferred out to other health facility=24

{(Ever started+ Transferred in) \_ (Transferred out+dead+droup out)}=Currently on ART

So, {(94+101)-(24+12+6)}=195-42=153

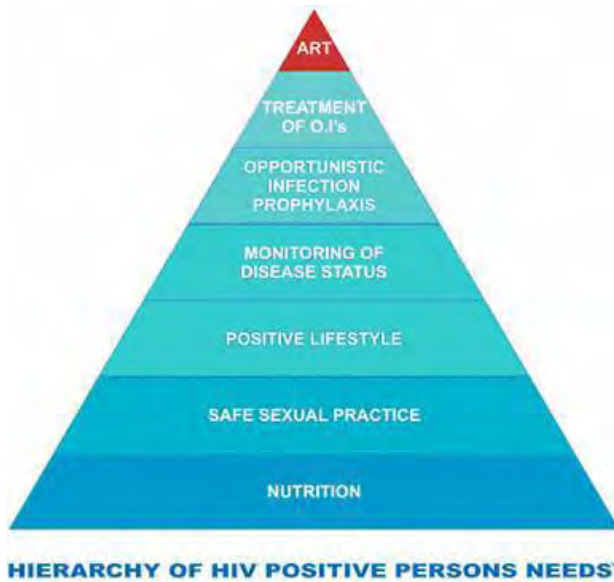


Figure 17 : Impact of ART on HIV/AIDS (14)

### Discussion

The major aim of this study was to assess the prevalence of HIV infection and analysis trends of disease in Farta district, South Gondar, Amhara Region, Ethiopia, 2016. According to (WHO), there were approximately 36.9 million people worldwide living with HIV/AIDS at the end of 2014, Of these, 2.6 million were children (<15 years old) (4). In this study the incidence of exposed cases were highest in 2011 followed by 2013. The lowest incidence was reported in 2014. The average incidence of exposed cases was 0.131 per 1000 from 2011-2015. This may be due to lack of awareness about mode transmission and prevention mechanism. The two primary modes of HIV transmission in Ethiopia are heterosexual intercourse (87%) and vertical transmission from mother to child (10%) during pregnancy, delivery and breast-feeding (9). In our assessment distribution of condom from the plan in the respected years (2011-2015) ranges from 7.2%-91.7%, unlikely in one area of Ethiopia, 79% of 544 bars sampled had condoms available, either free in dispensers or, more commonly, for sale at the bar (10). Although there is a remarkable improvement in consistent condom use among female sex workers and uniformed forces, which reached as high as 90%, condom use among sexually active young people is still low (9). From The age and sex specific distribution of the records showed that most cases were the age 25+ were tested than 15-24, although, males (52.4%) are tested than females (47.5%). Females were affected than males because positivity rate of females (2.5/1000) were higher than males (1.5/1000) from tested. But from the national burden, the estimated HIV prevalence rates for male and female have been 1.8

and 2.8, respectively. In Ethiopia the estimated HIV prevalence rates for male and female have been 1.8 and 2.8, respectively, accordingly the overall, national point prevalence for 2009 was 2.3. During the same year, adult HIV incidence was 0.28 resulting in total AIDS related deaths of 44,751(8). HIV prevalence for the region is 4.7% but varies greatly between regions within sub-Saharan Africa as well as individual countries. Global prevalence was 0.8% in 2015 and 1.1 million people died of AIDS in 2015(6). In Farta district from total tested 55365, males 29035, females 29030 those 223 were affected, total positivity rate 4/1000 and 26 death. Case fatality rate was 0, 0,106,272,250 per1000 respectively from five years, this result came from different reasons: One hundred one PLHIV transferred in from other health facility, 24 PLHIV transferred out to other health facility because of ART treatment center is only one in the district due to this dropout were 03(2011), 03(2014) and 06(2015).Percentage of ever started from ever enrolled is not satisfactory (55.5%), Also there was lost 02 in 2013. Among regions, the highest proportion of PLHIV enrolled in HIV care is seen in Amhara, Oromia and Addis Ababa While, Harari region manages to enroll far more than the target (122%), and Somali region takes in hand only 13% of the eligible target. Similarly, Benishangul Gumuz, Dire Dawa, Addis Ababa, and Tigray are the regions that performed well enrolling 66%, 66%, 68% and 73% of targeted eligible respectively (10). In the district from all STI cases treated (10130) screened for HIV but no HIV positive case, unlikely a study in SNNPR has shown that the prevalence of HIV among symptomatic STI cases was 10.6% (12).

### **Gaps**

- ❖ There is a great discrepancy of recorded data between age and sex.
- ❖ Large gap in age grouping system especially in VCT, PITC and ART was the other problem in the document.
- ❖ Other problem is no document about ART in 2011 and no computer still for ART documentation and mentoring service.
- ❖ Only one treatment center in the district i.e kimre Dingay health center.

### **Conclusion**

Report showed that in Farta district magnitude of HIV/AIDS case is higher in the aged 25+ years compared to age 15-24years and by sex, females more affected than males. Dropout was high in

three respective years 2013, 2014 and 2015 (3, 3 and 6). Lack of a robust surveillance system, only one ART treatment center and limited access to health facilities may be possible reasons for dropout, lost and death in the remote rural settings, because from total kebele of 43 only 2 are sub-towns the rest have unstable infrastructure.

### **Recommendations**

The Community should be sensitized how ART intervene HIV AIDS and use of condom to reduce the magnitude of disease.

Records of HMIS and promotion and prevention of disease core process should have one report. Secretariat of HAPCO and other concerned sectors should work in collaboration with the health offices and facilities to construct other additional treatment center in the district and find reactive measures for control of dropout and lost.

Anti-HIV Club coverage has to be upgraded to all schools in order to cover the required target. It is better to support and collaborate for PLWHA by any means as psychological treatment. Community health extension workers, Teachers and all concerned bodies should contribute their bests especially on adult based activities to reveal the real magnitude of the disease at the district.

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## Chapter III –Evaluation of Surveillance System

### 3.1 Surveillance System Evaluation of Malaria and Typhoid Fever, East Gojjam Zone, Amhara Region, Ethiopia, 2016

#### Abstract

**Introduction:** Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health. Malaria is one of public health important communicable disease, which is under surveillance activities and poses major public health problem in the region. Regardless of achieving the high coverage of the major interventions for malaria control like high distribution LLITNs, IRS, increasing of health facilities that may be facilitated on time and accurate diagnosis however in the country. On the other hand, a number of districts in our country had poor hygiene and sanitation practice which lead to Typhoid fever disease, the most vulnerable group mainly children.

**Method:** Cross-sectional descriptive study was conducted in East Gojjam Zone, Amhara Region. The study period was 01/8/2016 -12/8/2016. Data on attributes of the surveillance system collected during the assessment. Totally 11 health facilities were included in this evaluation. Data were entered in to Microsoft Excel and checked for its Quality then analysis was done using pivot table.

**Result:** At zonal level there was an assigned PHEM officers, at district level, although assigned PHEM officers were present that expert had another responsibility.

When we assess malaria in East Gojjam a total of 38797 outpatient and inpatient cases of confirmed malaria cases and no death was reported in 2015/16, from these 23675 Cases positive for Plasmodium falciparum and 15122 were positive for plasmodium vivax. Typhoid fever cases were highest at D/Markos administrative town 23.9% of the zone. The case definition of Typhoid fever and Malaria available in visited health facilities but not in Betengus health post of Basoliben district. Shortage of weekly PHEM reporting formats were observed at the time of visiting in 3 health centers and 4 health posts. From all health facilities, privates' health facilities are less likely to send weekly PHEM report. The weekly report timeliness in the zone in the previous fiscal year (2016GC) was 99.4% and the timeliness of Basoliben, D/Elias and D/Markos town was 94.4%, 99.4 % and 100% respectively.

**Conclusion:** Regular monitoring and follow up of health extension workers from districts and zonal PHEM unit is very weak they were supported as ISS in general. Evidence of data analysis was not observed in some district health offices and health facilities. Lastly we concluded that supportive supervision on quarterly basis is done in regional basis but specific surveillance system evaluation and feedback is not practiced at regular basis. Data utilization is very low at the lower level of the reporting unit, based on this challenge: Training should be given for health workers on surveillance data management activities to improve case search and reporting system and there should be held in reserve budget for epidemic response and preparedness plan must prepare in all setup.

## **Background**

### **Introduction**

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce Morbidity and mortality and to improve health(1). The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively (1). Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness (1). The evaluation of public health surveillance systems should involve an assessment of system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, predictive Value positive, representativeness, timeliness, and stability (1). Surveillance data are used both to determine the need for public health action and to assess the effectiveness of programs (2). The key to surveillance is reporting, developed in such a way that a continuous record is kept, not the desperate call of an established epidemic (3). Surveillance for a disease or other health-related problem should be evaluated periodically to ensure that it is serving a useful public Health function and is meeting its objectives (4). A surveillance system for emergency health care should be started from the initial needs assessment(5). Surveillance activities are information loops that start with data collection and end with appropriate disease control measures (6), as shown in Figure1:



Figure 18 : Information loop involved in surveillance of diseases

Good surveillance doesn't necessarily ensure the making of right decision, but it reduces the chance of wrong ones {Alexander D .Langmuir, 1963} (7).

IHR (2005) has introduced the notion of "event-based" surveillance to IDSR in order to address Rumors of "unexplained illness or clusters" as an event category for reporting from lower levels to national level (8).

In Ethiopia 21 diseases (13 are immediately reportable whereas 8 are weekly Reportable) are selected to be included into the routine surveillance (9).

Regionally 22 diseases (13 are immediately reportable whereas 9 are weekly reported including Kalaazar which is found in N and S Gondar zones. The potential of mobile phone technology for public health practice in some health facility: This technology could be used by a variety of health practitioners. For example (health post level), health extension workers in particular could improve their effectiveness through the provision of information on key treatment practices such as the management of malaria or fever in children under five. Such interventions could enhance the capacity of health extension workers and might have immense implications for improving the quality of health services in the country. Secondly, surveillance systems could be established through the network of health extension workers. They could be provided with a specified number for diseases which need immediate reporting. In addition, a pre-designed template can be used by them to report weekly reportable diseases. Thirdly, the technology could be used to provide health information to the general public. It could also be used for alerting the people during emergency situations and outbreaks of disease; and reminders for medication adherence and defaulter tracing.

Finally, mobile phones could be used as a tool for strengthening the health management information system. This facilitates collection and compilation of information from wide areas. In conclusion, we believe that it is now time to harness mobile phone technology for public health practices in Ethiopia. However, context specific research should precede any planned interventions using mobile phones. Characterizing the subscribers and taking the lessons learned from the commercial sector on the use of the service and the adaptability of the system to the context of public health are important first steps (11). Public health departments at local, state, and national levels routinely use different surveillance systems. Here is an overview of some of these systems, including vital statistics, disease reporting, and surveys. There are more specialized surveillance systems, including sentinel surveillance, zoonotic disease surveillance, adverse events surveillance, Syndromic surveillance, disease registries, and laboratory surveillance. Some of them are more useful for certain diseases than others, but each fills a specific need. All these systems can be used to monitor disease trends and plan public health programs for a wide variety of conditions (12). Public health practitioners often run into attitudinal problems among potential data user's and collectors. Among the more important problems are: Incredulity that communication can lead to change, Potential inconsistency of public health and political messages ,Overly hierarchical, top-down communication and Secretive attitudes(13).

### **Rational of the Study**

Malaria and Typhoid fever are major public health concerns and epidemic prone in Ethiopia as well as in East Gojjam zone of Amhara Region in which most parts of its population are at risk of outbreak of malaria and Typhoid fever (10). System evaluation addressed two weekly reportable diseases (malaria and Typhoid fever). Use of the collected data at the local level as evidence for public health decision making is not well known, Surveillance system evaluation is not done in the area; and little is known about the effectiveness and efficiency of the system. The data generated from surveillance evaluation will be important to understand gaps, suggest possible intervention and help to improve public health decision making. Therefore evaluating public health surveillance systems helps to ensure that problems of public health importance are being monitored efficiently and effectively.

### **Objectives**

#### **General Objective**

To evaluate the existing surveillance system of malaria and Typhoid fever in two districts, one Administrative town and East Gojjam zone, Amhara region, 2016.

### **Specific objectives**

- ❖ To assess the core activities such as case detection, reporting analysis and response surveillance system in East Gojjam zone.
- ❖ To describe different attributes of surveillance system.
- ❖ To evaluate supportive activities of surveillance system such as supervision, staff training, information feedback, equipment and financial support.
- ❖ To assess documentation system for reported cases and use of data in surveillance system
- ❖ To identify strengths and challenges of the current surveillance system in this zone

### **Methods and materials**

**Study Area:** This surveillance system evaluation was undertaken in East Gojjam zone of Amhara regional state. East Gojjam is bordered on the south by the Oromia Region, on the west by West Gojjam, on the north by South Gondar, and on the east by South Wollo; the zone is selected for its high burden of malaria and it is one of the zones affected by the typhoid fever.

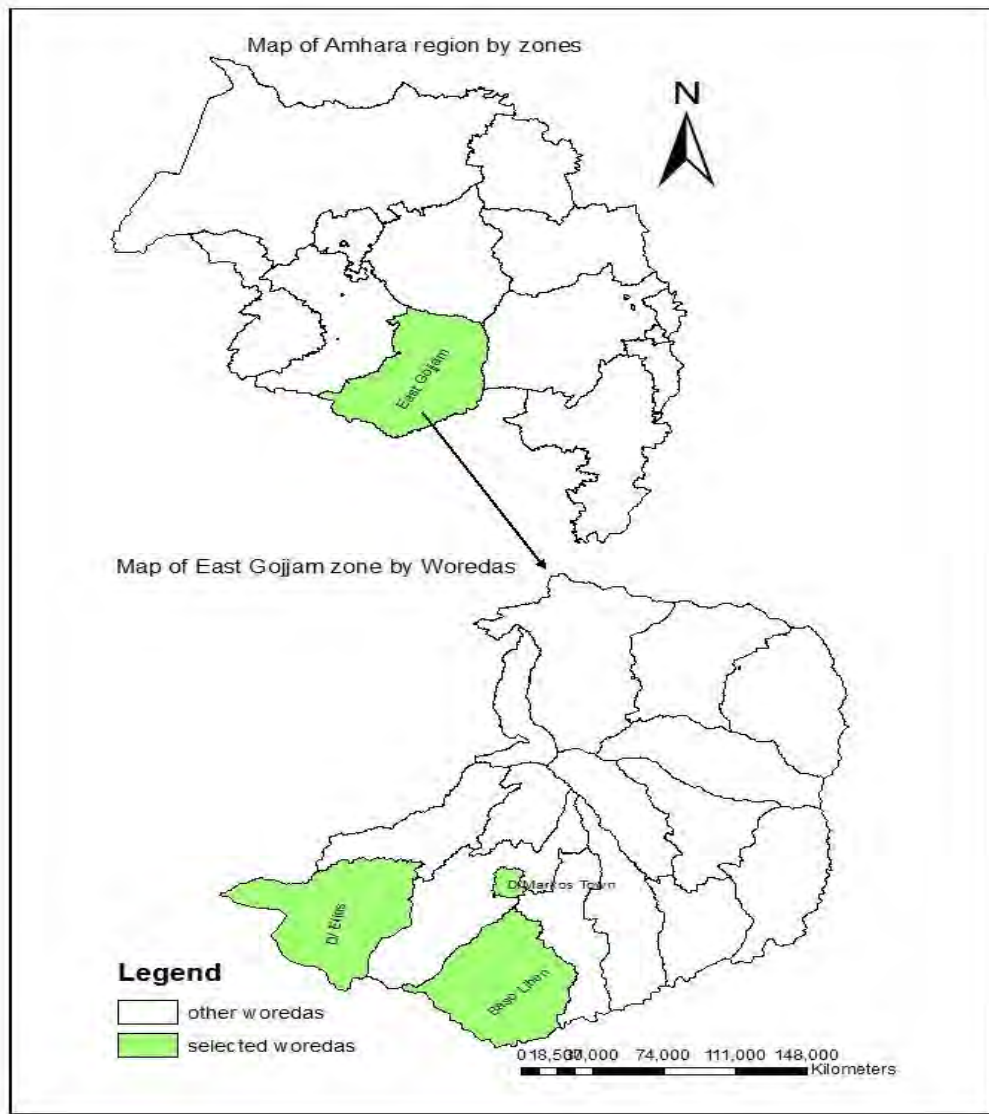


Figure 19 : Map of Amhara region by zones and Map of East Gojjam by districts, 2016

**Study design and period:** Descriptive cross sectional study design was conducted from 01/8/2016 to 12/8/2016

### **Sample Size and Sampling technique**

**Selection of zone:** Amhara Regional State is one of the Regional States under the Federal Democratic Republic of Ethiopia. It is divided into 10 administrative zones and three

administrative towns. East Gojjam zone was selected purposively because of the presence of case buildup of malaria and Typhoid fever cases especially in the selected districts.

**Selection of districts:** East Gojjam zone is divided into sixteen districts and two administrative towns. Two districts (D/Elias and Basoliben) and D/Markos admin.town were selected objectively by discussing with the zonal PHEM officers depending on the priority of case increment in the academic year, 2015/2016. D/Elias and Basoliben had more malaria cases where D/Markos admin.town had more typhoid fever cases in 2015/2016

**Selection of health facilities:** Health facilities were selected by discussing with district malaria officers. One health center from each districts, one health post from each two districts and two health posts from one district were included in the evaluation. But health centers were included based on the 2015/2016 PHEM performance. Health posts were selected by IRS operation (IRS targeted kebeles).

**Data collection:** WHO surveillance evaluation checklist was used for Face to face interviewing of zonal and district PHEM officers, Health center heads, PHEM focal persons and health extension workers. District health office and health facilities reports and records reviewed as part of the data collection system.

**Data Analysis:** Data was entered and analyzed with MS Excel and results were presented using rates, frequencies, charts and graphs.

**Ethical issue:** Letter was written to the district health offices & zonal health department from Amhara regional health bureau PHEM Core process for legal consent.

### **Case definitions**

According to the Ethiopian public health emergency management guideline case definitions are classified into two i.e. standard and community case definitions (see below for all the two diseases) (7). A case definition is a standard set of criteria for deciding whether an individual should be classified as having the health condition of interest.

**Standard case definition:** is a case definition that is agreed upon to be used by everyone within the country.

**Community case definitions:** is a case definition of disease or a condition adapted to suit to health extension workers (HEWs) and community members including community health workers, traditional healers, birth attendants, kebele administration, agricultural workers, teachers, drug outlets, etc.

**Standard case definition:**

**A1.Malaria**

**Suspected:** Any person with fever or fever with headache, rigor, back pain, chills, sweats, malaise, nausea, and vomiting diagnosed clinically as malaria

**Confirmed:** A suspected case confirmed by microscopy or RDT for plasmodium parasites.

**B1.Typhoid fever**

**Suspected:** Any person with gradual onset of remittent fever (rising in step ladder fashion) in the 1st week, headache, arthralgia, anorexia, constipation and abdominal pain.

**Confirmed:** A suspected case with Widal test, "o" titer of 1/160 and more, is very suggestive,

A suspected case with positive blood culture at the 1st week or

Positive stool culture at 3rd, 4th and 5th week of illness is very definitive.

**Community case definitions**

A2.Malaria: Any person with fever or fever with headache, back pain, chills, vomiting or  
Suspected case confirmed by RDT.

B2.Typhoid fever: any febrile illness other than malaria case

**Result**

The flow of information and data from the community to the ministry of health for all the 22 priority disease and conditions, when a suspected case presents to a health facility based on the case definition reports were sent to the next level.

On the other hand, for weekly reportable diseases (Typhoid fever and malaria) reports were compiled and sent from facility to district health office on Monday, from district to zone on

Tuesday, from zone to region on Wednesday. Similarly, feedbacks were sent down wards from the federal ministry of health at each step to the community (see figure 20 below).

**Legend**

information

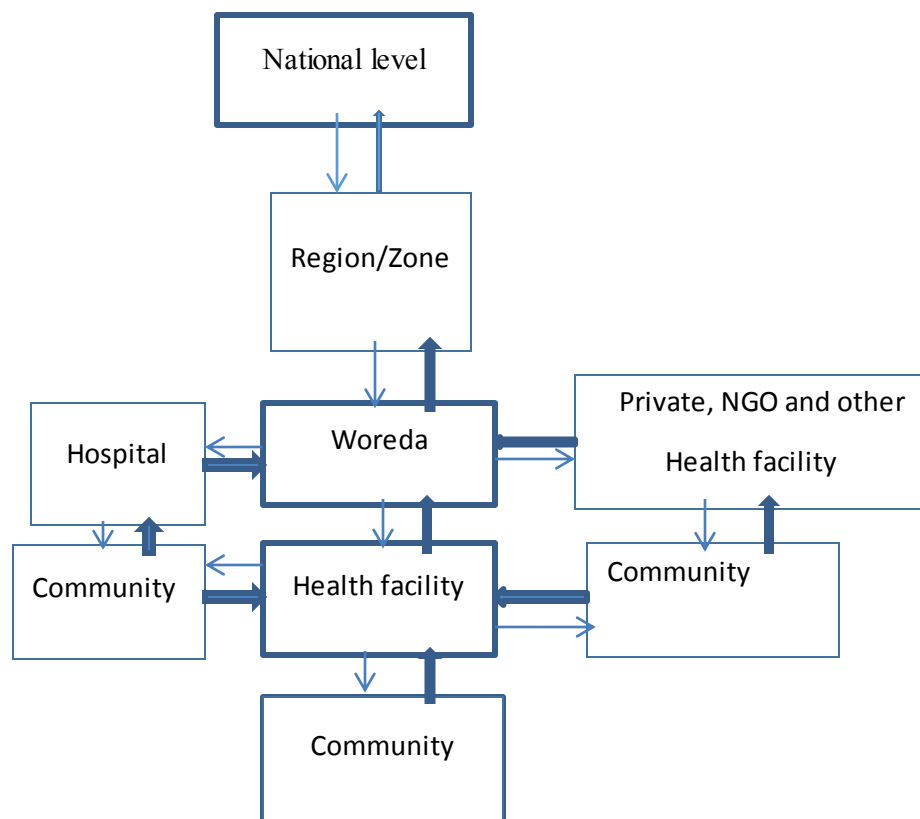


Figure 20 : Diagram illustrating the formal and informal flow of surveillance data and information throughout a health system (source PHEM Guidelines for Ethiopia 2012).

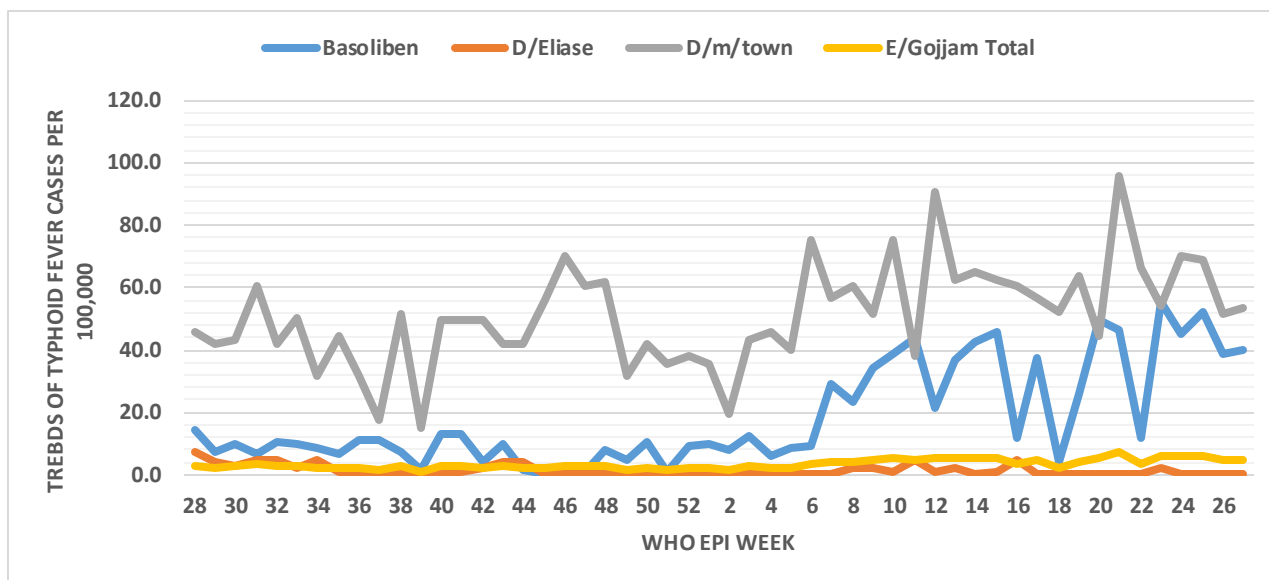
**Description of Public Health Importance**

**Typhoid fever**

When compared with other zones, more Typhoid fever cases were experienced in East Gojjam zone in 2015/2016. which accounts 1.1% of the total patients.

East Gojjam zone from July to June 2015/2016 there were 11842 Typhoid fever cases from these cases 2896(24.45%) were from Debremarkos Administrative town with zero death.

Figure 21 : Trend of typhoid fever cases (Rate per 10, 000 population) by selected districts in East Gojjam zone, Amhara, 2016



### Malaria

In 2015/2016, 594650 confirmed malaria cases were reported from all zones of the region of those 6% were from East Gojjam. The zone is known of its high malaria endemicity. Thirteen (72.2%) of the districts or 120 kebeles are malarious and 1597246 Populations are at risk of malaria that lives in these areas. In 2015/2016, 38797 confirmed malaria cases were reported in East Gojjam zone. Of these 23675 (61%) and 15122 (38.97%) were plasmodium falciparum and plasmodium vivax respectively. Malaria accounts 3.6% of the total outpatient cases and 0.3% of the inpatient cases. Of the total malaria cases 897 (2.3%) were under five children, 12% were people aged from 5-14 and the rest 85.6 % ( 33212) were above 15 years old. However, there were no deaths due to malaria.

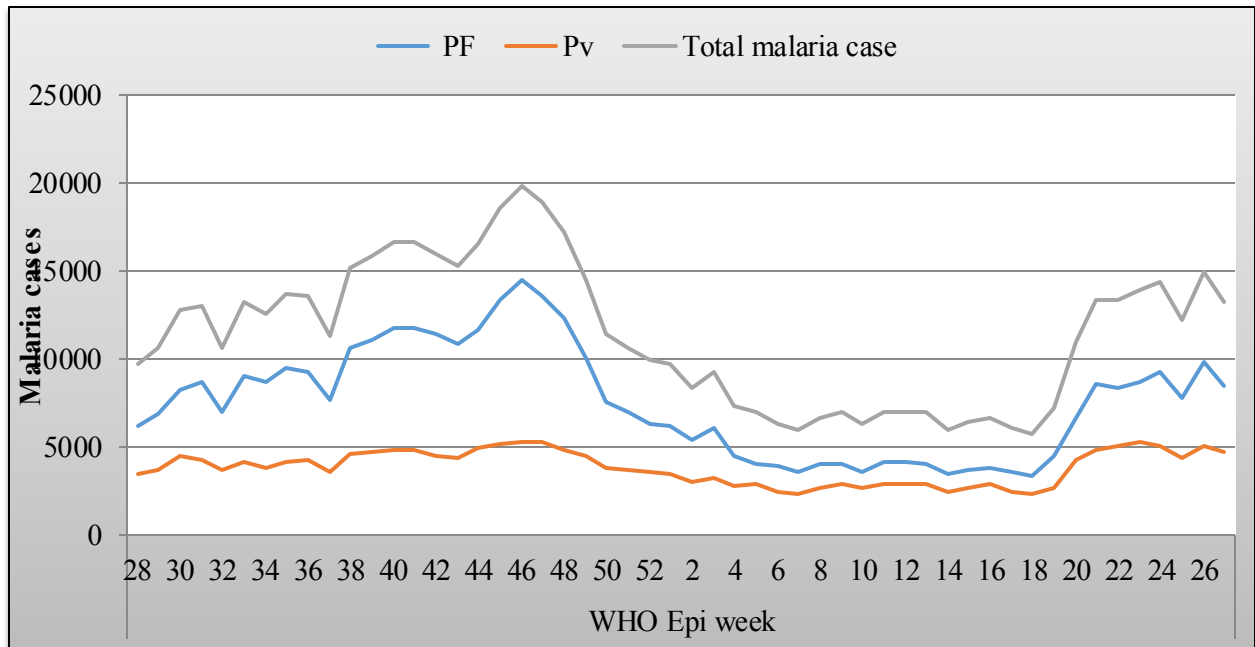


Figure 22 : Trend of malaria cases by different species in East Gojjam, Amhara, 2016

### Targeted diseases under surveillance

The Federal ministry of health public health emergency management gives prioritization to 21 diseases that are interest of national and international levels.

Currently maternal death surveillance is one of the weekly reportable event under the public health emergency management system.

In addition, the Amhara national regional state includes Leishmaniasis in the weekly surveillance system hence the number of reportable diseases increases to 22. Of these, nine diseases (malaria, meningitis, dysentery, typhoid fever, epidemic typhus, relapsing fever and SAM, MDSR, Leishmaniasis) were reported on weekly base and the rest 13 diseases (Guinea worm, Viral hemorrhagic fever, Rabies, Small pox, Yellow fever, Polio, NNT, Measles, Cholera, Anthrax, Avian human influenza, Sever acute respiratory syndrome and Pandemic influenza) have been reported as immediately. Of these targeted diseases under surveillance: malaria and typhoid fever were covered in this study.

Table 12: Lists of weekly and immediately reportable diseases/ conditions in Ethiopia

Immediately reportable		Weekly reportable	
1	Acute Flaccid paralysis (AFP)/Polio	1	Malaria
2	Measles	2	Meningococcal Meningitis
3	Avian Human influenza	3	Typhoid fever
4	Anthrax	4	Dysentery
5	Guinea worm/ Dracunculiasis	5	Severe Acute Malnutrition
6	Viral hemorrhagic fever	6	Relapsing fever
7	Yellow Fever		Epidemic typhus
8	Cholera	8	Leishmaniasis- Amhara region
9	NNT	9	MDSR
10	Pandemic influenza		
11	Rabies		
12	Severe acute respiratory syndrome (SARS)		
13	Small pox		

### Performance of the existing surveillance system

#### Population under surveillance

Public health emergency management targets all the population to be under surveillance for all the 21 disease nationally and 22 disease (includes Leishmaniasis) in Amhara region.

Table 13 : Populations under surveillance of malaria & typhoid fever in East Gojjam zone, Amhara region, 2015/2016

	Administration Level	Total population	Rural	Urban
1	Amhara Region	17221976	15108840	2113136
2	East Gojjam	2539491	2155189	286562
3	Basoliben	162546	152188	10358
4	Debre Elias	99155	93418	5737
5	Debre markos Admin. town	107234	7624	99609

Amhara region is the second populated region in the country. Most of the people (85.8%) live in the rural part of the region. Concerning health facilities, the region has 34 hospitals, 838 health centers and 3350 Health posts.

Table 14 : Number of health facilities East Gojjam, Amhara, 2016

	Number of Health facilities							
	Health posts	Health Centers	Hospitals	NGOs	Others	Total	Health Service Coverage	
							HP	HC
Amhara Region	3350	838	34	7	1719		97.2%	100%
East Gojjam	406	102	6	5	20	539	79.9%	100%
Basoliben	25	5	1	0	0		76.9%	76.9%
Debre Elias	15	4	0	0	4		75.6%	100%
D/Admin. town	7	3	1	-	15		32.6%	69.9%

#### **Availability of case definition, clinical register, guidelines, reporting and communication**

Regarding the presence of case definitions of the country's priority diseases, all visited districts and health centers have standard case definitions of all the countries priority diseases. But some of health posts had no good understanding about surveillance and its objectives. Community case definitions were found in three (75 %) of the visited health posts of both districts. Although the regional health bureau prepared and distributed PHEM reporting pad. In the meantime all health

posts and health centers in the two districts had shortage of weekly PHEM reporting pads. With respect to reporting facilities at zonal level, private facilities were also included in the reporting but at district level only public health facilities report to the districts. In the last one-year, scabies, Measels, NNT, AFP and H1N1 were reported to the zone. The reports were received in the first 24 hours. Communication utilities only Basoliben district and zonal health department had email access. Reports from the rest of the district were received through telephone or paper. In case of emergency, PHEM focal person and officers communicate on daily bases or more frequently but if there was no emergency, they usually communicate on weekly basis either by telephone or weekly reports.

Health posts send report to health center on Monday. All the four-health posts report using telephone. Health centers sent their report to district on Monday and reports sent from district to zonal health department on Tuesday, finally the zone aggregates and sent to the region on Wednesday. The reporting proportion was generally good for Gov.Health center and health post (99% and 99.3% respectively) but Gov.Hosp.and other health facilities were low (70.1% and 80% respectively). From the 7 NGO health facilities none of them were reported all over average annual report completeness of all health facilities was 87%.

Table 15: Weekly Reporting rates of health facilities in East Gojjam, Amhara, 2016(Jan 4-April 10, 2016)

Epi week	Gov.Hospital		Gov.Health Center		Gov.Health post		Other health Facility	
	Expected	Reported	Expected	Reported	Expected	Reported	Expected	Reported
1	4	4	100	99	402	399	20	17
2	4	2	100	100	402	397	20	19
3	4	4	100	100	402	398	20	10
4	5	2	100	100	402	400	20	19
5	5	2	100	100	402	397	20	16
6	5	4	100	100	402	397	20	15
7	5	2	100	100	402	398	20	16
8	5	2	100	100	402	401	20	19
9	5	5	101	101	402	401	20	17
10	5	5	101	101	402	398	20	16
11	6	5	101	101	402	401	20	14
12	6	5	101	101	402	401	20	16
13	6	6	101	101	402	401	20	17
14	6	6	101	101	402	400	20	14
Av. No of reports per wk	6	4	101	100	402	399	20	16

Av. reporting rate per wk (%) f	70.1	99	99.3	80
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**Data analysis**

All of the districts and admin.town had permanently assigned surveillance officer. In all assessed health facilities and health offices, there were assigned trained responsible officers or focal person for report compilation and data analysis and other surveillance activities. In all of visited sites, they had appropriate denominator for data analysis. Although it is not routine, data analysis was done at zonal and district level and reports were disseminated to administration and department heads. Most of district PHEM officers and only (33%) Yejube health center PHEM focal person have basic computer skill like MS-excel, MS-word etc from the visited health centers.

On the other hand D/m/town and Basoliben district health offices have computer for PHEM and analyze the collected surveillance data irregularly (quarter or month no have fixed time) by place, person and time. However, none of visited health facilities were analyzing surveillance data by converting into rate for comparison and analysis purpose this is because of lack of skill and shortage of computer and less attention given for data analysis. In all visited health facilities and districts health offices, unexpectedly they had better experience on malaria-monitoring chart.

**Outbreak investigation**

There were outbreak of scabies in five districts a total of 236134 cases which U5 accounts 31978 (13.5%) but no death and H1N1 in two districts a total of 99 cases which U5 accounts 15 (15.5% in the zone but none of these investigated by district or zonal level following the standard procedure of outbreak investigation. Due to different challenges such as Skill gaps, scarcity of vehicle and budget not timely investigate the outbreak. They did not have outbreak investigation checklist. The commonest problems were low collaboration and late reporting from the community. But if reports were sent to districts response were started within 24 hours.

**Epidemic preparedness and Response**

All districts, Admin.town and the zonal health department prepared epidemic preparedness and response plan but Basoliben district and zonal health department were not budgeted. There was no shortage of emergency supplies in the visited districts and health facilities to respond malaria

outbreak. From East Gojjam zone multi sectorial emergency preparedness and response task force committee was applicable. All districts of the zone had RRT and 75% from visited districts conduct regular meeting but D/Elias district RRT becomes active when there is an outbreak. In addition to the national PHEM guideline all visited health centers had case management protocols for selected epidemic prone diseases (malaria, Cholera and measles). The commonest challenges during an epidemic response were, shortage of vehicle, late reporting by the community and health extension workers. Emergency preparedness and response task force is established at zonal and district level (except D/Elias) and conducts regular meeting monthly at zonal level but meeting is occasional at district level. None of the visited health centers allocated budget for epidemic response and neither districts nor health centers Car assigned for PHEM.

Table 16 : Epidemic preparedness and response status of East Gojjam, Amhara, 2016

Activities	Zonal health department(n=1)	District(n =3)	Health center (n=3)
Prepare epidemic preparedness and response plan	1	3	3
Presence of emergency drugs and supplies	1	3	3
Experienced shortage of supplies	0	0	0
Existence of RRT	1	3	3
Presence of regular meeting by RRT	1	2	3
Allocate budget for epidemic response	0	2	0
Existence of case management protocol for Epidemic prone diseases(malaria, Cholera and measles)	1	3	3
Car assigned for PHEM	1	0	0

### Supervision and feedback

Supervisions and feedback are major activities that help to improve the health system. Feedbacks and supervisions were given by region to zone 3 times in the academic year. But at zonal level supervisions were conducted as integrated supportive supervision in each quarter unless outbreak appears. Regarding feedback the region gave feedback weekly to zones. From the assessed districts(except D/Elias district health office which had no Specific PHEM supervision plan which

had only ISS plan) and Admin.town, provide feedback to cluster health centers, all health post replied that they had received supportive supervision from cluster health center and district health office at least every 15 days and month respectively. In general the feedback and supervision mechanism was better at zonal and regional level and gets weaker down wards to district health offices and health facilities.

