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

Ethiopian Field Epidemiology and Laboratory Training Program (EFELTP)

Compiled Body of Works in Field Epidemiology

By

Million Tumato, MD, EFELTP resident

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

February 2011
Addis Ababa

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Advisors

1. **Dr. Adamu Addissie, EFELTP Coordinator**
2. **Dr. Richard Luce, EFELTP Advisor**

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Approval by Examining Board

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Chairman, School Graduate Committee	
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Examiner	
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Examiner	

Acknowledgments

This compiled body of work/Thesis in Field Epidemiology could not come in to reality without unreserved supports of the following individuals and Institutions by reason of which I am very much indebted to.

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It is quite obvious that this program is collaborative one and peculiar feature of it presupposes that mission of shared responsibilities be fulfilled by respective parties which actively got involved in implementation of the program as per memorandum of understanding reached therefore it is certain that these collaborative actors contributed level best to bring this program in to reality. In encountered health emergency events in the last two years all intervention activities were undertaken by residents of 1st cohort in collaboration with focal persons/officers of collaborating organizations while logistics, supplies and overall management of activities was provided by mentioned parties. Therefore I would like to extend my sincere appreciation to staffs/ focal persons and organizations of the following: Ministry of Health (FMOH) , School of Public Health (SPH), Addis Ababa University (AAU), World Health Organization(WHO), Center for Diseases control (CDC) and Ethiopian Public Health Association (EPHA) for their unreserved supports they rendered through provision of coordination, materials, logistics and supplies required to undertake encountered outbreaks/epidemics and related health events intervention activities which were very helpful in addressing pressing public health problems.

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List of Abbreviations

AAHAPCO	- Addis Ababa HIV-AIDS prevention & control Office
AARHB	-Addis Aababa Regional Health Bureau
AIDS	-Acquired Immuno Deficiency Syndrome
ARHB	-Afar Regional Health Bureau
AWD	-Acute watery diarrhea
BCG	-Bacillus Calmette Gurin
CFR	-Case Fatality Rate-
CTC	-Case Treatment Center
E.C	-Ethiopian Calendar
EFELTP	-Ethiopian Field Epidemiology and Laboratory Training Program
EFY	-Ethiopian Fiscal Year
EHNRI	-Ethiopian Health and Nutrition Research Institute
ELISA	-Enzyme Linked Immuno Assay
EOS	-Enhanced Outreach Strategy
EPI	-Extended Program on Immunization
ESS	-Evaluation of Surveillance System
FMOH	-Federal Ministry of Health
HIV	-Human Immuno Virus
HNA	-Humanitarian Needs Assessment
HPA	-Health Profile Assessment
IDSR	-Integrated Diseases Surveillance and Response
IFHP	-Integrated Family Health Program
Igm	-Immuno globulin
MCH	-Maternal and Child Health
MVI	-Motor Vehicle Injuries
NA	-Not Available
NGO	-Non- governmental Organizations
NHAPCO	- National HIV-AIDS Prevention & Control Office
ORS	-Oral Rehydration Fluid

OTP	-Out Patients Therapeutic Program
PHEM	-Public Health Emergency Mangement
PHEM Public	- Health Emergency Management
RF	-Relapsing Fever
RHB	-Regional Health Bureau
RHD	- Regional Health Bureau
RRT	- Rapid Response Team
RTA	-Road Traffic Accident
SAM	- Severe Acute Malnutrition
SC	- Stabilization Center
SNNPR	-Southern Nations, Nationalities and Peoples Region
SNNPRHB	-Southern Nations, Nationalities and Peoples Regional HB
UNICEF	-United Nations Childrens' Emergency Fund
USA	- United States of America
WB	-Western Blot
WHO	-World Health Organization
WHO	-World Health Organization
ZHD	-Zonal Health Department

Preface

This body of work which contains various outputs of epidemiological investigatigations on outbreaks/epidemics and health related emergencies, assessment and evaluation of surveillance systems, health profiles and compilation of various investigation findings and the like was produced as Thesis to fulfill partial requirement demanded for MPH degree in School of Public Health (SPH), Addis Ababa University (AAU), Addis Ababa, Ethiopia, February 2011.

It contains backgrounds, methods, results and discussions of different research activities undertaken while accomplishing very tasks of competency based field attachment which was scheduled to be carried out by residents upon finishing theoretical part of courses in Field Epidemiology and Labortory Training program (EFELTP). EFELTP is a program which is first of its kind in the country and was established on February 2 /2009. Ultimate goal of this program is enhancement of dependable progress in public health development of the country. Desirable outcomes are expected to be achieved by making unreserved collaborative efforts through providing trainings to public health workers who were engaged in public health services provision activities in their respective regions in attempt of empowering their capacities in the field and use them as vanguard health cadres in efforts being made to address particularly most pressing public health problems there by enabling them contribute their level best in this regard. This program also renders various supports to empower laboratory service capacity to enable the system provide quality services to needy communities. It also provides supports to undertake epidemiological investigations on outbreaks/epidemics and health related emergency events. Moreover it is being implemented in geared attempt of strengthening production and communication of evidence based to those in need to undertake possible intervention activities to address public health problems of the country.

It also gives emphasis on supporting demand driven health research activities through provision of required logistics and supplies and creating strong links between health programs,national and international health institutions, health research institutions and collaborating with local and international partners and make unreserved efforts to meet set objectives of the program. To accomplish very mission of the program it placed utmost emphasis on communicable diseases and health related events prevetion and control ativities undertakings through provision of required supports of different sorts. Adopting this strategy of option is very useful to eventually bring about enhancement in health development progress. This approach can be regarded as vital for more than 80% of communicable diseases occurring particularly in developing countries can be prevented and controlled if proper strategies of option be

adopted and implemented as situations warrant. Currently magnitude of emerging and reemerging communicable diseases particularly epidemic prone ones show increasing tendency in low income countries of the world.. In Ethiopia burden of communicable diseases particularly epidemic prone ones is on increase and as result of which the need to escalate responses to address this cause is unquestionable.

This compiled body of work prepared as Thesis can be considered as contribution made to ongoing national effeorts being made to address issue of pressing public health problems of the country as residents used to undertake required activities in teams as the program presupposes this approach to be implemented for best results in this field. Moreover during field attachment period when ever any health emergency situation occurs residents were made to actively collaborate with health facilities, institutions and local and international partners (FMOH, AAU, EPHA, WHO, CDC, UNICEF...) to contribute to concerted efforts and conjoint action being taken to address public health problems. Therefore this activities and their outcome contained in the body of work regarded as results of efforts made by mentioned institutions and their officers for intervention activities were undertaken conjointly. Body of work of this Thesis incuded: Reports on epidemiological investigations of outbreaks/epidemics/and related health emergency events, Reports on evaluations of surveillance activities, humanitarian needs assessments and assessment results of health profile of selected zone, woredas and health facilities were also incorporated.

Moreover it contains different pieces of scientific writing including Abstracts, manuscripts and possible scientific publication bulletins prepared on different health events which can be used to communicate research findings to all in need to undertake possible intervention measures

Having made general summary on What is meant by Body of work for this Thesis in Field Epidemiology and accomplished very task of describing its overall contents, I here after explain about Epoidemiological investigations (outbreaks/Epidemics/Related health emergencies, assessments.evaluations of various surveillance systems, profiles and the like), what assessment was undertaken where, when and duration of intervention and methods used to investigate issues/health problems deserved utmost priority.

AWD outbreak/epidemic investigation/intervention activities were undertaken for ten days in Gewane, Burimedayto and Amibara districts in zone 3, Afar, Ethiopia, June 2009. After one month in the same region Afar team of Joint mission support to contain AWD involving partners mentioned above and effort to deal with this problem was made for 02 weeks on July 2009. Since problem of AWD was encountered

almost in all regions of the country, Multi sectoral involvement in intervention activities undertaken to escalate response to contain AWD out break. Similarly mentioned multi sectoral team went to Dasenech Woreda, S.Omo Zone, SNNPR, December 2010. Methods adopted to investigate outbreaks of AWD included: Review of surveillance data, active case search, and Clinical examination of suspected cases who fulfilled set criteria for case definition, environmental analysis and use of laboratory to investigate stool samples to confirm diagnosis. Based on produced evidence based information immediate intervention activities were implemented to prevent and control the outbreak in attempt of containing it. Because of unreserved efforts made by health service providers, partners and by and large active involvement of communities it was possible to contain outbreaks of AWD in any of the regions affected. It was only in Addis Ababa where (July-December 2009) the epidemic was that of large scale involving various segments of communities and practically all sub-cities where containing of the epidemic delayed for 06 months. Even in this city though its magnitude was relatively higher as compared to other regions thanks to unreserved concerted efforts and conjoint actions of all parties ir was possible to contain it.

Similarly different epidemiological investigations/assessmemts/evaluations were undertaken in different places affecting different population and for certain period of time. Ultimate goal of undertaking such investigations was to produce evidence based information and communicate to those in need to take appropriate measures to address public health problems particularly most pressing problems of the country.

Analysis of surveillance (IDSR) data (05 years) was done in Addis Ababa for 06 months from April to August 2009. Outbreak investigation and surveillance activities were undertaken from May-June and ongoing active surveillance activities with interventions lasted for more than 06 months, up to April 2010. Assessment of magnitude and trends of 10 years (2000-2009) road traffic accidents was undertaken for months from December 2009-June 2010. Moreover outbreak investigation of measles and Relapsing fever in Kolfe-keranio sub- city, Addis Ababa was undertaken in February 2010.

