ADDIS ABABA UNIVERSITY, SCHOOL OF PUBLIC HEALTH

Ethiopian Field Epidemiology Training Program (EFETP)

Compiled Body of Works in field Epidemiology

By

Munira Nasser Hassen

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

31 –May- 2016

Addis Ababa

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Advisor

Mr. Abyot Bekele

Dr. Lucy Boulanger

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Approval by Examining Board

_____ _____

Chairman, School Graduate Committee

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Advisor

_____ _____

Examiner

_____ _____

Examiner

Acknowledgment

First of all I would like to thank Allah the most beneficent and the most merciful, for supporting me all the way. Secondly I would like to give my gratitude for my mentors Mr. Abyot Bekele and Dr. Lucy Boulanger for their continuous guidance, support and constructive inputs in my work. And then, I would like to thank Dr. Adamu Addise, Dr. Alemayehu Bekele and Dr. Daddi Jimma for their constructive comments and contribution during field base supervisions.

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Acronyms/Abbreviations

ACF	Acton Contre La Faim
AFI	Acute Febrile illness
AFRO	African Federation Regional Office
AIDS	Acquired Immuno Defficiency Syndrome
ANC	Anti Natal Clinic
ART	Antiretroviral treatment
AOR	Adjusted Odds Ratio
AWD	Acute Watery Diarrhea
BCG	Bacilus Calmate Gurin
BSc	Bachelor of Science
CDC	Centers for Disease Control and prevention
CFR	Case Fatality Rate
CI	Confidence Interval
COR	Crude Odds Ratio
CTC	Cholera Treatment Center
DRMFSS	Disaster Risk Management and Food Security Sector
EIS	Epidemic Intelligence Service
EPHA	Ethiopian Public Health Association
EPHI	Ethiopian Public Health Institute
EPI	Expanded Program of Immunization
FETP	Field Epidemiology Training program
GIS	Geographic Information System
HEW	Health Extension Workers
HIW	Health Institution Workers
IgM	Immuno globlin M
ITN	Insecticide Treated Net
MCH	Mother and Child Health
MPH	Masters of Public Health
MSF	Médicos Sin Fronteras

NGO	Non Goernment Organizaton
OCHA	Office for the Coordination of Humanitarian Affairs
OPD	Out Patient Department
OPV	Oral Polio Vaccine
OTP	Out patient Treatment Program
PF	Plasmodium Falciparum
PHEM	Public Health Emergency Management
PPE	Personal Protective Equipments
PITC	Provider Initiated Testing and Counseling
PMTCT	Provider Initiated Maternal Testing Counseling and Treatment
PTB	Pulmonary Tuberculosis
PV	Plasmodium Vivax
PVP	Positive Predictive Value
RUTF	Ready for Use Therapeutic Feeding
SAM	Sever Acute Malnutrition
SC	Supplementary Care
SIA	Supplementary Immunization Activity
SNNPR	Southern Nations Nationalities and Peoples Region
STI	Sexually Transmitted Infection
TSF	Treatment with Supplementary Feeding
TSFP	Treatment with Supplementary Feeding Program
TVET	Technical and Vocational Educational Training
UN	United Nations organization
UNECA	United Nations Economic Commission
UNICEF	United Nations Children Emergency Fund
URTI	Upper Respiratory Tract Infection
UTI	Urinary Tract Infection
VIA	Visual Inspection with Acetic acid
WHO	World Health Organization

Executive Summary

The Ethiopian field epidemiology Training Program (FETP) is a two year in service training program in field epidemiology. Adopted from the United States centers for disease control and prevention (CDC Epidemic intelligence service (EIS) program. The program is designed to assist the ministry of health in strengthening health system by recruiting promising health workers and building their competencies through on the job training mentorship and training. The program has two main components. Class room teaching component (25%) and practical attachment of field placement component (75%) completion of the above mentioned two components of residency culminates in final outputs of works which is equivalent to the thesis for the graduate school of public health for partial fulfillment of a masters degree in the field epidemiology.

These out puts of work have nine chapters, which includes report of outbreak investigations, surveillance data analysis, evaluation of a surveillance system, description of a health profile, manuscript , a narrative summary of disaster situation, a proposal for epidemiological research project and another additional output report. In an attempt to complete these outputs of work different methods were used.

Chapter one consists of two outbreak investigations done at 1- Sidama zone chirre woreda of South Nation Nationalities Peoples Region (SNNPR). In 2015 and it was measles outbreak and the second outbreak was Acute Watery diahrea outbreak investigation which was done in oromia Regional states Guji Zone Liben woreda in 2016.

Chapter two consists of is the surveillance Data Analysis Report of Measles which was done in Addis Ababa. It is done in Addis Ababa in 2014.

Chapter three is the Evaluation of the surveillance data on Malaria in Oromia Regional States in Adama town and it is done in 2016.

Chapter four is about the health profile description of Lidetta subcity which is in Addis Ababa and it is done in Addis Ababa Ethiopia in 2014/15.

Chapter five is of about the Manuscript from the surveillance data analysis report of measles in Addis Ababa and it is done in 2016 in Addia Ababa

Chapter six is proposal for epiproject and it is entitled prevalence of cervical C.A. and the Factors associated among clients who come for VIA and cryotherapyi and factors associated in Addis Ababa.

Chapter seven consists of Meher humanitarian and emergency needs assessment which is done in Gurage, Silti, and Hadya Zones of SNNPR and it was done in 2015.

Chapter I: OUTBREAK INVESTIGATION

1.1 Investigation of measles outbreak Chire woreda, SNNPR, Ethiopia 2015

Background

Measles is an acute viral illness caused by a virus in the family paramyxo virus, genus Morbilli virus. It is characterized by a prodrome of fever (as high as 105°F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash. Sidama zone Chire woreda reported measles cases since 26 Dec 2015. And the investigation was conducted to identify the magnitude of the outbreak and to undertake prevention and control interventions [1]. Laboratory investigation was done for five cases and five cases were found to be positive for measles.

Methods

A case was defined as any person with fever and maculopapular rash and cough, coryza, or conjunctivitis or any person in whom a clinician had suspected measles. And controls defined as any person without sign and symptom of the disease. Structured questioner was used to collect data from 40 cases and 80 controls. Patient observation was made at health centers and active cases were searched house to house from 18 Jan 2016 to 19 Jan 2016. Five samples were confirmed by laboratory investigation. Descriptive and case control analysis was conducted using Epi-Info7 and Ms-Excel 2007.

Results

A total of 439 cases (Attack Rate: 1.00%) with 2 deaths case fatality rate (CFR: 0.5%) were reported and the mean age of the cases is 7 years among all identified cases 229(52.2%) were male. Compared to those who had no measles cases in the family, those who had measles cases were more likely to develop measles adjusted odds ratio (AOR= 20.2; 95%CI: 6.69, 61.24). Those cases with moderate malnutrition were more likely to develop measles compared to normal nutritional status (AOR= 4.5; 95%CI: 1.08, 18.70) (Table 6).meaning those who have measles cases in the family has 20times chance of developing measles than those who do not have measles cases in the family on the other hand those who have moderate malnutrition have 4.5 times chance of developing measles

Conclusion

According to the analysis in this investigation shows that having sick person with measles in the family and being moderately malnourished are associated with measles both sexes are almost equally affected and age >15 are not affected by measles compared to the other age groups.
Key words: Measles, Sidama zone, Chire Woreda.

Introduction

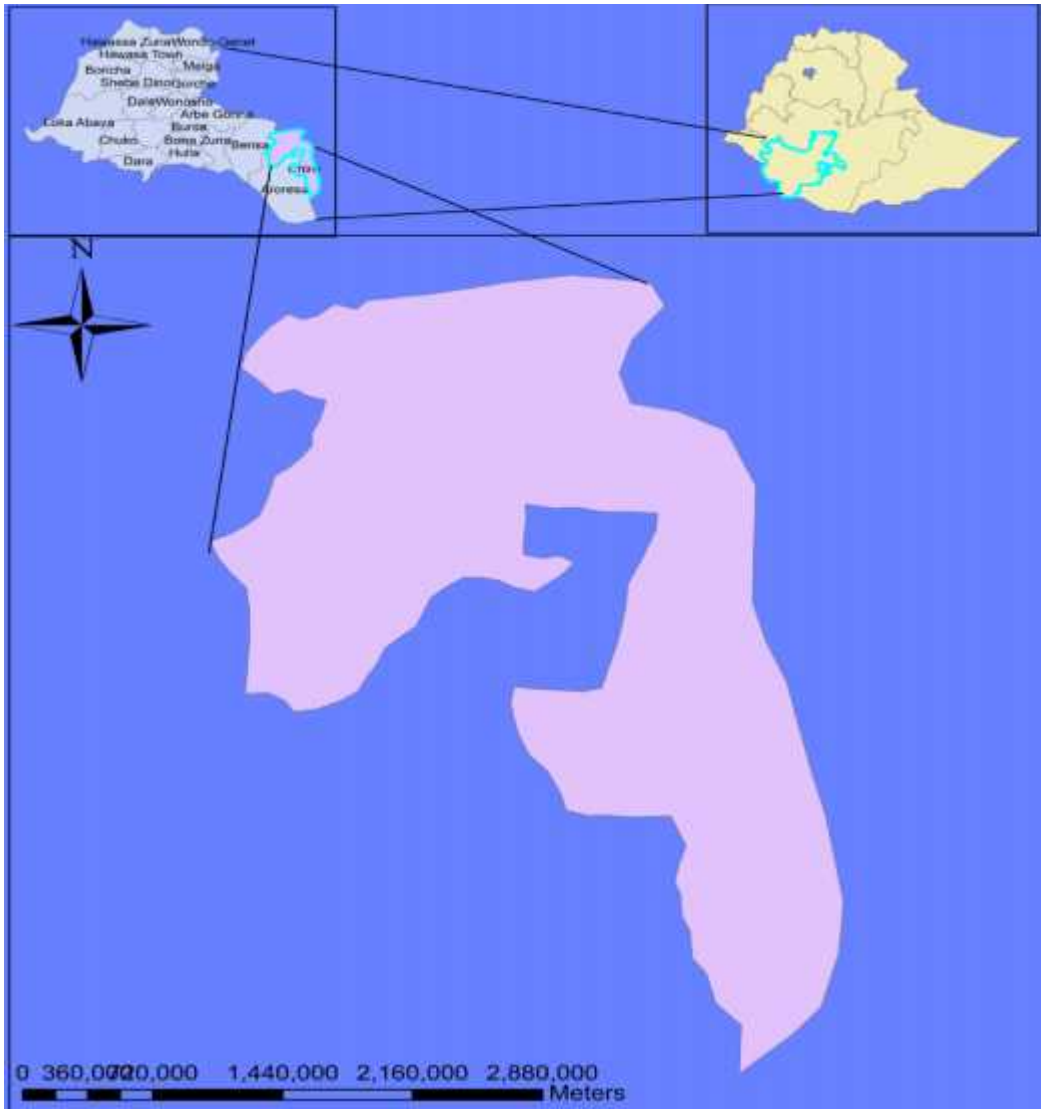
Measles is an acute highly contagious viral disease caused by measles virus. This highly contagious virus is transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the respiratory tract or conjunctiva.

Measles infection presents with a two to four day prodrome of fever, malaise, cough, and runny nose (coryza) prior to rash onset. Conjunctivitis and bronchitis are commonly present. A harsh non productive cough is present throughout the febrile period.

In certain high-risk populations, the disease case-fatality rates as high as 30% have been reported in infants aged less than one year of age. Malnutrition (including vitamin A deficiency), underlying immunodeficiency and lack of access to medical care are all factors leading to the high case fatality rates observed in many parts of the world. In Ethiopia context, the expected case-fatality rate is between 3% and 6%; the highest case-fatality rate occurs in infants 6 to 11 months of age, with malnourished infants at greatest risk. These rates may underestimate the true lethality of measles because of incomplete reporting of outcomes of measles illness [1].

The number of measles cases reported worldwide each year and decreased 73%, from 853,480 to 226,722, and measles incidence decreased 77%, from 146 to 33 cases per million populations per year. Similarly, the number of measles cases decreased by 80%, from 520,102 in 2000 to 106,052 in 2012, and measles incidence decreased 85%, from 841 cases in 2000 to 125 cases in 2012 per million populations in African region [2].

Ethiopia adopted the African regional accelerated measles control strategies to reduce measles mortality in 2002. In Ethopia the expected case fatality rate is between 3% and 6%.{7}. Routine measles vaccination is provided for infants at 9 months of age and a second opportunity for measles vaccination through supplementary immunization activities (SIAs), targeting children aged 6 months –14 years [3].


Hawassa Town
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Boricha
Dale/Wondo
Arbe Gonch
Bursa
Chuko
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Dara
Bensa
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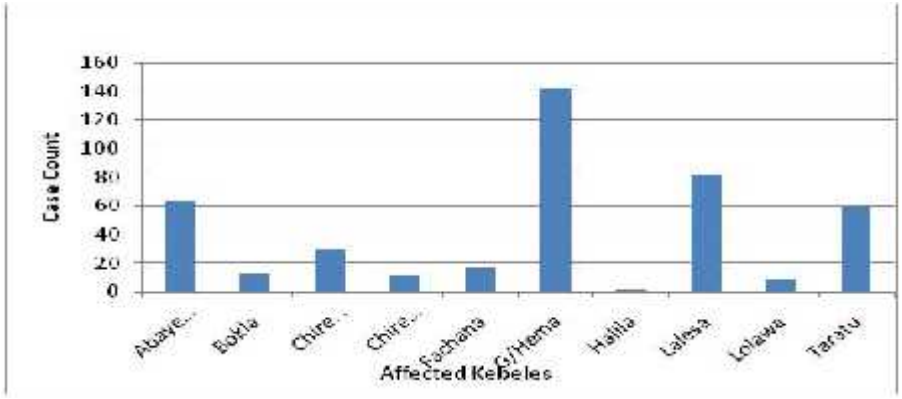
Meters

Methods

Active cases were searched house to house. Case patients were observed and interviewed at health centers. Line list and daily epidemic reporting formats were used. Suspected measles cases were identified from 18-Jan-2016 to 19-Jan-2016 using standard cases definition. A measles case was defined as a person with fever, generalized maculopapular rash and at least one of the following: cough, coryza, or conjunctivitis. A measles death was defined as a death of a measles case-patient within 30 days of rash onset, unless another clearly stated non-related cause existed (e.g., trauma, homicide, etc) [1]. Immunization coverage and other health related data were collected from woreda health office. Discussions were made with districts and zonal multi sectoral epidemic prevention and control committees and daily activities were evaluated. Technical assistance was given for health workers and managers. Line list and WHO AFRO measles surveillance guidelines were used.

Results

A total of 439 cases (Attack Rate: 1.00%) with 2 deaths (CFR: 0.5%) were reported. The first case was reported from Gubo hema kebele on 30 Dec,2015 and gradually spreading to AbayTaka, Bokla, Chire Ballo, Chire kumburuta, Fachana, G/hema, Halila, Lalesa, lollawa and Taratu kebeles of Chire woreda. Of the reported cases 64(55.1%) were from Abay Taka, 13(15.4%) were from Bokla, 30(11.3%) were from Chire Ballo, 12(9.0%) were from Chire kumburuta , 17(9.9%) were from Fachana, 142(4.0%) were from G/hema 2(0.2%) were from Halila 82(18.6%) were from Lalesa 10(2.2%) were from lollawa and 59(13.4%) were from Taratu kebele Currently, 10 of 16 kebeles were affected by the outbreak. Among all identified cases 229(52.2%) were male and 210(47.8%) regarding the age group 193(47.4) are age group1-5, age groups 6-15 are 190(46.7) the rest 24(5.9%) are age groups>15 concerning the vaccine status those who are vaccinated among the cases were 120(27.3%) the unvaccinated were 294(67.6%) the rest 25(5.7) were those whose vaccination status is unknown. The mean age of the cases is 7 years (table 1).



