

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



Ethiopian Field Epidemiology Training Program (EFELP)  
Compiled Body of Works in Field Epidemiology

By

Kidan Wendmu

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

June 2019

Addis Ababa, Ethiopia

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## LISTS OF ABBREVIATION/ ACRONYMS

|        |       |                                          |
|--------|-------|------------------------------------------|
| AFB    | ----- | Acid Fast Bacilli                        |
| AIDS   | ----- | Acquired Immune Deficiency Syndrome      |
| AOR    | ..... | Adjusted Odds Ratio                      |
| ART    | ----- | Anti Retroviral Therapy                  |
| AURTI  | ----- | Acute Upper Respiratory Infection        |
| CBN    | ----- | Community Based Nutrition                |
| CBR    | ----- | Crude Birth Rate                         |
| CDR    | ----- | Crude Death Rate                         |
| CFR    | ..... | Case Fatality Rate                       |
| CMR    | ----- | Crude Mortality Rate                     |
| CSA    | ----- | Central Statistics Agency                |
| DHS    | ..... | Demographic Health Survey                |
| DRM    | ----- | Disaster Risk Management                 |
| EFY    | ----- | Ethiopian Fiscal Year                    |
| GDP    | ----- | Gross Domestic Product                   |
| HC     | ----- | Health Center                            |
| PH     | ----- | Primary Hospital                         |
| HEW    | ----- | Health Extension Workers                 |
| HIV    | ----- | Human Immunodeficiency Virus             |
| IDSR   | ----- | Integrated Disease Surveillance Response |
| IESO   | ----- | Integrated Emergency Surgery Officer     |
| IMR    | ----- | Infant Mortality Rate                    |
| ITN    | ----- | Insecticide Treated Net                  |
| IDP    | ..... | Internal displaced people                |
| FU     | ----- | Lost To Follow Up                        |
| MAM    | ----- | Moderate Acute Malnutrition              |
| MCV    | ----- | Measles Containing Vaccine               |
| MDG    | ----- | Millennium Development Goals             |
| MDR TB | ----- | Multi Drug Resistant Tuberculosis        |
| MMWR   | ----- | Maternal Mortality Weekly Report         |

|            |                                            |
|------------|--------------------------------------------|
| NNMR-----  | Neonatal Mortality Rate                    |
| ODF-----   | Open Defecation Free                       |
| OPD-----   | Outpatient Department                      |
| OR-----    | Odds Ratio                                 |
| OTP-----   | Outpatient Therapeutic Program             |
| PCV-----   | Pneumococcal Conjugate Vaccine             |
| PHEM-----  | Public Health Emergency Management         |
| PITC ----- | Provider Initiated Testing and Counseling  |
| PMTCT----- | Prevention of Mother to Child Transmission |
| PNC-----   | Post Natal Care                            |
| RDT-----   | Rapid Diagnostic Test                      |
| RRT-----   | Rapid Response Team                        |
| SIA-----   | Supplementary Immunization Activity        |
| SPH-----   | School of Public Health                    |
| TB-----    | Tuberculosis                               |
| TFU-----   | Targeted supplementary food                |
| TSF-----   | Therapeutic Supplementary Feeding          |
| TFP -----  | Therapeutic Feeding Program                |
| VCT-----   | Voluntary Counseling and Testing           |
| WAD-----   | Women Developmental Army                   |
| WASH-----  | Water Sanitation and Hygiene.              |

## Executive summary

This document contains two years output of field Epidemiology training program that submitted To AAU school of public health for the final accomplishment of master in field Epidemiology .The Ethiopia field epidemiology training program is a two years postgraduate training program. The training is collaborated with Addis Ababa University, school of public health, Ministry of health and Ethiopian public health association .According to the design , the residents expects to spend 75% of their time in the field activities and 25%in class. During the two years residents ,the expected output for the partial fulfilment of master's degree in field epidemiology were ;two diseases outbreak investigation ,public health surveillance analysis , surveillance, system evaluation, district health profile, narrative summery of disaster situation report ,manuscripts ,abstract and additional outputs (EFETP Resident manval,2012.

Until know my resident at AAU,schoolof public health and Tigray regional health bureau PHEM, I have conducted the following output s and activities the detail output that I have accomplished still know are summarized below.

Chapter one: Cholera outbreak investigation and suspected measles outbreak investigation

1.1 Cholera outbreak investigation in Hadnet district Mekelle special zone July, 2018. From this cholera investigation we use case control study with 50 cases and 100 controls. We identified drinking spring water is risk factor the outbreak, using latrine was preventive factor.

1.2 suspected Measles cases investigation. This was done in Hawelity district Tigray on January 2019.We use decretive study from this study we found 68.7% of the case were vaccinated to measles, 18.2% of the case were not vaccinated and 12.5% of the cases were unknown their vaccination status.

Chapter two: Secondary surveillance data analysis 3 years on measles in Tigray region 2015-2017.

Chapter three Surveillance system evaluation the evaluation was conducted in Kilte Awlalo district Tigray region Ethiopia, Dec 2019. The worda surveillance system was assess and the attributors were clarified sensitivity is 50% timelines completeness were greater than 80.

Chapter four health profile District health profile was conducted in Adigrat town Eastern zone of Tigray Ethiopia 2018. In this health profile most of immunization coverage of the worda was greater than 90 but TT for non-pregnant mothers were less coverage.

Chapter five Manuscript on cases based measles surveillance data analysis this was conducted in Tigray regional health bureau.

Chapter six Cholera outbreak investigation in Hadnet district Mekelle special Zone Tigray region this abstract was prepared for conference.

Chapter seven: Narrative summery report on IDP. We assess the IDP site and we observe the condition of the IPD site base on WASH and other health relative conditions.

Chapter Eight: Epidemiological research proposal assessment of knowledge on ITN utilization and association factors affecting ITN utilization in raya Azobo district. This will be help identifying knowledge gab in utilization of ITN and association factors affecting the ITN utilization this is will be help in control and prevention of malaria in the district.

## **CHAPTER: ONE CHOLERA OUTBREAK INVESTIGATION**

### **1.1 CHOLERA OUTBREAK INVESTIGATION IN MEKELE TOWN HADNET, TIGRAY REGION, 2018.**

#### **Abstract**

**INTRODUCTION** Cholera is a diarrheal disease caused by infection of the intestine with the Gram-negative bacteria *Vibrio cholera*, either type O1 or O139. An estimated 3-5 million Cholera cases and 100,000-120,000 deaths occur annually worldwide. We aimed to identify the risk factors for the occurrence of the cholera outbreak and institute appropriate control measures.

**Method** community based UN matched 50 case and 100 control was used considering previous study. Data was collected by the recorded case definitions using structured questionnaire. Case sample were taken from the registration line list by using systematic random sampling system. Data was entered into epi info descriptive was analyzed using excel and analyzed statistics with 95% confident interval was used to compare risk factor. Ethical clearance will be obtained from TRHB and consent form will be asked willingness to the eligible people.

**Result** from the total 132 cases in the study 56.8% cases were male's. Over all case fatality was 0.07 the total attack rate 1.7 per 100,000 using spring water for drinking purpose have risk association with cholera disease COR 8.8 P.V 0.000 CL 2.393, 13.570. Use of latrine have preventive association with Cholera disease AOR .160 P.V 0.000 CL 0 .0.60, 0.424.

**Conclusion** The incidence rate was high in the age group of 15-24 years it was 35/10,000 followed by 21/10,000 in age group of 25-56. There were low CFR the outbreak control intervention was partially effective using spring water for drinking is the risk occurrence of the outbreak.

**Key words:** Acute watery diarrhea, outbreak, Hadnet district

### 1.1.1. INTRODUCTION

Cholera is an acute diarrheal disease caused by ingestion of food or water contaminated by the bacteria *Vibrio cholera*, of which O1 is the most common serogroup in Africa (1) Cholera epidemics continue to cause major morbidity and mortality globally, and key indicator of inadequate social development. Cholera infection is now largely confined to developing countries in the tropics and subtropics. (2) Cholera is generally a disease spread by poor sanitation, leading to contaminated water supplies(3) The disease is now considered to be endemic in many countries and the pathogen causing cholera cannot currently be eliminated from the environment(4)

Cholera is highly transmittable through contaminated water and food. About 20% of those who are infected develop acute, watery diarrhea 10–20% of these individuals develop severe watery diarrhea with vomiting. If these patients are not promptly and adequately treated, the loss of such large amounts of fluid and salts can lead to severe dehydration and death within hours(5).

Many more cases were unaccounted for due to limitations in surveillance systems and fear of trade and travel sanctions. Global burden of the disease is estimated to be 3–5 million cases and 100 000–120 000 deaths annually (6). The proportion of global cholera cases reported from sub-Saharan Africa decreased 98% during 2009 to 44% in 2013, cholera remains a major cause of disease epidemics in these countries(7).

In Somalia A total of 9573 cholera cases and 228 deaths (CFR–2.4%) have been recorded from 45 districts across 11 regions since the beginning of the year(8)

In Ethiopia, AWD was first reported in districts of Oromia and Ethiopian Somali close to the Ethio-Kenyan border in February 2016(9).

Since the beginning of the year up to 16 April 2017, a total of 26,966 cases including 731 deaths (case fatality rate of 2.71%) have been reported from six regions of the country, namely Amhara, Afar, Oromia, SNNP, Somali, and Tigray. Ninety eight percent of all the reported cases and 97% of all the deaths occurred in Somali region alone(10).

Hadnet district Public Health Emergency Management reported acute watery diarrhea case on July 30, 2018 which was confirmed as cholera. We investigated the outbreak to identify its etiology, source, associated risk factors and to control the outbreak.

## 1.1.2. Objectives of the study

### 1.1.1.1 General objectives

To investigate cholera outbreak in Hadnet district Mekelle special zone.

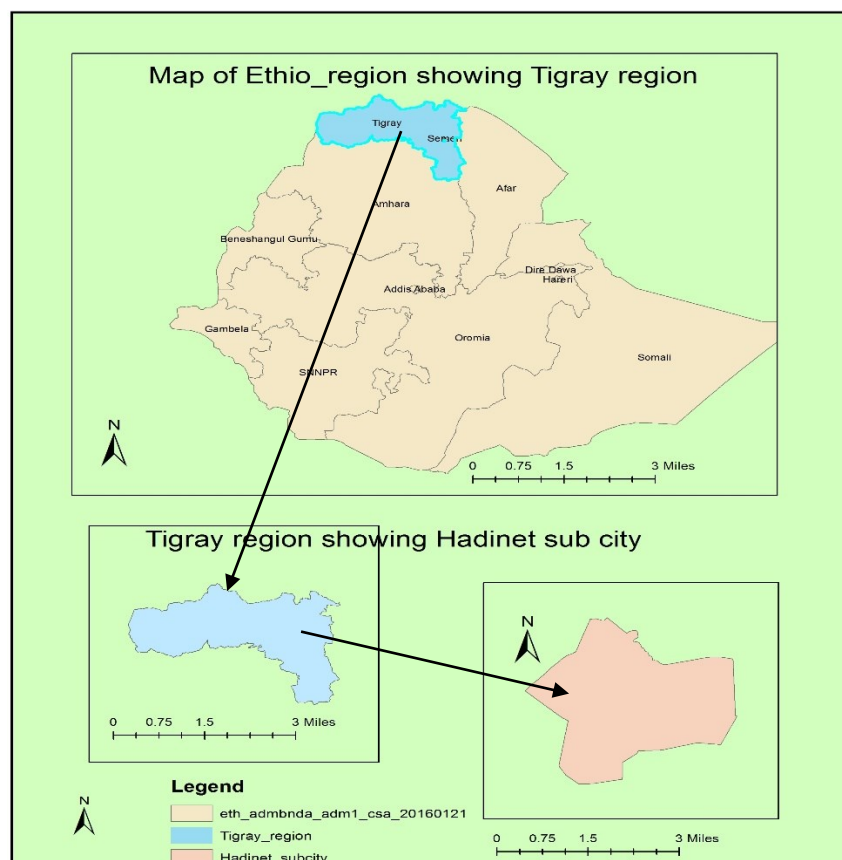
### 1.1.1.2 Specific objectives

- To describe the cholera outbreak by place person and time.
- To identify risk factor for occurrence of the cholera outbreak.
- To identify prevention and control measures to stop further spread of the outbreak.

## 1.1.3 Methods and Materials

### 1.13.1 Study area:

Cholera outbreak investigation was conducted in Hadnet district. Hadnet district is found in Mekelle special zone of Tigray region Ethiopia. Mekelle is located in a distance of 780K.m from Addis Ababa.



Map 1: Map of Ethio- region showing Hadnet sub city

#### **1.1.3.2 Study period:**

Data were collected July 23 to August 10/2018.

#### **1.1.3.3 Study design:**

Descriptive study design was used to characterize cases. To identify potential risk factors for cholera unmatched case control study design was used.

#### **1.1.3.4 Target population:**

All population in Hadnet district where cases and controls found.

#### **1.1.3.5 Study population:**

Sample cholera cases from five kebeles of Hadnet district and sample control free of the disease selected from the neighbors of cases.

#### **1.1.3.6 Sample size and sampling procedure:**

Sample size was calculated using Epi info statically based on the previous study done in afar region (7). For UN matched case control study two sided confidence interval level=95%

Power (chance of detecting) =80

Ratio of control=2

Odds ratio to be detected=.26

Proportion of control with exposure =34%

Proportion of case with exposure=11%

By using systematic random sampling method cases were selected randomly from the line list controls were neighbors of cases who did not develop cholera during the period of the study.

#### **1.1.3.7 Inclusion and exclusion criteria**

##### **1.1.3.7.1 Inclusion criteria:**

Any resident of Hadnet district who had bacteriological confirmed cases with sign and symptom of cholera based on PHEM case definition and who agreed to participate in the study was included.

## **Controls**

A control was any resident of Hadnet district during the study who was a neighbor to a case and who did not develop signs and symptoms of cholera based on PHEM case definition and agreed to participate was included.

### **1.1.3.7.2 Exclusion criteria**

Cases that did not fulfill the sign and symptom of cholera based on PHEM case definition and who was absent during the study period were excluded.

### **1.1.3.8 Data collection:**

Structured questionnaire adopted from others study was used to collect data for case-control study and using line list. Data was collected by principal investigator and investigator

Including HW at zonal, district and health center levels by translating the Questionnaire into Tigrigna and Amharic.

### **1.1.3.9 Data quality control**

The data was primarily collected by principal investigator and co-investigator. Pre-test was done using the developed questioners prior to the data collection. Before entering the data into the computer the missing variables and consistency of filling of questionnaires and Completeness of data was checked every day during data collection

### **1.1.3.10 Laboratory investigation:**

The first index case was tested by RDT for vibrio-cholera and the sample sent to Mekelle regional lab for culture test .The remaining case was tested by RDT and bacteriologic investigation was done from 2 water sample.

### **1.1.3.11Data entry and Analysis**

Data was entered and analyzed using Epi-info 7 and spss. After data cleaning and recoding advanced statically analysis were under taken. Results were presented using graphs, tables, charts and attack rate was calculated. Odds ratio, 95% CI, and p-value were constructed to Measure association and significance.

#### **1.1.3.12 Dependent Variables**

##### **1.1.3.12.1 Variable**

##### ***1.1.3.12.1 Dependent variables***

##### *Cholera*

##### **1.1.3.12.2 Independent variables**

Age

Sex

Travel history

Source of water

Occupation

Marital status

Knowledge

Level of education

##### **1.1.3.13 Ethical clearance**

Letter of permission was written from TRHB to Hadnet district health office, where the outbreak took place. The outbreak investigation was done after permission obtained from Hadnet district health office.

##### **1.1.3.14 Cholera Case Definition:** based on cholera national guide line

##### **1.1.1 4.1 suspected case**

A case of cholera should be suspected when: in an area where the disease is not known to be present, a Patient aged 5 years or more develops severe dehydration or dies from acute watery diarrhea; In an area where there is cholera epidemic, a patient aged 5 years or more develops

acute watery diarrhea, with or without vomiting. At the health post and at community levels, a suspected cholera case can be defined as follows: Any person 5 years of age or more with profuse acute watery diarrhea and vomiting.

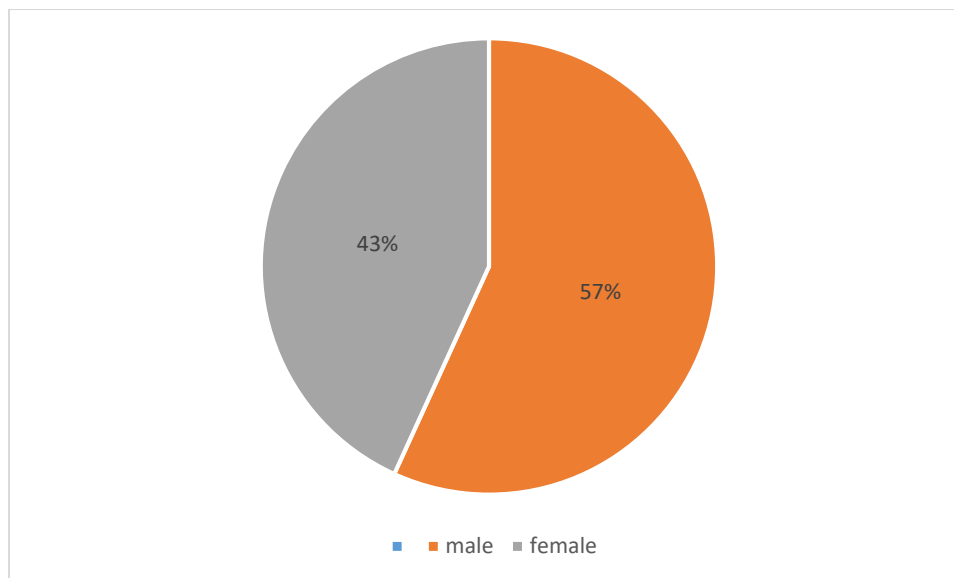
#### 1.1.3.14.2 Confirmed case:

A suspected case in which *Vibrio cholera* O1 or O139 has been isolated from their stool. *Note:* children under five of age are excluded from the surveillance case definition. However, in terms of case management during cholera epidemic, persons aged 2 years or More should be treated for cholera when they develop acute watery diarrhea.

#### 1.1.4. RESULT

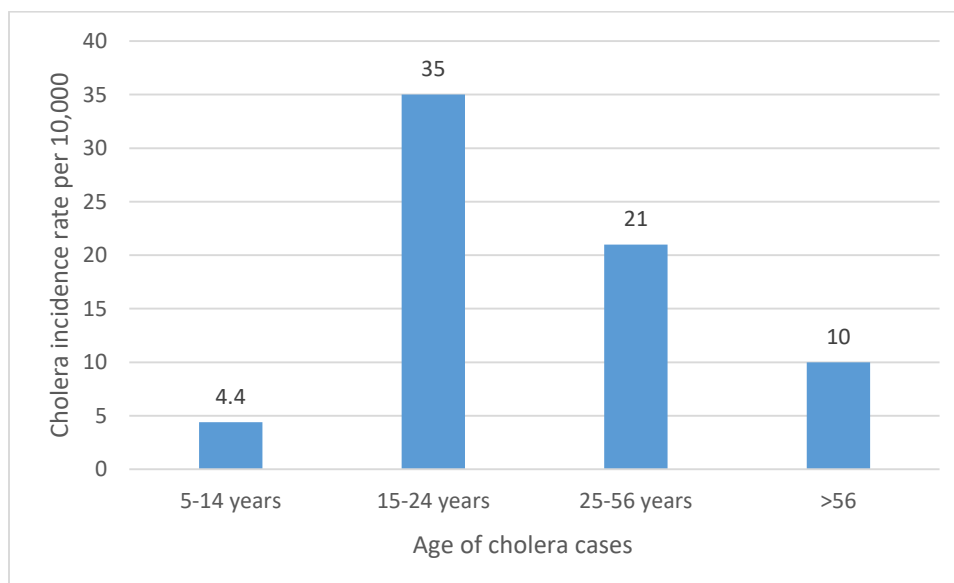
Description of cases by time place and person

A total of 132 cholera cases were reported. The overall attack rate was 1.7/1000, 000 population and the cases fatality rate was 0.07%. Most of the reported symptom of vomiting and diarrhea. A total 83 (63%) of the cholera cases had some dehydration followed severe dehydration which was 47(36).



**Figure: 1Shows cholera cases by sex in Handnet woreda, 2018**

Regarding cases by sex of respondents 75(56.8%) were males. Incidence rate was high in the age group of 15-22 years (35/10,000) followed by age group of 25-56 of 25-56 year with the incidence rate (21/10,000).



**Figure 2 Shows cholera cases by age group in Handnet woreda, 2018**

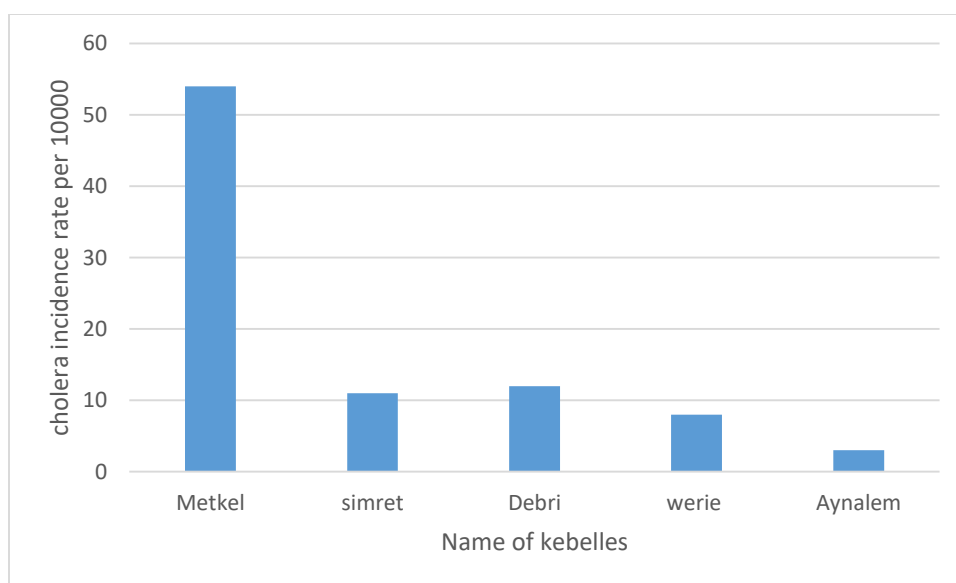
#### 1.1.4.1. Description of cases by time

The first cholera cases were reported on 29 July 2018 in Metkel kebele of Hadnet woreda. High number of cases reported during July 29 to August 2, 2018. The intervention was started on the first day of outbreak through distribution of water chemicals.

**Table 1 cholera attack rate by kebelles of Hadnet woreda, 2018**

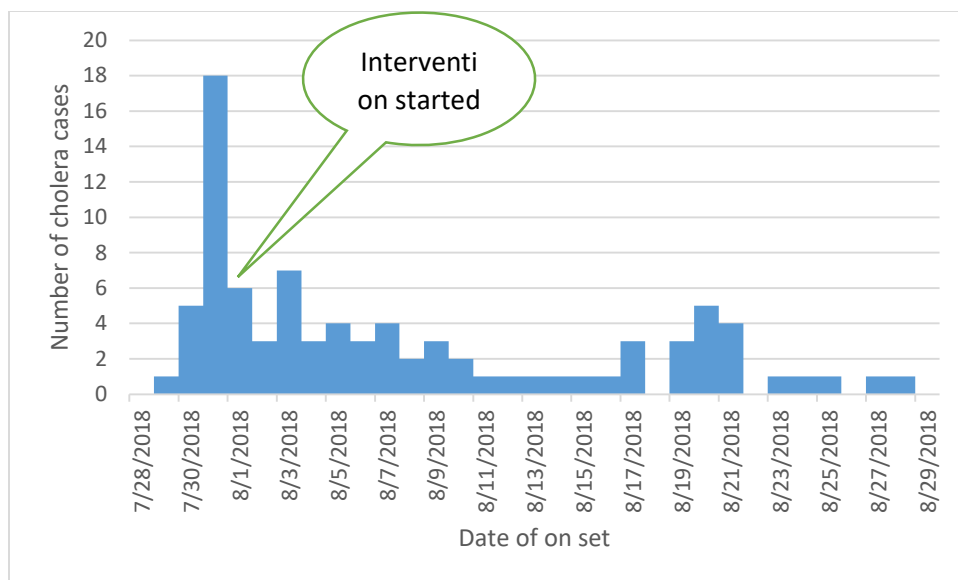
| Name of kebelles | Total population | Number of cases | AR/10,000 | Death rate |
|------------------|------------------|-----------------|-----------|------------|
| Metkel           | 13827            | 75              | 54        | 1.3%       |
| Werie            | 14879            | 12              | 8         | 0          |
| Simret           | 23655            | 27              | 11        | 0          |
| Aynalem          | 13134            | 4               | 3         | 0          |
| Debri            | 11428            | 14              | 12        | 0          |
| Total            | 76923            | 132             | 17        | 7.5/1000   |

As the table shows the incidence rate was high in Metkel kebele which is 54/10,000 followed by Debri 12/10,000 incident rate of cholera was reported from Hadnet woreda, 2018.



**Figure 3 Cholera incidence rate by affected kebeles in Handnet woreda, 2018**

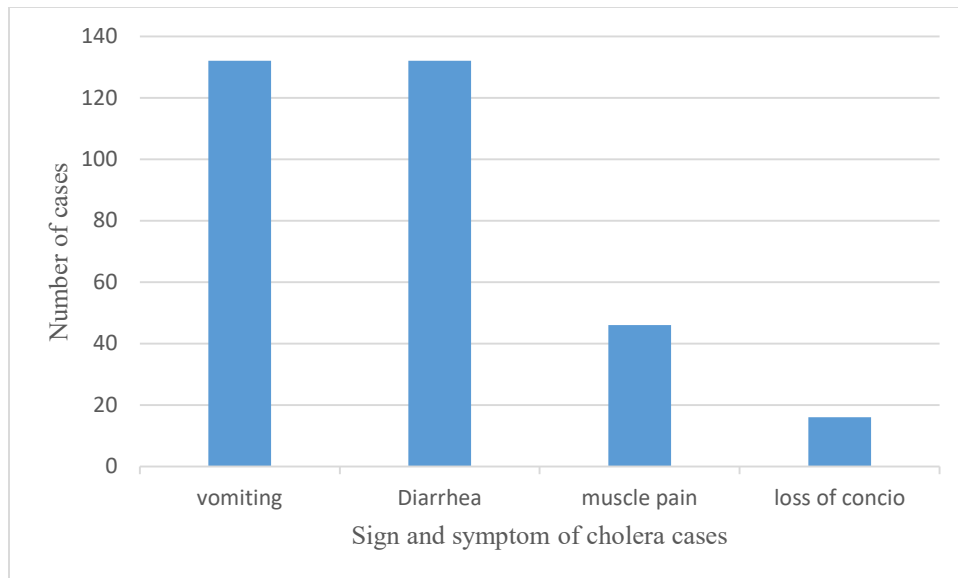
The first cholera case was reported on July 29/2018 was reported from Metkel kebele of Hadnet woreda and the highest number were reported July 29/2018 to August 1/2018.