Table 17 : Supervision and feedback in East Gojjam, Amhara, 2016

Activities	Zonal health department(n=1)	district(n=3)	Health center (n=3)	Health post (n=3)
Have supervision plan	1	2	3	3
Provide supervision according to the plan	1	2	3	0
Receive specific supervision to PHEM	1	0	0	0
Receive integrated supervision	1	2	3	0
Have supervision checklist	1	3	3	0
Receive feedback weekly	1	0	3	0
Provide feedback	1	3	3	0
Conduct active case search	1	2	0	3

### **Training**

Except one health center all respondents from health centers and district health offices got five days training organized by regional health bureau. The health extension workers were trained on surveillance together with the integrated refreshment training but they had not received training specifically for public health emergency management.

### **Resources**

All visited zone and districts compile weekly surveillance report with software (MS excel but 75% of the visited health centers lack of skill on data management and computer application that was why they aggregate it manually. Although all districts had vehicles D/Elias health center has no vehicle this was the major problem mainly on MDSR. At the time of visiting all health facilities have motor Cycles but there is no staff member who has driving license. Hence the motor cycles

were not using for surveillance activities, from the three visited health centers only one (33.3%) had fax service and from the four visited health posts one only (25%) had Electricity. All of the visited Zone, Districts, Health centers and Health posts had mobile phone network access this was an opportunity to report communication through all level.

Table 18 : Resources available in East Gojjam, Amhara, 2016

Resources	zonal health department (n=1)	District health office (n=3)	Health center (n=3)	Health post (n=4)
Electricity	1	3	3	1
bicycle	0	0	2	4
Motor cycle	1	3	3	0
Vehicle	1	3	2	0
Computer	1	2	3	0
Telephone	1	3	3	0
Fax	1	0	1	0
Radio call	0	0	0	0
Printer	1	3	3	0
Generator		1	3	0
Megaphone	0	1	2	0
Projector	1	1	1	0
Mobile phone network access	1	3	3	4

### Laboratory diagnosis

The national reference laboratory at the EPHI performs tests for most of the immediately reportable diseases and sends feedback to facilities. For other priority diseases, which cannot be tested by the national laboratory capacity samples will be sent to international laboratories.

The most series problem that faced was feedback from the national laboratory has delayed and did not come totally (D/Elias has sent AFP sample but feedback did not received still) due to this

reason not used for intervention, most of the time it takes at least two months. The Amhara national regional state has two regional research laboratories at Dessie and Bahir Dar center, which performs confirmatory tests for most of the weekly reportable diseases. Currently the Bahir Dar regional laboratory starts confirmatory test for measles. Most of the assessed health facilities had RDT.

## **Description of Each System Attribute**

### **Usefulness**

Usefulness refers to whether surveillance contributes to prevention and control of a health-related problem. Usefulness is typically assessed by determining whether surveillance meets its objectives. Usefulness of surveillance is influenced greatly by its operation, including its feedback mechanism to those who need to know, and by the presence or absence of the characteristics of optimal surveillance (4). All respondents from district health offices, zonal health department and 71%(3HC and 2HP) of health facilities understood that the surveillance system is important to permit accurate diagnosis early on a timely manner and it also helps to estimate the magnitude of morbidity and mortality related to those disease and allows evaluating the effectiveness of prevention and control program.

### **Simplicity**

Simplicity of a public health surveillance system refers to both its structure and Ease of operation. Surveillance systems should be as simple as possible while still meeting their objectives. Measures that might be considered in evaluating the simplicity of a system: level of integration with other systems; methods for analyzing and disseminating the data, including time spent on preparing the data for dissemination, staff training requirements(1). All respondents answer that the case definitions of malaria were easily understandable but Typhoid fever was somewhat difficult especially for HEW. Concerning the time it takes to fill the reporting format seven from eleven respondents replied that it only takes five minutes while the rest said that it takes more than 15 minutes to fill the reporting format. The other measure of simplicity is the time it takes to diagnose by laboratory respondents replied regarding malaria, it takes 30 minute if it is diagnosed using microscopy and 30 minutes if the diagnosis is with RDT but Laboratory tests for typhoid fever

(blood and stool culture) take time and have a high rate of false-negative results also can't done by HC&HP level.

### **Flexibility**

Refers to the ability of the method used for surveillance to accommodate changes in Operating conditions or information needs with little additional cost in time, personnel, or funds. Flexibility might include the ability of an information system, whose data are used for. Surveillance of a particular health condition, to be used for surveillance of a new health problem (4). All health offices and facilities replied that the current reporting format is used for other newly occurring health event easily. Any change in the existing procedure of case detection and reporting will not be difficult for implementation. Respondents also replied that they can use the option (other) if any new event took place.

### **Sensitivity**

The sensitivity of a surveillance system can be considered on two levels. First, at the level of case reporting, sensitivity refers to the proportion of cases of a disease (malaria and or Typhoid fever) detected by the surveillance system. Second, sensitivity can refer to the ability to detect outbreaks (malaria and or Typhoid fever), including the ability to monitor changes in the number of cases over time (4).

### **Acceptability**

Reflect the willingness of individual and organizations to participate in surveillance. Acceptability is influenced substantially by the time and efforts required to complete and submit report or perform other surveillance tasks (4). All reporting agents accept and well engaged to the surveillance activities the report completeness status of reporting agents is 99% for health centers, 99.3% for health posts and 80% for private health facilities all the reporting agent use the current reporting format and case definitions however some health care workers who were not trained on surveillance are not familiar on the case definitions and reporting formats.

### **Representativeness**

Is the extent to which the findings of surveillance accurately portray the incidence of a health event among a population by person, place, or time? Representativeness is influenced by the

acceptability and sensitivity of the method used to obtain data for surveillance. Too often, epidemiologists who calculate incidence rates from surveillance data incorrectly assume that those data are representative of the population (4). Health service coverage of the zone 100% and 79.94% for health center and health posts respectively. Surveillance system helps to assess health related events both in the urban and rural community. However the health seeking behavior of the community is not satisfactory especially for Malaria in which people prefer LLIN for using other activities.

### Report Timeliness and Completeness

Timeliness reflects the speed or delay between steps in surveillance system. As per standard of National PHEM the expected level of report timeliness is 80% and above. Early case detection is another key attribute of timeliness assessment. Timeliness is the time required for the identification of trends, outbreaks, or the effect of control measures. The weekly report timeliness and completeness (almost the same) in the zone in the previous fiscal year (2016) was 99.4% and the timeliness of Basoliben, D/Elias and D/Markos town were 94.4%, 99.4 % and 100% respectively. However since the date sent to the next level is not recorded and even copy of each report is not filed, It is difficult to know exactly the number of facilities which reported on time.

Table 19 : Weekly report completeness of East Gojjam, Amhara, 2016

WHO Epi Week	Minimum requirement	Basoliben	D/Elias	D/M/town	East Gojjam
28	80%	100%	100%	100%	100%
29	80%	100%	100%	100%	100%
30	80%	100%	100%	100%	100%
31	80%	100%	100%	100%	100%
32	80%	100%	100%	100%	100%
33	80%	100%	95%	100%	100%
34	80%	96%	100%	100%	99%
35	80%	100%	100%	100%	100%
36	80%	93%	100%	100%	99%
37	80%	93%	100%	100%	100%
38	80%	96%	100%	100%	100%

39	80%	93%	100%	100%	99%
40	80%	100%	100%	100%	100%
41	80%	100%	100%	100%	100%
42	80%	100%	100%	100%	100%
43	80%	100%	100%	100%	100%
44	80%	100%	100%	100%	100%
45	80%	93%	100%	100%	99%
46	80%	93%	100%	100%	100%
47	80%	93%	100%	100%	99%
48	80%	89%	100%	100%	99%
49	80%	89%	100%	100%	99%
50	80%	89%	100%	100%	98%
51	80%	93%	100%	100%	99%
52	80%	89%	100%	100%	99%
1	80%	100%	100%	100%	100%
2	80%	78%	100%	100%	99%
3	80%	100%	100%	100%	99%
4	80%	81%	100%	100%	99%
5	80%	100%	100%	100%	99%
6	80%	93%	100%	100%	99%
7	80%	85%	100%	100%	98%
8	80%	85%	100%	100%	99%
9	80%	89%	100%	100%	99%
10	80%	96%	100%	100%	99%
11	80%	96%	100%	100%	100%
12	80%	89%	95%	100%	99%
13	80%	96%	100%	100%	100%
14	80%	100%	100%	100%	100%
15	80%	96%	100%	100%	100%
16	80%	96%	100%	100%	100%

17	80%	96%	79%	100%	99%
18	80%	89%	100%	100%	98%
19	80%	93%	100%	100%	100%
20	80%	96%	100%	100%	100%
21	80%	89%	100%	100%	99%
22	80%	96%	100%	100%	100%
23	80%	96%	100%	100%	100%
24	80%	96%	100%	100%	100%
25	80%	93%	100%	100%	99%
26	80%	89%	100%	100%	99%
27	80%	96%	100%	100%	100%

### Positive predictive value

Is the proportion of reported cases that actually have the health-related event under surveillance?

In assessing PVP, primary emphasis is placed on the confirmation of cases reported through the surveillance system. The effect of PVP on use of public health resources can be considered on two levels. At level of case detection, PVP affects the amount of resources used for case investigations (1). It is difficult to calculate the predictive positive value for Typhoid fever since all suspected Typhoid fever cases were not confirmed using laboratory. All malaria suspected was examined by RDT or microscopy. In 2015/2016, 126075 suspected malaria cases were examined by microscopy and RDT in East Gojjam zone. From these only 38797 suspected cases were positive for both species (23675 (61%) PF and 15122 PV) with positive predictive value of 30.77%. When we compared all districts of the zone not only from the visited D/Elias had high PVP.

Table 20 : PVP for malaria cases in malaria visited districts, East Gojjam, Amhara 2016

S.no.	District(Admin.town)	Suspected Malaria cases	Confirmed Malaria cases	PVP (%)
1	Basoliben	23126	10691	46.2%
2	D/Alias	14251	7892	55.3%
3	D/Markos town	11739	977	8.3%

## **Stability**

Refers to the reliability of the methods for obtaining and managing surveillance data and to the availability of those data (4). But the continuity of the system was interrupted at health post level when health extension workers were not available and inability of management

## **Discussion**

The purpose of evaluating public health surveillance system was to ensure that problems of public health importance are being monitored efficiently and effectively. Public health surveillance systems should be evaluated periodically to determine how well they operated to meet their stated purposes and objectives (1). From the time when established of PHEM as core process at Federal and Regional level significant achievements were recorded on surveillance activities.

In Amhara region surveillance system evaluations were done in different zones by EFETP residents during the past years. Findings of these assessments were being inputs in strengthening and prioritizing surveillance sites and activities. When we focused on usefulness of surveillance system, there were PHEM officers at zonal level and visited districts as well as surveillance focal person in the HC.

Surveillance data are used both to determine the need for public health action and to assess the effectiveness of programs (2). The problem from visited districts were work overload like PHEM officers act as Malaria officers in addition to regular task and other problem. Where in HC lack of capacity to do data analysis regularly in case of lack of knowledge of data management. The main problem was a poor practice of interpretation and utilization of surveillance data at facility, especially at HP level there work was not document based, for example in Basoliben district Betengus HC&HP.

All most 75% of visited districts were simply compile data from lower level and submitted to zone without further analysis, this might be due to shortage of trained man power, irregular supervision and feedback system, no legal enforcement to the surveillance activities (the best example here was Basoliben district IRS operation was not properly managed), lack of sense of ownership a serious example was D/Elias district. Thus the collected data has a limited usefulness. The key to

surveillance is reporting, developed in such a way that a continuous record is kept, not the desperate call of an established epidemic (3).

The flow of data from lower level (health post) to higher level (regional and national) is very great, however; reported cases were underestimated due to the trend of reporting only from governmental health facilities and very few other health facilities in East Gojjam zone there were 5 NGO health facilities but none of them reported any case, poor health seeking behavior of the population and problems with reporting means; infrastructure like vehicle for transport, telephone, fax machines and computers for data management and analysis especially at HC. These impacted the completeness and timeliness by the health facility and it becomes low. When we assessed the trend of Typhoid fever cases D/Markos town was high compared to all districts of the zone this was due to poor Hygienic and sanitation activity of the town.

Our analysis indicated that species of malaria PF cases were increases than PV cases, in the period of major and minor malaria transmission season, so it might be indicate new case transmission. Epidemic preparedness refers to the existing level of preparedness for potential epidemics and includes availability of preparedness plans, stockpiling, designation of isolation facilities, setting aside of resources for outbreak response (9).

From our visited sites at all level no shortage of emergency drugs. Although zone and HC had epidemic preparedness and response plan without budget; all districts except Basoliben were budgeted. There was also well-organized epidemic response committees at all level but their limitation was didn't met regularly to review their plans and actions. This may cause weak case detection and all responses to be late. In addition to this, the districts health offices were allowed for emergency budget from the district administration office only after an event has occurred, this may hinders timely investigation. Further, it was identified that rapid response team is functional only during outbreak. But, RRT must be establishing before outbreak was occurred. Feedback is a key function of public health surveillance system, the purpose of the feedback is to reinforce efforts of the health staff to participate in the surveillance system. Another purpose of evaluating public health surveillance system is to raise awareness about certain diseases and any achievements of disease control and prevention activities in the area. When the district receive data, they should respond to the health facilities that reported it and all the levels have to give feedback to the level that sends those reports (6). At all visited level there is no strong written feedback; somehow it

was better in zonal level. As region is essential role player in preparing and disseminating feedback of surveillance activities for zones and districts in different method. Current practice of the region on preparation and dissemination weekly bulletin is a good starting point to strength feedback system.

The evaluation of public health surveillance systems should involve an assessment of system Attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, predictive Value positive, representativeness, timeliness, and stability (1) there was problem on the simplicity of the system regarding case definitions of selected diseases at HC&HP.

The case definition for malaria is easy to apply and in which the person identifying the case will also be the one analyzing and using the information but typhoid fever was difficult for HEWs. Most private health facilities not volunteer to report that make it complex as well as at district level, manual data entry also, make it complex. The understanding of case definition among all health care providers were good at zonal, district and somewhat at HC level but data management has some gaps.

All respondents agreed by that the surveillance system is flexible for newly occurring health and health related events. Even though reporting formats of priority diseases are easy and clear to fill for data. In general the system was flexible because, the reporting form could be modified to include other variables. Timeliness and completeness of report is important for the identification of trends, outbreaks, timely public health interventions. Timeliness and Completeness in the weekly report at zonal level in the previous fiscal year (2016) was 99.4%; it is higher than expected national level (80%).

The ability of the system to capture true cases regarding malaria disease was assessed in this evaluation. On this regard, predictive value positive for malaria by case definition was very low in malarious districts of East Gojjam zone as majority of them were less than 50% except D/Elias district (55.3%) in 2016.

### **Limitations**

- ❖ Due to poor handling and management of data, it was unable to get some important data such as population under surveillance from some districts and health facilities.
- ❖ Turnover health provider especially surveillance focal person at HC.

- ❖ There was no electric power from HF to collect and generate requested data.
- ❖ Low frequency of feedback system at all levels from zones to districts, districts to health center, health center to health post. Discrepancy of expected hospital b/n weeks.

### **Conclusion**

Surveillance system evaluation is key activity to identify strengths and weakness of the existing system. PHEM processes have starting and ending point, the process starts with early warning and end with recovery. In East Gojjam zone the surveillance system was not satisfactory and the trend of supervision and feedback was good at Zonal and but not district levels because it didn't bring change in the lower level. Training of surveillance including data management is required for health workers specially health extension workers since they are not trained. Regular monitoring and follow up of health extension workers from districts and zonal PHEM unit is very weak they were supported as ISS in general. Evidence of data analysis was not observed in some district health offices and health facilities. Lastly we concluded that supportive supervision on quarterly basis is done in regional basis but specific surveillance system evaluation and feedback is not practiced at regular basis. Data utilization is very low at the lower level of the reporting unit. Even though in some extent the existing surveillance system at all visited level is likely addressing some important public health problems and meeting its objectives.

### **Recommendations**

- ❖ Sustainability of PHEM requires strengthening the coordination and integration mechanisms as well as Strengthen multi-sectorial response teams at all levels
- ❖ Training should be given for health workers on surveillance data management activities to improve case search and reporting system.
- ❖ Data quality assessment should be conducted at all levels as many problems were identified on reporting system during this evaluation especially at district level. There is shortage of weekly reporting formats in some district levels, So that timely and adequately distribution of these formats for facilities will help to improve quality of the report.
- ❖ Strengthening feedback system at all levels from zones to districts, districts to health center, health center to health post.

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## Chapter IV - Health Profile Description Report

### 4.1 Health Profile Description of Debera tabor Administrative Town, South Gondar Zone, Amhara Regional State, Ethiopia, 2016

#### Abstract

**Background:** The preparation of a profile provides a lively, scientifically and evidence based account of health in Administrative Town; it can initiate public interest and political commitment; and it can identify targets for the future and monitor progress profile is concern about the health of people and about the conditions in which they live. It is essential tool for change and thus must be a core element of local decision-making and strategic planning processes towards them. Objective of this study is to assess and identify health issues of public concern and gaps to take possible interventions of the town.

**Methods:** Health and health related data were collected from different sectors of the Administrative Town using semi structured questionnaire, reviewing of annual reports, and observation of charts. Interviews were conducted with different core and supportive process owners and heads of different sectors to identify leading public health problems of the Administrative Town. I selected this town due to: 1.it is zonal town and live different populations by work, religion culture.2.to identify health problems especially waste disposal system and to assess town health office controlling system of d/t organizations i.e. university, gov.tal teaching college, private colleges.

**Results:** Debretabor as an Administrative Town had 4 urban kebeles with a total population of 78706 of whom women constitute 52.1% and 100% of the total population dwells in the urban areas. The overall health professional to population ratio is 0.12 per 100. Upper respiratory infection was the leading causes of outpatient visit at 26.2% from the ten top causes of morbidity, followed by acute respiratory infection. Fully immunized children were 35%. No any outbreak in the academic year. No recorded data was available for vital statistics and admitted cases. Availability of transportation, safe water supply, latrine utilization rates were 100%, 54% and 55.7% respectively.

**Conclusion and Recommendation:** Upper respiratory infection was the major public health concern of the Administrative Town. The town experiences very low immunization and PNC coverage. There was no reporting system of vital statistics. It is strongly recommended strengthen prevention and control measures of URI and Strong collaborative effort is needed to serve the community through good coverage of infrastructure. The Administrative Town should be enforced by law to register data of vital statistics through supplying important registries and other materials from the higher-level.

## **Back ground**

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, and political belief, economic or social condition. The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States. The achievement of any State in the promotion and protection of health is value to all (1). The preparation of profiles provides a lively, scientifically and evidence based account of health in the Administrative Town; it can encourage public interest and political commitment; and it can identify targets for the future and monitor progress towards them (2). Health Profiles provide summary health information to support local authority members, officers and community partners to lead for health improvement"(3). The health profile description highlights several important aspects of public health data. Data will be collected, analyzed, and disseminated for decisions on the best information available. Demographic, infrastructure of the Administrative Town socio-economic, primary health care coverage, vital statistics and other data will be collected and to address important public health problems and to facilitate effective public health actions. Administrative Town health data are important for advocacy, program planning, implementation and evaluation of health care most importantly, at the town level. Based on the decentralization structure of Ethiopia, Towns are the basic infrastructure to planning, decision making, and political administration with respect to urban structure (4). Sources that are likely to provide water suitable for drinking are identified as improved sources. They include a piped source within the dwelling, yard, or plot; a public tap or standpipe; tube well/borehole; a protected well or spring; and rain water or bottled water (WHO and UNICEF, 2014). Lack of ready access to a water source may limit the quantity of suitable drinking water that is available to a household (4). In 2012, healthy expectancy in both sexes was 9 year(s) lower than Overall life expectancy at birth. This lost healthy life expectancy represents 9 equivalent year(s) of full health lost through years lived with morbidity and disability(5). Demographic pressure, land scarcity, and land fragmentation drive greater rural vulnerability and poverty, marked by decreased food security, inadequate response to such natural disasters as drought or pest infestations, weakened resilience to shocks, and poor health. In summary, it is not just the supply of food, fodder, and fuel that is under threat, but the resource base itself and the lives that depend upon it. (6). The overall health worker ratio per 1000

population was 1.17 versus the national 0.84(Africa health workforce observatory, 2010). This result is quite less than the standard set by the World Health Organization of 2.3 per 1000 population (7). The MDG goal on maternal health aims to reduce MMR by two-thirds to 290 per 100,000 deliveries by 2015(8). The HSDP prioritizes maternal and newborn care, and child health, and aims to halt and reverse the spread of major communicable diseases such as HIV/AIDS, TB, and Malaria (9). The purpose of this project is to assess and describe the health profile of Debre Tabor Administrative Town, Amhara region, 2016 to address gaps for program planning, priority setting and intervention.

### **Rationale of the Study**

Health profile is designed to give an easily accessible Photograph/computing a file or asset of files captured at a particular time capable of being reloaded to restore earlier state/ of the community's health. Describing health profile is helpful to understand the current health of population and of the many aspects of the community's life that influence it. Health profile generates data that are useful and useable at the community level. The data generated from the health profile description project will help the town, and other stakeholders for public health decision making, resource allocation and priority setting.

### **Objective**

#### **General objective**

To assess and describe the current health profile of Debre Tabor Administrative Town, Amhara Region, January 2016

#### **Specific objectives**

- ❖ To summarize health information relevant to the Debre Tabor Administrative Town
- ❖ To identify health problems of the Debre Tabor Administrative Town
- ❖ To assess factors that affect health in the Debre Tabor Administrative Town
- ❖ To assess the human resources of the Debre Tabor Administrative Town health offices and HF
- ❖ To describe existing health infrastructure of the Debre Tabor Administrative Town

### **Methods and Materials**

**Study Area:** Debre Tabor is a town and located in the South Gondar Zone of the Amhara Region of Ethiopia, The distant is 97 and 666 kilometers far from Bahir Dar and Addis Ababa respectively. It is bounded by Farta district from all directions.

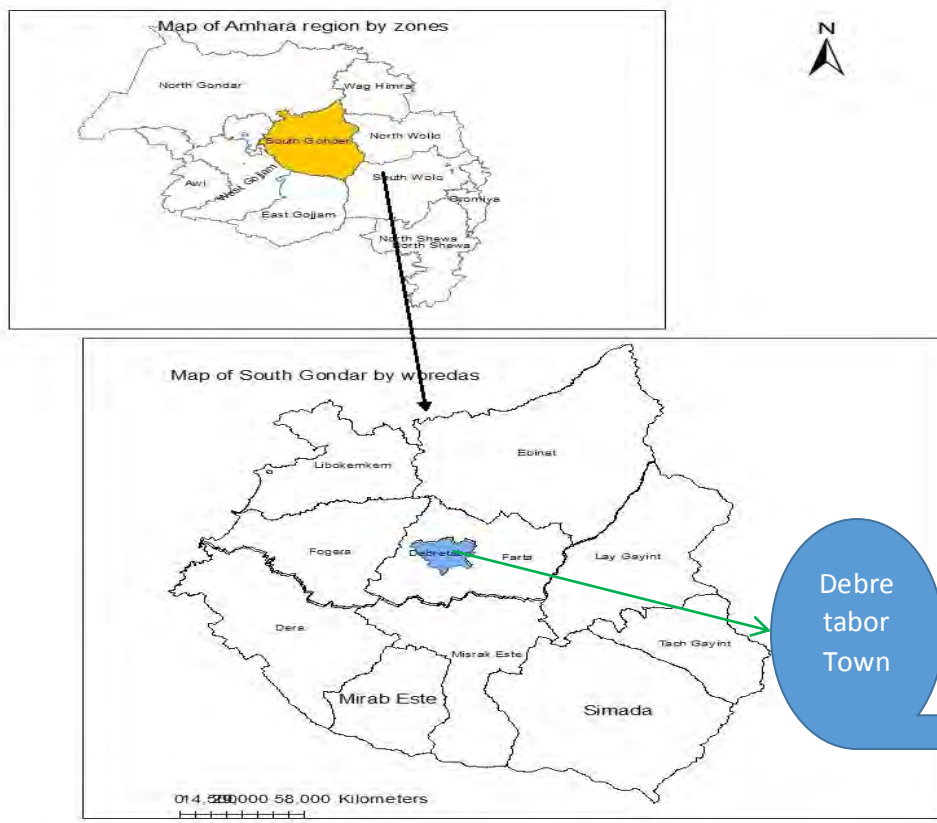


Figure 23 : Map of Debre tabor Administrative Town, Amhara region 2016

**Study Design:** By reviewing district based quantitative descriptive cross sectional study design was conducted at Debretabor admin. Town, S.Gondar zone, Amhara Region, Ethiopia.

**Study period:** Study period was conducted from 21-jan-10- feb-2016

**Target population:** All Debretabor administrative town Sectors

**Study Population:** Selected Debretabor administrative town sectors.

**Data sources:** Administrative Town health office, health facilities, education sector, finance office, agriculture sector, water resource office, Municipality office, Culture and Tourism office

and Administrative Town political administration office. We interviewed concerned health office heads, process coordinators, health professionals of various disciplines and heads and officers of other sector offices. We examined posted charts on the walls of the office for a list on top causes of morbidity, organizational structure and others were evaluated. We reviewed annual reports of the relevant sectors that have sent to zone.

### **Malaria case definition**

**Suspected case:** Any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea and vomiting diagnosed clinically as malaria.

**Confirmed case:** A suspected case confirmed by microscopy or RDT for plasmodium parasites

### **Data collection instrument and procedure**

Data was collected by using semi structured checklist. By reviewing annual report of sectors at the towns. Emergency and Disease prevention and control core processes focal persons or zonal health office head.

### **Data quality control, processing and analysis**

The collected data was reviewed and checked for completeness before data entry and also conducted data cleaning was prior to analysis. Descriptive statistics including Proportion, percentage, ratios, frequency distribution were calculated and analyzed by excel.

## **Results**

### **Geography and Climate**

The town is named for the Biblical Mount Tabor which has an area of 1331.25 hectares. Altitudes with above sea level. Most of the Debre Tabor Administrative Town area accounts weina-dega almost (100%). The distance is 97 and 666 kilometers far from Bahir Dar and Addis Ababa (capital city) respectively. It is bounded by Farta District from all directions. I.e Debre Tabor Administrative Town is surrounded by farta district.

### **Administrative and political structure**

Debre Tabor Administrative Town had 4 urban and zero rural/before one year four rural kebeles are dispatch to the neighbour woreda farta. In another way Debre Tabor Administrative Town

is the town of South Gondar zone, which have one Governmental university, one Teaching college, one private college. All the sector offices of the zone are in the administrative town.

### Demographic Information

DebreTabor has a total estimated population of 78706 with 36683 males and 41023 on 2014/15 projected from the 2007 population and housing census. From this document the growth rate was 5.6%. From the total population under one years old children constitutes 2361 (3%), under five 11491(14.6%), women of child bearing age 18102 (23%) and pregnant women are 2990 (3.8%). From these population segment 78706(100%) lives in urban part of the town, and by religion 68% Orthodox, 0.02% catholic, 0.46% protestant, 1.8 Muslim and the rest are not identified. The annual growth rate is considered to be 5.6% per annum. Average house hold size was 4.3 per house hold. No data was available for age group above 65 years old due to this dependency ratio could not be calculated.

Table 21 : Population size by kebeles Debre Tabor Admin.Town, based on 2014/15

Serial No.	Name of kebele	Population size		
		Male	Female	Total
1	Kebele 01	12261	13092	26353
2	Kebele 02	12689	13952	26641
3	Kebele 03	4388	5141	9529
4	Kebele 04	7345	8838	16182
	Total	36683	41023	78706

Kebele02 has the largest population size (26641) in the Administrative Town followed by kebele01 (26353) and kebele04 (16182), the least population is found in kebele03 (9529). Kebele01 is the kebele where the University found, Kebele04 is kebele where the teaching college found.

### Productivity and Income

About 95% of the total population is engaged on merchandise/ (different crops and cereals like sesame , sorghum , maize, Teff, dagussa ,bean , pea and other oil crops) ,Animals like oxen, donkey,mule,sheep,goat,hourse and hens, leather and its product. Five percent of the total population depend on governmental and NGO employees (Males 948, females 927, total 1875). Adequate data was found about the total number of jobless people, there were documented

unemployed peoples i.e male 1069, female 2596, Total 3665, The rests are lead there life on merchandise and construction activities.

### **Education**

Debre tabor Administrative Town has a total of 18 schools, of these, 14 primary (7 private and 7 governmental), three secondary and two tertiary schools exist with a total of 14468 students enrolled in 2015. Females account 50.95% of the total students enrolled. From a total of 4178 (49.2%) in elementary and 1756(52.7%) in secondary schools were females. A total of 643 teachers were registered and all schools have latrines. All schools have access to safe water supply, 100% latrine coverage. All gov.tal schools (7 elementary, 3 high and 2 tertiary schools) have Anti HIV/AIDS clubs.

### **Health status**

The Administrative Town has three health centers and 04 health posts/each kebele has one/; with ratio of 1: 26235 health center to population ratio and 1:19676 health post to population ratio. Health center and health post coverage were above 100%; with the ratio of 1:7155, 1:2071 and 1:4372 health officer, nurse, HEW to population respectively.

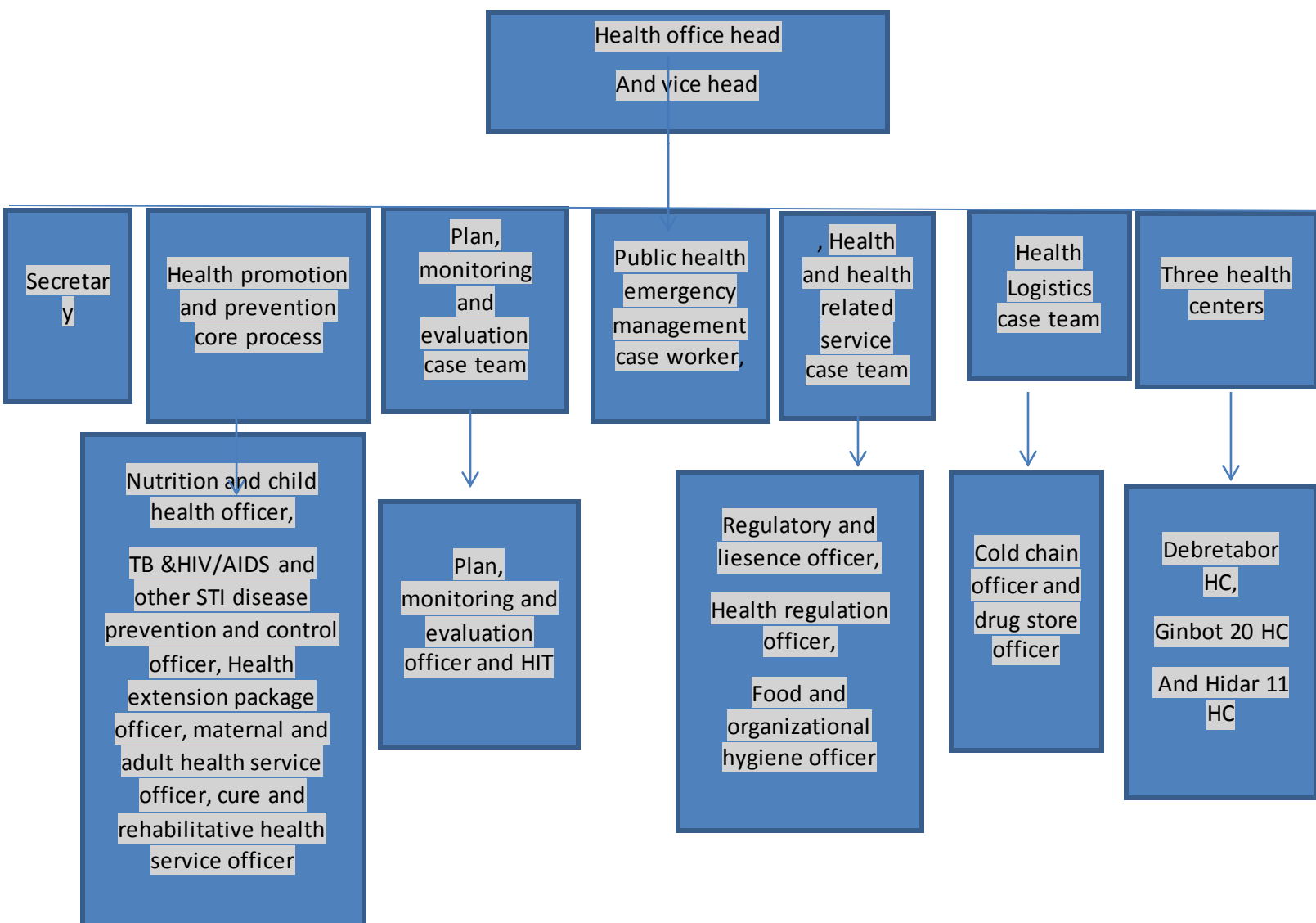


Figure 24 : Debre Tabor Administrative town health office organization structure Business Process Re-engineering

Table 22 : Manpower of Debre tabor Administrative Town, health office and health facility, Amhara region, 2014/15

Type	Number	Health worker: population ratio
Physician	0	0
Health officers	11	1:7155
Laboratory/technician/technologist	8	1:9838

Pharmacy/technician/technologist/	8	1:9838
Nurses	38	1:2071
Mid wife	7	1:11243
HEW	17	1:4372
HIT	3	1:26235

No physicians and X-ray technicians were found in the Administrative town. The overall health worker to population ratio was 1:855 population. No hospitals/only zonal hospital/, has 04 pharmacies, 05 drug store and 04 private clinics were available in the town.

Table 23 : Number of health facilities in Debre tabor Administrative Town, Amhara region, 2014/15

	Type of health facility	Number	Ratio Health facility: population
1	hospital	0	Only zonal hospital
2	Health center	3	1:26235
3	private clinics	4	4:19676
4	Pharmacy	4	4:19676
5	Drug store	5	1:15741
6	Health post	4/by kebele one/	1:19676

Table 24: Ten leading causes of Adult OPD visit (morbidity) in Debre tabor Administrative Town, Amhara region, 2014/15

Serial no.	Adult				
		Number	%	Cumulative frequency	Rate per 1000
1	URTI	6587	14.2	14.2	83.6
2	Pneumonia	3914	8.5	22.7	47.7
3	Intestinal parasites	3300	7.1	29.8	41.9
4	Gastritis	2964	6.4	36.2	37.6

5	AFI	2276	4.9	50.1	28.9
6	LRTI	2007	4.3	54.4	25.4
7	Diaharrea	1903	4.1	58.5	24
8	Malaria	1608	3.5	62	20.4
9	Non-identify cases	1329	2.9	64.9	16.8
10	Accidental injuries	1125	2.4	67.3	14.3
	Total cases of ten top of adult OPD	27013	58.4		
	Total cases from adult OPD	46241	100		

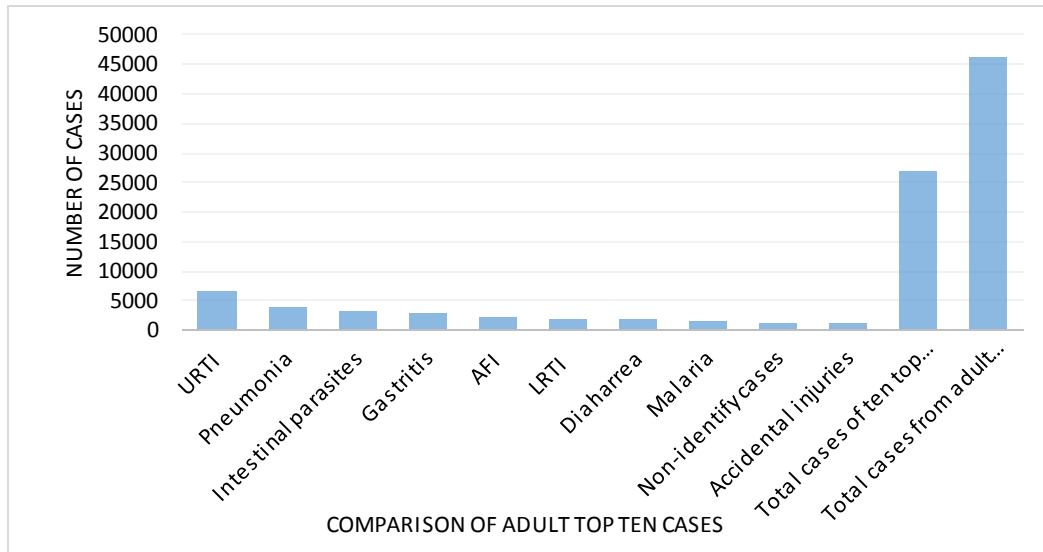


Figure 25 : Comparison of adult top ten cases at Debretabor administrative town, 2014/15

Table 25 : Ten top leading causes of <5yrs OPD visit (morbidity) in Debre tabor Administrative Town, Amhara region, 2014/15

se.no	Pediatrics				
	Diagnose	Number	%	Percent of Cumulative frequency	Rate per 1000
1	URTI	1405	23.6	23.6	17.8
2	Diaharrea	1306	21.8	45.4	16.6
3	Pneumonia	735	12.4	57.8	9.3
4	Pruritus	267	4.5	62.3	3.4
5	Non-identify cases	251	4.2	66.3	3.2
6	Intestinal parasites	236	4	70.3	3
7	AFI	157	2.6	72.9	2
8	Dysentery	142	2.4	77.3	1.8
9	Accidental injuries	91	1.5	78.8	1.15
10	Non-identify Intestinal parasites	70	1.2	80.	0.88
	Total cases of top ten from	4660			
	Total from pediatrician OPD	5942	100		

URTI was the leading causes of morbidity even though it shows 24.4% from adult and 30.15% from pediatrics the total cases. No data was available for top causes of admission and top causes of mortality. The above depicted data is complete yearly data.