Kebele	Count	Percentage
Abay Taka	64	14.50%
Bokla	13	2.96%
Chire Ballo	30	6.83%
Chire Kumburuta	12	2.73%
Fachana	17	3.87%
G/Hema	142	32.30%
Halila	2	0.45%
Lalesa	82	18.60%
Lolawa	10	2.27%
Taratu	59	13.40%

Socio Demographic Characteristics

Sex	Count	Percent
Male	229	52.20%
Female	210	47.80%
1-5 age group	193	47.40%
6-15 age group	190	46.70%
above 15	24	5.90%
Mean age	7	
Mean date arrival to health facilities	4 days	
Attack Rate	0.3%	
Case Fatality Rate	0.50%	

Table 3: Vaccination status of measles at Chire Woreda

Vaccination Status	Count	Percent
Unvaccinated	294	67.6 %
Vaccinated	120	27.30%
Unknown Status	25	5.70%

Analytical Analysis

17(40.5%) of cases and 21(26.6%) of controls age groups were less than < years old. Among the study subjects 22(52.4%) and 47(59.3%) were cases and controls were male respectively. Concerning educational status 26(61.9.0%) of cases and 26(32.9%) of controls were illiterates. 4(9.5%) of cases and 7(8.9%) of controls were house wives. Family size were reported by 19(46.3%) of cases and 36(45.6.%) of controls were having family size<=5 (Table 4).

Table 4: Adjusted odds ratio of the socio demographic characteristics at Chire woreda

Variables	Cases (N=42)%		Controls (N=79)%		COR
	Number	Percent	Number	Percent	
Age in years					
<5 years	17	40.5	21	26.6	1.7(0.55-5.59)
5-14 years	19	45.2	45	57	0.9(0.30-2.76)
>=15 Years	6	14.3	13	16.5	1:00
Sex					
Male	22	52.4	47	59.5	1.2(0.59-2.71)
Female	19	45.2	32	40.5	1
Educational Status					
Illiterate	26	61.9	26	32.9	3.4(1.09-10.58)*
Primary	11	26.2	36	45.6	1.0(0.31-3.46)
Secondary	5	11.9	17	21.5	1:00
Occupation					
House Wife	4	9.5	7	8.9	2.1(0.53-8.32)
Others	25	59.5	24	30.4	3.8(1.67-8.82)*
Student	12	28.5	48	60.8	1:00
Family Size					
<= 5	19	46.3	36	45.6	1:00
>5	22	53.7	43	54.4	0.9(0.45-2.06)

Table 5: Bivariate analysis of vaccination and nutritional status

Variables	Cases (N=42)%		Controls (N=79)%		COR
	Number	Percent	Number	Percent	
Sick Person in family					
Yes	25	85.7	20	25.3	14(6.49-48.21)*

No	6	14.3	59	74.7	1:00
Vaccination					
Yes	12	28.6	42	53.2	1:00
No	30	71.4	37	46.8	2.8(1.27-6.32)*
Number of vaccine doses					
Zero dose	25	64.1	34	43.6	2.3(1.04-5.10) *
>= one dose	14	35.9	44	56.4	1:00
Nutritional status					
Moderate	11	26.2	6	7.6	4.3(1.46-12.71)*
Normal	31	73.8	73	92.4	1:00

The final model was constructed using backward binary logistic regression method. All variables which had shown statistically significant association during chi-square analysis such as presence of sick person in the family, vaccination status, number of vaccine received, nutritional status, educational status and occupation were included. However, on multivariate backward binary logistic regression analysis, out of these six independent variables only presence of sick person in the family and nutritional status were found to be independent predictors for the occurrence of measles.

Compared to those who had no measles cases in the family, those who had measles cases were more likely to develop measles (AOR= 20.2; 95%CI: 6.69, 61.24). Those cases with moderate malnutrition were more likely to develop measles compared to normal nutritional status adjusted odds ratio (AOR= 4.5; 95%CI: 1.08, 18.70) (Table 6).meaning those who have measles cases in the family has 20times chance of developing measles than those who do not have measles cases in the family on the other hand those who have moderate malnutrition have 4.5 times chance of developing measles.

Table 6: Backward binary logistic regression (AOR) of measles outbreak in Chire woreda

Variables	Cases (N=42)%		Controls (N=79)%		COR	AOR
	Number	Percent	Number	Percent		
Sick Person in family						
Yes	25	85.7	20	25.3	14(6.49-48.21)*	20.2(6.69-61.24)*
No	6	14.3	59	74.7	1:00	
Nutritional status						

Moderate	11	26.2	6	7.6	4.3(1.46-12.71)*	4.5(1.08-18.70)*
Normal	31	73.8	73	92.4	1:00	

Discussion

The study reviled in the descriptive analysis that out of the 439 cases 229(52.2) are males and 210(47.8) are females this shows that there is no significant difference among both sexes. There are two deaths reported and the case fatality rate is 0.5% which is consistent with the case fatality rate in the guideline [1]. Among the age groups Regarding 1-5 and 6-15are almost equally affected 47.4and46.7 respectively and the rest 24(5.9%)>15 which tells as age groups age groups were the vaccination status of the cases were 120(27.31) were vaccinated for measles and 294(67.6) were not vaccinated. Those whose vaccination status were 25(5.7%) this shows that more than half of the cases were not vaccinated .this does not much with the vaccine coverage of the Woreda which is reported as 97% this may be due to over reporting of the coverage, poor cold chain maintenance resulting in vaccine failure .The mean age of the cases is 7 years.

Multivariate analysis in the back word binary logistic shows that those who had measles cases in the family compared to those who have measles cases in the family are more likely to develop (AOR=20.2:95%C.I;6.69-61.4) and this means that those who have sick person in the family have a 20.2 times chance of getting measles .The other variable is nutritional status in which (A.O.R=4.5:95% C.I;1.08-18.70) this means that those who have moderate malnutrition are having 4.5 times chance of getting measles . This also matches with the researches that say nutritional status is one of the factors related with acquiring measles [2].

Conclusion:

According to the analysis in this investigation shows that having sick person with measles in the family and being moderately malnourished are associated with measles both sexes are almost equally affected and age >15 are not affected by measles compared to the other age groups.

Recommendation

1. Supplementary immunization activities should be enhanced up to age groups 15.
2. Surveillance system should be strengthened.
3. Awareness creation should be done about isolation of active cases and minimizing contact.
4. Active case search and treatment must be strengthened

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1. Robert T Perry, Marta Gacic Dobo ,Alya Dabagh ,Mick N.Mulders ,peter M. Strebel, ean-Marie OKwo –Bel et al. Global Control and Regional Elimination of Measles ,2000-2012.
2. EHNRI, guideline on Measles surveillance and outbreak management, 3rd edition.

Annex 1: Measles Outbreak Investigation Questionnaire

Case status: 1. Case 2. Control

Name_____

Date of Data collection_____

Address_____

Dormitory number_____

Birth place: _____

1. Socio-demographic Characteristics

S/N	Question	Alternatives
1.1	Sex	1.Male 2.Female
1.2	Age	Years____ Month_____
1.3	Occupation	1. Farmer 2.House wife 3.Student 4.Unemployed 5. Daily laborer 6.Merchant 7. Government 8.Others(specify)
1.4	Educational level	1. Illiterate 2.Read & write 3. Elementary 4.Secondary 5. College and above
1.6	Religion	1. Orthodox 2. Muslim 3. Catholic 4. .Protestant 5. Other

2. Clinical presentations

2.1	What were the sign and symptoms	1.Fever 2.Rash 3.Cough 4.Coryza(runny nose) 5. Red /watery eyes 6. Small white spots inside the cheeks 7. Malaise 8.Sore throat
2.2	Date of onset of fever	___/____/____
2.3	Date of onset of rash	___/____/____
2.4	Duration of rash	

2.5	Location where rash started?	
2.6	Date seen at health facility	___/____/____
2.7	Did you/he/she take treatment?	1. Yes 2. No
2.8	If Yes, treatment taken	1.ORS 2.Antibiotics 3.Vitamin A 4.TTC ointment 5. Anti pyretic
2.9	Admitted	1. Yes 2. No
2.10	If admitted to the hospital Date of admission	___/____/____
2.11	Complications	1.Pneumonia 2.Ear infection 3. Diarrhea 4. Encephalitis Others_____
2.12	Outcome of the patient	1 Alive 2. death

3. Risk factor

3.1	Did You ever vaccinated for measles?	1.Yes 2.No
3.2	If yes last vaccination date	1._____/_____/___ by card 2._____/_____/____ by history
3.3	Number of vaccine doses received	1. One dose 2. Two dose 3. Above 3
3.4	Did you ever have measles infection?	1. Yes 2. No 3. Unknown
3.5	Is there any sick person with rash, Fever, running nose or conjunctivitis visited you or in the dormitory/class within last 3 weeks	1. Yes 2.No
3.6	If Yes , number of sick person	_____
3.7	Do you have any travel history 10 days before rash onset?	1. Yes 2. No 3.If yes where
3.8	Do you have any contact history with sick person before 10 days of onset of rash	1.Yes 2.No If yes, when?
3.9	If yes for Qe.3.8 with whom	1. school friends 2.Ward with same case 3. Market 4.other specify
3.10	Do you know modes of transmission for measles?	1.Yes 2.No
3.11	How many people sleeping together? In dorm	_____

3.12	Where do you go first if you get ill for measles?	1. Health facility 2. Traditional Healer 3. Holy water 4. Stayed at home 5. other specify
3.13	If answer for Q 3.12 other than health facility,	Why?
3.14	How do you think people get measles?	1. Contact sick person 2. Wrath of God 3. Curse of other people 4. Other specify
3.15	Do you know measles is vaccine preventable?	1.Yes 2.No
3.16	Who do you think that can be affected by measles?	1.Children of aged less than 5 years 2. Children of aged less than 18 years 3.Women of any age 4. Any age group
3.17	Do you think medical treatment can cure measles?	1.Yes 2.No
3.18	When do you go to health facility if get ill for measles	1. Immediately 2. After a week

1.2 Acute Watery Diarrhea outbreak Investigation, Liben Woreda, Guji zone, Oromia, Ethiopia 2016

Abstract

Cholera is a diarrheal disease caused by infection of the intestine with the gram-negative bacteria Vibrio cholerae, either type O1 or O139. Both children and adults can be infected. It is one of the key indicators of social development and remains a challenge to countries where access to safe drinking water and adequate sanitation cannot be guaranteed [1]. Cholera is usually transmitted through fecal contamination of water or food and remains an ever-present risk in many countries. New outbreaks can occur sporadically in any part of the world where water supply, sanitation, food safety, and hygiene are inadequate. The greatest risk occurs in over-populated communities.

Methods

Descriptive study was done using medical record reviewing and house to house case search was made and line list was used 57 cases were obtained from guji zone liben woreda from 3April-13April 2016. cases were defined as 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, or In an area where there is a cholera epidemic, a patient aged 2 years or more develops acute watery diarrhea. A confirmed case is a person in which vibrocholera is detected in his stool. Microsoft office excel 2007 was used to analyze the data. Arc GIS information also obtained.

Results

We obtained 57 acute watery diarrhea cases. 15 kebeles of Guji zone liben were affected. Of the cases 29(50.9%) cases were male while the rest 28 (49.1%) were female. Crude attack rate was 0.05%. In which is the attack rate was (0.028%) in male and (0.027%) in female. All cases were inpatient 56(98.2%) except one 1(1.8%) and there was one death and the case fatality rate was (1.75%) Among the kebeles affected by the disease lege gula reports 15(26.3%) which is the highest. All cases were treated as an outpatient except one and all of the cases were having dehydration except one. Adult's age groups 15-45 are most affected and children less than five are less affected. From this study we can concluded that adults are more affected than children.

Conclusion

Adult's age groups 15-45 are most affected and children less than five are less affected. From this study we can concluded that adults are more affected than children. And the disease results in dehydration and death. Also, both sexes are equally affected by AWD.

Introduction

Cholera is acute, secretory diarrhea caused by infection with Vibrio cholerae of the O1 or O139 sero group. It is endemic in more than 50 countries and also causes large epidemics. Since 1817, seven cholera pandemics have spread from Asia to much of the world. The seventh pandemic began in 1961 and affects 3–5 million people each year, killing 120 000. Although mild cholera can be indistinguishable from other diarrhea it is endemic in many areas of Asia and Africa. In Asia, cholera occurs seasonally before and after the monsoon rains, the incidence is highest endemic in more than 50 countries and also causes large epidemic. Cholera occurs in both endemic and epidemic patterns. It in children and the disease can occur in neonates [2].

Cholera epidemics arise in a long cycle superimposed on existing endemic disease. This pattern relates to declining levels of population-level immunity from a previous outbreak, overlaid on cycles of climate variability In the past decade, devastating epidemics of cholera have occurred in Angola, Ethiopia, Zimbabwe, Pakistan, Somalia, Sudan, Vietnam, and Haiti. Among immunologically native populations, cholera affects all age groups, and epidemics can be associated with high case-fatality rates. This pattern was recorded in Haiti, where cholera had been notably absent before decade, devastating epidemics of cholera have occurred Sudan, Vietnam, and Haiti. Among immunologically in Angola, Ethiopia, Zimbabwe, Pakistan, Somalia, cholera affects all age groups, and epidemics can be associated with high case-fatality rates. This pattern was recorded in Haiti, where cholera had been notably absent before 2010Cholera occurs in both endemic and epidemic patterns. It is endemic in many areas of Asia and Africa. In Asia, cholera occurs seasonally before and after the monsoon rains, 3 the incidence is highest in children, and the disease can occur in neonates arise in a long cycle superimposed on existing endemic disease. This pattern relates to declining levels of population-level immunity from a previous outbreak, overlaid on cycles of climate variability. In the past decade, devastating epidemics of cholera Sudan, Vietnam, and Haiti.35 Among immunologically naive populations, cholera affects all age groups, and epidemics can be associated with high case-fatality rates. This pattern was recorded in Haiti, where cholera had been notably absent

before 2010, Cholera occurs in both endemic and epidemic patterns. It is endemic in many areas of Asia and Africa. In Asia, cholera occurs seasonally before and after the monsoon rains [3]. The incidence is highest in children, and the disease can occur in neonates. Cholera epidemics arise in a long cycle superimposed on existing endemic disease. This pattern relates to declining levels of population-level immunity from a previous outbreak, overlaid on cycles of climate variability. In the past decade, devastating epidemics of cholera have occurred in Angola, Ethiopia, Zimbabwe, Pakistan, Somalia, Sudan, Vietnam, and Haiti.

Among immunologically naive populations, cholera affects all age groups, and epidemics can be associated with high case-fatality rates. This pattern was recorded in Haiti, where cholera had been notably absent before 2010 refugee settings characterized by poor sanitation, unsafe drinking-water, and increased person-to-person transmission. As the incubation period of cholera is very short (2 hours to 5 days), the number of cases can rise extremely [4], In general cholera is an acute enteric disease characterized by the sudden onset of profuse painless watery diarrhea or rice-water like diarrhea, often accompanied by vomiting, which can rapidly lead to severe dehydration and cardiovascular collapse[3]. In Nigeria since the appearance of epidemic choler in 1972, intermittent outbreaks have been occurring .The latter part of 2010 marked resulting with 3000 cases and 781 deaths. Cholera infection rate sex and seasonality are not constant [5].

Methods

Investigation Area: Liben Woreda is one of the 16 Woreda of Guji Zone which is pastoralist Woreda The Woreda weather Condition is Desert and Total rainfall in Average 500-750mm annually It is found in south west of Guji Zone, boarded by to the North with Bale Zone, South West with Borena zone South east with Somali regional state, to the West Goro Dola Woreda. Woreda GPS Location East= E39 deg 001 to 40deg.001.8 North=N401 to 5deg 451. Negele is the capital city of the Woreda (Negele is also Capital City of Guji Zone) which is located 610 KM from Addis Ababa. The total population of the Woreda is 100,916 having 17 rural Kebeles and 1 Urban administrations Totally 18 kebels.

Liben Woreda have 4 Health Centers and 18 health Posts with potentials health coverage of 86%.These health facilities are staffed with 8 health officers 38 nurses 7 mid wives HEW (health institution workers) Urban-2 and 72 rural Total 74 health extension workers.

Administrative Map of Liben Woreda kebeles

Adminstrative Map of Guji Zone Woredas

Administrative Map of Ethiopia

identified from 3-Apr-2016 to 13-Apr.-2016 using standard cases definition of AWD in different kebeles of Guji zone Liben woreda. Vaccine cold chains were also assessed. Discussions were made with districts and zonal multi sectoral epidemic prevention and control committees and daily activities were evaluated. Technical assistance was given for health workers and managers. Line list and WHO (world health organization) cholera surveillance guidelines were used.

AWD Case Definition

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 a 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 any person whose age is 5 years or more with profuse acute watery diarrhea and vomiting.

Confirmed case: A suspected case in which Vibrio cholerae O1 or O139 has been isolated from their stool.

Descriptive

We assessed and reviewed medical records. Group discussions were conducted with health personnel working at each visited health centers and Liben hospital. Direct patient interview was conducted with some of the patients. We evaluated information concerning any recent change in the case definitions, reporting situations and laboratory diagnosis tools and population size.