**Figure 4 Cholera cases by date of onset in Handnet woreda, 2018**

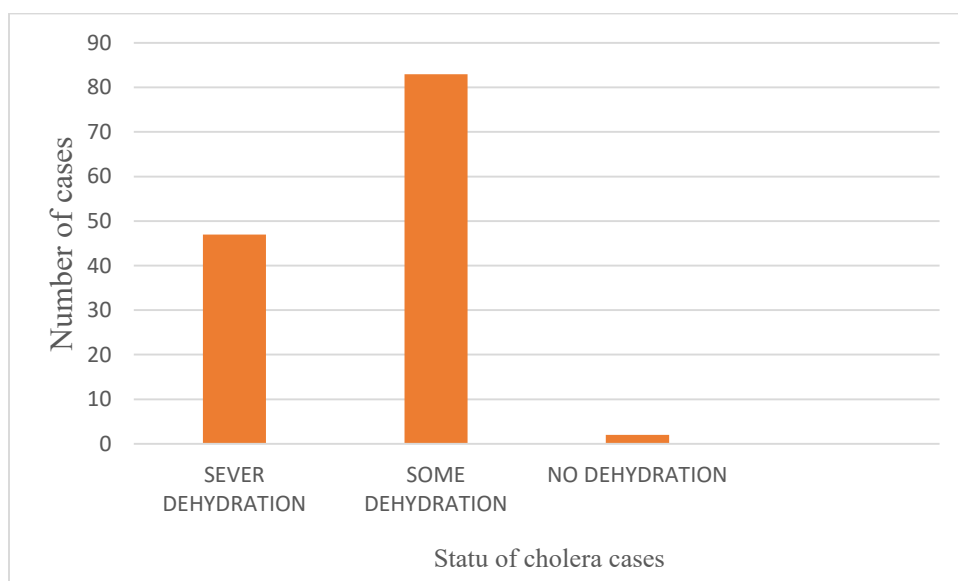
#### 1.1.4.2 Description of cases by place

All kebeles in Hadnet woreda reported cholera cases of which high number 75(57%) cholera cases were reported from Metkel kebele of Hadnet woreda. The overall fatality and attack rate in Hadnet woreda were 0.07% and 1.7/1000 respectively.



**Figure 5 Shows Cholera cases sign and symptom in Handnet woreda, 2018**

As shown in the figure 132 (100%) of the cases were develop sign and symptom of vomiting and diarrhea 47(38%) muscle pain,18(13%) loss of conciosness.The symptoms of muscle pain and loss of consciousness indicates severity of the disease. Severs cases were admitted to the cholera treatment center and they were treated by intravenous therapy.



**Figure 6 cholera cases by Dehydration status in Handnet woreda, 2018**

As shows in the figure most of the cases reported symptom of vomiting and diarrhea 83(63%) cholera case had some dehydration 47(36%) cases had severe dehydration.

#### **1.1.5 Public health intervention**

Supported the Regional Health Bureau during the preparation the response actions plan that include activities monitoring and evaluation the gap, responsible bodies, time schedule and the operational cost. The regional health Bureau established five response team (Case management and disinfection, Surveillance, logistic and resource mobilization, Wash and Social mobilization and awareness creation) and the daily activity report was presented to the task force by the leaders of each thematic area. The gap and challenges are forwarded and given solution by the task force if it is above the scope of the thematic areas team. Finally the team activities are evaluated by taskforce.



Figure 7 the spring water that sample was taken for investigation.

#### **1.1.6. Risk factor for occurrence of cholera**

On multivariate analysis using spring water for drinking have strong association with cholera P.V .000 OR 8.8 (95 CL 4.062, 19.219). Use of latrine have preventive factor with P.V 0.000 OR .160 whereas age sex were not significant association with cholera.

**Table 2 Cholera multivariate analysis Hadnet, district Mekelle special zone, Tigray 2018.**

| variables                             | Respondent status |         |    | CO   | CI         | P-    | AOR   | CI                        |
|---------------------------------------|-------------------|---------|----|------|------------|-------|-------|---------------------------|
|                                       | Case              | control | R  |      | VALUE      |       |       |                           |
| Drinking spring water                 | yes               | 34      | 19 | 8.8  | 4.062,19.2 | 0.000 | 5.699 | 2.393,13.57 <sup>xx</sup> |
|                                       | No <sup>1</sup>   | 16      | 79 |      |            |       |       |                           |
| Contact history                       | Yes               | 21      | 29 | 5.2  | 2.302,11.9 | 0.000 | 3.88  | 1.346,11.19 <sup>xx</sup> |
|                                       | No <sup>1</sup>   | 29      | 87 |      |            |       |       |                           |
| Usage of latrine                      | Yes <sup>1</sup>  | 17      | 71 | 0.20 | 0.98,0.42  | 0.000 | 0.160 | 0.160,0.424 <sup>xx</sup> |
|                                       | No                | 33      | 28 | 3    | 2          |       |       |                           |
| Drinking pipe water                   | Yes <sup>1</sup>  | 15      | 79 | 0.10 | 0.047,0.2  | 0.000 | 0.116 | 0.050,0.28 <sup>xx</sup>  |
|                                       | no                | 35      | 19 | 3    | 26         |       |       |                           |
| Availability of soap near the latrine | Yes <sup>1</sup>  | 36      | 27 | 0.14 | 0.68,0.31  | 0.000 | 0.266 | 0.107,0.661 <sup>xx</sup> |
|                                       | No                | 14      | 72 | 7    | 2          |       |       |                           |
| Do you know mode of transmission      | Yes <sup>1</sup>  | 34      | 87 | 0.02 | 0.121,0.4  | 0.03  | 0.432 | 0.155-1.243               |
|                                       | No                | 16      | 11 | 6    | 39         |       |       |                           |

Note: <sup>xx</sup> Indicates variables which have significant association with the contracting of cholera disease.

Note <sup>1</sup>: The number indicates the reference we have used in the logistic regression analysis.

### 1.1.7. Discussion

This study indicates that a total of 132 cases were reported for Hadnet district. Cholera had affected all age 15-44 age group were more affected and 57% of the cases were. Males this is similar to the study conducted in Gana 56.6% of the cases were males (11).

Cholera case fatality rate during this outbreak was 0.007 less than, previous studies reported in Oromia 1.11% (12) Afar region 4.4%.(6) This might be due to better health care accessibility for the cases to get treatment.

The attack rate in the district was 1.7/1000 this study is greater than the study done in Afar region the AR is 8.5/1000 but with high fatality rate 4.4% this is might be due to late arrival to health facilities because the distance of the health facilities were far from their home when we compare with our study. (7). WHO UNICEF participated in control the outbreak by suppling logistics in line with zonal and district .There was shortage of save water in the two kebelles. The outbreak was transmitted to neighbor's kebelles.

According binary logistic using spring water for drinking have strong association with cholera COR 8.8 P.V 0.000 and AOR 5.699 P.V 0.000(CL 2.393-13.370).the outbreak is happened in the rain season after heavy flood followed. Around the spring water the is open defecation the spring water was contaminated with floody .The index cases 18 years old male patient he was drink from the spring water.

Clinically sign symptom of AWD cases was a common practice in most of peripheral health care system of the district. Based on possible patients care and treatment was done .The laboratory confirmation was 10 sample from cases positive by RDT and 5 cases with Bose RDT and golden standard culture were confirmed and all become positive for the type 01vibro cholera. Clean utilities with soap by binary logistic analyses is preventive association with cholera with COR 0.364 P.V 0.032 (CL.145-.915) and AOR .432 P.V0.01.

#### **1.4.8. Conclusion**

Age group 15-24 were more affected than others.

There were low CFR the outbreak control intervention was partially effective

High number of cases reported from Metkel kebele.

Drinking spring water and contact history were identified for risk occurrence of the outbreak,

#### **1.4.9. Recommendation**

- ❖ The district administration in collaboration with district health office should increase the coverage of latrine utilization.
- ❖ The health extension workers have to create awareness about hygiene and sanitation in the community.
- ❖ Provision of water purifier for these areas who have serious safe water problem provision.

### 1.1.10. Reference

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## **1.2. Suspected measles outbreak investigation in Hawelity district, Mekelle special Zone, Tigray region, Ethiopia January 2019.**

### **Abstract**

**Background:** Measles is highly contagious, vaccine preventable viral disease most affecting under five children and continues to be a major public health problem every year around 100,000 children loss their life due to the disease. We describe the outbreak by person time and place, and to implement public health control measures.

**Methods:** we conduct a cross sectional study design with 16 cases and we describe in terms of their ages, sex and residence area from 1-14 January. We used line lists and standard questionnaires to collect the data. We conducted the study by defining suspected cases of measles as any person presenting with fever and maculopapular rash and plus one of the three Cs (cough, coryza and conjunctivitis).

**Result:** We identified 16 suspected cases of measles. The overall attack rate was 1.4 per 10000 population with 0 mortality rate and it was high in under five male children. Age specific attack rate was high in under five years.

**Conclusion:** from the total cases 31% of them were no vaccinated. The attack rate was high in under five years old. Out of five kebelles of Hawelity district two of them were reported measles cases. And 87.5% of the cases were received only one dose of measles vaccine.

**Key word:** suspected measles outbreak Hawelity district, January 2019

### 1.2.1. Introduction

Measles is one of the most contagious vaccine-preventable viral diseases and represents an important cause of child mortality in sub-Saharan Africa(1) . It is illustrated by a prodromal of fever (as high as 105 °F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash(2) . Measles is a systemic infection. The primary site of infection is the respiratory epithelium of the nasopharynx. Two to three days after invasion and replication in the respiratory epithelium and regional lymph nodes, a primary viremia occurs with subsequent infection of the reticuloendothelial system (3).

Transmission is through aerosol droplets or direct contact with the nasal and oral secretions of an infected person to susceptible individuals, especially children between the ages of 9 months to 15 years. This disease is considered endemic especially in the developing countries with a peak of transmission from October to March(4). Though many children experience uncomplicated measles, nearly 30% of cases may develop one or more complications that are more common in young children with immune deficiency disorders, malnutrition, vitamin “A” deficiency, and inadequate vaccination(5)

According world Organization (WHO) report, measles still remains a public health challenge and is associated with high morbidity and mortality. Most of the associated deaths occur in children aged five years and younger(6)

The measles vaccination coverage has been increasing over the past years in Ethiopia. The national immunization coverage survey in 2012 revealed routine measles immunization coverage of 68.2% in children 12-23 months of age and measles vaccination coverage according to the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) was 78% in 2015(7)

Despite tremendous achievements towards global measles mortality reduction and measles elimination goals, in 2010, there were 327,305 measles cases reported and an estimated 139,300 measles deaths globally (8).

Measles is one of the leading cause for child morbidity and mortality in the world, every year around 100,000 of children lost their life due to the disease. (9)

Africa and Asia were usually suffered from More than 20 million measles cases each year(10). There are different factors associated with immunization coverage in the Africa as well as in

Ethiopia among those factors access to the immunization services, caregivers awareness, time of vaccination not known and long distance to reach institutions, maternal level of education, exposure to media, and antenatal care service utilization, geographic variations, and socio-cultural beliefs coupled with the timing of the measles vaccine as well as the fragile health service infrastructure (10).

In Ethiopia measles incidence increased from 20 cases per million in 2006 to 194 cases per million population in 2015 and declined to 49 per million in 2016(11) Recently measles outbreaks have been occurring in several areas of Ethiopia. Since the start of 2015, a total of 2,190 suspected measles cases have been reported in 61 separate outbreaks in Ethiopia. Of these, 929 have been positively confirmed. The majority of the cases were reported in the woredas (districts) of Nejo and Nole, West Wellega zone in the Oromia Region, the woreda of Kola Tembien, Central Tigray Zone in the Tigray Region and Bench Maji, Keffa and Sheka zone in Southern Peoples Region (12).

## **1.2.2. OBJECTIVES**

### **1.2.2.1 General objectives**

- To describe an outbreak of measles in Hawelity district, Tigray region

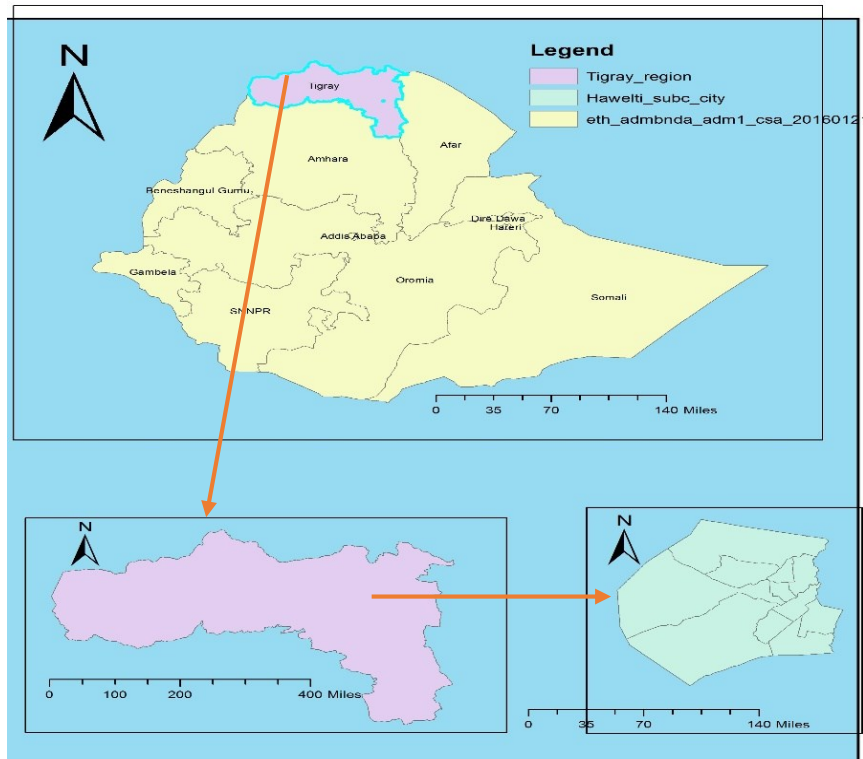
### **1.2.2.2 Specific objectives**

- To describe measles outbreak by person, time and place.
- To implement prevention and control measures

### 1.2.3. Methods

**1.2. 3.1 Study area:** Measles outbreak investigation was conducted in Hawelity district.

Hawelity district is found in Mekelle special Zone of Tigray region Ethiopia .Mekelle is located in the north region of Ethiopia 780 Km far from Addis Ababa.



**Map 2** *Map of Hawelity district, Mekelle Zone, Tigray region, January 2019*

**1.2. 3.2 Study period:** Data were collected from 1-14 January 2019.

**1.2.3.3 Study design:** we conducted cross sectional study, including review of immunization card records and interviews.

#### 1.2.3.4 Data collection tools and Methods

We interviewed the cases and parents or care takers and using a structure questionnaire. For descriptive part of the study the line list which was reported to the Zonal health department between January 1<sup>st</sup> to 14- 2019 was analyzed using MS excel 2013.

#### **1.2.3.4 Variable specification**

| Dependent variable | Independent variables        |
|--------------------|------------------------------|
| Measles            | Measles vaccination status   |
|                    | Measles infection previously |
|                    | Family size                  |
|                    | Contact history              |
|                    | Travel history               |

#### **1.2.3.5 Case definition**

##### **1.23.5.1 Suspected case**

A Suspected case of measles defined as any person in Hawelty woreda with fever and maculopapular (non-vesicular) rash and cough, coryza or conjunctivitis (red eyes) OR any person in whom a clinician suspects measles during 1-14 January 2019.

##### **1.2.3.5.2 Confirmed case**

A suspected case with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed cases in an epidemic (source National guidelines).

#### **3.6 Outbreak threshold**

WHO-AFRO defines an outbreak of measles as the occurrence of 3 or more IgM positive measles cases in a health facility or district in a month OR the occurrence of 5 or more reported suspected cases of measles in a health facility/district in a month.

#### **1.2.3.7 Inclusion and exclusion criteria**

##### **1.2.3.7.1 Inclusion criteria**

**Cases:** Any residents of Haweti district who had symptoms of measles or tested positive for IgM from 1-14 January 2019.

**1.2.3.7.2 Exclusion criteria:** Those who have no any sign and symptom of measles were excluded

#### **1.2.3.8 Ethical consideration**

The district health office has accepted for the investigation of measles outbreak through the Formal letter of TRHB .All the respondents as well as the parents were well informed about the Objectives of questionnaire and we got consent from them.

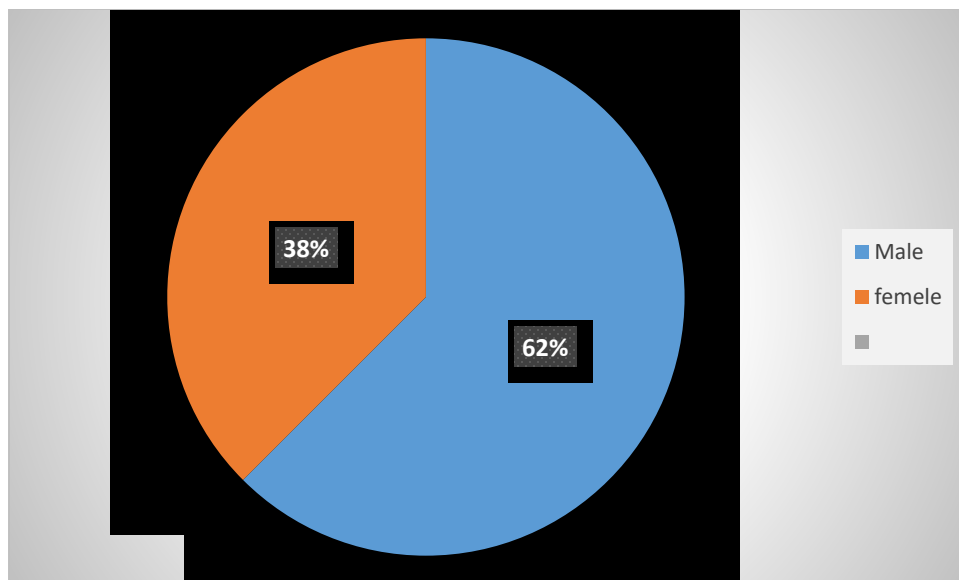
**1.2.3.9 Result dissemination:** Result was disseminated to the respective woreda, Zone, TRHB and to AAU school of public health.

#### **1.2.4. Laboratory result**

Five blood serum sample were collected from patients in the district from 1-13 January 2019 and sent to EPHI for confirmation. Out of five of them were invalid might be due to inadequate sample and transportation problem. As the result delayed we treated them as measles suspected cases and we continued active surveillance.

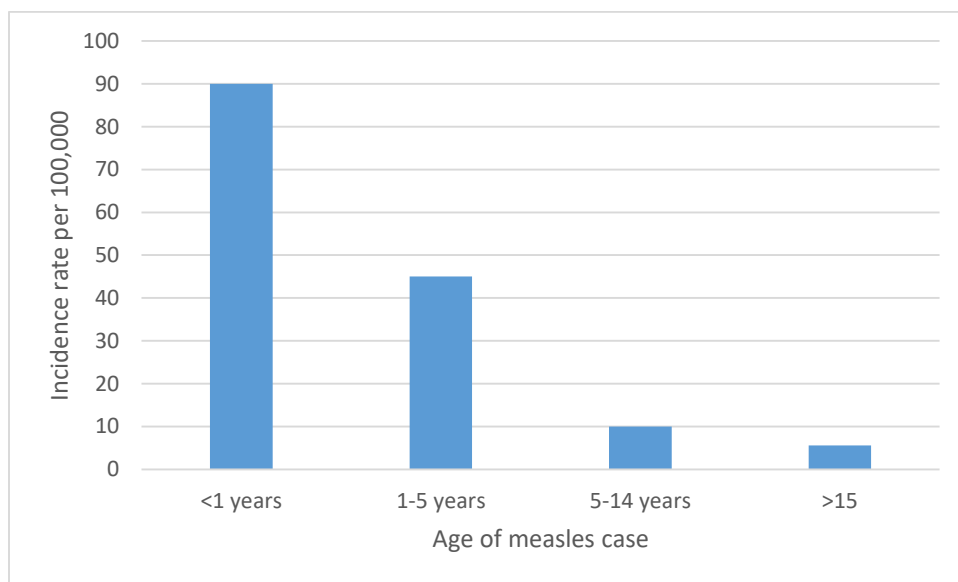
#### **1.2.5 Result**

We identified a total of 16 cases of measles suspected with median age of 5 years ranging from 8 months to 22 years. The most affected age was 1- 5 years of age (37.5%) followed by 5-14 years (25%). The age specific attack rate was highest in the age group of under-One 90/100,000 followed by 45/100,000 1-5 years of age group with case fatality of 0. Out of all measles patient 18.5% have no history of vaccination and 12.5% have unknown their vaccination status. We identified also 87.5% of the cases have history of at least one dose of measles vaccine exposure. And out of the total 18.5% of the cases have history of contact with active case of measles. All cases were screen for malnutrition out of this 1(6%) of cases have acute moderate malnutrition. We observed cold chain monitoring and there was gab in registering the temperature of the refrigerator.



*Figure: 8 proportion of measles cases by sex in Hawelity district, Mekelle special Tgray region.*

Regarding cases by sex of respondents 10(62%) were male



*Figure 9 measles incident rate by age in Hawelity district, Tigray region January 2019*

As shown in the figure the incident rate of under one more 90/100,000 followed by 1-5 years 45/100,000. And 18.7% of the total cases were not vaccinated for measles and 12.5% of the cases were unknown their vaccination status. And from the total vaccinated 81.8 %( 9) cases were received only one dose of measles vaccine.

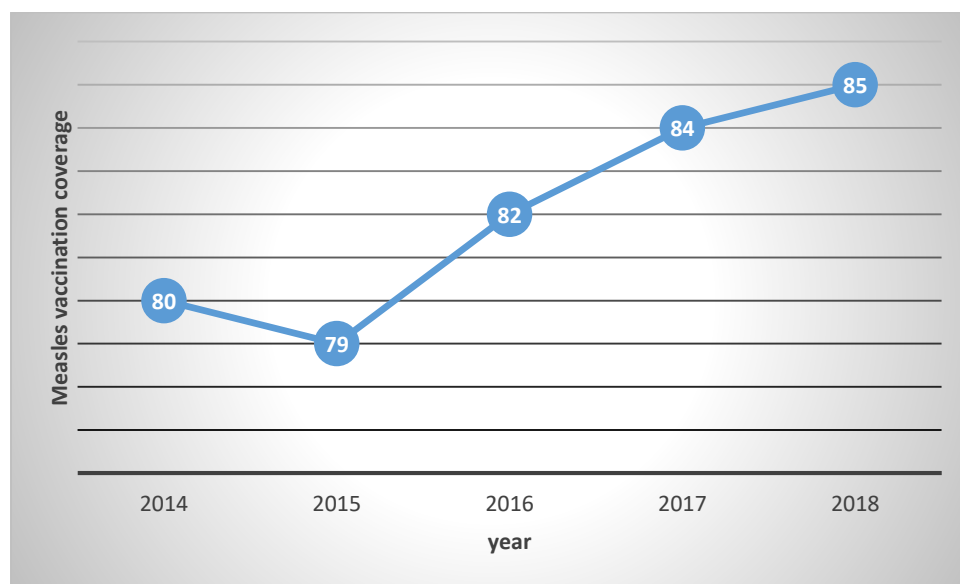


Figure 10: Measles vaccination coverage, Hawelity district, Mekelle special zone, January 2019.

As shown in figure immunization coverage of measles in the district is increasing from year to year, but outbreak was happen in the area this indicates poor cold chain monitoring.

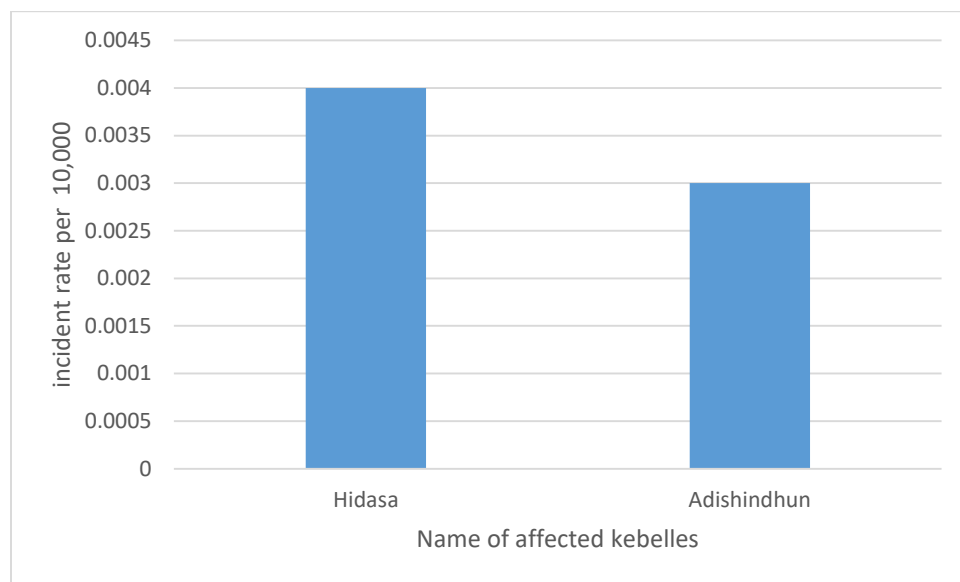
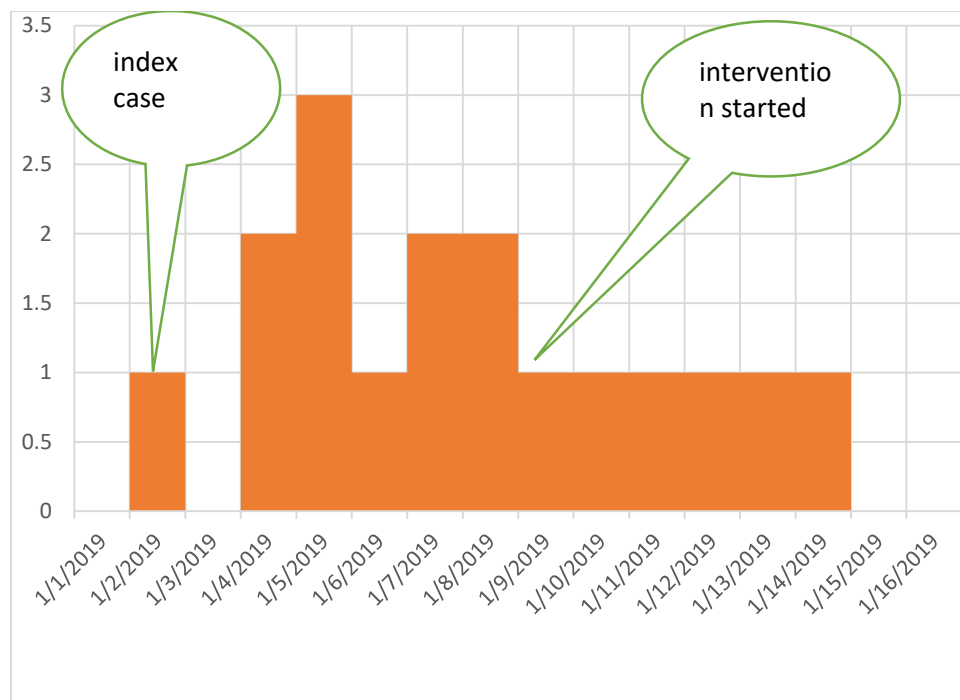


Figure 11: Distribution of suspected measles cases Hawelity, district Mekelle special zone

Out of five kebelles of Hawelity district, two kebelles reported suspected measles case with the attack rate of 4/10000, 3/10000 Hidasa and Adishindhun respectively. No death was reported.



*Figure 12: Measles case by date of onset in Hawelity district Mekelle zone, Tigray*

The index case was a 9 month child who is not vaccinated reported from Hidasa kebele. After the index case was reported we went to the area where occurred to verify the case. As soon as we saw the case we decided as suspected measles case. We started active surveillance in the district.