Table 26 : MCH and EPI coverage of in Debre tabor Admin. Town, Amhara region, 2014/15

Description	Target	Coverage	Remark
ANC(1st)	2652	61.7%	

ANC(4th)		32%	
Delivery	2652	32.5%	
PNC	2652	32.17%	
BCG	2652	34%	
Measles vaccine	2447	35%	
OPV1	2447		
PAB	2652	33%	
Pent1	2447	36%	
Pent3	2447	35%	
Rota1	2447	36%	
Rota2	2447	37%	
FP	15921	75%/31.6% long acting/	
TT2+ pregnant	2652	55.8%	
TT2+ non pregnant	15921	56.9%	

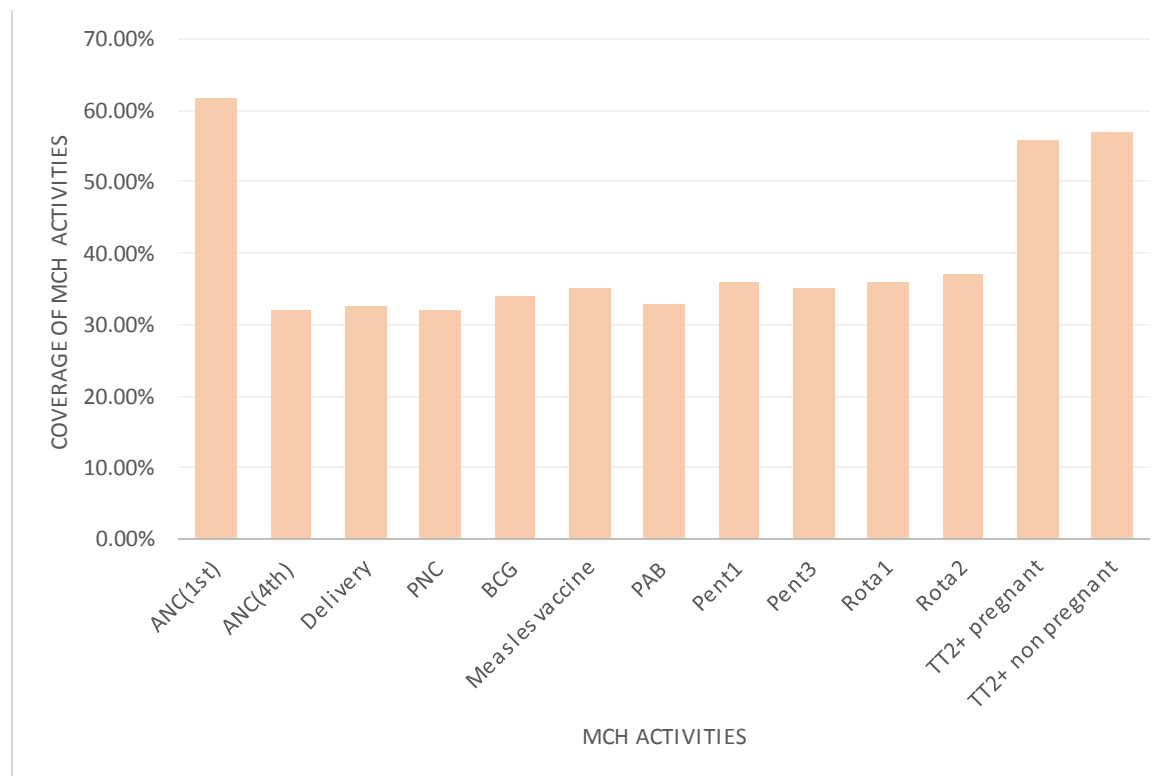


Figure 26 : Performance of MCH activities at Debretabor administrative town, 2014/15.

Source: Debretabor health office annual report.

Table 27 : Environmental sanitation and availability of safe drinking water in Debre tabor Administrative Town, Amhara region, 2014/15

Description	Number (%)	Remark
Latrine coverage	81.4%	
Number of HH with latrine	10203	
Number of kebeles accessed to safe water supply	04	
safe water supply coverage	54%	

### Endemic Diseases

**HIV/AIDS:** In 2014/15 a total of 6659 clients were screened for HIV among those females composed 50.1%. From a total screened 38(16 males and 22 females) diagnosed positive for HIV. The overall AR was 0.48 per 1000 population. Females experienced 0.28/1000 higher incidence than males who have 0.2/1000. There were a total of 725 PLWHA at prevalence of 0.92%. Of those 310 patients were on ART in 2014/15. Health education plan of 64536 given for 64490 people (male=27537, female=36953) and condoms had been distributed to 54004(>100%) users from 50000 plan. Only one health center of the town gives ART.

### Tuberculosis/leprosy

From a total of (no document) clients screened for tuberculosis in 2014/15, 67 (P-32, P+18 and ETB17) patients were diagnosed with TB among those 18 were smear positive at about 21.18% case detection rate. Treatment completion rate was 93.9%. There were 2 defaulters documented and 94.5% cure rate was achieved. All the TB patients were screened for HIV but no data was found about co-infection prevalence. One leprosy case was found among the diagnosed customers in the respective year.

**Immediately reportable disease:** No any outbreak/disaster occur except dog bite in 2014/15

### Communication and utilities

Provision of requisite infrastructure is very well in Debre tabor. All of kebeles have electricity, all the health posts have source of electric power/because it established with Kebele admin.office/, and all three health centers have electricity as a source of power. Regarding transportation 100 % have transport facility which is asphalted road. Also recently mobile service is introduced even though its network access is not regular, users have to travel some distance apart from their residential area in searching of network. Good Computer access. The Administrative Town has one zonal ACSI, One Micro finance, five private/P.L.C/ and three governmental banking service were there for the whole Administrative Town population.

### Health service expenditure and financing

Table 28 : Budget allocation of Debre tabor Administrative Town, Amhara region, 2014/15

Source	Amount	Remark
Total district budget	99795484	
Allocated to health sector	8402109	
Total per capita expenditure	6390024	

There are NGOs who support the Administrative Town in different way gives technical support UNICEF/it covers costs of EPI,/Carter center/trachoma campaign/. HAPCO assigned man power, GIS gives training to urban health extension workers.

**Nutrition Intervention:** One health center underwent outreach therapeutic program.

Table 29 : Priority setting of the identified problem in Debre tabor Administrative Town based on their magnitude and feasibility, Amhara region, 2014/15

Problem		magnitude	Community concern	feasibility	Priority setting
Environmental	Waste disposal	61-80%	Still no good waste disposal system	Feasible	1
	Safe water supply	41-60%	46% of population did	Feasible	1

			not have safe water supply		
Organizational	Man power	>80%	No physicians, X-ray technician	Medium	2
	Health post	>80%	Not have their own construction	Medium	2
Diseases	URT/	41-80%	Leading cause of ten top morbidity /from adult and pediatric/	Feasible	1
	HIV/AIDS	41-60%		Feasible	3

## Discussion

Debre tabor has a nice infrastructure coverage especially for merchandise/95%/; Some writers said that preparation of profiles provides a lively, scientifically and evidence based account of health in the Administrative Town; it can encourage public interest and political commitment; and it can identify targets for the future and monitor progress towards them (2). In the study all of the kebeles have had electricity which is very crucial for daily activity of citizens and in health facilities to maintain medicines, reagents and to manage patients in the night shift. Hundred percent of the kebeles have their own resources for example Eucalyptus for construction and selling, based on the decentralization structure of Ethiopia, Towns are the basic infrastructure to planning, decision making, and political administration with respect to urban structure (4). The kebeles' administrators selling Grass and Eucalyptus to the kebeles residents and any other activities. All the kebeles are accessed to transportation facility; those people living in these kebeles had no travel long distance on foot to get health service and other activities. Most of mothers not diseased in

their home because 100% accessed to health facility nearby, and those who came to health facility with Ambulance , pregnancy not referred to another higher health institution because Debretabor zonal hospital is there which have physician or Emergency surgeon. In this case mothers not lost their life when there were on the way to the referred center. Although transport is safe many unrecorded data was occurred in many activities of the Town e.g. vital statistics, top ten admission. In our assessment the overall health worker to population ratio was 1:855 population. But overall health worker ratio per 1000 population was 1.17 versus the national 0.84(Africa health workforce observatory, 2010). This result is quite less than the standard set by the World Health Organization of 2.3 per 1000 population (7). URTI was the top causes of morbidity in 2014,6587/26.2%/ recorded cases. No any outbreak was occurred in the respective year 2014; and problem of environmental sanitation may contributed to its existence. Acute febrile illness is the second causes of outpatient visit (morbidity) this might be happen due to lack of safe water supply and low personal heigyiien. Many people of the town of kebeles had accessed to safe water supply, in some part kebeles there was no safe water supply due to newly established villages but studies showed that, Sources that are likely to provide water suitable for drinking are identified as improved sources; They include a piped source within the dwelling, yard, or plot; a public tap or standpipe; tube well/borehole; a protected well or spring; and rain water or bottled water (WHO and UNICEF, 2014(4). Also another study discussed it is not just the supply of food, fodder, and fuel that is under threat, but the resource base itself and the lives that depend upon it. (6). The MDG goal on maternal health aims to reduce MMR by two-thirds to 290 per 100,000 deliveries by 2015(8). Unlikely, in our finding Females experienced higher incidence of HIV/AIDS 0.28/1000 which is 1.4 times higher than males this may be attributed to the biological vulnerable nature of females and//or more of those were engaged as commercial sex workers. Even If the HSDP prioritizes maternal and newborn care, and child health, and aims to halt and reverse the spread of major communicable diseases such as HIV/AIDS, TB, and malaria (9).

### **Limitations**

- ❖ Relevant information regarding Administrative Town background and how it gets its name was not obtained because no person in the culture and tourism office in the moment.
- ❖ There was no complete recorded data for the year 2014. Especially no vital statistics data.

- ❖ Due to the only Debretabor health center which gives inpatient service; data for top leading causes of admissions and mortality was not found.
- ❖ There was no compiled TB annual report in the health office (e.g. clients screened for TB) due to turn over of TB officer.

### **Conclusion**

The academic annual Immunization coverage of the administrative town in 2014 was low (most of the activities performances were extremely under expected). In the administrative town disease surveillance is silent, since immunization coverage was low there would PHE cases. Annual delivery performance is too low compared to target. More sensitive data are not available especially vital statistics. Dog bite and poor waste disposal was the main problem in the administrative town.

URTI is the main public health concern of administrative town followed by AFI which were the top causes of morbidity. Low environmental sanitation and safe water supply and personal hygiene.

### **Recommendations**

The Health Sector, political leader and stakeholders must be collaborated to give sustainable solution adequate safe water supply. The administrative town strengthen surveillance system, because immunization coverage was low there. Health centers should be well equipped to give inpatient service, no data for top ten admission for adult and pediatrics. Regarding rabies, everybody should be sensitized by giving health education to create awareness about its fatality, availability of prophylactic treatment, its prevention mechanisms and to don't take traditional medicines which potency is not evaluated. Since more people were bite by dog. Influential persons and religious leaders should be established to break the immemorial culture of the society. Sector offices of the administrative town should record the same reliable data in respect to demographic and climatic information of the administrative town.

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## Chapter V -Scientific Manuscripts for Peer reviewed Journals

### 5.1 Scabies outbreak investigation, Dera, South Gondar, Amhara, Ethiopia, 2017

Authors: Abere Muchie, Dr. Naod Firdu, Mrs.Mastewal Worku

#### Abstract

**Introduction:** Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. *hominis*. Scabies, due to infestation with the *Sarcoptes scabiei* mite, has been estimated to affect approximately 300 million people worldwide each year. Today a scabies outbreak is reported in 20 districts in Amhara region. Of these 88,905 cases were from Waghimra zone.

**Method:** We conducted unmatched case control study from January 16-30/2017 in dera district South Gondar zone. We included 40 cases and 80 controls and define cases as those any resident in Dera district that has papular pruritic rash. We collected the data using structured questionnaire and analyzed using SPSS version 20, Epi Info 7 and Arc GIS.

**Result:** A total of 5417 scabies cases with no death were identified during outbreak and 1.87% of populations were affected. Forty cases with median age 14.5 (range, 3-57 years), and eighty community controls with a median age of 19(1-70years). Body parts that highly affected were on hand and majority of cases with degree of scabies infection were Moderate (6-10) lesions. Sleeping with contacted persons OR 5.56 = (95% CI 2.43–12.73), Sex OR 3.86 (95% CI=1.7-8.9) & Family size OR 2.2 (95% CI= 1.01– 4.8) were risk factors but Literacy OR = 0.274 (95%CI =0.124-0.6) was protective factor.

**Conclusion:** The highest risk factors were family size, Sex, & sleeping with contracting scabies case but literacy was protective factors. Improving drinking water source, reduction of family size and increasing knowledge about transmission are the proper methods for controlling scabies in the community.

**Key words:** Scabies, Outbreak, Dera, Ethiopia

## **Background**

### **Introduction**

Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. *hominis* (1). Human scabies is a microscopic mite that burrows into the upper layer of skin where it lives and lays its eggs. Community settings such malnutrition, poor hygiene and other disasters are at increased risk of scabies outbreaks. Scabies is transmitted primarily through prolonged, direct skin-to skin contact with an infected person, and may also be transmitted through shared clothing, towels, bedding, linens, carpets, and furniture(2). The primary mode of transmission of the human scabies mite is direct skin contact between two individuals. An infected person can spread scabies even if he or she has no symptoms. Humans are the source of infestation but animals do not spread human scabies (3). The most common signs and symptoms of a typical scabies infestation are intense itching, especially at night, and a pimple-like (papular) itchy rash. The rash may contain tiny blisters (vesicles) and scales. Tiny, raised, crooked grayish-white or skin-colored burrows are sometimes seen on the skin. The itching and rash may affect any part of the body, or may be limited to common sites like the webbing between the fingers, wrist, elbow, armpit, shoulder blades, breasts, waist, genitals, buttocks, and knees(4). Symptoms usually occur four to six weeks after infestation in someone who has not previously experienced scabies (5). The

rash is an allergic reaction of the body to the mite, although its waste products and the eggs deposited by the mite under the skin, allergic reaction may not correspond with the site where the mite may be found (6). Scabies, due to infestation with the *Sarcoptes scabiei* mite, has been estimated to affect approximately 300 million people worldwide each year. The highest rates of scabies in the world were in Pacific Island countries.

In population based survey in Fiji, 24% of participants had scabies, with particularly high prevalence in young children (7).

Globally, it affects more than 130 million people at any time and rates of occurrence vary in the recent literature from 0.3% to 46%. In the developed world, outbreaks in health institutions and vulnerable communities contribute to significant economic cost in national health services.

In 2010, it was estimated that the direct effects of scabies infestation on the skin alone led to more than 1.5 million YLDS (years lived with disability), and the indirect effects of complications on renal and cardiovascular function are far greater (8).

The highest incidence is in tropical climates, with rates of up to 25% overall and up to 50% in some communities in the South Pacific and northern Australia (9). Prevalence was highest in children aged five to nine years (43.7%, adjusted odds ratio, OR, 3.7

When compared to those aged over 49 years. Scabies was nearly twice as common in iTaukei Fijians (24.7%, adjusted OR 2.7 when compared to the Indo-Fijian population). Scabies was most prevalent in people living in the Northern division (28.5%), in people living in rural areas (25.6%) and in females (24.8%). Taking into account the census distribution of age and geographical location by direct adjustment, the estimated national prevalence of scabies was 18.5% (95% CI 14.7–22.9). There were no cases of crusted scabies detected in this study. Similar to scabies, impetigo prevalence was twice as high in the iTaukei Fijians (22.8%, adjusted OR 2.4), in females (20.5%), in people living in rural areas (21.4%) and in the Northern division (23.7%). The presence of impetigo was strongly associated with a diagnosis of scabies (relative risk, 58.6, 95% CI 48.7–70.5) (10). In many tropical developing areas, especially in sub-Saharan Africa where majority of the studies were carried out, the prevalence of scabies was 1-2% (11).

In the study by Ukonu and Eze, performed at a referral center in Mekelle on adults and children, scabies was the fifth cause of dermatological conditions attended and the first cause of admission due to dermatological diseases. However, in a study performed at a referral hospital in Addis Ababa, scabies was present in 0.9% of cases. In studies among school children in resource-poor

communities, its prevalence ranged from 1% to 5%. Moreover, in a recent systematic review, the prevalence of scabies ranged from 0.2% to 71.4% (12). At present, a scabies outbreak is reported in at least 20 districts in Amhara region. Some 88,905 cases were reported in six districts of Waghimra zone (13).

According to South Gondar zone health department 12879 & 31875 cases were reported in 2015 & 2016 respectively from different districts of the zone, of these Dera is the most scabies affected district in 2017 (14). The main objective of this study was to investigate the outbreak epidemiologically and identify the risk factors for the occurrence of the outbreak and provide appropriate control & prevention measures of the disease.

### **Methods and Materials**

The outbreak investigation was conducted in Dera district, South Gondar zone, and Amhara region. The district has total population of 289113 over half of (50.2%) were males and 39146 (13.54%) under five years, 9743 were pregnant and 68173 child bearing age. The study was conducted from January 16-30, 2017. Simple random sampling method was employed to recruit cases and controls. Sample size was calculated Epi-info 7 stat calc for unmatched case-control study i.e. Two sided confidence level  $(1-\alpha) = 95\%$ , Power = 80%, Ratio of controls to case = 2:1 Proportion of controls with exposure = 10% (9) Least extreme odds ratio to be detected = 4.5 (15) Proportion of case with exposure = 33.3%, Therefore 120 samples 40 cases and 80 controls were selected. Interviews were conducted using a semi – structured interview with key informants district health office, with community member of society about food and water insecurity, if they are recognize outbreak, then identify causes of outbreak, what control measure should they take. Observational assessment was done, such as hygiene and sanitation, overcrowding, season (climate change), so, focus group discussion was done with community about food insecurity, water supply shortage and also scabies outbreak. Data was analyzed on computer using Epi info 7, MS- Excel and Arc GIS. Descriptive and analytical statically analyses were under taken. Results were presented using graphs, tables, charts and attack rate, proportions, were calculated. Odds ratio, 95% CI, and p-value were constructed to measure association and significance. The dependent variable was Scabies diseases and Age, Sex Number of family, Educational level of the family, Frequency of changing clothes, sleeping with scabies patients and Source of water fetched were independent variables.

## Results

### Descriptive Epidemiology

When outbreak was reported to region a team went to the district and confirmed existence of scabies outbreak in the area and conducted unmatched case control study. Twenty six were affected from the 32 kebeles of the district, totally 5417 scabies case were reported from these we recruited 40 cases and 80 controls into the study. The median age of patients was 14.5 (3to 57) years where as that of the controls was 19 years ranging from (1 to 70) years. The overall attack rate for all age categories was 2.35 % from the risk population.

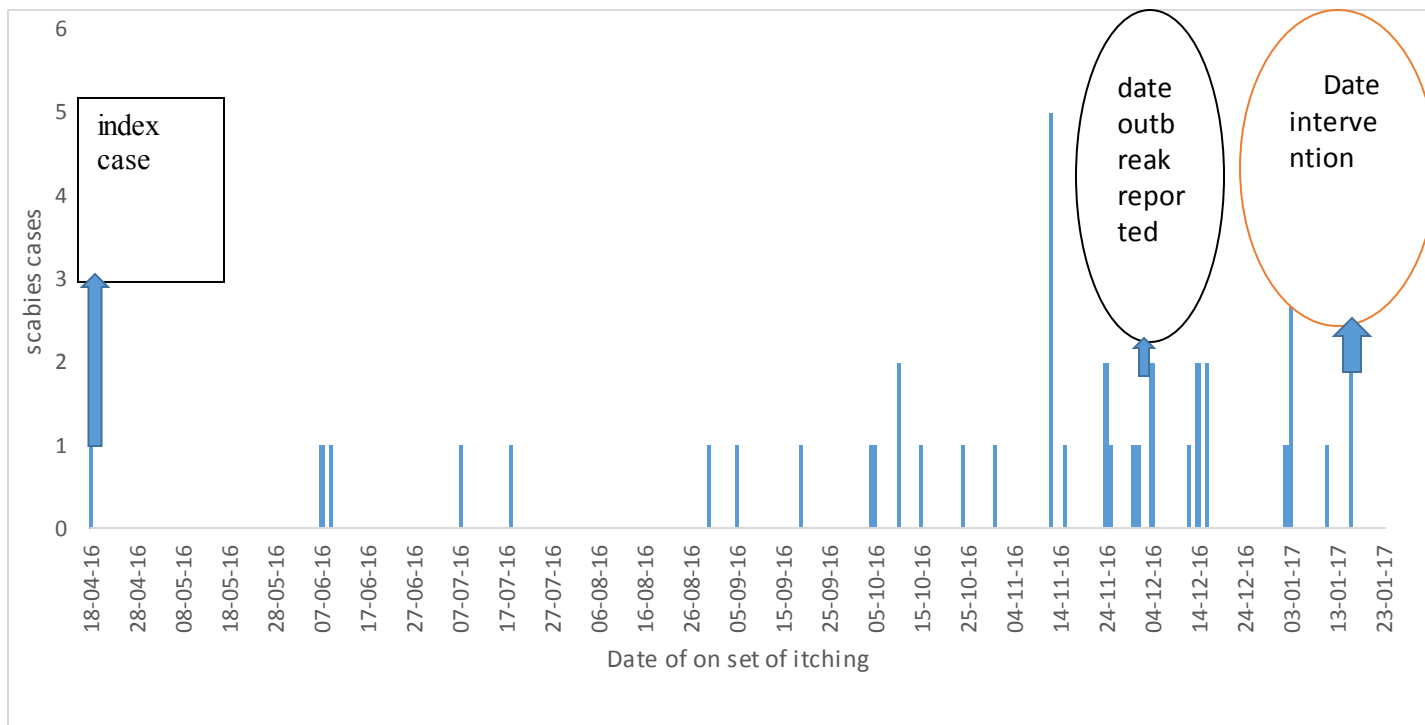


Figure 27 : Epi curve of scabies outbreak Dera district, South Gondar Zone, Amhara Region, Ethiopia, 2017

The highest prevalence of cases were registered in Wutmara kebele (10.1) followed by Wogedame (8.5) but the least was in Mitsiley silasie (0.1).

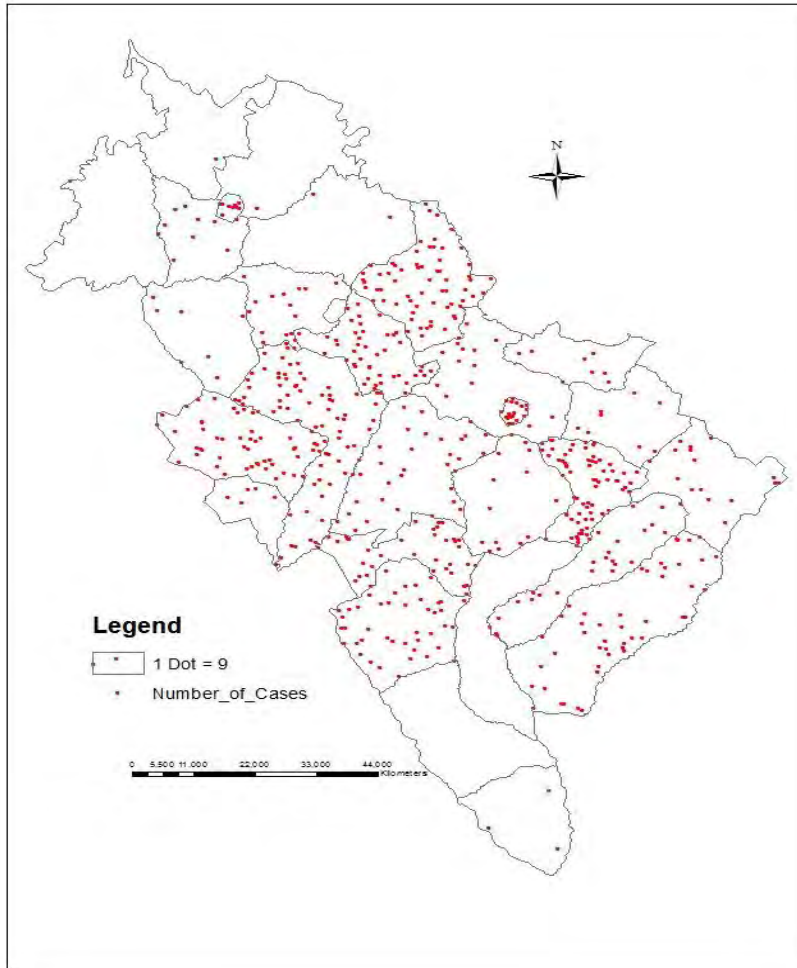


Figure 28 : Distribution of scabies cases among kebeles of Dera district South Gondar Zone, Amhara Region, Ethiopia, 2017.

From the total study subjects 65(54.2%) were males, 100% of the respondents were Orthodox Christianity followers and live in rural areas and source of water that most of respondents fetched from well (52.5%) followed by river (35%).But when we compared the scabies infected persons each other 35% were from river.

Although most of the protected respondents used soaps to take shower (50.8%), 10% of scabies patients took only with water from the total study subject.

Three groups were made according to their number of family members. Majority 63(52.2%) respondents had family members 4 - 6 the mean of the persons living in each room was 2.275 with SD of 0.64. When we assessed occupation of respondents 57(47.5%) farmer, 39(32.5%) student 18(15%) other &6(5%) were house wife. There marital status were seventy (58.3%) single, 47 (39.2%) married and 3(2.5%) divorce.

### Skin examination

Ninety eight percent of the respondents replied that they had itching which was intense during night. The most frequent site of the wound was hands about 37 (37.75%). Patients reported that they had itching on the hand followed by groin 20 (20.41%). Majority of cases were Moderate (6-10) lesions and mild (5or less) sores and no case was very severe (>+50) (neither lesion nor sores) infected by scabies (See figure -29).

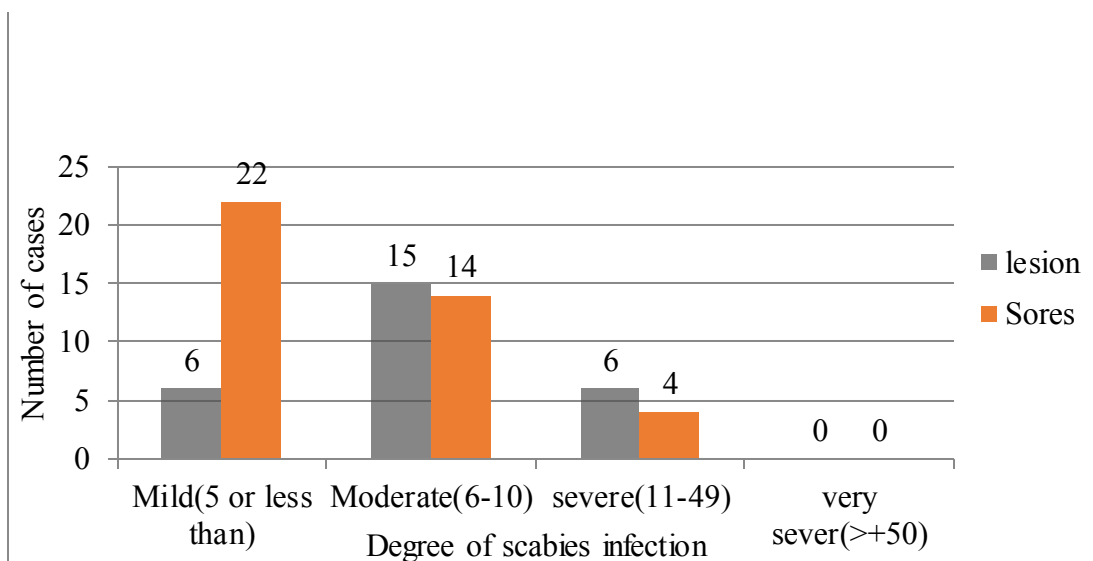


Figure 29 : Degree of scabies infection in body part Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017

### Analytic epidemiology

We recruited 40 cases and 80 controls into the study. The median age of patients was 14.5 (3-57) years where as that of the controls was 19 years ranging from (1-70) years. The statically significant variables in bivariate analysis are sleeping with contacted persons OR 5.56 = (95% CI

2.43–12.73), Sex OR 3.86 (95% CI=1.7-8.9) & Family size OR 2.2 (95% CI= 1.01– 4.8) were risk factors. On the other hand, Literacy OR = 0.274 (95%CI =0.124-0.6) were protective factors.

On multivariate logistic regression analysis, risk factors that remained statistically significantly associated with the diseases was Sex AOR 4.34(95%CI=1.64-11.46), In another way, protective factors that remained statistically significantly associated with the diseases on multivariate logistic regression analysis were Age AOR 0.81 (95%CI=0.32-2.085), Family size AOR 0.47(95%CI=0.18-1.2) (See table-30).

Table 30: Bivariate and multivariate analysis of risk factors for counteracting scabies in Dera district, South Gondar zone, Amhara Region, Ethiopia, 2017.

Serial no.	Variables	Category	Case(n=40)	Control=80	COR (95%CI.)	P-Value	AOR (95%CI.)	P-Value
1	Sex	Male	30(75%)	35(43.75%)	3.86(1.66-8.94)	0.0012	4.338(1.643-11.458)	0.003
		Female	10(35%)	45(56.25%)				
2	Educational level	literate	14(35%)	53(66.25%)	0.274(0.1235-0.6)	0.001	0.34(0.152-0.671)	0.002
		Illiterate	26(65%)	27(33.75%)	Reference			
3	Family size	>6	20(50%)	25(31.25%)	2.2(1.009-4.792)	0.0455	0.472(0.183-1.22)	0.121
		≤6	20(50%)	55(68.75)	Reference			
4	Age	<15	20(50%)	30(37.5%)	1.667(0.77-3.59)	0.19043	0.812(0.316-2.805)	0.665
		≥15	20(50%)	50(62.5%)	Reference			
5	Sleeping cases	Yes	16(40%)	33(41.25%)	5.558(2.426-12.7345)	0.0000245	0.155(0.06-0.401)	P<0.0001
		No	16(40%)	47(58.75%)				

### Qualitative analysis

Detail discussion was done among affected people by scabies & contact, health facilities workers, community leaders and Health Extension Workers, focused on hygiene practices like to take shower and washing clothes, how to get water they must go at least 1 hour from their nearby home, about overcrowding in student class it is favorable condition or precipitating factor for spreading of scabies because of scabies is high contagious diseases so that, student dropout rate were high in these year. They strongly conclude that school was the most risk area. We visited different villages, the local communities reside in villages without access to safe drinking water even spring water so when we saw most of peoples they wear their clothes for long time and they are not take shower for pervious weeks even months.

### **Interventions undertaken**

Since all of the affected kebeles prevalence were maximum 10.1% i.e less than 15% cases due to this reason cases & contacts were treated with ivermectin and sulfur ointment. In addition to this, awareness creation on all household contacts should be treated at the same time even if asymptomatic and Reapply the topical scabicide to the hands if they are washed during the treatment period. Clothing, bedding, and linens used by an infested individual during the seven days prior to and during treatment should be washed or cleaned and dried sun or putting clothes in a plastic bag for two days and above is also effective in letting the mite die. Routine cleaning of the house and health education on prevention is important to avoid reinfection.

### **Discussion**

This study tried to identify the possible risk factors for contracting scabies pertaining to socio demographic characteristics living conditions, contact history and level of education, and access to water. According to South Gondar zone health department data 12879 & 31875 cases were reported in 2015 & 2016 respectively from different districts of the zone (14).

In the same manner in our investigation result Twenty six kebeles were affected from the total 32 kebeles of the district, totally 5417 scabies case were reported and the overall attack rate for all age categories was 2.35 % from the risk population and 65(54.2%) were males. Hundred percent of the respondents were Orthodox Christianity followers and live in rural areas. Majority 63(52.2%) respondents had family members 4 - 6 with mean of the persons living in each room 2.275 with SD of 0.64 .

When we analyzed marital status of the respondents were seventy (58.3%) single which are the adult stage, 47 (39.2%) married and 3(2.5%) divorce. Similarly one study in Fujii said Scabies was most prevalent in people living in the Northern division (28.5%), in people living in rural areas (25.6%) and in females (24.8%) (10). In our study most of the Literate communities less affected than illiterate, OR 0.274(0.1235-0.6). The highest prevalence was registered in Wutmera kebele (10.1) followed by Wogedame (8.5) but the least was in Mitsiley silasie (0.1), from the total kebeles only five kebeles were not affected.

Similarly in resource-poor communities worldwide, scabies prevalence in the general Population is up to 10%. But in population based survey in Fiji, 24% of participants had scabies, with particularly high prevalence in Young children (7). In our study result the most frequent site of the wound was hands about 37 (37.75%). The itching and rash may affect any part of the body, or may be limited to common sites like the webbing between the fingers, wrist, elbow, armpit, shoulder blades, breasts, waist, genitals, buttocks, and knees (4). Also our result discussed that Patients reported that they had affected on the hand followed by groin 20 (20.41%) and the least was at breast (1.02%) and majority of cases with degree of scabies infection were Moderate (6-10) lesions, no case was very severe ( $>+50$ ).

When we compared with other study, in 2010, it was estimated that the direct effects of scabies infestation on the skin alone led to more than 1.5 million YLDS (years lived with disability), and the indirect effects of Complications on renal and cardiovascular function are far greater (8). When we assessed source of water that most of respondents fetched from well (52.5%) followed by river (35%). But when we compared the scabies infected persons each other 35% were fetched from river. Although most of the protected respondents used soaps to take shower (50.8%), ten percent of scabies patients took only with water from the total study subject. From our analytic epidemiological analysis statically significant variables in bivariate analysis are sleeping with contacted persons which had highest effect OR 5.56 = (95% CI 2.43–12.73), males were more affected than females OR 3.86 (95% CI=1.7-8.9) & Family size which living more than six people in on living room were highly affected OR 2. 2 (95% CI= 1.01– 4.8) were risk factors. When Educational status were analyzed literate respondents were protective (72.6%) than illiterate with OR = 0.274 (95%CI =0.124-0.6). Infrequent bathing, infrequent changing cloths and infrequent washing clothes have no statistically significant at  $p$ -value  $\leq 0.05$ . On multivariate logistic

regression analysis, risk factors that remained statistically significantly associated with the diseases were Sex AOR 4.34(95%CI=1.64-11.46), In another way, protective factors that remained statistically significantly associated with the diseases on multivariate logistic regression analysis were Age AOR 0.81 (95%CI=0.32-2.085) and Family size AOR 0.47(95%CI=0.18-1.2). In different studies Prevalence was highest in children aged five to nine years (43.7%, adjusted odds ratio, OR, 3.7 when compared to those aged over 49 years. Scabies was nearly twice as common in iTaukei Fijians (24.7%, adjusted OR 2.7 when compared to the Indo-Fijian population) (10). The outbreak was reported 8 months after the onset of the illness and treatment was started after one month of detection the delay in reporting and response might be due to the fact that health care providers were not informed that scabies should be reported as public health important problem.

Limitation was data discrepancy in line list and total number of cases in the health facility our Conclusion was Scabies is still continues as neglected with less concern. In this study, the highest risk factors were Sex, high family size & sleeping with contracting scabies case, I recommended that: district health office and health center workers have to increase their surveillance activity, Education on scabies and different risk factors for scabies diseases shall be given in the community and at regular school.

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## Chapter VI –Abstracts For Scientific Presentation

### 6.1 Seasonal Influenza Outbreak Investigation in Bezawit Mariam Church Traditional School, Bahir Dar Administrative Town, Amhara Region, Ethiopia, 2016

**Authors:** <sup>1</sup>Abere Muchie, Dr. <sup>2</sup>Naod Firdu, Mrs.<sup>3</sup>Mastewal Worku

**Name of FETP:** Ethiopian FETP

**Title:** Seasonal Influenza Outbreak Investigation in Bezawit Mariam Church Traditional School, Bahir Dar Administrative Town, Amhara Region, Ethiopia, 2016

#### Abstract

**Introduction:** In April 2009, in the United States, the first 2009 pandemic influenza A (H1N1) virus infection were reported. On June 11 2009, the World Health Organization declared influenza pandemic because of widespread transmission worldwide. In Ethiopia 414 suspected cases were reported from Amhara, Arsi zone & Addis Ababa region. Regionally: a total of 354 influenza like illness cases were reported from Laygaint, Estie and Andabet districts of South Gondar zone in 2009.

Among them samples were collected from 54 patients and laboratory result turned positive for Influenza a H1N1 (2009 Pandemic).This makes the positivity rate 56 %.