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 a cholera epidemic, a patient aged 2years or more develops acute watery diarrhea, with or without vomiting [2].

We searched for suspected cases in the community and health care facilities. We described the outbreak over time by date of onset. We calculated the attack rate by sex, age and place from 3 May 2016 to 13May 2016

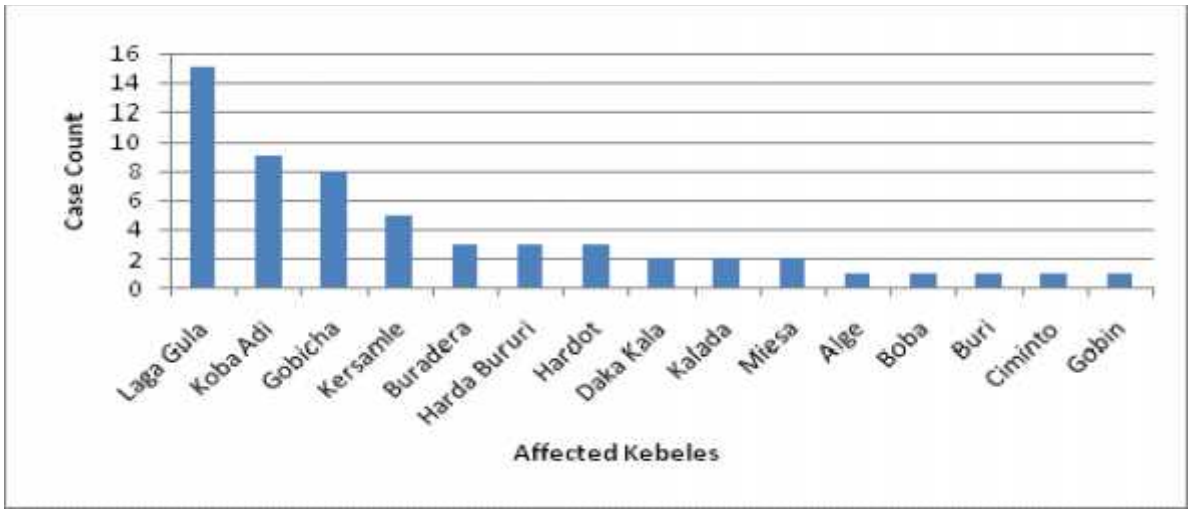
Analytical study

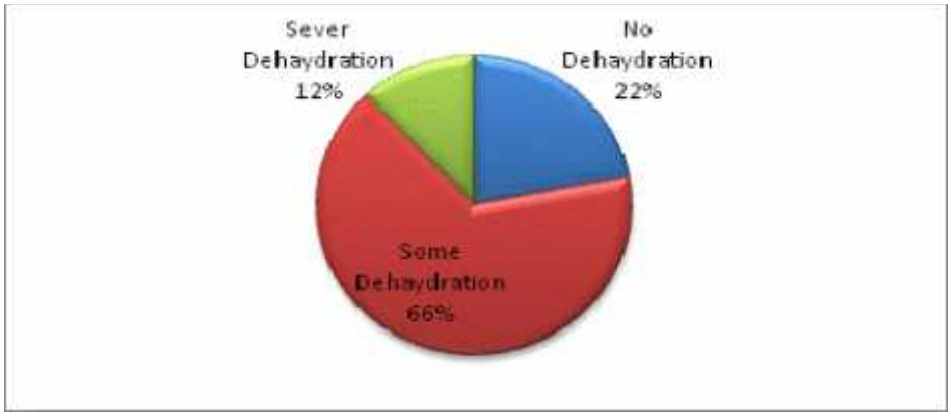
We conducted analytical observational unmatched case control study (1:2). A suspected case is any person in whom Vibrio cholerae O1 or O139 has been isolated from their stool we designed a structured questionnaire that addresses possible exposures for those cases. We identified study subjects at CTC (cholera treatment centers) and community using convenience sampling methods. We gave oral consent for study subjects. We interviewed 50 suspected cases and compared with 100 controls subjects from the same population of the same characteristics except history of having AWD. We calculated odd ratio and 95% confidence intervals using Epi Info version 3.5.1.

Environmental Investigation: We assessed latrine site Water sources for drinking checked. We obtained information on source of drinking water. We asked site populations about hand washing practices and waste management.

Results

Descriptive analysis: We identified 57 acute watery diarrhea cases. 15 kebeles of Guji zone Liben were affected. Of the cases 29(50.9%) cases were male while the rest 28 (49.1%) were female. Crude attack rate was 0.05%. In which is the attack rate was (0.028%) in male and (0.027%) in female. Males and females were almost equally affected. All cases were inpatient 56(98.2%) except one 1(1.8%) and there was one death. Among the kebeles affected by the disease Lagagula reports 15(26.3%) kobadi 9(15.7%) Gobicha 8(14.0%) kersa male 5(8.7%) Buradera, Harda Bururi, and Hardot reported 3(5.2%) cases for each kebele Daka Kala, Kalada and Miesa reported 2(3.5%) for each kebele Algae, Boba, Buri, Ciminto and Gobin) reported 1 (1.7%) for each kebele.





Age Group	Count	%
1 up to 4	1	1.80%

5 up to 14	15	26.30%
15 up to 44	30	52.60%
above 45	11	19.30%

Discussion

The study reviled that both sexes are almost equally affected by AWD which is supported the studies [2]. regarding place of treatment almost all 56(98.2) were inpatient cases and the rest 1(1.8%) was treated as an outpatient this shows the seriousness of the disease. when we compare the age groups in 5-14 (26.3%) with age group 15-44(52.6%) age group 15-44are affected twice than the age groups 5-14. Compared to age groups 45 and above age groups age groups 15-44 are three times affected than age groups 45 and above and there is only one case among age groups 1 -4 is only which shows under five children are less affected by AWD in this study even those it is less in uder5 the disease affects all age groups. Why adults are more affected may be because this age groups move from place to place for different purposes like work, social issues and community gatherings like markets, mosques and churches. Regarding the level of dehydration, 12% of the cases have some dehydrations, 22% have no dehydration and 66% of the cases developed some dehydration so there is difference in degree of t almost all the cases had dehydration this is shows that acute watery diarrhea results in dehydration [2] and the case fatality rate 1(1.75%) indicates that the disease can also result in death with high case fatality rate if not treated will result in death [3].

Intervention

In response to this outbreak there was a multisectorial committee formed from WHO , UNICEF, wash committee and the woreda and zonal administrations and health offices. There were meeting on daily

The team was evaluating the CTC cites and was having discussion with community and religious leaders .they also worked on awareness creation on hand washing and water treatment, latrine usage and waste management and also active case search was made.

Conclusion

- From this study we can concluded that adults are more affected than children.

- The disease results in dehydration and death
- Both sexes are equally affected by AWD

Recommendation

- Awareness creation on hand washing and toilet practices etc should be strengthened.
- Contacts should be avoided as much as possible in order to limit the disease in the affected kebeles since the people are nomadic the epidemic may affect other neighboring kebeles.
- Case management also should continue as early as possible.
- Surveillance should also be strengthened.

Recommendation

1. Aggressive case finding and efficient transport system has to be done
2. Set up has to be ready for remote areas.
3. Epidemic surveillance should be strengthened.
4. Strengthen control and prevention methods.
5. Awareness creation by simple health education messages that include eat freshly cooked food, reheat left over and eat while still hot, drink clean tap water or boiled water, wash utensils in clean water and dry them, Wash hands before handling or eating food and after deification.

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Annex 2: AWD outbreak assessment questionnaire

A. Socio-demographic information:

1. Age:_____

2. Sex: M / F_____

3. ID number: _____

4. Address: Region _____Zone_____

Woreda _____Sub Kebele_____

5. House Hold size_____

6. Head of house hold 1. M--------2.F--------

B) Clinical Picture/illness information: circle and fill the correct response given by respondent

7. Have you get ill with Diarrhea in the past 1 month? 1. Yes------ 2. No------. (If No skip to Q part C)

8. If yes to Q7, Date of onset of diarrhea__

9. When do you have diarrhea and what was the episodes/24hours_____

1. Less than 4 times------ 2.>=4 times-----

10. If yes, to Q9 type of diarrhea?

1. Bloody--- 2. Watery---- 3. mucoid--------

11. What are other symptoms of the disease?

a) Abdominal cramp: 1.Yes------ 2. No-----

b) Vomiting: 1.Yes------ 2. No------.

c) Fever: 1.Yes------ 2. No------.

d) Lethargy/altered consciousness: 1.Yes--2. No----

e) Headache: 1.Yes___ 2. No-----

12. Did you visit Health facility 1.Yes----- 2.No------ if yes ,Date of Health facility visit (DD MM YY) _____

13. Did you get any treatment 1.Yes----2. No--

14. If yes: what was given? 1. ORS---2.IV Fluid--- 3. Antibiotic-----

15. Did you recover completely after the mentioned treatment: 1.Yes--- 2. No--

C. Source of drinking water information

16. What is your source of drinking water?

1. Tap water----

2. Self Birka-----

3. Private-commercial birka---

4. River----

5. Spring-----

6. Others-----

17. If Birka, indicate the source of water for the self (private) birka ----------

18. What was the source of drinking water during the last 20 days for your birka in the past 1 month? -1.Gov---- 2.privet---- 3.donkey carry-----

19. How many litters/barrel are you fetching water for the birka to fill once? ------- litters/barrel

20. For how long do you use the above mentioned amount of water ____ days

21. What do you use to fetch drinking water from your birka_____

22. Do you have separate container to keep water for drinking in your house?

1. Yes------- 2. No----------

23. If yes to Q 24, does it have cover 1.Yes--- 2.No------

24. Do you treat the water for drinking 1.Yes------ 2.No--------

25. If Yes for Q 24, when did you start treating water

1. After the illness of your family----- 2. Before the illness of your family------

26. How often do you use treated drinking water 1. Sometimes-----2.Always---------

D. Latrine use:

27. Do you have a latrine in you compound? 1.Yes------2.No---------

28. If yes to Q 27 type of latrine available for you" 1.Pit latrine------ 2.Flash toilet------ 3. Others(mention)_____

29. Is there facility for hand washing at the latrine site? 1.Yes------2.No -------

30. Do you wash your hands,

30.1. After toilet 1. Yes ---- 2. N0_____

30.2. After cleaning the bottom of children

Yes ---- 2. N0_____

30.3 Before eating food. 1. Yes ---- 2. No-

30.4 Before cooking foods 1. Yes -- 2. No-

31. If yes: how often do use it: 1. Always-----2.Sometimes------ 3.Never----------

32. Do you use soap/detergent to wash your hands after toilet? 1. Yes----- 2. No--

33. If yes; how often do you use? 1. Always-- 2. Sometimes----- 3. Others----------

34. Where do you dispose wastes?

1. Open field ----- 2. Bore hole-----

3. Burning/Burring-------4 others /specify/----------

E. Contact history:

35. Is there any sick person with diarrhea in your household? 1.Yes------ 2. No------

36. If yes, to Q24, what action did you take?----------

37. Did you eat outside your home in the past 5 days before your illness? 1.Yes------ 2. No------.

38. Did you have similar illness previously? 1.Yes------ 2. No------. If yes when?------

Knowledge and practice

39. Have you heard about the diarrhea outbreak in this town recently? 1.Yes---- 2. No--

40. Did you know the disease has medicine to cure? 1.Yes------ 2. No------.If yes, list out ----------

41. Where do you take sick person? --------

42. How fast are you supposed to take diarrhea patients to hospital? ----------

43. Do you know mode of transmission for diarrhea? 1. Yes------ 2. No------

44. If yes, to Q43 list_____

CHAPTER II: SURVEILANCE DATA ANALYSIS REPORT

2.1 Measles surveillance Addis Ababa, Ethiopia 2005-2014

Abstract

Introduction: Measles is an acute viral illness caused by a virus in the family paramyxo virus, genus Morbilli virus. It is characterized by a prodrome of fever (as high as 105°F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash. The number of measles cases reported worldwide each year and decreased 73%, from 853,480 to 226,722, and measles incidence decreased 77%, from 146 to 33 cases per million populations per year. Similarly, the number of measles cases decreased by 80%, from 520,102 in 2000 to 106,052 in 2012, and measles incidence decreased 85%, from 841 cases in 2000 to 125 cases in 2012 per million population. The aim of our retrospective data analysis was to determine the trend and incidence of measles cases in the Addis Ababa.

Methods:

Results: From 2005-2014, a total of 4,203 suspected measles cases with 2 deaths (CFR: 0.05%) were reported from ten sub cities of Addis Ababa. Among them, 1,154 (27.5) were laboratory confirmed cases, 512 (12.2%) were clinically compatible cases, 52 (1.2%) were epidemiologically linked with laboratory confirmed cases and the rest 2,485 (59.1%) cases were negative for measles IgM. Among the total cases, 2129 (50.7%) were male and 2074 (49.3%) female. Median age of case-patients was 5 years and inter quartile range was 3–10 years. The annual suspected measles cases incidence rate was 14.5 per 100,000 populations, which was 60.0 among less than one year age, followed by 42.1 among children from 1-4, 18.7 among 4-14 years, 5.3 among 15-44 and 0.2 among 45 years and above. The non measles rash cases increased from 3. We officially request and received 10 years (2004-2014) Addis Ababa's Measles surveillance data from Ethiopian Public Health Institute (EPHI). Data clearance was carried out and checked for any duplication by patient name, sex, age, residence area, date of onset, date seen at health facility and date sample collection. Data is categorized by age and vaccination status analysis. A retrospective descriptive data analysis was carried out by time, place and person variables. Crude and specific Incidence rates were calculated per 100,000 population using Microsoft Excel 2010. To make the incidence rate annualized the average of 10 years data was divided by mid population and projected to 100,000.4 in 2009 to 16.9 in 2012 per

100,000 populations having an average of 8.6 annualized non measles rash cases in ten years. Of the total suspected measles cases 1,151 (28%) were took one dose of measles vaccine, 397 (9%) were took two measles vaccine doses, 11 (3%) took 3 and above measles vaccine doses while the vaccination status of 1,989 (47%) suspected cases were not known and the rest 555 (13%) were not vaccinated against measles antigen.

Conclusion

The increment of measles incidence rate from 2004 to 2014 may be attributed to the increment of measles surveillance sensitivity throughout the years. The incidence is high in lower age groups and decreasing across the higher age groups. Males and females were almost equally infected. As Addis Ababa is accessible for all health care services all children should be vaccinated against measles antigen. Surveillance data quality should be improved to avoid unknown measles vaccination status.

Key word: Measles, Vaccination Status, Incidence rate, Addis Ababa, Ethiopia,

Introduction

Measles is an acute viral illness caused by a virus in the family paramyxo virus, genus Morbilli virus. It is characterized by a proteome of fever (as high as 105°F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash. The rash usually appears 14 days after exposure and spreads from head to trunk to lower extremities (1).

The number of measles cases reported worldwide each year and decreased 73%, from 853,480 to 226,722, and measles incidence decreased 77%, from 146 to 33 cases per million populations per year. Similarly, the number of measles cases decreased by 80%, from 520,102 in 2000 to 106,052 in 2012, and measles incidence decreased 85%, from 841 cases in 2000 to 125 cases in 2012 per million population in African region [2].

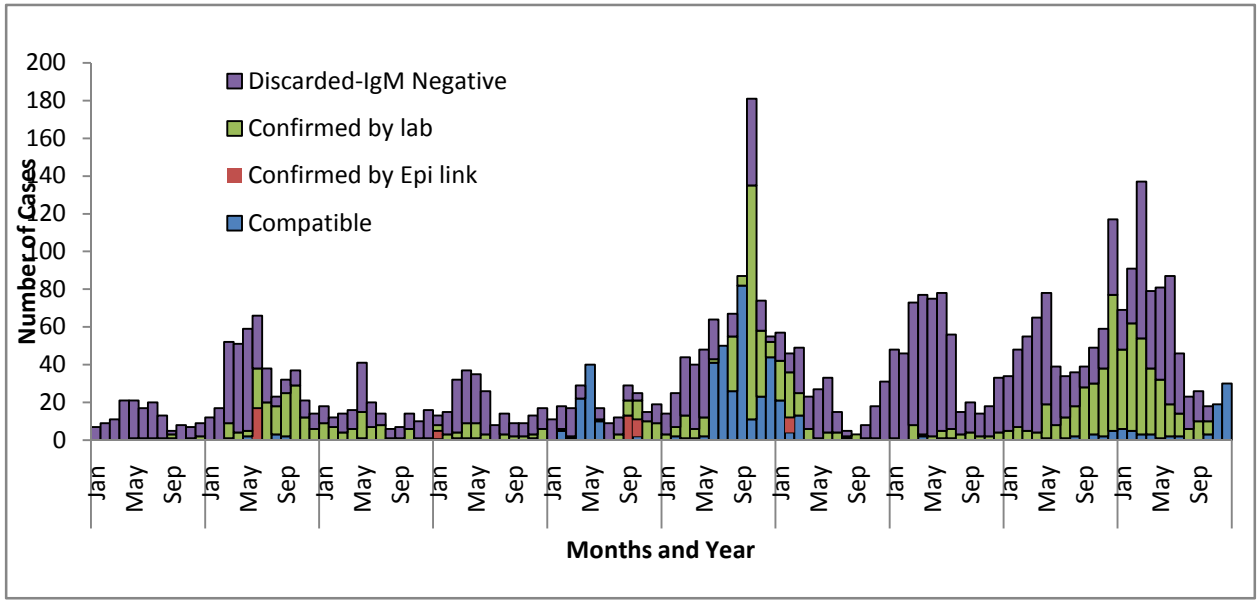
Ethiopia adopted the African regional accelerated measles control strategies to reduce measles mortality in 2002. Routine measles vaccination is provided for infants at 9 months of age and a second opportunity for measles vaccination through supplementary immunization activities (SIAs), targeting children aged 6 months–14 years [3, 4]. The aim of our retrospective data analysis was to determine the trend and incidence of measles cases in the Addis Ababa.