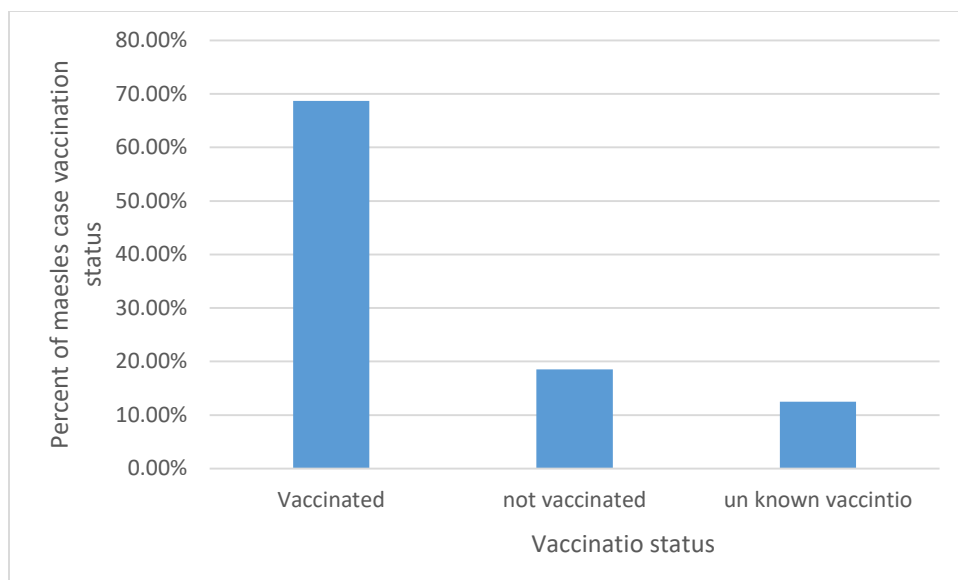


Figure 13 Vaccination status of measles cases. Hawelity district Tigray, January, 2019

From the total of measles case 11(68.7%) were vaccinated to measles, 3(18.5%) were not vaccinated and 2(12.5%) were unknown there vaccination status. 18.5% of the measles cases were not vaccinated this have contribution to happen the outbreak.

#### 1.2.6. Public health intervention

Active case management in the health center level was given to control the outbreak .Community mobilization to create awareness on mode of transmissions and prevention measure including mechanisms to reduce contact with active cases was done. The measles vaccination coverage within the specific kebelles was reviewed. The banners has been distributed to the areas where the communists are mostly assembled like church and school. From the total cases 87.5 %( 14) of cases were treated with TTC and vitamin A.

### 1.2.7. Discussion

From this study 3 (18.5 %) of the cases were not vaccinated. And 18.7% of the cases were unknown their vaccination status. From the total cases 11(68.7 % ) of them were vaccinated This is less than the study conducted in Bossoba Worena woreda of Amhara region which is 71.3% of the cases were receives measles vaccine (10).The overall incident rate is 1.4/10,000 which is lower than study conducted in Jarar zone Somali region with attack rate of 28.2/10, 000(6)

Out of those vaccinated 9(81.8 %) receive only first dose of measles vaccine and 2(19.2 %) of the total cases they received two dose of measles vaccine. This indicates low coverage of receiving measles second dose when we compared WHO recommendation that is all children should receive second dose of measles vaccine.

Our study showed that 56.2% of the cases were under five children this is less than the study conducted in Guji Zone Oromia region Ethiopia which is 65.9% of the case were under five children(13). To prevent measles outbreaks or interrupt transmission and to enhance elimination of measles, 95% population immunity is needed (5). However, the administrative coverage of measles vaccination in the district under review range from 79-85% for the 5 years

Even though the vaccination coverage of the district for measles vaccine was 82%, outbreak was happened in the district. This is due to poor cold chain management in the health facilities.

#### **1.2.8. Limitation/challenge**

- Absence of child immunization card in the family.
- Absent of confirmed cases because of invalid sample specimen.

#### **1.2.9. Conclusion**

- The incidence rate for the district was 1.4/10000 population
- 18.7% of the cases their vaccination status was unknown
- 6.2% of the cases have acute moderate malnutrition
- 18.5% of the cases have history of contact to active measles cases.
- We verified suspected measles outbreak was happened in Hawelty district

#### **1.2.10. Recommendations to the district health office**

- Second dose of measles vaccination should be improved
- Social mobilization should be strengthen to improve the community awareness towards prevention and control of measles infection.
- Cold chain management should be routinely monitored

### 1.2.11. Reference

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## CHAPTER TWO: MEASLES DATA ANALYSIS

### 2.1 MEASLES CASE BASED SURVILANCE DATA ANALIYSIS REPORT,TIGRAY REGIONAL STATE,2015-2017.

#### Abstract

#### 1. Background

Measles a highly infectious viral illness, remains one of the leading causes of death among children worldwide. Owing to insufficient measles vaccine coverage, however, measles is still endemic in many parts of the world, including several European countries. There were 327,305 measles cases reported and an estimated 139,300 measles deaths globally. We analyzed three years measles data to see its magnitude and to describe the data by place, person and time variables

**Method** Across sectional surveillance report based on retrospective record review of secondary data. Secondary data were reviewed from PHEM and HMIS unit of monthly reported from the woredas of the region. Variables were entered, cleaned and analyzed using SPSS and tables and figures were used to analyze the data.

**Result.** The data indicates around 94% of the cases reported in the 3 years period occurs in 2015. According to data reviewed the incidence of measles from 2015 to 2017 was 9/10000, 3/10000, 6/10000 for age less than 5, 5-14, greater than 15 years respectively. The highest affected age group was under five children overall mortality rate is 3.4/100,000 cases and proportion hospital admission was 49%. And 68% of the cases were vaccinated to measles 18.2%, unvaccinated 13.8% un known their vaccination status.

#### Conclusion

From this analysis, we can conclude the incidence of measles in 2015 was very high; there was an outbreak measles in different woredas of the region.

**Key word:** Measles, surveillance data analysis, Tigray regional health bureau.



## 2.1. Introduction

### Back ground

Measles, a highly infectious viral illness, remains one of the leading causes of death among children worldwide.(1) Measles is one of the vaccine preventable diseases among the leading causes of under-five child mortality. Measles follows a seasonal pattern, with. Increasing incidence in the dry season, i.e. from November to May a large number of susceptible of measles cases are affected every year(2). Effectively prevented through vaccination But it results in a significant public health impact when there are displaced populations, less sanitation and poor nutritional systems due to their characteristic mass population displacement, high population density in camps and low measles vaccination coverage among children(3).

Owing to insufficient measles vaccine coverage, however, measles is still endemic in many parts of the world, including several European countries (4) measles still was the leading cause of Vaccine preventable deaths in children, and the fifth leading cause of death from any cause in children under five years old(5)

Despite tremendous achievements towards global measles mortality reduction and measles elimination goals, in 2010, there were 327,305 measles cases reported and an estimated 139,300 measles deaths globally (6)

In developed countries measles immunization coverage is a good level but in developing countries, particularly in Sub-Saharan region vaccination coverage is very low (7)

To this end, the assessment conducted in 2010 indicated that global mortality from measles has been reduced by 74% of the global estimate in 2000, and 85% reduction in the African region has been documented(8) Sub-Saharan Africa reports repeated outbreaks of measles, a vaccine preventable disease, which is notifiable under the Integrated Disease Surveillance and Response strategy in Nigeria. Nigeria has reported several outbreaks of measles in the last three years. Poor immunization coverage and weak health systems have been related with measles. (9)

Measles vaccines have dramatically reduced cases and deaths during recent decades. The Measles Initiative developed a joint strategic plan to reduce measles-related deaths by strengthening routine immunization, supplementary immunization activities (SIAs) in the form of mass vaccination(11)

As of week, 22, 2017 there have been 1,981 reported cases of measles across the country, including 961 confirmed cases (420 laboratory confirmations, 490 epi-linked and 51 clinically compatible cases). In the same week there were 73 new suspected cases reported across the country (12).

Measles outbreak is still persisting. During week 24, 37 new-suspected measles cases were reported in the country. Since the beginning of 2017, 2,119 suspected measles cases were reported from across the country. This includes 979 confirmed cases (434 laboratory-confirmed, 490 epidemiologically linked and 55 clinically compatible cases). Of the reported cases, 18.5% had not received any measles vaccination and 44.1% had an unknown status. Oromia is still the most affected region, with 32% of reported cases, followed by Amhara (28%), Addis Ababa (17%) and SNNPR (11%) (10)

### 2.1.1 RATIONALE OF STUDY

Measles is one of the communicable diseases causing preventable mortality and morbidity in Ethiopia. Epidemiological surveillance of measles is a major public health strategy in prevention and control of disease. So, this study is important to improve the prevention and control strategy in Tigray regional state from 2015-2017

## 2.1.2. Objective

### 2.1.2.1 General Objective

- ❖ To describe the magnitude and distribution of measles in Tigray regional state from 2015 to 2017.

### 2.1.2.2 Specific Objectives

- ❖ To describe measles distribution by time, place, person.
- ❖ To implement the prevention and control measures

### **2.1.3. Methods and Materials**

#### **2.1.3.2 The study area and period**

Tigray is the northernmost regional state of Ethiopia, located between latitude 12° and 15° north. This surveillance data analysis was conducted in this region from January 5-15/2018.

#### **2.1.3.3 Study design**

A cross sectional surveillance report based on retrospective record review of secondary data.

#### **2.1.3.4 Population under surveillance**

All population living in Tigray were population under surveillance

#### **2.1.3.5 Data collection tools and procedures**

Data was analyzed using MS-Excel 2007 after cleaning and merging the data.

We collected the data from weekly report of PHAM data and monthly report of HMIS data. By reviewing secondary data from 2015—2017

#### **2.1.3.6 Data analysis and presentation**

Data was analyzed by using SPSS entered from excel and presented by tables, texts and graphs

### **2.1. 3.7 Case definition**

**2.1.3.7.1 Suspect case** A Suspected case of measles defined as any person with fever and maculopapular (non-vesicular) rash and cough, coryza or conjunctivitis (red eyes).

**2.1.3.7.2. Confirmed case** any of the following, Isolation of measles virus, Positive serology test of measles IgM antibody, Significant rise in measles antibody titers by any standard serological OR epidemiologically linked to a laboratory confirmed case

#### **2.1.3.8 Ethical consideration**

The regional health office has accepted for the collection of the data following legal letter was written from Addis Ababa to TRHB to be officially to collect our data from the region HMIS unit and PHEM member.

#### **2.1.3.9 Dissemination of result**

The result were presented to RHB and will be presented to Addis Ababa university field epidemiology residents and submitted to school of public health department of epidemiology.

#### 2.1.4. Result

#### 4.1 Description by person

Table 3 age description of measles incidence case at Tigray regional state from 2015-2017

| Age   | Frequency | Incidence/10000 |
|-------|-----------|-----------------|
| <5    | 692       | 0.09            |
| 5-14  | 485       | 0.03            |
| >=15  | 1652      | 0.06            |
| Total | 2829      | 0.18            |

From this incidence table those under five age is more affected than the other age group.

Because children under five years are more vulnerable for measles infection. In the three years date analysis from the total cases 68% of cases were vaccinated for measles, 16.2% not vaccinated 15.8% un known their vaccination status.

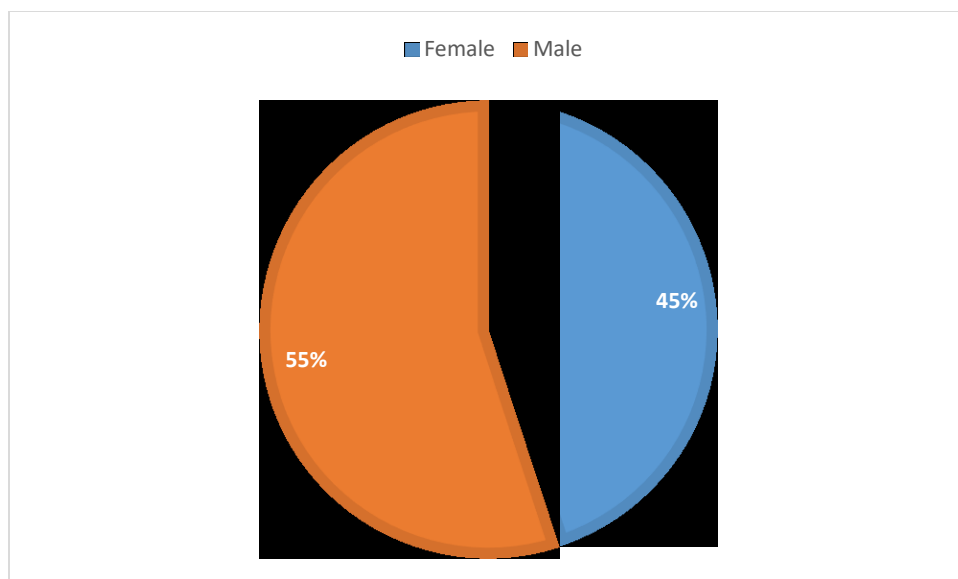


Figure 14 sex description of measles case at Tigray regional state from 2015-2017

Table 4 time description of measles case at Tigray regional state from 2015-2017.

| Year  | Frequency | Per 10000 |
|-------|-----------|-----------|
| 2015  | 2669      | 5.3       |
| 2016  | 81        | 1.6       |
| 2017  | 79        | 1.5       |
| Total | 2829      | 8.4       |

As the data shows in the table in 2015 there was high incident rate because there were UN outbreak in different district of the region in that year. The incidence rate was decreased from 5.3/10000 to 1.5/10000 due to implementation done during 2015. From this data analysis, 68% of the cases were vaccinated to measles, 18.2% UN vaccinated 13.8 unknown their vaccination status.

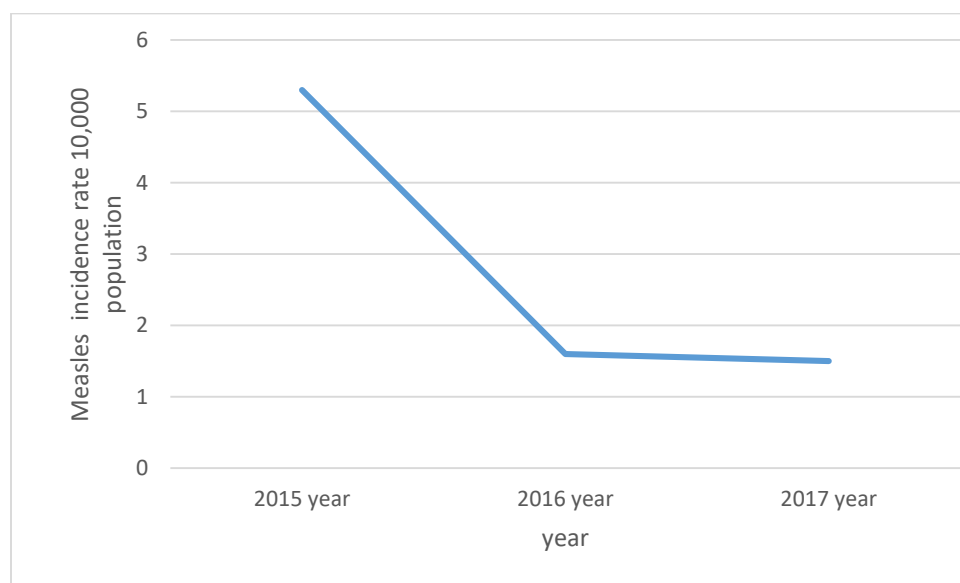


Figure 15 Disruption of measles cases by time Tigray regional health bureau 2018

As shows in the figure 2015 year reports highest number of measles cases because there was an outbreak the different district of the region. After the implementation it was decreased in the two consecutive years.

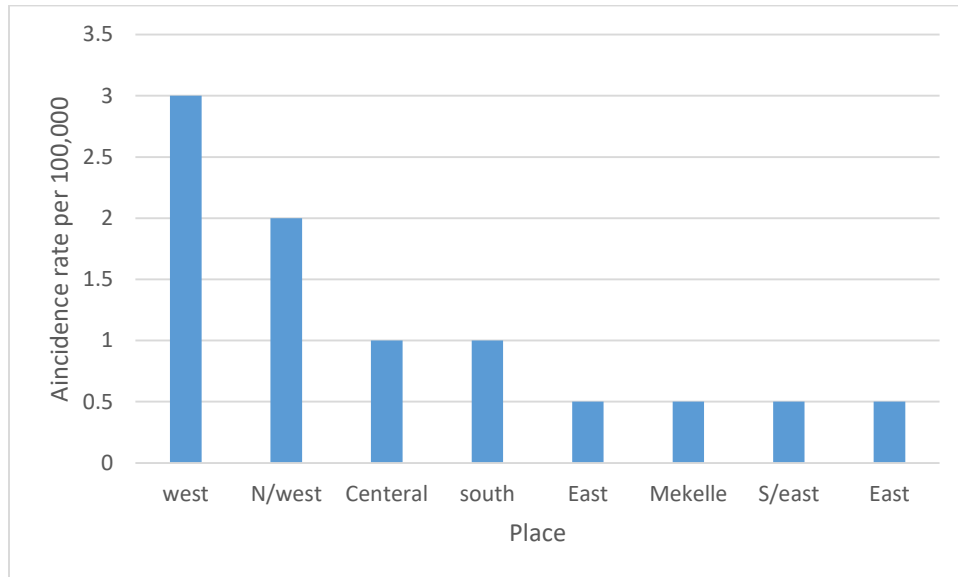


Figure 16: Disruption of measles case by place Tigray regional health bureau 2018

AS the figure shows out of 7 Zones the highest cases were from west 3/100,000 followed N/west 2/100,000 central the highest cases were from western zone because there were UN outbreak in the zone and highest number of measles cases were reported.

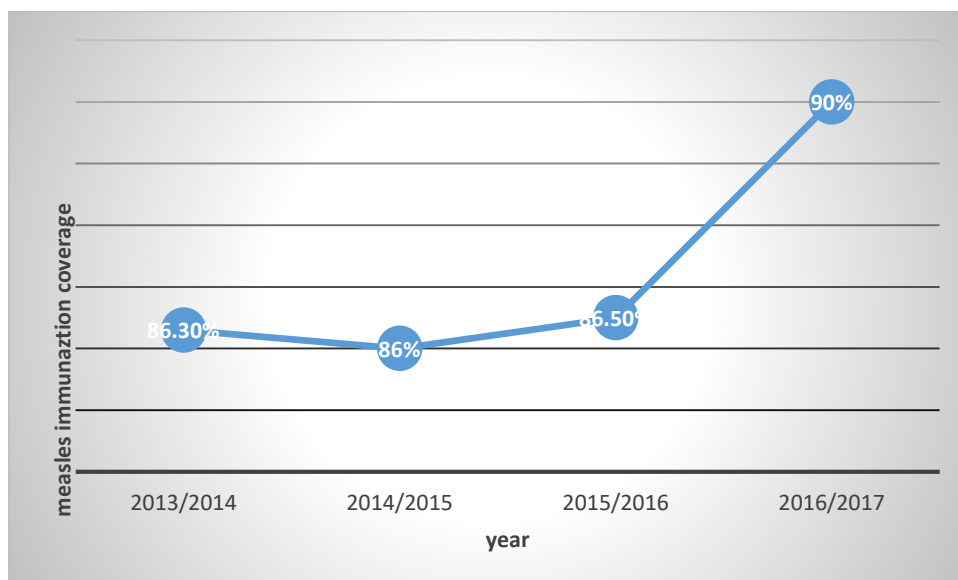


Figure 17 Measles immunization coverage of Tigray regional health bureau 2018

As shown in the trend the immunization coverage of the region increasing year to year in the measles data analysis there was outbreak in 2015 but dramatically the incidence rate is decreased from 5.3/10000 -1.6/10000 in 2016, 1.5 in 2016 this indicates there was good intervention in the control of the outbreak And the immunization coverage is increasing.

### 2.1.5. Laboratory Result

Of the total of 256 suspected measles sent to national referral laboratory from Jan, 2015, Feb, 2015, 173(67.2) of them were with valid result that have lab result. 102 (58.9) were positive for IGM antibody. The positivity rate ranges from 34.5%, in Eastern zone to 76.9% in Mekelle Zone. There were 82(32%) sample with no lab result or missing value, from the total of 256 referral sample sent for confirmation. There is no laboratory result for the remaining years.

Table 5 Number of cases reported in OPD and IPD, Tigray regional health bureau 2015-2017

|       | Frequency | Percent |
|-------|-----------|---------|
| OPD   | 1434      | 50.7    |
| IPD   | 1395      | 49.3    |
| Total | 2829      | 100     |

We described the data reviewed from Tigray region (2015-2017) in terms of time place person. The result gave us 58.4 % of measles cases were from that age less than 5 years. The data indicates around 94% of the cases reported in the 3 years period occurs in 2015. According to data reviewed the incidence of measles from 2015 to 2017 was 9/10000, 3/10000, 6/10000 for age less than 5, 5-14, greater than 15 years respectively. In addition to this mortality rate is 3.4/100,000 cases and proportion hospital admission was 49%%

#### **2.1.6. Limitation**

Data was incomplete, that is the necessary variables like vaccination status were not completed register in the line list.

#### **2.1.7. Discussion**

In the surveillance data analysis the cumulative incidence was 8.4/10,000 this is less than measles outbreak investigation done in Jarar zone Somalia region with incidence rate 28/10,000(2). The incidence rate was high in 2015 because there was an outbreak in the different district of the region at the same time outbreaks have been occurring in several areas of Ethiopia. Since the start of 2015, a total of 2,190 suspected measles cases have been reported. Of these, 929 have been positively confirmed. The majority of the cases were reported in the woredas (districts) of Nejo and Nole, West Wellega zone in the Oromia Region, the woreda of Kola Tembien, Central Tigray Zone in the Tigray Region and Bench Maji, Keffa and Sheka zone is Southern Peoples Region (3). In Ethiopia as a result of the low population immunity and buildup of the susceptible population, widespread measles outbreaks were occurring in 2015 throughout the country, and the numbers of districts affected by measles epidemic were more than 280 as per the weekly measles report(13). The proportion of measles cases the analysis 58 % of the cases were more in under 5 years. This is less than measles analysis done in Oromia region 46% and 42% in SNNPR (13). From this analysis 94% of the cases was in 2015 due to the out breaks happened in different district of the region. In 2015 and 2016. The incident rate were decreased from 5.3/10,000 in 2015 to 1.6/10,000 in 2016 and 1.5/10,000 in 2017. this might be due to good intervention done following the outbreak. I recommend to Tigray health bureau to focus on early warning and assess surveillance system and quality of data should improve

## **8. Conclusion**

From this analysis, we can conclude the incidence of measles in 2015 was very high; there were an outbreak in that year. We can also conclude that incidence of measles was highest in West as compared to the others due to repeated outbreak in the zone. The incident rate was more in the age group of <five years. 94% of the cases was in the year of 2015.

### **2.1.9. Recommendation**

I recommend to Tigray health bureau to focus on early warning and assess surveillance system.

Tigray health bureau should improve their data quality.

Regional HMIS and PHAM case team should cross check the data has come from districts identify the gaps and in accurate reports.

The necessary variables should complete in the reports.

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## CHAPTER THREE: SURVEILLANCE SYSTEM EVALUATION

### 3.1 SURVEILLANCE SYSTEM EVALUATION ON MEASLES IN KILTE AWLAELO WOREDA TIGRAY REGION 2019

#### 3.1.1 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. Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation, and formulating research hypotheses. For example, data from a public health surveillance system can be used to (1). Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness(1).

Measles is an acute, highly contagious viral disease caused by measles virus and transmitted primarily by respiratory droplets or airborne spray from the coughs and sneezes of person infected with the disease to mucous membranes in the upper respiratory tract or the conjunctiva (2). Measles was still the leading cause of vaccine preventable deaths in children, and the fifth leading cause of death from any cause in children under five years old (3). Though many children experience uncomplicated measles, nearly 30% of cases may develop one or more complications that are more common in young children with immune deficiency disorders, malnutrition, vitamin “A” deficiency, and inadequate vaccination(4)

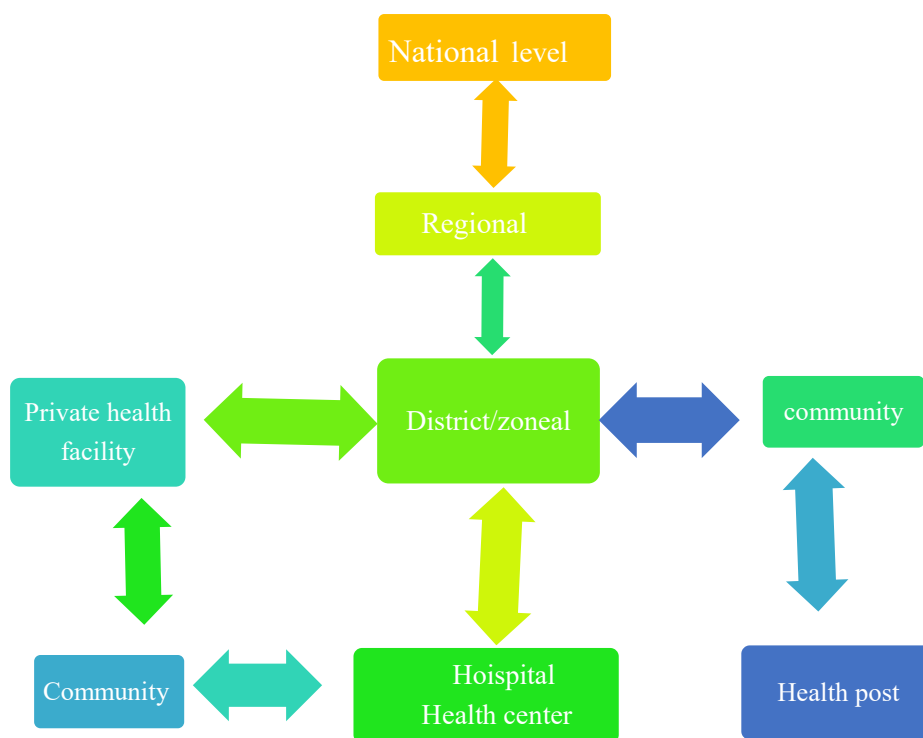
Measles is one of the leading causes for child morbidity and mortality in the world, every year around 100,000 of children lost their life due to the disease (5)

Following the implementation of strategies, an estimated 60% reduction in global measles mortality was achieved by 2005 during 2000–2008, global mortality attributed to measles declined by 78%, from an estimated 733,000 deaths in 2000 to 164,000 in 2008, while estimated measles mortality declined by 92% in the African region(6)

Owing to insufficient measles vaccine coverage, however, measles is still endemic in many parts of the world, including several European countries (7)

Despite Malawi’s measles control successes during the past 2 decades, a large outbreak occurred in 2010, with as many cases as in the 1980s(8)

Recently measles outbreaks have been occurring in several areas of Ethiopia. Since the start of 2015, a total of 2,190 suspected measles cases have been reported in 61 separate outbreaks in Ethiopia. Of these, 929 have been positively confirmed. The majority of the cases were reported in the woredas (districts) of Nejo and Nole, West Wellega zone in the Oromia Region, the woreda of Kola Tembien, Central Tigray Zone in the Tigray Region and Bench Maji, Keffa and Sheka zone in Southern Peoples Region (9). In 2002 Ethiopia adopted the African regional accelerated measles morbidity and mortality reduction goal to reduce measles mortality, including the pre-elimination goal which ended in 2012 (10)



**Figure 18:** Shows the flow of surveillance data and information throughout the health system.

#### 3.1.1.2. Rational of the study:

In our country Ethiopia measles outbreak occur in difference regions of the country. In Tigray also there was measles outbreak frequently in the area. In addition Surveillance system evaluation was not done in the area before; and little is known about the effectiveness and efficiency of the surveillance system. Therefore evaluating public health surveillance systems helps to ensure that problems of public health importance are being monitored efficiently and effective

### 3.1.1.2. OBJECTIVES

#### 3.1.1.2.1 General objectives

To describes the existed surveillance system on measles and evaluate the key system attribute of surveillance in Kite Awlaelo woreda, eastern zone of Tigray regional, Ethiopia

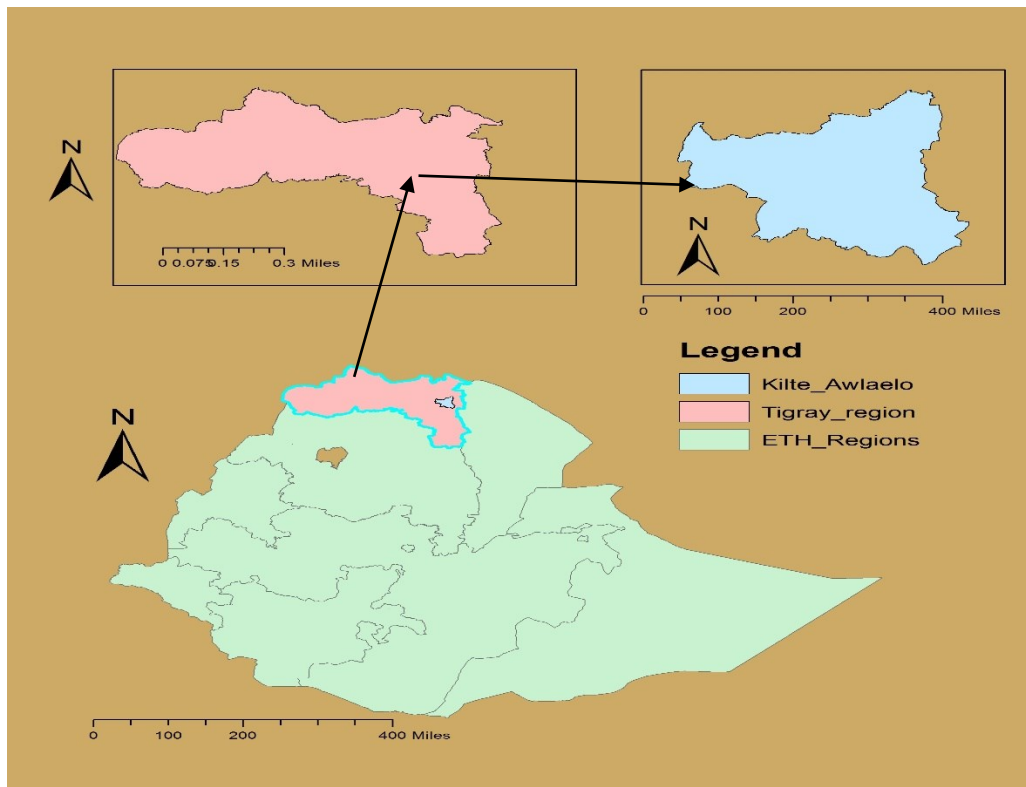
#### 3.1.1.2.2. SPESFIC OBJECTIVES

- To describe the performance of the measles surveillance system of
- To describe attributes of measles surveillance in Kilte Awlaelo woreda
- To describe the implementation of core surveillance activities in respect to case detection, registration, confirmation, reporting, epidemic preparedness and response
- To describe supportive activities of surveillance system such as supervision, staff training and information feedback
- Determine whether the system is meeting its objectives

### 3.1.1.3. Methods and materials

#### 3.1.1.3.1 Study area and period

Kilte Awlaelo woreda is found in the eastern zone of Tigray region north Ethiopia 795 km far from Addis Ababa and 45 km far from Mekelle the capital city of the region. The woreda has a population of **xxxx** and it has 19 kebelles with 5 health centers and 17 health posts. The study was conducted on December 15-January 1-2018.