Relevant Investigations together with laboratory testing were done. After laboratory testing diagnosis was Confirmed and prompt intervention activities were undertaken to contain outbreaks and prevent and control outbreaks from occurring in the future. In addition Measles surveillance evaluation and Health profile assessment activities were done for one month in Sidama zone, SNNPR, December 2010. Assessment of Humanitarian Needs assessment activities were conducted in Southern Nations, Nationalities and Peoples region, Ethiopia, July 2010. Proposal on magnitude and trends of road traffic accidents in SNNPR and Oromia regions was prepared and submitted to School of Public Health (SPH),

Addis Ababa Unuversity (AAU) for possible investigation activities to be undertaken. Last but not least is that there were many epidemiological investigations which were underwent in the last two years mention of above activities regarded as representing examples.

The purpose of this body of work compiled as Thesis was to report on undertaken epidemiological investigations on outbreaks/epidemics and related health emergency events, conducted surveillance evaluation activities on health systems, humanitarian needs assessment, evaluation of health profile system, health intervention activities among others. Ultimate goal of undertaking such investigations was to produce and communicate evidence based information to health service providers, health facilities at various levels, health institutions at various levels including regional health bureaus and federal ministry of health, sectors, related policy makers, partners, those concerned and public at large to take necessary intervention measures to address public health problems of the country to eventually bring about enhancement in health development progress.

Chapter I – Outbreak/Epidemic Investigations

1.1 The epidemiology of acute watery diarrhea outbreak and challenges in control measures, Zone 3, Afar, Ethiopia, April-June 2009

Abstract

Objective: The study was conducted to investigate the outbreak epidemiologically & provide guidance & support on intervention activities to control & prevent the disease in the districts.

Methods

55 cases and controls were selected conveniently & interviewed with structured questionnaire. A line list and case register log book of the districts were reviewed; Hygiene and sanitation condition of residents in the study area were meticulously well observed. Stool & drinking water samples were also collected, transported to and analyzed in EHNRI laboratories to verify the etiologic agent. Then data were analyzed using Epi-Info version3.3.2 & Microsoft Excel.

Results

A total of 1065 cases and 30 deaths were registered from 21/08/2001-09/10/2001E.C. Males constituted 87.8 % (935) from the total cases. The age range of cases was 2-60 years, however majority of the cases were in the age category of 18-25 years old. The attack rate & the case fatality rate of the outbreak was 0.9% & 2.8% respectively. The highest number of cases were seen in Debel, Geliadura,& Briforo villages (21.1%, 16.7% &11.7% respectively).Among the interviewed groups 94.4 % of the respondents wash their hands before having any meal/preparing food & 83.3 % practice hand washing after latrine usage. 74.1% of them get their drinking water from river while 25.9 % from piped water & only 22.2% used treated water for drinking. 47.1 % of the respondents had access to latrine & from these 63.6% of them use it always. Hand washing after latrine usage (OR 0.13 & p-value 0.03), access to latrine (OR 10.5, P-value 0.001) & contact to a case (OR 2.00, P-value 0.001) had shown statistically significant association with AWD. Vibrio cholera 01 serovar inaba was isolated from 7 (78 %) of stools samples taken and all of them were resistant to Cotrimoxazole.

The hygiene and sanitation condition was worst (no safe water supply and accessibility to latrine) in investor camps, and response of the districts' epidemic taskforce was also weak which might be resulted in prolonged duration of the epidemic in the area.

Conclusion

The overall attack rate & case fatality rate was 1% & 2.8 % respectively which was higher compared to the WHO recommendation. Drinking untreated water, close contact with a case, inaccessibility to latrine and not practicing hand washing were found to be risk factors for the epidemic. Vibrio cholera 01 serotype Inaba was responsible for the acute watery diarrhea epidemic in all three districts. Both the local community and daily laborers in investor camps had no access to safe water supply and latrine. Therefore, all responsible bodies in the area should work

together for the provision of safe drinking water supply, accessibility of latrine & giving awareness about AWD prevention methods to the residents in the area.

Key words: Acute watery diarrhea outbreak, investor camps, districts of Gewane, Amibara & Burimedatyto, Afar

Introduction

Cholera is a diarrheal disease caused by infection of the intestine with the bacterium Vibrio cholerae, either type O1 or O139; usually transmitted through faecally contaminated water or food and remains an ever-present risk in many countries. About 20% of those who are infected develop acute, watery diarrhea – 10–20% of these individuals develop severe watery diarrhea with vomiting. If these patients are not promptly and adequately treated, the loss of such large amounts of fluid and salts can lead to severe dehydration and death within hours. The case-fatality rate in untreated cases may reach 30–50%. Treatment is straight forward (basically rehydration) and, if applied appropriately, should keep case-fatality rate below 1%.[1]

Globally, according to World Health Organization (WHO) report, a total of 131,943 cases, including 2272 deaths have been notified from 52 countries[2].

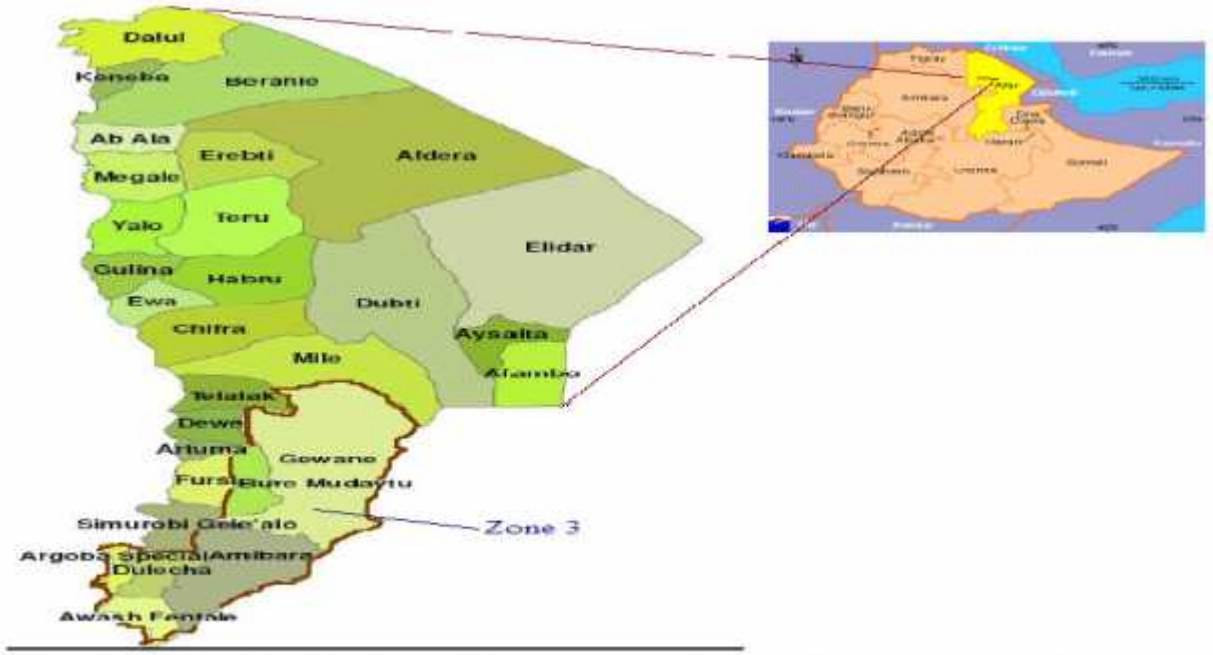
Some reports and studies have indicated that in Ethiopia there was cholera epidemic in 1990 which persisted with recrudescence of cases till 1998 [3]. Moreover, recently in Ethiopia, there were a total of 22,101 cases and 219 deaths (with case-fatality rate 1.0%) of acute watery diarrhea in five big regions including Addis Ababa [4].

Back Ground

Afar is pastoral and agro-pastoral people living in the arid and semi-arid areas of Ethiopia, Eritrea and Djibouti, located in the Northeastern part of the country, stretching 278,000 sq. k/ms from the Djibouti Dire-Dawa railway in the South to the Bari-Pensile in the North and from the shores of the Red Sea to the Eastern planks of the Ethiopian plateau. The Ethiopian Afar inhabits the middle, the lower and part of the upper Awash valley. Afar National Regional State is one of the nine regional states of Ethiopia according to the 2002 population projection from 1996 population and Housing Census, for polio eradication program, the total population of the Afar region was 1,327,001, out of which (56.7%) were males and (43.3%) were females, with 92.2% of population living in rural as agro pastoralist and pastoralist and 7.8% living in urban areas. Of the total population, 95.6% were Muslims by religion.

The regional population density is estimated to be 12 persons per km. Majority of the rural population (96.2%) is Afar speaking, while 57.8% of urban is Amharic speaking (5, 6).

The society is patriarchal which means that men are the head of the family and represent the family at all level. The responsibility of the women is grinding, food preparation, serving food, looking after goat and sheep & rearing children (7, 8).



Districts of Afar Region. Map accessed on. February 18, 2010 *(http://www.ethiodemographyandhealth.org/Afar.html)*

Figure 1.1.1: Map of Afar regional Administrative State and its districts, Afar, Ethiopia, February 18, 2010

According to the Ethiopian FMOH Afar region is one of the repeatedly affected area by AWD. A total of 8109 cases and 194 deaths were registered in three districts of Afar (Amibara, Burimedayto, and Gewane) from 2006-2009 with a total case fatality rate of 2.4%.there was no reported cases of AWD from Burimedayto and Gewane districts in the year 2006 and 2008, But Amibara had AWD in all four consecutive years.

On last week of May (Ginbot in Ethiopian) a team from the FMOH, PHEM unit which includes field epidemiology residents, was sent to affected woredas of Afar and actively involved in outbreak investigation and intervention activities undertaken in the above mentioned districts on issue of AWD

General Objective

The main objective of this study was to provide epidemiologic description of the outbreak occurred from April – June 2009 and guide the intervention measures in three districts of Afar.