**Method:** A suspected case of influenza like illness was defined as acute onset of fever (>38°C) with cough or sore throat and 2 confirmed case as influenza like illness case with throat swab positive for seasonal influenza A/H3N2 .The study design was unmatched case control (control by

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<sup>1</sup>- EFETP Resident

<sup>2</sup>-Assistant professor in AAU(MD,MPH)

<sup>3</sup>- APHI Malaria Epidemiologist(MPH In Field Epidemiology)

simple random sampling from the neighbor).The demographic and clinical details were collected from traditional school students around church from March 19, 2016-April one, 2016 and the objective was to investigate the outbreak

**Result:** A total of 25 cases were reported and median age was 18 years (ranging: 10 to 25 years), and 68 % of the patients were greater than 15 years old. As laboratory result showed that two out of four samples tested positive for influenza A (H3N2). Living in a room with more than three people (OR=3.37(1.29-8.806)) was associated independent risk factor with higher rate of disease. But recent travel to areas with influenza cases OR=0.606(0.103-3.574) was protective factor of influenza cases.

**Conclusion:** Our finding showed that majority of symptoms were Headache, Cough and Fever, most of the patients were adults, and family size which live more than three peoples in one dorm was risk factor.

**Key word:** Seasonal influenza outbreak, traditional school, Bahir Dar

**Word Count:** 260

## **6.2 Scabies Outbreak investigation in Dera District, South Gondar Zone, Amhara Region, Ethiopia, 2017**

**Authors:** Abere Muchie, Dr. Naod Firdu, Mrs.Mastewal Worku

**Name of FETP:** Ethiopian FETP

**Title:** Scabies Outbreak investigation in Dera District, South Gondar Zone, Amhara Region, Ethiopia, 2017

### **Abstract**

**Background:** Scabies, due to infestation with *Sarcoptes scabiei* mite, has been estimated to affect approximately 300 million people worldwide each year. The highest rates of scabies in the world were in pacific Island countries. In studies among school children in resource-poor communities, its prevalence ranged from 1% to 5%. We received reports of a scabies outbreak in the dera district of the Amhara region in Ethiopia. We investigated to confirm the outbreak, identify risk factors, and implement control measures.

**Method:** We conducted unmatched case control study from January 16-30/2017 in dera district. We included 40 cases and 80 controls and define cases as those any resident in Dera district that has papular pruritic rash. We collected data using structured questionnaire, entered and analyzed using Epi Info 7 and SPSS version 20. Logistic regression was used to assess associations between risk factors and scabies infection.

**Result:** A total of 5417 scabies cases with no death were identified during investigation and 1.87% of populations were affected. A median age of cases was 14.5 (range 3-57years), and 80 controls with a median age of 19(range 1-70years) and 54.2% of the total cases were male. Body parts that highly affected was on the hand (37.75%) and majority of cases with degree of infection were Moderate (6-10) lesions. Sleeping with contacted persons OR 5.56 = (95% CI 2.43–12.73), Sex OR 3.86 (95% CI=1.7-8.9) & Family size OR 2. 2 (95% CI= 1.01– 4.8) were significantly associated but Literacy OR 0.274 (95%CI =0.124-0.6) was protective factor.

**Conclusion:** The highest risk factors were family size, sleeping with contracting scabies cases & sex. Reduction of family size and increasing knowledge about transmission are proper methods for controlling scabies in the community.

**Key words:** Scabies, Outbreak, Dera, Ethiopia

**Word Count:** 266

## Chapter VII –Narrative Summary of Disaster Situation Visited

### 7.1 Maher Assessment Report in Oromia and South Wollo Zones, Amhara Region, Ethiopia, October 2016

#### Executive summary

We conducted Maher season assessment from 20 Nov to 13 July, 2016 in two zones and nine selected districts. We assessed food and non- food causes of hazards, magnitude, capacity to manage and gaps. Non- food assessment includes health and nutrition, WASH and education emergencies. Many suffer from multiple natural and manmade crises. Malaria, AWD, Meningitis, scabies, malnutrition, dysentery due to lack of safe and adequate water and school absenteeism or dropouts are all associated with natural calamities or disruption of healthy human activities in the given ecosystem or living environment. The objectives of the assessment were to determine magnitudes of hazards of different types, to identify risk factors, gaps/challenges and make recommendations to take reliable intervention measures that address problems encountered. Assessment findings have revealed that AFI, upper respiratory tract infections (URTI), non-Bloody diarrhea were the leading cause of morbidity in both under-five and above five years of age in the year May 2015/ Oct 2016. In the last six months, 4639 AWD cases and 35 deaths, 8009 scabies, 35 Meningitis cases and 2 deaths (Borena district) were reported from all zones. There was no ongoing measles outbreak in the assessed zones but scabies cases have been present. In the regional stock, drugs and supplies for meningitis control (meningitis vaccine, LP set, RDT for meningitis and oily CAF), drugs and supplies for AWD (CTC kits, PPE such as duty gloves) were the major gaps. It was found that there is an established multi sectorial PHEM coordination forum at regional, zonal and in all visited districts. Except regional EPRP, all of the assessed districts allocated some amount of money for emergency purpose. Currently nutrition situation in the region is unstable. Of the total 1,133,459 under five children screened in October 2016, 5,064 and 86,906 were SAM and MAM respectively. The GAM was 8.1%. As to pregnant and lactating women, of the total 217,584 screened, 63,258(29.1%) of them reported MAM by the same month October.

Moreover when we see regionally, malnutrition is found to be a series problem in assessed zones. Except for E/Gojjam, Waghemira, N/Gondar, S/Gondar, N/Wollo, S/Wollo, N/Shewa, and Oromia

zones reported high GAM for both screened groups. Particularly, GAM in Wagemira was in the range of 30 -36. Monthly report of TFP admission was indicated that cases are unacceptably high almost in all the assessed districts and most zones in both 2015 and 2016. It was also found that proxy GAM for PLW was high in Wagemira zone which followed by North Gondar and South Gondar. Screening conducted in October indicated high GAM load among PLW in Wagemira, N/Gondar and S/Gondar zones. The assessed zones from the region were proposed a total of 72,569,555 ETB to address 7496323 risk populations to malaria, AWD, malnutrition, scabies and measles. Reactivation of multi sectorial PHEM coordination forum at all levels, strengthening surveillance and preparedness activities, capacity building, strengthening of malaria prevention and control activities were recommended.

## **Introduction**

Amhara region is one of the nine administrative regions in the federal democratic republic of Ethiopia. It has total population of 21134988. The region shares boundary with four national regions (Oromia, Tigray Afar& Benishangul Gumuz) and one international border with Sudan. In the region, there are ten zones and three administrative towns, 167 districts and about 3345 kebeles, from which 318 are urban kebeles. The livelihood of Amhara population has been affected by different types of hazards including recurrent drought, and disease outbreaks such as acute watery Diarrhea , H1N1 influenza (2016 ), Typhoid fever ( mostly Eastern Amhara (North Wollo & South Wollo), Meningitis (2016 in South Wollo), Scabies(2016) in all zones and still in some areas of the region), Rabies (usually from North & South Wollo), Malaria (predominantly from Western part of the region), and flood and flood associated problems. In the region, 100902 Typhoid fever cases were reported in the year 2015/16 and 594650 malaria cases were reported in the same year. The current assessment has identified immediate risk factors associated with the possible occurrence and distribution of health and nutrition emergencies such as AWD, scabies, Malaria, meningitis outbreaks and Sever Acute Malnutrition (SAM) in the region. District/Zonal/regional capacity was also assessed to confront the situation.

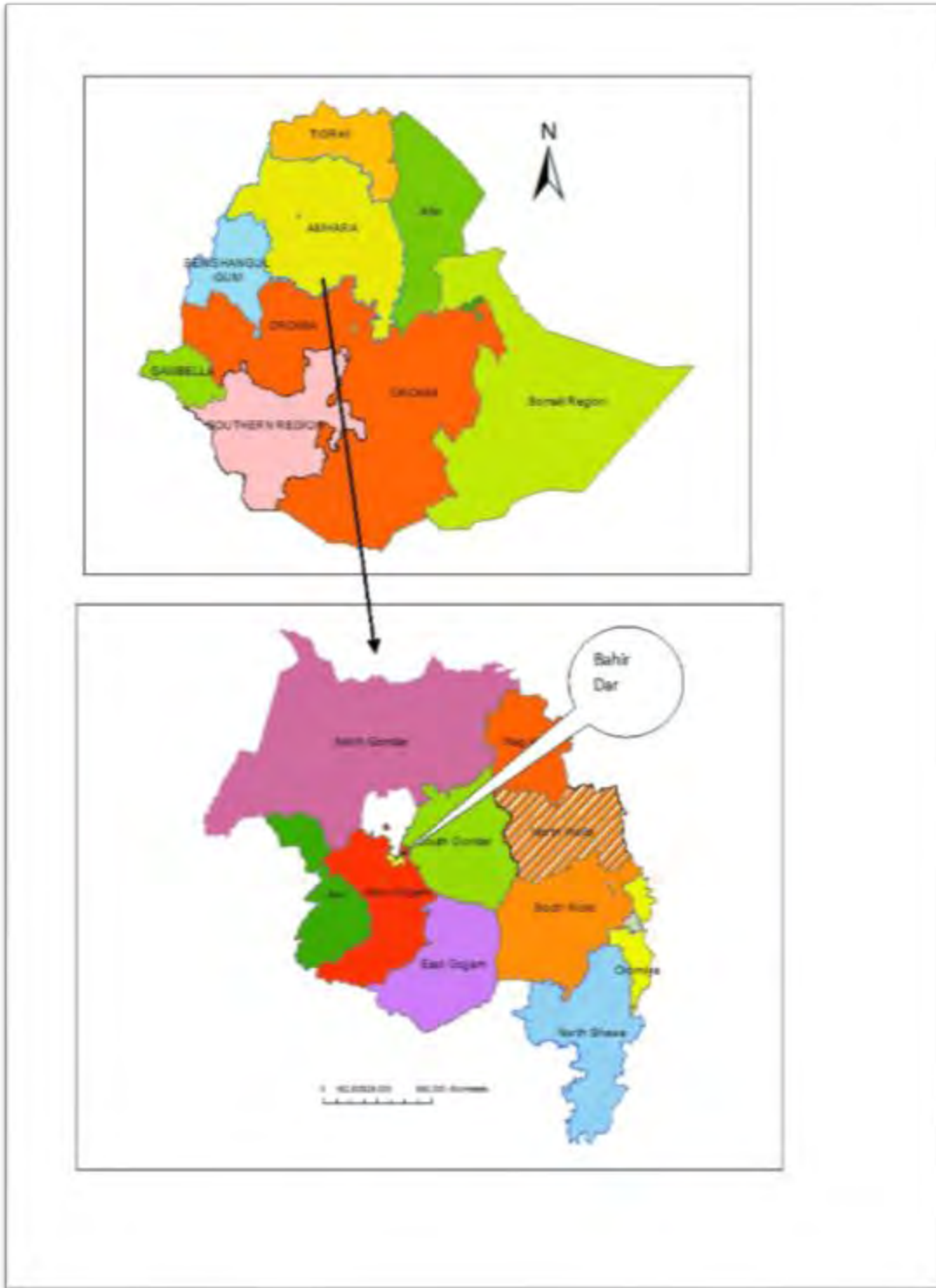


Figure 30 : Zones of Amhara Region, Ethiopia, 2016

## Objectives

### General objective

- ❖ To contribute in ensuring appropriate and effective humanitarian planning and responses that leads to reducing morbidity and mortality in the most vulnerable areas of the assessed zones.

### Specific objectives

- ❖ To assess the extent, types, magnitude, severity and likely of the different hazards (drought, disease epidemics, sever and acute malnutrition, etc) and risks to the populations in the most vulnerable districts for epidemic prone problems considering health and nutrition emergencies.
- ❖ To assess the existing capacity of the health services to address health and nutrition emergencies likely to occur during the coming six months of 2016.
- ❖ To determine the shortcomings (gaps) in the capacity of the existing health services to address health and nutrition emergencies likely to occur.
- ❖ Based on the findings on the assessment of risks for, and the need to address, potential health and nutrition emergencies for the next six months, to formulate workable mechanisms and develop necessary plans for fostering preparedness of Health and nutrition for appropriate and adequately addressing the potential emergencies;
- ❖ To identify areas where health and nutrition emergency assistance might be needed during the coming six months of 2016 due to acute problems and come up with reasonable estimates of the size of the population needing emergency assistance.

## Methods

**Study design:** A cross-sectional study design was used to assess and identify health and nutrition emergency needs in the next six upcoming months.

**Study Area:** we conducted the assessment in South Wollo and Oromia zones of Amhara Region. From all the two zones a nine districts were selected to be visited during the assessment. The zones and districts were selected based on their natural, manmade disasters and diseases trends.

**Assessment Team:** The assessment team was composed of experts from federal DRMFSS, Amhara region DRMFSS, Amhara regional Health Bureau, WHO and National meteorology agency, world food program, Concern World Wide, Goal Ethiopia, Federal ministry of Education

and Federal ministry of Mine, Water and Energy. The half a day training was given for all assessment teams at Amhara regional DRMFSS before deployed to zones. The team was classified to food and nonfood section based on their working organization and collect data from respective sectors.

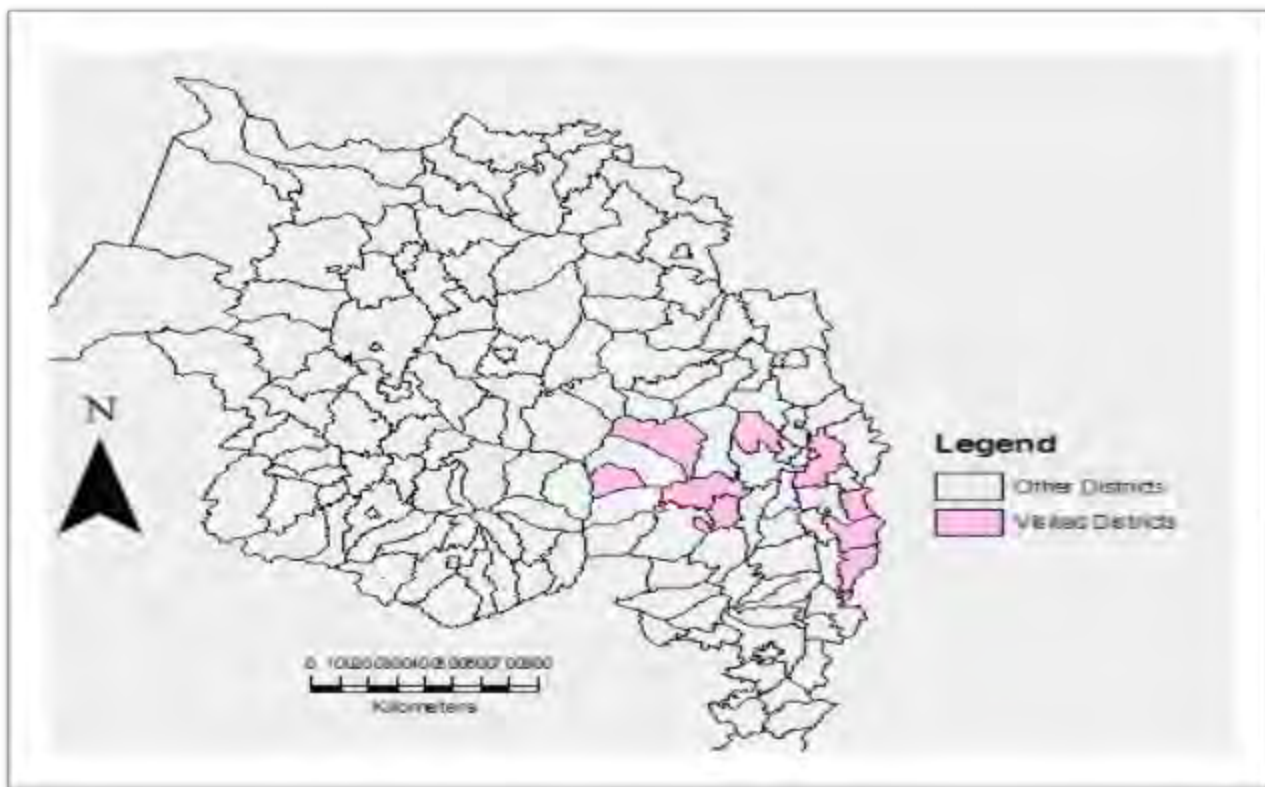


Figure 31 : Map of S.Wollo and Oromia Zone, Amhara Region, 2016

**Selection of Assessment area:** Hot spot districts were identified by respective regional and zonal disaster prevention and risk management and health department offices. During the selection of districts to be addressed by assessment the regional health bureaus and zonal health departments take into consideration both natural disasters and diseases trends such as drought, shortage of normal rain, ongoing diseases outbreaks, floods, landslides, conflict etc

**Assessment Tools:** Semi-structured questioners were used for data collection. Two different questioners were used to collect health and nutrition related data at district and zonal levels. The questioners addresses socio-demographic profile, health profile, status of epidemic prevention and control multi sectorial coordination committee at all levels and go through asking ongoing epidemic situation and check availability of emergency drug at zonal and district levels.

**Source of Data:** Both primary and secondary data were collected from zonal health departments and district health offices. Head of zonal health office and district health offices, pharmacist, and public health emergency management officers, nutrition and EPI officers were interviewed.

## **Result**

### **Regional Level**

#### **Health Profile**

#### **Coordination and Management Systems**

There are six PHEM officers at regional level and PHEM report regularly on the scheduled date. All zones and districts in the region have PHEM officers. The region has monthly health and nutrition emergency forum where all relevant Govt, NGOs and UN agencies are represented.

**The region anticipated epidemics** such as AWD, Malaria, Measles, Meningitis, Scabies and Malnutrition.

#### **Public Health Emergency Management**

There is public health and nutrition emergency preparedness and response plan but the plan is not budgeted. It was reported that only one staff trained on PHEM basic level training. Other, no PHEM staff was trained on emergency nutrition management at all level.

#### **Disease outbreak**

There were AWD, Scabies and Meningitis outbreaks in the last 3 months. The finding indicated that a total of 4639 AWD cases and 35 deaths (CFR= 0.8%); 8009 scabies cases and 35 meningitis cases and 2 deaths (5.7%) were reported since August 2016. Ongoing outbreak of AWD and Scabies was reported.

#### **Drugs and Medical supplies**

Table 31 : Emergency Drugs and Medical Supplies required, Amhara Region, 2016

Description	Specific items	Unit	Required	Available	Gap
<b>Vaccines</b>	Meningitis vaccine	Dose	1,145,217	0	1,145,217
<b>Drugs</b>	Coartem	Dose	1,241,321	2000	1,239,321
	Artesunate (rectal)	Dose	9775	0	9775
	Artesunate (Inj)	Vial	8880	200	8680
	Artemether IM	Vial	570	0	570
	Quinine (PO)	Dose	106350	0	106350
	Quinine (IV)	Vial	8200	0	8200
	Chloroquine 150mg of 1000 tab	Tin	617	0	617
	Ceftriaxione	Tin	12796	0	12796
	Oily CAF	Vial	6250	0	6250
	Doxycycline 100 mg of 1000 Caps/TIN	Tin	900	16	884
	Ringer lactate	Bag	29900	1585	28315
	ORS	Sacket	362,000	26,500	335,500
	Vit A.	Tin	934552	1476	933076
	F100	Carton	1063	49	1014
	F75	Carton	1035	54	981
	<b>Nutrition supplies</b>	RUTF	Carton	21582	2466
Resomal		Carton	326	0	326
<b>Laboratory supplies</b>	RDT (Malaria) 25 test	PK	687520	3040	684480
	Pastorex	Each	250	0	250
	LP set	Each	263	0	263
	TI bottle	Each	322	0	322
<b>Kits</b>	CTC Kit (AWD)	Kit	60	2	58

<b>Medical supplies</b>	Gloves,	Each	118130	0	118130
	Syringe	Each	98380	0	98380
	PPE	Each	461	0	461

### **Risk factors for epidemics to occur**

**Malaria:** Regional PHEM reported a total of 2168 malarious kebeles in the region where 15851241 risk peoples are living. Most parts of the region are malaria endemic due to presence of breeding sites, interrupted or potentially interrupted rivers, and unprotected irrigation in the area. LLINs and IRS coverage in the year 2016 was 98%.

**Meningitis:** Meningitis epidemic was reported from Borena district of South Wollo zone. Vaccination was conducted in Nov.2015 and the coverage was 98% (5,153,798 took vaccination). So the risk of meningitis epidemic is less likely.

**AWD:** There is ongoing AWD outbreak some areas of the region starting from July2016. In the region, the latrine, utilization and safe water coverage in 2015/2016 was 77%, 96% and 64% respectively. The current history of AWD in the region, low safe water and latrine coverage may trigger epidemics.

**Measles:** In the region there was no measles outbreak in the last 3 months. Measles coverage in 2015/2016 was 90% and 584340 children were vaccinated. The region conducted SIA in Nov.2015 for under-five children and a total of 1159110 were vaccinated. The coverage was 99%.

### **Nutrition**

The current malnutrition situation is attributed to the impact of the El Niño weather conditions. Most Meher and Belg producing areas of the region were affected due to El Niño. The effect results negative impacts on agricultural products, house hold food security and potable water. Despite ongoing efforts to tackle the consequences of the drought situation and by this year there is a better agricultural products, the findings have shown that malnutrition is still high in the assessed zones and districts.

ARB has 55 hospitals, 836 HCs, 3336 HPs from these health facilities there are 321 SCs and 3,269 OTP sites. 610 HWs working on these health facilities were trained on SAM management and all HEWs in the region were trained on SAM management on IRT. Currently nutrition situation in the

region is unstable. Of the total 1,133,459 under five children screened in October 2016, 5,064 and 86,906 were SAM and MAM respectively. The GAM was 8.1%. As to pregnant and lactating women, of the total 217,584 screened, 63,258(29.1%) of them reported MAM by the same month October.

Regional SAM and MAM trend is still unacceptably high but it has not shown increment from the previous six months comparing to the same time period in 2015. Mass screening conducted in May 2016 brought more number of SAM and MAM cases comparing to the recent months.

Table 32 : MAM and SAM cases by the previous six months, Amhara Region, 2016

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no odema and MUAC <11 cm			# of children with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children	
				#SAM						#MAM
				MUAC <11 cm	odema	Total				
May	<b>1,372,776</b>	<b>1,205,232</b>	88	4656	15	4671	101,724	8.8	0.39	
Jun	1,372,776	1,199,366	87	4757	30	4787	97,775	8.15	0.40	
Jul	1,173,765	889,073	76	3091	54	3145	64,322	7.6	0.35	
Aug	1,372,776	1,079,061	79	3740	31	3771	85,551	8.3	0.35	
Sep	1,372,776	1,154,818	84	4348	43	4391	86,999	7.9	0.38	
Oct	1,364,852	1,133,459	83	5052	12	5064	86906	8.1	0.45	

Table 33 : Screening performance for Pregnant and lactating Women (May-Oct2016) in Amhara Region, 2016

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	% Proxy GAM for PLW

May	354,026	265,999	75.1	67,868	25.5
Jun	354,026	263,253	74.4	68,760	26.1
Jul	301,026	174,012	57.8	61,665	35.4
Aug	354,026	208,466	58.9	56,065	26.9
Sep	354,026	245,429	69.3	57,663	23.5

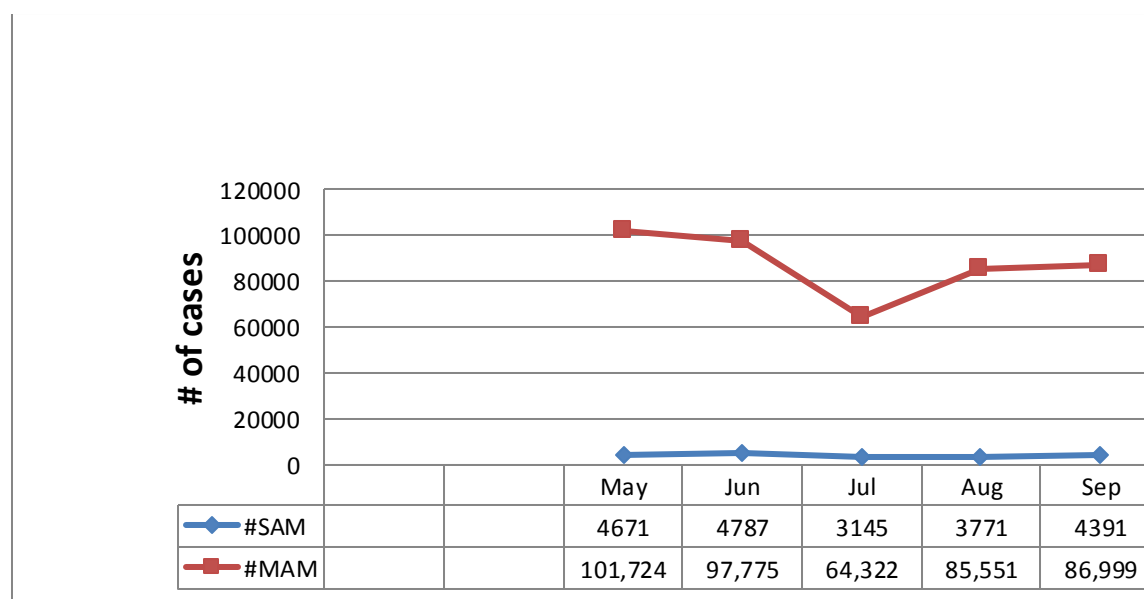


Figure 32 : Comparison of SAM and MAM cases (May-Oct2016) in Amhara Region, 2016

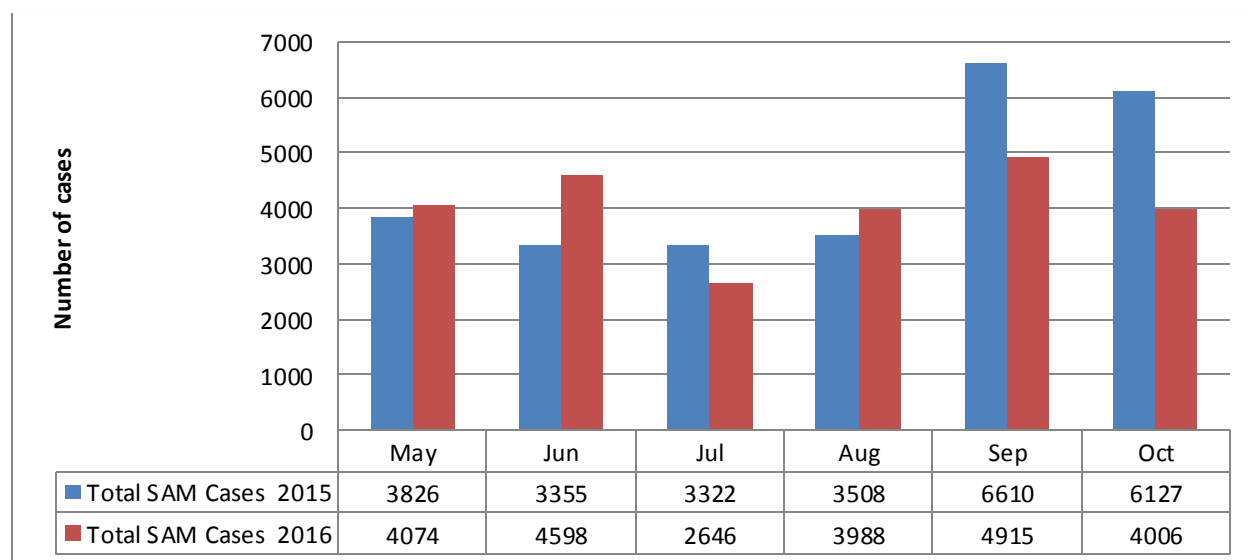


Figure 33: Comparison of total SAM admission cases (May-Oct2016) in Amhara Region, 2016

Moreover, malnutrition is found to be a series problem in assessed zones. Waghemira, N/Gondar, S/Gondar, N/Wollo, S/Wollo, N/Shewa, E/Gojjam and Oromia zones reported high GAM for both screened groups. Monthly report of TFP admission was indicated that cases are unacceptably high almost in all the assessed districts and zones in both 2015 and 2016.

### **Nutrition supplies**

A total of 3269 OTPs and 321 SCs are providing service for malnourished cases in the region. By the 1<sup>st</sup> quarter of 2009 EFY 195 CTN F-100, 168 CTN F-75, 12254 CTN Plump nut, 13616 bottle Amoxicillin, 27 CTN Resomal and 682 tin Mebendazole supplies were distributed to treat the malnutrition. Findings from the RHB have shown that almost all OTPs and SCs are providing TFP and the reporting rate ranges from 80% on July to 95% on May.

### **Zonal level**



### Briefing (S.Wollo zone)



### Debriefing (Oromia Zone)

Figure 34: Photo taken at the time of briefing and debriefing from Oromia and South Wollo Zone, Amhara Region, 2016

Health and nutrition part of the Maher Assessment 2016 was conducted in South Wollo and Oromo zones of Amhara region.

#### **Coordination**

Multi-sectorial coordination forum is established in all assessed zones and most of were active.

#### **Anticipated epidemics**

Water borne diseases (AWD and dysentery), malaria, measles, meningitis and malnutrition are the anticipated epidemics South Wollo & Oromia also reported risk of drought cold (wurch) in the coming months.

#### **Public Health emergency management**

In the assessed zones, there is public health emergency preparedness and response plan with allocated budget. Example in Oromia zone 556000ETB from Gov't. and 251354from NGO's, With respect to emergency drugs and supplies, health sectors have got directly from PFSA for

routine health activities. They can use those supplies for emergency. There are 5 staffs who took PHEM basic level training 4 from S.Wollo and 01 from Oromia zones.

### **Outbreak situation**

There was an outbreak of AWD (134 cases and 5 deaths) Artuma fursi, Jille Tumuga and M/Saint, Scabies cases (1820 cases) in Legehida and other un visited districts, Meningitis (40 cases and 2 deaths) in Borena and measles (20 cases ) in Legambo, Legehida , Jille Tumuga and Mekidela in the last three months. Currently there is Scabies ongoing outbreak in the assessed districts of one zone, South Wollo.

### **Drugs and Medical Supplies**

#### **Risk factors for Epidemics to occur**

Both of the two are malaria endemics zones due to presence of breeding interrupted or potentially interrupting rivers and unprotected irrigation in the area.

**Malaria:** When we assessed LLIN coverage of South Wollo and Oromia 2015/16 were both 100%.

Totally South Wollo have 362 kebeles which are malarias and 1481679(50.2%) population at risk of malaria in the visited zones.

**Meningitis:** There were epidemics in one district of S.Wollo called Borena and vaccination was conducted in 2015.

**AWD:** There were epidemics in the two zones specifically Jille Tumuga and Artumafursi from Oromia and M/Saint from S.Wollo Zones. When we see latrine coverage of the two zones Oromia is very low (66%).

**Measles:** There is no ongoing outbreak of measles. The vaccination coverage less than one year of the two zones in 2015/16 was 100% and 103% respectively.

**Nutrition:** The number of SC and OTP in the two zones are 82 and 719 respectively.

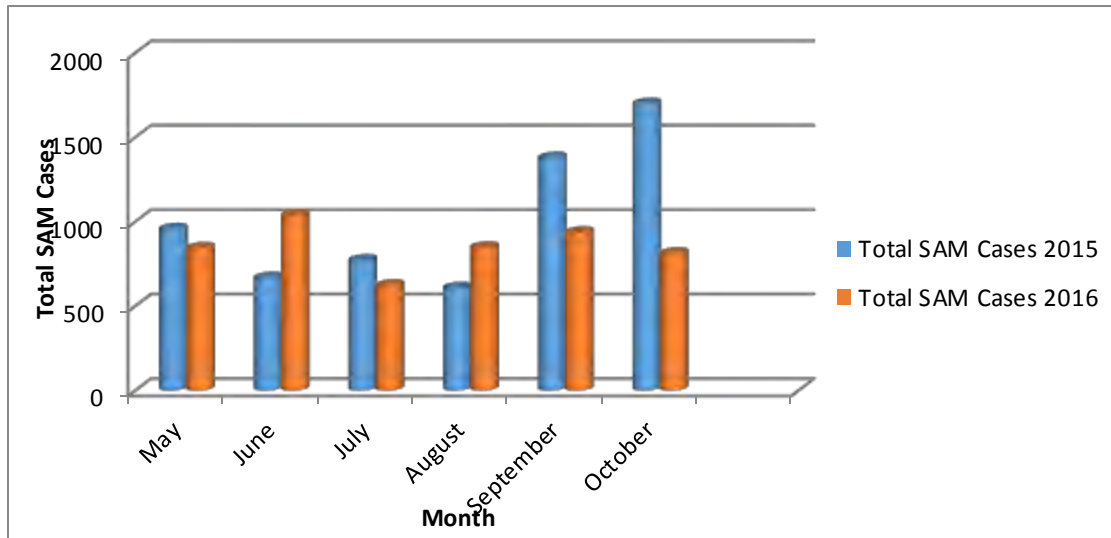


Figure 35: Comparison of Children SAM Cases b/n 2015/2016 (May-Oct) South Wollo Zone, Amhara Region, 2016

#### Availability of therapeutic supplies

No shortage of therapeutic supplies for the next 3 months in Oromia zone but no document available about it from S.Wollo zone.

#### Screening

When we compared Proxy GAM for <5yrs of the two zones in Oromia June (8.6%) was registered the highest value and the lowest was also July in Oromo zone (5.3%) as the table shown below.

Table 34 : Screening performance for Children in the two zones (May-Oct 2016), Amhara Region, 2016

Month	Target Children 6-59months		No.of Screened children		Coverage		No.of Children with no oedema and MUAC<11cm		MUACb/n 11-11.9cm		GAM for <5yrs	
	Oromia	S.Wollo	Oromia	S.Wollo	Oromia	S.Wollo	No.of SAM		MAM			
							Total	Total	Total			
May	63071	374625	57793	296836	91.60%	92%	279	1064	3465	20674	6.5	7.3
Jun	67367	374625	64335	348384	95.50%	93%	332	1180	5171	21872	8.6	6.6

July	67367	382687	42491	319698	63.10%	84%	227	1013	2140	17579	5.6	5.8
Aug	68403	382687	43079	374223	63%	91%	149	906	2142	19828	5.3	5.5
Sept	68510	382687	55452	343495	80.90%	90%	360	1005	3200	21111	6.4	6.4
Oct	68510	382687	55743	330128	81%	86%	817	136	2635	17811	6.2	5.4

When we see screening of PLW from the two zones the Highest performance was performed May (84%) in S.Wollo and the lowest was July (37%) in Oromo as the table shows (table4).

Table 35 : Screening performance for Children in the two zones (May-Oct 2016), Amara Region, 2016.

Month	Target PLW		# of screened PLW		Screening Coverage (%)		# of PLW MUAC below 23.0 cm*		% Proxy GAM for PLW	
	Oromia	S.Wollo	Oromia	S.Wollo	Oromia	S.Wollo	Oromia	S.Wollo	Oromia	S.Wollo
May	16502	98019	12046	82241	73%	84%	2532	226	21	0.27
June	17626	98019	13959	80690	79%	82%	2864	210	21	0.26
July	23179	100128	8554	71306	37%	71%	1666	429	19	0.60
August	17897	100128	9302	77382	52%	77%	2323	198	25	0.26
Sept	17925	100128	12844	79861	72%	80%	3189	69	25	0.09
Oct	17925	100128	12844	75061	72%	78%	3189	141	25	0.19

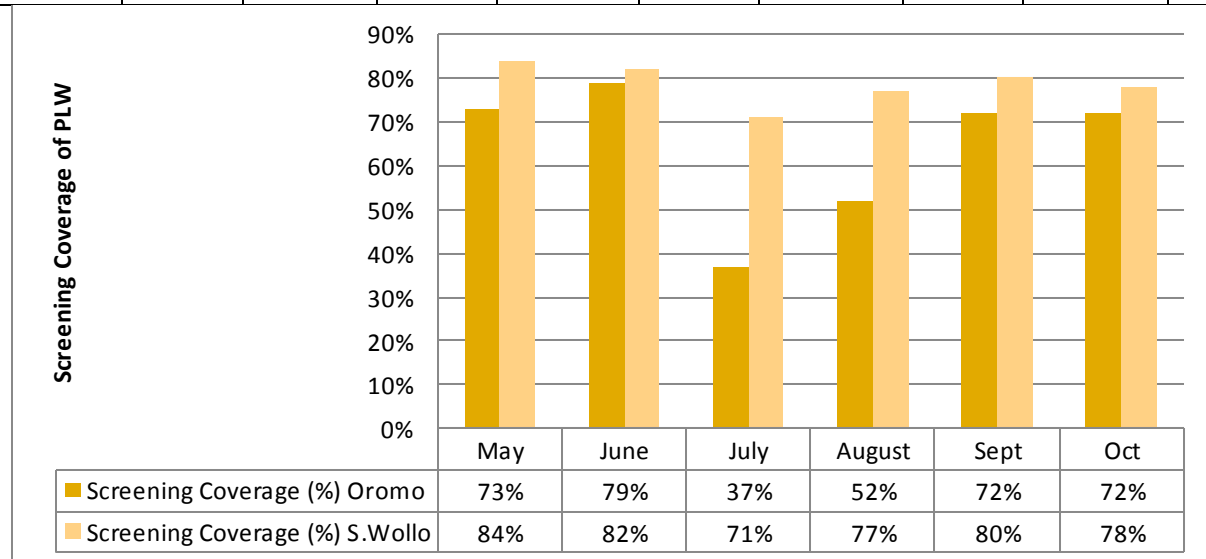


Figure 36: the comparison b/n screening Coverage of PLW of the two zones, Amhara Region, 2016

## District Level

### Socio-demographic profile

During Maher human health and nutrition emergency needs assessment three districts from Oromia and six from S.Wollo were visited. Kutaber, Legehida, Mekidela, M/Saint, Legambo and Argoba especial districts were visited from South Wollo and Jille Tumuga, Dewaherewa and Artumafursi were visited from Oromia zones. Respective zonal health departments and disaster prevention offices based on diseases trend and natural disasters selected the districts. A total of 9 districts were included in the assessment. Total population of 907957(25.9%) was covered by the assessment.