Map 3: Map of Ethiopian regions showing kilte Awlaelo woreda, eastern zone of Tigray, Ethiopia December 2018

#### 3.1.1.3.2 STUDY DESIGN

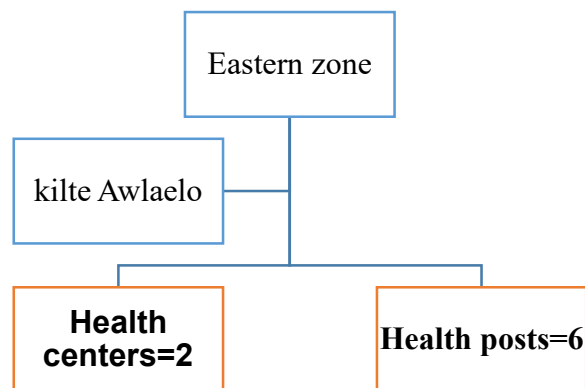
Cross sectional study design was conducted.

#### 3.1.1.3.3 STUDY UNIT:

Two health centers and six health posts of Kilte Awlaelo woreda, woreda health office are the study units in this system evaluation.

#### 3.1.1.3.4 SAMPLE SIZE AND SAMPLING TECHNIQUE

*We have selected this woreda according to the regional low performance of surveillance system. The health centers and health posts were also selected purposively, by considering access to public transport.*



*Figure 19: Sampling technique showing how study subject of kilte Awlaelo woreda are selected, December 2018*

#### 3.1.1.3.5 DATA ANALYSIS

Data was entered and analyzed with MS excel and result were presented using rates, frequency, charts and graphs.

#### 3.1.1.3.6. CASE DEFINITIONS

##### 3.1.1.3.6.1 COMMUNITY CASES DEFINITIONS:

Any person with *rash* and *fever* to a health worker and also advise the person to go to a health facility.

##### 3.1.1.3.6.2. STANDARD CASE DEFINITION

Measles

**3.1.1.3.6.3 Suspected:** Any person with fever and maculopapular (non-vesicular) generalized rash and

Cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles

**3.1.1.3.6.4Confirmed:** A suspected case with laboratory confirmation (positive I gm antibody)  
or

Epidemiological link to confirmed cases in an epidemic.

#### 3.1.1.4RESULT

##### Case detection, registration and confirmation

The national guide line of measles was available in 7 health facilities from 8 visited health facilities that is 87.7%. And PHEM National guide line was available in 6 visited health facilities from 8 health facilities that is 75% other guidelines for prioritized diseases like meningitis, malaria, were available in all (100%) visited health facilities and district of Kilte Awlalo. The standard case definition of measles and other reportable disease were available in all visited health facilities and district posted in the wall of the health facilities. All (100%) health care providers define the correct case definition of measles. Measles case based registration form was found in all visited health facilities. All visited sites have materials to collect the stool, blood/serum but not for CSF sample due to lack of capacity to collect the sample. All visited health facilities and the district have functional cold chain to handle the sample and have transport media transport to next level.

##### 3.1.1.4.1 REPORTING

All the visited health facilities have appropriate surveillance reporting forms in the last six months from July to December with no interruption. The forms are supplied by national PHEM and distributed by regional PHEM, and sometimes the district health office distributes the forms to the respective health facilities by duplicating. Case investigation, line list, weekly reporting and rumor log book are some of the formats found in each health facilities visited.

In case of emergency, PHEM focal person and officers communicate on daily bases or more frequently and other daily activities they usually communicate weekly either by telephone or weekly reports. Health posts send reports to health center every Sunday. Health centers send the report to the district on Monday. From the district to region on Tuesday finally the region aggregates and sent to EPHI on Wednesday. Report completeness of health posts to health center was 83.3% and health center to woreda was 100% with average woreda completeness of 91.6%

### **3.1.4.2 DATA ANALYSIS**

There was no any data analysis practice by place and person at all levels. Malaria trend analysis was done in all health facilities. The reported number of cases was described by weekly basis at all levels. All facilities and district had permanently assigned surveillance officer and 86% of them trained on surveillance and epidemic management.

#### **3.1.1.4.3 OUTBREAK INVESTIGATION**

During 2016/2017 there was outbreak of AWD with 90 cases and 500 scabies cases were reported by health facility staffs and district level.

When reports were sent to districts response was started within 24 hours. Response is provided based on the clinical findings and laboratory sample of measles.

#### **EPIDEMIC PREPAREDNESS AND RESPONSE**

Kilte Awlalo districts and the visited health centers prepared epidemic preparedness and response plan and it was not supported by budget. All districts and health facilities have RRT but only the district have regular meeting. All health centers have case management protocol for measles. The commonest challenges during an epidemic response were shortage of supplies, Shortage of budget for administrative issue because they did not prepared the budget before the outbreak occurred. Another challenge is late reporting by the community and health Extension workers. Emergency preparedness and response task force was established at District level and conducts meeting only when there is outbreak.

#### **SUPERVISION AND FEED BACK**

Supervisions and feedback are major activities that helps to improve the health system regarding feedback. The region gave feedback to the district once in the year (50%).

All visited health posts receive feedback regularly monthly from health centers. But the district health office receive feedback only one in the past one year 2017.

#### **RESOURCE**

Data was aggregated by computer at district level. All health center visited and districts have motor cycles but they do not have driving license. Hence the motor cycles were not used for surveillance activities. The visited health center do not have computers but only the district have computer.

#### **Laboratory**

All visited health centers have laboratory service. And give services for 24 hours. Stool exam, urine analysis, malaria blood sample etc.

### **ATTRIBUTE**

#### **USEFULLNESS**

All respondents from district health offices, health centers and health posts 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.so surveillance system is useful to detect outbreak of measles and to Estimate the burden of these disease and mortality with regard to disease and finally to Assess the effects of prevention and control of measles. So all (100%) respondents agreed that the surveillance is useful for disease prevention and control.

#### **SIMPLICITY**

The simplicity of surveillance system is explained by the case definition because it is important to detect early the disease or condition under surveillance. All respondents of the study replied that the case definitions of measles were easily understandable. Regarding the contents of the reporting format 100% of the visited health facilities replied that the format contain all necessary variables for Measles. All respondents agreed that to fill the format takes 5-10 minutes.

#### **FLEXIBILITY**

The surveillance system accommodate itself into the new reform under taken in the health system because all interviewed staff respond that the system is easy to change and accept new ideas which are good for improvement of the surveillance .The formats is more flexible to report and can incorporate other newly occurring health event without much difficulty.

#### **REPORT TIMELINESS AND COMPLETENESS**

Report completeness is the proportion of health facilities reported completely compared to the expected. In six months, weekly report was complete in 7(87.5%) of health facilities visited but the timeliness of the visited health facilities was 100%.

#### **SENSITIVITY**

According to the response of the surveillance focal persons, the surveillance system captures most of the priority disease in the community/district. But this can be affected by the presence of case definitions, ability of the health professionals and laboratory capacity to detect cases at each level. According to WHO standard, a district with 100,000 populations expects to detect at least two measles cases annually, but the district detect only one measles cases in the last six months this indicates (50%) sensitivity.

#### ACCEPTABILITY

Acceptability is expressed by accepting and well engaged to the surveillance activity. All reporting agents accept and well engaged to the surveillance activities. All reporting agents use the current reporting format.

#### REPRESENTATIVENESS

The health service coverage of the district was shown below, according to the national Health Service coverage standards, the health center to population ratio was above the national standard, >100% coverage, but HP :population ratio was below the national standard(1HP to 5000 population) or low coverage. All health facilities report the disease under surveillance, and all the kebelles have access to health care. Therefore the surveillance system is representative.

*Table 6 Shows health service coverage of kilte Awlaelo woreda, Tigray, Dec, 2018*

| Type of health institution | Number of HFS | Health institution to population ratio (coverage) |
|----------------------------|---------------|---------------------------------------------------|
| Hospital                   | 0             | 0:115,900                                         |
| Health center              | 5             | 1:23180                                           |
| Health post                | 17            | 1:6818                                            |

A public health surveillance system that is representative accurately describes the Occurrence of a health-related event over time and its distribution in the population by Place and person. The populations do have good health seeking behavior for many diseases but for disease like measles, the populations has low health Seeking behavior and prefer to stay at home.

#### POSETIVE PREDITIVE VALUE

Predictive value positive (PVP) is the proportion of reported cases that actually have the Health- related event under surveillance. It is difficult to calculate the predictive positive Value for measles since all suspected measles cases were not confirmed using laboratory.

## **STABILITY**

Stability refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system. Methods. Since all the weekly surveillance data were reported by individual mobile phones to the next higher level, this needs mobile card allowances especially for the health facilities with no telephone service. In addition per diem and transport must be considered for the health professionals conducting active surveillance for motivation, despite those issues the surveillance system is going as needed.

## **DISCUSSION**

The main goal of conducting public health surveillance is to assess the health status of a Population, establish public health priorities, and reduce the burden of disease in a Population by making appropriate public health actions. Even though the rapid response team was functional with documented review meetings and active surveillance findings at all levels, useful for case detection. But there was no descriptive data analysis practice by person and place in all the visited health facilities and the district health office, that indicates poor practice of interpretation and utilization of surveillance data for action at all levels. Thus, the surveillance data has limited usefulness. According to WHO standard, a district with 100,000 populations expects to detect at least two measles cases annually, but the district detect only one measles cases in the last year this indicates less sensitivity.(11)

Measles standard case definitions were available in all of the visited health center but all the health post there is no community case definition this may affect early measles cases detection and notification by the local community.

In this surveillance evaluation poor performance of data is due to lack of knowledge in Health extension workers who are intends to work peripheral area however the study did not the effect of training performance in health extension worker according to the CDC guideline Quality of data is influenced by the performance of the screening and diagnostic tests (i.e., the case definition) for

the health-related event, the clarity of hardcopy or electronic surveillance forms, the quality of training and supervision of persons who complete these surveillance forms, and the care exercised in data management (12).

The need for rapidity of response in a surveillance system depends on the nature of the public health problem under surveillance and the objectives of that system. Recently, computer technology has been integrated into surveillance systems and may promote data quality. The report completeness and timeliness of district is above 85. According to WHO acceptable report completeness is 80% (11).

## **6. Conclusion**

The district office received only one feedback from the regional PHEM in the past one year. There was no any weekly bulletin distributed to the district office. Supportive supervision was also conducted regularly at each level. All visited health posts received feedback from health center monthly but the health center not received the feedback regularly. There were poor data analysis practice. The report completeness and timeliness of the district was above the national requirement (i.e. >80%).

## **7. RECOMMENDATION**

- The woreda health office should allocate a budget line at woreda as well health facility level for public health surveillance activities like, active surveillance (transport and per diem) and communication purposes (mobile card fees).
- The regional PHEM should disseminate the weekly epidemiological bulletins to each district according the data they provided, for timely public health actions.
- The district health office and health centers should do and disseminate epidemiological bulletins or written feedbacks regularly to all the reporting health facilities for timely feedbacks and interventions.
- The woreda health office should allocate budget for outbreak before the outbreak occur

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## **CHAPTER: FOUR HEALTH PROFILE DESCRIPTION**

### **4.1 HEALTH PROFILE ASSESSMENT IN ADIGRAT TOWN, TIGRAY REGION NORTH ETHIOPIA**

#### **ABSTRACT**

A community health profile is a collection of information about the characteristics of the Community, the health resources within the community data describing the community and the Community's perceptions of health. This profile presents a collection of facts and figures of the Adigrat town annual performance. The aim of this profile is to assess the health profile of Adigrat town, North Ethiopia from January 2017.

**Methods:** Data were collected, compiled and analyzed using Microsoft Excel 2007. Frequency distribution, table and figure were used to display findings. Official letter was obtained from Tigray regional health bureau to the study health office and other relevant offices to accept the legality of this study. The health profile assessment was conducted in Adigrat town, Tigray region, North Ethiopia. A semi structured questionnaire and a descriptive statistics was used to collect the data from the town. On January 2017. The overall data was collected based on the profile data of 2009 E.C. we collected the data by interviewing, using structured questionnaire and by observational check list to assess it.

**Result:** 45003[51%] of the population of Adigrat town were males and 42826[49] of them were females in 2017. The town has 6 Kebeles, all are urban. From the total population in that year 12815[15%] of them were <5 years old children and 38380[43%] were ≥15 years old. The sex ratio male to female of the town is 1:1.05. The first two ten top disease in adult in the town were URTI and AFI respectively. The immunization coverage for all antigens in the town was above 95%.

**Conclusion :** EPI coverage of the town in most of the EPI activities are greater than 95%

## 4.1 Introduction

A community health profile is a comprehensive compilation of information about a community. The data in a profile reflects the health of a given community from many different angles. A community can refer to a county, a locality within a county, a tribe, or a multi-county region. The information may include data already collected and published about a community or information collected by the organizations or individuals creating the profile. Community health assessment is both a process and a product. It is a process of gathering and interpreting information from multiple and diverse sources in order to develop a deep understanding of the health of a community. It is also a process that uses these results to develop strategies to improve the health status of the community. Community health assessment also includes products, such as a community health profile and a community health improvement plan (1). This comprehensive health profile is intended to serve as a tool to monitor progress in the health of the population. WHO collaboration with its Member States will strengthen the national health information systems, and enable the generation of timely and reliable evidence to assess the health situation and trends, and the health system response. Most important, it will provide the information needed by health policy and decision-makers(1).

According to the results of the 2017 Revision, the world's population numbered nearly 7.6 billion as of mid-2017 implying that the world has added approximately one billion inhabitants over the last twelve years. Sixty per cent of the world's people live in Asia (4.5 billion), 17 per cent in Africa (1.3 billion), 10 per cent in Europe (742 million), 9 per cent in Latin America and the Caribbean (646 million), and the remaining 6 per cent in Northern America (361 million) and Oceania (41 million). China (1.4 billion) and India (1.3 billion) remain the two most populous countries of the world, comprising 19 and 18 per cent of the global total, respectively(2).

The majority (71 percent) of households in Kenya have access to an improved source of drinking water. Twenty-three percent of households have an improved toilet facility that is not shared with other households. The majority (64 percent) of households in Kenya do not have electricity. Kenya's population was enumerated at 38.6 million in the 2009 census. The trend data from population censuses indicate that the total population more than tripled between 1969 and 2009. These data also suggest that the population increased by approximately one million people per year. Between 1999 (28.7 million) and 2009. The inter-censal growth rate, which was 3.3

percent per annum in 1969, increased to a peak of 3.8 percent per annum in 1979 before declining to 2.9 percent per annum in 1999. At a growth rate of 2.9 percent per annum, the population may increase to 77 million by 2030(3)

Clean water is a basic need for human life; however, most household residents in both urban (88%) and rural (92%) areas report that they do not treat their water prior to drinking. Overall, 7% of households in Ethiopia (11% in urban areas and 6% in rural areas) are using an appropriate treatment method. Appropriate treatment methods include boiling, adding bleach/chlorine, straining through a cloth, filter in, solar disinfecting, and letting it stand and settle(4)

Ethiopia's economic and social indicators are declining as the population grows. Its industrial only half of the working-age population is employed full time.<sup>3</sup> Therefore, a small working population must provide for a large number of unemployed young people, creating a disproportionately high dependency level that inhibits investment in the future(5).

#### **4.1.1 Rational of the study**

The health profile assessment provides a guidance on how healthy community can address the local health problems they face. Profiles can include a wide range of information, including population characteristics, health service data, environmental and social information. The purpose of collecting health profile data is to identify strategies that improve the access of every member of the community to effective health care and health promotion of the community and these contribute a gap in planning and taking evidence based information for action. Community health assessment often yields a long list of public health needs, issues and problems.

## **4.2 Objective of the study**

### **4.2.1 general objective**

To assess the health and health related profile in Adigrat town north Ethiopia.

### **4.2.2 Specific objectives**

- To assess demographic profile of the community.
- To assess health status of the community

## **4.3 Methods**

### **4.3.1 Study area and period**

The study was conducted in Adigrat town which is found in the eastern zone of Tigray region and the capital city of eastern zone from February 01-15/2010. The data was a one-year data of 2009 E.C.

### **4.3.2 Procedure and instrument**

Semi- structured questionnaire was designed and a formal letter from regional health bureau was written to the respected town health office and the other sectors to get permission and to gather the data of health profile assessment. The data was collected by interviewing and looking wall charts posted on.

### **4.3.2 Population of Adigrat town**

The study design of this study is retrospective cross sectional secondary data analysis

### **4.3.3 Study population**

The study population in this health profile assessment is the population of Adigrat town.

### **4.3.4 Sample size**

The whole population in the town.

### **4.3.5 Sampling procedure**

The town was selected by simple random sampling method which is lottery method

### **4.3.6 Data quality control measures**

To ensure data quality the questionnaire was edited and simplified before administered repeatedly by the group of residents.

### **4.3.7 Data analysis**

We used simple descriptive statistics of frequency percent using tables and graphs.

### **4.3.9 Variable specification**

#### Variables

MCH

Age

EPI

Sex

HIV/AIDS

Geography of the woreda

TB, ART, PMTCT

#### 4.3.10 Operational definition

**EPI:** An extension of immunization program to all under one-year children in the population.

**Dependency ratio:** The relation between the potentially self-supporting portion of the population and the dependent portions at the extremes of age.

**MCH:** A medical care given to maternity and child health

**PMTCT:** It is a strategy developed to prevent HIV transmission from mother to child during pregnancy and labor.

**Pentavalent vaccine:** A vaccine which consists of Pertussis, Tetanus, Diphtheria, Hepatitis B virus and Haemophilus influenza type B.

#### 4.3.11 Ethical considerations

A legal letter was written from Tigray regional bureau to the town health office and other selected sectors.

### 4.4. Result

#### 4.4.1 Geography and climate

Adigrat town the city of eastern zone. And is one of the 9 town of the Eastern zone of Tigray region which located at 118 km far from Mekelle and 905 km from Addis Ababa which are the capital city of the region and the country of Ethiopia respectively. The borders of this town are Ganta Afeshum by four of the direction. Adigrat town has a total area of 1934 hector. Adigrat town is found at latitude 14° 20' N 39° 29' and 39°29 E longitude. This Town has 6 kebelles. It has weina dega weather condition and with an altitude of 2500 meter above sea level. It has 500-650 millimeter annual range of rain fall and annual average temperature of 16<sup>0</sup>c-20<sup>0</sup>c.



**Figure 20:** Map of Adigrat town with its six kebelles.

Source: Adigrat town plan and finance office

#### 4.4.2 Administrative and political issues

Adigrat town has 6 urban kebelles and in which the central

Administrative office is itself the town.

The government has assigned a political leaders and technical staffs for each sector which are responsible to their duties. They experienced an intersectional collaboration to achieve the strategic plan. According to the observational check list, the health sector experts conducted a supportive supervision in a quarter basis every year which was designed to strengthen the capacity of health workers and to achieve high coverage of all activities within the town.

#### 4.4.3 Population and population structure of Adigrat town

Adigrat town has a population growth rate of 5.1% which is high than the national.

Table; 7 Socio Demographic Distribution of Population, Adigrat 2017

| Characteristics) | Frequency | Percentage |
|------------------|-----------|------------|
| Sex              | 45003     | 51%        |
| Male             | 42826     | 49%        |
| Female           | 87829     | 100%       |

|           |       |        |
|-----------|-------|--------|
| Total     |       |        |
| Age Group |       |        |
| <1        | 2556  | 2.91%  |
| 1-4       | 10259 | 11.68% |
| 5-14      | 25566 | 29.11% |
| 15-64     | 46374 | 52.80% |
| ≥65       | 3074  | 3.50%  |
| Total     | 87829 | 100%   |

#### 4.4.4 Economical status

The population of Adigrat town is dependent on trade, Small and mico-interprise and daily labor.

#### 4.4.5 Education

There are 16 primary schools in Adigrat town. There are 6578 male and 6554 female students out of this 2males and 5 females are drop out their education. There are also 5 secondary schools in this town with 7334 males and 7991 females follow their secondary school; out of these 14 males and 132 females were drop out from their secondary school. In the town there is one university around 13 thousand students have followed their education, and there is also one Technique College in the town

Table 8: Number of students in Adigrat town, 2017.

| School<br>Grade | On registration |       |       | Dropout their education |     |       |      |
|-----------------|-----------------|-------|-------|-------------------------|-----|-------|------|
|                 | M               | F     | Total | M                       | F   | Total | PERC |
| 1-4             | 3677            | 2901  | 6578  | 2                       | 5   | 7     | 0.1% |
| 5-8             | 3272            | 3276  | 6554  | 0                       | 0   | 0     | 0%   |
| 9-10            | 6084            | 6348  | 12432 | 7                       | 113 | 120   | 0.9% |
| 11-12           | 1250            | 1643  | 2893  | 7                       | 19  | 26    | 0.8% |
| TOTAL           | 14283           | 14149 | 28432 | 16                      | 134 | 153   | 0.5% |

There were 13132 students in primary and 15325 in secondary schools, out of the total students 0.05% in the primary and 0.95% in secondary schools dropout their education.

Out of the total dropout students (153) 134(87.5%) of them were females.

#### 4.4.6 Basic infrastructure and development of facilities

Table 9: *Health service institutions and infrastructure of Adigrat town, 2017*

| <i>Sr.no</i> | <i>Type of health facility</i>        | <i>Number</i> |
|--------------|---------------------------------------|---------------|
| <i>1</i>     | <i>Number of public hospitals</i>     | <i>2</i>      |
| <i>2</i>     | <i>Private clinic</i>                 | <i>6</i>      |
| <i>3</i>     | <i>Private pharmacy</i>               | <i>18</i>     |
| <i>4</i>     | <i>Number of public health center</i> | <i>2</i>      |

*In Adigrat town there is one public hospital, six private clinic, eighteen private pharmacy and two health centers. In all facility there is 24 hours electric power, telephone service and water pipe supply*

Table 10: *Human resource of the district health office and health facility in Adigrat town, 2017.*

| <i>S.no</i> | <i>Type of profession</i>                  | <i>Number</i> |
|-------------|--------------------------------------------|---------------|
| <i>1</i>    | <i>Physicians all type</i>                 | <i>12</i>     |
| <i>2</i>    | <i>IESO</i>                                | <i>1</i>      |
| <i>3</i>    | <i>Health officers</i>                     | <i>7</i>      |
| <i>4</i>    | <i>Laboratory technicians/technologist</i> | <i>22</i>     |
| <i>5</i>    | <i>Pharmacy technicians/druggist</i>       | <i>13</i>     |
| <i>6</i>    | <i>Nurses/degree/diploma</i>               | <i>113</i>    |
| <i>7</i>    | <i>Midwives/degree/diploma</i>             | <i>22</i>     |
| <i>8</i>    | <i>X-ray technicians/technologist</i>      | <i>2</i>      |

|    |                                    |     |
|----|------------------------------------|-----|
| 9  | <i>Anesthetist/degree/diploma</i>  | 2   |
| 10 | <i>Environmental professionals</i> | 3   |
| 11 | <i>HIT</i>                         | 2   |
| 12 | <i>HEWs</i>                        | 18  |
| 13 | <i>Total</i>                       | 216 |

Table 11 Health professionals' ratio Adigrat town Tigray, Ethiopia January, 2017

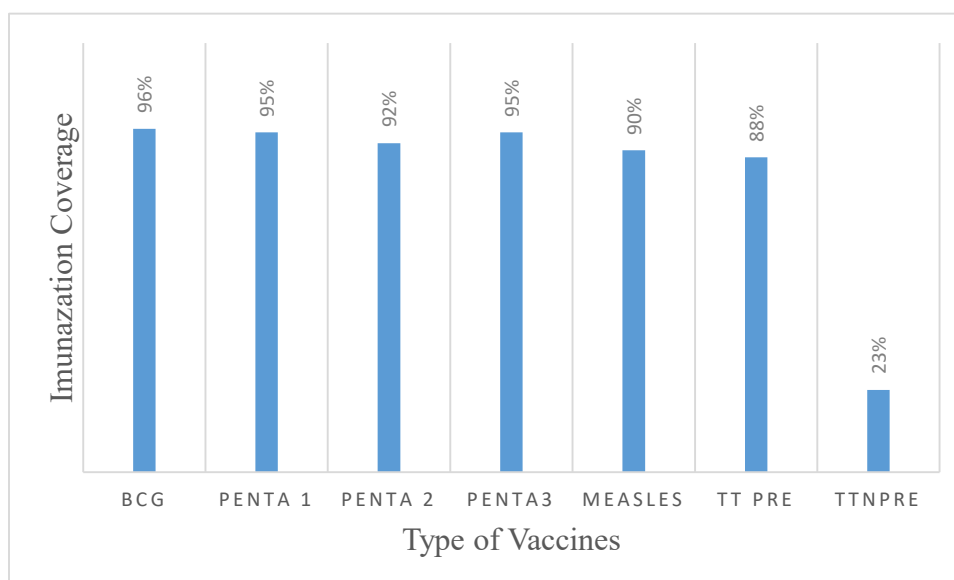
| Number | Health professional                         | Ratio   | Standards |
|--------|---------------------------------------------|---------|-----------|
| 1      | <i>Physicians all type</i>                  | 1:7319  | 1:10000   |
| 2      | Integrated emergency surgery officer to pop | 1:87829 |           |
| 3      | Health officer to population                | 1:12547 |           |
| 4      | Nurse to population                         | 1:777   | 1:5000    |
| 5      | Laboratory to population                    | 1:3992  |           |
| 6      | Pharmacy to population                      | 1:6756  |           |
| 7      | Midwife to population                       | 1:3992  | 1:5000    |
| 8      | Environmental health to population          | 1:21957 |           |
| 9      | HIT to population                           | 1:43914 |           |
| 10     | HEW to population                           | 1:4879  | 1:2500    |
| 11     | Health center to population                 | 1:43914 | 1:40000   |
| 12     | Hospital to population                      | 1:87829 |           |

Table: MCH activities plan and coverage, of Adigrat Woreda, Tigray region Ethiopia.2017

| MCH activities | Plan  | Achievement | Percent |
|----------------|-------|-------------|---------|
| ANC 1          | 2722  | 2588        | 95%     |
| ANC4           | 2722  | 2335        | 88%     |
| Skill delivery | 2722  | 2385        | 88%     |
| F/P            | 20622 | 8543        | 49%     |
| Maternal death |       | 0           | 0       |

As shown in the table most of the MCH activities their coverage was greater than 85%

But the coverage of the family planning is low only 23%.