North Shewa(R4)
West Shewa
Oulele
Yeka
Addis Kerelma Arada
Kolfo - Keran
Lideta
Kirkos
Bole
Addis Ababa
Nefas Silk
Akaki - Kaliti
South West Shewa
East Shewa
Legend
Zones of Oromia Region selection
Addis Ababa Boundary
Addis Ababa Subcity Boundary

We officially request and received 10 years (2004-2014) Addis Ababa's Measles surveillance data from Ethiopian Public Health Institute (EPHI). We defined suspected measles cases as any person with fever and maculopapular (no vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) OR any person in whom a clinician suspects measles: We also further classified the suspected measles cases collected through surveillance into four categories as per the national guideline (B). 1) Laboratory confirmed measles cases: Is a suspected measles cases which has laboratory results indicating measles IgM positive. 2) Epidemiologically linked measles case: A suspected measles case that has not had a specimen taken for serologic confirmation and is linked (in place, person and time) to a laboratory confirmed case; i.e., living in the same or in an adjacent district with a laboratory confirmed case where there is a likelihood of transmission; onset of rash of the two cases being within 30 days of each other. 3) Discarded measles case: is a suspected measles case which, upon adequate investigation that includes a blood specimen collected in the appropriate time frame, lacks serologic evidence of a measles virus infection. A person received one dose of MCV1 is considered as vaccinated against measles antigen. Data clearance was carried out and checked for any duplication by patient name, sex, age, residence area, date of onset, date seen at health facility and date sample collection. Data is categorized by age and vaccination status analysis. The 2007 population census projection was used to calculate incidence rates. A retrospective descriptive data analysis was carried out by time, place and person variables using graphs and tables. Crude and specific incidence rates were calculated per 100,000 population using Microsoft Excel 2010. To make the incidence rate annualized the average of 10 years data was divided by mid population and projected to 100,000. Furthermore Arc Geographic Information System (GIS) version 10.2 was used to show study area.

Results

From 2005-2014, a total of 4,203 suspected measles cases with 2 deaths (CFR: 0.05%) were reported from ten sub cities of Addis Ababa. Among them, 1,154 (27.5) were laboratory confirmed cases, 512 (12.2%) were clinically compatible cases, 52 (1.2%) were epidemiologically linked with laboratory confirmed cases and the rest 2,485 (59.1%) cases were negative for measles IgM (Figure 4 and Table 8). Majority of the cases, 3,875 (92.2%) were outpatient consults and 326 (7.8%) were inpatient. Measles cases were almost equally distributed between male and female, 2129 (50.7%) and 2074 (49.3%) respectively which makes Male to



Year	Total Cases	Confirmed by lab	Epi linked	Compatible	Discarded	Incidence	Non Measles Rash Rate	Median	IQR
2005	148	6	0	4	138	5.6	5.2	5.0	3-6
2006	422	141	17	8	256	15.7	9.6	5.0	3-9
2007	188	65	0	1	122	6.9	4.5	5.0	3-8
2008	228	43	4	5	176	8.2	6.3	4.0	3-7
2009	241	43	22	80	96	8.4	3.4	5.5	3-9
2010	749	238	0	283	228	25.7	7.8	5.0	2-12
2011	315	77	8	40	190	10.6	6.4	4.5	2-10
2012	553	36	0	4	513	18.2	16.9	5.0	4-9
2013	653	237	0	14	402	21.1	13.0	6.0	3-12
2014	706	268	1	73	364	22.3	11.5	6.0	4-12
Total	4203	1154	52	512	2485	14.5	8.6	5.0	3-10

Table 9: Measles incidence per 100,000 population by Age Group, Addis Ababa, 2005-2014

Region	<1	1-4	5-14	15-44	44+	Total
Addis Ketema	55.1	32.2	15.5	3.4	-	11.4
Akaki Kaliti	44.3	35.9	23.1	7.8	-	15.8
Arada	60.6	46.4	25.9	5.1	-	17.2
Bole	65.0	41.4	16.0	7.1	-	14.5
Gullele	64.6	57.9	26.5	51	-	18.9
Kirkos	76.3	55.7	19.5	4.0	-	16.3
Kolfe Keranio	66.5	32.5	17.1	6.9	0.2	13.7
Lideta	89.6	48.0	16.1	3.6	-	14.4
Nifas Silk Lafto	50.8	36.2	14.7	4.5	0.2	12.1
Yeka	35.9	43.6	17.5	4.8	-	13.6
Addis Ababa Total	60.0	42.1	18.7	5.3	0.1	14.5

Of the total suspected measles cases 1,151 (28%) were took one dose of measles vaccine, 397 (9%) were took two measles vaccine doses, 11 (3%) took 3 and above measles vaccine doses while the vaccination status of 1,989 (47%) suspected cases were not known and the rest 555 (13%) were not vaccinated against measles antigen (table 10).

Table 10: Measles Cases Vaccination Status (N/%) by Age Groups, Addis Ababa, 2005-2014

Row Labels	<1	1-4	5-14	15-44	>44	Total
One dose	48(4)	568(49)	491(43)	44(4)	0(0)	1151(24)
Two Doses	12(3)	205(52)	173(44)	7(2)	0(0)	397(9)
Three and above Doses	12(3)	49(44)	46(41)	4(4)	0(0)	111(3)
Unknown	199(10)	557(28)	793(40)	439(22)	1(0.1)	1989(47)
Unvaccinated	138(25)	110(20)	139(25)	167(30)	1(0.2)	555(13)
Grand Total	409(10)	1489(35)	1642(39)	661(16)	2(0.05)	4203(100)

The non measles rash cases increased from 3.4 in 2009 to 16.9 in 2012 per 100,000 populations having an average of 8.6 annualized non measles rash cases in ten years. The incidence of suspected measles cases was 25.7 in 2010 followed by 22.3 in 2014, 21.1 in 2013.

Discussion

We found that suspected measles cases and incidence has been increased from 2000 to 2014. Similarly non measles rash case rate was also increased by two folds from 5.2 per 100,000 populations in 2000 to 11.5 per 100,000 populations in 2014. Hence, the increment of the cases

and incidence of suspected measles from 2000 to 2014 might be attributed to the sensitivity of surveillance system. As the surveillance system more sensitive the probability of gating the cases is also increased.

The analysis shows that males and females were almost equally affected and all age groups were affected having median age 5 and inter quartile age range from 3 -10 years. The study conducted in Malawi on measles outbreak indicates that males and females were equally affected (M:F ratio 1.03:1) and Median age of case-patients was 7 years (inter quartile range 1–16) which is supported our finding [6]. The incidence is high in lower age groups and decreasing across the higher age groups. Infants <1 year of age were most affected (60/100,000) followed by children 1-4 years (42.1/100,000), 5-14 years (18.7/100,000), 15-44 Years (5.3/100,000) and 45+ years (0.1/100,000). In France, the incidence of measles was 134.6 cases/100,000 in infants <1 year of age, 68.6 cases/100,000 in children 10–19 years of age, and 46.8 cases/100,000 in persons 20–29 years of age [7] which shows decrement of incidence of cases as the age group increasing.

Among the 4,203 suspected measles cases 1,151 (28%) were took one dose of measles vaccine, 397 (9%) were took two measles vaccine doses, 11 (3%) took 3 and above measles vaccine doses. Totally, 1558 (40) were vaccinated while the vaccination status of 1,989 (47%) suspected cases were not known and the rest 555 (13%) were not vaccinated against measles antigen. On the other hand, among the 1,817 confirmed and clinically compatible cases, 380 (22%) were vaccinated, 923 (54%) were not known, 415 (24%) were not vaccinated. Among 380 positive and vaccinated cases, 11 (3%) were not eligible, among 923 positive and had not know their vaccination status, 92 (10%) were not eligible and among 415 positive and unvaccinated cases, 86 (21%) were not eligible for measles vaccination. In Ethiopia routine vaccination is given at the age of 9 months and infants less than 9 months are assumed to be eligible for measles vaccination [3]. This indicates that the positivity rate is relatively low among vaccinated suspected measles cases. While it is high among suspected measles cases those had not known vaccination status. May be the positive measles cases among unknown vaccination status cases were not vaccinated against measles cases which make positivity rate high among unvaccinated children. The measles vaccine efficacy is more than 85% at the age of 9 months and above [8].

Conclusion

In line with the increment of measles surveillance sensitivity the suspected measles infection increased from 2004 to 2014. The incidence is high in lower age groups and decreasing across the higher age groups. Males and females were almost equally infected. From the surveillance data, we identify that the vaccination status of majority of suspected measles were not properly recorded.

Recommendation

As Addis Ababa is accessible for all health care services all children should be vaccinated against measles antigen. Surveillance data quality should be improved to avoid unknown measles vaccination status.

Authors Contribution:

The work presented here was carried out in collaboration between all authors. Munira Nasser proposed and designed the analysis. Munira Nasser and Abyot Bekele carried out data cleaning, categorizing, analysis and write-up the manuscript. Munira Nasser, Abyot Bekele, Berhane Beyene, Lucy Boulanger and Daddi Jima participate in the interpretation analysis finding and review of the manuscript. All authors read and approved the final manuscript.

Conflict of Interest

There is no conflict of interest.

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CHAPTER III: EVALUATION OF SURVEILANCE SYSTEM

3.1 Evaluation of Malaria Surveillance System in Adama Town 2016

Abstract

Background

Malaria is a serious infection. It is common in tropical countries such as parts of Africa, Asia and South America. It is caused by a parasite called plasmodium. A parasite is an organism that lives on an animal and feeds from it. The parasite is passed to humans from a mosquito bite. We evaluated the malaria surveillance system in Adama town to determine whether the system meeting set objectives and to assess its attributes.

Methods

A cross sectional descriptive study design was conducted from 13-23 April 2016. A total of 7 study units, 1 hospital and six health centers were selected. We used Center for Disease Control updated guidelines for public health surveillance system evaluation.

Results

We found the regional reporting rate for the last six month was 87.7%, we observed acceptable and analyzing of surveillance data for action, surveillance system. It was simple, useful and flexible at all levels.

Conclusion

The surveillance system of Malaria is useful to detect outbreaks and to estimate the magnitude of morbidity and mortality of the disease in the area. The system is simple and flexible but poorly accepted. We recommend the reporting rate, feedback system, government funding for sustainability, data analysis and quality should be improved.

Key words: Surveillance, System Evaluation, Malaria, Adama Town Ethiopia, 2016

Introduction

Malaria is a vector born disease caused by genus plasmodium. It is one of the top leading causes of morbidity and mortality in the world. But more than 70% of the total morbidity is in Africa

[1].Worldwide an estimated 219 million malaria cases and 660,000 deaths occur each year in Africa. Malaria is a leading health problem with almost the entire population being at risk [2].

Transmission occurs in all six WHO regions. Globally, an estimated 3.2 billion people in 97 countries and territories are at risk of Malaria being infected with malaria and developing disease, and 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year). According to the World Malaria Report 2014, 198 million cases of malaria occurred globally in 2013 (uncertainty range 124–283 million) and the disease led to 584 000 deaths (uncertainty range 367 000–755 000), representing a decrease in malaria case incidence and mortality rates of 30% and 47% since 2000, respectively. The burden was heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occurred, and in children aged under 5 years, who accounted for 78% of all deaths [3]. More than half of the world's population is at risk of acquiring malaria, and the proportion increases each year because of deteriorating health systems, growing drug and insecticide resistance, climate change and natural disasters. Combating malaria is one of the millennium development goals; which is planned to halt the incidence of malaria by halve in 2015 [3].

In Ethiopia, malaria is one of the leading causes of morbidity and mortality. It is endemic in most part of the country with an altitude below 2,000 meter. About 75% of the land mass is potentially malarious and about 40 million people are at risk of infection. From the four Plasmodium species, Plasmodium Falciparum and Plasmodium Vivax species are the cause of disease, the risk of disease in Ethiopia is also highly variable by location that is affected by rainfall, altitude, and seasonal factors; host immunity to malaria is thought be low in most parts of Ethiopia [4].

Rationale

In our country Ethiopia Malaria stays the leading cause of morbidity and mortality more over the disease is endemic in most parts of the country and Adama also is malaria endemic area in addition Surveillance system evaluation is not done in the area before; and little is known about the effectiveness and efficiency of the system.

Objective

General Objective

To describe the surveillance system of Malaria and evaluate the key system attribute of Adama Town Oromia Regional State, Ethiopia from 13-23 April 2015.

Specific Objectives

- To describe the surveillance system of Malaria
- Evaluate the key system attribute
- Determine whether the system is meeting its 'objective

Methods and Materials

Study area and population

Adama forms a Special Zone of Oromia and is surrounded by Misraq shewa zone. It is located at 8.54°N 39.27°E at an elevation of 1712 meters, 99 km southeast of Addis Ababa. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia CSA), this city has a total population of 220,212, an increase of 72.25% over the population recorded in the 1994 census, of whom 108,872 are men and 111,340 women. With an area of 29.86 square kilometers, Adama has a population density of 7,374.82; all are urban inhabitants. A total of 60,174 households were counted in this city, which results in an average of 3.66 persons to a household, and 59,431 housing units. The 1994 national census reported this town had a total population of 127,842 of whom 61,965 were males and 65,877 were females.

Study design

A cross sectional descriptive study design was employed, from 13-23 April 2016

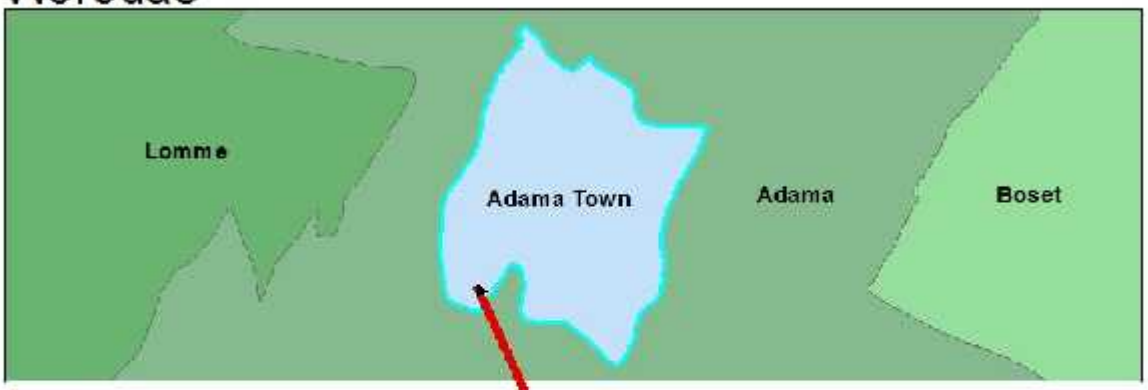
Sample size and sampling technique

All health centers (Geda, Bokushenens, Denbella, Biftu, Hawas, Adama health centers) and Adama Hospital were visited.