Table 36 : Assessed zones and districts in Maher assessment, Amhara Region, 2016

Zone s	Assessed Districts	Zonal populati on	Population of Assessed districts					
			M	F	T	Childr en<5 yrs	Reproduct ive age group(15-49)	Pregna nt wome n
Orom ia	Jille Tumuga ,Dewaherewa and Artumafursi	558062	116977	121169	238146(42.6 %)	35802	70632	8020
	Kutaber, Legehida,Mekidela,M/Sa int,Legambo and Argoba	2951551	336058	333753	669811(22.7 %)	94685	142594	18242

### Health profile

#### Coordination

All districts have PHEM officers, RRT, but multi sectorial coordination forum didn't meet regularly. Most of districts and health facilities report PHEM report as scheduled date.

#### Public Health Emergency Management

Emergency response fund is funded in two ways by Gon't and NGOs. As the figure told us much amount of budget was allocated in Legambo district,S.Wollo zone for PHEM activities.

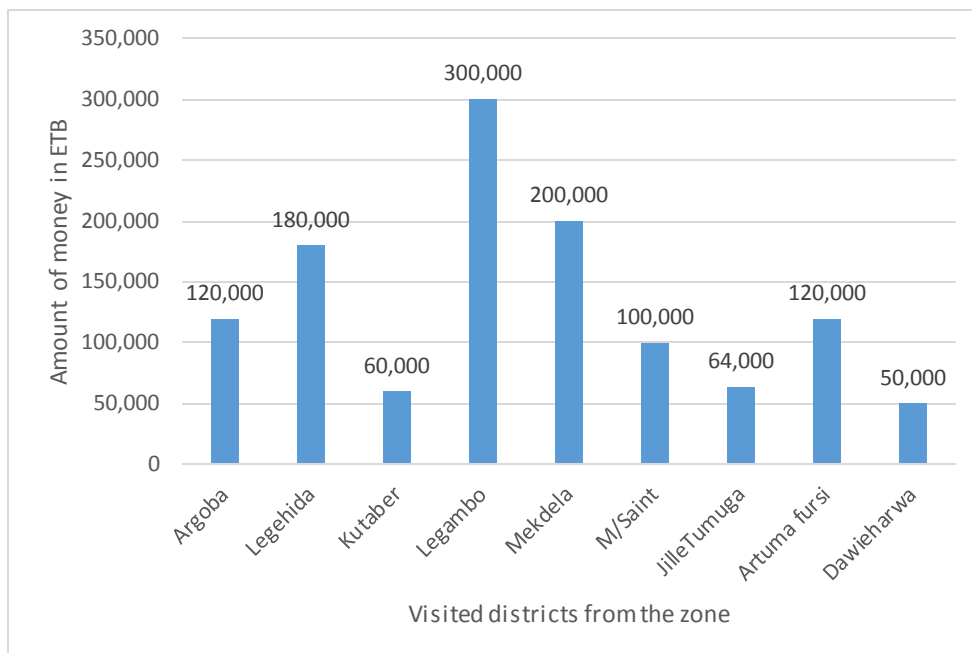


Figure 37: Emergency response fund Budgeted in each district (Gov't), Oromia and South Wollo zones, Amhara Region, 2016

### **Morbidity and Mortality Data**

Most districts of top cases below 5 and above 5 age groups were AFI and non-bloody diarrhea respectively.

### **Disease outbreaks**

Scabies cases from visited district Legehida (278), AWD 108 cases and 1 deaths from Aug to Oct2016 from visited districts Jille Tumuga (74), Artuma fursi (23) and M/Saint (11).

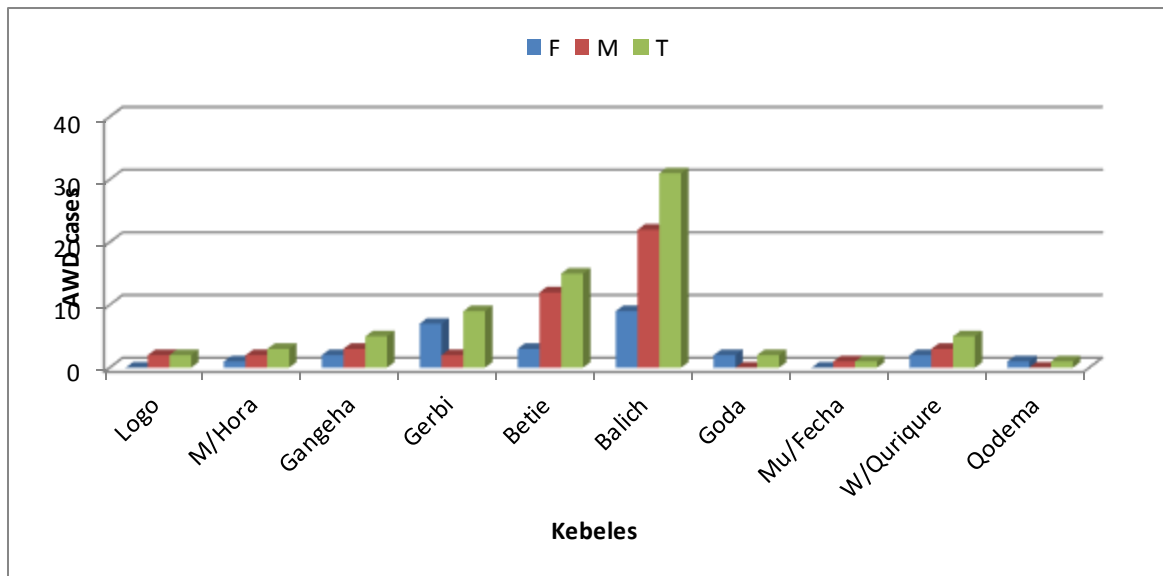


Figure 38: Distribution of AWD cases with sex by kebele in Jille Tumuga district, Oromia zone Amhara Region, 2016

\*From May-Oct2016 measles cases:

- ❖ Legambo=13,
- ❖ Legehida=2
- ❖ Mekidela=2

\* One AFP case from Legehida district

### Emergency drugs and Supplies

There are shortages of;

ORS

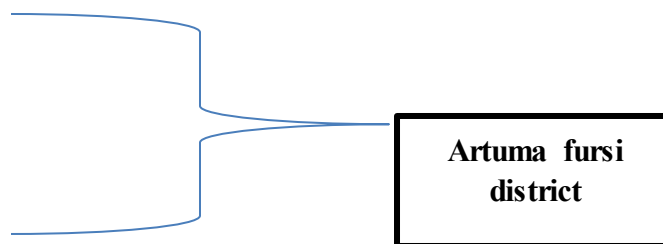
Amoxil susp(measles)

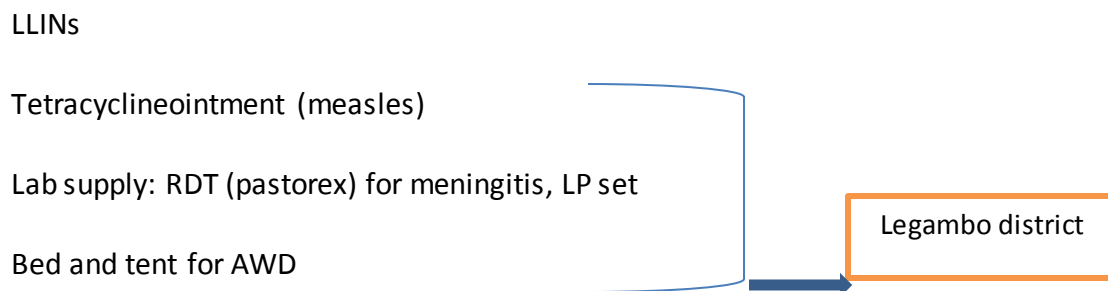
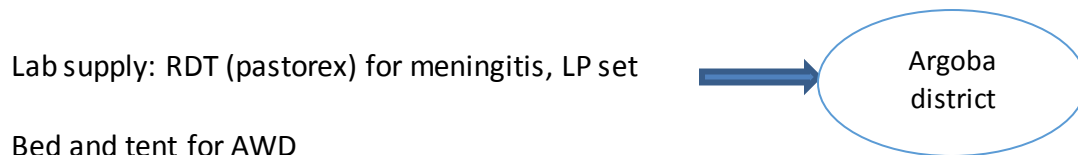
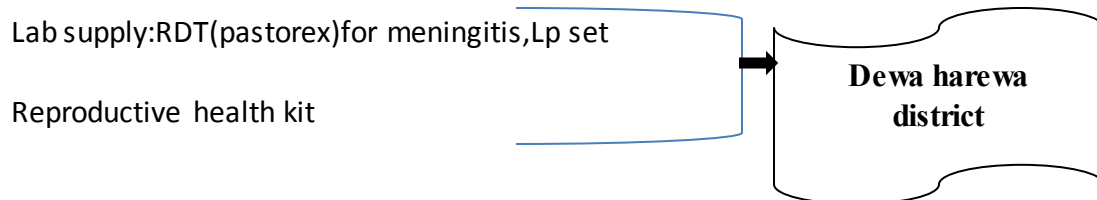
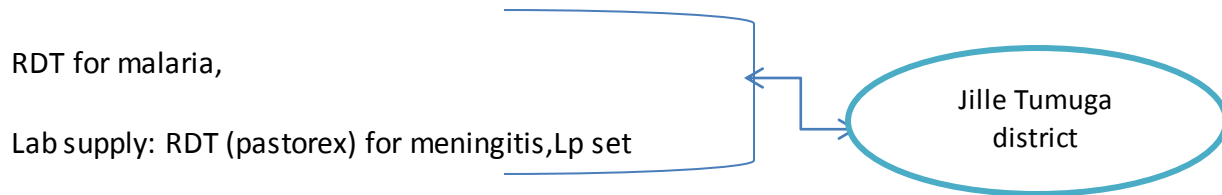
TTC

VitA(measles)

Lab supply:RDT(pastorex)for meningitis,Lp set

Coartum





**Risk factors for epidemic to occur**

**Malaria:** Most of kebeles in the two zones are malarious,

Presence of breeding sites and Interrupted or potentially interrupting rivers.

Table 37 : LLIN Coverage of visited districts S.Wollo and Oromia Zone, Amhara Region, 2016

Serial NO.	District	LLIN Coverage	Distribution Year
------------	----------	---------------	-------------------

1	Argoba	91.4%	2014/15
2	Legehida	100%	2015/16
3	Kutaber	25750(in number)	*-
4	Legambo	98%	*-
5	Mekidela	100%	*-
6	M/Saint	100%	*-
7	Dawie Harwa	100%	*
8	Jille Tumuga	*	*
9	Artuma fursi	100%	2014/15

\* Refers to no document was avail during visit.

**AWD:** There was epidemic from Aug-Oct 2016 in Jille Tumuga, Artuma fursi and M/Saint from visited districts. The latrine coverage of most visited districts were above 75%; Jille Tumuga (46%), Artuma fursi (87%), Argoba (94%), Legehida (98%), Kutaber (86%) and M/Saint (95%) but no had document in Dewie harwa district. The main problem was safe water coverage of the health centers almost 50% of visited HC without water access.

## Nutrition

### SAM management

There were 44 SC and 193 OTP sites in the visited districts.

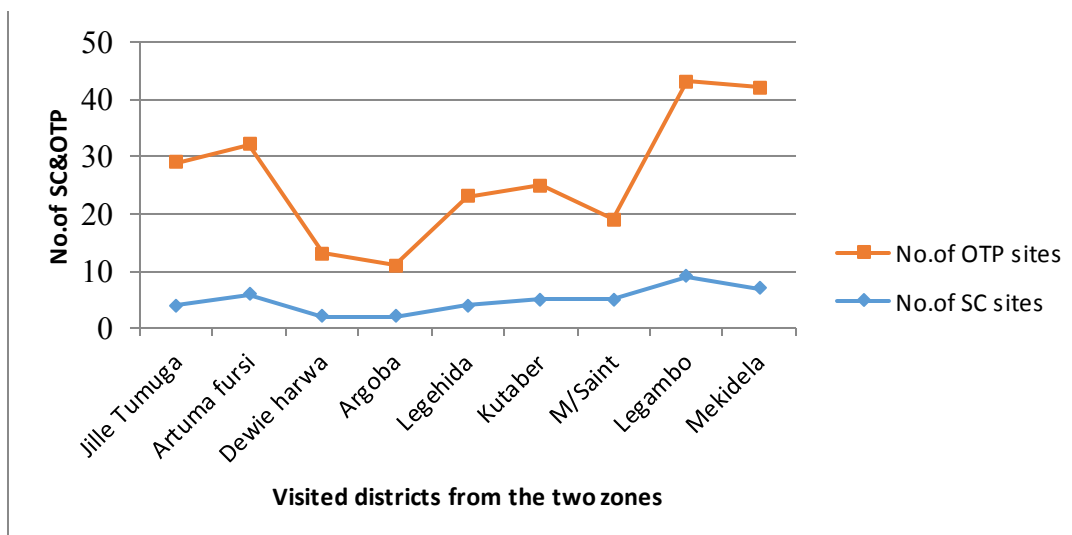


Figure 39: SC and OTP sites from visited districts S.Wollo and Oromia zone, Amhara Region, 2016

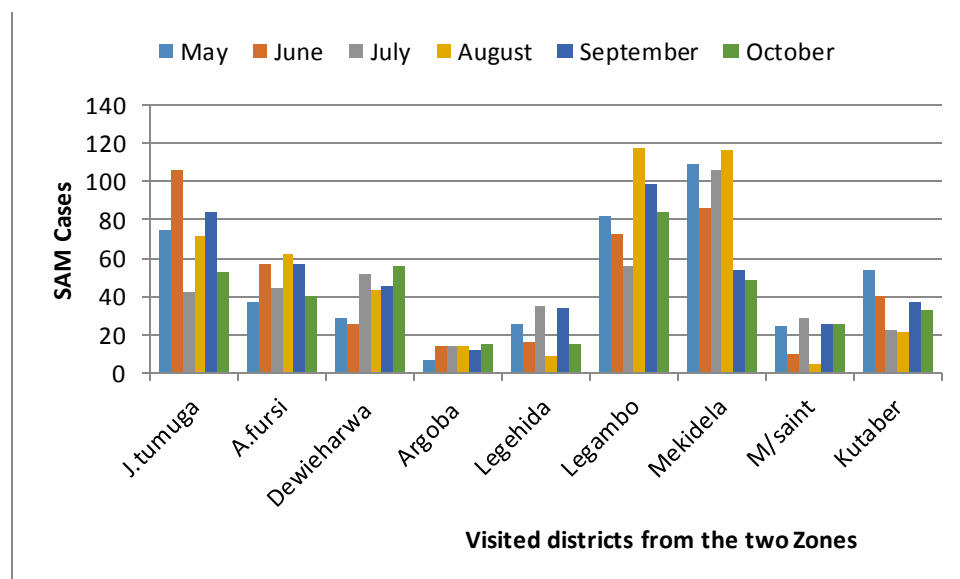


Figure 40: Comparison of SAM cases by district (May-Oct) S.Wollo and Oromia Zone, Amhara Region, 2016

**Screening:** All of the visited district screening modality was CHD besides Routine. When we see the screening coverage of children the highest was May in Argoba district (99%) but the least was Oct in Jille Tumuga (74%).

Table 38 : Screening of PLW with MUAC below 23cm by district From May-Sept 2016, Oromia and S.Wollo Zone, Amhara Region, 2016

Month	Legambo	Artuma fursi	Mekidela	Kutaber	Jille Tumuga	Dewie harwa	Legehida	M/Saint	Argoba
May	1073	692	1429	521	687	241	452	253	695
June	1479	893	1510	721	58	241	530	268	538
July	1366	550	205	502	441	117	684	480	736
August	1429	816	91	403	441	238	632	-	665
Sept	1620	726	815	539	869	192	784	-	784

Oct	1976	638	819	509	840	181	802	99	693
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### **Challenges/ Gaps**

- ❖ Inactive multiagency coordination forum for health at zonal and district levels.
- ❖ High turnover of trained PHEM and nutrition officers and health workers.
- ❖ Difficulty to get the right person & complete the appropriate data during assessment.
- ❖ Shortage of emergency drugs and medical supplies in some districts.
- ❖ Lack of road access, water sources, adequate budget for EPRP, and shortage of food for pregnant mothers.
- ❖ Poor data documentation, under reporting and low quality of available data.
- ❖ Actual population number at the ground disagrees with number given from central statistics agency which affected projecting the coverage and performance of health and nutrition service delivery.
- ❖ There was shortage of time to collect data from targeted ZHDs, WhOs, HCs and HPs and difficult to get the right person & complete data during assessment.
- ❖ Caretakers and community attitude to remain enrolled in the SC program and sharing RUTF among household members might have contributed for less performance of SAM managements.

### **Recommendations**

- ❖ Strengthen surveillance and allocate adequate emergency fund at all levels.
- ❖ Strengthen pre-positioning of emergency drugs and supplies
- ❖ Strengthen integration between sectors (especially health and water sectors to properly manage current water shortage and safety).
- ❖ Capacitate health workers to identify and manage emergencies.
- ❖ Increase screening coverage through routine program in all areas.
- ❖ Work on linkage of PLW and Under 5 aged children MAM cases to SFP to minimize/avoid the possibility of MAM cases to be SAM in the next screening.
- ❖ Provide support for care takers at SC to win mothers willingness to stay at SCs.
- ❖ Work of decentralization of SCs to provide access to sever cases from far to reach areas.

- ❖ Enhance the supply chain management or logistics need to be contacted soon and get them ready as resource funding and mobilization may take its own time.
- ❖ Strengthening nutritional programs, or work on capacity building of staffs and health system service deliveries,
- ❖ Reviewing data collection checklist specially avoiding redundant questions and improving the template to enable precession as well as involving regions in the development of check lists
- ❖ Increasing routine nutrition screening coverage so that identifying malnourished children and vitamin A and de-worming coverage in all institutes will improve.
- ❖ Strengthening SBCC activities to raise awareness on appropriate utilization of therapeutic foods to decrease defaulter and readmission rate

## Chapter VIII - Protocol/Proposal for Epidemiologic Research Project

### **8.1 Assessment of Knowledge, Attitude and Practice of Bed Net use to Prevent and control Malaria, in Basoliben and D/Elias districts of East Gojjam Zone, Amhara Region, Ethiopia, 2017**

Addis Ababa University  
 Faculty of Medicine  
 School Of Public Health  
 Master of Public Health  
 Research Project

This Proposal Submitted to the School of Public Health Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Masters in Field Epidemiology.

Name of Investigator	Abere Muchie(BSc)
Name of advisors	1.Dr.Naod Firdu(MD,MPH) 2.Mrs. Mastewal Worku (MPH in FEP)

Full title of the project	Assessment of Knowledge, Attitude and Practice of Bed Net use towards Prevent and control Malaria, in Basoliben and D/Elias districts of East Gojjam Zone, Amhara Region, Ethiopia
Duration of project	Five Months
Study area	Basoliben & D/Elias districts of East Gojjam zone ,Amhara Region,Ethiopia
Total cost of the project	63540.75 ETB
Address of investigator	Call phone-+251-0918714212 Email: aberemuchie@gmail.com

### Summary

**Background:** Approximately 52 million people (68%) live in malaria risk areas in Ethiopia, primarily at altitudes below 2,000 meters and nearly 4-5 million cases of malaria are reported annually in Ethiopia and the disease is prevalent in 75% of the country, putting over 50 million people at risk. Malaria accounts for seven per cent of outpatient visits and represents the largest single cause of morbidity.

Long-lasting insecticidal nets (LLIN) are the main preventive tool against malaria, providing a reduction in malaria episodes of 50%. The World Health Organization (WHO) recommends implementing universal coverage of LLIN for all populations at risk, and since 2004, over 800 million nets have been delivered to sub-Saharan Africa.

**Methods:** We will conduct a community based cross-sectional study design in Basoliben and Debre Elias districts. Study subjects will be selected by simple random sampling using HH leader as sample frame. The total calculated sample size will be 422, we will collect data using semi-structured questionnaire. Data will be entered to the computer using Epi info Version 7 and analyzed in SPSS 20.0 version statistical software. We will be used bivariate and multivariate logistic regression analysis to explore factors associated with possession of LLINs to ensure the data quality.

**Work plan:** The data collection and analysis procedure will take place from July to October 30/2017. The total budget required to run the research is **63540.75 ETB**.

**Dissemination of Results:** The research findings will be submitted as report to Addis Ababa university school of public health (SPH) and disseminated to Basoliben and Debre Elias districts, East Gojjam zonal health Department, Regional Health Bureau, Federal Ministry of Health and other fund raising bodies. Therefore they can use the results for planning and implementation of intervention programs. Any attempt will also be made to present the paper on annual scientific meeting and conferences and it will be publish on reputable research journals.

**Key Words:** Malaria, Knowledge, Attitude, Practice, Insecticide  
Treated net utilization.

## **Introduction**

Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected female Anopheles mosquitoes, called "malaria vectors." There are 5 parasite species that cause malaria in humans, and 2 of these species – *P. falciparum* and *P. vivax* – pose the greatest threat (1). The parasites that cause malarial disease are protozoan organisms that also infect many animal species including primates, lizards and birds. *Falciparum* is the most virulent parasite, and is responsible for the majority of malaria related mortality.

It is found in all malaria endemic regions of the world and is the most common human malaria parasite in Africa. *P.vivax* is rarely found in Africa, but is the most common species outside Africa. The malaria parasite has a complex lifecycle involving both asexual and sexual stages with obligatory phases in both humans and the female Anopheles mosquito (2). The first symptoms – fever, headache, chills and vomiting – may be mild and difficult to recognize as malaria. If not treated within 24 hours, *P. falciparum* malaria can progress to severe illness, often leading to death. Children with severe malaria frequently develop one or more of the following symptoms: severe anaemia, respiratory distress in relation to metabolic acidosis, or cerebral malaria. In adults, multi-organ involvement is also frequent. In malaria endemic areas, people may develop partial immunity, allowing asymptomatic infections to occur (1). There are three principal ways in which malaria can contribute to death in young children. First, an overwhelming acute infection, Which frequently presents as seizures or coma (cerebral malaria), may kill a child directly and quickly.

Second, repeated malaria infections contribute to the development of severe anemia, which substantially increases the risk of death. Third, low birth weight frequently the consequence of malaria infection in pregnant women is the major risk factor for death in the first month of life (3).

Approximately 52 million people (68%) live in malaria risk areas in Ethiopia, primarily at altitudes below 2,000 meters. 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. Historically, there have been an estimated 10 million clinical malaria cases annually. On average, 60%-70% of malaria cases have been due to *P. falciparum*, with the remainder caused by *P. vivax*. *Anopheles arabiensis* is the main malaria vector (4).

### **Statement of the problem**

Malaria transmission occurs in all six WHO regions. Globally, an estimated 3.3 billion people are at risk of being infected with malaria and developing disease, and 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year). According to the latest estimates, 198 million cases of malaria occurred globally in 2013 (uncertainty range 124–283 million) and the disease led to 584 000 deaths (uncertainty range 367 000–755000). 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(5). According to World Health Organization estimates, 300–500 million (WHO1) clinical malaria cases are reported every year. Of this, over 100 million people develop severe disease while 100 million people and more die from it. About 80% of the cases and more than 95% of the deaths occur in tropical Africa (6). Half of the world's population is at risk for malaria infection (3.4 billion people). In 2012, there were an estimated 219 million malaria infections, and among those individuals infected, approximately 660,000 deaths occurred. Ninety-one percent of malaria deaths worldwide occur in Africa (7). In 2015, 88% of global cases and 90% of global deaths occurred in the African Region. In 2013, there were 528 000 deaths from malaria and about 78% of these were in children under 5 years of age (8).

Ethiopia is thought to experience some 10 million cases per year, the fourth highest case number in sub-Saharan Africa. According to an Ethiopian report, clinical malaria accounts for 10 - 40% of all outpatient consultations, 13 - 26% of inpatient admissions at various health facilities, and is responsible for 15-17% of case fatalities in health facilities (9). Approximately 4-5 million cases of malaria are reported annually in Ethiopia and the disease is prevalent in 75 per cent of the

country, putting over 50 million people at risk. Malaria accounts for seven percent of outpatient visits and represents the largest single cause of morbidity. It is estimated that only 20 percent of children less than five years of age that contract malaria are treated at existing health facilities (10). The FMOH reported a total of 3,384,589 malaria cases from July 2011-June 2012, with 1,793,832 (53.0%) of these laboratory confirmed, with 1,061,242 (59.2%) *P. falciparum* and 732,590 (40.8%) *P. vivax*. Ethiopia reported 936 malaria deaths in 2011, according to the 2012 World Malaria Report, there were 2,475,337 laboratory confirmed *P. falciparum* cases, and 1,174,559 *P. vivax* cases reported. (11).

Amhara Region is the second-most populous region in Ethiopia and accounts for 31 % of the national malaria burden. Malaria parasite prevalence in this region was estimated at 2 % in 2011 and malaria accounted for 22 % of outpatient visits, 24 % of hospital admissions, and 10 % of health facility deaths in 2012. While the proportion of outpatient visits, hospital admissions and health facility deaths attributed to malaria has fallen to 7, 2 and 1 %, respectively, since 2012, malaria remains an important source of morbidity and mortality in the region (12). The prevalence of malaria in 2011/2012 was 4.3% and the prevalence rate among sex was male (4.8%) greater than female (3.4%) (13).

### **Research questions**

This study will try to assess knowledge, attitude and practice of communities on ITNs use to prevent malaria in the two study districts in East Gojjam Zone, Amhara Region.

### **Literature review**

Long-lasting insecticidal nets are the main preventive tool against malaria, providing a reduction in malaria episodes of 50%. The World Health Organization recommends implementing universal coverage of LLIN for all populations at risk, and since 2004, over 800 million nets have been delivered to sub-Saharan Africa (14). In wolyta Seven hundred and forty one (96.2 %) of the respondents believed that sleeping under LLINs prevent malaria. Knowledge of the respondents on the role of LLINs in preventing malaria was affected by kebeles ( $\chi^2 = 35.832$ ;  $P < 0.001$ ). The majority of the respondents reported LLINs to prevent malaria by killing or acting as physical barriers against mosquitoes. Most of the respondents with this understanding have attended at least religious school ( $\chi^2 = 34.824$ ;  $P = 0.004$ ). Moreover, 21.2 and 14.2 % of the respondents claimed children < 5 years old and pregnant women as priority groups to sleep under LLINs. However,

29.9 % of the respondents reported that there was no priority group to sleep under LLINs in their households. On the other hand, 26.9 % of the respondents were willing to buy LLINs if provided with an affordable price. The attitudes of the respondents towards buying LLINs for their households was significantly different between males and females ( $\chi^2 = 26.357$ ;  $P < 0.001$ ) (15).

A study in Adama found household members who had priority to LLIN usage was 65.4% for children under five years, 50% for pregnant women, and 32.9% equally for all household members. Regarding regular and consistence utilization of LLINs less than half (40.9%) of households used always the year, whereas 59.1% used only during high transmission period (16).

According to research done in kersa, Western Ethiopia majority of LLIN owned households had either one or two LLINs irrespective of their household size.

The average LLIN ownership among LLIN owned household was 1.7. Of the total 3137 reported LLINs, 62.4% (1958) LLINs were observed by the data enumerators. Only 64.2% (1258) of the total observed LLINs were in good condition, without holes that could allow finger through it (17).

Another study in Awi showed 13% of visited household nets were damaged by rodent. In this study, about 21% do not use their nets at all while of those who reportedly use their nets, about 56% use their nets irregularly. And also clients were responds on indoor residual sprayed was performed for the last one year in all outbreak affected kebeles (13). According to Ethiopian National MIS 2015 in malarious areas, 44 percent of pregnant women and 45 percent of children fewer than five years of age slept under an LLIN the night before the survey. However, in households owning at least one LLIN, use by children and pregnant women was 70 percent and 74 percent, respectively, highlighting the importance of access to interventions. A trend analysis across the three surveys shows a slight increase in LLIN use among children under five and pregnant women (38 percent and 35 percent, respectively, in 2011 compared with 45 percent and 44 percent in 2015) (18). Based on my System evaluation I have tilted to study on LLIN usage in the two districts in the zone.

### **Justification of Study**

The contribution of KAP studies to malaria prevention and control has not received much attention in the two districts. The study will add to the growing body of knowledge needed for malaria programming for districts and the zonal health department by providing strategic information to

complement Community-based malaria data sources. The survey will provide community data on key malaria indicators including mosquito net ownership and use. In general, KAP surveys can be used to improve the design of community-based malaria control programs, and help identify indicators of programmed effectiveness. In particular, findings of this KAP study will enable district health offices to design more effective BCC campaigns. Districts will be able to design messages that are tailored to the needs of the people in Basoliben and Debre Elias villages.

## **Objectives**

### **General objective**

To assess knowledge, attitude and practice of ITNs use to prevent malaria in the two study districts in East Gojjam Zone, Amhara Region.

### **Specific objectives**

- ❖ To assess the KAP of community members regarding Malaria prevention and practice.
- ❖ To identify key behavioral barriers for use of ITNs and promotion of net culture
- ❖ To recommend strategies for scaling-up malaria communication interventions in two study districts of East Gojjam Zone, Amhara Region.

## **Methods and Materials**

**Study area:** The study area will be in rural malaria endemic community of East Gojjam. East Gojjam is a Zone in the Amhara Region of Ethiopia. East Gojjam is named after the former province of Gojjam. The zone is bordered on the south by the Oromia Region, on the west by West Gojjam, on the north by South Gondar, and on the east by South Wollo; the bend of the Abay River defines the Zone's northern, eastern and southern boundaries. East Gojjam zone has a total population of 2539491 with health coverage of 100% for health centers and 79.94% for health posts in 2015/2016. The zone has 06 hospitals, 102 health centers, 20 medium clinics, 05 NGO`HFs and 406 health posts. Among the zone two rural districts (Basoliben=10691(27.6%) and (Debre Elias=7892(20.34%) were selected based on the highest cases reported comparing with other districts in the zone.

**Study design:** We will employ a community based descriptive cross-sectional study design

**Study period:** We will be conducted during July to October 2017.

**Source population:** All house hold living in Basoliben and Debre Elias districts in East Gojjam Zone

**Study population:** Number of households selected in Basoliben and Debre Elias districts

### **Inclusion and Exclusion Criteria**

#### **Inclusion Criteria**

Any houses hold head or adult member of the household, volunteer to participate in the study and avail at home during data collection period.

#### **Exclusion**

##### **Criteria**

People residing temporarily labor works, like migrant laborers will exclude

#### **Sampling techniques and procedure**

From the total 13 malaria endemic districts in the zone, Basoliben and Debre Elias districts will be selected based on the highest malaria case reported as of 2016 PHEM surveillance report. Using the same scenario three and two kebeles from Basoliben and Debre Elias districts respectively will be selected based on utilization of LLIN. Total household of the districts and kebeles will be obtained from the respective districts and kebeles administrative then systematic random sampling method will be employed to select household to be included in the study. Only one individual (mostly head of household) will participated in the study, if the head not there in the study period the next family member representative or another next household will take in the study.

**Study Subjects:** Those individuals selected to be included under the study

**Sample Size Determination:** The household sample size was calculated using the standard formula for estimating a single proportion, it is calculating considering study done in Adama (16).

$$n = Z^2 P (1-P)/d^2$$

Where

n = Sample size of households.

P = Proportion of households slept under LLIN. No

Previous similar study was carried out in the area and

To get maximum sample size P was taken as 50% (P=0.5).

d = Degree of accuracy required (sampling error) is

5% that is, d = 0.05.

Z = Standard score for 95% confidence level is 1.96.

Additional 10% for non-response rates were taken. Substituting the above values, the calculated sample size for the study was 422 households.

### **Data Collection**

A structured questionnaire will be used to collect data. The data will be collected by 12 data collector and will supervise by 3 supervisors. Training will be given for data collectors and supervisors prior to study period for four days. The data collection tools have two main parts to assess the socio- demographic characteristics of the respondent and issues concerning knowledge, attitude and practice of using bed net to prevent malaria. Pre-test will be conducted in a non-study area to identify and correct the potential problems encountering during data collection and interview.

### **Data management and analysis**

Data will check by investigators for correct completion of questionnaires. The data will enter into Epi info software version 7, Microsoft Excel and exported to SPSS Statistics software version 20. Data cleaning, recoding and restructuring of some variables to make them amenable for analysis will carry out using SPSS Statistics software. Socio-economic and demographic characteristics of study subjects will summarize in a Table and compare on the basis of means of continuous variables such as age, family size and income, using t-test for differences of means. The number of LLINs owned and factors affecting utilization of LLINs Will analyses using binary logistic regression and multinomial logistic regression will use to analyze factors associated with possession of LLINs To ensure the data quality, the data collection questionnaire will pretested; checklists and field guidelines will use. Adequate training will give to data collectors and field supervisors and job supervision will carry out daily by field supervisors.

### **Operational Definitions**

**Knowledge of malaria:** The ability of a person to have correct understanding of malaria in terms of causative agent, mode of transmission, signs and symptoms, treatment and prevention.

**Attitudes towards malaria:** Beliefs on susceptibility, seriousness and threat of malaria.

**Practice of malaria prevention:** Routine activities (HEW asked HHs Early morning visit or make interview like did you sleep under net last night) and actions of individual or group for prevention of malaria. These include the use of insecticide treated mosquito nets, using insecticides to spray and control/clear mosquito breeding places.

**Community:** Refers to a group of people living in a particular area and having shared values, cultural patterns, and social problems.

**Malaria management:** Refers to the whole process of recognition of the causes, symptoms and transmission of malaria and seeking health care for its treatment promptly.

**Malaria control:** is a process that requires eradicating the carrier mosquito or reducing man-vector contact so as to cut in the life –cycle of the parasite.

**Insecticide Treated Nets:** A net or screen dipped in an insecticide for protection against mosquito bite during sleeping.

**High risk groups:** Part of the populations, which are highly vulnerable to the disease malaria and identified as children less than 5 years of age and/or pregnant women.

**Risk factors:** factors such as housing conditions and mosquito breeding sites that may contribute for high risk of malaria.

### **Ethical Consideration**

The study will be conducted after ethical clearance from school of public health (SPH) and Addis Ababa University Medical faculty Institution Review Board. Supporting letter will also be written by SPH to Basoliben and Debre Elias districts, East Gojjam Zonal health Department. Confidentiality of the information will be assured and privacy of the information will also maintain. Additionally, informed consent will be developed in Amharic and we will ask for the interviewees their consent to take part in the study .They will be enrolled in the study if they decide to do so. They have also the right and the freedom to withdraw them from the study and are not obliged to answer all of the questions.

### **Variables**

### Dependent variable:

- ❖ Practice on ITN utilization to prevent malaria

### Independent

#### variables:

- ❖ Age
- ❖ Sex
- ❖ Knowledge and attitude of the community
- ❖ Socio-economic characteristics (e.g. educational status, and income)
- ❖ Environmental factor (living room, place of residence and season of the year)
- ❖ Availability of ITN in the household

### Dissemination of the result

The research findings will be submitted to Addis Ababa University School of public health (SPH) and disseminated to Basoliben and Debre Elias districts, East Gojjam Zonal health Department, Regional Health bureau, Federal Minister of Health and other fund rising bodies. Therefore they can use the results for planning and implementation of intervention programs. Any attempt will also be made to present the paper on annual scientific meeting and conferences and to publish on reputable research journals.

### Expected

#### outcomes

Knowledge, attitude and practice of using bed net to prevent malaria will be clearly identified and documented.

### Work Plan (Project Management)

Table 39 : Work plan for major activities to be conducted during the project.

Sr. No	Activities	February	March	April	June	July	August	September	Octoberr
1	Topic Selection								
2	Proposal writing								
	Submission to advisor								
	Final proposal submission (To advisors and the								

	school: Academic coordinator								
3	Approval								
4	Ethical Clearance								
5	Training to data collectors(HC PHEM Focal)								
6	Data collection								
7	Data entry								
8	Data analysis and interpretation								
9	Report writing								
10	Final Draft writing and submission								
11	Final thesis report								
12	Final thesis defense								

### Budget

Table 40 : Budget breakdown for different costs required to conduct the research

Title	Qualification	Quantity	Rate(ETB)	Days	Total	Remarks
Personnel						
Principal investigator	EFETP Resident	1	290.00	25	1*290*25=72500	
Supervisors	Degree	3	100.00	25	3*100*25=7500	
Data Collectors	BSC/Diploma Nurse	12	100.00	20	12*100*20=24000	
Training for data Supervisors& collectors	BSC/Diploma Nurse	15	210.00	3	15*210*3=9450	
Hall rent for training		1	500	3	3*500=1500	

Tea/Coffee		16	50(2*per day)		16*50=800	
Vehicle rent, fuel		1	1000carRent,500Fuel /day	5	5*1500=7500	
<b>Sub-Total</b>					<b>58000 ETB</b>	
Supplies and reagents						
Pen Lexi		15	5.00		15*5=75	
Dot Pencil		15	1.00		15*1=15	
Eraser		15	0.50		15*0.5=7.5	
Sharper		15	0.5		15*0.5=7.5	
Printing& Duplication		422	1.00		422*5*1=2110	
Blank WR-CD		15	20.00		15*20=300	
<b>Sub-Total</b>					<b>2515 ETB</b>	
<b>Total Amount</b>					<b>60515ETB</b>	
5% Contingency					3025.75	
<b>Grand Total</b>					<b>63540.75 ETB</b>	

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## Chapter IX –Additional Out Puts

### 9.1 Supervision on prepared ness and early warning for AWD outbreak response

The main target of the supervision was creating awareness about AWD, since the risk/precipitating factors for the occurrence of the disease are Insufficient water supply (quality and quantity), Unsafe excreta disposal, Poor hygiene practices (hand washing) ,Poor breast feeding and weaning practices, high population density(camps and slum populations are highly vulnerable), Environmental and seasonal factors, not only these but also characteristics of the disease is Extremely virulent, unless treated promptly it quickly leads to severe dehydration and kill within hours and has potential for explosive pattern of outbreaks and has occurred in Oromia Region and Addis Ababa due to different reasons we were interested planning supervision schedule based on risk areas and vulnerable groups in different zones and districts of Amhara Region.