Specific objectives:

1. To verify the diagnosis, assess the magnitude of the outbreak and possible risk factors in the districts of Gewane, Amibara and Burimedayto, Afar.
2. To activate and support the woreda epidemic taskforce in prevention and control activities of AWD.
3. To evaluate the situation of AWD in the investor camps engaged in cotton plantation in the districts.

Methods and materials

Study area and population

The outbreak investigation was conducted in Amibara, Burimedayto, and Gewane woredas of Afar Region which have a population of 63280, 31786 and31313 respectively. Many daily laborers are working in 11 companies (excluding those in Amibara) which engaged in cotton plantation. There are also coal producers who came from wolayta, SNNPR

Study design

A case control study design was employed; the selection of cases and controls was made conveniently (unmatched).

Sample size and data collection

Case finding: We used the Ethiopian FMOH definition of a suspected cholera case in an outbreak setting- *in an area where there is a cholera epidemic, a patient aged 2 years or more develops acute watery diarrhoea, with or without vomiting.*

AWD cases were identified by obtaining line-lists compiled by the district health offices and active case finding using the case definition.

A total of 31 Cases and 24 controls were interviewed with standard questionnaire and national check list (assessment tool for AWD) was used during observation of investor camps and community villages for sanitary and hygiene condition. Moreover reviewing of a case log book, reports of the districts for deaths and cases, discussion with health workers and different official leaders involved in the epidemic task force was conducted.

Laboratory investigation: Cary-Blair transport medium was used to transport the diarrheaic stool samples collected from the cases. Because of its high pH (8.4); it is the medium of choice for transport and preservation of *V. cholera, however it also used to transport* many other enteric pathogens, including *Shigella*, and *Escherichia coli* O157:H7.

All samples were initially cultured on TCBS (& other agar media used for isolation of pathogens from stool sample) medium. After 18-24hrs distinct colonies were sub-cultured on nutrient media and re-incubated for 18-24 hrs. The identification of Vibrio cholera was done by oxidase test and agglutination with polyvalent antiserum. Serotyping was made using monovalent antisera.

Antibiotic sensitivity testing of *V. cholera isolates* was also done on Muller Hinton agar by disc diffusion method of Kirby & Bauer (9, 10).

Standardized microbiological procedures were also followed to analyze bacteriological water quality in Ethiopian health and nutrition research institute (EHNRI).

Limitation

It could not be easy to interview more cases and especially controls to get reasonable sample size in a very short time in a dispersed population. The team reached in the area very late and couldn't spend much time on investigation of the outbreak rather engaged in the intervention activity.

Ethical issue: Permission to undertake the study was obtained from Public Health Emergency Management office (PHEM/EHNRI) of Federal Ministry of Health of Ethiopia (FMOH), School of public health (SPH), Addis Ababa University (AAU), Afar regional health bureau and Districts of Afar where this study was conducted. Informed consent of study participants was obtained from respondents before undertaking data collection activities**.**

Results

Burimedayto district: A total of 320 registered cases and 8 deaths were reviewed from the district health office and health facility registry in Burimedayto from date 25/08/2001-08/10/2001 E.C. Most of the cases were males (92.7%) and females constitute only 7.3%. 38.80% (127) of the cases were also found in the age category 19-24 yrs. The median age was 22 & the age range was 2-60 yrs old.

All 13 villages / Kebeles in the district were affected by AWD and 68.4 % (219) of the cases were from Debel village/Kebele followed by Fiaeto (18.1 %(58)

On the date 25/8/2001, the first cases were diagnosed and registered. The highest pick was seen on day 25th Ginbot (June in Eglish) 2001 E.C (Graph 2).

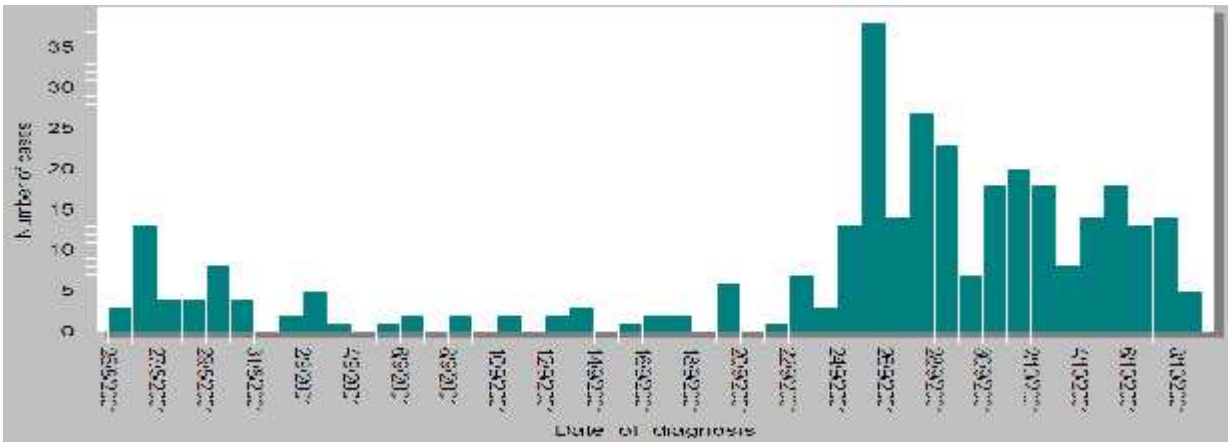


Figure1.1.2: *Epidemic curve by date of diagnosis of Burimedayto district AWD cases, Afar, Ethiopia*

The above epidemic curve of AWD cases in Burimedayto district expilicitly shows typical characterstics of curve revealed in propagated type of epidemic curve which entails person to person transmission of the epidemic.

Gewane district: A total of 637 cases and 20 deaths were reviewed from the daily reporting format.78.3% (499) of the cases were in the age range 15-44 yrs old.83.2% & 16.8% were males & females respectively. 28.0 %(178) of the cases were from Geliadura village followed by 19.7 %(125) in Briforo. The highest death toll was also recorded from these two villages [26 %(4) in each].

In Gewane district, the onset date of the first cases was recorded on 21/08/2001 E.C. The highest peak was seen on 5 of Ginbot and 4th week of the same month 2001 E.C. However on day29/09/2001 there was a sharp fall & again sharp rise on date 30/09/2001 & 01/10/2001 E.C (Graph 2)

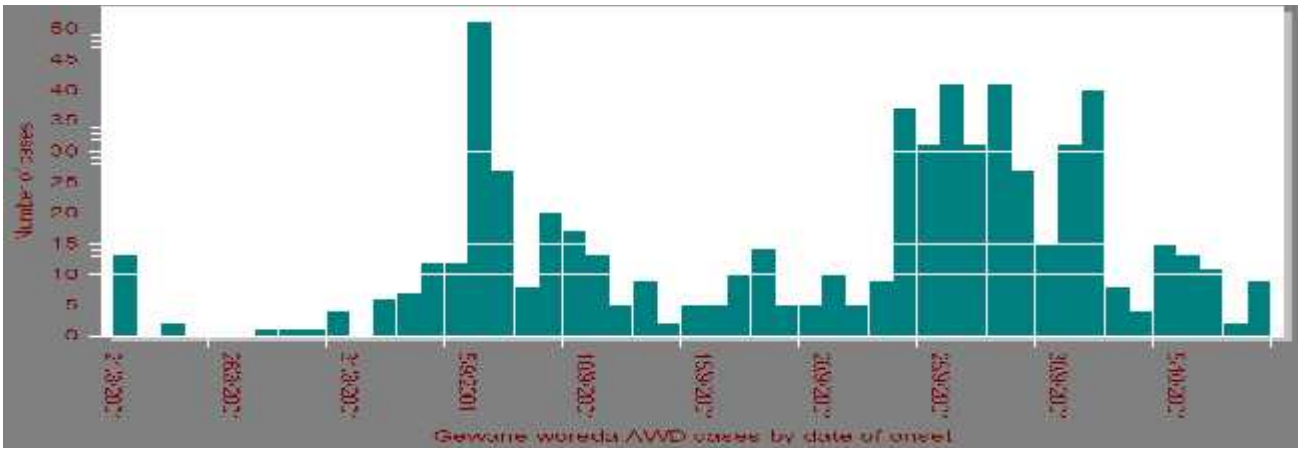


Figure 1.1.3: *Epidemic curve by onset date AWD from 21/08/2001-08/10/2001 E.C, Gewane, Afar*

The obove above epidemic curve also shows propagated type of epidemic curve which clearly shows that the epidemic was spread due to person to person transmission of AWD infection

The case fatality rate was 3.1% for Gewane district & 80% of the deaths were in the age group of 15-44 years old. From 28/08/2001 - 06/10/2001 E.C (during the 38 days of the epidemic) death was also occurred at least in each week in this district (Graph 3).

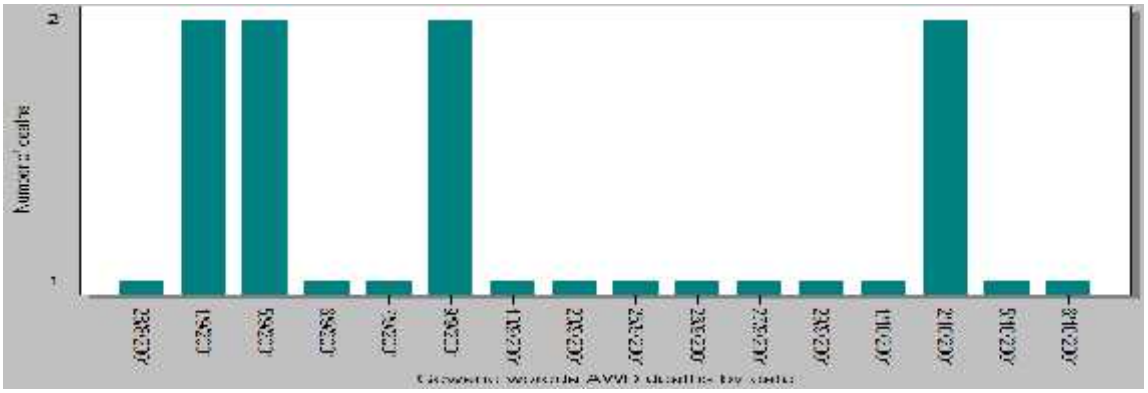


Figure 1.1.4: *Deaths due to acute watery diarrhea (AWD), Gewane district, Afar, April-June 2001 E.C.*

Amibara district: A total of 108 cases and 2 deaths from 06-09/10/2001 E.C were seen in the district. All cases and deaths were occurred only in Sheleko village/kebele among daily workers employed in a private

cotton plantation farm. No report from the district health office or health facility was reviewed for any other village (Table 1).