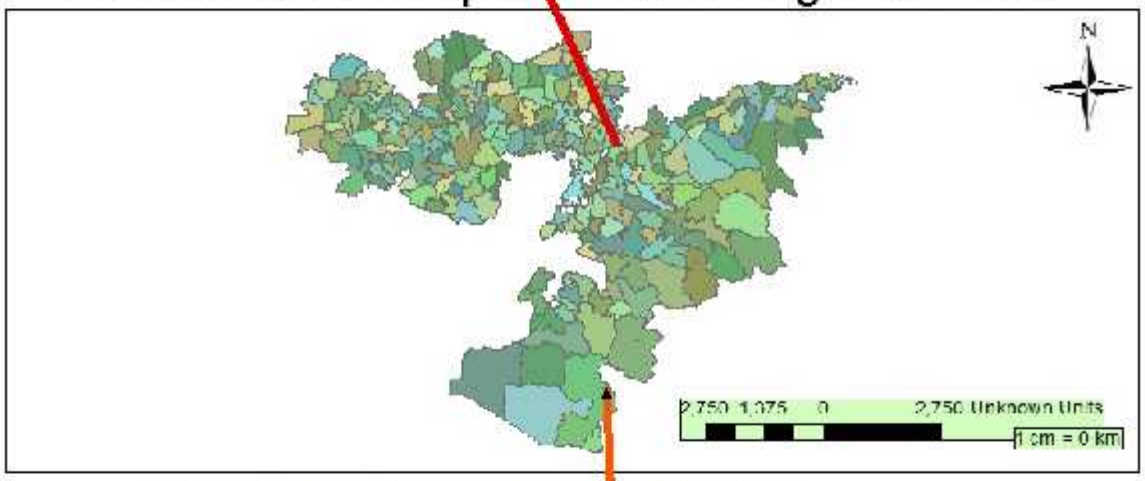
Study unit

The study subjects were been health facilities, . A total of 7 study units, six health center and one hospital were taken.

Administration Map of Adama Town and Near by Woredas



Administrative Map of Oromia Regional State



Adminstrative Map of Ethiopia

The data were collected using Center for Disease Control updated guidelines for public health surveillance system evaluation. We were interviewed PHEM officers and other responsible persons in the selected study areas and were observed the overall system. Secondary data source such as registration books, minute of meeting, and plan of action, result of data analysis and surveillance indicators were also reviewed.

Data Analysis

Data were entered and analyzed using the Microsoft Excel 2007.

Data quality assurance

Questionnaires were developed after thorough reviewed of CDC Surveillance evaluation guideline and interviews with the key informants were conducted in the same manner using a questionnaire and all questionnaires were administered by a single interviewer to keep the consistencies administering the questions.

Results

Case definition

All the observed health facilities use standard case definitions these are:

Suspected case:

A person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea and vomiting is diagnosed clinically as malaria

Confirmed cases:

A suspected case confirmed by laboratory by microscopy for plasmodium parasite.

Community case definition

Any person with fever and rigors

Case Detection, Registration and Confirmation

The cases definition of Malaria was available in all visited health facilities of Adama Town Understanding of the available cases definitions by the health care providers was satisfactory at the time of visit. Malaria clinical registration was found in the registration books at health

facilities. All visited sites have a capacity to collect, handle and transport specimen to the next level

Reporting

There was no shortage of reporting form in the past 6 months in all visited health facilities. All the visited health facilities used the same reporting formats. The weekly reporting rate of the past six month was 97% the health facilities used telephone to send report the next higher level. There were responsible PHEM (public health emergency management focal person in all visited health facilities) regarding analyzing data by person, place and time.

Epidemic preparedness and Response

The facilities have epidemic preparedness and response plan mostly epidemic management committee and rapid response team activated during an event. All the visited sites use an action threshold for epidemic prone diseases and they act accordingly at times of epidemic.

Feedback and supervision

There is written feedback system to the visited health facilities. But there were no meetings conducted with the community members .All the visited facilities have had supervision within six month

Training

All visited health facilities have trained staffs on disease surveillance and epidemic management. Resources. All the visited health facilities have electricity, computer, printer, stationary materials, sanitary and hygiene materials and personal protective equipments but in all the visited sites there is shortage of vehicles, fax, internet and there is no generator in any of the facilities.

Laboratory

Health facilities have a capacity to collect and transport specimen to the national laboratory (Ethiopian Health and Nutrition Research Institute) accompanied with case based reporting form for further analysis and investigation. EHNRI responsible to test the specimen and inform the result based on the seated time on the Malaria guideline to the national PHEM.

Attribute of the surveillance system

Usefulness: The surveillance system is useful to detect outbreaks, to estimate the magnitude of morbidity and mortality and to assess the effect of prevention and control programs.

Simplicity : All visited health facilities, health agreed that the case definitions of malaria for identification of suspected cases are easy to understand and possible to apply by all level health professional. All the visited sites have shortage of communication materials like internet and fax.

Flexibility: The system accommodated itself in to the new reform undertaken in the health system because more over all the staffs interviewed are not resistant to change and accept new ideas which are good for the improvement of the surveillance. newly formats is more flexible to report and can incorporated other newly occurring health event without much difficulty. Newly formats is more flexible to report and can incorporated other newly occurring health event without much difficulty.

Data Quality: We assessed the quality of data in terms of completeness and validity of the recorded data on the registry and formats. Based on this when we look the internal completeness of the data some of the malaria case based formats in the health facilities missed to fill variables

Timeliness and completeness:: When we assessed the timeliness and completeness report of the facilities is complete they give reports in a weekly and monthly basis and data is analyzed in terms of time place and person monthly.

Acceptability : The acceptability of the surveillance system is assessed based on their active participation in the surveillance system. When we looked the commitment of the reporting agents was satisfactory and the reporting rate was 97% as seen over 12 reporting week.

Stability: The surveillance system is donor based, and sometimes reforms changed its stability.

Sensitivity: Sensitivity in surveillance refers to the proportion of actual cases in a population that are detected and notified through the system. During the evaluation, we described sensitivity in to three ways:

Sensitivity of case definition: Refers to the ability of the case definition to identify all possible cases in the community. This is the case definition of malaria well established, easy and can identify all malaria cases.

Sensitivity of the system: This refers to the proportion of the cases meeting the case definition (regardless of the sensitivity of the case definition itself) that are detected and notified as they should. Accordingly, all the cases reported to the higher levels fulfilled the case definition of malaria as seated on the guideline.

Sensitivity of the detection of events for public health response:

This refers to the proportion of cases detected and reported through the system. But this couldn't be measured as the total number of persons with the disease in the community was not ascertained.

Predictive value positive: We were not able to calculate the Predictive value positive (PVP), because the total number of persons actually with disease was not determined.

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. On the other hand, understanding of malaria case definition by all health professional was found good, which helps for early detection and identification of cases for timely response.

Conclusion

The surveillance system of malaria is useful to detect outbreaks, to estimate the magnitude of morbidity and mortality of the disease in the area. In addition professionals working in the system are satisfied. The malaria surveillance system is simple and flexible and also well accepted. But there is no discussion with the community and there are also resources like fax internet and vehicles there are also some variables the reporting formats are lacking which may be as a result of carelessness or poor concentration.

Recommendation

The surveillance system in all visited facilities is good and should be kept up but since all facilities lack resources like internet fax generator and vehicles must be available. Regarding the feedback there has to be discussion with community and since all variables in the format are very important they should not be missed.

References

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CHAPTER IV: HEALTH PROFILE DESCRIPTION

4.1 Health profile description of Lideta sub city, Addis Ababa, 2015

Introduction

Health profile provides summary health information to support local authority members, officers, and community partners to lead for health improvement. Health profile is a program to improve availability and accessibility for health and health related information. The profiles give a snap shot overview of health for each authority. Health profiles are produced annually. Designed to help local government and health services makes decisions and plans to improve local people's health and reduce health inequalities. The profiles present a set of health indicators that show how the area compares to the national average. The indicators are carefully selected each year to reflect important public health topics.

A city health profile is a public health report that brings together key pieces of information on health and its determinants in the city and interprets and analyses the information. The main function of the profile is to stimulate action that will improve Profiles and Indicators defined city health profiles as reports that identify in health. The WHO Healthy Cities Project Technical Working Group on City writing and graphs health problems and their potential solutions in a specific city.

This city health profile can then form the basis of a city health plan that sets Health out strategies and programmers of intervention to improve the health of the city population. Informing the public, policy-makers and politicians about health and its determinants in their city is the key to ensuring that all relevant groups in the city truly understand the ideas, problems and issues with which they are dealing. The city health profile is an ideal way of bringing together a wide range of health information to acquaint with current health challenges. It may be useful to consider public health reports as "a visible manifestation of the public health function." The role of city health profiles in influencing health policy includes:

- Interesting, informing and educating the public, health professionals, politicians and policy-makers and stimulating them to action;
- Acting as a source of epidemiological information about the locality;

- Being a critical component of health planning – indicating health priorities, the preferred resource allocation and the direction of service development; and
- Providing a focus for inter-sectoral action.

This health profile describes the health and health related information of Lideta sub city, Addis Ababa. It encompasses compilation and interpretation of Demographic, Education and services like: water, Transport, and also health status information of the sub city on the perspective of health. It gives health and health related information to stakeholders and different sectors involved in the health system.

This health profile description also tries to determine evidence based information about availability and accessibility of health in the community which will be helpful for decision making priority setting for local authorities of the sub city.

Rationale

Since Lideta sub city is one of the highly populated sub cities in Addis Ababa, having evidence based information on health and health related conditions is crucial in priority setting and decision making on the sub city's health affairs. So, this health profile can be used as a critical source of evidence based information for setting an action plan for those who are concerned.

Objectives

General objectives

To develop health profile of Lideta in the year 2014/15 sub city which gives information about health care delivery in the sub city, which will be helpful in priority setting and decision making.
Specific objectives to have evidence based information about health care delivery system in the sub city

- To compile health and health related indicators of the sub city in one place
- To have an information about health indicators of the sub city
- To describe existing community health problems in the sub city in terms of time, place, and person

Methods

A one year retrospective data was collected from different offices of Lideta sub city health bureau and other offices like water, education, etc. Official permission letter was taken from EPHI and permission from the above bureaus was also requested in order to gain the data. Then data was collected using structured questionnaires and interview with some officials in the departments.

And the data was entered and analyzed by using excel spread sheet. And since it's a snap shot, cross sectional study design is used. And the study period is from July 10- 15, 2015 G.C.

Study Area

Lideta sub city is one of the 10 sub cities under Addis Ababa city administration and there are 10 woredas in this sub city. It is bounded in the North by Addis Ketema, in the south by Nifas Silk, IN the east by Kirkos, and in the west by Kolfe Keranio sub cities. And its area is 9.18 sq. Km. Projections from the 1999 population and housing census estimates a total population of Lideta sub city in 2007 E.C. is 240,890.

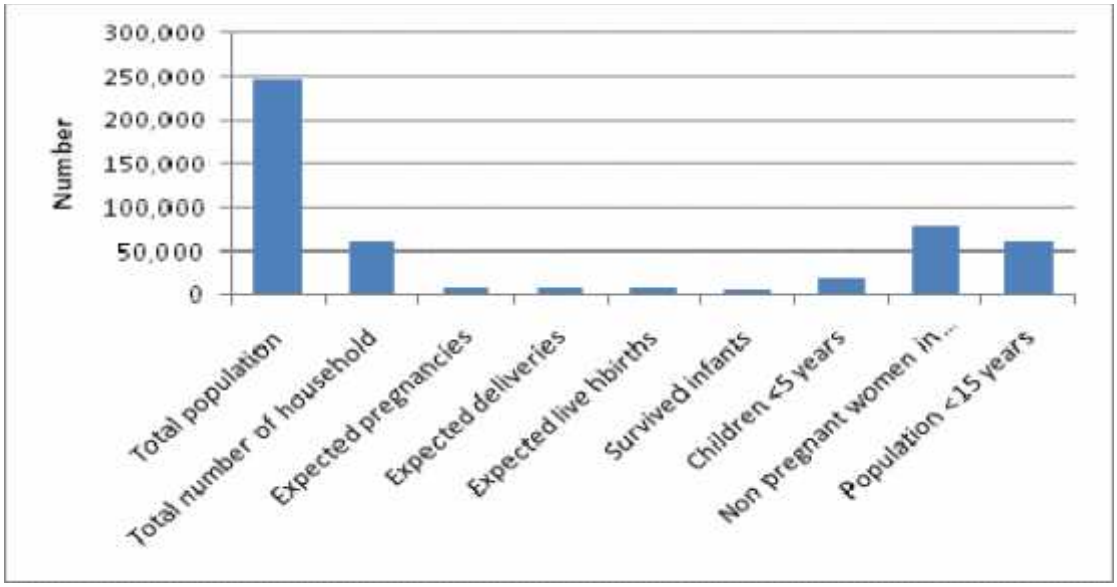
Map 5: Map of Lideta sub city

Government and administration

Addis Ababa city is sub divided into 10 sub city administrations. In which a sub city is headed by Chief executive Body. And Lideta is one of these 10 sub cities. It has 10 administrative woredas and woreda is the basic decentralized administrative council composed of elected members.

Demography

Demographic indicators	Number of population	Percentage
Demographic indicators	Population	Percentage
Total population	245,948	
Total number of household	59,987	24.39
Expected pregnancies	5854	2.38
Expected deliveries	5854	2.38
Expected live births	5854	2.38
Survived infants	5438	2.21
Children <5 years	17,610	7.16
Non pregnant women in reproductive age(15-49years)	79,318	32.25
Population <15 years	58,943	24.37



Infrastructures of the sub city

Education

In the sub city there are a total of 30 government schools out of which 10 are kindergarten.17 primary and 3 preparatory and secondary and there are 32 private schools out of which 19 are kindergarten. 13 are primary and the local community schools are 7and 6 are kindergarten and 1 primary there are also 2 faith based schools 1primary and 1 kindergarten there are 3 missionary nongovernmental schools in general there are 39 kindergarten, 32 primary 3 secondary and preparatory which makes a total of 74 schools are available in Lideta sub city.

The number of students enrolled in the government schools is male 7870 female 10098 and the total number of students enrolled in 2014/15 is 17,968 those who are enrolled in private schools are 2521 male and 2524 females which is a total of 5045 there are also 5 TVET and 2 government TVET and there are 334 school dropouts.

Water supply

The main sources of water supply for Lideta sub city is from Akaki and Legedadi surface waters by means of tap water the safe water supply is 60% up to now and it will be 92% at the end of Hamle then from next year it is expected to be 100% as mentioned by the officials. The water supply as a sub city is not known for technical reasons but the supply as a city is 110 liters /cap/person.

Transportation

Lideta sub city Administration is subdivided into10 woreda administrations and is connected with other sub cities by roads. The roads are busy as Lideta sub city is the link between different sub cities Mini buses and city buses are the main transportation systems for the peoples and the train system which is under construction in the sub city.

Budget

The recurrent budget of the sub city for 2014/15 is 2,487,363 ETB, and the capital budget is 14,579,000 ETB, while the total sector budget is 1,766,363 ETB.

Health

Table 12: Health institutions at Lideta sub city, 2015

Type	Number

Government	
Health centers	7
Hospitals	3
Private	
Clinics	37
Hospitals	2
Drug stores	20
Pharmacies	8
NGOs	0
Hospitals	1
Organizationally	0
Clinics	19

Having an information on health care delivery system, health indicators etc are essential in estimating the health condition of a given health sector in decision and policy making as well as evaluation of the health care delivery.

Table 13: Number of health professionals in Lideta sub city, 2015

Profession	Number
Specialists	10
General Pracitioners	30
Clinical nurse	167
Public nurse	1
BSc nurse	58
BSc midwives	3
Diploma midwives	29
Health officers	37
Medical laboratory technologists	12
Laboratory technicians	15
Pharmacists	8
Pharmacy technicians	20
Environmental health professionals	19
BSc in health education and promotion	1
BA in management	2
BA in sociology	1
MPH	2
Total	415

In Lideta sub city there are seven government health centers and three government hospitals. There are also 37 private clinics, 2 private hospitals, 20 drug stores and 8 pharmacies. In addition, there is 1 NGO hospital and there are 19 organizational clinics.

As far as human resource is concerned, there are a total of 415 health workers in Lideta sub city health office. Out of which 10 are specialists, 30 are general practitioners, 167 are clinical nurses, 1 is public nurse, 58 are BSc (bachelor of science) nurses, 3 are BSc midwives, 29 are diploma midwives, 37 are health officers, and 12 are medical lab technologists, 15 are lab technicians, 8 are pharmacists, 20 are pharmacy technicians, 19 are environmental health professional, 1 has BSc in health education and promotion, 2 are BA managers, 1 is a BA sociologist and 2 have masters in public health.