Table 41 : Visited Zones, districts and dates on prepared ness and early warning for AWD outbreak response, May-June, 2016

Ser.N o.	Visited Zone	Visited District	Visited Organizations	Date of Supervision
1	Awi	Jawi	Zonal Health, Mine ,Water & Energy and Educational department, District Health ,water and education office,	22/5/- 9/6/2016
		Dangla	District Health office	
		Ankisha	District Health , Mine ,Water & Energy and education office, Agew G/Bet HC	
		Enjibara Town	Zonal Health , Mine ,Water & Energy and education department, Abunu,and addinas Hotel	
		Agita	Ashewa M/Holy water	
2	West Gojjam	Sekela	District Health , Mine ,Water & Energy and education office	

	F/Selam Town	Zonal Health department Vergine , Beza and Extreme hotel	
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During the supervision the team first gave general orientation for different stakeholders about overview of AWD and then address detail activities in the hierarchy of zone, district and community level: Direction was accustomed for the district administration on the vehicle arrangement during

Transportation of logistics, to take solution on staff shortage and strengthening zones and districts coordination committee. Orientation was mainly given to district health office heads and officers, district administrative about current issues on AWD cause as well as social and economic consequences in the country. We have assisted in planning of logistic requirement and contingency plans, rearrangement training schedule with the regional health bureau for those have not trained person about AWD overview, coordination of prophylaxis drug administration campaign for AWD outbreak if it has been beyond our capacity and discuss the zonal water, mineral and mine department and responsible partner to avail water treatment chemicals.

Table 42 : Lists of number and profession of participants during AWD overview orientation

Serial no.	Sector/Profession	Number of Participants
1	Different Zonal and District Sector Managers	66
2	Zonal and District Health Professional	146
3	Zonal and District Educational Sector	55
4	Zonal and District Mine, Water and Energy	33
5	Water AID(from Region and Federal)	78
6	Holy Water Clients	200
	<b>Total Participants</b>	<b>578</b>

## **Findings in the field visit**

### **Awi Zone Health Department**

#### **A. Strength**

- ❖ They had task force which were composed of relevant sectors.
- ❖ They had clear, data based preparedness, emergency and response.

- ❖ All type of Case definition, reporting format and relevant guidelines arranged in the appropriate way and place.

### **B. Gaps identified**

- ❖ Except ORS there was no drug availabilities if there was AWD outbreak at that time.
- ❖ Zonal Task force had meeting time but not regularly apply.
- ❖ Public Health Emergency plan had not its own budget.
- ❖ Zonal Rapid Response Team had meeting time but not regularly.
- ❖ Pre-AWD alert letter not sent to the lower level.
- ❖ They did not give training about AWD for Enjibara town Hotels, Groceries and restaurants man power.

### **Jawi District**

#### **A. Strength**

- ❖ They had functional task force which were composed of relevant sectors, accordingly no problems on the quality of water.
- ❖ Water, Mine and Energy office and Health office did every activity jointly concerning about preparation of AWD outbreak response.

#### **B. Gaps identified**

- ❖ Task force had meeting time but not regularly apply.
- ❖ Public Health Emergency plan had not its own budget.
- ❖ Rapid Response Team had meeting time but not regularly.
- ❖ They did not create awareness for stake holders about AWD.
- ❖ They did not give training about AWD for Enjibara town Hotels, Groceries and restaurants man power.

### **Ankisha District**

#### **A. Strength**

- ❖ Mine, Water and Energy, Educational and Health office did every activity jointly concerning about preparation of AWD outbreak response.

- ❖ All type of Case definition, reporting format and relevant guidelines arranged in the appropriate way and place

### **B. Gaps Identified**

- ❖ Weak multi-sectorial collaboration.
- ❖ They did not create awareness for stake holders about AWD.
- ❖ Rapid Response Team had no regularly meeting time and not functional.
- ❖ Alert notification was not written for Health facilities and there were Low community mobilization and awareness activities.
- ❖ No data from previous outbreak Challenges/Weaknesses.

### **Fagita District (Ashewa Medahiniale) Holy water Site**

- ❖ Totally 1000-1500 people per day present in the time of holy day due to this reason: There were in adequate water supply and poor latrine construction (Low WASH coverage).
- ❖ No any existed committee in the holy water site during the visit but the supervision team has established one committee comprised of five members.
- ❖ There were administrative conflict b/n the kebele leader and church manager in case of new construction site of latrine for pilgrims.





Figure 41: Photos Ashewa Medahinialem Holy water, Fagita, Amhara Region, 2016

### West Gojjam Zone

#### Visited Hotels

**Virigin Hotel:** It had good Hygiene and Sanitation practice compared with other visited hotels and restaurants in Finote Selam town. Hotel food handlers check their health Condition quarterly from near clustered health Center.

**Beza Hotel:** It was the poorest hotel in Hygiene and Sanitation practice, weakly handling system of Kitchen materials and equipment's were not properly arranged.

**Extreme Hotel:** All the seventeen food handlers have had  $\geq 8$  grade level and Kitchen materials and equipment's were properly arranged.

### Sekela District

#### **A. Strength**

- ❖ All type of Case definition, reporting format and relevant guidelines arranged in the appropriate way and place.
- ❖ Rapid Response Team had meeting time.
- ❖ The Community had enough awareness about AWD Transmission and prevention mechanism.

- ❖ Alert notification letters was written for Health facilities.
- ❖ No problem on latrine utilization in Abune zeraa Biruk Holy Water.

## B. Gaps Identified

- ❖ No Emergency Preparedness and Response Plan as well as weak multi-sectorial collaboration.
- ❖ All Hotels and Restaurants had not well standard arrangement of Kitchen materials and equipment.



**Awareness creation  
at Abune Zeraa  
Biruk pilgrims by  
Supervision Team**

Figure 42: Photos taken from in Abune zeraa Biruk Holy Water, Sekela, West Gojjam, Amhara Region, 2016

## Bahir Dar Zuria District

- ❖ Problems in Operational preparedness and response plan preparation.
- ❖ Low Community mobilization and awareness activities and lack of experience of HCWs in identifying managing cases and failed to prioritize hot spot areas for AWD.
- ❖ Logistics supplies scarcity, Data quality and no minute / no regular meeting and no data from previous outbreak not only this but also had poor data analysis and information utilization at lower levels and Surveillance is not sensitive enough.

## Andasa Holy Water

- ❖ They drank Andasa River water which was untreated in addition to this, they did not have enough Kitchen to prepare food for the pilgrims.
- ❖ Totally 11000 people per day present in the time of holy day due to this reason: There were in adequate water supply and poor latrine construction (Low WASH coverage).

**Summarized Recommendations for zonal health departments and district health office given by the Supervision Team:**

- ❖ Alert Notification and Preparedness assessment.
- ❖ Sensitization and revitalizing emergency coordination committee at all level.
- ❖ Availability of Logistics supplies mobilized and treatment centers established, operational preparedness and response plan and training of Public Health Emergency management workforce early established.
- ❖ The district coordination and technical committees should be established immediately

(Strengthen the already existing and conduct regular meeting evaluation and monitoring) and must be functional.

- ❖ Strengthen the health development army concerning the current nutritional emergency to take part in the social mobilization activities.
- ❖ Capacity building activities health care providers must get refreshment training and clinical Mentoring additionally; new health professional must be trained.
- ❖ The district administrations must allocate budget for care givers food to minimize the number of defaulters and for Emergency management.
- ❖ The water treatment chemicals should be available to the communities and clear responsibility should be assigned either to the health or water sector regarding treating water and availing chemicals.
- ❖ The district PHEM officer should consistently follow any changes in public health event and avail case definitions and national guide lines to health facilities.
- ❖ Clear TOR should be given for the technical committee and conducting regular meeting and evaluating the performance of the technical committee.
- ❖ The technical committee should also conduct weakly meeting and should present real situation of the problem to the coordination committee.

- ❖ All the necessary supplies should be fulfilled urgently particularly water treatment chemicals should be availed by the responsible organ and Drinking water sources should be treated properly.
- ❖ Stake holders who are living with the respected zones and districts should concern mainly on Hygiene and Sanitation.

## 9.2 Supportive Supervision Malaria on IRS Operation, Amhara Region, November, 2016

Table 43 : Supportive Supervision Malaria on IRS Operation, 2016

Serial No.	Visited Zone	Visited District	Visited HC/HP	Date of Supervision
1	East Gojjam	Baso liben	Betengus HC&HP	14-28/8/2016
		Debre alias	Yekegat HP	
2	Awi	Jawi	Jawi HC	
3	West Gojjam	Mecha	-	
4	South Gondar	Fogera	-	
		Dera	-	
5	North Gondar	Dembia	Girargie HC	
		East Belesa		
		Metema	Metema Yohannes HC&kebele01 urban HP	
		Dabat	Wokin HC	
		Wogera	-	
		Gondar Zuria	-	
		Chilga	-	

The Supportive Supervision was conducted with in different disciplines of team on Major malaria season with selected malaria endemic districts those were targeted for IRS. We summarized our report with detail lists of zones, districts and Organizations that were visited showing their Strength and Gaps.

### Strength during the field visit

Most of districts: Started the IRS operation on Time, applied community IRS operation ( Metema , D/Alias, Baso liben and East Belesa).Had plan for IRS operation with budget (from

Gov.) (D/Elias=90000, Baso liben =80000, Jawi=150000ETB). Most of HEWs had enough awareness when and how the operation is performed.

### **Gaps identified during the field visit**

- ❖ Low utilization /unavailability of malaria morbidity monitoring chart and LLINs utilization. Undistributed LLINs in some kebeles of D/Alias and Basoliben districts. Dera district was not apply Community IRS.IRS report discrepancy that reported for zone and region was different (D/Alias, Metema and East Belesa) There were wastage of Chemicals due to different reasons (Dera, Basoliben) and there was shortage of Coartum (Jawi).
- ❖ Almost all of the visited districts had poor environmental management. Not only problem of shortage of monitoring chart but districts who had enough chart did not fill the chart properly per week.
- ❖ Totally there were data on IRS operation from Fogera and Chilga during the time of supervision due to absence of the responsible body. The data is not sensitized and analyzed for local consumption at health facility level; what is being done is merely recording /listing. Case finding /active case search is not undertaken periodically .Had active searches were conducted the real burden of cases would have not been overlooked. There was inconsistency /figure fallacy in number of reported malaria cases in some districts; what had been reported to the region from ZHD was by far larger than what we had from the district. The majority of the visited health facilities have malaria monitoring chart however some of them were not up-to-date. The charts in some facilities were not properly plotted; the threshold was not properly set; the previous year data was simply used without doubling; the graph revealed or disclosed the occurrence malaria outbreak throughout the year.

### **Summarized Recommendations for zonal health departments, district health office and Cluster Health Centers given by the Supervision Team (What has been done so far?)**

- ❖ LLIN distribution and ensuring proper utilization and distribute the remaining LLINs in Kebeles where there was misdistribution (not based on family size).
- ❖ Health information on proper utilization of nets, use abate chemical on irrigation projects ponds, environmental management.

- ❖ Ensure proper malaria morbidity monitoring chart utilization, determine base line prevalence/real burden by kebele in each district and Strengthen programmatic supervision

### 9.3 Disease surveillance refresher training for health facility, district, hospital and zonal PHEM officers

To strengthen the surveillance activities the Amhara National Regional Health Bureau Public Health Emergency Management (ANRHB/PHEM) core process planned to conduct training.

This training was given to make familiar and motive lower level health professionals on public Health Emergency management program. Power point presentations, discussions were used as training methods. Soft copies of the training Materials were given for the trainees. The training was given for 179 trainees from health centers , District health offices, Hospital and zonal health departments’ focal persons. training addressed contents like introduction to public health emergency management system, surveillance and early warning, public health emergency preparedness ,response and recovery, Report format outbreak investigation ,surveillance of rabies, measles ,malaria ,meningitis ,AFP, NNT ,Influenza ,Guinea worm and Scabies . The training was successfully conducted according to the schedule. Most of expected trainees from Health Centers, Hospitals, zones and districts had participated. The participants were from different disciplines like health officers, nurses and environmental health professional.

Table 44 : Date, Topic and Title of Basic PHEM training

Date: March 13-16 and 18-21, 2017 Venue: Enjebara Town, Chema Hotel (Two Rounds)

Time	Topic	Presenter/Responsible	
		Hall A	Hall B
DAY – ONE			
08:30 – 09:00 AM	Registration	Participants	
09:00 – 09:15	Opening speech	RHB PHEM	
09:15 – 09:30	Objectives of the training	RHB PHEM	
09:30 – 09:55	Pre Test	Participants	
09:55 – 10:30	PHEM Overview	Tesfaye T.	Abere. M
10:30 – 10:50	Tea Break	Organizers	
10:50 – 12:30	Early warning and surveillance	Misganaw A.	Ashenafi. A.
12:30 – 02:00 PM	Lunch Break	Individual	
02:00 – 02:30	PHEM reporting tools	Misganaw A.	Abere. M

02:30 – 02:50	Tea Break	Organizers	
02:50 – 04:20	Emergency Preparedness	Tsgereda A.	Ashenafi A.
04:20 – 05:30	Emergency Preparedness	Tsgereda A.	Ashenafi A.
DAY – TWO			
08:30 – 08:45 AM	Recap of Day 1	Participants	
08:45 – 10:30	Outbreak Investigation and Response	Tsgereda A.	Abere Muchie
10:30 – 10:50	Tea Break	Organizers	
10:50 – 12:30	Introduction of AWD, Epidemiology transmission and prevention, recent and current AWD regional update	Abere. M	Tesfaye T.
12:30 – 02:00 PM	Lunch Break	Individual	
02:00 – 03:00	AWD case management	Dr Kume A.	Dr. Endalamaw. A
03:00 – 03:20	Tea Break	Organizers	
03:20 – 04:20	AWD preparedness and Surveillance	Tsgereda A.	Ashenafi. A
04:20 – 05:30	AWD outbreak management/response	Misganaw A.	Dr. Endalamaw
DAY – THREE			
08:30 – 08:45 AM	Recap of Day 2	Participants	
08:45 – 09:45	Polio Eradication and AFP Surveillance	Dr. Ayalneh. F	Dr Kume A.
09:45– 10:30	NNT Surveillance and response	Dr. Ayalneh. F	Dr Kume A.
10:30 – 10:50	Tea Break		
10:50 – 11:50	Malaria Surveillance and entomology	Tsehay	Bizuayehu
11:50 – 12:30	Malaria Surveillance and entomology	Tsehay	Bizuayehu
12:30 – 02:00 PM	Lunch Break	Individual	
02:00 – 03:00	Measles surveillance and case management	Dr. Ayalneh. F	Dr Kume A.
03:00 – 03:30	Surveillance of other diseases (Rabies, anthrax, Scabies and Guinea worm, meningitis)	Tsgiereda, Abere	Misganaw, Tesfaye
03:30 – 03:50	Tea Break	Organizers	Organizers
03:50 – 05:30	Surveillance of other diseases cont...	Tsgiereda, Abere	Misganaw, Tesfaye
DAY – FOUR			
08:30 – 08:45 AM	Recap of Day 3	Participants	
08:45 – 09:45	TOR for surveillance FPs at different levels	Ashenafi. A	
09:45 – 10:30	TOR for RRT at different levels	Misganaw A.	
10:30 – 10:50	Tea Break	Organizers	
10:50 – 11:15	Post Test	Participants	
11:15 – 12:15	General Discussion	Participants	
12:15 – 12:30	Closing remark	RHB_PHEM Head	
12:30 – 02:00 PM	Lunch Break	Individual	

02:00 – 03:30	Admin issue	APHI	
03:30 – 04:00	Tea Break	Organizers	

### 9.4 Weekly Epidemiological bulletin preparation

**AMHARA NATIONAL REGIONAL STATE HEALTH BUREAU**  
**PUBLIC HEALTH EMERGENCY MANAGEMENT (PHEM) CORE PROCESS**  
**WEEKLY PHEM BULLETIN**

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 Vol II-15| Week 15 April 03– April 09, 2017|

**Major issues in the bulletin:**

- Weekly surveillance report completeness and timeliness
- Weekly malaria trend in the region
- Regional PHEM situation
- Other issues

**I. Introduction:** This bulletin represents the reporting period of week 15 and serves to provide information on public health emergencies and surveillance activities for evidence based decision making. It also gives a chance for partners working on public health to engage in priority issues of the region. The bulletin shows surveillance report completeness and timeliness, Malaria situation and other PHEM targeted disease in the region.

**II. Weekly Surveillance report:**

The overall completeness of the reporting units in week 15 was 98.9%. Completeness was above 90% in all zones. Completeness was decreased in Awi, South Gondar and South Wollo zones as compared with the previous week. The completeness in Private health facilities was 89.4%.

**Figure 1: Completeness by zone in week 15, 2017, Amhara region.**

**Malaria Case by District (Woreda)**

Regionally Number of malaria cases were decreased by 209 (6.4%) as compared with the previous week. Malaria case decrement was seen in the majority of the zones except Bahir Dar town, Gondar town, North Wollo, Oromia, Wag Himra and South Gondar zones. From the total malaria cases reported in this week, 1225(40%), 399(13%) and 359(11.7%) were reported from North Gondar, West Gojjam and Awi zones respectively. When we see the malaria cases by woreda, 62(41%) of the woredas in the region had shown case increment (from one case to 95 cases) and 65(43%) of the woredas in the region had reported case decrement (from one case to 50 cases), where as the remaining 25(16%) woredas had reported the same number of cases with the previous week. Kobo Kestera, Takusa, Jabitehinan, Dera, Gondawuha, North Achefet, Abergelle, Farta, Jietunna, Kenishe town, Mekidella, Arnamafusi, Fogera, Bahir Dar town, Argoba, Dembecha, Jananora and Gondar Zuna were woredas where malaria case increment by 100% and above was seen as compared with the previous week. Top ten woredas by increment of cases in this week as compared with the previous week were presented in figure 3 below.

**Figure 3: Top ten woredas with malaria case increment in week 15 as compared to week 14, Amhara Region.**

**III. Diseases and conditions**

**1. Malaria:** A total of 3071 malaria cases (1.3% of the total out patient cases) with positivity rate of 12.2% were reported in week 15. From the total positives, *Plasmodium falciparum* Plus mixed and *Plasmodium Vivax* constituted 57% and 43% respectively. The proportion of malaria cases from total cases (8.1%) was high in North Gondar zone where as proportion of 1% from total positives (68%) and positivity rate (24%) were high in Wag himra zone. As it is shown in figure two, the total malaria cases in this week were lower as compared with the same week of the previous four years.

**Figure 2: Regional malaria trend by week from 2005 to 2009 EFY.**

**Comparison of 2008 & 2009 EFY malaria cases, WK13 – WK 15**

In this sub topic 2009 malaria data is compared with the same week of 2008 EFY, and 2009 malaria cases were high in Dessie town, South Wollo and Wag Himra zones.

**Table 1: 2008 & 2009 EFY malaria cases comparison by zone, Week 15**

Zones	2008 Malaria cases			2009 Malaria Cases			Change from 2008 to 2009	
	Week 13	Week 14	Week 15	Week 13	Week 14	Week 15	Week 13	Week 14
Awi	706	662	647	424	380	359	-282	-282
Bahir Dar	41	37	36	35	20	28	-8	-17
Dessie	11	8	1	2	0	3	-9	2
E/Gojjam	297	306	333	194	148	139	-103	-158
Gondar	75	41	69	27	23	28	-48	-41
N/Gondar	2889	2392	2264	1623	1471	1225	-1266	-861
N/Shewa	203	206	156	145	113	104	-58	-93
N/Wollo	175	140	132	84	82	103	-91	-58
Oromia	223	190	237	105	92	115	-118	-98
S/Gondar	1297	1072	1492	317	315	331	-980	-757
S/Wollo	134	113	107	93	121	121	-61	8
W/Gojjam	847	794	854	417	398	399	-430	-396
Wag Himra	122	69	71	113	113	116	-7	44
Region	7020	5970	6399	3579	3280	3071	-3441	-2690

**NB:** The red colored Numbers in the table show case increment in 2009 as compared with the same week of 2008 E.C.

## Annexes

### Annex I: CURRICULUM VITAE

#### 1. Personal information

- ❖ Name: Abere Muchie Zerihun
- ❖ Date of Birth: 8/3/1976 E.C
- ❖ Place of Birth: Farta, South Gondar
- ❖ Sex: Male
- ❖ Marital Status: Married

- ❖ **Nationality: Ethiopian**
- ❖ **Address: Tel. +251918714212**

**E-mail aberemuchie@gmail.com**

## **2. Educational background**

### **Testimonial (Qualification)**

#### **1. BSc Degree in Environmental Health Officer**

- ❖ Institution: Gondar University
- ❖ Duration: 11/9/2004-21/7/2007

#### **2 .Diploma In Basic Computer Technology ((MS-word, MS-excel, MS-power point, Internet)**

- ❖ Institution: Debretabor 3B computer Center
- ❖ Duration: 11/9/2014 for three months

#### **3. Certificate in International English Language**

- ❖ Institution: Bahirdar BRISBANE Language Center
- ❖ Duration: for three months
- ❖ Institution: Tewodros second preparatory school, Debre Tabor (9-12 grade)
- ❖ Duration: 25/9/2000-7/7/2004

#### **4 .Work Experience:**

12/9/2007-22/4/2009 Vice Head of district Health Office.

23/4/2009-8/1/2010 Vice Head of district Health Office & Coordinator of Health promotion and disease prevention core process owner.

9/1/2010-7/7/2016 Malaria and other vector born disease control and prevention officer in the same district health office.

#### **5. Training History**

Seri al no.	Title	Training Site	Duration	Organized by
1	TOT malaria and Trachoma	Woreta	4/11/2009-10/11/2009	Carter Center
2	Indoor Residual Spray	Dangla	27-31/7/2012	ARHB&UNICEF
3	Health Management Information System	Woreta	May 2010	FMOH & Tulane University
4	Community Lead Hygiene & Sanitation	K/Dingay	26/11/2010-4/12/2010	District Health Office & FINIDA
5	Basic Public Health Emergency management	Woreta	6/8/2013-9/8/2013	UNICEF
6	Integrated Supportive Supervision	Woreta	31/8/2010-5/9/2010	Integrated Family Health
7	Monitoring & Evaluation	Bahirdar Felege Hiwot Health Science College	26/8/2009-01/9/2009	ARHB
8	General Administrative Training	Bahirdar	27/7/2007-8/9/2007	Amhara Administrative Bureau
9	Community Based Nutrition	Debretabor Health Science College	9/4/2010-20/4/2010	District Health Office & UNICEF

10	Cold Chain Maintenance	Woreta	11/8/2014- 19/8/2014	District Health Office
11	Arc-GIS for geo spatial making in public Health	Addis Ababa	9-13/2015	Addis Ababa University &CDC
12	Data management Training	Debretabor	10-13/5/2017	Amhara Public Health Institute

NB. All the above years are in GC.

**6. Computer skills:** Diploma with basic computer skills (MS-word, MS-excel, MS-power point, Internet) and software like EPI INFO &SPSS

### 7. Language

Ser.no	Language	Speaking	Writing	Reading	Listening
1	Amharic	Excellent	Excellent	Excellent	Excellent
2	English	Excellent	Excellent	Excellent	Excellent

**8. Hobbies:** Reading Biomedical Journals, English books, newspapers and magazines, listening music, watching Movies,

**9. Professional Membership:** Member of the Ethiopian public health association (EPHA)

### 10. References

1. Mr. Teklehayimanot Gebrehiwot

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2. Mr. Ashenafi Ayalew, Amhara regional emergency management (PHEM) Emergency preparedness officer. Mobile No: + 251912157105, E-mail:ashunet@gmail.com

Mr. Tesfā Getanew, Response and Recovery officer at Amhara Regional health bureau Bahir Dar

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### **Declaration**

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 suitably acknowledged.

Name: Abere Muchie

Signature: \_\_\_\_\_

Place: Addis Ababa, Ethiopia

Date of Submission-----

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisors: Dr.Naod Firdu (MD, MPH)

Mrs. Mastewal Worku (MPH in Field Epidemiology)

Signature: \_\_\_\_\_

Date \_\_\_\_\_

### **Annex II: Influenza like illness outbreak Questionnaire**

Patient Name \_\_\_\_\_ Code \_\_\_\_\_ date of Data collection \_\_\_\_\_

Woreda \_\_\_\_\_ kebeles \_\_\_\_\_ Gote \_\_\_\_\_

#### **I. Socio-demographic Characteristics**

S. No	Questions	Alternatives
1.1	Sex	1.Male 2.Female
1.2	Age	years _____ Months _____
1.3	If female, is she currently pregnant?	1.Yes 2. No 3.Do not know
1.4	Occupation	
1.5	Educational level	
1.6	Marital status	
1.7	Family size	-----
1.8	Is there any sick person with fever, cough , headache , running nose/vomiting (Illness) family	1. Yes 2. No

1.9	If yes, number of sick person	-----
1.10	Specimen taken	Yes No

**II. Clinical History of Diseases:**

2.1	Case status	1. Case 2. Control if the answer is 2 go to question No.3.1														
2.2	Date of illness on set	------(dd/mm/yy)														
2.3	Date seen at health facility															
2.4	Date of Admission if Inpatient	------(dd/mm/yy)														
2.5	What was the symptom?	<table border="1"> <tr> <td>Cough</td> <td>Sneezing</td> </tr> <tr> <td>2.Fever</td> <td>Chest pain</td> </tr> <tr> <td>3.Sore throat</td> <td>Joint pain</td> </tr> <tr> <td>4.Shortness of breath</td> <td>chills</td> </tr> <tr> <td>5.Difficulty in breathing</td> <td>Headache</td> </tr> <tr> <td>6.Vomiting</td> <td>.Other (Specify</td> </tr> <tr> <td>7.Diarrhea</td> <td></td> </tr> </table>	Cough	Sneezing	2.Fever	Chest pain	3.Sore throat	Joint pain	4.Shortness of breath	chills	5.Difficulty in breathing	Headache	6.Vomiting	.Other (Specify	7.Diarrhea	
Cough	Sneezing															
2.Fever	Chest pain															
3.Sore throat	Joint pain															
4.Shortness of breath	chills															
5.Difficulty in breathing	Headache															
6.Vomiting	.Other (Specify															
7.Diarrhea																
2.6	Did you take treatment?	1.Yes 2.No														
2.7	Outcome	1.cure 2. improved 3.died 4.Referred 5.on treatment														

**III. Risk factors**

3.1	Did you have any travel history 7 Days to areas with active influenza like illness cases before onset of symptoms?	1.Yes 2. No
3.2	Do you have any contact history with Someone else with suspected or confirmed Flu patient(s)?	1.yes 2.No
3.3	Do you have any contact history with sick or dead animals (wild or domestic):	1. Yes      2. No
3.4	2. Did you wash your hands after touching the dead animals and birds?	1.Yes 2.No 3.Unknow
3.5	was there death of birds/chicken in the kebeles	Yes No
3.6	Is your house well ventilated?	1.Yes 2.No 3. other
3.7	Did you have participated at the wedding ceremony?	1. Yes      2. No
3.8	Did you have eaten or drunk at the wedding?	1. Yes      2. NO
3.9	Number of windows	
3.10	How many times do open windows per week	

### Knowledge of patient on influenza like illness

1	Do you hear about influenza like illness?	1.Yes 2.No
2	From whom did you heard	1.Friends 2.Family member 3 HEW

		4 Teacher 5. Health workers 6. other _____
3	Do you know the causes influenza like illness?	1.Yes 2.No
4	If Yes? What it is?	1.virus 2.bacteria 3.contaminate food 4.from God 5. related to weather condition 6.Don't know 6.Others (Specify) _____
5	What are the Signs and symptoms of influenza like illness?	1.cough 2.Fever 3.Headache 3. nasal discharge 4.fatigue 5. Chills 6. chest pain e) 7. vomiting 8.diarrhea 9. Loss of appetite 10.Don't know
6	How do you think this disease transmit from person to persons (none proving)?	1. sneezing/coughing 2.Contact with patient 3.wind 4. Don't know 5.Other(specify)
7	What are the prevention methods of ILI?	1.limit your contact with others 2. hands washing

		3. Cover mouth and nose during coughing and sneezing? 4. Don't touch any dead poultry 5. Hot fluid drinking 6. Don't know 7. other specify----- -
--	--	--

**Annex III: Scabies outbreak investigation Questionnaire**

Questionnaires for case – control study on Scabies Outbreak in -----District, -----zone, and Amhara Region , Code Date -----/-----/-----

Respondent Status: 1. Case 2. Control

**A. Identification Information**

- 1. Age ----- 2. Sex: a. Male b. Female
- 3. Residence: 1. Urban 2. Rural
- 4. Occupation: 1. Farmer 2. Student 3. House wife 4. Trader 5. Other
- 5. Religious: 1. Orthodox 2. Protestant 3. Muslim 4. Other -----
- 6. Marital Status: 1. Single 2. Married 3. Divorced
- 7. Educational Status: 1. Illiterate 2. Not eligible 3. Primary education 4. Secondary education 5. Collage and above

**B. Epidemiological**

- 8. Total number of family members who live in the house -----
- 9. Number of Families affected -----
- 10. With whom do you sleep?  
1. Alone 2. Wife 3. Husband 4. Brother 5. Sister 6. Friends 7. Other
- 11. Has the person whom you are sleeping with contacted Scabies 1. Yes 2. No

**C. Clinical Information**

- 12. Which sign and symptom did you experience first? 1. Itching 2. Rash
- 13. Date of onset/onset of itching ...../...../..... (DD/MM/YY)

14. When is itching is intense? 1. Daytime2. At night

15. Is Rash Seen? 1. Yes2. No

16. Date of onset/onset of rash ...../...../..... (DD/MM/YY)

#### **D. Skin Examination**

17. Can you see scabies Lesions? 1. Yes 2 No

18. If yes, how long is the duration? -----

19. If there are lesions, How many?

Mild (5 or less) Moderate Severe (11-49 Very sever (50-More)

20. Which body part is mostly affected? 1. Hands 2. Wrist3.Elbows 4. Breasts5. Armpits6. Waist line 7. Groin8. Others.....

21. Do scabies lesions look infected?(Pus filled sores or crusted sores over scabies lesion)1. Yes 2.No

22. Is anyone else in the household is complaining of itchiness? 1. Yes2. No

23. Does it look like crusted/Norwegian Scabies? (Generalized scaling and crusting of skin)

1. Yes2. No

#### **E .Skin Sore Assessment**

24. Can you see any Skin sores? 1. Yes2. No

25. If yes sores, how many? Mild (5 or less) Moderate (6-10) Severe (11 -49 Very sever (<50)

26. Do any the sores look crusted (infected scabies)? 1. Yes2. No

27. Are there any of the sores pus filled (include infected scabies)? 1. Yes2. No

#### **F. Sanitation and Hygiene**

28. How often do you take shower?

1. Weekly 2.Every other week 3.Monthly 4.Quarterly 5.Once a year6. Never

29. What do you use detergents to take shower?

1. Only water 2.with soap3. Other -----

30. Have you bathed someone else with the disease in the previous six weeks? 1. Yes2. No

If yes, who is he/she .....

31. Do you wash your clothes? 1. Yes2. No

32. If yes, how often do you wash your clothes? 1. Weekly 2. Every other week 3. Monthly

4. Every two month 5. Every three month 6. Not at all

33. Have you put on clothes of someone who was diseased in previous six weeks? 1. Yes2. No

34. When do you change your clothes that you wear now?

1. Every day2.Every other day3.Every week 4. Monthly5. Cannot change

35. What are the sources of water for your drinking water? 1. Pipe 2.Well3. spring4.River

36. Have you ever heard about scabies disease prevention, treatment and transmission? 1. Yes 2. No

37. If yes on question 36, where and when did you hear about scabies disease prevention, treatment and transmission? -----

**Annex IV: Surveillance System Evaluation questionnaire**

**Zonal level questionnaire**

Identifiers:

Region \_\_\_\_\_ Respondent \_\_\_\_\_

Zone \_\_\_\_\_ Date \_\_\_\_\_ Tele. \_\_\_\_\_

General

Total pop \_\_\_\_\_ Male \_\_\_\_\_ Female \_\_\_\_\_ u5yrs \_\_\_\_\_

Rural pop. \_\_\_\_\_ urban pop. \_\_\_\_\_ Total Kebeles \_\_\_\_\_ urban  
\_\_\_\_\_ rural \_\_\_\_\_ Hosps. \_\_\_\_\_ H.Cs \_\_\_\_\_ Hps \_\_\_\_\_ All  
types of private clinics \_\_\_\_\_ other private health facility \_\_\_\_\_ NGOs H.F. \_\_\_\_\_

Total # of malarious Woreda \_\_\_\_\_ Total # of malarious kebeles \_\_\_\_\_ Total pop at risk for  
malaria \_\_\_\_\_

**Availability of a National Surveillance Manual**

Is there a national PHEM manual/ guideline for surveillance? Yes / No

If yes, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

\_\_\_\_\_

What are the objectives of surveillance? \_\_\_\_\_

What are the strengths of your surveillance system? \_\_\_\_\_

What are the weaknesses of your surveillance system? \_\_\_\_\_

**III, Case Detection and Registration**

Do you have standard case definitions for the Country's priority diseases like AFP (polio), malaria, and measles? Yes / No / Unknown / Not applicable

If the answer is yes for Q #6, observe the presence of the standard case definition for each priority disease. Yes No Unknown Not applicable

### **Data reporting**

Presence of recommended reporting forms in the zone at all times over the past 11 months

Are the Federal/ Regional health bureau responsible for providing surveillance forms to the health facilities? Yes No Unknown Not applicable

*If yes*, have you lacked appropriate surveillance forms at any time during the last 11 months?

Yes No Unknown Not applicable

What are the reporting entities for the surveillance system? Public health facilities

A.NGO HF B. Military HF C.Private health facilities D. Others\_\_\_\_\_

Was there any report of the immediately reportable diseases in the past 1 month? Yes/ No

What was the disease\_\_\_\_\_?

If yes, for Q 11, with in what time is the report received after detection of the diseases?

A.Less than 1 hour B. 2-24 hour C.1- 2 days D. 3- 7 days E. After 1 week

Percent of districts that have means for reporting to next level by e-mail, telephone, fax or radio\_\_\_\_\_

How do you report weekly, monthly and other formations to higher level?

A. Mail B. Fax C. Telephone D. Radio E. Electronic F. Other

Did you have address of regional PHEM officers? Yes /No

How frequently are you communicating with the regional PHEM officers on emergencies and other daily activities?

A) Daily B) Weekly C) Every 2 week D) Monthly E) Quarterly F) Every 6 month G) Yearly  
H) Others\_\_\_\_\_

Did you have address of district/health facility PHEM officers? Yes/ No (if yes observe the lists and their address of district and H.F PHEM officers)

How frequently are you communicating with the districts/health facility PHEM officers on emergencies and other daily activities?

A) Daily B) Weekly C) Every 2 week D) Monthly E) Quarterly  
F) Every 6 month G) Yearly H) Others\_\_\_\_\_

When are you expected to send weekly report to the Regional PHEM unit? Every

A) Monday B) Tuesday C) Wednesday D) Thursday E) Friday F) Saturday G) Sunday H)I don't know

B) When are you expected to receive weekly report from districts /health facilities?

A) Monday B) Tuesday C) Wednesday D) Thursday E) Friday F) Saturday

G) Sunday H)I don't know How is the Zone communicating the districts /health facility PHEM officers in case of immediately reportable diseases?

A) By e-mail B) By phone C) By fax D) Regular weekly report E) Others-----

Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing important issues at community level that have arisen through the surveillance system? Yes/No

If answer for Q 22 is yes to whom did you send?

---

If you faced any problems on communicating and reporting, list them\_\_\_\_\_

---

How do you manage the problem you faced?

---

**Data analysis**

Have you trained on surveillance system? Yes/ No

If answer for Q1 is yes a) when \_\_\_\_\_ b) Topic \_\_\_\_\_ c)

For how long \_\_\_\_\_

Did you give any onsite training / orientation about surveillance system for the districts or health facility PHEM focal persons? Yes/No (if yes observe any documents)

How many districts have permanently assigned surveillance officer or focal person? \_\_\_\_

How many of them trained on surveillance and epidemic management? \_\_\_\_\_

If Q #4 is no, how surveillance activities were done at districts level? \_\_\_\_\_

Was data compiled and registered? Yes/ No (if yes observe documents)

Did you have computer on your department (PHEM unit)? Yes/ No

What is the data entry and compilation instrument?