From a total of 24 villages affected by AWD in three districts, the highest proportion of cases was seen from Debel (21.1%), Geliadura (16.7%), Briforo (11.7%), & Sheleko (10.2%) villages (Table 1).

Table 1.1.1: Depicting distribution of AWD cases by villages in Gewane, Burimedayto and Amibara districts, Zone 3, Afar regional state, Ethiopia, April to June 2009 (G.C)

Table 1: Distribution of AWD cases by villages in Gewane, Burimedayto & Amibara districts, Zone 3, Afar, April-June 2001 E.C

Ser No	Village/Kebele	No	%	Remark
1	Amasabura	32	3.0	
2	Bedula	1	0.1	
3	Beida	1	0.1	
4	***Briforo***	***125***	***11.7***	
5	Burimedayto	4	0.4	
6	Burka	1	0.1	
7	Danglafia	1	0.1	
8	***Debel***	***224***	***21.1***	
9	Degita	1	0.1	
10	Fiacto	58	5.5	
11	Geliabora	22	2.1	
12	***Geliadura***	***178***	***16.7***	
13	Gewane	64	6.0	
14	Hengoyuo	1	0.1	
15	Kodae	60	5.6	
16	Leras	1	0.1	
17	Melkawayou	1	0.1	
18	Meteka	2	0.2	
19	Morobiro	2	0.2	
20	RassAdass	2	0.2	
21	Sheleko	108	10.2	
22	Subiro	1	0.1	
23	Urafita	94	8.8	
24	Yigil	80	7.5	
	Total	**1064**	**100.0**	

The pattern of the epidemic from date 21/08/2001-09/10/2001 E.C for the combined cases from all three districts (Gewane, Burimedayto, & Amibara) like other district specific curves showed protracted person to person transmission. It can also easy to see the 4 clear marked high peaks in the epidemic curve (Graph 4).

Figure 1.1.5: Epidemic curve of AWD in zone 3, Afar, April-June 2001 E.C (2009G.C)

Observation for the situation of investor camps and community

Investor camps situation:

The team observed the daily workers hygiene and sanitation condition in the investor camps; as it was seen there was no any latrine and safe drinking water supply (fetch directly from river Awash) for daily workers. They live in overcrowded (>60 persons/room) condition, drinking and eating utensils are shared (1 utensil for > 50 individuals), inadequate /no provision of medical supplies, and except one investor camp (in Amibara) all others had no any clinic and health workers to provide treatment and health education activities.

Photo: *Daily workers shelter in the investor camps and the cotton plantation product (cotton covered under plastic sheet)*

Figure 1.1.6: Shelter of daily labourers in the investor camps and produce of investor camps workers (Cotton covered with plastic), Afar, Ethiopia, June 2009

Community situation:

The team also visited different villages in the districts; like in investor camps the local community reside in villages (rural) had no any access to safe drinking water supply and latrine.

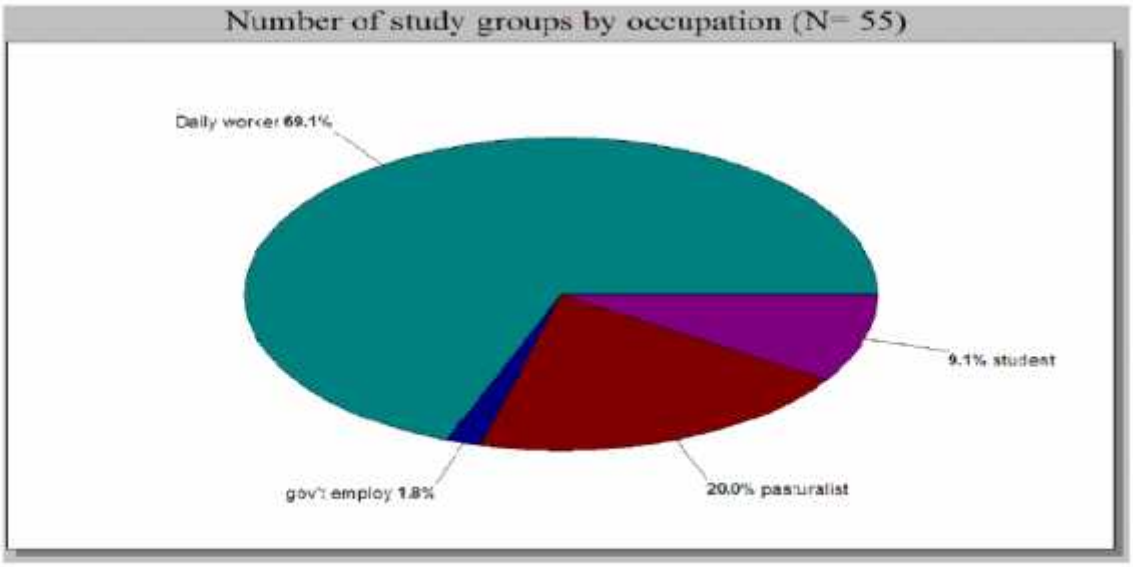
Health extension workers and & other health professionals were scarce, inadequate medical supplies and other resources (hygienic materials, water treatment kits, etc). The team also observed that awareness of the rural community to personal hygiene and diarrheal disease was low.

Photo: *Afar women fetching water from a canal used for irrigation (from Awash River) for drinking and other house hold purpose, Geliadura village, Gewane district, Afar, Ethiopia*

Figure 1.1.7: Afar women fetching water from a canal used for irrigation (from Awash river) for drinking and other household purposes, Geliadura village, Gewane district, Afar, Ethiopia

Questionnaire based interviewed study group

From a total of 55 individuals interviewed, 31 of them were cases & the rest were controls (with out symptoms of the disease), 85.5% were males & the median age was 20 years old. Cases of AWD were selected from patients who came to case treatment centers and households of affected families and controls were selected from households of families which were not affected by AWD. Appropriate sample size of cases and controls was not maintained for there were conflicts between clans of Afar ethnic group which resulted in relatively low number of cases and controls to be investigated to obtain reliable results.
Even though we couldn't get the number of cases by occupation from the line list and/or register logs of the districts, it was shown that 69.1% of the interviewed were daily workers followed by pastoralists (20%).



Graph 5: *Distribution of study population (cases and controls) by occupation, Gewane and Burimedayto district, AWD outbreak, Afar, April-June 2001 E.C.*

Figure 1.1.8: Distribution of study population (cases and controls) by occupation in Gewane and Burimedayto districts, AWD outbreak, Afar, Ethiopia, April-June 2001 E.C (2009 G.C)

From the interviewed cases 74.1% of them get their drinking water from river while 25.9 % from piped water & only 22.2% used treated water for drinking. 47.1 % of the respondents have access to latrine & from these 63.6% of them use it always. Only 13.2 % of respondents ate/drink in another's home/restaurant.94.4 % of the respondents wash their hands before having any meal/preparing food & 83.3 % practice hand washing after latrine usage. 54.8% of the patients treated with antibiotics, IV fluid & ORS and 32.3 % of them get only IV fluid.

Table 1.1.2: Table depicting exposure for some possible risk factors, OR, 95% CI and P-Valuein Gewane and Burimedayto districts, AWD outbreak, Afar regional state, April to June 2001 E.C (2009 G.C).

Table 2: *Exposure for some possible risk factors, OR, 95% CI and p-value, Gewane & Burimedayto district, AWD outbreak, Afar April-June 2001 E.C*

Sc. No	Risk factor	OR	95% CI	P-Value
1	*Drinking water treatment*	0.28	0.07-1.07	0.053
2	*Contact with other case*	200	19.4-2061.4	0.001
3	*Hands washing with Soap /detergent after latrine usage*	0.13	0.01-1.13	0.03
4	*eat/drink in a restaurant/another's home*	0.48	0.09-241	0.3
5	*access to latrine*	10.5	2.5-43.3	0.001

Laboratory confirmation: *Vibrio cholera 01 serotype Inaba* was isolated from seven stool samples which were collected from three districts & all isolates were sensitive to Ciprofloxacin, Doxycycllin, Tetracycline, Erythromycin, Amoxicillin, & Chloramphinicol. However, all isolates were resistant to co-trimoxazole. No any other enteric pathogenic bacteria were isolated from stool samples.

Escherichia coli type I and other faecal cloiform bacteria were also isolated from all four water samples collected from the canals that residents and employees of investors were being used for drinking and other home purposes in the districts.

Discussion

The onset date of the disease & date of diagnosis for the first cases was recorded on 21/8/2001 E.C & on 25/8/2001 in Gewane & Buriemedayto respectively. As it was observed during the field visit, the two districts are very close and adjacent; residents and daily laborers could easily cross from one village to the other frequently and could transmit the disease.

The overall attack rate & case fatality rate was 1% & 2.8 % respectively; which is almost similar with the cholera outbreak in Kampala-Uganda and Tanzania [11, 12]. Age and sex specific attack rate and case fatality rate could not be calculated due to lack of estimate population and uniformity in data compilation system in the districts.