Immunization Coverage

Table 14: Immunization coverage at Lideta sub city, 2015

Year	Target popn<1	Vaccination coverage (%)										Full immunization
		BCG	OPV 0	OPV 1	OPV 3	Penta1	Penta2	Penta3	Measles	PCV1	PCV 10-3	
		2112(38.83%)	2245 (41.8%)	2610(48%)	2351(43.23%)	2610 (48%)	-	2351 (43.23%)	2393 (44%)		2285 (42%)	

Table 15: Top ten causes of morbidity in Lideta sub city by the year 2015

No.	Disease	Number	Percent
1	Acute URTI	35,101	29.7
2	AFI	12,126	10.2
3	Dyspepsia	11,772	9.96
4	UTI	11,676	9.88
5	Non bloody diarrhea	10,403	8.8
6	Diseases of MS and conjunctivitis	8,763	7.41
7	Infection of skin and subcutaneous tissue	8,749	7.4
8	Trauma injury and fracture	7,416	6.28
9	Typhoid fever	6,160	5.21
10	Dental and gum disease	6,016	5.09

M.C.H covereage

Among 79,318 non pregnant women of reproductive age group those used contraceptives are 7459(34.5%). Out of 5854 expected pregnancies 3516(60%) attended first A.N.C. and 2021(34.5) attended fourth A.N.C. the number of deliveries attended by skilled birth attendants is 1686 (28.2%).

In 2014/15 in lideta sub city, acute URTI is the leading cause of morbidity which is 29.7% of the total causes of morbidity followed by AFI, dyspepsia and UTI.

Endemic diseases

There was no endemic disease observed in the sub city including malaria. Lideta is also not a malaria endemic area.

TB/ Leprosy

A total of 427 individuals were screened for TB among which 156(36.5%) were found to be negative, 95(22.3%) positive for PTB, and 176(41.2%) were found to have ext PTB in the first three quarters of the year 2014/15. And among the total screened persons, 28(6.5%) were found to be HIV negative. And there were also a total four leprosy cases.

HIV/ AIDS

In the year 2014/15 a total of 17,106 persons were screened for HIV and 567 (3.3%) were found to be positive. From the 17,106 individuals 9344 were tested in VCT and 290(3.1%) were positive, and 4366 were tested via PITC of which 219 (5%) were positive while the rest 3396 were tested through PMTCT and 58 were found positive. Currently, 6,684 persons living in Lideta are HIV positive. And among these persons, 2178 are on ART, 275 are on pre ART, and 4231 are ever started.

Nutrition

There are three supplementary care (SC) sites in the sub city which are not actively functioning other than dispensing “Plumpy nuts”.

Environmental Sanitation

Lideta sub city has its own cleaning and dry waste management office which has 252 members and 35 associations. This office has functions by removing wastes from homes and offices. It has 3 compactors which have a capacity of loading $100m^3$.

In 2007, an average of $405.23m^3$ solid waste was removed. But the staffs working on removal of the waste don't use Personal Protective Equipments (PPE) properly even though there is no shortage of supplies.

Results and discussion

Lideta sub city is one of the highly populated sub cities in Addis Ababa. with a population size of 245,948 and women of reproductive age i.e. age 15-49 which is 83,444(34.6%) takes the highest percentage of the population, and the number of expected pregnancies is 2.33% which takes the least percentage. in the sub city there are a total of 74 schools out of which 39 are kindergarten, 32 are primary, and 3 are primary and secondary both. The schools have a water and latrine service which is good in preventing water born and other diseases like diarrheal diseases resulting from poor sanitation.

The main source of water for the sub city is from Legedadi and Gefersa surface water which has 60% coverage of safe water supply which is expected to be 90% by July(2014) and the safe water supply is expected to be 100% in 2015. The sub city has its own organized dry wastes and sewage management authority, but office as mentioned by the officials the individuals who are working in waste disposal are not using proper personal protective equipments like gloves and masks despite the presence of these equipments and their reason for not using these equipments is that wearing the protective equipments at work is uncomfortable; we can see that people are at high risk.

The roads are crowded in Lideta sub city as the biggest market in Africa 'Merkato' is located in Lideta. And the main means of transportation in the sub city are mini buses and public busses and the new rail way on construction will also be additional means which is expected to solve the crowd of the roads in the sub city.

Among the leading causes of OPD visits acute febrile illness takes highest percentage i.e. (29.7%) followed by acute febrile illness (10.2%) the least percentage is dental and gum

diseases. Concerning vaccination, those children vaccinated for BCG among 5438 infants are 2112(39%), OPV 0 2245(41.2), OPV1 2610(48%), OPV 3 2351(43.2%) penta1 2610(48%) penta3 2351(43.222%) measles 2393(44%) 2285(42%),in which all types of vaccine coverage lies below 50% which is very low and this may be as a result of poor data management.

Among 79,318 non pregnant women of reproductive age group those used contraceptives are 7459(9.34%). Out of 5854 expected pregnancies 3516(60%) attended first ANC (Antinatal clinc) and 2021(34.5) attended fourth ANC the number of deliveries attended by skilled birth attendants is 1686 (28.2%). This also shows low coverage may be resulting from poor data management since lack of awareness is not expected as an urban dweller.

Even though there are three SC units for nutrition but both are not functional which may be due to lack of monitoring as a sub city there must have been functional SC. Unit.

Although it is good that the sub city has its own office to manage dry wastes handling the wastes are not using proper personal protective equipments despite no shortage of supplies. The other important issue is about data in Lideta sub city; I have observed that very important data are missed. That is:

1. There is no demographic and health related data classified by the woredas, and of the ten woredas only three are using a computerized system of data management, and as the officials in the sub city informed me the rest seven woredas are still in process of organizing a computerized system.
2. There is no data showing mortality in the sub city like infant mortality and maternal mortality which are very important in deciding health status of a population.
3. There is an office handling vital statistics but there is no data by sex and there is no data about deaths.

Conclusion

1. From the above mentioned we can observe that Lideta sub city lucks very important data
2. Low vaccine, MCH, and anti natal coverage which may be as a result of poor data management
3. There is nutrition unit having three SC units which are not functional
4. Staffs working in waste management (those who are handling dry wastes) are not using proper personal protective equipments while handling wastes.

Recommendation

- The sub city has to improve the data management which will be important in the future health planning policy and decision making and improve health action and identify what exactly the source of low health service coverage is.
- The nutritional SC. units have also to be reactivated and this will be very helpful in fighting malnutrition and handle the already existing malnutrition.
- The staffs involved in waste management has to be given training on the advantage of personal protective equipments as they are at high risk of different diseases resulting from lack of sanitation.

Annex 2: Health profile assessment questionnaire

1. Historical aspects of the Sub city

- Name_____
- How and when the sub city was formed_____
- Any other historical aspect about the sub city_____

2. Geography and Climate

Sub city map_____

- Location(distance) _____Direction _____
- Surface Area _____

Sub city boundaries

North _____South_____

East _____West _____

3. Political and Administrative Organization

- Total no. of kebeles: _____
- rural_____
- Urban_____

4. Population and Population structures

Demographic data

1. Total Population _____Male _____Female_____ sex ratio_____
2. Urban Total _____ Male _____ Female _____
3. Rural Total _____ Male_____ Female_____
4. Population under 1yrs_____
5. Population under five yrs_____
6. Population < 15 years_____
7. Population >64 years_____
8. Women 15_49 years of age_____
9. Total population by kebele(each kebele pop)_____

Population pyramid

Population data by age and sex								
Male	<1	1-5	6-14	15-24	25-34	35-49	50-64	>65
Female	<1	1-5	6-14	15-24	25-34	35-49	50-64	>65

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

Main income sources

- Agriculture
  - Cultivated area_____
  - Grazing area_____
  - Cropping seasons_____
  - Land density_____
- Livestock
- Truism
- Trade
- Other business

House hold income source

1. Agriculture_____ (#)
2. Government Employer_____(#)
3. Private Employer_____(#)
4. Daily Laborer_____(#)
5. Different business_____ (#)

6. Education and school Health

Number of educational institution

1. Kinder Garten_____
2. Primarily School_____
3. Secondary_____
4. Preparatory_____
5. College/ University_____
6. TVET_____
7. Total School Age Children (target) _____
8. Total Enrolment _____ Male _____ Female _____
9. School dropout in 6 months or year 2007_____
10. If there is school dropout why _____

Educational status of the community

1. Total Educated people_____
    - Male _____
    - Female _____
2. School health activities:
    - Number of schools with water supply_____
    - Toilets:
        - Schools with functional latrines (male & female)_____
        - Schools with HIV/other Health clubs_____

7. Facilities

Transport

1. Accessibility (main roads)_____
2. Type of road _____
3. How many kebeles have access to transportation _____

Water

1. Total safe water coverage _____ (___ %)
2. Safe water supply coverage by kebele _____
3. Main source of water supply _____
4. Kebeles getting safe water____ (__ %)
5. Population getting safe water_____ (__ %)
6. Daily water consumption per day per person_____

8. Disaster situation in the woreda

1. Was there any disaster (natural or manmade) in the woreda in the last one year? _____
2. Any recent disease outbreak/other public health emergency_____
3. If yes cases_____ and deaths_____

9. Vital Statics and Health Indicators

1. Infant Mortality Rate (IMR) _____(total <1 yr deaths this 2004yr_____)
2. Child Mortality Rate_____(this year's total <15 yr deaths_____)
3. Crude Birth Rate_____
4. Crude Death Rate_____ (total deaths 2004yr____)
5. Maternal Mortality Rate_____(2004 total maternal deaths_____)
6. Contraceptive prevalence rate_____
7. Contraceptive acceptance rate _____
8. ANC rate (how many of the total expected pregnancies attended 1st ANC) _____

9. ANC rate (how many of the total expected pregnancies attended 4th ANC) _____
10. Percentage of deliveries attended by skilled birth attendants_____
11. Percentage of deliveries attended by HEWs_____
12. Percentage of deliveries attended by TBA _____
13. Average family size_____

10. Immunization Coverage (for children and Women)

1. BCG _____ (__ %).
2. OPV0____ (____ %), OPV1_____ (___ %), OPV3_____ (___ %)
3. Penta1_____ (___ %), penta2 _____ (___ %) penta3_____ (___ %)
4. Measles_____ (___ %).
5. PCV-10-1_____(__%), PCV-10-3_____(___%)

11. Health Service

Type and Number of Health Institution

Type		**umber**	**Total No. of beds**
Gov. Hospital			
Gov. Health center	Type A		
Private H.Fs (clinics/diag. lab/drug stores)	Clinics (all type)		
	Diag. Lab.		
	Drug store		
Gov. Health posts			
NGOs	H.Ps		
	H.Cs		
	Hospitals		
	Clinics		

Health institution to pop ratio:

- Hospital: Pop----------.
- HC: Pop----------
- HP: Pop----------
- Health service coverage----------

Type and Number of health professionals

Type	**No.**	**Remark**
Specialist		
G.P		

HO		
Nurses (Deg. and Dip.)		
Mid wife (Deg. and Dip.)		
Lab. (Deg. and Dip.)		
Pharmacy (Deg. and Dip.)		
Env. Health (Deg. and Dip.)		
HIT		
Health education		
HEWs		
Others		

- ❖ Health professional to population ratio
  - Doctor: pop. Ratio_____
  - Nurse: pop. Ratio____
  - Mid. Wife: pop. Ratio ____
  - HEW: pop. ratio_____

12. Top causes of morbidity and mortality

Top ten leading causes of OPD visit (morbidity)

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

Top ten causes of admissions

	Adult	Pediatrics/ <5 year
1		
2		
3		

4		
5		
6		
7		
8		
9		
10		

- **Top ten causes of deaths (mortality).**

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

13. Health budget allocation

Government

1. Total budget allocated for the woreda _____
2. Total budget allocated for health _____ (____%)

Funds from NGO

1. Total _____ (purpose/programs)_____

14. Community Health Services

Status of services provided by community health workers namely:

1. No. of TBAs/TTBA_____ and their responsibility

   _____

2. No. of CHWs/CHPs_____ and their responsibility

   _____

3. Responsibility of HEWs_____

4. Others_____

15. Status of Primary Health Care Components – with focus on the eight PHC elements and MDG

1. MCH (Delivery, ANC, PNC)

   _____

2. FP(Methods)

   _____

3. EPI(outreach service, cold chain, vaccine) :

   _____

- Environmental Health & sanitation.
  1. Latrine coverage_____ & utilization rate_____
  2. Solid waste management_____
  3. Liquid waste management _____
  4. others_____

16. Endemic diseases

Malaria:

1. Total malarious kebeles_____& Pop at risk_____
2. ITNs coverage (including current dist)_____
3. Is there IRS this year(No of kebeles)_____
4. Total cases/yr_____ deaths/yr_____,<5yr cases_____ deaths_____
5. Malaria supplies (Coartem, RDT, etc) shortage _____
6. Other issues_____

TB/Leprosy:

1. Total TB cases_____
2. PTB negative_____
3. PTB positive_____
4. Extra PTB _____
5. TB detection rate _____
6. TB Rx completion rate _____

7. TB cure rate _____
8. TB Rx success rate _____
9. TB defaulter_____
10. Death on TB Rx_____
11. Total TB patients screened for HIV_____
12. Total Leprosy cases _____on Rx_____

HIV/AIDS

1. Total people screened for HIV (last one year)_____
2. VCT_____ PITC_____PMTCT_____
3. HIV prevalence_____
4. HIV Incidence (new cases/yr)_____
5. Total PLWHA_____
6. On ART _____on Pre-ART_____
7. Other HIV prevention activities_____

Nutrition

1. Total OTP sites_____, total admissions to OTP/yr_____
2. Total SC sites,_____, Newly opened/yr_____, total admissions to SC/yr_____
3. Is there TSF (targeted supplementary feeding) program in the woreda_____
4. CBN program_____ PSNP _____other_____

17. Essential drugs (shortage)

_____

_____

CHAPTER V: MANUSCRIPT

5.1 Epidemiology of Measles in the Metropolitan Setting, Addis Ababa Ethiopia, 2005-2014: A Retrospective Descriptive Surveillance Data Analysis

Authors: Munira Nasser BSc, Abyot Bekele Woyessa MPH [1], Mekonen Getahun MSc[1], Berhane Beyene MSC[1], Lucy Boulanger MD[2], Ayesheshem Ademe MD, MPH[3], Alemayehu Bekele MPH, PhD[4], Adamu Addisie MD,MPH,PhD[5], Amha Kebede MSc, PhD[1], Daddi Jima MD, MPH[1]

Authors Affiliation: [1]Ethiopian Public Health Institute, Addis Ababa, Ethiopia, Center for Diseases Control, Addis Ababa Ethiopia [3]World Health Organization Country office, Addis Ababa, Ethiopia, [4]Ethiopian Public Health Association, [5]Addis Ababa University, Addis Ababa, Ethiopia,

Institution at which work was done: Ethiopian Public Health Institute, Addis Ababa, Ethiopia

Corresponding Author: Abyot Bekele Woyessa, Ethiopian Public Health Institute, Email: abyotbekelephem@gmail.com, PO Box: 1242, Cell phone: +251-923-646497, Tel: +251-112-765340, Fax: +251-112-75863

Abstract:

We retrospectively reviewed and analyzed Addis Ababa city's 10 years measles surveillance data from 2005-2014. A total of 4,203 suspected measles cases identified, of which 1,154 (27.5%) were laboratory confirmed cases. Median age was 5 years with 3-5 years inter quartile-range. The annual-incidence was 14.5, which was 60.0 among >1 year, 42.1 among 1-4 years, 18.7 among 4-14 years, 5.3 among 15-44 years and 0.2 among ≥45 years per 100,000 population. Of the cases 1,151 (28%) received one dose of measles vaccine, 397 (9%) received two doses, 11 (3%) received more than two doses, 555 (13%) were not vaccinated while the vaccination status of 1,989 (47%) cases were not known. Our analysis revealed that the incidence rate is higher among young children than older age group. There was high number of zero doses and unknown vaccination status. Routine immunization should be strengthened to reach all children and improve data quality to avoid unknown vaccination status.

Key word: Measles, Surveillance, Vaccination, Incidence, Addis Ababa, Ethiopia,

Introduction:

Measles is a highly contagious and serious respiratory viral disease [1] and caused by a virus in the family paramyxo virus, genus Morbilli virus. It is characterized by a prodrome of fever (as high as 105°F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash [2]. The rash usually appears 14 days after exposure and spreads from head to trunk to lower extremities [3].

Measles is a highly communicable disease that is a significant cause of illness and death worldwide [4,5]. Transmission is airborne, by droplet spread or by direct contact with the nasal and throat secretions of infected persons [6]. After exposure, up to 90% of susceptible persons develop measles [7]. The number of measles cases reported worldwide each year and decreased 73%, from 853,480 to 226,722, and measles incidence decreased 77%, from 146 to 33 cases per million populations per year. Similarly, the number of measles cases decreased by 80%, from 520,102 in 2000 to 106,052 in 2012, and measles incidence decreased 85%, from 841 cases in 2000 to 125 cases in 2012 per million population in African region [8].