A. Manual B. Computer C. Other

Did you have computer skill on A) Ms word B)Ms excel C) MS power point D) Epi-info

Did you analyze data of the surveillance system (cased based, routine, outbreak ....)?Yes/ No

If answer for Q 11 is yes, observe whether or not data is analyzed by time, place and person

If you analyze surveillance data how frequently? A) weekly B) every two week C) Monthly D)quarterly E) every 6 month F) annually G) No regular time

Did you perform trend analysis for priority diseases? Yes/ No

If yes for Q #10, observe and list the diseases which has line graph

\_\_\_\_\_

Did you have denominators for data analysis? A) T. population B) male C) female D) U5 E) pop. By districts E) hard to reach area pop.

Did you notify the results of your analysis to the higher level PHEM? Yes/ No

Did you notify the results of your analysis to the lower level PHEM? Yes/ No

If answer for Q #18 is No, what is the reason?

- Lack of knowledge  Shortage of time  Less attention to data analysis  Shortage of materials  Analysis is not familiar  Negligence  Other-----

**Outbreak Investigation**

How many outbreaks were occurred in 2008 EFY? \_\_\_\_\_

How many of them were investigated \_\_\_\_\_ list the diseases

\_\_\_\_\_

Did you have outbreak investigation check list? Yes/No

If the answer no for Q #3, how did you know possible factors for the outbreak?

\_\_\_\_\_

Where was laboratory confirmation of cases done?

- Regional laboratory  Hospital  EHNRI  Health center  Contracted private laboratory  
 Other-----

Who was responsible to investigate an outbreak?  Rapid response team  HEW  staffs of districts health office  experts organized randomly  health facility staffs  other \_\_\_\_\_

Fill the table below for question #2

S.No	Name of outbreak	Place(Kebele /district	No of cases			No of deaths			Start date of the outbreak	Investigation date	Remark
			M	F	U5	M	F	U5			
1											
2											

Had you faced any challenge in outbreak investigation in 2008 EFY? Yes/No

If answer for Q 8 is yes, a) list the challenges \_\_\_\_\_  
\_\_\_\_\_

b) List the alternatives that you take to tackle the challenges. \_\_\_\_\_

**Epidemic preparedness (relevant for epidemic prone diseases)**

Did you have plan for epidemic response and preparedness? Yes/No ( if yes observe )

Was there an emergency stock of drugs and supplies at all times in the past 1 year (2008)? Yes/  
No (if yes observe any document for evidence)

If answer for Q2 is No, how did you control epidemics? -----

Had you experienced shortage of drugs, vaccines and supplies in 2008 EFY? Yes/No

Was an epidemic management committee established at zonal level? Yes/No

Did the epidemic management committee have regularly scheduled meeting time?  
Yes/No(if yes observe minute book)

How many districts are established epidemic management committee and meet regularly? \_\_\_\_

Was Rapid response team established at zonal level? Yes/No

Did the Rapid response team have regularly scheduled meeting time during epidemics? Yes/No  
(observe minute book or other document)

How many district have established Rapid Response Team? \_\_\_\_\_

Did you have case management protocol for epidemic prone diseases? Yes/No/Not applicable  
(check)

Do have multi sectorial emergency preparedness and response task force committee? Yes/ No/Not  
applicable

In what frequency did the task force meet during outbreaks? \_\_\_\_\_

Were partners working together with your office on emergencies? Yes/No

If answer for Q 14 is yes, what type of supports did they give to your office?  
\_\_\_\_\_

Was there a budget for epidemic response in the last year (2008)? Yes/No

Had you a car assigned for emergencies (PHEM)?Yes /No/Not functional

If answer for Q 17 is NO, how did you address emergencies?

---

Had you faced any Challenges on epidemic response and preparedness in 2008 EFY ?Yes/No

If answer for Q 19 is yes,

a) List the challenges

---

b) What measures did you take to tackle the challenges?

---

**Response to epidemics**

Did the zonal health office respond for epidemics within 48 hours of notification of most recently reported outbreaks? Yes /No (observe any documents)

Are epidemic management committees evaluating their epidemic preparedness and response activities during the past year (2008)? Yes/No (check written document)

**Supervision and Feedback**

Did you have supervision plan in 2008 EFY? Yes/No(check documents)

If answer for Q1 is No, how did you supervise? \_\_\_\_\_

If Q #1 is yes, did you supervise the districts and health facilities? Yes/No

If Q #3 is No, what is the reason? \_\_\_\_\_

If Q #3 is yes, how many times did you supervise each districts and health facilities in 2008 EFY?  
Woreda----- Health facility-----

Had you received supervision from regional PHEM unit or FMOH in the last 12 months or 2008EFY? Yes /No

If Q #6 is yes, how many times in 2008 EFY? -----

Did you have regular supervision checklist? Yes/No

If Q #8 is No, how did you supervise the Districts and health facilities?

---

Did you send feedback of your supervision findings to the districts and health facilities which commenting/indicating their strong and weak sides? Yes /No(check)

If Q #10 is No, why? \_\_\_\_\_

If answer for Q #10 is yes, for how many districts and health facilities and sessions did you send a feedback in 20015/16? Woreda \_\_\_\_\_ health facilities \_\_\_\_\_

Had you received feedback from higher level supervisors in the last 12 months or 20015? Yes/No

If Q #13 is yes, how many feedbacks did you received in last 12 months or 20015/16?

---

Did you conduct active case search for health facilities in last 12 months or 20015/16? Yes/No, if yes, how many times and for how many districts and health facilities? \_\_\_\_\_ did districts PHEM officers also conducted? Yes/ No (observe the document)

What did you get from active case search \_\_\_\_\_?

Had you faced any challenge on supervision and feedback in the last 12 months? Yes / No

If answer for Q #15 is yes, a) list the challenges. \_\_\_\_\_

b) List the measures that you take to tackle the challenges \_\_\_\_\_

## IX. Resources

### Data management

Computer \_\_\_\_\_ Printer \_\_\_\_\_ Photocopier \_\_\_\_\_ Data manager \_\_\_\_\_

Statistical package \_\_\_\_\_

### Communications

Telephone service

Fax

Radio call

Satellite phone

Budget line \_\_\_\_\_

Logistics \_\_\_\_\_

**Surveillance**

Do you have a computerized surveillance network at this level? Yes/No/Not applicable

Budget for surveillance

Is there a budget line for surveillance in the zonal Health office budget? Yes/No Not applicable

*If yes, what is the proportion: %*

How could surveillance be improved?

\_\_\_\_\_

Questionnaire for Attributes and level of Usefulness:

Total population under surveillance \_\_\_\_\_ 2016/2008

What is the incidence / Prevalence of 2016/2008 -----in your area/region

Malaria \_\_\_\_\_ laboratory done \_\_\_\_\_ cases P.F \_\_\_\_\_ P.V \_\_\_\_\_ Deaths \_\_\_\_\_

Typhoid fever \_\_\_\_\_ cases \_\_\_\_\_ Deaths \_\_\_\_\_

Pandemic influenza \_\_\_\_\_ cases \_\_\_\_\_ Deaths \_\_\_\_\_

Measles \_\_\_\_\_ cases \_\_\_\_\_ Deaths \_\_\_\_\_

Level of Usefulness of the Surveillance System for these selected priority diseases

Does the surveillance system help?

To detect outbreaks of priority diseases early on time to permit accurate diagnosis? Yes/ No

To estimate the magnitude of morbidity and mortality related to these diseases, including identification of factors associated with these diseases? Yes/ No

Permit assessment of the effect of prevention and control programs? Yes/ No

Observe (confirmation):

interventions and diseases trends analyzed ---Available //Not available

**Describe Each System Attributes:**

**Simplicity:**

Is the case definition of the priority diseases (malaria, typhoid fever measles, pandemic influenza, and dysentery....) easy for case detection by all level health professionals? Yes/ No

The surveillance system allows all levels of professionals to fill data? Yes/No

Does the surveillance system help to record and report data on time?

Does the surveillance system (Reporting format) have necessary information for investigation? Yes/No

How long it takes to fill the format? a, <5 minute b, 10-15 minutes c, >15 minutes

How long does it take to have laboratory confirmation of

Malaria \_\_\_\_\_ Typhoid fever \_\_\_\_\_ Pandemic influenza \_\_\_\_\_

Measles \_\_\_\_\_ Others \_\_\_\_\_

**Flexibility:**

Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? Yes/ No

Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? Yes /No

Comment: \_\_\_\_\_

Is the system easy to add new variables? Yes /No

Is the surveillance system easy to integrate with other systems? Yes /No

Is the surveillance system easy to add new disease on report? Yes /No

Is the system easy to add new information technology? Yes /No

**Acceptability:**

Do you think all reporting agents accept and well engaged to the surveillance activities? Yes/No

If yes, how many are active participants (of the expected including all private clinics)? \_\_\_/\_\_\_

If No for Q #1, what is the reason for their poor participation in the surveillance activity?

Lack of understanding of the relevance of the data to be collected

No feedback / or recognition given by the higher bodies for their contribution;

I.e. no dissemination of the analysis data back to reporting facilities

Reporting formats are difficult to understand

Report formats are time consuming

Other: \_\_\_\_\_

Were all participants using the standard case definition to identify cases? Yes/ No

If yes, What is your evidence \_\_\_\_\_

Were all the reporting agents send their report using the current and appropriate surveillance reporting format? Yes/ No (if yes observe the documents)

Were all the health professionals aware about the surveillance system? Yes/No (if yes how they awarded)

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

Are the reporting site / data collectors trained/ supervised regularly? Yes/No

Observe: Review the last months report of these diseases

Average number of *unknown or blank responses* to variables in each of the reported forms

\_\_\_\_\_

Percent of reports which are complete (that is with no blank or unknown responses) from the total reports \_\_\_\_\_

Are all districts reporting (including late report)?  Yes  No

Percent of districts that send report of each week the last 12 months in 2008 EFY. -----

Are all hospitals reporting?  Yes  No

Percent of hospitals that send report of each week the last 12months in 2008 EFY. -----

Total weekly reports received from districts/Hospitals (including late reports, from July 2015-may, 2016)

WHO epid. wk	N <sup>o</sup> of districts expected to report	N <sup>o</sup> of districts that report (including late report)	N <sup>o</sup> of Hospitals expected to report	N <sup>o</sup> of hospitals that report (including late reports)	WHO epid. wk	N <sup>o</sup> of districts expected to report	N <sup>o</sup> of districts that report (including late report)	N <sup>o</sup> of Hospitals expected to report	N <sup>o</sup> of hospitals that report (including late reports)

**Representativeness:**

What is the health service coverage of the district/ zone/ region? \_\_\_\_\_%

What is the health service utilization of zone? \_\_\_\_\_%

Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes / No

Was the surveillance system enabled to follow the health and health related events in the whole community? Yes /No

If answer for Q 12 is no, who do you think is well benefited by the surveillance system?  The urban  the rural  both

If yes for Q 12, do you think that rural and urban communities are equally benefited in surveillance system? Yes/ No , if no why \_\_\_\_\_

Are all the Socio demographic variables included in the surveillance reporting format? Yes /No

If the answer for Q 7 is No, which a) Sex----- b) age group----- c) ethnic group----- d) religion----- is less represented?

**Stability:**

Was any new restructuring affected procedures & activities of surveillance of these diseases? Yes/ No

Was there lack of resources that interrupt the surveillance system? Yes / No if yes what was it and how do you solve it \_\_\_\_\_

Was there any time /condition in which the surveillance is not fully operating? Yes/ No

If the answer yes for Q #3 When/what is the condition that talks the system not to function properly

Is there a surveillance officer or focal person (PHEM unit)? Yes/No Number \_\_\_\_\_

**Timeliness:**

Are all districts /health facilities reporting on time?  Yes  No

Percent of districts that report on time. -----

Are all Hospitals reporting on time?  Yes  No

Percent of hospitals that report on time. -----

Weekly Zonal reports received on time in last 12 months in 2015/16 report (July2015-May, 2016)

WHO epid wk	N <sup>o</sup> of districts expected to report	N <sup>o</sup> of districts that report on time	N <sup>o</sup> of Hospitals expected to report	N <sup>o</sup> of Hospitals that report on time	WHO epid wk	N <sup>o</sup> of districts expected to report	N <sup>o</sup> of districts that report on time	N <sup>o</sup> of Hospitals expected to report	N <sup>o</sup> of Hospitals that report on time

How do you work with other departments and other sectors? \_\_\_\_\_

**II. District (intermediate level) questionnaire**

Region \_\_\_\_\_ Zone \_\_\_\_\_

Woreda \_\_\_\_\_ Name of respondent \_\_\_\_\_

Tele \_\_\_\_\_ Date \_\_\_\_\_

Total pop. \_\_\_\_\_ Male \_\_\_\_\_ Female \_\_\_\_\_ u5yrs \_\_\_\_\_

Rural pop. \_\_\_\_\_ urban pop. \_\_\_\_\_ Total Kebeles \_\_\_\_\_ urban

\_\_\_\_\_ rural \_\_\_\_\_ Hosps. \_\_\_\_\_ H.Cs \_\_\_\_\_ Hps \_\_\_\_\_ All

types of private clinics \_\_\_\_\_ other private health facility \_\_\_\_\_ NGOs H.F. \_\_\_\_\_

\_\_\_\_\_ Total # of malarious kebeles \_\_\_\_\_ Total pop at risk for malaria \_\_\_\_\_

Availability of a National Surveillance Manual

Is there a national Phem manual/ guideline for surveillance system? Yes /No/ Not applicable/  
Unknown

If yes, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

---

What are the objectives of surveillance? \_\_\_\_\_

What are the strengths of your surveillance system? \_\_\_\_\_

What are the weaknesses of your surveillance system? \_\_\_\_\_

---

**Case Detection and Registration**

Do you have standard case definitions for the Country's priority diseases like SAM, dysentery, malaria, and measles.....? Yes /No / Unknown /Not applicable

If the answer is yes for Q #1, observe the presence of the standard case definition for each priority disease. Yes No

If answer for Q1 is No, for which disease(s) did you lack the case definition? \_\_\_\_\_

---

**Data reporting**

Are the Federal/ Regional health bureau responsible for providing surveillance forms to the health facilities? Yes No Unknown Not applicable

If yes, have you lacked appropriate surveillance forms at any time during the last 12 months? Yes No Unknown Not applicable

What are the reporting entities for the surveillance system? A. Public health facilities B.NGO health facilities C. Military health facilities D. Private health facilities E. Others\_\_\_\_\_

Was there any report of the immediately reportable diseases in the past 1 month? Yes/ No

If yes, for Q 7, with in what time is the report received after detection of the diseases?

A.Less than 1 hour B.2-24 hour C.1- 2 days D.3- 7 days E.After 1 week

Percent of health facilities that have means for reporting to next level by e-mail, telephone, fax or radio \_\_\_\_\_

How do you report weekly, monthly and other formations to higher level?

A. Mail B. Fax C. Telephone D. Radio E. Electronic F. Other

Did you have address of Zonal PHEM officers? Yes /No

How frequently are you communicating with the Zonal PHEM officers on emergencies and other daily activities?

Daily  Weekly  Every 2 week  Monthly  Quarterly  Every 6 month

Yearly  Others-----

Did you have address of HC/HP PHEM focal persons? Yes /No

How frequently are you communicating with the HC/HP PHEM focal persons on emergencies and other daily activities?

Daily  Weekly  Every 2 week  Monthly  Quarterly  Every 6 month  Yearly

Others-----

Did you have case based reporting formats for outbreaks ?Yes /No  Not Applicable

Was there guide line for specimen collection, handling and transportation to the next level? Yes/No

Not Applicable

Did you have line list for reporting outbreaks? Yes/No  Not Applicable

Did you face shortage of surveillance reporting and recording formats? Yes/ No

If yes, which form \_\_\_\_\_

When are you expected to send weekly report to the Zonal PHEM unit?  Monday  Tuesday  
 Wednesday  Thursday  Friday  Saturday  Sunday  I don't know

When are you expected to receive weekly report from HCs/HPs?  Monday  Tuesday   
Wednesday  Thursday  Friday  Saturday  Sunday  I don't know

How is the district communicating the HCs/HPs PHEM officers in case of immediately reportable diseases?  by e-mail  by phone  by fax  regular weekly report  others

Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system? Yes /No

If answer for Q9 is yes to whom did you send? \_\_\_\_\_

\_\_\_\_\_

If you faced any problems on communicating and reporting, list them \_\_\_\_\_

\_\_\_\_\_

Mention the alternative solutions that you take to tackle the problems you listed on the above?

\_\_\_\_\_

Do you have assigned surveillance officer for PHEM activities and working on? Yes /No

If no, who is responsible for PHEM activities? \_\_\_\_\_

If yes for Q 27, did he train on surveillance system?  Yes  No

If answer for Q 27 is yes a) when----- b) Topic----- c) For how long? -----

Did you conduct any onsite training / orientation about surveillance system for the HC and HP PHEM focal persons? yes/No Was data compiled? Yes /No Did you have computer on your office? Yes/No

Did you have computer on your department (PHEM unit)? Yes /No

What is the data entry and compilation instrument?  Manual  Computer  other-----  
-----

Did you have computer skill on  MS word  MS excel  MS power point  Epi-info

Did you analyze the data collected from surveillance system? Yes /No

If answer for Q 35 is yes, did you described data by,  time  place  person

If yes for Q 36, for which disease \_\_\_\_\_

Did you have denominators for data analysis?  Total population  male  female   
under five Please indicate the frequency of your data analysis.

Weekly  Every two week  Monthly  Quarterly  Every 6 month  Annually

No regular time

Did you notify the results of your analysis to the higher level PHEM? Yes/No

Did you notify the results of your analysis to the lower level PHEM? Yes/No

If answer for Q 38 is No, what is the reason?

Lack of knowledge  Shortage of time  Less attention  Shortage of materials

Analysis is not familiar  Negligence  Other-----

How can report system be improved?

---

Do you have an action threshold for any of the country priority diseases? Yes No I don't know

If yes, what is it? \_\_\_\_\_ cases \_\_\_\_\_% increase \_\_\_\_\_ rate

(Ask for 2 priority diseases)\_

---

### **Epidemic preparedness**

Did you have plan for epidemic response and preparedness? Yes/No

Did you have emergency stocks of drugs and supplies? Yes/No

If answer for Q 47 is No, how did you control epidemics? \_\_\_\_\_

Had you experienced shortage of drugs, vaccines and supplies in last 12months in 2008 EFY? Yes/No

Was district epidemic management committee established? Yes /No

Did the epidemic management committee have regularly scheduled meeting time? Yes/No

Was Woreda Rapid response team established? Yes /No

Did the Rapid response team have regularly scheduled meeting time during epidemics? Yes /No

Did you have case management protocol for epidemic prone diseases? Yes /No

Did your PHEM have multi sectorial emergency preparedness and response task force committee? Yes /No

In what frequency did the task force meet during outbreaks? \_\_\_\_\_

Were partners working together with your office on emergencies? Yes /No

If answer for Q 57 is yes, what type of supports did they give to your office? \_\_\_\_\_

Was there a budget for epidemic response? Yes /No

Had you a car assigned for emergencies (PHEM)? Yes /No Not functional

If answer for Q 60 is NO, how did you address emergencies? \_\_\_\_\_

Had you faced any Challenges on epidemic response and preparedness in the last 12 months in 2008 EFY?  Yes  No

If answer for Q62 is yes, a) list the challenges \_\_\_\_\_

b) What measures did you take to tackle the challenges? \_\_\_\_\_

### **Outbreak investigation**

Had you investigated any outbreak in the last 11 months in 2008 EFY? Yes/No

Did you have outbreak investigation check list? Yes / No

If answer for Q64 is No, how did you know possible factors for the outbreak? -----

Where was laboratory confirmation of cases done? Regional laboratory  Hospital  EPHI  
 Health center Contracted private laboratory  Other-----

Who was responsible to investigate an outbreak?

Rapid response team  HEWs Staffs of district H.O  Experts organized randomly  
 Health facility staffs  Other-----

If answer for Q 64 is yes how many out breaks did you investigated in 2015/16? \_\_\_\_

S.N <sup>o</sup>	Name of out break	Place(Kebele/district)	N <sup>o</sup> of cases			N <sup>o</sup> of deaths			Start date of the out break	Investigation date	Remark
			M	F	U5	M	F	U5			
1											
2											
3											

Had you faced any challenge in outbreak investigation in the last 11 months in 2008 EFY? Yes/No

If answer for Q70 is yes, a) list the challenges \_\_\_\_\_

b) List the alternatives that you take to tackle the challenges. \_\_\_\_\_

**Responses**

Has the district implemented prevention and control measures based on local data for at least one reportable disease or syndrome?

Yes No Unknown Not applicable

Does the district responded within 48 hours of notification of most recently reported outbreak (from written reports)

Yes No unknown not applicable

Does the district achieved an acceptable case fatality rate for most recent outbreak (Observe from outbreak report)

Yes No Unknown Not applicable

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

Yes No Unknown Not applicable

**Supervision and Feedback**

Did you have supervision plan in 2008 EFY? Yes/ No

If answer for Q 76 is No, how did you supervise? \_\_\_\_\_ -

If answer for Q 76 is yes, did you supervise the health centers (HCS) and health posts (HPs) according to your plan in 2008 EFY? Yes/ No

If answer for Q 78 is No, what is the reason? \_\_\_\_\_ -

If answer for Q 78 is yes, how many times did you supervise each health center (HC) and health post (HP) in 2008 EFY? Health center \_\_\_\_\_ health post \_\_\_\_\_

Had you reviewed about surveillance practice by higher level supervision? Yes /No

Did you have regular supervision checklist? Yes/ No

If answer for Q 82 is No, how did you supervise the health centers and health posts?

\_\_\_\_\_

Were you supervised by higher level officers the last 11 months in 2008 EFY? Yes/ No

If answer for Q 84 is yes how many times in 2008 EFY? \_\_\_\_\_

Did you send feedback of your supervision to the health centers (HCS) and health posts (HPs) commenting/indicating their strong and weak sides? Yes /No (observe)

If answer for Q 86 is No, why\_\_\_\_\_

If answer for Q 86 is yes, for how many HCs and HPs did you send a feedback in 2008 EFY? HC-  
-----

Had you received feedback from higher level supervisors in 2008 EFY? Yes/ No

If answer for Q 89 is yes how many feedbacks did you received in 2008 EFY? \_

Did you conduct active case search for health facilities? Yes/No if yes, how many times and for how many health facilities? \_\_\_\_\_

Had you faced any challenge on supervision and feedback in 2008 EFY? Yes/No

If answer for Q 92 is yes a) list the challenges\_\_\_\_\_

b) List the measures that you take to tackle the challenges\_\_\_\_\_

### **Training**

Have you been trained in disease surveillance?

Yes No Unknown Not applicable

*If yes, specify when, where, how long, by whom?*

\_\_\_\_\_

What percent of your personnel in the district have been trained in surveillance and epidemic management? \_\_\_\_\_

### **Resource**

I. Percent of sites that have: A. Logistics B. Electricity C. Bicycles

D. Motor cycles E. Vehicle

### **Data management**

A. Stationery, B. Calculator, C. Computer, D. Printer, E. Statistical package, F. Communication, G. Telephone service, H. Fax, I. Radio, J. Computers that have modems, K. Information education and communication materials ,

L. Posters, Megaphone M. Flipcharts or Image box N.VCR and TV set O. Generator

P. Screen Q. Projector (Movie) R. Other:

**Satisfaction with surveillance system**

Are you satisfied with the surveillance system?

Yes/ No Unknown Not applicable

If no, how can the surveillance system be improved?

---

**Opportunities for integration**

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

Questionnaire for Attributes and level of Usefulness:

Total population under surveillance in 2008 EFY\_\_\_\_\_

What is the incidence / Prevalence of 2008 -in your area/region

Malaria \_\_\_\_\_Laboratory done \_\_\_\_\_cases P.F \_\_\_\_\_ P.v \_\_\_\_\_Deaths \_\_\_\_\_

Typhoid fever\_\_\_\_\_cases \_\_\_\_\_Deaths \_\_\_\_\_

Measles \_\_\_\_\_cases \_\_\_\_\_Deaths \_\_\_\_\_

Pandemic influenza\_\_\_\_\_cases\_\_\_\_\_Deaths\_\_\_\_\_

Level of Usefulness of the Surveillance System for these selected priority diseases

Does the surveillance system help?

To detect outbreaks of priority diseases early on time to permit accurate diagnosis? Yes/ No

To estimate the magnitude of morbidity and mortality related to these diseases, including identification of factors associated with these diseases? Yes/ No

Permit assessment of the effect of prevention and control programs? Yes/ No

Observe (confirmation):

interventions and diseases trends analyzed ---Available //Not available

**Describe Each System Attributes:**

**Simplicity:**

Is the case definition of the priority diseases (malaria, typhoid fever, measles, pandemic influenza....) easy for case detection by all level health professionals? Yes/ No

The surveillance system allows all levels of professionals to fill data? Yes/No

Does the surveillance system help to record and report data on time?

Does the surveillance system (Reporting format) have necessary information for investigation?  
Yes/No

How long it takes to fill the format? a, <5 minute b-10-15 minutes c- >15 minutes

How long does it take to have laboratory confirmation of

Malaria -----Pandemic influenza-----Measles-----Others-----

**Flexibility:**

Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? Yes/ No

Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? Yes /No

Comment: \_\_\_\_\_

Is the system easy to add new variables? Yes /No

Is the surveillance system easy to integrate with other systems? Yes /No

Is the surveillance system easy to add new disease on report? Yes /No

Is the system easy to add new information technology? Yes /No

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

Are the reporting site / data collectors trained/ supervised regularly? Yes/No

Observe: Review the last months report of these diseases

Average number of *unknown or blank responses* to variables in each of the reported forms

---

Percent of reports which are complete(that is with no blank or unknown responses) from the total reports \_\_\_\_\_

Are all health facilities reporting (including late report)?  Yes  No

Percent of health facilities that send report of each week in the last 11 months 2008 EFY. -----

Total weekly reports received from H.C/health posts (including late reports. from july2015—may 2016)

WHO epid. Wk	N° of HCs expected to report	N° of HCs reported	N°of HPs expected to report	N°of HPs reported	WHO epid. wk	N° of HCs expected to report	N° of HCs reported	N°of HPs expected to report	N°of HPs reported

**Acceptability:**

Do you think all the reporting agents accept and well engaged to the surveillance activities?  
Yes/No

If yes, how many are active participants (of the expected including all private clinics)?  
\_\_\_\_\_ / \_\_\_\_\_

If No for Q #7, what is the reason for their poor participation in the surveillance activity?

Lack of understanding of the relevance of the data to be collected

No feedback / or recognition given by the higher bodies for their contribution;

i.e. no dissemination of the analysis data back to reporting facilities

Reporting formats are difficult to understand

Report formats are time consuming

Other:

---

Were all participants using the standard case definition to identify cases? Yes/ No

If yes, what is your evidence? \_\_\_\_\_

Were all the reporting agents send their report using the current and appropriate surveillance reporting format? Yes/ No (if yes observe the documents)

Were all the health professionals aware about the surveillance system? Yes/No (if yes how they award)

**Representativeness:**

What is the health service coverage of the district? \_\_\_\_\_ %

What is the health service utilization of the district? \_\_\_\_\_ %

Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes / No

Was the surveillance system enabled to follow the health and health related events in the whole community? Yes /No

If answer for Q 13 is no, who do you think is well benefited by the surveillance system?  The urban the rural both

If yes for Q 13, do you think that rural and urban communities are equally benefited in surveillance system? Yes/ No , if no why \_\_\_\_\_

Are all the Socio demographic variables included in the surveillance reporting format? Yes /No

If the answer for Q 6 is No, which a) Sex----- b) age group----- C) ethnic group----- d) religion----- is less represented?

**Timeliness:**

Are all health facilities reporting on time?  Yes  No

Percent of health facilities that report on time. -----

Weekly health facilities reports received on time in the last 11 months in 2008 EFY

WHO epid wk	N <sup>o</sup> of HCS expected to report	N <sup>o</sup> of HCs that report on time	N <sup>o</sup> of HPs expected to report	N <sup>o</sup> of HPs that report on time	WHO epid wk	N <sup>o</sup> of HCS expected to report	N <sup>o</sup> of HCs that report on time	N <sup>o</sup> of HPs expected to report	N <sup>o</sup> of HPs that report on time

**Stability:**

Was any new restructuring affected the procedures and activities of the surveillance of these diseases? Yes/ No

Was there lack of resources that interrupt the surveillance system? Yes / No if yes what was it and how do you solve it \_\_\_\_\_

Was there any time /condition in which the surveillance is not fully operating? Yes/ No

If the answer yes for Q #5 When/what is the condition that talks the system not to function properly? -----

How did you work with other departments and other sectors? \_\_\_\_\_

**Health center questionnaire**

Region \_\_\_\_\_ Zone \_\_\_\_\_ woreda \_\_\_\_\_

Name of H.C \_\_\_\_\_ Name of respondent \_\_\_\_\_

Tele \_\_\_\_\_ Date \_\_\_\_\_

General

Catchment population \_\_\_\_\_ u5 \_\_\_\_\_ # of Kebeles/H.Ps \_\_\_\_ / \_\_\_\_

Is there a national PHEM manual for surveillance at this site?

Observe national surveillance manual: Yes No Unknown Not applicable

What are the objectives of surveillance? \_\_\_\_\_

What are the strengths of your surveillance system? \_\_\_\_\_

What are the weaknesses of your surveillance system? \_\_\_\_\_

Observe the existence of a clinical register

Yes / No Unknown Not applicable

Observe the correct filling of the clinical register during the previous 30 days

Yes No Unknown Not applicable

Do you have a standard case definition for: (each priority disease) like typhoid fever, pandemic influenza, measles, malaria...? Yes/No Unknown Not applicable

Observe the standard case definition for:(each priority disease) Yes / No Unknown Not applicable

Observe the respondent correctly diagnosing one of the country's priority diseases using a standard case definition

Yes/ No Unknown Not applicable

(Select one of the priority diseases in the facility's clinical registers and ask how they diagnosed it — interviewer should have the standard case definition from MOH)

### **Case confirmation**

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

Stool Y N U N/A

Blood Y N U N/A

CSF at this facility? Y N U N/A

Observe the presence of materials required to collect

Stool Y N U N/A

Blood/serum Y N U N/A

CSF Y N U N/A

Do you have the capacity to handle sputum, stool, blood/serum and CSF until shipment at this facility ?Yes No Unknown Not applicable

Observe presence of functional cold chain at health facility Yes No Unknown Not applicable

Observe presence of transport media for stool at health facility Yes No Unknown Not applicable

Observe presence of packing materials for shipment of specimens at health facility Yes No Unknown Not applicable

**Data reporting**

Which communication material did you have?

E-mail  Wired phone  Mobile  Radio  Fax  Other-----

-Did you have address of Zonal/district PHEM officers? Yes  No

How frequently are you communicating with the Zonal/district PHEM officers on emergencies and other daily activities?

Daily  Weekly  Every 2 week  Monthly  Quarterly  Every 6 month

Yearly  Others-----

When are you expected to send weekly report to the Zonal/district PHEM unit?

Monday  Tuesday  Wednesday  Thursday  Friday  Saturday  Sunday

I don't know exactly

How is your facility communicating the Zonal/district PHEM officers in case of immediately reportable diseases?

By e-mail  By phone  By fax  Regular weekly report Others-----

Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system?  Yes No

If answer for Q 18 is yes, to whom did you send? -----

If you faced any problems on communicating and reporting, list them-----  
-----

Mention the alternative solutions that you take to tackle the problems you above? -----  
-----

Have you lacked appropriate surveillance forms and records at any time during the last 12 months (rumor log book, epidemic reporting, weekly, case based, investigation...)

Yes No Unknown Not applicable

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

Obs Measles Y N U N/A, Obs Malaria Y N U N/A, Obs AFP (polio) Y N U N/A

Obs Pandemic influenza Y N U N/A

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

Obs Weekly: /12 times the number of sites, Obs immediately: /-- times the number of sites

On time (use national deadlines), Obs Number of weekly reports submitted on time:- \_\_\_\_\_ /12 times the number of sites

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

How do you report to higher level?

A. Mail B. Fax C. Telephone D. Radio E. Electronic F. Other Strengthening reporting

How can reporting be improved?

---

---

### **Data analysis**

Is there assigned focal person for surveillance activities? Yes/ No

If no for Q 31 how do you do surveillance activities? \_\_\_\_\_

If yes for Q 31, did he trained on surveillance system? Yes/ No

If answer for Q33 is yes a) when-----? b) Topic-----? c)

For how long? -----

Was data compiled? Yes /No

Did you have computer on your office? Yes / No

Did you have computer on your department (PHEM unit)? Yes /No

What is the data entry and compilation instrument?  Manual  Computer   
other\_\_\_\_\_

Did you have computer skill on  Ms word  Ms excel  MS power point  Epi-info

Did you analyze data of the surveillance system? Yes /No

If answer for Q 40 is yes, did you describe data by  time  place  person

Did you have denominators for data analysis?  total population  male  female  U5

Please indicate the frequency of your data analysis.

Weekly  Every two week  Monthly  Quarterly

Every 6 month  Annually  No regular time

Did you notify the results of your analysis to the higher level PHEM? Yes /No

If answer for Q 44 is No, what is the reason?

Lack of knowledge  Shortage of time  Less attention given  Shortage of materials

Analysis is not familiar  Negligence  Other-----

Did you perform trend analysis (Observe the presence of line graph of cases by time)

Yes No Unknown Not applicable

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

Yes No Unknown Not applicable

If yes for Q 47, what is it (Ask for at least 2 priority diseases)? \_\_\_cases \_\_\_ % increase \_\_\_rate

### **Epidemic preparedness**

Did you have plan for epidemic response and preparedness? Yes/ No

Did you have emergency stocks of drugs and supplies? Yes/ No

If answer for Q 50 is No, how did you control epidemics? \_\_\_\_\_

Had you experienced shortage of drugs, vaccines and supplies 2015/16? Yes No I don't know

Did you establish epidemic management committee?  Yes  No  Not Applicable

Did the epidemic management committee have regularly scheduled meeting time? Yes/ No

Did you establish Rapid response team?  Yes  No  Not Applicable

Did the Rapid response team have regularly scheduled meeting time during epidemics? Yes/No

Did you have case management protocol for epidemic prone diseases?  Yes  No

Was there a budget for epidemic response?  Yes  No

Any Challenges on epidemic response and preparedness in 2008 EFY? Yes / No

If answer for Q 59 is yes, a) list the challenges \_\_\_\_\_

b) What measures did you take to tackle the challenges? \_\_\_\_\_

**Epidemic response**

Is there any outbreak occurred in your area in 2008 EFY? Yes/ No how money \_\_\_\_\_

If yes for Q 61, how many of them were investigated in 2008 EFY? \_\_\_\_\_

Did you have outbreak investigation check list? Yes/ No

If answer for Q 63 is No, how did you know possible factors for the outbreak? -----  
-----

Where was laboratory confirmation of cases done?

Regional laboratory  Hospital  EPHI  Health center  Contracted private laboratory

Other-----

Has the health facility implemented prevention and control measures based on local data for at least one epidemic prone disease? Yes No Unknown Not applicable

Did they achieved acceptable case fatality rates (e.g. 10% for Meningococcal, 1% for Cholera) during the most recent outbreak

Observe that the health facility achieved an acceptable case fatality rate for most recent outbreak  
Yes No Unknown Not applicable

**Supervision and Feedback**

Were you supervised by higher level (regional, zonal or district) officers in 2008 EFY? Yes /No(observe at least one feedback report)

If answer for Q 68 is yes, how many times in 2015/16? -----

Had you received feedback from higher level supervisors in 2008 EFY? Yes /No

If answer for Q 70 is yes, how many feedbacks did you received in 2008 EFY? -----

Had you faced any challenge on supervision and feedback in 2008 EFY? Yes /No

If answer for Q 72 is yes a) list the challenges.-----

b) list the measures that you take to tackle the challenges.-----

How many meetings has this health facility conducted with the community members in the past 11 months? \_\_\_\_\_

Observe the minutes or report of at least 1 meeting between the health facility team and the community members within the 11 months: Yes No Unknown Not applicable

**Resources**

**Logistics**

Electricity, Bicycles, Motor cycles, Vehicles, Data management Stationery Calculator, Computer, Software Printer, Communication Tel. service, Computer with modem Fax & Radio call

**Information education and communication materials:** Posters, Megaphone, Flipcharts or Image box VCR and TV set, Generator, Screen Projector (Movie)

Other:

Protection materials (list) \_\_\_\_\_

Questionnaire for Attributes and level of Usefulness:

Total population under surveillance \_\_\_\_\_ 2008

What is the incidence / Prevalence of 2015/16 in your area/ region?

- ❖ Malaria \_\_\_\_\_ Total laboratory done \_\_\_\_\_ cases P.F \_\_\_\_\_ P.V \_\_\_\_\_ Deaths
- ❖ Typhoid fever \_\_\_\_\_ cases \_\_\_\_\_ Deaths \_\_\_\_\_
- ❖ Pandemic influenza \_\_\_\_\_ cases \_\_\_\_\_ Deaths \_\_\_\_\_
- ❖ Measles \_\_\_\_\_ cases \_\_\_\_\_ Deaths \_\_\_\_\_

**Level of Usefulness of the Surveillance System for these selected priority diseases**

Does the surveillance system help?