The CFR was high as compared to the WHO guideline; which was supposed to be less than 1 % [1]. This could be ignorance in the investor camps, shortage of medical supplies & poor case management in CTCs. However when we compare with outbreaks occurred in other African countries, such as in Nigeria 6.1% (similar serotype isolated like in our outbreak investigation)[13], in Lusaka 5.1% [14], in Kenya 4% [15], and in Burundi 3% [16] ours case fatality rate is low. Still we couldn't ignore the unreported & unregistered cases and deaths especially in the 11 villages/kebeles in Burimedayto district which has a potential to rise up the case fatality rate.

On the 4 th week of May (Ginbot in Ethiopian) in both districts there were high number of cases (Graph 1 & 2) which might indicate similar transmission pattern among the districts, but there was also marked case load difference among them in the 2nd week of May. In both districts most of the cases were daily laborers & males working in cotton plantation. This could be due to overcrowding (more severe than refugee camps), over all poor prevention & control measures in the investor camps and which actually was also witnessed by the investigators during the field visit.

The highest numbers of cases were seen from Debel, Geliadura, & Briforo villages (21.1%, 16.7% &11.7% respectively) (Table 1). This might also be due to the high number of daily laborers residing in these villages/Kebeles. The duration of the epidemic was long and the Epi-curve has many peaks (Graph 4) which showed a progressive person to person transmission, this could be due to the absence of health infrastructure in the investor camps and weak response activity of the districts Epidemic task force.

Risk factors for exposure to hand washing after latrine use, access to latrine & contact to a case had shown statistically significant association with AWD in univariate analysis. But drinking treated water & eating/drinking in a restaurant or other's home were not significantly associated to AWD (Table 1).

Provision of Intervention Activities

The team was briefed about the problem by representatives of local authority and health officials and made discussion and prepared short work activity plan. As per the consensus reached with the districts officials, the team engaged in re-activating the districts epidemic response task force / AWD committee/to take actions like involving district sectors, community leaders & health agents in the active case detection & educating the community to control the epidemic. The team also conducted various activities like reporting daily cases and deaths, supervision of CTCs & supported the case management, Communicated with regional Health bureau, FMOH and UNICEF to transmit messages of prevention and control measures for AWD through media in Afar language, observed investors camp's, made discussion with investors & gave advice on how to control the epidemic and handle their daily laborers.

Even though the numbers of cases were on declining after 30/9/2001, AWD cases were coming to the health facility up to 8/10/2001 E.C (The team from PHEM was returned on 9/10/2001 E.C).

Challenges encountered to undertake intervention activities

We observed very low level of fulfilling responsibilities and accountabilities of investors for their daily laborers against AWD and any health related issues, which should need higher official's attention at the regional or federal level. It was difficult to get and give advice to coal producers who came from other regions about the disease.11 kebeles of Burimodayto were inaccessible for vehicle transport from Afar because of Awash River and the district had no transport vehicle its own. We also couldn't make the epidemic response task force full time on board for the intervention of AWD because of other priorities like resolving dispute among clans.

Conclusion

In this outbreak the overall attack rate & case fatality rate was 1.5% & 2.9 % respectively which was higher compared to the WHO recommendation. Both the local community and daily laborers in investor camps had no access to safe water supply and latrine. Drinking untreated water, close contact with a case, inaccessibility to latrine and not practicing hand washing were found to be risk factors for the epidemic. Vibrio cholera 01 serotype inaba was responsible for the acute watery diarrhea epidemic in all three districts. The isolation of Escherchia coli Type I and other faecal coliform bacteria from the water being

used for drinking & for other house hold purposes both by the local community and daily workers in the investor camps could also support the real cause for the situation in the area.

Recommendation

RHB & FMOH should discuss with Investment office & other higher officials to halt further spread & mitigate the impact of AWD & other diarrheal diseases in the community. The districts, Investor camps, NGOs, regional health bureau and the FMOH should also work for the Sustainable provision of safe drinking water supply & accessibility of latrine for both the local community and daily laborers in the investor camps. Districts have to work in giving awareness to the community about AWD and other diarrheal diseases prevention and control measures through health education.

Acknowledgments

We would like to extend our sincere appreciation to the following individuals and institutions heads without whose unreserved supports work of this study could not come in to reality.

All districts surveillance focal persons who gave us log books and other documents related to AWD, Health center heads that participate and provide their unlimited support during our field visit in rural villages/kebeles and Mr Abiy for his cooperation in giving some back ground data for the study areas (districts) in Afar.

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1.2: Report on verification of AWD outbreak in Dasenech woreda, South Omo zone, SouthernNations, Nationalities and peoples Region. Dasenech Woreda, S.Omo, SNNPR, Ethiopia, 11-20/3/2002 E.C (November 20-29, 2009G.C

Executive Summary

Acute Watery diarrhea /AWD/ has been reported from regions in Ethiopia since 2006 GC. One of the regions reporting the case is Southern Nation and Nationalities People (SNNP) from different Zones and Special woredas and cities.

AWD was not reported from South Omo Zone in SNNPR as there was no AWD out break. Currently South Omo Zone, reported AWD out break with index case Tikimt 26/02/2002 E.C (Oct, 2009) from one of its woreda called Dasenech wereda which have 40 villages and 56,176 residents.

The woreda is one of the remotest site from the center, bordered with Kenya sharing Lake Turkana (L.Rudolf) and have poor access to infrastructure (Road, electricity, telecommunication, Health facility etc).

Thus, the Public Health Emergency Management Center/Ethiopian Health and Nutrition Research Institution recommended a joint team mission to the Zone/Southern Nation and Nationality People Region/ for outbreak verification/investigation, to give technical assistance and support the Multi sectoral response coordination mechanism and PHEM/FELTP team mobilized from 11-20/3/2002EC (November 20-29 ,2009GC).

The team Reviewed secondary data from woreda Health office ; the only Health center in the woreda and CTCs ; Interviewed patients and relatives visited the treatment sites, conducted field rapid laboratory investigation/stool sample) using RDK and done culture and sensitivity; investigated the water source for contamination; called and led woreda Coordinating body meetings.

Analysis of case reports, interviews with health workers indicates AWD outbreak existed in Dasenech wereda where the index case was treated on 27/02/2002 in the Omorate Health Center from one of the remotest village called Delerele which is located on the border of Kenya where it is sharing the Lake Turkana as one of the fishery area for both countries. The Epi-curve depicted also propagated character of

transmission. The outbreak affected 47% of Dasenech wereda from its 40 kebeles. From 27/02/2002-18/03/2002 EC reported 1426 cases and 23 deaths/including community death) making 2.54 % attack rate and 1.6% case Fatality rate.

Risk factor investigation revealed that ORs, of latrine access, Washing hands before preparing and eating food VS illness has protective effect (OR=0.799 and 0.469 respectively) but there is no significant association as the CI of 0.146 - 4.3256, 0.075 -2.9402 & P-value of 0.545 and, 0.355 respectively. The OR of Association between water sources VS Illness is calculated to be 1.306 which might be one of the risk factor. But still it is not significantly associated.

Laboratory investigation revealed that 90%(N=20) of the investigated stool sample revealed V.Cholera 01 positive (Rapid Diagnostc Kit) (higher than the result observed in Guinea Bissau which was 72% positivity rate using Crystal VC RDT- Tropical Medicine and International Health, volume 14 no 10 pp 1–5 october 2009) and 71.4%(N=7) samples became culture positive for the same pathogen with resistance for Bactium and sensitive for other antibiotics like TTC,Docy and others.

Water sample investigation (from the river and pipe) result showed also not potable due to bacterial contamination.

The observed outbreak expanded to-ward the Northern, Eastern and western as well as central part of the woreda.

Investigating the rumours, using lab results , considering the possible incubation periods, considering the existence of AWD outbreak in the Kenyan side, taking into account the movement of people in the border area and expansion route of the outbreak, the AWD out break confirmed, and the outbreak is not likely expanded from the nearby woredas of Ethiopian side. Based the investigation findings, the wereda was advised to strengthen its surveillance and case management, improve safe and adequate water access, provision of safe latrine access ,strengthen health education, strengthen the woreda coordinating of multi sectoral response.

Background

Dasenech woreda is one of eight woredas of South Omo zone in SNNPR. It is bounded in the North Hamer woreda of South omo zone, in the south Lake Turkana and Kenya, in the east Gniagatom woreda and Kenya and in the west by Hamer and Kenya. It is found 370 meters above sea level. It has average temperature of 39 degree centigrade. The woreda is found 208 kms away from the zonal capital Jinka, 655 kms from Hawassa regional capital and 885 kms away from Addis Abeba. Has total population of 56,178 among which 27,526 (48.9%) are males and 28,650 (51,1%) are females and it is administratively divided in to 40 kebeles .

The woreda has least social service such as roads, water, telecommunication, electricity and others as compared to sister woredas found in the zone. Use their own language. The dwellers are said to be pastoralists. The people have strong relationship with Turkana (Kenyans) and their source of water is the second largest river of the country, Omo river . Omo river dissects the woreda in to two major parts and making “Island” after the bifurcation before entering lake Turkana. More than 50% of the people who are residing near the bank of the river and around the lake depend entirely on fishery for their lively hood, so, fish is part and parcel of Dasenech people. Movement of Kenyans, Somalians and people of Dasenech is freely and frequently across the border for different reasons is a routine life.

Currently, there is one health center and 15 health posts in the woreda, out of which three are non-functional for different reasons. In terms of man power, there are two health officers, five clinical Nurses, one midwife, two lab.technicians, three public health Nurses, one pharmacy technician and two environmental health professionals. In addition to this, the woreda has 5 health extension workers, 26 pastoralist HEWs, 1 trained traditional birth attendant and 1 front line health worker. Health service coverage of the woreda is <5% and sanitation coverage is < 5%. The capital of the woreda is Omorate.