As shown in the figure most of the EPI coverage was greater than 85% but the coverage of TT for non-pregnant is low

#### 5. 4.6 HIV/AIDS

In this town here are two health centers that give ART services. In 2009 EFY there were 9785 people screened for HIV. Out of the total screened 3429 persons were screened on VCT, 6356 of them on PTIC and 2588 of them were on PMTCT. And from the total 2453(25.1%) of them were males and 7332(74.9%) of them were females. The prevalence rate of HIV positive in the town in the year was 66(0.7%).All of them are linked to ART Currently there are 50 people

on ART, 22 are males and 28 of them are females. There are also 9 males and 29 females on pre ART .Condom distribution 134320 pieces condom was distributed.

#### 4.4.7 TB/Leprosy

In 2009 there were 13 pulmonary positive TB, 25 pulmonary negative and 25 extra pulmonary TB patients. The detection rate of pulmonary positive TB was 13.8% which is very low below the national standard. The treatment outcome of TB patients on the same quarters was done for 35 pulmonary positive cases, 69 pulmonary negative cases and 73 extra pulmonary TB.

Table: 12Treatment outcomes of all form of TB cases in Adigrat town 2017, Tigray, Ethiopia

| Type of TB            | Cure | Fail<br>ure | Comple<br>ted | LTFU | Died | Defaul<br>ted | Moved to<br>MDR TB |
|-----------------------|------|-------------|---------------|------|------|---------------|--------------------|
| Pulmonary positive TB | 29   | 2           | 2             | 0    | 1    | 0             | 1                  |
| Pulmonary negative TB | -    |             | 67            | 0    | 2    | 0             | 0                  |
| Extra pulmonary TTB   | -    |             | 67            | 0    | 6    | 0             | 0                  |

In this year the treatment outcome for cure rate was 82.8% and treatment success rate was 88.5% and death rate was 5%. The prevalence of HIV positive among TB cases was 5 from 69 cases 8% which is high.

#### 4.4.8 Malaria

Adigrat town is not endemic area for malaria but they give services to those came from malarous area, out of the total cases of malaria 389 confirmed by blood film. From these cases 32cases are PF which is 8.2%, 42 cases are PV which is10.7% and also 3 cases are mixed which is 0.8%.

#### Hygiene and environmental sanitation

From the total house hold of 18881, 16992 have latrine which is 90% the latrine coverage. The number of kebeles in the town are 6 and six of the kebeles have water supply access. Safe water coverage of the town is 80%.

Nutrition intervention in Adigrat town there are two OTP sites in the town there is no TFU site they refer to hospital if they gate sever cases. From 12815 number of under five children 85027

screen for malnutrition from this 142 (0.16%) have moderate and 8 (0.009%) children have severe malnutrition.

Table 12 Ten top cause of morbidity of Adigrat town north Ethiopia 2017

| Number | Disease type   | Count /number | Percent |
|--------|----------------|---------------|---------|
| 1      | AURTI          | 2845          | 9       |
| 2      | AFI            | 2460          | 8       |
| 3      | Diarrhea       | 1992          | 6       |
| 4      | Skin infection | 1694          | 5.5     |
| 5      | Trauma         | 1633          | 5.3     |
| 6      | I/P            | 976           | 3.2     |
| 7      | Dyspepsia      | 667           | 2.2     |
| 8      | UTI            | 665           | 2.1     |
| 9      | STI            | 305           | 1       |
| 10     | Pneumonia      | 301           | 0.9     |

As shown in the table AURTI is the leading cause of morbidity

Table 13: Health sector expenditure and financing in Adigrat town in 2008-2010EFY

| Year     | Total district budget | Allocated to health sector | Percent for each year allocated from total town budget |
|----------|-----------------------|----------------------------|--------------------------------------------------------|
| 2008 EFY | 147109326.36          | 5491066                    | 3.7%                                                   |
| 2009 EFY | 222317953.51          | 6710428                    | 3%                                                     |
| 2010 EFY | 2010 EFY              | 7565146                    | 3.5%                                                   |

*The budget allocated for the health sector from the total district budget is not enough and it decreased from the first year and then increased slightly.*

#### 4.4.9 Disaster situation

There was an outbreak of AWD in the town total 79 patients were treated at inpatient. Out of them 49(62.2%) patients were females and 30(39.8%) were males. most of the cases were from out of the town due to shortage of safe water to drink and all cases were recovered.

#### 4.5 Limitation of the study

There is no vital registration to calculate CDR CBR IMR CMR in the town.

#### 4.6 Discussion

This community health profile was conducted in Adigrat town with total population of 87829 the ratio of male to female is 1:1.05. The population growth rate of the town is 3% which is greater to the national 2.5% and also less than to that of Kenya which is 3.7% (3). Dependency ratio of the town is 89% which is similar to national. Students dropout rate of the town is .05% in the primary school and .95% in the secondary school from the total students 87.4% were females. More than 90% of the female students were dropout their education in their secondary school due to marriage. The ratio of hospital to

Population is 1:87829 and the ratio of health center to population is 1:43913 the standard is 1:40,000 prevalence of HIV/AIDS in the woreda is .7% which is less than the national.. EPI coverage of the woreda is good in almost EPI activity their coverage is >95% only TT2 for non-pregnant mothers very low which is. The ratio of HEW to population is 1:4849 which is less than the standard and the ratio of physician to population is 1:7319 which is greater than the standard .TB success rate is 88.5 which is less than the national 92%.

In inadequate health service settings, antenatal care is an effective health intervention to prevent maternal morbidity and mortality through preparing for birth and parenthood. It also prevents, detects and alleviates complications of pregnancy itself, pre-existing conditions that worsen during pregnancy, and effects of unhealthy lifestyles (6). Overall antenatal care coverage was 95% in one year. This is higher than national average (93%) of the same period (93.5%). Global target for ANC is that each and every pregnant woman should start the first ANC in the first trimester of pregnancy (7). Nonetheless, lower ANC coverage was reported in Ethiopia: 82.4% in Oromia (14); 54% in Tigray (15)

In meeting Millennium Development Goals (MDG) target 5 with objectives of reducing maternal mortality ratio by three-quarters between 1990 and 2015, and achieving universal access to reproductive health, various indicators were in use in Ethiopia such as contraceptive acceptance rate, proportion of births attended by skilled personnel, and antenatal coverage (8). In our assessment maternal death was 0 in 2016.

Contraceptive use has a crucial role in reducing maternal and infant mortality (9) and contributes for the betterment of schooling and economic developments, especially for girls and women (10). Further, it is taken as measure of health, population development and empowerment of women in access to reproductive health provisions (11). It has been used across the world by married or in-union women of reproductive age representing 64% in 2015, though, it is lower in developing countries (40%) and was specifically lower (33%) in Africa (12). In our assessment, we found 49% contraceptive rate in one year. This is lower than its national average (64.76%) of respective period. In 2016, contraceptive acceptance rate was 38.2%. This is lower than its national counterpart (71%) (13). There is no vital registration data, it is difficult to calculate CBR and CDR. There is no vital registration data it is difficult to calculate CBR CDR and other.

#### **4.7 Conclusion**

Dependency ratio of the woreda is 89%. The ratio of male to female is 1:1.05.

EPI coverage of the woreda is good in most of the EPI activities are greater than 95%. penta1 95% and penta3 also similar to penta1, measles 96% which is greater than the regional 80% and national 54%, fully immunization 96% which is similar that of measles, TT2 coverage for pregnant is >100% but the coverage of TT2 for non-pregnant is 23% which is very low coverage. ANC1 coverage of the woreda is 95% which is greater than the and coverage, the coverage of ANC4 is 88%. Skill delivery coverage of the woreda is 88%, the prevalence of HIV/AIDS in the woreda is .7% TB detection rate of the woreda is 14%, success rate of the woreda is 88.5%, TB cured rate of the woreda is 82.8%, TB mortality rate of the woreda is 5%. URTI is the first top ten disease of the woreda.

#### **4.8 Recommendation**

The coverage of TT for non-pregnant very low which is 23% this should improve because tetanus is highly fatal, we can prevent this by improving this coverage.

Data documentation should be improved.

There is no data ten top disease of <5 this should be available.

TB detection rate of the woreda is low which 14% it should be improved.

Vital registration should be available.

## Identified gaps in the town

1. Females educational dropout in secondary school.
2. Low coverage of TT for non-pregnant mothers.
3. Absent of five top disease in under five.
4. Low T.B detection rate.
5. Low coverage of family planning.

**Figure 21 Action plan for the identified and prioritized gaps of Adigrat town 2018.**

| No | Health activities to be done                          | Responsible person                                     | When to start   | Output                                                           |
|----|-------------------------------------------------------|--------------------------------------------------------|-----------------|------------------------------------------------------------------|
| 1  | Educational dropout in females secondary school 87.5  | Social affairs female association, school directors    | January 30/2018 | Health education and community mobilization                      |
| 2  | Low coverage of TT for non-pregnant mater 23%         | MCH expert, EPI focal, WDA, WOF                        | January 30/2018 | Health education and community mobilization                      |
| 3  | Absent of five top disease in under five              | MCH expert, Midwives, WDA                              | January 30/2018 | Awareness creation on health professionals                       |
| 4  | <i>Low pulmonary positive TB detection rate (14%)</i> | TB/HIV EXPERT, TB/HIV focal person, laboratory experts | January 30/2018 | Health education and community mobilization, community screening |
| 5  | Low contraceptive prevalence Rate                     | MCH expert, midwives                                   | January 30/2018 | Health education and community mobilization,                     |

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## CHAPTER FIVE: SCIENTIFIC MANUSCRIPT

### 5.1 MEASLES CASE BASED SURVILANCE DATA ANALIYSIS REPORT, TIGRAY REGIONAL STATE, 2015-2017.

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#### **Abstract**

##### **1. Background**

Measles a highly infectious viral illness, remains one of the leading causes of death among children worldwide. Owing to insufficient measles vaccine coverage, however, measles is still endemic in many parts of the world, including several European countries. There were 327,305 measles cases reported and an estimated 139,300 measles deaths globally. We analyzed three years measles data to see its magnitude and to describe the data by place, person and time variables

**Method** Across sectional surveillance report based on retrospective record review of secondary data. Secondary data were reviewed from PHEM and HMIS unit of monthly reported from the woredas of the region. Variables were entered, cleaned and analyzed using Excel and SPSS and tables and figures were used to analyze the data.

**Result.** The data indicates around 94% of the cases reported in the 3 years period occurs in 2015. According to data reviewed the incidence of measles from 2015 to 2017 was 9/10000, 3/10000, 6/10000 for age less than 5, 5-14, greater than 15 years respectively. The highest affected age group was under five children overall mortality rate is 3.4/100,000 cases and proportion hospital admission was 49%. And 68% of the cases were vaccinated to measles 18.2%, unvaccinated 13.8% un known their vaccination status.

#### **Conclusion**

From this analysis, we can conclude the incidence of measles in 2015 was very high; there was an outbreak measles in different woredas of the region.

**Key word:** Measles, surveillance data analysis, Tigray

## 5.1 Introduction

### Back ground

Measles, a highly infectious viral illness, remains one of the leading causes of death among children worldwide.(1) Measles is one of the vaccine preventable diseases among the leading causes of under-five child mortality. Measles follows a seasonal pattern, with. Increasing incidence in the dry season, i.e. from November to May a large number of susceptible of measles cases are affected every year(2). Effectively prevented through vaccination But it results in a significant public health impact when there are displaced populations, less sanitation and poor nutritional systems due to their characteristic mass population displacement, high population density in camps and low measles vaccination coverage among children(3).

Owing to insufficient measles vaccine coverage, however, measles is still endemic in many parts of the world, including several European countries (4) measles still was the leading cause of Vaccine preventable deaths in children, and the fifth leading cause of death from any cause in children under five years old(5) Despite tremendous achievements towards global measles mortality reduction and measles elimination goals, in 2010, there were 327,305 measles cases reported and an estimated 139,300 measles deaths globally (6)

In developed countries measles immunization coverage is a good level but in developing countries, particularly in Sub-Saharan region vaccination coverage is very low (7)

To this end, the assessment conducted in 2010 indicated that global mortality from measles has been reduced by 74% of the global estimate in 2000, and 85% reduction in the African region has been documented(8) Sub-Saharan Africa reports repeated outbreaks of measles, a vaccine preventable disease, which is notifiable under the Integrated Disease Surveillance and Response strategy in Nigeria. Nigeria has reported several outbreaks of measles in the last three years. Poor immunization coverage and weak health systems have been related with measles. (9)

Measles vaccines have dramatically reduced cases and deaths during recent decades. The Measles Initiative developed a joint strategic plan to reduce measles-related deaths by

strengthening routine immunization, supplementary immunization activities (SIAs) in the form of mass vaccination(11)

As of week, 22, 2017 there have been 1,981 reported cases of measles across the country, including 961 confirmed cases (420 laboratory confirmations, 490 epi-linked and 51 clinically compatible cases). In the same week there were 73 new suspected cases reported across the country (12).

Measles outbreak is still persisting. During week 24, 37 new-suspected measles cases were reported in the country. Since the beginning of 2017, 2,119 suspected measles cases were reported from across the country. This includes 979 confirmed cases (434 laboratory-confirmed, 490 epidemiologically linked and 55 clinically compatible cases). Of the reported cases, 18.5% had not received any measles vaccination and 44.1% had an unknown status. Oromia is still the most affected region, with 32% of reported cases, followed by Amhara (28%), Addis Ababa (17%) and SNNPR (11%) (10)

### **5.1.1 RATIONALE OF STUDY**

Measles is one of the communicable diseases causing preventable mortality and morbidity in Ethiopia. Epidemiological surveillance of measles is a major public health strategy in prevention and control of disease. So, this study is important to improve the prevention and control strategy in Tigray regional state from 2015-2017

## **5.2 Objective**

### **5. 2.1 General Objective**

- ❖ To describe the magnitude and distribution of measles in Tigray regional state from 2015 to 2017.

### **5.2.2 Specific Objectives**

- ❖ To describe measles distribution by time, place, person.
- ❖ To implement prevention and control measures.

### **5.2.3 Methods and Materials**

#### **5.2.3.1 The study area and period**

Tigray is the northernmost regional state of Ethiopia, located between latitude 12° and 15° north. This surveillance data analysis was conducted in this region from January 5-15/2018.

#### **5.2.3.2 Study design**

A cross sectional surveillance report based on retrospective record review of secondary data.

#### **5.2.3.3 Population under surveillance**

All population living in Tigray were population under surveillance

#### **5.2.3.4 Data collection tools and procedures**

Data was analyzed using MS-Excel 2007 after cleaning and merging the data.

We collected the data from weekly report of PHAM data and monthly report of HMIS data.

By reviewing secondary data from 2015—2017

#### **5.2.3.5 Data analysis and presentation**

Data was analyzed by using SPSS entered from excel and presented by tables, texts and graphs

#### **5.2.3.6 Case definition**

**5.2.3.6.1 Suspect case** A Suspected case of measles defined as any person with fever and maculopapular (non-vesicular) rash and cough, coryza or conjunctivitis (red eyes) clinician suspects measles

**5.2.3.6.2 Confirmed case** any of the following, Isolation of measles virus, Positive serology test of measles IgM antibody, Significant rise in measles antibody titers by any standard serological OR epidemiologically linked to a laboratory confirmed case

#### **5.2.3.6 Ethical consideration**

The regional health office has accepted for the collection of the data following legal letter was written from Addis Ababa to TRHB to be officially to collect our data from the region HMIS unit and PHEM member.

### 5.2.3.7 Dissemination of result

The result were presented to RHB and will be presented to Addis Ababa university field epidemiology residents and submitted to school of public health department of epidemiology.

## 5.4 Result

### 5.4.1 Description by person

Table 14 age description of measles incidence case at Tigray regional state from 2015-2017

| Age   | Frequency | Incidence/10000 |
|-------|-----------|-----------------|
| <5    | 692       | 0.09            |
| 5-14  | 485       | 0.03            |
| >=15  | 1652      | 0.06            |
| Total | 2829      | 0.18            |

From this incidence table those under five age is more affected than the other age group.

Because children under five years are more vulnerable for measles infection. In three years date analysis 68% of the cases were vaccinated for measles, 16.2% were not vaccinated, 15.8% were un known their vaccination status.

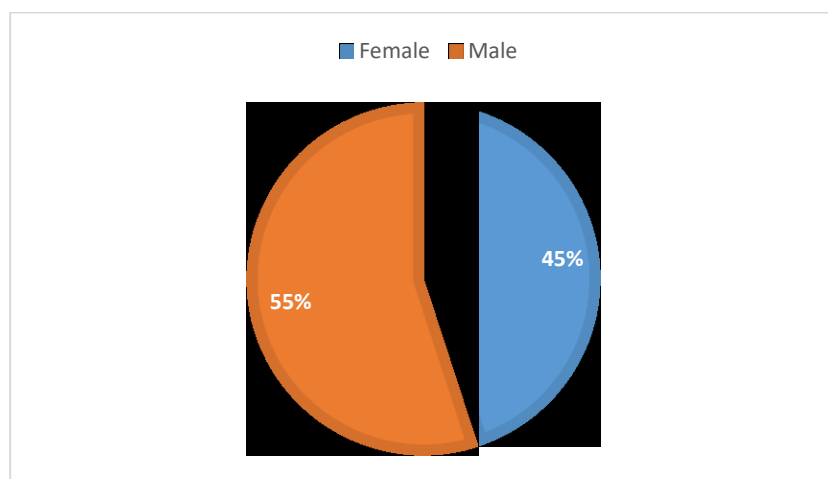


Figure 22 sex description of measles case at Tigray regional state from 2015-2017

### 5.4.2 Description by time

Table 15 time description of measles case at Tigray regional state from 2015-2017.

| Year  | Frequency | Per 10000 |
|-------|-----------|-----------|
| 2015  | 2669      | 5.3       |
| 2016  | 81        | 1.6       |
| 2017  | 79        | 1.5       |
| Total | 2829      | 8.4       |

As the data shows in the table in 2015 there was high incident rata because there were UN outbreak in different district of the region in that year. The incidence rate was decreased from 5.3/10000 to 1.5/10000 due to implementation done during 2015.From this date analysis. 68% of the cases were vaccinated to measles, 16.2% UN vaccinated 15.8 unknown their vaccination status.

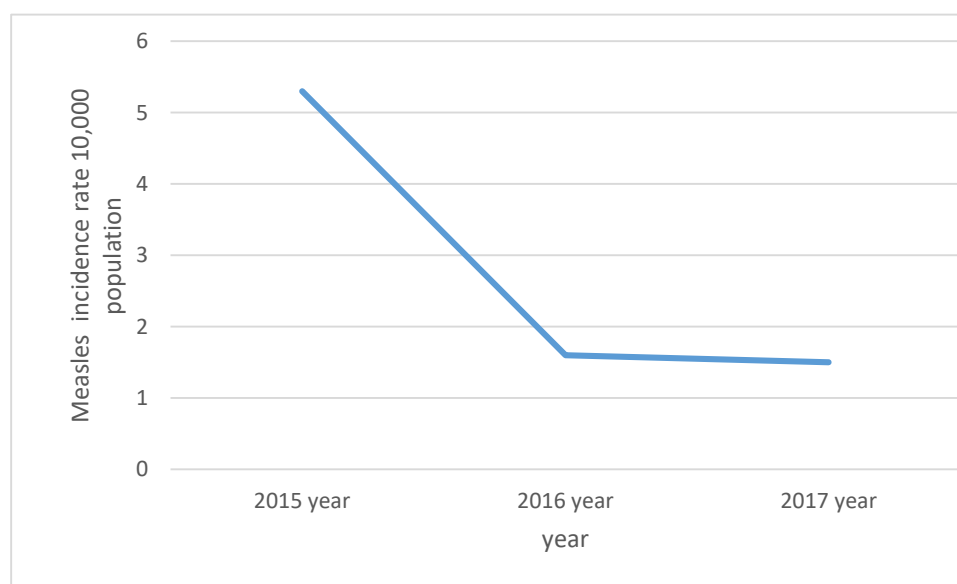


Figure 23 Disruption of measles cases by time Tigray regional health bureau from 2015-2017

As shows in the figure 2015 year reports highest number of measles cases because there was an outbreak the different district of the region. After the implementation it was decreased in the two consecutive years.

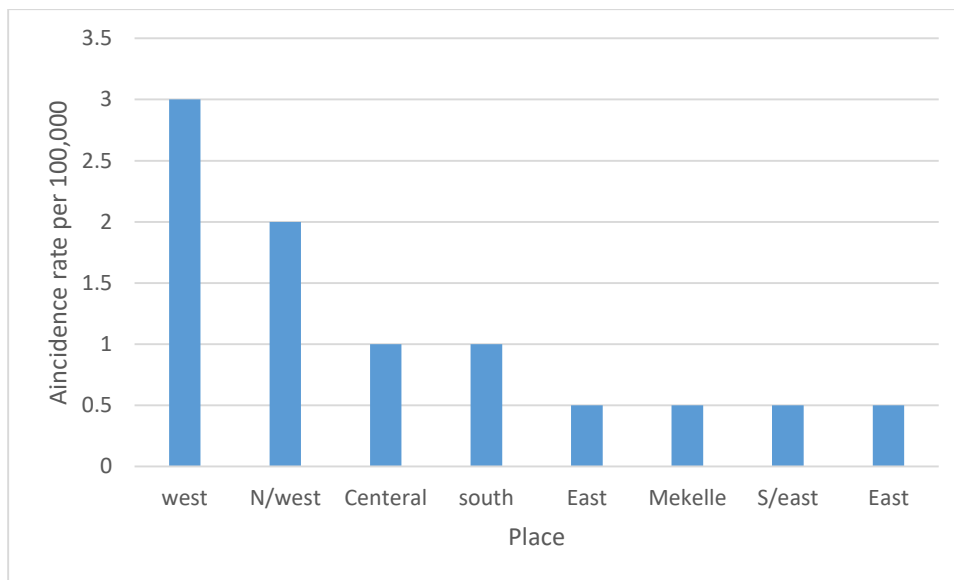


Figure 24: Disruption of measles case by place Tigray regional health bureau

AS the figure shows out of 7 Zones the highest cases were from west 3/100,000 followed N/west 2/100,000. The highest cases were reported from western zone because there were UN outbreak in the zone.

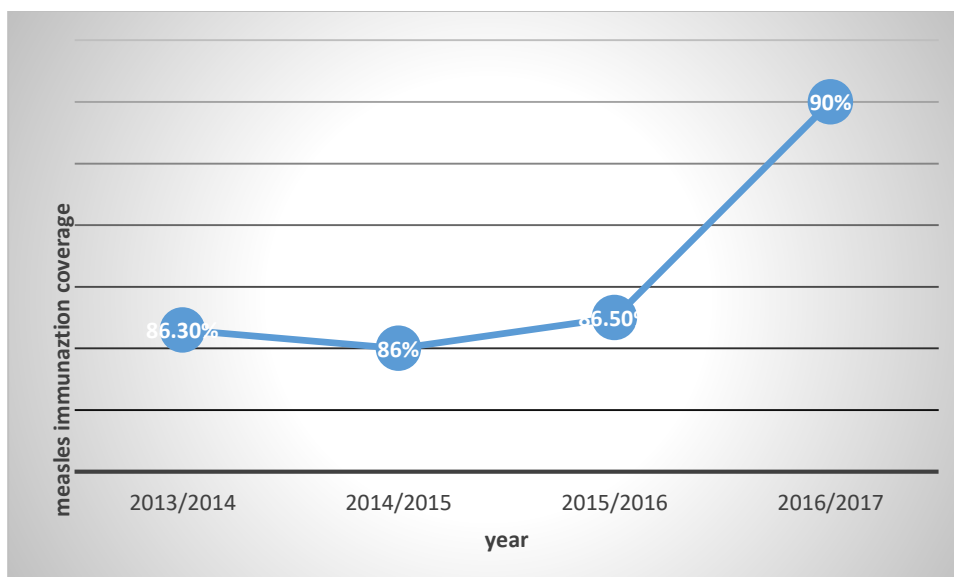


Figure 25 Measles immunization coverage of Tigray regional health bureau 2017

As shown in the trend the immunization coverage of the region increasing year to year but

There were outbreak in 2015 in different district of the region. This indicates follow up to the cold chain monitoring is necessarily.

in the measles date analysis there was outbreak in 2015 but dramatically the incidence rate is decreased from 5.3/10000 -1.6/10000 in 2016,1.5 in 2016 this indicates there was good intervention in the control of the outbreak And the immunization coverage is increasing.

### 5.5 Laboratory Result

Of the total of 256 suspected measles sent to national referral laboratory from Jan, 2014, Feb, 2015, 173(67.2) of them were with valid result that have lab result.102 (58.9) were positive for IGM antibody. The positivity rate ranges from 34 .5%, in Eastern zone to 76.9% in Mekelle Zone. There were 82(32%) sample with no lab result or missing value, from the total of 256 referral sample sent for confirmation. There is no laboratory result for the remaining years

Table 16 Number of cases reported in OPD and IPD level in 2015-2017

|       | Measles case | Percent |
|-------|--------------|---------|
| OPD   | 1434         | 50.7    |
| IPD   | 1395         | 49.3    |
| Total | 2829         | 100     |

We described the data reviewed from Tigray region (2015-2017) in terms of time place person.

The result gave us 58.4 % of measles cases were from that age less than 5 years

The data indicates around 94% of the cases reported in the 3 years period occurs in 2015.According to data reviewed the incidence of measles from 2015 to 2017 was 9/10000, 3/10000, 6/10000 for age less than 5, 5-14, greater than 15 years respectively. In addition to this mortality rate is 3.4/100,000 cases and proportion hospital admission was 49%%

### 5.6 Limitation and challenges of the study

We use 3 years data because the necessary variables like the vaccination status was in complete.