86. To detect outbreaks of priority diseases early on time to permit accurate diagnosis? Yes/ No

87. To estimate the magnitude of morbidity and mortality related to these diseases, including identification of factors associated with these diseases? Yes/ No

88. Permit assessment of the effect of prevention and control programs? Yes/ No

**Describe Each System Attributes:**

**Simplicity:**

Is the case definition of the priority diseases (malaria, typhoid fever, measles, Pandemic influenza....) easy for case detection by all level health professionals? Yes/ No

The surveillance system allows all levels of professionals to fill data? Yes/No

Does the surveillance system help to record and report data on time?

Does the surveillance system (Reporting format) have necessary information for investigation?  
Yes/No

How long it takes to fill the format? a, <5 minute b-10-15 minutes c- >15 minutes

How long does it take to have laboratory confirmation of

Malaria-----Typhoid fever----Pandemic influenza ----Measles -----Others-----

**Flexibility:**

Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? Yes/ No

Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? Yes /No

Comment: \_\_\_\_\_

Is the system easy to add new variables? Yes /No

Is the surveillance system easy to integrate with other systems? Yes /No

Is the surveillance system easy to add new disease on report? Yes /No

Is the system easy to add new information technology? Yes /No

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

Are the reporting site / data collectors trained/ supervised regularly? Yes/No

Observe: Review the last months report of these diseases

Average number of *unknown or blank responses* to variables in each of the reported forms

\_\_\_\_\_

Percent of reports which are complete (that is with no blank or unknown responses) from the total reports \_\_\_\_\_

### **Acceptability:**

Were all health workers using the standard case definition to identify cases? Yes/ No

If yes, what is your evidence \_\_\_\_\_

Were your health facilities sending your report using the current and appropriate surveillance reporting format? Yes/ No (if yes observe the documents)

Were all the health professionals aware about the surveillance system? Yes/No (if yes how they awarded)

### **Representativeness:**

What is the health service coverage of the catchment area? \_\_\_\_\_%

What is the health service utilization of the catchment area? \_\_\_\_\_%

Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes / No

Was the surveillance system enabled to follow the health and health related events in the whole community? Yes /No

If answer for Q 4 is no, who do you think is well benefited by the surveillance system?  The urban the rural both

If yes for Q 4, do you think that rural and urban communities are equally benefited in surveillance system? Yes/ No , if no why \_\_\_\_\_

Are all the Socio demographic variables included in the surveillance reporting format? Yes /No

If the answer for Q 7 is No, which a) Sex----- b) age group----- c) ethnic group----- d) religion----- is less represented?

**Timeliness:**

Are you sending report timely?  Yes  No (observe copy of reports)

**Stability:**

Was any new restructuring affected the procedures and activities of the surveillance of these diseases? Yes/ No

Was there lack of resources that interrupt the surveillance system? Yes / No if yes what was it and how do you solve it

---

Was there any time /condition in which the surveillance is not fully operating? Yes/ No

If the answer yes for Q #3 When/what is the condition that talks the system not to function properly? -----

**Opportunities for integration**

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

\_\_\_\_\_?

### Health Post Level Questionnaire

Region \_\_\_\_\_

Respondent \_\_\_\_\_

Zone \_\_\_\_\_

Tele. \_\_\_\_\_

Woreda \_\_\_\_\_

Date \_\_\_\_\_

Health C. (cluster) \_\_\_\_\_

Name of health Post \_\_\_\_\_

General overview

What are the objectives of surveillance? \_\_\_\_\_

What are the strengths of your surveillance system? \_\_\_\_\_

What are the weaknesses of your surveillance system? \_\_\_\_\_

Communication and reporting assessment

Which communication material did you have?

E-mail  Wired phone  Mobile  Radio  Fax  Other-----

Did you have address of district or H.C PHEM officers? Yes /No

How frequently are you communicating with the district or H.C PHEM officers on emergencies and other daily activities?

Daily  Weekly  Every 2 week  Quarterly  Every 6 month  Yearly  Others

When are you expected to send weekly report to the district or H.C PHEM unit?  Monday  Tuesday  Wednesday  Thursday  Friday  Saturday  Sunday  I don't know

How are you communicating district or H.C PHEM officers in case of immediately reportable diseases?  By e-mail  By phone  By fax  Regular weekly  Others-----

If you faced any problems on communicating and reporting, list them-----

Mention the alternative solutions that you take to tackle the problems you above? -----

**Assessment of availability of Surveillance Documentation, Registers, and Forms**

Was there national manual for surveillance?  Yes  No  Not Applicable

Did you have standard case definition for all country priority diseases? Yes/ No

Was the case definition posted?  Yes  No

If answer for Q2 is No, for which disease(s) did you lack the case definition?-----

Did you have case reporting formats for out breaks?  Yes  No  Not Applicable

Was there guide line for specimen collection, handling and transportation to the next level?  Yes  
 No  Not Applicable

Had you line list format for reporting outbreaks?  Yes  No  Not Applicable

Was there a clinical register/logbook in your health post?  Yes  No  Not Applicable

Did you face shortage of surveillance reporting and recording formats? Yes/ No

If answer foe Q9 is yes, which form? -----

Data analysis and training assessment

Had you trained on surveillance system? Yes/ No

If answer for Q1 is yes a) when-----? b) Topic-----? c) For how long? -----

Did you analyze data?  Yes  No

Outbreak investigation and case confirmation assessment

Was there any outbreak in your Kebele in 2015/16? Yes/ No

If your answer for Q1 is yes, what did you do?

Reported to the district PHEM  Reported to administrative leaders  We investigated

Cases referred to health center/hospital  Other-----

Where was laboratory confirmation of cases done? \_\_\_\_\_

Who was responsible to investigate an outbreak? \_\_\_\_\_

If answer for Q1 is yes how many outbreaks were occurred in your Kebele in 2008 EFY? Fill the table below

Had you faced any challenge in outbreak investigation in 2008 EFY? Yes/ No

If answer for Q 6 is yes, a) list the challenges-----

b) List the alternatives that you take to tackle the challenges.-----

### **F. Supervision and feedback**

Were you supervised by higher level (regional) officers in 2008 EFY?  Yes  No

If answer for Q1 is yes how many times in 2008 EFY? -----

Had you received feedback from higher level supervisors in 2008 EFY?  Yes  No

If answer for Q 3 is yes how many feedbacks did you received in 2008 EFY? -----

### **Annex V: Data collection tools for health profile of Debre Tabor Admin.Town**

#### 1. Historical Aspects of the area (if available)

The name how and why \_\_\_\_\_

How was the Town formed \_\_\_\_\_

Any other historical aspect \_\_\_\_\_

#### 2. Geography and Climate

Area of the Town \_\_\_\_\_

Distance from Addis Ababa and Bahir Dar \_\_\_\_\_  Altitude \_\_\_\_\_

Latitude \_\_\_\_\_  Average Annual rain fall \_\_\_\_\_  Average Annual temp \_\_\_\_\_

Land bodies \_\_\_\_\_  Water bodies \_\_\_\_\_

3. Demographic information  Total Population size \_\_\_\_\_
- male \_\_\_\_\_  female \_\_\_\_\_
- urban \_\_\_\_\_  rural \_\_\_\_\_  Sex ratio \_\_\_\_\_
- Age structure: -percentage of children < 1yrs \_\_\_\_\_. <5yrs \_\_\_\_ < 15 yrs.
- Percentage of old people >65 years \_\_\_\_\_  Women child bearing age \_\_\_\_\_
- Percentage of pregnant women \_\_\_\_\_  Dependency ratio \_\_\_\_\_
- Population size by religion  Orthodox \_\_\_\_\_  Catholic \_\_\_\_\_  Protestant \_\_\_\_\_
- Muslim \_\_\_\_\_ Others \_\_\_\_\_
- Estimated Population size by Kebele

Serial No	Name of kebele	population size		
		Male	Female	Total
1				
2				
3				
4				

**4. Administrative setup**

Total no. of kebeles: rural \_\_\_\_\_ Urban \_\_\_\_\_ Town \_\_\_\_\_  
 Boundaries \_\_\_\_\_

**5. Health status**

Number of health facilities

Type of Health facility	Number	Ratio
Hospital		
Health Center		
Private clinic		
Pharmacy		
Drug store		
Diagnostic laboratories		
Health post		

Man power of Admin.Town health office and health facility in 2014/15

Type	Number	Ratio
Physician		
Health officers		
Laboratory/Technician/Technologist		
Pharmacy/technician/Pharmacist		
Nurses		
Mid wife		
HEW		
TBA		
Others		

Top causes of morbidity and mortality

Top ten leading causes of OPD visit (morbidity) Town, in 2014/15

Serial no.	Adult	Number (%)	Pediatrics	Number (%)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Top ten causes of admissions

Serial no.	Adult	Pediatrics
1		
2		
3		
4		
5		
6		
7		

8		
9		
10		

Top ten causes of deaths (mortality)

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

Vital statistics CBR \_\_\_\_\_ CDR \_\_\_\_\_ NMR \_\_\_\_\_

PNMR \_\_\_\_\_ IMR \_\_\_\_\_ MMR \_\_\_\_\_ GR \_\_\_\_\_

Marital status: single \_\_\_\_\_ Married \_\_\_\_\_ Divorced \_\_\_\_\_

MCH and EPI coverage of the Town in 2014/15

Description	Number (%)	Remark
ANC(1st) coverage		

ANC(4th) coverage		
Delivery		
PNC coverage		
BCG coverage		
Measles vaccine		
OPV		
Penta1		
Penta2		
Penta3		
CP		
TT2+ pregnant		
TT2+ non pregnant		
PAB		
Rota1		
Rota2		

Environmental sanitation and availability of safe drinking Water in 2014/15

Description	Number (%)
Latrine coverage	
No.of HH with latrine	
Safe Water Supply coverage	
No.of kebeles accessed to Safe Water Supply	

**Endemic Diseases**

Malaria prevention and control program of **Town** in 2014/15

Description	Number of population (%)
Number of Malarious areas	
ITN coverage	
Coverage of Insecticide chemical spray	
Total no. of cases/yr.	
Case fatality rate	
Cases treated clinically	
Cases Treated based on lab finding	

Supplies: RDT \_\_\_\_\_

Coartem \_\_\_\_\_

**Prevalence of TB/Leprosy**

Description		Population (%)
Prevalence of TB		
Pulmonary TB	Smear positive	

	Smear negative	
Extra PTB		
TB detection rate		
TB Rx completion rate		
TB cure rate		
TB Rx success rate		
TB defaulter rate		
Death on TB Rx		
Total TB patients screened for HIV HIV prevalence rate among TB cases		
Prevalence of Leprosy		

**HIV/AIDS;**

Activities	Male	Female	Total	Remark
Total people screened for HIV				
VCT				
PICT				
PMTCT				
HIV prevalence				
Total PLWHIV on ART				
Pre-ART				
Condom distribution				
Health education coverage				

### 6. Socio economic conditions

Education and school Health

Type of School	Number of School	Number of Teachers	Male students	Female Students	Total Students
Primary					
Secondary					
Tertiary					
Total					

**School health activities :**

- ❖ schools with water supply\_\_\_\_\_
- ❖ Schools with functional latrines \_\_\_\_\_
- ❖ Schools with HIV/other Health clubs\_\_\_\_\_
- ❖ Literacy ratio\_\_\_\_\_
- ❖ Employment
- ❖ Number of people employed\_\_\_\_\_
- ❖ Number of people un employed\_\_\_\_\_
- ❖ Ratio of Employed to un employed\_\_\_\_\_
- ❖ Income
- ❖ Main source of income: Agriculture \_\_\_\_\_ Civil servant \_\_\_\_\_ Others (specify)  
\_\_\_\_\_
- ❖ Yearly income per house hold\_\_\_\_\_
- ❖ Average income per capita \_\_\_\_\_

**7. Communication and Utilities**

How many of the health facilities have access to transportation\_\_\_\_\_ (%)

Telecommunication\_\_\_\_\_ (%)

Electric power\_\_\_\_\_ (%)

**8. Health sector expenditure and financing**

Source	
Total <b>Town</b> budget	
Allocated to Health sector	
Total per capital Health Expenditure	

**9. Disaster situation in the Town**

Was there any disaster (natural or manmade) in the **Town** in the last one year? YES (specify)  
\_\_\_\_\_ No \_\_\_\_\_

Any recent disease outbreak/other public health emergency?

Yes (specify) \_\_\_\_\_ No \_\_\_\_\_  If yes cases \_\_\_\_\_ and deaths \_\_\_\_\_

### 10, Nutrition intervention in Town in 2014/15

Type of Food intervention program	
OTP sites	
TFU	
TSF	
CBN	
EOS	
Others	

11. What do you think the major Health problem/s of the Administrative Town?

---

11.1 What do you think solutions of the addressed problems?

---

**12.** Discussion of the highlights and the main findings of the health profile assessment and description

13. Problem Identification and Priority Setting –set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc.

14. What are the main zoonotic diseases in the Administrative Town?

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_

### Annex VI: Maher Assessment Check list

#### Rapid Maher assessment 2016, Health and Nutrition Sector:

Region/Zone level Questionnaire

Interviewer name \_\_\_\_\_

Institution: \_\_\_\_\_

Interview Date: (dd) \_\_\_\_/(mm)\_\_\_\_\_/2016 \_\_\_\_\_

Region: \_\_\_\_\_

Zone: \_\_\_\_\_

Main contact at this location: Name: \_\_\_\_\_ Position: \_\_\_\_\_ Tel: \_\_\_\_\_

**SECTION I: SOCIO- DEMOGRAPHIC PROFILE**

Population: Woreda total population	M: _____ F: _____	Total: _____	Under 5 _____
	No. of women of reproductive age (age 15-49 yrs.) _____		
	No. of pregnant women : _____		
Special Population ( <i>if any</i> )	Pastorals _____	Refugees _____	IDPs _____ Migrant Workers _____
Number of HCs _____ Number of HPs _____ Number of Mobile health and Nutrition teams _____			
Number of HEWs _____			
Water availability at health centers (HC)	No. of health centers _____	No. of HC with water access _____	No. of HC without water access _____

**SECTION II: HEALTH PROFILE**

**2.1. Coordination and management systems**

Is there a PHEM Officer at Regional level? If yes how money _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Does the RHB/Zone Health Office regularly report PHEM report as scheduled dates? Observe copies and comment _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are there PHEM Officers/focal persons at Woreda and HC levels? If yes how money are there in the district level _____ If yes how money are there in the district level _____	Yes <input type="checkbox"/> No <input type="checkbox"/>

Do the districts, health facilities and HEWs regularly report PHEM report as scheduled dates? Observe copies and comment _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are all relevant government, NGOs and UN agencies represented at Regional PHEM?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a multi sector health coordination forum? If yes how frequently meet? -----	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a Public Health Emergency preparedness and response plan? Does it include reproductive health? Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there accessible emergency response fund for PHEM at regional level? If yes how much allocated-----	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.2. Mention anticipated epidemics (If yes please indicate Zone/Woreda at risk and risk population per anticipated risk: <i>(Use the back side)</i> _____, _____, _____ _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>2.3. Public Health emergency Management</b>	
Is there a Public Health and Nutrition Emergency Preparedness and Response plan?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, is the plan budgeted/ funded?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a trained staff on PHEM basic level (Regional/Zonal/Woreda/HFs)	Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes specify number of trained personnel per level: <b>Region/Total:</b> Female _____ Male _____, <b>Zone:</b> Female _____ Male _____, District: Female _____ Male _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a Regional/zonal trained Rapid Response team (RRT)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a trained staff on Emergency nutrition management at all level? If yes specify the no. : Total _____ Male : _____ Female :- _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>2.4. Disease outbreaks</b>	
<b>Was there any outbreak in the last 3 months?</b> YES _____                      NO _____	
If yes, specify the type of disease	

Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____
Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____
Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____
Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____
Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____

**Is there any ongoing outbreak of any disease? YES \_\_\_\_\_ NO \_\_\_\_\_**

Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____
Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____
Type of outbreak _____	Number of cases _____	Deaths _____	(specify the time period) _____

<b>Drugs and medical supplies</b>				
<b>Description</b>		Total requirement	Available	Gap
<b>Vaccines</b>	Meningitis vaccine			
<b>Drugs</b>	Coartem			
	Artesunate (rectal)			
	Artesunate (Inj)			
	Artemether IM			
	Quinine (PO)			
	Quinine (IV)			
	Chloroquine			
	Ceftriaxione			
	Oily CAF			
	Doxycycline			
	Ringer lactate			
	ORS			
	Vit A.			
<b>Nutrition supplies</b>	F100			
	F75			
	RUTF			
	Resomal			
	Routine antibiotics at SC/OTP (the list can be annexed)			

<b>Laboratory supplies</b>	RDT (Malaria)			
	Pastorex (Meningitis)			
	LP set			
	TI bottle			
<b>Kits</b>	CTC Kit (AWD)			
<b>Medical supplies</b>	Gloves,			
	Syringe			
	PPE			
<b>RH medical supplies/drugs</b>	Individual Clean Delivery Kits			
	Emergency medicines and supplies to support care of rape survivors? (Main shortage (if any): Specify)			

### SECTION III: RISK FACTORS

<b>Diseases</b>	<b>Risk factors for epidemics to occur</b>	<b>Yes</b>	<b>No</b>
Malaria	Malaria endemic area	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Presence of malaria breeding site	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Interrupted or potentially interrupting rivers	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Unprotected irrigation in the area	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	LLINs coverage <80 No _____ % _____		
	Indicate the coverage of IRS 2008 No _____ % _____		
	Was there any prevention and control activities	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Number of malarious kebeles and total population in these Kebeles	Keb _____	Pop _____
Meningitis	Was there Meningitis epidemic in the last 3 years (If yes specify date)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

	Has vaccination been conducted in the past 3 years	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If yes : Indicate the date and number of people vaccinated Date _____ No _____	
AWD	Was there AWD epidemic in the last three years (If yes specify date) _____	
	Latrine coverage number and percentage. No _____ % _____	
	Latrine utilization No _____ % _____	
	Safe water coverage No _____ % _____	
Measles	Is there ongoing measles outbreak	Yes <input type="checkbox"/> No <input type="checkbox"/>
	What is the measles vaccination No and % coverage of 2008, less than one year No _____ Percentage of coverage _____	
	Has SIA been conducted in 2008 EFY	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If yes, Indicate the month and number of children vaccinated including the age group Month----- No-----Age group-----	

Any other observations you made on health emergencies or any risks of epidemics?

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What were the major challenges in your Epidemic response experience?

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**SECTION IV: NUTRITION – SAM and MAM Management in Region/Zone – May to October 2016**

**SAM Management**

**4.1 Facilities with SAM management in Region/Zone**

Month	Total Number of Hospitals	Total Number of Health centers	Total Number of Health posts	Number of SC.	Number of OTP.	Total Number of OTP/SC reported
May						
Jun						
Jul						
Aug						

Month	Total Number of Hospitals	Total Number of Health centers	Total Number of Health posts	Number of SC.	Number of OTP.	Total Number of OTP/SC reported
Sep						
Oct						

#### 4.2 Admission and performance of the therapeutic feeding programme for SAM management

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.
May												
Jun												
Jul												
Aug												
	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.
Sep												
Oct												

#### 4.3. Availability of therapeutic supplies

	Yes	No
Is there sufficient supplies for 3 months of :		
RUTF		
F100		
F75		
2 <sup>nd</sup> line drugs		
Is there sufficient district level storage for SAM treatment at district level?		

Water availability at stabilization center (SC)		
Others		

#### 4.4. Reporting

Is there weekly SAM report? Yes \_\_\_\_\_ No \_\_\_\_\_ (if yes observe)

#### 4.5. Training

How many HWs have been trained on SAM management in Region/Zone? \_\_\_\_\_, \_\_\_\_\_%

How many HEWs have been trained in SAM management? Number \_\_\_\_\_, \_\_\_\_\_%

#### MAM Management

#### 4.6. TSFP programme in the district

Questions	Yes	No
Is this a priority 1 district?		
Was there a TSFP distribution last month?		
Is there sufficient TSFP supplies for the next 1 month (RUSF, CSB+/oil or CSB++)?		
Is there district level storage of TSFP supplies for at least 2 months of supplies?		
Are children discharged from OTP referred to TSFP		
Is this a pilot (2 <sup>nd</sup> generation) TSFP district?		
Has the Woreda been supported by an NGO in the last 3 months?		

#### 4.7. MAM admission

Month	Priority 1 district Y/N		Total MAM Cases		Total Number of Food Distribution points in the district
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	
May					
Jun					
Jul					
Aug					
	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	

Sep					
Oct					

#### 4.8. Screening

4.8.1. When was the last screening conducted in the district? \_\_\_\_\_

4.8.2. What screening modality is used in the districts? EOS \_\_\_\_\_, CHD \_\_\_\_\_, Routine \_\_\_\_\_

4.8.3. Vitamin A coverage \_\_\_\_\_ De-worming coverage \_\_\_\_\_

#### 4.9. Screening performance for children in the district

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no odema and MUAC <11 cm			# of children with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children	
				#SAM						#MAM
				MUAC <11 cm	odema	Total				
May 2008										
Jun 2008										
Jul 2008										
Aug 2008										
Sep 2009										
Oct 2009										

#### 4.10. Screening performance for Pregnant and lactating Women (PLW) in the district

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	% Proxy GAM for PLW
May 2008					
Jun 2008					
Jul 2008					

Aug 2008					
Sep 2009					
Oct 2009					

\* Below 21.0 cm in Tigray up to Aug

**4.11 Any other observations you made or any risks of emergency nutrition?**

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**4.12 What were the major challenges in your emergency nutrition response experience?**

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**SECTION V: FLOODING**

5.1. Was there flood disaster in the last 6 months in the **Region /Zone**? Yes  No

5.2. If yes, How many districts affected \_\_\_\_\_,

5.3. Mention the names of districts affected with flood

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

5.4. If yes, No of population affected \_\_\_\_\_

5.5. Human Death due to flooding \_\_\_\_\_ Yes  No ,

5.6. If yes how many in number \_\_\_\_\_

5.7. Are there displaced people due to flooding? Yes  No

5.8. If Yes, how many \_\_\_\_\_ PLW

5.9. Children <5 yrs \_\_\_\_\_ <2 yrs) \_\_\_\_\_ <6months \_\_\_\_\_ 6-23 months \_\_\_\_\_

5.10. Was there outbreak in the flood affected area Yes  No

If yes , Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____
Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____
Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____
Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____
Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____

**Any comment**

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## District level Questionnaire

Interviewer name \_\_\_\_\_ Institution: \_\_\_\_\_  
 Interview Date: (dd) \_\_\_\_/(mm)\_\_\_\_\_/2016\_\_\_\_\_  
 Region: \_\_\_\_\_  
 Zone: \_\_\_\_\_ district \_\_\_\_\_  
 Main contact at this location: Name: \_\_\_\_\_ Position: \_\_\_\_\_ Tel: \_\_\_\_\_

### SECTION I: SOCIO- DEMOGRAPHIC PROFILE

Population: Woreda total population	M: _____ F: _____	Total: _____	Under 5 _____
	No. of women of reproductive age (age 15-49 yrs.) _____		
	No. of pregnant women : _____		
Special Population (if any)	Pastorals _____	Refugees _____	IDPs _____ Migrant Workers _____
Number of HCs _____ Number of HPs _____ Number of Mobile health teams _____ Number of HEWs _____			
Water availability at health centers (HC)	No. of health centers _____	No. of HC with water access _____	No. of HC without water access _____

### SECTION II: HEALTH PROFILE

#### 2.1. Coordination and management systems

Is there a PHEM Officer at Woreda Health Office level? How many PHEM officers are there _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there RRT in Woreda health office	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are there RRTs at HCs? If yes no. _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Are there PHEM Officers/focal persons at HCs? If yes No. _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Does the Woreda Health Office regularly report PHEM report as scheduled dates? If yes, Observe copies and comment _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Do the health facilities and HEWs regularly report PHEM report as scheduled dates? If yes, Observe copies and comment _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a multi sector Health Emergency/PHEM coordination forum? If yes how frequently meet? _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there a Public Health Emergency preparedness and response plan? Does it include reproductive health? Observe and comment (Observe and comment) _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is there accessible emergency response fund?	Yes <input type="checkbox"/> No <input type="checkbox"/>

If yes , How much is that \_\_\_\_\_  
 If yes, how much allocated and/or by whom allocated \_\_\_\_\_

**2.2. Morbidity (List top 5 causes of Morbidity) in the year 2008 EC (2015-2016 GC)**

a. Morbidity below 5		b. Morbidity above 5	
1.		1.	
2.		2.	
3.		3.	
4.		4.	
5.		5.	

**2.3. List number of cases/deaths from Ginbot 2008 to Tikimt 2008 (May 2016 –October 2016)**

Month	AWD				Malaria				Measles				Meningitis				Other(specify)
	Cases		Deaths		Cases		Deaths		Cases		Death		Cases		Death		
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	
May																	
Jun																	
Jul																	
Aug																	
Sep																	
Oct																	

**2.4. Disease Outbreaks**

**Was there any outbreak in the last 3 months?** YES \_\_\_\_\_ NO \_\_\_\_\_

If yes, specify the type of disease

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

**Is there any ongoing outbreak of any disease?** YES \_\_\_\_\_ NO \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

Type of outbreak \_\_\_\_\_ Number of cases \_\_\_\_\_ Deaths \_\_\_\_\_ (specify the time period) \_\_\_\_\_

<b>2.5. Preparedness: Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need?</b>		<b>Comments</b>
Ringer Lactate (to treat AWD cases)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
ORS (to treat AWD cases):	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Doxycycline (to treat AWD cases):	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Consumables : Syringes, Gloves (for AWD management):	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Amoxil susp (measles)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Tetracycline ointment (measles)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Vit A (measles)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Coartem for Malaria	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Lab supply: RDT for Malaria	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Lab supply: RDT (pastorex) for M meningitis	Yes <input type="checkbox"/> No <input type="checkbox"/>	
LP set	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Number of CTC kit available: (for AWD)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Are there emergency reproductive health kits in health facilities to provide Basic Emergency Obstetric and New Born Care? (If No, list the missing medicines and supplies)		Yes <input type="checkbox"/> No <input type="checkbox"/>
Are there emergency medicines and supplies to support care of rape survivors? (Main shortage (if any): Specify)		Yes <input type="checkbox"/> No <input type="checkbox"/>
Is budget allocated for emergency rapid response by the district? How much allocated _____		Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>SECTION III: RISK FACTORS</b>		
<b>Diseases</b>	<b>Risk factors for epidemics to occur</b>	
Malaria	Malaria endemic area	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Presence of malaria breeding site	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Interrupted or potentially interrupting rivers	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Unprotected irrigation in the area	Yes <input type="checkbox"/> No <input type="checkbox"/>
	LLINs coverage No _____ % _____	
	Indicate the coverage of IRS 2008. No _____ % _____	

	Was there any prevention and control activities. No _____ % _____	
	Number of malarious kebeles and total population in these Kebeles	Keb _____ Pop _____
Meningitis	Was there Meningitis epidemic in the last 3 years (If yes specify date) If yes, No _____ % _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Has vaccination been conducted in the past 3 years If yes, No _____ % _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If yes : Indicate the date and number of people vaccinated Date _____ No _____ % _____	
AWD	Was there AWD epidemic in the last three years (If yes specify date)	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Latrine coverage No _____ % _____	
	Latrine utilization No _____ % _____	
	Safe water coverage No _____ % _____	
Measles	Is there ongoing measles outbreak	Yes <input type="checkbox"/> No <input type="checkbox"/>
	What is the measles vaccination coverage of 2008, less than one year No _____ % _____	
	Has SIA been conducted in 2008 EFY	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If yes, Indicate the month and number of children vaccinated including the age group Month----- Number----- Age group-----, coverage (%)----- - ____	

Any other observations you made or any risks of epidemics?

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What were the major challenges in your Epidemic response experience?

**SECTION IV: NUTRITION– SAM and MAM Management in the district – May to October 2016**

**SAM Management**

**4.1. Facilities with SAM management in the district**

Month	Total Number of Health centers/ Hospitals	Total Number of Health posts	Number of SC.	% of health centers/ hospitals with a SC.	Number of OTP.	% of health posts with an OTP	Total Number of OTP/SC reported	% of OTP/SC who have reported
May								
Jun								
Jul								
Aug								
Sep								
Oct								

#### 4.2 Admission and performance of the therapeutic feeding program for SAM management

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
May												
Jun												
Jul												
Aug												
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
Sep												
Oct												

#### 4.3. Availability of therapeutic supplies

	Yes	No
Is there sufficient supplies for 3 months of :		
RUTF		
F100		

F75		
2 <sup>nd</sup> line drugs		
Is there sufficient district level storage for SAM treatment at district level?		
water availability at stabilization center (SC)		

#### 4.4. Reporting

Is there weekly SAM report? Yes \_\_\_\_\_ No \_\_\_\_\_ (if yes observe)

#### 4.5. Training

How many HWs have been trained on SAM management in the Woreda? \_\_\_\_\_

How many HEWs are there in the districts? No \_\_\_\_\_, \_\_\_\_\_%

How many HEWs have been trained in MAM management? No \_\_\_\_\_, \_\_\_\_\_%

#### 4.6. MAM Management

##### TSFP programme in the district

Questions	Yes	No
Is this a priority 1 district?		
Was there a TSFP distribution last month?		
Is there sufficient TSFP supplies for the next 1 month (RUSF, CSB+/oil or CSB++)?		
Is there district level storage of TSFP supplies for at least 2 months of supplies?		
Are children discharged from OTP referred to TSFP		
Is this a pilot (2 <sup>nd</sup> generation) TSFP district?		
Has the Woreda been supported by an NGO in the last 3 months?		

#### 4.7. MAM admission

Month	Priority 1 District		Total MAM Cases		Total Number of Food Distribution point in the district
	Yes <input type="checkbox"/>	No <input type="checkbox"/>	I don't Know <input type="checkbox"/>		
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	
May					
Jun					

Jul					
Aug					
	2008	2009	2008	2009	
Sep					
Oct					

#### 4.8. Screening

When was the last screening conducted in the district? \_\_\_\_\_

What screening modality is used in the district? EOS \_\_\_\_\_, CHD \_\_\_\_\_, Routine \_\_\_\_\_, vitamin A and Screening coverage \_\_\_\_\_ Vitamin A coverage \_\_\_\_\_ De-worming coverage \_\_\_\_\_

#### 4.9. Screening performance for children in the district

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no odema and MUAC <11 cm			# of children with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children	
				#SAM						#MAM
				MUAC <11 cm	odema	Total				
May										
Jun										
Jul										
Aug										
Sep										
Oct										

#### 4.10. Screening performance for Pregnant and lactating Women (PLW) in the district

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	% Proxy GAM for PLW
May 2008					

Jun 2008					
Jul 2008					
Aug 2008					
Sep 2009					
Oct 2009					

\* Below 21.0 cm in Tigray

**4.11 Any other observations you made or any risks of emergency nutrition?**

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**4.12 What were the major challenges in your emergency nutrition response experience?**

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**SECTION V: FLOODING**

5.1. Was there flood disaster in the last 6 months in the **Region /Zone**? Yes  No

5.2. If yes, how many Kebeles affected \_\_\_\_\_,

5.3. Names of kebeles \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

5.4. Population affected \_\_\_\_\_

5.5. Human death due to flooding Yes  No ,

5.6. If yes how many in number \_\_\_\_\_

5.7. Are there displaced people due to flooding? Yes  No

5.8. If Yes, how many PLW \_\_\_\_\_

5.9. Children <5 yrs \_\_\_\_\_ <2 yrs \_\_\_\_\_ <6months \_\_\_\_\_ 6-23 months \_\_\_\_\_

5.10. Was there outbreak in the flood affected area Yes  No

<p>If yes ,</p> <p>Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____</p>
<p>Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____</p>
<p>Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____</p>
<p>Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____</p>
<p>Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____</p>

## Any comments on flooding

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### Annex VII: Consent Form of Project Proposal

**Objective:** To assess knowledge, attitude and practice of ITNs use to prevent and control malaria infection, in Basoliben and Debre Elias districts, East Gojjam zone, Ethiopia

**Procedure:** This study questionnaire will take about 15 minutes of your time. During the study time, we will clearly explain you the objective, benefits and risks of the study and then will give you a chance to ask questions and get answers about the study. Finally, we will ask you about the knowledge, attitude and practice of bed net use among your family. All information collected during this study will be kept private.

**Benefits:** This study will help to enhance knowledge, attitude and utilization of ITN to prevent and control malaria transmission throughout the community.

**Risks:** There is no risk to you answering the questions or participated in this study.

**Privacy:** We will keep information about you private. We will not collect your name. We will not use any information that might identify you when we present or publish the study's results.

**Payment:** There is no cost to you being part of the study.

**Participant Agreement:** The project has been explained for me. I have been given a chance to ask questions. I feel that all my questions have been answered. Being in this study is my choice. I May change my mind and leave the study any time during the interview. Participant

Signature

Date \_\_\_\_\_ Date of interview \_\_\_\_\_ Time started \_\_\_\_\_ Time completed \_\_\_\_\_

Checked by supervisor: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

### **Annex VIII : Questionnaires on KAP on malaria prevention and Control of Project Proposal**

Knowledge, attitude and practice of use of bed net to prevent malaria

No.	Question	Possible answers
1.1	Region	Amhara
1.2	Zone	East Gojjam
1.3	District	1. Basoliben                      2. Debre Elias
1.4	Kebelle/Gote	
1.5	Age of respondent	
1.6	Sex of respondent	1. Male                      2. Female
1.7	Level of education of respondent	1. Illiterate 2. Able to read and write 3. Primary completed grade (1-8) 4. Secondary and above
1.8	Level of education of children in the house (write the number of children in space provided)	1. Illiterate 2. Able to read and write 3. Primary completed grade (1-8) 4. Secondary and above
1.9	Occupation of respondent	1. Farmer                      2. Student

1.10	Religion	1. Protestant                      2. Orthodox
1.11	Ethnicity	1. Amhara                      2. Other
1.12	House number	
2.1	Do you know about Malaria?	1. Yes                      2. No

2.2	What are the main symptoms of Malaria?	1.Fever 3. Headache 4. Nausea	2.Chills 4.Muscle and Joint pain 5.General malaise
2.3	How do we acquire malaria?	1.Mosquito bite 2.Not using ITN and insecticides 3. Swampy areas, pond and stagnant water 4. Not spraying chemical at home 5. Bimbi bite 6. poor hand washing practice 7. contaminated food 8.close contact 9.If other, specify	
2.4	How can we prevent malaria Infection/transmission?	1. IRS 3.Drugs(prophylaxis)	2. Source reduction 4.ITNs utilization

		5. keep personal hygiene 6.If other, specify 7.Sleeping with fully dressed 8. close door early and smoking in the house 9.Closing doors and windows in a time	
2.5	Who are at risk of malaria in the Household?	1.Under five children 2.Pregnant women 3.Adults 4.Old age 5.If other, specify	
2.6	Have you seen or heard any education messages pertaining to malaria from any source in the past one year?	1.Yes	2.No
2.7	If yes where did you see or hear These education messages from? (Multiple responses possible)	1.Radio 2.TV 3.Newspaper/magazine 4.Posters/notices 5.Friends 6.Parents 7.Health workers 8.Government official 9.Church/mosque 10.School 11,Other (please specify)	
2.9	Do you or anyone in your house hold own a functioning radio currently?	1.Yes	2.No

2.10	Do you or anyone in your Television currently?	1.Yes	2.No
------	--	-------	------

2.11	How much time took nearby health facility from the village through walk?	1. 5 -10 minute 3. one hour	2.15-30 minute 4. More than an hour
3.1	Do you believe malaria is the most Serious health problem?	1.Yes	2.No
3.2	Do you think using bed nets have Any benefit?	1.Yes	2.No
3.3	If yes what are the benefits of bed net? (Multiple responses possible).	1.To prevent mosquitoes/Insect biting 2. To prevent malaria 3.To sleep under 4. To generate heat 5. To prevent from disease 6. To protect dirt during sleep 7. As domestic container 8. As curtain 9. To collect straw 10. As carpet 11. As head cover 12. As sieve	

		13. For close 14. for sale/ to generate income 15. As bed sheet 16. To sift/ filter water 17. To decorate house 18. Other: (please specify)	
4.1	Does the household own bed net?	1.Yes	2.No
4.2	If yes, How many bed nets do you have?	_____	
4.3	Number of family size in one HH	_____	
4.4	Did you use /slept inside bed net Last night?	1.Yes	2.No

4.5	If No to Q3.4 what was the Reason?	1.It is not prevent against malaria 2.The bed net was not treated 3.Mosquitoes can still bite through the net 4.It takes time to tuck the net each night 5.Carlessness 6. Thinking that malaria can be prevent by having sufficient food 7. Disliking or hatred net
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		8. Lack of understanding 9. Thinking malaria is from God thus can't be prevented using bed net 10. ITN can't fit their bed 11. do not have ITN 12. Lack of trust on ITN 13. Lack of information, how and when to use ITN 14. Using the freely given ITN for sale 15. Lack of sufficient education 16. It is too hot sleeping under a net 17. Smell of the chemical in which the ITN is dipped 18. Feeling breathless while sleeping under ITN 19. Burning nature of the chemical of the ITN
4.6	How frequent and when should one use bed net	1.Every night 2.Seasonally 3.When Mosquito seen in the house 4.If other
4.7	Who should be given priority in malaria prevention in the household?	1.Under five children                      2.Pregnant women 3.Adults    4.Old age 5.If other, specify