Introduction

Acute watery diarrheal disease is characterized by painless, profuse watery diarrhea and effortless vomiting resulting in severe dehydration. Of the many causative agents of Acute Watery Diarrhea, there are more than 60 serogroups of vibrio cholera, but only sero-group 01 cause’s cholera.

Vibrio cholera 01 occurs as two biotypes: classical and Eltor. Each biotype also occurs as two serotypes Ogawa and Inaba. The Eltor biotype has caused almost all of the recent cholera outbreaks, although cases caused by the classical biotype still occur on the Indian sub continent. The Eltor biotype also causes a higher proportion of asymptomatic infections than the classical biotype and survives longer in the environment. It can live in association with certain aquatic plants and animals, making water an important reservoir for infection.

Vibrio cholerae serogroups O1 and O139 are associated with epidemic Watery Diarrhea. Nearly 80% of infected population will be asymptomatic while 20% develops Acute Watery Diarrhea out of which 10-20% will end to be severely ill (WHO, Geneva 2004)

In April 2006 (GC) cases of acute watery diarrhea were reported initially from Gambella region. The total duration of the outbreak was 2 ½ months in which time a total of 2,300 cases with 18 deaths and CFR of 0.78% were reported from four Woredas. Similar cases were reported end of June, 2006 from West Arsi Zone of Oromiya Region which harbors one of the busiest business centres, the town of Shashemene. Shashemene town and Arsi Negele are points for junction from major cities like Addis Ababa in the North and Wolayta, Awassa and others in the South.

From the time of the second outbreak in the country to date reported more than 110,000 cases reported from all regions except Benishangul Gumuz.

SNNPR is one of the regions which reported AWD cases and responding accordingly. Thirteen zones, Cities and special weredas rproted AWD cases in the last four years. South Omo didn't have AWD cases and didn't report in the past four years.

Kenyan government was reported Cholera and managing cases in the Cases Management Centers /CTC's/ in the bordering wereda of Dasenech in the past two months. Now they closed the CTC as AWD is said to be controlled in their side.

Objectives

- To verify AWD outbreak in Dasenech woreda ,S.Omo Zone,SNNPR
- To do situational analysis, establish/strengthen the overall co-ordination
- To identify risk factors increasing vulnerability to AWD infection
- To give technical support and make sound recommendation to contain the outbreak

Methodology

- Reviewing secondary data (Registry books, case based reports, line list records and related documents), were collected from health center and CTCs
- Interview using structured questionnaire
- Stool samples were collected and on the site investigated using RDK (Rapid Diagnostic Kits) and also sent to EHNRI using Cary Blair for culture and sensitivity. Water samples were collected and sent to EHNRI
- Making site visit and treatment sites on job orientation/training
- Re-activation of woreda AWD prevention and control task force
- Communicate findings and incorporate comments of the feedbacks
- Data analysis was done using Epi.Info 3.3.2 version and Excel

Active case search and detection surveillance activities including incorporation of various rumors through contact tracing was done to find out first index case which was probable source of transmission of acute watery diarrhea in Dasenech woreda, S. Omo zone, SNNPR.

The first community report reached Dasenech wereda on Nov 9, 2009 (29/02/2002) indicating 10 patients with 2 community death in Derelere kebele. And the wereda Health office mobilized health team & investigated the situation and started to respond as AWD cases.

During the investigation process the community informed the woreda that cases with acute watery diarrhea were managed in Delerede Kebele, Fishery Area on Oct26 and 27, 2009. One patient /fisher man/ came from Arbamich City who started his Journey on Oct 23, 2009.Spent one night in Konso Sp Wereda

on Oct 24, 2009 and went to Dasenech wereda passing through Omorate, the capital city of Dasenech arrived in Delerele Village of Dasenech wereda on Oct 27, 2009.The same day he was sick of diarrheal diseases and was treated himself with antibiotics and cured. The Next day on Oct 28, 2009 his friend was sick with the same complaint was also treated by the same way as the first patient and was cured until the first report of the cases on Nov 9, 2009 there was no case report in dasenech, Konso and Arbamich.

.

But document review showed there were 2 cases of Derelere kebele were managed at Omorate Health Center on 27/2/2002 with AWD and Managed as AWD cases by protocol but not reported to wereda Health office. Over all history and the document review showed the incident case most likely was on 27/2/2002

A total of 19kebles out of 40 (47.5%) of the Dasenech wereda were affected. Over all 1426 cases and 23 deaths (including community death) were reported from the affected kebeles from 27/2/2002 to 18/3/2002 making the case fatality rate 23/1426 (1.61%)including the Community death report) and the wereda attack rate was 1426/56,178 (2.54%)

Kebele/ Date	26/2/200	27	28	29	30	01/03/20	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Delerale		X																					
Gnemmemery			X																				
Doshe					X																		
Omorate						X																	
Fejeji								X															
Kelewi									X														
Lobet									X														
Delegnimur												X											
Bubua												X											
Nayeka													X										
Hado													X										
Torongole														X									
Ocholoch															X								
Bayo																X							
Rate																				X			
Bandira																						X	
Alketekech																						X	
Siremiret																							X
Lokoro																							X

Figure 2.1.1: AWD out break report by kebele and date, Dasenech wereda

In this outbreak from the line listed cases 51.9% males patients and 49.1% females patients were affected .Mean age of males was -19.8 years, median age is 18 years old and the age range is between 3 month and 90 years. The Mean age of females was 21.1 years, Median age 22 years and age range 4 month and 77 years.

Among the total wereda cases case load,1110 (77.8%) were from Delerele kebele .While Fejeji, Ocholoch,Bubua and Omorate reported 6.9,6.1,3 and 1.9 percent .Other kebeles reported less than 1 %.

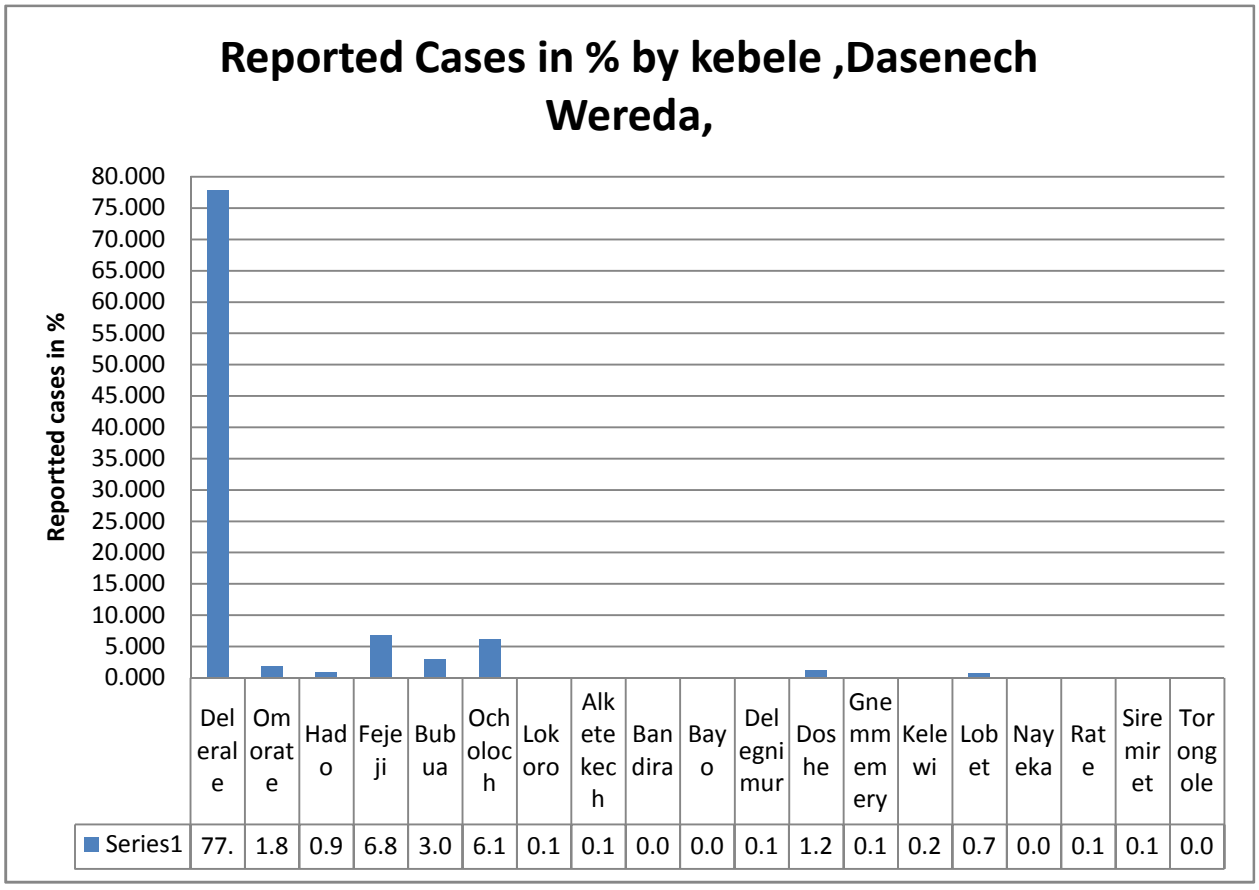


Figure 2.1.2: Case load in percentage by Kebele, Dasenech wereda

Case fatality rate and attack rate differs from kebele to kebele.Case fatality rate is ranging from Zero to 50%,as Attack rate is ranging from 0.08 Nayeka village to 105.7% of Dalerele. The Delere's village attack rate increment more than 100% is due to population influx in the village from the surrounding villages and difficult to set the baseline population for the wereda.