Measles vaccination has markedly reduced the incidence of measles virus infection and is one of the most successful global public health interventions; it prevents millions of deaths annually, primarily among infants and young children [9].

Ethiopia adopted the African regional accelerated measles control strategies to reduce measles mortality in 2002. Routine measles vaccination is provided for infants at 9 months of age and a second opportunity for measles vaccination through supplementary immunization activities (SIAs), targeting children aged 6 months–14 years [10,11].

We conducted a retrospective data analysis to describe the trend and incidence of measles cases in Addis Ababa City to make recommendation for the government of the city to strengthening measles control interventions.

Methods and Materials

Study Area: We conducted analysis on measles surveillance data reported from Addis Ababa Addis City. Addis Ababa is the capital of Ethiopia and for African. It also hosts the headquarters of the United Nations Economic Commission for Africa (UNECA) and numerous other continental and international organizations. It is the largest as well as the dominant political,

economic, cultural and historical city of Ethiopia. The city is divided in to ten sub-cities which are the second administrative units next to city administration [12] and it is further subdivided into woredas and kebeles It is enclosed by Oromia Regional state zones in all directions (Figure 1). As per the 2007 projection the total population of Addis Ababa was estimated to 3167035of whom 1,595,968 (50.4$) were females and the rest 1,452,663 (49.6%) were males.

Study design: We officially request and received 10 years (2005-2014) Addis Ababa's Measles surveillance data from Ethiopian Public Health Institute (EPHI). We defined suspected measles cases as 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: We also further classified the suspected measles cases collected through surveillance into four categories as per the national guideline [10]. 1) Laboratory confirmed measles cases: Is a suspected measles case which has laboratory results indicating measles IgM positive. 2) Epidemiologically linked measles case: A suspected measles case that has not had a blood specimen taken for serologic confirmation and is linked (in place, person and time) to a laboratory confirmed case; i.e., living in the same or in an adjacent district with a laboratory confirmed case where there is a likelihood of transmission; onset of rash of the two cases being within 30 days of each other. 3) Discarded measles case: is a suspected measles case which, upon adequate investigation that includes a blood specimen collected in the appropriate time frame, lacks serologic evidence of a measles virus infection. A person received one dose of MCV1 is considered as vaccinated against measles antigen.

Data analysis: Data cleared and checked for any duplication by patient name, sex, age, residence area, date of onset, date seen at health facility and date sample collection. Data is categorized by age and vaccination status analysis. The 2007 population census projection was used to as denominator in calculating cumulative incidence rates and as well as age, sex and area specific incidence rates. A retrospective descriptive data analysis was carried out by time, place and person variables using graphs and tables. Cumulative and specific Incidence rates were calculated per 100,000 population using Microsoft Excel 2010. To make the incidence rate annualized the average of 10 years data was divided by mid population and projected to 100,000. Furthermore Arc Geographic Information System (GIS) version 10.2 was used to show study area.

Results:

From 2005-2014, a total of 4,203 suspected measles cases with 2 deaths (CFR: 0.05%) were reported from ten sub cities of Addis Ababa. Among them, 1,154 (27.5) were laboratory confirmed cases, 512 (12.2%) were clinically compatible cases, 52 (1.2%) were epidemiologically linked and the rest 2,485 (59.1%) cases were negative for measles IgM (Figure 2 and Table 1). Majority of the cases, 3,875 (92.2%) were outpatient consults and 326 (7.8%) were inpatient. Measles cases were almost equally distributed between male and female, 2129 (50.7%) and 2074 (49.3%) respectively which makes Male to female ratio 1:0.97. Median age of case-patients was 5 years and inter quartile range was 3–10 years. Of the total cases 409 (10%) were under one year, 1,489 (35%) were 1-4 year, 1,642 (39%) were 5-14 year, 661 (16%) were 15-44 and 2 (0.05%) were above 44 years. Using the midyear population, the annual suspected measles cases incidence rate was 14.5 per 100,000 populations (14.1 among male and 15.1 among female). The suspected measles case incidence rate was 60.0 among less than one year age, followed by 42.1 among children from 1-4, 18.7 among 4-14 years, 5.3 among 15-44 and 0.2 among 45 years and above per 100,000 populations. Relatively the incidence was high in Gullele sub city followed by Kirkos sub city (18.9 and 16.3 suspected measles cases per 100,000 population) (Table 17).

Table 16: Measles incidence rate per 100,000 Population by year, Addis Ababa, 2005-2014

Year	Total Cases	Confirmed by lab	Epi linked	Compatible	Discarded	Incidence	Non Measles Rash Rate	Median	IQR
2005	148	6	0	4	138	5.6	5.2	5.0	3-6
2006	422	141	17	8	256	15.7	9.6	5.0	3-9
2007	188	65	0	1	122	6.9	4.5	5.0	3-8
2008	228	43	4	5	176	8.2	6.3	4.0	3-7
2009	241	43	22	80	96	8.4	3.4	5.5	3-9
2010	749	238	0	283	228	25.7	7.8	5.0	2-12
2011	315	77	8	40	190	10.6	6.4	4.5	2-10
2012	553	36	0	4	513	18.2	16.9	5.0	4-9
2013	653	237	0	14	402	21.1	13.0	6.0	3-12
2014	706	268	1	73	364	22.3	11.5	6.0	4-12
Total	4203	1154	52	512	2485	14.5	8.6	5.0	3-10

Table 17: Measles Incidence per 100,000 Pop. By Age Group, Addis Ababa, 2005-2014

Region	<1	1-4	5-14	15-44	44+	Total
Addis Ketema	55.1	32.2	15.5	3.4	-	11.4
Akaki Kaliti	44.3	35.9	23.1	7.8	-	15.8
Arada	60.6	46.4	25.9	5.1	-	17.2
Bole	65.0	41.4	16.0	7.1	-	14.5
Gullele	64.6	57.9	26.5	51	-	18.9
Kirkos	76.3	55.7	19.5	4.0	-	16.3
Kolfe Keranio	66.5	32.5	17.1	6.9	0.2	13.7
Lideta	89.6	48.0	16.1	3.6	-	14.4
Nifas Silk Lafto	50.8	36.2	14.7	4.5	0.2	12.1
Yeka	35.9	43.6	17.5	4.8	-	13.6
Addis Ababa Total	60.0	42.1	18.7	5.3	0.1	14.5

The non measles febrile rash rate increased from 3.4 in 2009 to 16.9 in 2012 per 100,000 population having an average of 8.6 annualized non measles febrile rash rate in ten years. The incidence of suspected measles cases was 25.7 in 2010 followed by 22.3 in 2014, 21.1 in 2013.

Table 18: Measles Cases Vaccination Status (N/%) by Age Groups, Addis Ababa, 2005-2014

Vaccination status	<1	1-4	5-14	15-44	>44	Total
One dose	48(4)	568(49)	491(43)	44(4)	0(0)	1151(24)
Two Doses	12(3)	205(52)	173(44)	7(2)	0(0)	397(9)
Three and above Doses	12(3)	49(44)	46(41)	4(4)	0(0)	111(3)
Unknown	199(10)	557(28)	793(40)	439(22)	1(0.1)	1989(47)
Unvaccinated	138(25)	110(20)	139(25)	167(30)	1(0.2)	555(13)
Grand Total	409(10)	1489(35)	1642(39)	661(16)	2(0.05)	4203(100)

Of the total suspected measles cases 1,151 (28%) were took one dose of measles vaccine, 397 (9%) were took two measles vaccine doses, 11 (3%) took 3 and above measles vaccine doses while the vaccination status of 1,989 (47%) suspected cases were not known and the rest 555 (13%) were not vaccinated against measles antigen (Table 3).

Discussions:

We found that suspected measles cases and incidence has been increased from 2005 to 2014. Similarly non measles rash case rate was also increased by two folds from 5.2 per 100,000 populations in 2005 to 11.5 per 100,000 populations in 2014. Hence, the increment of the cases

and incidence of suspected measles from 2000 to 2014 might be attributed to the sensitivity of surveillance system. As the surveillance system more sensitive the probability of gating the cases is also increased. The increment of the incidence is also may be related to unvaccinated children. The analysis shows that males and females were almost equally affected and all age groups were affected having median age 5 and inter quartile age range from 3-10 years. The study conducted in Malawi on measles outbreak indicates that males and females were equally affected (M:F ratio 1.03:1) and Median age of case-patients was 7 years (inter quartile range 1–16) which is supported our finding [13]. The incidence is high in lower age groups and decreasing in older age groups. Infants <1 year of age were most affected (60/100,000) followed by children 1-4 years (42.1/100,000), 5-14 years (18.7/100,000), 15-44 Years (5.3/100,000) and 45+ years (0.1/100,000). In France, the incidence of measles was 134.6 cases/100,000 in infants <1 year of age and decrease as age group increases which is consistent with our finding (2008-2011), 68.6 cases/100,000 in children 10–19 years of age, and 46.8 cases/100,000 in persons 20–29 years of age [14] which shows decrement of incidence of cases as the age group increasing.

Among the 4,203 suspected measles cases 1,151 (28%) were took one dose of measles vaccine, 397 (9%) were took two measles vaccine doses, 11 (3%) took 3 and above measles vaccine doses. Totally, 1558 (40) were vaccinated while the vaccination status of 1,989 (47%) suspected cases were not known and the rest 555 (13%) were not vaccinated against measles antigen. On the other hand, among the 1,817 confirmed and clinically compatible cases, 380 (22%) were vaccinated, 923 (54%) were not known, 415 (24%) were not vaccinated. Among 380 positive and vaccinated cases, 11 (3%) were not eligible, among 923 positive and had not know their vaccination status, 92 (10%) were not eligible and among 415 positive and unvaccinated cases, 86 (21%) were not eligible for measles vaccination. In Ethiopia routine vaccination is given at the age of 9 months [10]. This indicates that the positivity rate is relatively low among vaccinated suspected measles cases. While it is high among suspected measles cases those had not known vaccination status. May be the positive measles cases among unknown vaccination status cases were not vaccinated against measles cases which make positivity rate high among unvaccinated children. The measles vaccine efficacy is more than 85% at the age of 9 months and above [15].

Conclusion and Recommendation:

Our analysis revealed that the incidence rate is higher among young children than older age group. Additionally it indicates that high number of zero doses and unknown vaccination status. We also found that both sex are equally affected .We recommend strengthening routine immunization service delivery to reach all children by their first year of life and improve data quality to avoid unknown vaccination status.

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Authors Contribution:

The work presented here was carried out in collaboration between all authors. Munira Nasser proposed and designed the analysis. Abyot Bekele and Munira Nasser and carried out data cleaning, categorizing, analysis and write-up the manuscript. Munira Nasser, Abyot Bekele, Berhane Beyene, Lucy Boulanger and Daddi Jima participate in the interpretation of finding and review of the manuscript. All authors read and approved the final manuscript.

Conflict of Interest

There is no conflict of interest.

Biographic Sketch

Munira Nasser is a senior Nurse with clinical working experience in different hospitals in Addis Ababa. Currently, she is Field Epidemiology Training program resident at Addis Ababa University. She is assigned to Ethiopian Public Health Institute as a resident to deliver her training competencies. She is interested in infectious diseases research and public health surveillance.

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Chapter VI: Protocol/proposal for epidemiologic research project

6.1 Prevalence of cervical cancer among women who came to health facilities for VIA (visual inspection with acetic acid) and cryotherapy and the factors associated in Addis Ababa for the last three years from (2013-2016G.C.)

Background

Cryotherapy uses extremely low temperatures to freeze and destroy abnormal tissue abnormal tissue, was first reported being used for the destruction of cervical intraepithelial neoplasia in 1967. Cryotherapy increased in popularity as in expensive and easy to perform treatment options in many countries throughout the 1970s and 1980s, through its use decreased somewhat with the introduction of newer technologies such as loop electrosurgical excision procedure and lesser ablation. Crotherapy has several advantages, particularly in low resource settings. Cryotherapy is relatively is simple procedure that is easy to learn, inexpensive in comparison to methods such as cone biobsy and hysterectomy, and requires no electricity all of which can be important considerations in low resource areas, where staffing, supplies and infrastructures are often severely limited .In addition, studies and anecdotal evidence have pointed consistently to satisfactory effectiveness with few complications or side effects.

In recent years, global awareness has been about the impact of cervical cancer on women's health and life expectancy in the developing countries account for 80 percent of the cervical cancer cases and approximately 200,000 deaths worldwide .prevention efforts in less developed countries are focusing on implementing screening programs to detect cervical intraepithelial neoplasea. And programs are seeking low cost effective treatment methods appropriate for use in low resource settings.

Objectives

General Objective

- To describe the magnitude of cervical cancer among women who came to health facilities for via and cryotherapy and determine factors associated in A.A. from (2013-2016).

Specific objectives

- To describe the prevalence of cervical cancer among women who came for via and cryotherapy in A.A. from (2013-2016) in terms of time, place and person.
- To determine the factors associated with cervical cancer among women who came for via and cryotherapy in A.A. from (2013-2016).

Method

Study Design

Descriptive cross sectional and case control study will be conducted.

Study Area

The study will be conducted in Addis Ababa in the hospitals where via and cryotherapy service is given.

Addis Ababa lies 9°1′48″N latitude and 38°44′24″E longitude. The city is located at the heart of the country, at an altitude ranging from 2,100 meters at Akaki in the south to 3,000(9,800 ft) meters at Entoto Hill in the North. The city occupies a total area of 540 Sq.Km2. The city is divided in to ten sub-cities which are the second administrative units next to city administration it is enclosed by Oromia Regional state zones in all directions. The total population of Addis Ababa was estimated to 3167035of whom 1,595,968 were females and the rest 1,452,663 were males.

Source Population

All women of reproductive age living in Addis Ababa

Study population

All women who come for via and cryotherapy service to health facilities.

Sample size determination

Since via and cryotherapy is started 3years back all women who come for via and cryotherapy will be the sample in order to make the sample significant.

Data collection

Data will be collected from the available log books and the client's charts will be referred in order to determine the associated factors. Data collectors will also be trained

Variables

Independent variable:

- cervical cancer

Dependent variables:

- Socio demographic information(e.g. age, sex)
- Risk factors e.g. multiple sexual partners, sero status, sexually transmitted infection (STI)

Ethical Consideration

The study was carried out after getting ethical clearance from the Ethical Committee of Faculty of Public Health, Addis Ababa University. Permission will be also obtained from the concerned bodies of Addis Ababa health office.

Data Analysis

Data will be entered, cleaned and analyzed using Epi info software version 7.1 and Microsoft Excel.

Dissemination of findings

The findings of this study will be disseminated to Ministry of Health, Regional Health Bureau, and health departments it will also be disseminated to different organizations that will have contributions on the prevention and control of cancer. In addition, the study findings will also be presented at national and international conferences.

Expected outcomes

Prevalence of cervical cancer and trend will be described and factors associated a will be determined which will be useful in the future planning and implementation of programs in the control and prevention of cervical cancer.

Budget and Implementations Time

A total of 5000 $USD will be needed to conduct the study and the detail of budget and time table of study annexed below.

Annex 3: Budget break down for Epi project

Items	Detail Activities	Cost in USD$
Training	Training for data collectors and supervisors	1000
Stationary	A4 size papers ,notebooks, and pen	1000
Paradigm	Paradigm payment for data collectors and supervisors	1500

Transportation	Car rent and fuel	1500

Annex 4: Project implementation time for Epi project

Activities	time in month			
	September	October	November	December
Training of data collectors	x			
Pretesting questionnaire		x		
Data collection		x		
Data Analysis			x	
Report Writing			x	
Progress report submit ion				X
Final report submit ion				X

CHAPTER VII: NARRATIVE SUMMARY OF DISASTER SITUATION VISITED

7.1 Meher Human Health and Nutrition Emergency need Assessment, Silti, Hadiya, and Gurage zones, SNNPR, 2015

Abstract

Background

Southern Nations, Nationalities and Peoples Region is one of the nine regional states in Ethiopia. It is administered by 15 zones, 4 special Woreda, 131 Woreda, 21 town administration, 3608 rural and 324 urban kebeles. The region is located Southern and South-Western part of Ethiopia. The total area of the region estimated to be 105,887.18 Sq. Km with a population of 13,433,991 (Male 7,425,918 and Female 7, 503, 630). The population density per square km is 141 person and population growth rate of 2.9%. According to census in 20014 by central statistical agency

In the region there are, 26 Hospitals (18 GO, 3 NGO, 5 private), 563 health centers, and 3635 health posts which provide health service. Other private health facilities 76 diagnostic laboratory centers, 10special clinics,15 NGO clinics, 13higher clinics,110 medium clinics,483 lower level clinics,20 Pharmacies ,9 drug distribution centers,133 drug stores and 333 drug venders found in the region with potential health service coverage greater than 80%. In the region the causes of mortalities and morbidities are mostly attributed to lack of clean drinking water supply, poor sanitation, overcrowding, and low public awareness of environmental health and Vaccine preventable diseases. Therefore this factor exacerbates the vulnerability of the population to disease outbreaks.