### 5.7. Discussion

In the surveillance date analysis the cumulative incidence was 8.4/10,000 this is less than measles outbreak investigation done in Jarar zone Somalia region with incidence rate 28/10,000(2). The

incidence rate was high in 2015 because there was an outbreak in the different district of the region at the same time outbreaks have been occurring in several areas of Ethiopia. Since the start of 2015, a total of 2,190 suspected measles cases have been reported. Of these, 929 have been positively confirmed. The majority of the cases were reported in the woredas (districts) of Nejo and Nole, West Wellega zone in the Oromia Region, the woreda of Kola Tembien, Central Tigray Zone in the Tigray Region and Bench Maji, Keffa and Sheka zone in Southern Peoples Region (3)

In Ethiopia as a result of the low population immunity and buildup of the susceptible population, widespread measles outbreaks were occurring in 2015 throughout the country, and the numbers of districts affected by measles epidemic were more than 280 as per the weekly measles report(13). The proportion of measles cases the analysis 58 % of the cases were more in under 5 years. This is less than measles analysis done in Oromia region 46% and 42% in SNNPR (13) From this analysis 94% of the cases was in 2015 due to the outbreaks happened in different district of the region. In 2015 and 2016. The incident rate were decreased from 5.3/10,000 in 2015 to 1.6/10,000 in 2016 and 1.5/10,000 in 2017. this might be due to good intervention done following the outbreak. I recommend to Tigray health bureau to focus on early warning and assess surveillance system and quality of data should improve

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## CHAPTER SIX: ABSTRACT FOR CONFERENCE PRESENTATION

### 6.1 ABSTRACT FOR CONFERENCE PRESENTATION ON CHOLERA IN HADNET DISTRICT TIGRAY REGION 2018

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#### **Abstract**

**Background:** Cholera is a diarrheal disease caused by infection of the intestine with the Gram-negative bacteria *Vibrio cholera*, either type O1 or O139. An estimated 3-5 million Cholera cases and 100,000-120,000 deaths occur annually worldwide. We aimed to identify the risk factors for the occurrence of the cholera outbreak and institute appropriate control measures.

**Method** community based UN matched 50 case and 100 control was used considering previous study. Data was collected by the recorded case definitions using structured questionnaire. Case sample were taken from the registration line list by using systematic random sampling system. Data was entered into epi info descriptive was analyzed using excel and analyzed statistics with 95% confident interval was used to compare risk factor. Ethical clearance will be obtained from TRHB and consent form will be asked willingness to the eligible people.

**Result** from the total 132 cases in the study 56.8% cases were male's. Over all case fatality was 0.07 the total attack rate 1.7 per 100,000 using spring water for drinking purpose have risk association with cholera disease COR 8.8 P.V 0.000 CL 2.393, 13.570. Use of latrine have preventive association with Cholera disease AOR .160 P.V 0.000 CL 0 .060, 0.424.

**Conclusion** The incidence rate was high in the age group of 15-24 years it was 35/10,000 followed by 21/10,000 in age group of 25-56. There were low CFR the outbreak control intervention was partially effective using spring water for drinking is the risk occurrence of the outbreak.

**Key words:** Acute watery diarrhea, outbreak, Hadnet district

## CHAPTER SEVEN: NARRATIVE SUMMARY REPORT

### 7.1 NARRATIVE SUMMARY REPORT ON IPD IN NORTH DISTRICT, TIGRAY REGION 2019.

#### EXECUTIVE SUMMARY

An internal displacement during conflict is one of the complex emergencies that occurs by man-made activities and may follow complex problem. Tigray people were displaced from different region of the country due to ethnic conflict they displaced from their home and came to their region.

This study was intended to assess basic needs of displaced people and to give immediate response in order to minimize further damage. Observation of the situation, discussion with stake holders and interview with 180 registered Households we interviewed all the all households. Data were collected from May 1-15 by 6 health workers, including the principal investigator organized into three teams containing two persons by using standard checklist adopted from CDC disaster guideline and analyzed by Microsoft excel.

The total population of the District was 13623 and there were 1 health centers, 4 private clinics and one hospital in the District. The total population displaced from different regions were 800. I was deployed to IDP site. In this IDP site there were 800 population settle. Out of this 392 were females 408 were males. And there were 21 under five and 3 pregnant mothers were including in the IDP site.

The people in the IPD site receive health care service from Lachi health center which is near to the IPD site. The majority of cases were acute upper respiratory tract infection followed by diarrhea. The main problems of displaced people were cloth and mattress, food, water, separate shelters, personal hygiene, Light, medical problems., chemical water treatments, separate and adequate latrine, Wash materials etc. .Since internal displacement is complex in nature, multsector collaboration, community and partner involvement should be mandatory to overcome this problems and discussion with Tigray Region to return back the internal displaced people.

#### 7.1 Introduction

As human populations grow and societies become increasingly interconnected and complex, the damage from natural and human-induced disasters have become more and more extensive (1). Our vulnerabilities as societies have deepened the effects that disasters have on human health. Socioeconomic, political, cultural, geographical, and other factors combine and compound to increase the scope of a disaster's consequences (2). An internal displacement during conflict is one of the complex emergencies that occur by man-made activities and may follow complex problems (3).

The public health system is continually challenged by recurrent and unexpected disease outbreaks and is facing the challenge of managing health consequences of natural and human made disasters, emergencies, crisis, and conflicts. These problems continue to disrupt the health care system, while successful detection and response to these challenges is becoming increasingly complicated (4).

## **7.2 General objective**

- To identified the health and health related need of IPD in North woreda

### **7.2.1 Specific objectives**

- To characterized the population residing IDP site
- To describe the effect of the disaster on health ,nutrition ,MCH and WASH

**7.3 Methodology-** Observation of the situation, discussion with stake holders and interview with registered Households. Data were collected from 1-15 May by 4 health workers, including the principal investigator organized into three teams containing two persons by using standard checklist adopted from CDC disaster guideline and analyzed by Microsoft excel.

**7.3.1 Sampling procedures:-**Total Households displaced who registered at woreda level=4000, Total out of this only 800 were settle in the IDP site and we include all house hold in the IPD site the rest population they live in the host community. And difficult to get the people in the host community.

## 7.4 RESULTS

North woreda is one of the woreda found in the Mekelle special Zone.in this district there were one health center and one hospital ,health service coverage of the woreda is 100% for the hospital. North woreda is one of the woreda of Mekelle special zone located 750 Km far from Addis Ababa with total population of 3623 of which 6947(51%) of them were males. The IPD site was in this woreda ,in this IPD site there were 800 population out of this 402 were .Total house hold displace were 180,under five 20,under one year 6,pregnant weman,4 lactating woman 6 were settle the IDP site

Name of the IDP site in North woreda, Mekelle special Zone, Tigray May 2019

| IDP site     | House hold |    |     | Under five |   |    | Total displaced |     |     | No of Pregnant mother | No of lactating mother |
|--------------|------------|----|-----|------------|---|----|-----------------|-----|-----|-----------------------|------------------------|
| Alamudi shed | M          | F  | T   | M          | F | T  | M               | F   | T   | 4                     | 6                      |
|              | 92         | 88 | 180 | 12         | 8 | 20 | 402             | 392 | 800 |                       |                        |

\*IDP=Internally Displaced Population

## Health status of the displaced population during the study period

The majority of displaced people settled in Alamudi shed in overcrowded conditions. Adolescent, Women and men live in separate rooms. 22% of the house hold received mattress by the Tigray administrative. During conflict one mother was die by bulletin injury. In the IPD one female Adolescent with mental retarded and one female mother with anxiety included in the IPD site. Patients were identified with chronic diseases and were referred to Mekelle Hospital to continue their follow up.in three Weeks of settlement. The majority of cases were, acute upper respiratory tract infection followed by diarrhea. This may be due to personal hygiene and environmental sanitation as well as overcrowding. Shortage of safe water for drinking and hand washing may be another risk for diarrheal diseases,

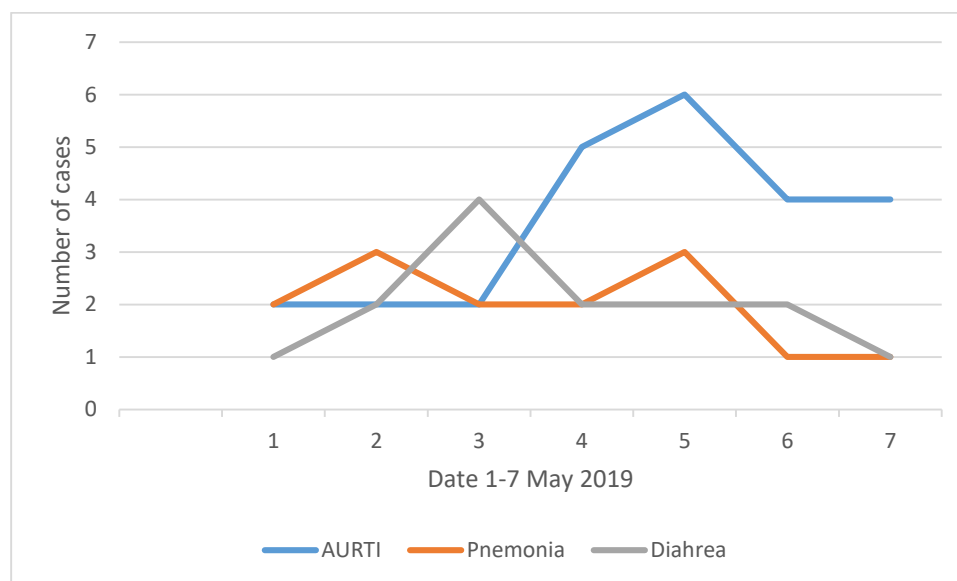


Figure: one week of common disease in the Alamudi Shed IDP North woreda Tigray, 2019.

As we can see from the above figure, trends of common diseases, such as AURTI, Diarrhea and pneumonia. The first leading cause morbidity is AURTI followed by pneumonia.

## SITUATION ANALYSIS

### Coordination

The Task Force at Regional level with Multisectoral taskforce and sub-technical teams were established at regional level. Political leaders in collaboration with and community leaders played their role in stabilizing and supporting the community. The Tigray administrative decides to give the temporary settlement in the Alamudi shed. This place was previously it was clinic at the time of IPD it was nonfunctional so Tigray administrative decide to stay in this place.

### **Supporting**

There was not enough support for displaced people until date of visit. However, only 40 mattress, food utility materials for 20 house hold is distributed .And the Woreda health office with collaborating Zonal health office decide to get free health service until additional support given to the IPD. At this time the Tigray regional health bureau asked additional support for IDP from EPHI at this time additional support is in process.

### **Public Health intervention activity:**

Orientation was given on community health condition and anticipated outbreak for woreda task force

Activate of rapid response team at Woreda level

Latrine construction by member of IDP

Water container for storage and hand washing

Clinicians were assigned at temporary clinics

Some drugs and medical supplies were provided to the hospital and HC TRHB

Orientation for all health workers on prone disease and Public Health Emergency Managements

Active surveillance was conducted for epidemic prone diseases

Psychosocial support for displaced community

Major Gaps

Week multi-sectorial collaboration

- Health workers with different health professionals were not deployed lately in IDP site for integrated health interventions
- Shortage of safe water supply, no water tracking, water container and water treatment chemicals
- Poor hygiene and sanitation practices
- Mass screening was not conducted for all IDPs for communicable and chronic diseases including nutrition and child vaccination
- Trench latrines were not constructed at IDP site( only 8 rooms latrines are providing service for all displaced people, no water and light in area)
- Lack of WASH materials for IDPs (Soaps, water treatment chemicals, Water container, Hand Washing facilities, Water basin, bucket, Jerkins
- Health education was not given for IDPs on epidemic diseases prevention and control including reproductive health problems
- No distribution of Non-Food Items (NFI) Kits and shelter for IDPs. Existing Partners in the zone did not start to provide support on IDP responses
- Interruption of basic infrastructures (electricity, water supply)

During our visit, major gaps identified and items required for at least two months were requested by teams. Foods, nonfood items and medical supplies prepared by teams based on households needs. Food items, Mattress, Blanket and Clothes were requested per households and family size. Dignity kit requested based on number of lactating Women and drugs and medicals supplies were requested based on top ten diseases treated at temporary clinic, health facilities drugs out stock and anticipated prone diseases.

Basic and necessary for the IPD site 360 mattress, 360 blanket, 9340 soaps, 400 personal clothes, 800Jerkins, 800Kuntals food items,41 items were requested from the worda health office .some of the items were listed in the table. And for drugs and medical supplies estimated to 50,000 ETB were requested for minimum of two months.

Table 17 some of the items requested for the IPD site North district, Mekelle, special zone, Tigray 2019

| Sn | ITEMS                 | No. of items available | Unit     | Required items |
|----|-----------------------|------------------------|----------|----------------|
| 1  | Mattress              | 15                     | No       | 360            |
| 2  | Blanket/sheet         | 25                     | No       | 360            |
| 4  | Soap                  | 0                      | No       | 800            |
| 5  | Personal clothes      | 0                      | No       | 800            |
| 6  | Water container       | 50                     | No       | 180            |
| 7  | Food items            | 0                      | kilogram | 5400           |
| 8  | Rubber sheet 1.20m*1m | 0                      | No       | 30             |

#### 7.5 Anticipated disease/Outbreak

Acute Watery Diarrhea, Measles, Malnutrition, Malaria, Acute febrile illnesses, Skin Infections (Scabies) Other Diarrheal Diseases, etc. are expected to emerge in the internally displaced population settlement sites.

#### 7.6 Conclusion

The main problem of displaced people were clothes and mattress ,foods, water ,separate shelters, personal hygiene, Light, medical supplies., Dignity kits ,chemical water treatments, separate and adequate latrine, Wash materials etc. are highly demanded .Since internal displacement is complex in nature, multsector collaboration, community and partner involvement should be mandatory to overcome this problem.

#### Recommendations

- Establish and strengthen coordination activities at all levels
- Enhance communication and data management

- Effective and efficient resource mapping, mobilization and utilization at all levels
- Strengthening partners involvement on IDP responses
- Strengthening capacity building through on job and basic training on IDP interventions,
- Providing psychosocial support for IDPs during rehabilitation activities
- strengthening water trucking in IDP sites
- Conduct joint team supportive supervision for IDP sites
- Provision of adequate supplementary and general foods
- Mobilization and distribution of NFI kits and shelters for IDPs
- Conduct regular monitoring and evaluation of IDP interventions at both zonal and district level.
- Latrine should construct in IPD site

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## CHAPTER EIGHT: EPIDEMIOLOGICAL RESEARCH PROJECT PROPOSAL

### 8.1 ASSESSMENT OF KNOWLEDGE AND UTILIZATION OF ITN AND FACTORS AFFECTING IN RAYA AZOBO, 2019

#### 8.1 INTRODUCTION

In 2017, an estimated 219 million cases of malaria occurred worldwide, compared with 239 million cases in 2010 and 217 million cases in 2016. Although there were an estimated 20 million fewer malaria cases in 2017 than in 2010, data for the period 2015–2017 highlight that no significant progress in reducing global malaria cases was made in this timeframe. Most malaria cases in 2017 were in the WHO African Region (200 million or 92%), followed by the WHO South-East Asia Region with 5% of the cases and the WHO Eastern Mediterranean Region with 2%. Fifteen countries in sub-Saharan Africa and India carried almost 80% of the global malaria burden. Five countries accounted for nearly half of all malaria cases worldwide: Nigeria (25%), Democratic Republic of the Congo (11%), Mozambique (5%), India (4%) and Uganda (4%). The 10 highest burden countries in Africa reported increases in cases of malaria in 2017 compared with 2016. (1) *Plasmodium falciparum*, *P. vivax*, *P. ovale* and *P. malariae* are the four main species of malaria parasites that infect humans, with the first two species causing the most infections worldwide. Rapid, accurate and accessible detection of malaria parasites is important in the prevention and treatment of malaria. Malaria morbidity, mortality and transmission can be reduced if prompt diagnosis and adequate treatment is available. Rapid diagnostic tests (RDTs) offer the potential to provide accurate and timely diagnosis to everyone at risk, reaching those previously unable to access good quality microscopy services.(2) Ethiopia is among the few countries with unstable malaria transmission. Factors that may cause outbreaks include an increase in vector breeding sites, migration of infected people into a vector-rich area populated with susceptible individuals, arrival of new efficient vectors, breakdown of vector control measures, resistance of the parasites to treatment and resistance of the vectors to insecticides. (3) Malaria remains to be one of the main global health problems of our time, causing more than one million deaths per year, with about 90% of deaths and 60% of cases occurring in Africa south of the Sahara.(4) Despite the significant progress that has been made toward reducing the global burden of malaria, this disease remains one of the most

significant public health threats in sub-Saharan Africa and many other parts of the developing world.(5)

Malaria prevention and control is the major priority program that has enjoyed over the years utmost government commitment and considerable attention from the health policy makers since the beginning of HSDP I. The overall strategies to substantially reduce the overall burden of morbidity and case fatality rates remained: comprehensive approach to vector control, early diagnosis and prompt treatment and, surveillance, prevention and rapid management of malaria epidemics when and where it occurs. The achievement so far shows that distribution of ITNs has successfully reached around 22.2 million in 2008/09 that makes Ethiopia the third highest bed net coverage achiever in Sub-Saharan Africa after Togo and Sierra Leone. The major proportion of these ITNs are long lasting insecticide treated nets (LLITN) and have been distributed to communities including in hard to reach areas through health facilities, enhanced outreach strategy, and through especial community campaigns. (6) The nature of the clinical disease of malaria depends strongly on the background level of acquired protective immunity, which is a consequence of the pattern and intensity of malaria transmission in the area of residence.(7) In Ethiopia, malaria transmission is generally seasonal and highly unstable because of the variations in topography, climate and rainfall patterns. Hence, large scale outbreak frequently occurs particularly in epidemic prone areas of the country.(8) Malaria infection during pregnancy leads to adverse health outcomes for both mothers and infants. Intermittent preventive treatment during pregnancy of at least two doses of sulphadoxine- pyrimethamine, administered at antenatal care visits, is an effective prevention intervention in malaria-endemic areas. The major targets for HSDP III in malaria prevention and control were to distribute 20 million ITNs to households in malarious areas, increase the proportion of under 5 children utilizing ITNs from 2% to 63%; and pregnant women utilizing ITNs from 2% to 49%, reduction in the malaria morbidity from 22% to 10% and malaria case fatality rate in age groups of 5 years and above from 4.5% to 2% and in the under 5 children from 5% to 2%. The achievement so far shows that distribution of ITNs has successfully reached around 22.2 million in 2008/09 that makes Ethiopia the third highest bed net coverage achiever in Sub-Saharan Africa after Togo and Sierra Leone. (9) 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. On average, 60%-70% of malaria cases have been due to *P. falciparum*, with the remainder caused by *P. vivax*. *Anopheles arabinos* is the main malaria vector. (10) Malaria transmission intensity, along with its temporal and spatial distribution in Ethiopia, is mainly determined by the diverse eco-climatic conditions. Climatic factors such as temperature, rainfall, and humidity show high variability mainly as function of altitude and are the most important variables that influence malaria transmission. (11)

## **8.2 Statement of the problem**

The disruption and use of ITNs is one of the central intervention for preventing malaria infection(12).national policy aims to provide one ITN for every sleeping space approximately one per 1.8 persons in malaria-endemic area <2,000m(7). Proper use of ITNs protects the entire local community from malaria for at least three years without need for additional insecticide reapplication (12).In order to meet the millennium development goals and RBM target, it is indispensable to determine the actual level of use and association factors that affect its use to take timely correction actions. The Aim of this study therefore is to assess utilization of ITNs by household the knowledge of the community bout malaria and benefit of use of ITNs and factors affecting its use.Hense the study will provide valuable information on the ITNs

### **Rational of the study**

Raya alamata district is one of the malarious area of southern zone of Tigray region.ITNs ownership and proper utilization is one of the preventive interventions adopted by RBM partners in the country (13).All person in the household, particularly under five children and pregnant women are encouraged to sleep ender the ITNs at all time of the year, however information on utilization and associated factors in the district are limited. This calls for aneed to study and characterize the pattern of ITNs utilization and determine associated factors in malaria-endemic kebele of Raya Alameda district. Hence this study will provide valuable information on the ITNs utilization pattern, knowledge and association factors in the district. Therefore the finding will lead to understanding some of the factors affecting ITN use among the community members of the area therefore it would be helpful for policy makers to strengthen and plan strategies that will lead to increased ITN use, resulting in reduction of morbidity and mortality rates because of malaria.

### 8.3 Literature review

The use of insecticide-treated nets (ITNs) is the main malaria control strategies in most malaria endemic country's to reach the Roll back malaria (RBM) targets to reduce the malaria burden by 50% in 2010 compare to levels and at least 75% by 2015 (14)

A huge discrepancy was reported between ownership versus use of ITNs (12). Study quantified this difference at 95% vs 59% (Kenia) (15), 70% vs 53.1% (Nigeria) (16) and 90% vs 77% (Tanzania) (17). Misconceptions about prevention of malaria discomfort, perceived low mosquito density, inconvenience to hang the nets, place of residents, economic and educational background, age and gender differences, color of nets and inadequate availability were the major reasons to non-use of mosquito nets (16, 18)

The major targets for HSDP III in malaria prevention and control were to distribute 20 million ITNs to households in malarious areas, increase the proportion of under 5 children utilizing ITNs from 2% to 63%; and pregnant women utilizing ITNs from 2% to 49%, reduction in the malaria morbidity from 22% to 10% and malaria case fatality rate in age groups of 5 years and above from 4.5% to 2% and in the under 5 children from 5% to 2%. The achievement so far shows that distribution of ITNs has successfully reached around 22.2 million in 2008/09 that makes Ethiopia the third highest bed net coverage achiever in Sub-Saharan Africa after Togo and Sierra Leone (9) 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. On average, 60%-70% of malaria cases have been due to *P. falciparum*, with the remainder caused by *P. vivax*. *Anopheles arabinos* is the main malaria vector. (10) Malaria transmission intensity, along with its temporal and spatial distribution in Ethiopia, is mainly determined by the diverse eco-climatic conditions. Climatic factors such as temperature, rainfall, and humidity show high variability mainly as function of altitude and are the most important variables that influence malaria transmission. (11)

## **8.4 Objectives**

### **8.4.1 General objectives**

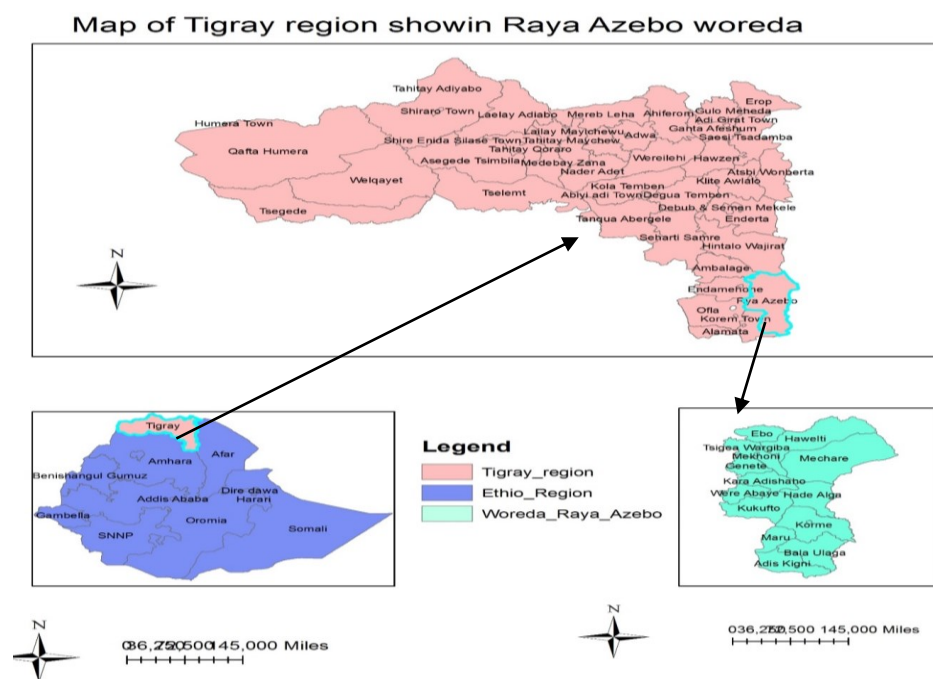
- To assess the prevalence of malaria and to identified risk factors of malaria among workers of Raya Azebo agro processing factory.

### **8.4.2 Specific objective**

- To determine prevalence malaria among the workers
- To identified ITN, distribution and utilization coverage.
- To assess the prevention and control measures

## 8.5 Method and material

**8.5.1 Study area and period:** this study will be conducted in Raya Azobo North zone Tigray region from september10-september 30, 2019



Map 4: Shows map of Raya Azebo Tigray region 2019

### 8.5.2 Study design:

Community base Cross sectional study design.

### 8.5.3 Study population:

All Population of raya Azobo

### 8.5.4 Sampling procedure:

Multi-stage sampling technique will be used to get study subject.in the first stage we select the district purposively from the malarious district (primary sampling). In this district there were 13 malarious kebele we select by SRM (secondary sampling unit) of the district seven (53%) of them will be selected by simple random technique. From each selected kebeles five villages (tertiary unit) will be selected SRS technique .finality household will be selected by SRS.The sample size of the house hold will be determine by using population proportion formula.

### 8.5.5 Sample size determination

$$n = Z^2 \times p(1-P) / d^2 \times DEFF$$

Wherein n=sample size, Z=z statistic for a level confidence

P= expected prevalence or proportion

Where: n = sample size, Z = z statistic for a level confidence,

d=Absolute precision

DEFF=design effect

The prevalence of malaria is not known in the study area. Therefore the p (expected prevalence) will be taken as 50% and minimum of 768 sample size will be included by using 5% marginal error and design effect of two. Adding for 105 for non-response, grand total sample size required will be 845. the study unit will be the household and the sampling frame will be the house hold.

**8.5.6 Data collection tools and methods:** a trained data collector and supervisor will be deployed for 10 days in the study area to perform their overall activities. The data will be collected through face to face interviewing using a structured questionnaire and reviewing document.

**8.5.7 Data entry and analysis:** Data will be entered by principal investigator using Epi info version 7.0.9.7

#### **8.5.8 Dissemination of findings**

The findings of this study will be disseminated to ministry of health, TRHB Rara Azobo district health office.

#### **8.5.9 Expected outcome**

The assessment of ITN utilization and association factors affecting utilization of ITN clearly identified and documented and it will also be disseminated to different organizations that could have contribution on the malaria prevention and control.

**Table 18 :Budget break down for epidemiological research project in Raya Azobo Tigray region**

| Item           | Detail activities                                                     | Cost in USD \$ |
|----------------|-----------------------------------------------------------------------|----------------|
| Traning        | Training for data collectors and supervisor and laboratory technician | 1500           |
| Stationary     | A4 size papers note books and pen                                     | 500            |
| Periderm       | Payment for data collection and supervisors and laboratory technician | 1000           |
| Transportation | Car rent and fuel                                                     | 500            |

**Table 19 Project implementation for EPI project**

| Activities                  | September | October | November | December |  |
|-----------------------------|-----------|---------|----------|----------|--|
| Training of data collectors | x         |         |          |          |  |
| Presenting questionnaire    |           | x       |          |          |  |
| Data collection             |           | x       |          |          |  |
| Data analysis               |           |         | X        |          |  |
| Report writing              |           |         | X        |          |  |
| Progress report summation   |           |         | X        |          |  |
| Final report summation      |           |         |          | x        |  |

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## CHAPTER NINE: ADDITIONAL OUT PUT.

### 9.1 WEEKLY BULLETIN TIGRAY REGIONAL HEALTH BUREAU



**Tigray regional Health Bureau, Health Promotion and Diseases Prevention Core Process**

**Public Health Emergency Management (PHEM) Case Team**

**Weekly Bulletin, WHO week 17 /2019 (15-21 /05/2011 E.C)**

#### **Introduction**

Early warning is the identification of public health threat by closely an indicators and frequently monitoring identified and predicting the risk. It poses on the public and the health system. As a part of an indicator based surveillance system. Our country closely following 21 cases and condition in daily and weekly based

#### **Dog bite**

A total of 49 rabies suspected cases with death were reported from different zones out of those south zone reports 19(38%) followed by North West 12(24.4), Central 9(18.3) and other zones 9(183)

#### **Maternal death**

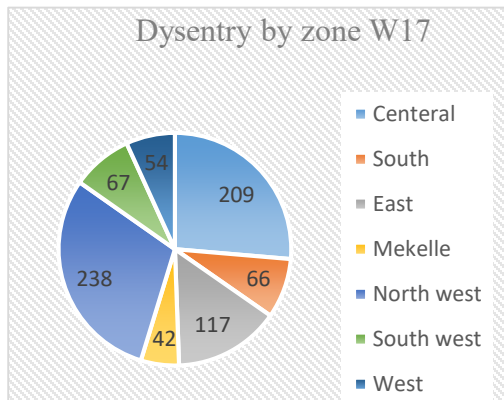
Only six neonatal death were reported out of this 5 from Mekelle and 1 from west zone and one maternal death from East zone this week.