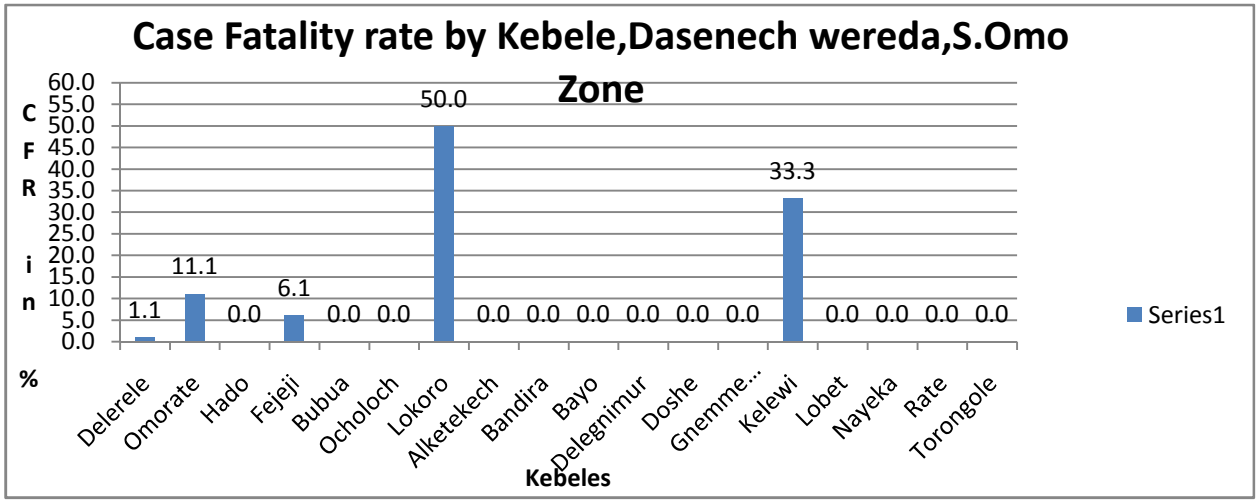


Figure 2.1.3: Case fatality rate of AWD by Kebele in Dasenech woreda, S.Omo zone, SNNPR

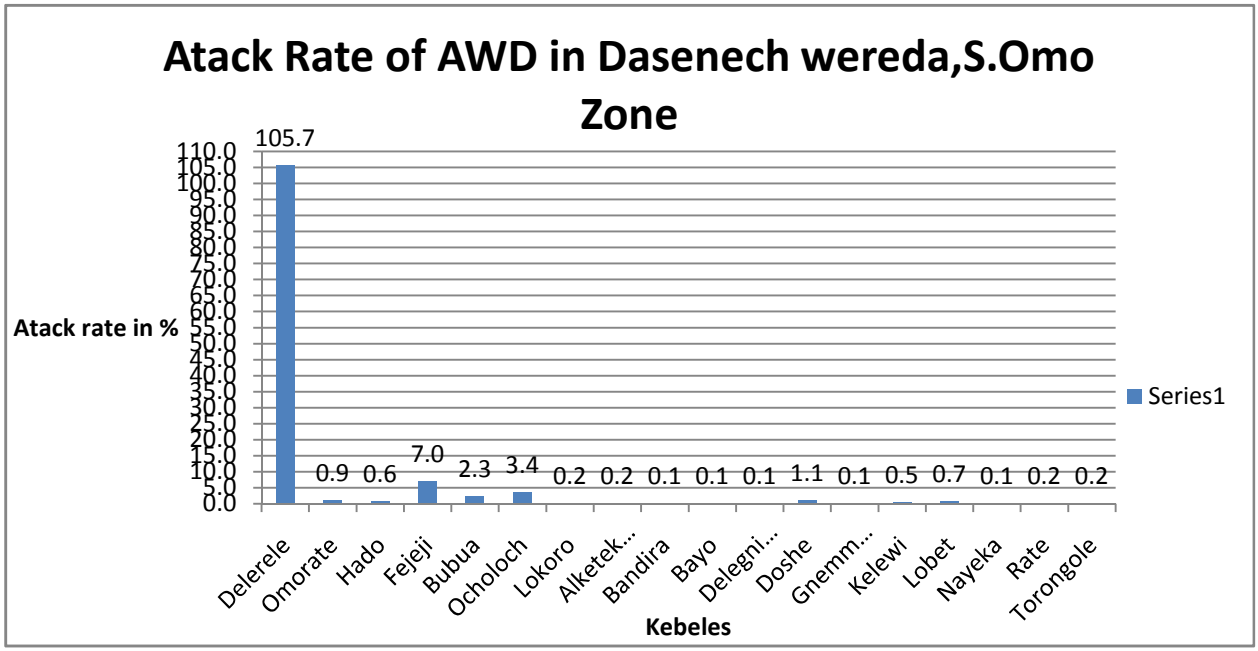


Figure 2.1.4: AWD outbreak Attack rate by Kebele in Dasenech woreda, S.Omo Zone, SNNPR

The EPI curve shows the index case to be 27/2/2002 while cases on 3/3/2002 were found cumulative case of some villages, which is difficult to disintegrate by date of admission. After 3/3/2002 the increment of case on 9 and 15/3/2002 was observed which implies some propagated type.

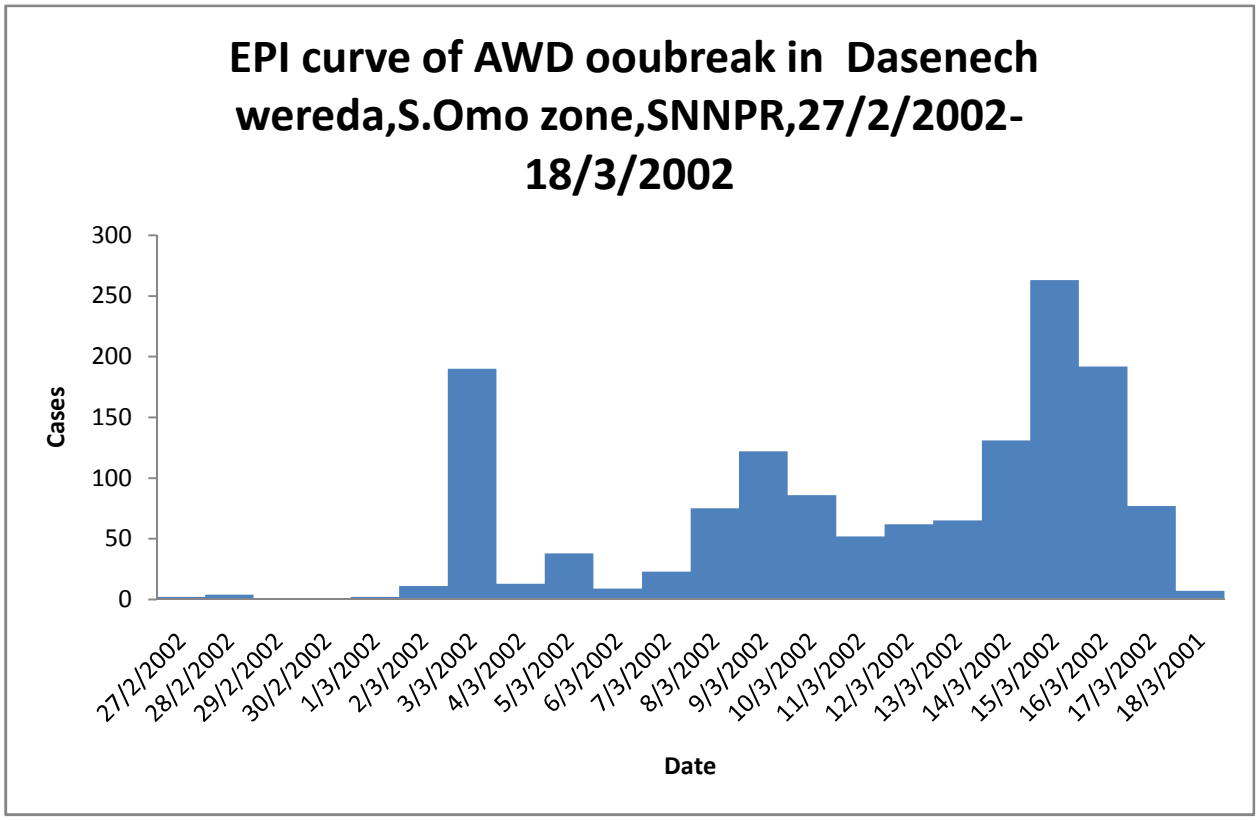


Figure 2.1.5: EPI curve showing AWD outbreak in Dasenech wereda, S.Omo Zone 27/2/2002-18/3/2002