Ethiopia has been conducting human health and nutrition emergency needs assessment twice a year following Meher and Belg seasons. The assessment lead by Disaster Risk Management and Food Security Sector in collaboration with sector governmental institute (Ministry of Health, Ministry of Water and Energy, Ministry of Education, National Metrology Agency and respective regional bureaus) and non-governmental organizations (WHO, UNICEF, OCHA, MSF, Plan International, World Vision, ACF, World food program etc).

This assessment was conducted from November 23-December 16/2013. The main purpose of the assessment was to identify the possible emergency health and nutrition needs for the upcoming six months in order to develop humanitarian requirement document so as to minimize and control the occurrence public health events and impacts timely.

Objective

- To assess the extent, types, magnitude, severity and likelihood of different risks in the most "vulnerable" woredas
- To assess the existing capacity of the health system to address those risks
- To determine gaps in the capacity of the health system to address anticipated risks and existing threats
- Based on the findings to develop response document

Methodology

Study design

A cross sectional study design was used to assess and identify human health and nutrition emergency needs in the upcoming months.

Study Area

The assessment was conducted in Hadiya, Gurage and Silti Zones of SNNP region. From selected Zones two to four woredas were selected and visited based on their risk trend.

Study period

The assessment was conducted from Oct 24 - Nov 13/2015.

Assessment Team

Ten experts from federal DRMFSS, EPHI, SNNP-RHB, NMA, GOAL, WVI, WFP, REW, ACF and Plan int. were participated in the assessment. Half day orientation was given for all assessment team at federal DRMFSS before deployed to regions.

Assessment Tools

Two different structured questioners were used to collect health and nutrition related data at woreda and zonal levels. The questioners addresses socio-demographic profile, health profile, status of epidemic prevention and control multi sectoral coordination committee at all levels and

go through asking ongoing epidemic situation and check availability of emergency drug at zonal and district levels .

Source of Data

Secondary data were collected through discussion and interview from Zonal Health department and woreda health offices. Head of Zonal and woreda health offices, PHEM officers and Pharmacisists were interviewed in the data collection.

Findings

Zonal Level findings

Coordination

In all assessed zones multi sectoral coordination forum are available. In the forum all relevant government, nongovernmental and UN agencies are represented. However, the forums not meet regularly only they meet when outbreak occurs.

Outbreak

During the last three month August-October, 2015 outbreaks were not reported from the assessed zone except in Hadiya. In Hadiya zone there is an ongoing measles outbreaks, a total of 44 cases without death were reported from Shashogo Woreda.

Anticipated epidemic

Malaria is one of the anticipated risks in all assessed zones. In addition, Meningitis, Malnutrition, AWD Measles are also anticipated as a result of the Elino food insecurity and shortage of safe water supply.

Public Health Emergency Management

Public health emergency preparedness and response plan is available in all assessed Zones. However the plans are supported by budget except in Dalocha Woreda. In all assessed Zones there is a trained staff on Public Health Emergency Management. Rapid Response Team is available in all visited Zones and the team is activated if outbreak or emergency situation occurs.

Stock

In all assessed Zones there are no sufficient emergency drugs and medical supplies used to treat and diagnose Malaria, Measles, Meningitis and AWD at least for six month (annex 1).

Requirements

Due to the presence of malaria breeding site, endemic area and low ITN utilization, presence of ongoing measles outbreak, low immunity for meningitis and previous outbreak report, low safe water, latrine and utilization coverage; Malaria, Measles, Meningitis and AWD are the anticipated risk in the assessed woredas and Zones.

Woreda level findings

Coordination

Functional multi sectoral coordination committees are available in all assessed woredas. In addition the assessed woredas have public health emergency and preparedness plan but not including reproductive health except in Dalocha Woreda and their plan is supported by budget except Dalocha woreda of Silti Zone.

Top Five Causes of Morbidity:

Table 19: Top five causes of morbidity by zones by age group, 2014

Zone	Woreda	Rank	Top five causes of morbidity	
Gurage	Mareko	Below five yeair		Above five year
		1	Diarrheal Diseases	Pneumonia
		2	Pneumonia	Diarrheal Diseases
		3	Malaria	AFI
		4	AURTI	Malaria
		5	AFI	AURTI
	Sodo	1	Diarrheal Diseases non bloody	AURI
		2	AURI	Typhoid
		3	Pneumonia	AFI
		4	AFI	Typhus
		5	Diarrhea bloody	Trauma (injury)
Silti	Dalocha	1	AURTI	Diarrheal Diseases
		2	A.F.I.	Pneumonia
		3	AURTI	AURTI
		4	Typhus	AFI
		5	Pneumonia	Helmenthosis
	Lanfuro	1	Pneumonia	Pneumonia
		2	Diarrheal disease	AFI
		3	AFI	Diarrheal Diseases

		4	Acute Respiratory Diseases	Typhoid
		5	Others	All Respiratory Diseases
	Silti	1	Diarrhea	AFI
		2	Pneumonia	All Respiratory Diseases
		3	All Respiratory Diseases	Typhoid Fever
		4	Malaria	Malaria
		5	AFI	Pneumonia
	Sankura	1	Pneumonia	Pneumonia
		2	Diarrhea	AFI
		3	AFI	Typhoid Fever
		4	All Respiratory Diseases	UTI
		5	Malaria	All respiratory diseases
Hadiya Zone	West Badwacho	1	Pneumonia	Intestinal Parasite
		2	AURTI	UTI
		3	Diarrheal Diseases	Malaria
		4	Malaria (PF	Typhoid Fever
		5	Malaria (PV	Diarrheal Disease
	East Badwacho	1	Malaria	Malaria
		2	AFI	Pneumonia
		3	Pneumonia	Typhoid
		4	Helmenthiasis	AFI
		5	Diarrheal Diseases	Helmenthiasis
	Soro	1	Malaria	Malaria
		2	Pneumonia	Typhoid
		3	AURTI	Pneumonia
		4	Diarrhea all forms	AFI
		5	AFI	Helmenthiasis
	Shashogo	1	Pneumonia	Malaria
		2	Malaria	Typhoid
		3	Diarrhea	Pneumonia
		4	AFI	Diarrhea
		5	Others	Trauma

Outbreak

During three month period (August – October) period no outbreak occurred in all assessed woredas except in Shashogo Woreda in Hadiya Zone where there is ongoing measles outbreak which resulted in 44 cases and no death.

Preparedness

Among the assessed woredas, of Silti Zone, Hadiya Zone and Gurage Zone except Shashogo woreda of Hadiya Zone have no adequate emergency drugs and supplies at least for one month.

Risk Factor

Malaria

All assessed woredas are malaria endemic Although malaria control and prevention activates are conducted in the area, the following risk factors were identified: presence of malaria endemic area and malaria breeding site interrupted or potentially interrupting river and IRS coverage is very low in east Badwacho (13%) Shashogo (35%) and Soro (60%) and the LTIN coverage is, less than 80% in east Badwacho in Hadiya zone.

Meningitis

No meningitis cases were reported in all the assessed zones and woredas in the last three years.

AWD

There was no AWD epidemic in the last three years in all assessed woredas.

Measles

Ongoing measles outbreaks were reported from Shashogo Woreda of Hadiya Zone (44 cases and zero death) were reported from the assessed woredas. In addition, measles vaccination coverage is>95% in all the assessed woredas.

Nutrition

Adequate therapeutic supplies of (F-100, F-75 and RUTF) available are not enough for one month in most assessed woredas. In addition children discharged from OTP not referred to supplementary feeding program because of lack of TSF supplies except in Lanfuro Woreda in Silti Zone. Relatively high number of comparing with other assessed woredas.

Table 20: SC and OTP sites by Zone, From Jun – October, 2014

Zone	Woreda	SC	OTP
Kembata Tembaro	Tenbaro	4	23
	Doyo Gena	1	18
Sidama	Arorsa	1	31
	Borcha	3	38
	Aleta Wondo	2	27
Gedio	Kochera	1	25
	Bule	1	30

Conclusion

There was a functional multi-sectoral coordination forum in all assessed zone and woredas. However they are not meeting regularly. All assessed woredas have their own public health emergency preparedness and response plan and budget except Dalocha woreda of Silti zone. Reproductive health is not included in their plan except in Dalocha woreda Malaria, measles, AWD and meningitis were the main anticipated risk in the visited zone and woreda. During Jun to October outbreak were not reported in any of assessed woreda. However measles outbreak was reported in Shashogo woreda of Hadiya zone. On the other hand many of assessed woreda and zone do not have enough emergency drugs and supplies for 1 month except woreda. Adequate therapeutic supplies RUTF, F100 and F75 available in all assessed woredas. However, children discharged from the OTP are being sent home without enrolling them into supplementary feeding program because of lack of TSF supplies in most assessed woredas except Lanfuro woreda in silt and SAM and OTP cases increased in all assessed woredas compared to 2014. On the other hand the number of Malaria cases have decreased compared to that of 2015.Most of the woredas reported that there is shortage of vehicles to reach all the affected areas specially in cases of emergency and staff turnover is the other challenge.

Recommendation

Woredas which are not supported by budget must be supported by budget. Those Woredas should be given all the necessary drugs and supplies to be used to manage emergency situations.

There must be available supplementary feeding in all zones so that children discharged from OTP given supplementary feeding otherwise

Annex 5 : Regional Level Questioner for Meher health and nutrition emergency

Interviewer name_____			Institution:_____
Interview Date:(dd)_____/(mm)_____/2013			Region:_____
			Zone:_____
Main contact at this location:	Name:_____	Position:_____ _	Tel:_____

1. COORDINATION

A.	Is there a functional multi sectoral coordination forum for the health sector?	Yes□	No□
B.	Are all relevant government, NGOs and UN agencies represented?	Yes□	No□
C.	Frequency of regular meeting? (Weekly, Every 2 weeks, monthly…..)		

2. Outbreak? Yes□ No□

Was there any outbreak in the last 3 months? YES_____ NO_____

If yes, specify the type of disease

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

If yes, specify the type of disease_____, _____, _____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

3. Mention anticipated epidemics_____,

If yes please indicate Zone/Woreda at risk and risk population per anticipated risk: (Use the back side)

4. Public Health emergency Management

A.	Is there a Public Health Emergency Preparedness and Response plan?	Yes□	No□
	If yes, is the plan budgeted/ funded?	Yes□	No□
B.	Is there a trained staff on PHEM (Regional/Zonal/Woreda/HFs) the last 2 year	Yes□	No□
	If yes specify number of trained personnel_____		
C.	Is there a Regional trained Rapid Response team (RRT)?	Yes□	No□

D. Is there stock of: (Use the Stock estimation matrix to	Drugs and medical supplies		Total requirement	Available	Gap
	i. Meningitis vaccine				
	ii. Drugs:	Coartem			
		Oily CAF			
		Doxcycline			
		Ringer lactate			
		ORS			
		Amoxil suspension			

estimate the amount of stock for each drug/supply for 6 months)		Cotrimoxazole suspension			
		Tetracycline Ointment			
		Vit A.			
	iii. Lab supplies	RDT (Malaria)			
		Pastorex (Meningitis)			
		LP set			
		TI bottle			
	CTC Kit				
	Medical Supplies	Gloves,			
		Syringe			
		PPE			
	Others(specify)				

Annex 6: Woreda Level Questioner

Interviewer name _____ Institution:_____

Interview Date: (dd) /(mm) /2013

Region:_____

Zone: _____Woreda_____

Main contact at this location: Name:_____ Position:_____ Tel:_____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE				
1.1. Woreda total population:	M:_____F:_____		Under 5_____	Total:____
1.2. Special Population (if any):	Pastorals____	Refugees____	IDPs____	Migrant Workers___

SECTION II: HEALTH PROFILE	
2.1. Coordination	
Is there a multi sectoral PHEM coordination forum?	Yes□ No□
Is there a PHE preparedness and response plan?	Yes□ No□
Is there accessible emergency response fund	Yes□ No□
2.2. Morbidity (List top 5 causes of Morbidity) in the year 2005 EC (2012-2013GC)	

a. Morbidity below 5	b. Morbidity above 5	
1.	1.	
2.	2.	
3.	3.	

4.	4.	
5.	5.	

2.3. List number of cases/deaths from Sene 2005 to Tikimt 2006 (June–Oct 2013)

Month	AWD		Malaria		Measles		Meningitis		Other (specify)
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	
June 2013									
July 2013									
Aug 2013									
Sept 2013									
Oct 201									

2.4. Outbreak?

Was there any outbreak in the last 3 months? YES_____ NO_____

If yes, specify the type of disease

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Is there any ongoing outbreak of any disease? YES_____ NO_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

2.5. Preparedness: Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need?

Ringer Lactate (to treat AWD cases)	Yes□ No□	
ORS (to treat AWD cases):	Yes□ No□	
Doxycycline (to treat AWD cases):	Yes□ No□	
Consumables : Syringes, Gloves (for AWD management):	Yes□ No□	
Amoxil susp (measles)	Yes□ No□	
Tetracycline ointment (measles)	Yes□ No□	
Vit A (measles)	Yes□ No□	
Coartem for Malaria	Yes□ No□	
Lab supply: RDT for Malaria	Yes□ No□	
Lab supply: RDT (pastorex) for Meningitis	Yes□ No□	
LP set	Yes□ No□	

Number of CTC kit available: (for A WD) Yes□ No□			
Main shortage (if any): Specify			
Is budget allocated for emergency Rapid response by the woreda?			
SECTION III: RISK FACTORS			
Diseases	**Risk factors for epidemics to occur**	**Yes**	**No**
Malaria	Malaria endemic area		
	Presence of malaria breeding site		
	Interrupted or potentially interrupting rivers		
	Unprotected irrigation in the area		
	LLINs coverage <80%, what is the %		
	Indicate the coverage of IRS 2005		
	Depleted prevention and control activities		
	Number of malarious kebeles and total population in these Kebeles	Kebele _____ pop _____	
Meningitis	Was there Meningitis epidemic in the last 3 years (If yes specify date)		
	Has vaccination been conducted in the past 3 years		
	If yes : Indicate the date and number of people vaccinated	date	No
AWD	Was there AWD epidemic in the last three years (If yes specify date)		
	Latrine coverage %		
	Latrine utilization %		
	Safe water coverage %		
Measles	Is there ongoing measles outbreak		
	What is the measles vaccination coverage of 2005, less than one year (Sene 2005-Tikemet 2006)		
	Has SIA been conducted in 2005 EFY		
	If yes, Indicate the month and number of children vaccinated including the age group	Month_____	
		No. Vaccinated	
		Age group	

Chapter VI: Additional outputs

I was involved in Ebola tracing during the 2014-2015 Ebola outbreak in West Africa until all the counties were declared free of the Ebola virus. I had been working in the 8335 hotline in day and night shift including weekends and holidays by giving information about the prevention measures, symptoms, modes of transmission, and treatment. I have also been doing tracing by going to the hotels and residences where passengers from affected countries reside. The follow up was from the day they come to Ethiopia to 21 days. I also involved in the Ebola tracing at African Union, 2015 annual summit at African Union hall. All the guests had been followed daily in morning and afternoon till the summit was completed. There was also Ebola tracing at A.A stadium for a week and was during the African juniors' cup, 2015 which has been held in Ethiopia and all the players and guests have been followed each morning and afternoon until the games were completed.

During the follow up, I traced an English passenger from Sierra Leone who was febrile and reported this to the rapid response and he was declared negative for Ebola after being evaluated by physician. He was diagnosed and treated as a mixed malaria patient and went to his country cured.

I was also involved in the nutritional emergency management and I was following and reporting information about the situation in Somalia in a daily basis.

I have also attended two trainings which were given at EPHI and they are emergency operating command management and nutritional emergency management.

The last is even if I could not make it for some Technical reasons, is that I had won the non communicable disease (NCD) training opportunity which has been offered by the Training Programs in Epidemiology and Public Health Intervention Network (TEPHINET) and which was held in Atlanta.