S.N

| S.N | Disease type                   | Case | Death |
|-----|--------------------------------|------|-------|
| 1   | Malaria                        | 1714 | 37    |
| 2   | Dysentery                      | 793  | 0     |
| 3   | Meningitis                     | 2    | 0     |
| 4   | Relapsing fever                | 0    | 0     |
| 5   | Typhoid fever                  | 413  | 0     |
| 6   | Typhus                         | 3    | 0     |
| 7   | Malnutrition(Severe)           | 101  | 0     |
| 8   | Hepatic Veno-occlusive disease | 0    | 0     |
| 9   | Scabies                        | 132  | 0     |

Table :1 summarized of weekly reportable disease week

| S.N | Disease type            | Case | Death |
|-----|-------------------------|------|-------|
| 1   | AFP                     | 0    | 0     |
| 2   | Anthrax                 | 1    | 0     |
| 3   | Avian Human Influenza   | 0    | 0     |
| 4   | AWD                     | 0    | 0     |
| 5   | Dracunculiasis (Guinea) | 0    | 0     |
| 6   | Measles                 | 6    | 0     |
| 7   | Neonatal Tetanus        | 0    | 0     |
| 8   | Pandemic Influenza      | 0    | 0     |
| 9   | Rabies/Dog Bite         | 49   | 6     |
| 10  | SARS                    | 0    | 0     |
| 11  | Smallpox                | 0    | 0     |
| 12  | VHF                     | 0    | 0     |
| 13  | Yellow fever            | 0    | 0     |
| 14  | Maternal Death          |      | 1     |



Figure=1 summary of Dysentery cases on week 17/2019

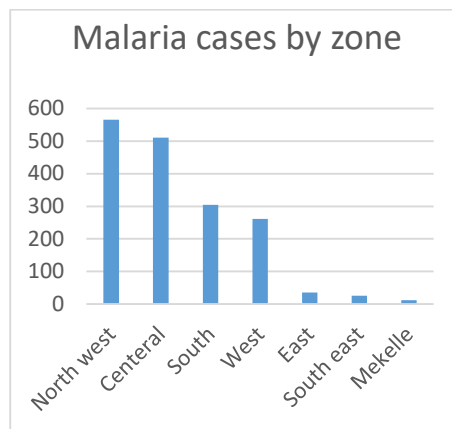


Figure =2 summary of Dysentery cases on week 17/2019

North West zone is still the leading the cases

565(32.9) from the region followed by central

510(29.7%), South304 (17.7%), west261 (15.2%)

The rest74 (4.3).

### Scabies

A total of 132 cases were reported in this week

Out of this 60(45.4%) from central 58 (43.9%)

Were from East zone and 14(10.6) from rest

### Focus issues for next week

Increase preparedness on rabies & Malaria

Measles active case searches should be in place

Follow up should be in place for dysentery and typhoid fever.

Attention should be strengthen in NND and maternal death.

### Dysentery

A total of 793 cases were reported in this week

North west zone is leading one with 238(30%) followed central 209(26.3%), East117 (14.7%)and the rest 229(28.8%) this might be show low in WASH activates.

## ANNEXES

### Annex 1: AWD Outbreak Investigation Questionnaire

Date -----Health facility-----

**Respondent Status:** ☐ Case ☐ control

#### A. Demography Information

1. Name of respondent .....ID.....
2. Gender ☐ Male ☐ Female
3. Age .....Address/ Zone .....District.....Kebelle.....Got.....
5. Resident Urb☐ Rur☐
6. Occupation ☐ Farmer ☐ Student ☐ Housewife ☐ Teacher ☐ Other specify  
.....
7. Religious ☐ Orthodox ☐ Muslim ☐ other.....
8. Ethnicity ☐ Tigry ☐ Amhara ☐ Oromo  
Other/specify.....
9. Education ☐ primary education ☐ Secondary Education ☐ Collage and above ☐ illiterate  
read and write
10. Marital ☐ single ☐ married ☐ Divorced/separated w ☐ widowed

#### B. Clinical Information

2. Do you have the following Sign and ☐ Diarrhea ☐ Vomiting ☐ Nausea ☐  
Abdominal Cramp ☐ Other specify ..... If no skip to  
q. 10
3. If Diarrhea is present Duration of diarrhea --- days. Stool frequency per  
days.....
4. Which did you Experience First ☐ Vomiting ☐ Diarrhea ☐ other specify -----  
-----
5. Date seen at health facility -----/-----/-----
6. Complication /Dehydration ☐yes ☐No
7. Severity of dehydration ☐ No DHN ☐ Some ☐ Sever
8. What type of treatment did you receive? 1. ORS 2. Anti-biotic 3.IV fluids 4. Anti-pain
5. Other

9. Status ☐ Improved ☐ Not Improved

10. Have you seen any person died by AWD yes ☐ No ☐

If yes How many

11. Do you think CTC is the source of the disease? Yes ☐ no ☐ ?

12. What did you do if you get a patient of AWD in your area? A. take to health facility B. take to holy water C. stay at home D. treats culturally

13. Did you visit health facility? Yes ..... No.....

## B. Epidemiological

1. Have you traveled outside your Village with ☐ in the last 7 days? Yes ☐ No ☐ If yes; where.....

3. Have you eat or drink outside your home? ☐ Yes ☐ No ☐

If yes; where.....

4. Did you have contact with another person with diarrheal case? Yes ☐ No ☐

If yes; who.....Where? .....

5. Did you attend a gathering (funeral, religious or any other)? If yes, when and where?

6. How do you think you get AWD?

1. by drinking contaminated water

2. By eating contaminated food

3. Burial preparation

4. By not washing hands during

critical times

5. Caring for people that are ill with AWD

## D. Laboratory Data

1. Sample taken? ☐ Yes ☐ No If yes; A) RDT----- B) Culture if yes date were sample taken ----/---/---

2. Result .....

## E. Satiation and Hygiene practices

1. Do you have access to latrine ☐ yes ☐ No

2. If yes, do you use it ☐ Yes ☐ No

3. Yes if yes is there soap for hands washing nearby the toilet?

☐ Yes; ☐ no

4. When do you wash your hands?

a. After using toilet?

b. After cleaning the bottom of children?

- c. Before eating food?
- d. Before cooking foods?

5. How often do you wash your use hands: 1. Always 2. Sometime 3/Never

6. What do you use to clean utensils/containers for feeding?

☐ Water only ☐ water with soap ☐ chemicals ☐ Ash

7. Where do you dispose of household garbage ☐ Pit ☐ op ☐ filed ☐ burning ☐ others

---

## F. Water related practices

1. From what sources do you get your drinking water ? ☐ Pipe ☐ Spring ☐ River

Pump ☐ Ponds ☐ Pump

2. Do you purify the water? Yes No

If yes by what methods did you treat Water?

- a. Boiling b) sedimentation c)chlorination d) Water chemicals (Aqua tab/  
Water guard/Beishan Gauri) F) Others specify type

3. Have you been using treated water in the past 1 week/ prior to the onset of your illness? Yes  
no

4. What type of container do you use in your house for water storage? a) Jerry can b) Bucket

3. How do you fetch water from your storage?

☐ By Deeping ☐ Inclining ☐ With cup always inside the storage ☐

4. How often clean water storage? ☐ Every day ☐ every other day ☐ every weeks ☐ Other  
(Specify)

## G. Source of food and type

1. Did you eat raw/uncooked food in the last 2-3 days before onset of your illness? 1)Yes  
2) No

If Yes Where did you feed

- a) Hotel b) Neighbor c) Food sold at roadside d) Gathering e) Self  
Prepared in camp f) others (specify) \_\_\_\_\_

2. Which type of food did you eat (Tick)? (before 5 days of illness)

- a) Raw meat b) Raw tomato c) Raw salad d) Raw milk products
- e) Enjera with wot other (specify).....

3. In the past 2-3 days, did you eat any left-over food? 1. Yes 2. No

4. Did you heat cold food before eating? 1. Yes 2. No

#### H. Knowledge and practice

1. Have you heard about the diarrhea outbreak AWD previously? 1/ Yes 2/ No
2. Did you know the diseases sign and symptom? 1. Yes 2. No .
3. If yes, A) Watery Diarrhea B) Vomiting C) Sunken Eye ball D) Dry Mouth
4. Do you know mode of transmission for diarrhea (AWD)? 1/ Yes 2/ No
5. If yes to A) Drinking Untreated water B) Eating uncooked food C) Not washing hands
6. Do you know the prevention methods of AWD? 1/ yes 2/ no  
If yes how do you prevent AWD?
  - A) Treating Water
  - B) Eating well cooked food
  - C) Hand washing with Soap at critical Times

## Annex 2 Measles outbreak investigation

|                                         |                                                                    |                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Respondent                              |                                                                    | Case <input type="checkbox"/> control <input type="checkbox"/>                                                                                                                                                                                                                                                                             |
| 1                                       | Data collector name                                                |                                                                                                                                                                                                                                                                                                                                            |
| 2                                       | Date of data collection                                            |                                                                                                                                                                                                                                                                                                                                            |
| 3                                       | Kebele/village                                                     |                                                                                                                                                                                                                                                                                                                                            |
| 4                                       | Got /ketene                                                        |                                                                                                                                                                                                                                                                                                                                            |
| 5                                       | Latitude                                                           |                                                                                                                                                                                                                                                                                                                                            |
| 6                                       | Longitude                                                          |                                                                                                                                                                                                                                                                                                                                            |
| 7                                       | What is your relation to the person we are asking questions about? | Mother <input type="checkbox"/> Father <input type="checkbox"/><br>Grandmother/father <input type="checkbox"/><br>Guardian <input type="checkbox"/><br>Other <input type="checkbox"/>                                                                                                                                                      |
| <b>Socio-demography characteristics</b> |                                                                    |                                                                                                                                                                                                                                                                                                                                            |
| 8                                       | Respondent's age                                                   |                                                                                                                                                                                                                                                                                                                                            |
| 9                                       | Sex                                                                | Male <input type="checkbox"/> female <input type="checkbox"/>                                                                                                                                                                                                                                                                              |
| 10                                      | Ethnicity                                                          | Tigray <input type="checkbox"/> Amhara <input type="checkbox"/> Afar <input type="checkbox"/> Agew <input type="checkbox"/>                                                                                                                                                                                                                |
| 11                                      | Religion                                                           | Orthodox <input type="checkbox"/> Muslim <input type="checkbox"/><br>Catholic <input type="checkbox"/> Protestant <input type="checkbox"/>                                                                                                                                                                                                 |
| 12                                      | Educational status                                                 | Kindergarten <input type="checkbox"/> illiterate <input type="checkbox"/> Able to read and write <input type="checkbox"/><br>Primary (1-8) <input type="checkbox"/><br>Secondary(9-12) <input type="checkbox"/> college and above <input type="checkbox"/><br>Not applicable <input type="checkbox"/>                                      |
| 13                                      | Occupation                                                         | Farmer <input type="checkbox"/> House-wife <input type="checkbox"/> Merchant <input type="checkbox"/><br>Student <input type="checkbox"/> Unemployed <input type="checkbox"/> Gove'tal employee <input type="checkbox"/><br>Pastoralist <input type="checkbox"/> Other <input type="checkbox"/><br>Not applicable <input type="checkbox"/> |
| 14                                      | Marital status                                                     | Single <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/>                                                                                                                                                                                                                                         |

|    |                                                                                                       |                                                                                                                                                                                                                                                                                                                   |
|----|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                       | Widowed <input type="checkbox"/> Separated <input type="checkbox"/> Under 18 <input type="checkbox"/>                                                                                                                                                                                                             |
| 15 | Is there any sick person with rash, Fever, running nose or conjunctivitis                             | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                          |
| 16 | If Yes, number of sick person                                                                         |                                                                                                                                                                                                                                                                                                                   |
| 17 | Were the case/ control Sick for Other disease 1 week back this disease                                | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                          |
|    | <b>II .Clinical history of the disease</b>                                                            |                                                                                                                                                                                                                                                                                                                   |
| 18 | What was the symptoms                                                                                 | Fever <input type="checkbox"/> Rash <input type="checkbox"/> Cough <input type="checkbox"/><br>Coryza(runny nose) <input type="checkbox"/><br>Conjunctivitis(Red eyes <input type="checkbox"/> Diarrhea <input type="checkbox"/><br>coughing <input type="checkbox"/> Blurring of vision <input type="checkbox"/> |
| 19 | Date of onset of fever                                                                                | ____/____/____                                                                                                                                                                                                                                                                                                    |
| 20 | Date of onset of rash                                                                                 | ____/____/____                                                                                                                                                                                                                                                                                                    |
| 21 | Date seen at health facility                                                                          | ____/____/____                                                                                                                                                                                                                                                                                                    |
| 22 | Did you/he/she take treatment                                                                         | Yes <input type="checkbox"/> NO <input type="checkbox"/>                                                                                                                                                                                                                                                          |
| 23 | If Yes, treatment taken                                                                               | ORS <input type="checkbox"/> . Antibiotics <input type="checkbox"/> Vitamin A <input type="checkbox"/><br>TTC ointment <input type="checkbox"/> Anti pyretic <input type="checkbox"/><br>supplementary food <input type="checkbox"/>                                                                              |
| 24 | Did you /he/she recover after treatment                                                               | Cured <input type="checkbox"/> Partially improved <input type="checkbox"/><br>Deteriorated <input type="checkbox"/> Dead <input type="checkbox"/>                                                                                                                                                                 |
|    | <b>III. Risk factor</b>                                                                               |                                                                                                                                                                                                                                                                                                                   |
| 25 | Have You ever vaccinated for measles?                                                                 | Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/><br>Not applicable <input type="checkbox"/>                                                                                                                                                                              |
| 26 | If yes last vaccination date                                                                          | A. ____/____/____ by card<br>B. ____/____/____ by history                                                                                                                                                                                                                                                         |
| 27 | Number of vaccine doses received                                                                      | One dose <input type="checkbox"/> Two doses <input type="checkbox"/><br>Three and above <input type="checkbox"/>                                                                                                                                                                                                  |
| 28 | Have you ever had measles infection?                                                                  | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                          |
| 29 | Did you have any travel history 7-8 days to areas with active measles cases before onset of symptoms? | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                                          |

|    |                                                                                                                  |                                                                                                                                                                                                 |
|----|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 30 | If yes to Q29, Did you have any contact with confirmed or suspected cases of measles?                            | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                        |
| 31 | If yes in Q 30 ,How                                                                                              | Living together <input type="checkbox"/> Playing together <input type="checkbox"/><br>Sleeping together <input type="checkbox"/><br>Admitted with suspected measles cases                       |
| 32 | Do you have any travel history four days before and after rash onset?                                            | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                        |
| 33 | If yes to Q32, where _____<br>Do you have any contact history with someone else four days before and after rash? | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                        |
| 34 | If yes, when?                                                                                                    | _____/_____/_____                                                                                                                                                                               |
| 35 | If yes for Q33 with whom?                                                                                        | School friends <input type="checkbox"/> Neighbors <input type="checkbox"/><br>Market <input type="checkbox"/> Other specify _____                                                               |
| 36 | Do you know modes of transmission for measles?                                                                   | Yes <input type="checkbox"/> No <input type="checkbox"/>                                                                                                                                        |
| 37 | Nutritional status(MUAC)                                                                                         | _____centimeter                                                                                                                                                                                 |
| 38 | How many people sleeping together?                                                                               | _____                                                                                                                                                                                           |
| 39 | Where do you go first if you get ill for measles?                                                                | Health facility <input type="checkbox"/> Traditional Healer <input type="checkbox"/><br>Holy water <input type="checkbox"/> Stayed at home <input type="checkbox"/><br>Other specify-----       |
| 40 | If answer for Q39 other than health facility, why?                                                               |                                                                                                                                                                                                 |
| 41 | How do you think people get measles?                                                                             | Contact with sick person <input type="checkbox"/><br>Wrath of God <input type="checkbox"/> Curse of other people <input type="checkbox"/><br><input type="checkbox"/> Other specify-----        |
| 42 | Do you know measles is vaccine preventable?                                                                      | Yes <input type="checkbox"/> No <input type="checkbox"/> Do not known <input type="checkbox"/>                                                                                                  |
| 43 | Who do you think that can be affected by measles?                                                                | Children of aged less than 5 <input type="checkbox"/><br>Children of aged less than 18 years <input type="checkbox"/><br>Women of any age <input type="checkbox"/><br>Any age group Other _____ |

|    |                                                           |                                                                                                                                                                                                                                                   |
|----|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                           |                                                                                                                                                                                                                                                   |
| 44 | How do you think measles can be cured?                    | Using modern medicine <input type="checkbox"/><br>Using traditional medicine <input type="checkbox"/><br>Holy water By feeding nutritious food<br><input type="checkbox"/> Keeping the sick person indoor <input type="checkbox"/><br>Other _____ |
| 45 | When do you go to health facility if get ill for measles? | Immediately <input type="checkbox"/> After a week <input type="checkbox"/>                                                                                                                                                                        |

### Annex 3: Surveillance system evaluation

#### Identifiers

Assessment team \_\_\_\_\_ Type of health facility \_\_\_\_\_ Date \_\_\_\_\_ District \_\_\_\_\_

Interviewer \_\_\_\_\_ Region \_\_\_\_\_ province \_\_\_\_\_ Respondent \_\_\_\_\_

Respondent's position \_\_\_\_\_ Name of health facility \_\_\_\_\_ Surveillance system \_\_\_\_\_

#### 1. Number of Health Post with national surveillance manual

Is there a national manual for surveillance at Health Post?

Observe national surveillance manual: Y ☐ N ☐ UK ☐ N/A ☐

#### I. Case detection and registration \_\_\_\_\_

2. Does the Health Post have a clinical register? Y ☐ N ☐ UK ☐ N/A ☐

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

Y ☐ N ☐ UK ☐ N/A ☐

4. Does the Health Post have standardized case definitions for the priority diseases (each priority disease) Meningitis, AFP (polio), measles, malaria, Anthrax ?, Y ☐ N ☐ UK ☐ N/A ☐

#### II. Data reporting \_\_\_\_\_

5. Does the Health Post have appropriate surveillance forms for that site at all times over the past 6 months Y ☐ N ☐ UK ☐ N/A ☐

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

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

A. Obs Measles Y ☐ N ☐ UK ☐ N/A ☐

B. Obs Malaria    Y ☐    N ☐    UK ☐    N/A ☐

C. Obs Meningitis    Y ☐    N ☐    UK ☐    N/A ☐

7. Does the Health Post that reported each reporting period to the next higher level during the past 3 months?    Yes ☐    No ☐    Uk ☐    N/A ☐

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

**Observe** Weekly: /12 times the number of sites

**Observe** immediately: /--times the number of sites

9. on time (use national deadlines)

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

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

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

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

11. Strengthening reporting

How can reporting be improved?

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### III. Data analysis

Percent of sites that:

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

Observe description of data by age and sex

Yes ☐    No ☐    Unknown ☐    Not applicable ☐

13. Does the Health Post describe data by place?

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

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

14. Does the Health Post describe data by time?

**Observe** description of data by time: Yes ☐ No ☐ Unknown ☐ Not applicable ☐

15. Does the Health Post Perform trend analysis

**Observe** line graph of cases by time Yes ☐ No ☐ Unknown ☐ not applicable ☐

#### IV. Epidemic response \_\_\_\_\_

16. Does the Health Post implemented prevention and control measures based on local data for at least one epidemic prone diseases Yes ☐ No ☐ Unknown ☐ Not applicable ☐

#### V. Feedback

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

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

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

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

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

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

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

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

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

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

## VI. Supervision:

22. Was HEWs supervised in the past 6 months?

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

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

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

**Observe** supervision report or any evidence for appropriate review of surveillance practices

Yes ☐ No ☐ Unknown ☐ Not applicable ☐

## VII. Training

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

Yes ☐ No ☐ Unknown ☐ not applicable ☐

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

\_\_\_\_\_

## VIII. Resources

27. Does the Health post have?

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

28. Data management a. Stationer b. calculator c. computer d. Software e. printer f. Statistical package

29. Communications a. Telephone service b. fax      c. Radio call d. Computers that have modems

30. Information education and communication materials

a. Posters b. Megaphone c. Flipcharts or Image box

d. VCR& TV set      e. Generator      f. Screen      g. Projector (Movie)h. Other:

31. Hygiene and sanitation materials      a. Spray pump      b. Disinfectant

32. Protection materials (list) \_\_\_\_\_

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### **IX. Satisfaction with surveillance system**

33. Satisfaction with the surveillance system

Are you satisfied with the surveillance system?

Yes ☐      No ☐      Unknown ☐      Not applicable ☐

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

\_\_\_\_\_

35. Opportunities for integration

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

\_\_\_\_\_

### **Attributes**

#### **a) Usefulness**

1. Total population of the district under surveillance \_\_\_\_\_

2. How many cases and deaths reported in the district from the following disease past 6month?

a) Anthrax cases \_\_\_\_\_ Deaths \_\_\_\_\_ Malaria cases \_\_\_\_\_ Deaths \_\_\_\_\_ b) Measles cases \_\_\_\_\_ Deaths \_\_\_\_\_

3. Does the surveillance system help?

a) To detect outbreaks of these selected priority diseases early. Yes ☐      No ☐      N/A ☐

b) To estimate the magnitude of morbidity, mortality and factors related to these

Diseases? Yes ☐ No ☐ N/A ☐

c) Permit assessment of the effect of prevention and control programs? Yes ☐ No ☐ N/A ☐

**b) Simplicity**

4. Do you feel that data collections on a case report form are time consuming? Yes No N/A

5. If yes, how long it takes to fill the format? a, <5 minute b- 10-15minuts c- >15 minutes

**c) Flexibility**

6. Do you think that the current reporting formats used for other newly occurring health

Event (disease) without much difficulty? Yes ☐ No ☐ N/A ☐

7. Do you think that any change in the existing procedure of case detection, reporting, and formats will be difficult to implement? Yes ☐ No ☐ N/A ☐

If yes, how \_\_\_\_\_

**d) Data Quality**

8. Are the data collection formats for these priority diseases clear and easy to fill for all the data collectors/ reporting sites? Yes ☐ No ☐ N/A ☐

9. Are the reporting site / data collectors trained/ supervised regularly? Yes ☐ No ☐ N/A ☐

If, Observe: Review the last months report of these diseases

10. Average number of unknown or blank responses to variables in each of the reported forms \_\_\_\_\_

11. Percent of reports which are complete (that is with no blank or unknown responses) from the total reports \_\_\_\_\_

**e) Acceptability**

12. Do you think all the reporting agents accept and well engaged to the surveillance activities? Yes ☐ No ☐ N/A ☐

If yes, how many are active participants (of the expected to)? \_\_\_\_\_

13. If no, what is the reason for their poor participation in the surveillance activity?

a) Lack of understanding of the relevance of the data to be collected

b) No feedback / or recognition given by the higher bodies. c) Reporting formats are difficult to understand d) Report formats are time consuming e) If

Others: \_\_\_\_\_.

#### **f) Representativeness**

14. What is the health service coverage of the district? \_\_\_\_\_%.

15. Do you think, the populations under surveillance have good health seeking behavior for these priority diseases? Yes ☐ No ☐ N/A ☐

46. Who do you think is well represented by the surveillance data? Urban / rural

#### **g) Timeliness**

47. What proportion of health facilities reports in acceptable time-----?

#### **h) Stability**

48. Was there lack of resources that interrupt the surveillance system? Yes ☐ No ☐  
N/A ☐

If yes, how did you manage it? \_\_\_\_\_

49. What do you suggest to overcome such problems? \_\_\_\_\_.

#### **I. Sensitivity:**

Do u thing the surveillance system captures most of the priority disease (cases) under surveillance in the HP/Community? Yes, No, If No what is the reason-----

#### **j. PVP:**

Do u think cases reported by the surveillance system are actually cases? E.g. measles

Yes ☐ NO ☐ If No gives explanations

## II. HEALTH Center Level Questionnaire

### Identifiers

Assessment team \_\_\_\_\_ Type of health facility \_\_\_\_\_ Date \_\_\_\_\_ District name \_\_\_\_\_  
Interviewer \_\_\_\_\_ Region/province \_\_\_\_\_ Respondent \_\_\_\_\_

Country \_\_\_\_\_ Name of health facility \_\_\_\_\_ Surveillance system \_\_\_\_\_

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

Obs Observe national surveillance manual: Yes ☐ No ☐ unknown ☐ Not Applicable ☐

### I. Case detection and registration

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

**Observe** the existence of a clinical register? Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

**Observe** the correct filling of the clinical register during the previous 30 days

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

### II. Case confirmation

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

Are you able to collect sputum Yes ☐ No ☐ unknown ☐ Not Applicable ☐

Stool Yes ☐ No ☐ unknown ☐ Not Applicable ☐

Blood Y: Yes ☐ No ☐ unknown ☐ Not Applicable ☐

CSF at this facility? Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Stool? Yes ☐ No ☐ unknown ☐ Not Applicable ☐

Blood/serum Yes ☐ No ☐ unknown ☐ Not Applicable ☐

CSF Y: Yes ☐ No ☐ unknown ☐ Not Applicable ☐

9. Does The Hospital/Health Center have the capacity to handle specimens like sputum, stool, blood/serum and CSF until shipment? Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

12. Does the Hospital/health Center have packing materials for shipment of specimens at health facility? Yes ☐ No ☐ unknown ☐ Not Applicable ☐

### III. Data reporting

13. Does the Hospital/health Center have appropriate surveillance forms for that site at all times over the past 6 months. Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

**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])

A. Observe Measles Yes ☐ No ☐ unknown ☐ Not Applicable ☐

B. Observe Malaria Yes ☐ No ☐ unknown ☐ Not Applicable ☐

C. Observe AFP (polio) Yes ☐ No ☐ unknown ☐ Not Applicable ☐

D. Observe Meningitis Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

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

Observe Weekly: /12 times the number of sites

Observe immediately: /--times the number of sites

16. on time (use national deadlines)

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

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

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

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

18. Strengthening reporting

How can reporting be improved?

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#### IV. Data analysis

Percent of sites that:

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

Observed description of data by age and sex

Y: ☐ N: ☐ U: ☐ N/A: ☐

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

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

Y: ☐ N: ☐ U: ☐ N/A: ☐

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

Observed description of data by time

Y: ☐ N: ☐ U: ☐ N/A: ☐

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

Observed line graph of cases by time

Y: ☐ N: ☐ U: ☐ N/A: ☐

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

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

Y: ☐ N: ☐ U: ☐ N/A: ☐

24. If yes, what is it (Ask for 2 priority diseases)? \_\_\_\_\_cases \_\_\_\_\_ % increase \_\_\_\_\_rate

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

\_\_\_\_\_

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

a. Daily b. weekly c. Every 2 weeks d. Monthly e. quarterly f. As needed g. Non

27. Does the Hospital/health Center have appropriate denominators?

Observed presence of demographic data at site (E.g. Population<5 yr., population by village, total population) Y: ☐ N: ☐ U: ☐ N/A: ☐

## V. Epidemic preparedness

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

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

Y: ☐ N: ☐ U: ☐ N/A: ☐

## VI. Epidemic response

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

Y: ☐ N: ☐ U: ☐ N/A: ☐

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

Observed that the health facility achieved an acceptable case fatality rate for most recent outbreak Y: ☐ N: ☐ U: ☐ N/A: ☐

## VII. Feedback

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

Y: ☐ N: ☐ U: ☐ N/A: ☐

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

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

Y: ☐ N: ☐ U: ☐ N/A: ☐

How many meetings have this Hospital/health Center conducted with the community members in the past six months? \_\_\_\_\_

## VIII. Supervision:

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

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

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

Y: ☐      N: ☐      U: ☐      N/A: ☐

## IX. Training

35. Does health personnel In Hospital/Health center trained in disease surveillance and epidemic management?    Y: ☐      N: ☐      U: ☐      N/A: ☐

36. Number of Health Personnel trained \_\_\_\_\_

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

## X. Resources

38. Number of Hospital/Health center that have Logistics

a. Electricity      b. Bicycles      c. Motor Vehicle      d. Vehicles

39. Data management in Health Center/Hospital

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

40. Communications in Health Center/Hospital

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

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

a. Posters    b. Megaphone    c. Flipcharts or Image box    d. VCR and TV set

e. Generator    f. Screen    g. Projector (Movie)      h. Other:

42. Hygiene and sanitation materials in Health Center/Hospital

a. Spray pump    b. Disinfectant

43. Protection materials (list)

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## **XI. Satisfaction with surveillance system**

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

Are you satisfied with the surveillance system?

45. Yes ☐ No ☐ UK ☐ N/A ☐

If no, how can the surveillance system are improved? \_\_\_\_\_

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46. Opportunities for integration

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

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## **III. DISTRICT Level Questionnaire**

### **Identifiers**

Assessmentteam\_\_\_\_\_District\_\_\_\_\_Date\_\_\_\_\_region.....province\_\_\_\_\_  
Interviewer\_\_\_\_\_country\_\_\_\_\_Respondent\_\_\_\_\_surveillancesystem\_\_\_\_\_

---

Is the Districts has available national surveillance manual?

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

Obs Observe national surveillance manual:

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

### **I. Case confirmation**

Is the Districts has the capacity to transport specimens to a higher level laboratory

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

3. Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

## II. Data reporting \_\_\_\_\_

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Weekly: \_\_\_\_\_ /12 times the number of health facilities

Immediately: \_\_\_\_\_ / \_\_\_\_\_ times the number of health facilities

On time (use national deadlines)

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

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

10. Is the Districts have means for reporting to next level? How do you report?

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

Strengthening reporting

11. How can reporting be improved?

## III. Data analysis

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

Obs Observed description of data by age and sex

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

13. Describe data by place

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

14. Describe data by time

Obs Observed description of data by time

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

15. Perform trend analysis

Obs Observed line graph of cases by time

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

16. List:

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17. Have an action threshold for each priority disease

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

18. If yes, what is it? \_\_\_\_\_ cases \_\_\_\_\_ % increase \_\_\_\_\_ rate

(Ask for 2 priority diseases)

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—

19. Have appropriate denominators

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

20. Yes ☐ No ☐ unknown ☐ Not Applicable ☐

21. Who is responsible for data analysis? \_\_\_\_\_

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

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

#### IV. Outbreak investigation

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

Yes ☐ No ☐

Number of outbreaks suspected in the past 6 months \_\_\_\_\_ Investigated \_\_\_\_\_?

Have you ever conducted an outbreak investigation?

Has your District ever investigated an outbreak?

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

#### V. Epidemic preparedness

24. Have your District a plan for epidemic preparedness and response?

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Observed the stocks of drugs and supplies at time of assessment

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

## VI. Responses

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

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

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

## VII. Feedback

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

Yes ☐ No ☐ unknown ☐ Not Applicable ☐

Obs Observed the presence of a written report that is regularly produced to disseminate

Surveillance data (District and higher)

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

### **VIII. Supervision**

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

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

Yes ☐      No ☐      unknown ☐      Not Applicable ☐

37. Number of Observed appropriate review of surveillance practices in the District in the past 6 month? \_\_\_\_\_

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

a. Expected    b. Achieved:      c. Not Done:

(Obtain required number of visits from central level) \_\_\_\_\_

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

Reason 1 \_\_\_\_\_

Reason 2 \_\_\_\_\_

Reason 3 \_\_\_\_\_

### **IX. Training**

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

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

\_\_\_\_\_

40. Number of Health personnel in the District have been trained in surveillance and epidemic management? \_\_\_\_\_

### **X. Resources**

42. I. Do the District have Important Logistics?

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

43. Data management

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

44. Communication a. Telephone service   b. Fax   c. B radio   d. Computers that have modems

45. Information education and communication materials

a. Posters   b. Megaphone   c. Flipcharts or Image box   d. VCR and TV set

e. Generator   f. Screen   g. Projector (Movie)   h. Other.....

46. Hygiene and sanitation materials

a. Spray pump   b. Disinfectant

list \_\_\_\_\_  
\_\_\_\_\_

## **XI. Surveillance co-ordination:**

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

Yes ☐   No ☐   unknown ☐   Not Applicable ☐

## **XII. Satisfaction with surveillance system**

48. Are you satisfied with the surveillance system?

Yes ☐   No ☐   unknown ☐   Not Applicable ☐

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

\_\_\_\_\_  
\_\_\_\_\_

50. Opportunities for integration

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

---

## **Attributes**

### **a) Usefulness**

51. Total population of the district under surveillance \_\_\_\_\_

52. How many cases and deaths reported in the district from the following disease past 6month?

a) Malaria cases \_\_\_\_\_ Deaths \_\_\_\_\_ b) Measles cases \_\_\_\_\_ Deaths \_\_\_\_\_

53. Does the surveillance system help?

a) To detect outbreaks of these selected priority diseases early? Yes No

b) To estimate the magnitude of morbidity, mortality and factors related to these diseases? Yes No

c) Permit assessment of the effect of prevention and control programs? Yes No

### **b) Simplicity:**

54. Do you feel that data collections on a case report form are time consuming? Yes No

55. If yes, how long it takes to fill the format? a. <5 minute b- 10-15minuts c- >15minutes

### **c) Flexibility:**

56. Do you think that the current reporting formats used for other newly occurring health event (disease) without much difficulty? Yes No

57. Do you think that any change in the existing procedure of case detection, reporting, and formats will be difficult to implement? Yes No

If yes, how \_\_\_\_\_.

**d) Data Quality:**

49. Are the data collection formats for these priority diseases clear and easy to fill for all the data collectors/ reporting sites?    Yes                      No

50. Are the reporting site / data collectors trained/ supervised regularly?    Yes                      No

If, Obe: Review the last months report of these diseases

51. Average number of unknown or blank responses to variables in each of the reported forms \_\_\_\_\_

52. Percent of reports which are complete (that is with no blank or Unknown responses) from the total reports \_\_\_\_\_

**e) Acceptability:**

53. 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 to)? \_\_\_\_\_

53. If no, what is the reason for their poor participation in the surveillance activity?

a) Lack of understanding of the relevance of the data to be collected

b) No feedback / or recognition given by the higher bodies. c) Reporting formats are difficult to understand                      d) Report formats are time consuming

e) If Others: \_\_\_\_\_.

**f) Representativeness:**

54. What is the health service coverage of the district? \_\_\_\_\_%

55. Do you think, the populations under surveillance have good health seeking behavior for these priority diseases?                      Yes                      No

56. Who do you think is well represented by the surveillance data? Urban / rural

**g) Timeliness:**

57. What proportion of health facilities reports in acceptable time? -----%

## **h) Stability:**

58. Was there lack of resources that interrupt the surveillance system? Yes/No

If yes, how did you manage it? \_\_\_\_\_

59. What do you suggest to overcome such problems? \_\_\_\_\_

## **Annex 4 Checklist for Health Profile Assessment**

Region \_\_\_\_\_ Zone \_\_\_\_\_ Woreda \_\_\_\_\_ Respondant \_\_\_\_\_ Interv  
iewer \_\_\_\_\_

### **1. Historical Aspects of the area (if available)**

1.1 When founded the area as district \_\_\_\_\_

1.2 How and why the name was given  
\_\_\_\_\_  
\_\_\_\_\_

1.3 How was the district formed \_\_\_\_\_

1.4 Any other historical aspect \_\_\_\_\_

### **2. population and Climate**

2.1 Area of the District \_\_\_\_\_

2.2 Altitude \_\_\_\_\_

2.3 Latitude \_\_\_\_\_

2.4 Longitude \_\_\_\_\_

2.5 Average Annual rain fall \_\_\_\_\_

2.6 Main rainy season \_\_\_\_\_

2.7 Average Annual temperature \_\_\_\_\_

2.8 Maximum temperature \_ minimum temperature \_\_\_\_\_

2.9 Land bodies \_\_\_\_\_

2.10 Water bodies \_\_\_\_\_

2.11 Boundaries of the district East-----South-----North-----West----

---

2.12 Distance from Addis Ababa-----Mekelle-----

### 3 Demographic information

3.1 Total Population \_\_\_\_\_

3.2 Household size-----

3.3 Male \_\_\_\_\_ Female \_\_\_\_\_

3.4 Urban \_\_\_\_\_ Rural \_\_\_\_\_

3.5 Sex ratio (Male to Female) \_\_\_\_\_

3.6 Age structure: - percentage of children < 1 yrs \_\_\_\_\_ . <5yrs \_\_\_\_\_ <

15 years and >15 \_\_\_\_\_ Population Pyramid

3.7 Percentage of old people >65 years \_\_\_\_\_

3.8 Reproductive year female population 15-49 \_\_\_\_\_

3.9 Percentage of pregnant women \_\_\_\_\_

3.10 Dependency ratio \_\_\_\_\_

3.11 Annual growth rate \_\_\_\_\_

### 4 Population size by religion if available

4.1 Orthodox ----- in no..... %

4.2 Catholic ----- in no..... %

4.3 Protestant----- in no..... %

4.4 Muslim ----- in no..... %

4.5 Others ----- in no..... %

### 5. Political and administrative organization

5.1 Number of Kebeles (Urban)\_\_\_\_\_(Rural) \_\_\_\_\_ Total \_\_\_\_\_

5.2 Number of Kebeles with transportation access \_\_\_\_\_

5.3 Number of Kebeles without transportation access \_\_\_\_\_

5.4 Number of Kebeles with electric power \_\_\_\_\_

5.5 Number of Kebeles without electric power \_\_\_\_\_

5.6 Number of kebeles with telephone service (cable  
based/wireless \_\_\_\_\_

5.7 Number of Kebeles without telephone

service\_\_\_\_\_

5.8 How many supporting NGOs are in the area

\_\_\_\_\_

5.9 Number of health development army(HDA)\_\_\_\_\_

5.10 Number of ambulances in the woreda\_\_\_\_\_

5.11 Health insurance *coverage* \_\_\_\_\_

## **6. Productivity and income**

6.1 main base of economy \_\_\_\_\_

6.2 Average income level\_\_\_\_\_

6.3 part of the population (%) whose economic source is from

a) Farming \_\_\_\_\_

b) Animal production\_\_\_\_\_

c) Trade \_\_\_\_\_

d) Government employee (salary) \_\_\_\_\_

e) Others\_\_\_\_\_

6.4. Productivity of the land/hectare \_\_\_\_\_kuntals/hectare

6.5. Common crop products\_\_\_\_\_

6.6. GDP (during harvesting season/ meher) \_\_\_\_\_quintal

6.7. GDP from irrigation \_\_\_\_\_quintal

6.8. Total GDP \_\_\_\_\_Quintals

6.9. Employment rate\_\_\_\_\_& unemployment rate\_\_\_\_\_

## **7. Water supply**

7.1. Source of water\_\_\_\_\_

7.2. Number of pipe water supply\_\_\_\_\_

7.3. Is there chlorination of water\_\_\_\_\_?

7.4. Frequency of chlorination \_\_\_\_\_

## 8. Education

8.1. Number of enrolled elementary schools (male and female) \_\_\_\_\_

8.2. Number of enrolled secondary schools (male and female) \_\_\_\_\_

8.3. Number of colleges/universities total number of students \_\_\_\_\_

8.4. Number of teachers at elementary \_\_\_\_\_ secondary \_\_\_\_\_ and colleges/universities \_\_\_\_\_

### A. Education and school Health

| Sr. no | Type of School | # Schools | # teachers |        |       | # Students |        |       | Student School Drop out | Female Student School Drop out |
|--------|----------------|-----------|------------|--------|-------|------------|--------|-------|-------------------------|--------------------------------|
|        |                |           | Male       | Female | Total | Male       | Female | Total |                         |                                |
| 1      | Primary        |           |            |        |       |            |        |       |                         |                                |
|        | 1-4            |           |            |        |       |            |        |       |                         |                                |
|        | 5-8            |           |            |        |       |            |        |       |                         |                                |
|        | Total          |           |            |        |       |            |        |       |                         |                                |
| 2      | Secondary      |           |            |        |       |            |        |       |                         |                                |
|        | 9-10           |           |            |        |       |            |        |       |                         |                                |
|        | 11-12          |           |            |        |       |            |        |       |                         |                                |
|        | Total          |           |            |        |       |            |        |       |                         |                                |
|        | Total          |           |            |        |       |            |        |       |                         |                                |

| School         | Toilet |         | Pipe water |         |
|----------------|--------|---------|------------|---------|
|                | With   | Without | With       | without |
| Primary school |        |         |            |         |

|                  |  |  |  |  |
|------------------|--|--|--|--|
| Secondary school |  |  |  |  |
|------------------|--|--|--|--|

**9. Social situation:**

9.1. Number of libraries \_\_\_\_\_

9.2. Number of NGO working on public health \_\_\_\_\_

9.3. Number of youth clubs \_\_\_\_

**10. Estimated Population size by kebele in 2010EFY (2017/18)**

| Sr. no | Name of the Kebele | Population size |        |
|--------|--------------------|-----------------|--------|
|        |                    | Male            | Female |
| 1      |                    |                 |        |
| 2      |                    |                 |        |
| 3      |                    |                 |        |
| 4      |                    |                 |        |
| 5      |                    |                 |        |
| 6      |                    |                 |        |
| 7      |                    |                 |        |
| 8      |                    |                 |        |
| 9      |                    |                 |        |
| 10     |                    |                 |        |

**11. Health status**

**Health service institutions and infrastructure**

| Sr | Type of Health facility |                                              | Number | remark |
|----|-------------------------|----------------------------------------------|--------|--------|
| 1  | Number of H/post        | with sustainable/ 24 hour /electric power    |        |        |
|    |                         | without sustainable/ 24 hour /electric power |        |        |
|    |                         | with telephone service (cable based/mobile)  |        |        |

|    |                                   |                                                |  |  |
|----|-----------------------------------|------------------------------------------------|--|--|
|    |                                   | without telephone service (cable based/mobile) |  |  |
|    |                                   | with piped water supply                        |  |  |
|    |                                   | Without piped water supply                     |  |  |
| 2  | Number of H/C                     | with sustainable/ 24 hour /electric power      |  |  |
|    |                                   | without sustainable/ 24 hour /electric power   |  |  |
|    |                                   | with telephone service (cable based/mobile)    |  |  |
|    |                                   | without telephone service (cable based/mobile) |  |  |
|    |                                   | with piped water supply                        |  |  |
|    |                                   | Without piped water supply                     |  |  |
| 3  | Number of hospitals               |                                                |  |  |
| 4  | Number of health centers          |                                                |  |  |
| 5  | Number of health posts            |                                                |  |  |
| 6  | Number of private clinic          |                                                |  |  |
| 7  | Number of pharmacies              |                                                |  |  |
| 8  | Number of drug vendors            |                                                |  |  |
| 9  | Number of diagnostic laboratories |                                                |  |  |
| 10 | Hospital to population ratio      |                                                |  |  |
| 11 | Health center to population ratio |                                                |  |  |
| 12 | Health post to population ratio   |                                                |  |  |
| 13 | Physical health service coverage  |                                                |  |  |

## 12. Human resource of the district health office and health facility in 2010EFY (2017/18)

| Sr. no | Type                               | Male | Female | Total |
|--------|------------------------------------|------|--------|-------|
| 1      | Physicians                         |      |        |       |
| 2      | Health officers                    |      |        |       |
| 3      | Laboratory technician/technologist |      |        |       |
| 4      | Pharmacy technician/Pharmacist     |      |        |       |
| 5      | Nurses                             |      |        |       |
| 6      | Midwife                            |      |        |       |

|    |                            |  |  |  |
|----|----------------------------|--|--|--|
| 7  | HEWs                       |  |  |  |
| 8  | HIT                        |  |  |  |
| 9  | X-Ray technician           |  |  |  |
| 10 | Environmental professional |  |  |  |
| 11 | IESO                       |  |  |  |
| 12 | Anesthesia                 |  |  |  |
| 13 | Supportive Staff           |  |  |  |
|    | Total                      |  |  |  |

### 13. Top Ten causes of morbidity and mortality 2010EFY (2017/18)

#### A. Top ten leading causes of OPD visit (morbidity)

| Sr. no | Adult         |        |   | Pediatrics    |        |   |
|--------|---------------|--------|---|---------------|--------|---|
|        | Diseases type | Number | % | Diseases type | Number | % |
| 1      |               |        |   |               |        |   |
| 2      |               |        |   |               |        |   |
| 3      |               |        |   |               |        |   |
| 4      |               |        |   |               |        |   |
| 5      |               |        |   |               |        |   |
| 6      |               |        |   |               |        |   |
| 7      |               |        |   |               |        |   |
| 8      |               |        |   |               |        |   |
| 9      |               |        |   |               |        |   |
| 10     |               |        |   |               |        |   |

#### B. Top ten causes of deaths (mortality).

| Sr. no | Adult         |        |   | Pediatrics    |        |   |
|--------|---------------|--------|---|---------------|--------|---|
|        | Diseases type | Number | % | Diseases type | Number | % |
|        |               |        |   |               |        |   |

|    |  |  |  |  |  |  |
|----|--|--|--|--|--|--|
| 1  |  |  |  |  |  |  |
| 2  |  |  |  |  |  |  |
| 3  |  |  |  |  |  |  |
| 4  |  |  |  |  |  |  |
| 5  |  |  |  |  |  |  |
| 6  |  |  |  |  |  |  |
| 7  |  |  |  |  |  |  |
| 8  |  |  |  |  |  |  |
| 9  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |

#### 14. Vital statistics 2010 EFY (2017/18)

- Under 5-year age \_\_\_\_\_ PNMR \_\_\_\_\_
- IMR \_\_\_\_\_ Live births \_\_\_\_\_
- MMR \_\_\_\_\_ CBR \_\_\_\_\_
- GFR \_\_\_\_\_ CDR \_\_\_\_\_
- CMR \_\_\_\_\_ NMR \_\_\_\_\_

#### 15. MNCH and EPI coverage of the district 2010 EFY (2017/18)

| Sr.<br>no | Description     | Performance |             |   | Remark |
|-----------|-----------------|-------------|-------------|---|--------|
|           |                 | Plan        | Achievement | % |        |
| 1         | ANC 1 coverage  |             |             |   |        |
| 2         | ANC 4 coverage  |             |             |   |        |
| 3         | Skill delivery  |             |             |   |        |
| 4         | PNC             |             |             |   |        |
| 5         | Still birth     |             |             |   |        |
| 6         | BCG coverage    |             |             |   |        |
| 7         | Measles vaccine |             |             |   |        |
| 8         | Pental          |             |             |   |        |

|    |                              |  |  |  |  |
|----|------------------------------|--|--|--|--|
| 9  | Penta3                       |  |  |  |  |
| 10 | PAB                          |  |  |  |  |
| 11 | Fully vaccinated             |  |  |  |  |
| 12 | Contraceptive prevalence     |  |  |  |  |
| 13 | LAFP                         |  |  |  |  |
| 14 | TT2 coverage for pregnant    |  |  |  |  |
| 15 | TT2 coverage for no pregnant |  |  |  |  |

#### 16. Hygiene and environmental health services 2010 EFY (2017/18)

| Sr.<br>no | Description                                     |        |     |
|-----------|-------------------------------------------------|--------|-----|
|           |                                                 | Number | (%) |
| 1         | Number of house hold with latrine               |        |     |
| 2         | Latrine coverage                                |        |     |
| 3         | Safe water supply coverage                      |        |     |
| 4         | Number of Kebeles accessed to safe water supply |        |     |

#### 18. Endemic Diseases

##### A. Malaria prevention and control program of .....District 2010 EFY (2017/18)

| Sr.<br>no | Description                            |       | Number |  |
|-----------|----------------------------------------|-------|--------|--|
| 1         | Number of Malarias' Kebelles           |       |        |  |
| 2         | ITN coverage                           |       |        |  |
| 3         | Coverage of Insecticide chemical spray |       |        |  |
| 4         | Total OPD cases                        |       |        |  |
| 5         | Confirmed cases by<br>RDT/microscope   | PF    |        |  |
|           |                                        | PV    |        |  |
|           |                                        | Mixed |        |  |

|   |                                      |       |  |  |
|---|--------------------------------------|-------|--|--|
| 6 | Cases treated clinically for malaria |       |  |  |
| 7 | Total BF done                        |       |  |  |
| 8 | Cases treated based on lab finding   | PF    |  |  |
|   |                                      | PV    |  |  |
|   |                                      | Mixed |  |  |

### C. Prevalence of TB/Leprosy: 2010 EFY (2017/18)

| Sr<br>No | Description                        |                | Population no. (%) |
|----------|------------------------------------|----------------|--------------------|
| .        | Prevalence of TB                   |                |                    |
| 1        | Pulmonary TB                       | Smear positive |                    |
|          |                                    | Smear negative |                    |
| 2        | Extra PTB                          |                |                    |
| 3        | TB detection rate                  |                |                    |
| 4        | TB Rx completion rate              |                |                    |
| 5        | TB cure rate                       |                |                    |
| 6        | TB Rx success rate                 |                |                    |
| 7        | TB defaulter rate                  |                |                    |
| 8        | Death on TB Rx                     |                |                    |
| 9        | Total TB patients screened for HIV |                |                    |
| 10       | HIV prevalence rate among TB cases |                |                    |
| 11       | Prevalence of Leprosy              |                |                    |

### D. HIV/AIDS 2010 EFY (2017/18)

| Sr<br>No | Activities                | Male | Female | Total | Remark |
|----------|---------------------------|------|--------|-------|--------|
| 1        | Total people screened for |      |        |       |        |
| 2        | VCT                       |      |        |       |        |
| 3        | PICT                      |      |        |       |        |
| 4        | PMTCT                     |      |        |       |        |

|    |                                                  |  |  |  |  |
|----|--------------------------------------------------|--|--|--|--|
| 5  | HIV Prevalence                                   |  |  |  |  |
| 6  | Total PLWHIV                                     |  |  |  |  |
| 7  | On ART                                           |  |  |  |  |
| 8  | Pre ART                                          |  |  |  |  |
| 9  | No of health facilities<br>providing ART service |  |  |  |  |
| 10 | Condom Distribution                              |  |  |  |  |

\*Private Schools E.g. Nursery

Literacy ratio \_\_\_\_\_

### **B. Employment**

- Number of people employed \_\_\_\_\_
- Number of people un employed \_\_\_\_\_
- Ratio of Employed to un employed \_\_\_\_\_

### **19. Health sector expenditure and financing 2006 - 2010 EFY (2017/2018)**

|   | Source                            | 2006 EFY | 2007EFY | 2008EFY | 2009EFY | 2010EF<br>Y |
|---|-----------------------------------|----------|---------|---------|---------|-------------|
| 1 | Total district budget (Birr)      |          |         |         |         |             |
| 2 | Allocated to health sector (Birr) |          |         |         |         |             |
| 3 | Salary for employee (Birr)        |          |         |         |         |             |

\*Name of NGOs which Support the health Sector: \_\_\_\_\_

### **19.1 Health Care financing /HCF/ ( \_\_\_\_\_ to \_\_\_\_\_ EFY)**

| Sr.<br>No | Name of the Health<br>HFs | HCF<br>Started at<br>(EFY) | Budget Allocated (birr) |      |      |      |      |
|-----------|---------------------------|----------------------------|-------------------------|------|------|------|------|
|           |                           |                            | 2006                    | 2007 | 2008 | 2009 | 2010 |

|   |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
| 1 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |

**20. Exempted Health services:**

a/ -----

e/-----

b/-----

f/-----

c/ -----

g/-----

d/ -----

h/-----

**21. Disaster situation in the district 2010 EFY (2015-2016)**

- Was there any disaster (natural or manmade) in the district in the last one year?

Yes (specify) \_\_\_\_\_

No \_\_\_\_\_

- Any recent disease outbreak/other public health emergency?

Yes (specify) \_\_\_\_\_

No \_\_\_\_\_

- If yes cases \_\_\_\_\_ and deaths \_\_\_\_\_

**22. Population screened for malnutrition**

Children \_\_\_\_\_ Moderate Acute Malnutrition-----Severe Acute Malnutrition----

---

Pregnancy \_\_\_\_\_ Moderate -----

**23. Nutrition intervention in ..... district 2009(2016/17)**

| Sr. No | Type of food intervention program |  |
|--------|-----------------------------------|--|
| 1      | OTP sites                         |  |
| 2      | TFU program                       |  |
| 3      | TSF program                       |  |
| 4      | CBN program                       |  |
| 5      | Others                            |  |

**24. What do you think the major Health problems of the district?**

---



---

--

**25.What do you think solutions of the addressed problems**

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---



---

26. What are the main zoonotic diseases in the district?

- A. -----
- B.-----
- C.-----
- D.-----

27. Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc.
28. Discussion of the highlights and the main findings of the health profile assessment and descri

## Annex 5 QUESTIONER FOR IPD IN NORTH DISTRICT TIGRAY

### Background of the woreda-----

1. Date (MM/DD/YY)\_\_\_\_\_
2. Name HHs member interviewed \_\_\_\_\_
3. No of family size \_\_\_\_\_
4. from where displaced? Region \_\_\_\_\_ woreda/town \_\_\_\_\_
5. Current settlement woreda/kebeles \_\_\_\_\_
6. Is there under one children in the house? \_\_\_\_\_
7. No.Of under five children in the house \_\_\_\_\_
8. How many in your household were children less than 2 years old? Number: \_\_\_\_\_
9. How many in your household were 65 years of age or older? Number: \_\_\_\_\_
10. If one or more children are currently living in the household, do you have access to enough diapers and formula for 7 days (if needed)? ☐Yes ☐No ☐Don't Know ☐Ref ☐NA
11. Is anyone in your household pregnant? \_\_\_\_\_
- 11a. If YES, how many? \_\_\_\_\_
- 12.is there lactating women in your family? \_\_\_\_\_
12. Have you shelter for your family? \_\_\_\_\_ if yes what type of shelter? \_\_\_\_\_
13. Have you clothes for you and your family? \_\_\_\_\_
- 14 .Have you rubber sheet or matters for your family? \_\_\_\_\_ -
15. have you food for your families? \_\_\_\_\_
- 16, Have you water supplies for your families? \_\_\_\_\_
- 16a if yes from what source \_\_\_\_\_
17. Is there latrine for your family? \_\_\_\_\_
18. is somebody in your family currently ill? \_\_\_\_\_ if yes who? What type of disease?

19. was somebody your family injured during conflict? \_\_\_\_\_

20. was somebody in your family died during conflict? \_\_\_\_\_

21. was somebody in your family has previously ill? \_\_\_\_\_ if yes what type of disease \_\_\_\_\_

22. is there nearby health facilities or mobile clinic for families? \_\_\_\_\_

23. have you got any support from community or government? \_\_\_\_\_ if yes what kind of support? \_\_\_\_\_

24. Does your household have electricity from the utility company? \_\_\_\_\_

25. Is your household treating your drinking water?

25a. If YES, how is your household treating your drinking water?

1=Boiling 2=Bottled 3=Chemical treatment 4=No treatment 88=other

26. Does anyone in your household need medical care or supplies now? If yes, collect referral information.

27. Can everyone in your household get the medical care and supplies he or she needs?

27a. If NO, what is preventing you/them from getting the medical attention you/they need?

1=Lack of transportation 2=No medical services available 3=Financial reasons 4=Debris or damage roads  
5=Afraid to travel 6=Other: \_\_\_\_\_

28. What is your household's greatest need right now? \_\_\_\_\_

29. Do you want to return back to original place if the problem is solved? \_\_\_\_\_

Data collector name \_\_\_\_\_

Professional \_\_\_\_\_