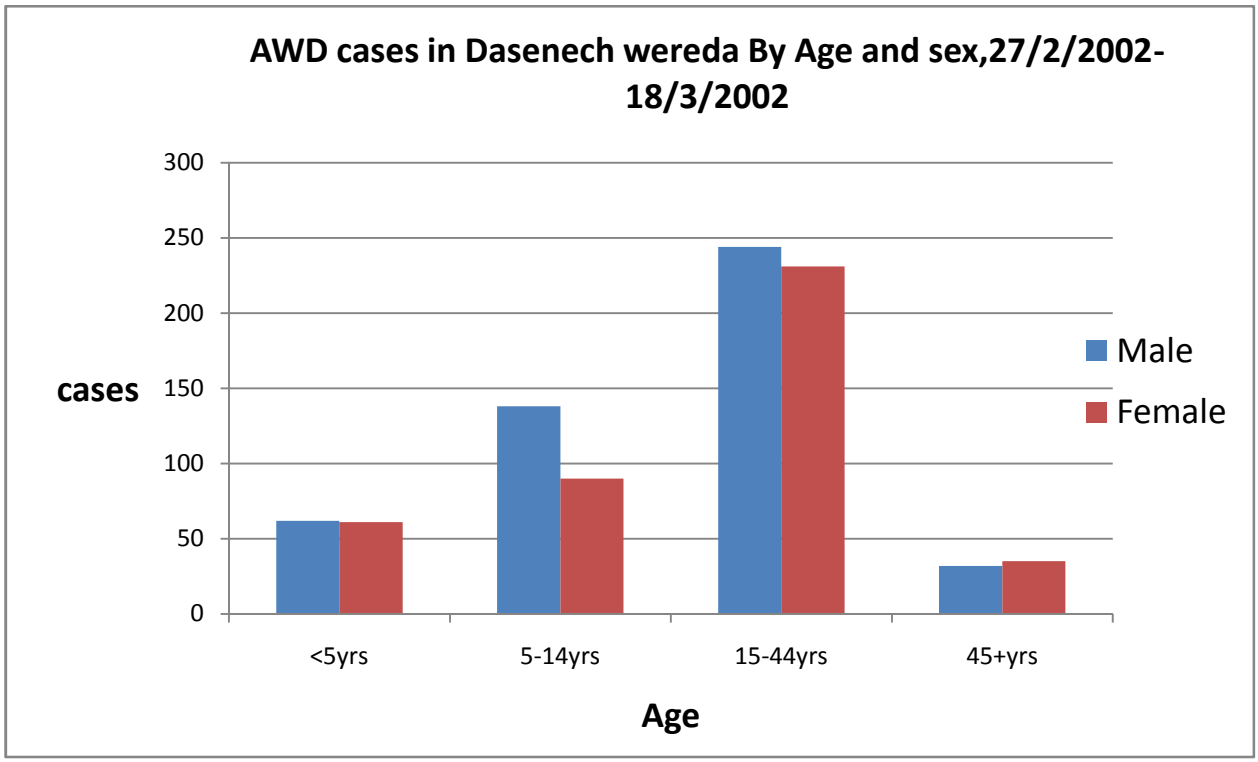


Figure 2.1.6: AWD cases by age and sex in Dasenech woreda, S.omo Zone, 27/2/2002-18/3/2002

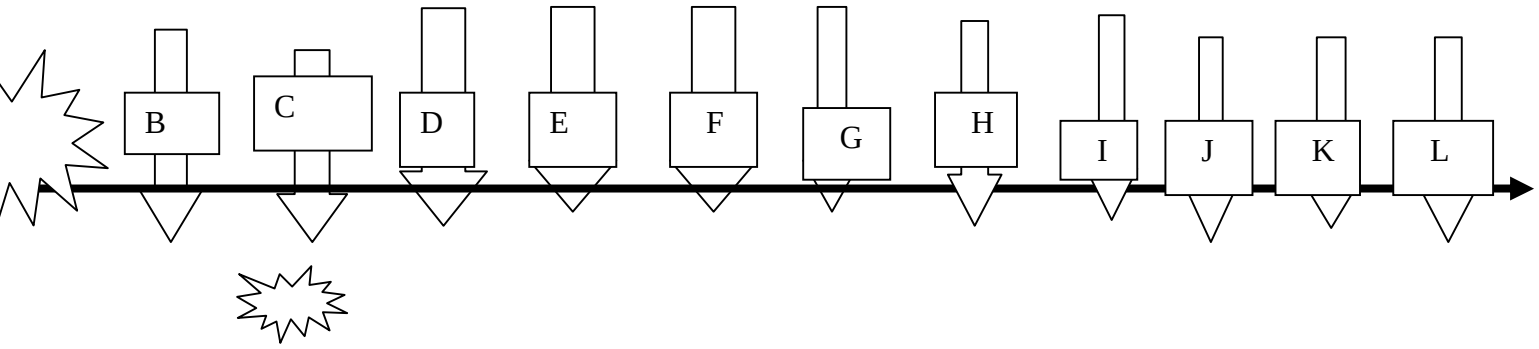


Figure 2.1.7: Time line of the response of the wereda and the Zone

A. Two AWD cases were managed in Dasenech HC on November 6,2009
B. Nov 8,2009 AWD reported from near by village called Derelere to the wereda and same day Zonal Offices communicated
C. Nov 9,2009,1st woreda/Zonal coordination Meeting held, Investigation /Case management/ team deployed
D. Nov 10,2009 Field report verified existence of AWD out break and submitted to the woreda and AWD out break management initiated
E. Federal level/PHEM and partners/ communicated through e mail on by partners working in Addis
F. Nov 12,2009 The Omo Zone Health office sent requirement giving information that Dasenech is affected by AWD with more than 200 cases and 6 deaths on 4/3/2002
G. Nov12-Nov16,2009 Phem started communication/Called Zonal and Woreda Health office,and also The Regional Health Bureau getting different information
H. Nov 15, 2009 SNNPR reported that regional team is deployed. No concrete information received at Federal level
I. Nov17,2009 PHEM decided to mobilize one Team to verify the situation and give technical assistance & preparation initiated
J. Nov 19, 2009 National AWD TWG met and discussed on the issue, PHEM informed them that Federal Team will be mobilized as of Friday. And they also informed the participants that UNICEF and WHO will send experts to the area
K. Nov 21, the team from PHEM/FELTP left Addiss to the area
L. Nov 23, 2009 Teams comprising PHEM, WHO, UNICEF and IRC arrived at the epidemic site.

Key Findings

1. Coordination

The woreda coordination meeting and activities started to be implemented with in 72 hours/had meetings and mobilized Health workers and started activities. But after 5-7 days there was no regular meetings, no specific task shared, no organized activities in resource mobilization and utilization, no schemes in safe water distribution and daily reporting and monitoring of the cases.

2. Surveilance and Case Management

Acute watery diarrhea was one of the diseases to be reported on immediately basis. While the index case which was managed in Omorate Health Center on 27/2/2002 and 28/2/2002 were not reported to the Woreda Health office. As described in the above the woreda received information on 29/2/2002 from the Derelere indicating 10 case and 2 deaths(see Time Line) .Observed delayed report of the woreda and the region to federal office.

During the epidemic phase reporting and registering was not at the expected level/not reporting on daily bases, no information on the incidence date and other variables/.There was no system to gather daily case report and Zero Case report from affected and non affected kebeles respectively.

3. Case management

The AWD case management protocol is found in the wereda Health office and Health center. The observation and the registry revealed that 8.6 % of cases managed were not managed as per the case management protocol.(observed Mass treatment, treatment with co -trimoxazol.) Classification of dehydration was as per the guideline.

In most of the kebeles cases were managed under shalters & small Hut/tukuls-in derelere, some kebeles uses school infrastructure some has small tents.

All treatment centers didn't qualify the protocol for case management center/has difficulty for disinfection, separation of patients, not suitable for over all hygine and sanitation intervention, no cholera beds etc. There is no active disinfection procedure. Most of observed sites didn't have place for health workers/working place, resting rooms together with other materials needed and there was no acute shortage of medication.

4. Social Mobilization and community participation

The woreda started to mobilize the community and also initiated activities to ensure the community participation. Through Kebele administrators/sent information, messages etc).Despite the ongoing effort, there was no strong mechanism to involve the community which hampers their involvement.

5. Multi sectoral involvement

Involvement of Ministry of Education and Ministry of Agriculture was ensured. In every affected kebeles teachers and development agents were mobilized to support the over all activities of Health sectors (participating in social mobilization, support in information dissemination and also safe water distribution. Detail discussion revealed there was no specific task given to the deployed manpower as per the AWD management guideline.

6. Community safe water and water treatment chemicals supply

The woreda started to distribute small amount of water treatment chemicals. There was only one water treatment plant at the capital town Omorate. Small number of Omorate dwellers was getting treated water buying one jerican by 50 cents and majority of them fetch water from the river. Almost all people in the woreda use water from Omo river, Turkana lake and pond called chirosh

As the community is pastoralist there was shortage of safe water keeping materials. Water tankering was initiated in small scale by the woreda Water office which didn't have the capacity/Financial, Logistics like vechicles, finance/ to cover the whole affected kebeles and the town.

7. Laboratory investigation

A total of 20 stool sample collected from admitted patients in different Treatment centers for rapid stool examination using RDK. Eighteen (90%) samples were found to be +ve for V.Cholera 01 out of the 20 collected stool samples. Seven positive stool samples were sent to EHNRI as a control for culture and sensitivity of which five samples (71.43%) were culture positive for V.Cholera o1 (Inaba). Culture and sensitivity result revealed resistance to Co-trimoxazol (all isolates) and sensitive to TTC and Doxycycline (EHNRI Bacteriology Lab section) .

More over from water samples from Omo river and water treatment point were taken and sent to EHNRI .The result revealed both not potable as samples contained more than the acceptable range of Fecal Coli form both sample and E .Coli type one from the river(*EHNRI public Health Lab).

8. Analysis results of case and control investigation

A total of 102 cases and 33 controls* were interviewed. The following results were obtained. Among cases 64 (62.7%) Were females whereas 38 (37.3%) were males. Mean age females was 17.4 years , median age was 18 years and the age range was found to be between 2 years and 45 years . Mean age of males was 17.4 years, median was 10 years and the age range was between 2 years and 60 years.

Age Distribution <5 were 17 (16.7%), 5-14 were 34 (33.3%), 15-44 were 47(46.1), 45 and above were 4 (3.9%).

Regarding occupation of respondents 97% were pastoralists and the remaining 3% were Fisher Men and Government employee.

Case distribution of the respondents by kebele revealed 40 (40.4 %) cases were from Delerele kebele , 27 (27.3%) respondents were from Ocholoch kebele ,10 (10.1%) from Fejej kebele and remaining 22 % of respondents were from other 9 kebeles of Dasenech woreda .

Clinical Manifestation revealed 101 cases (99%) had diarrhea, 99 (97.1 %) had vomiting, 44 (43.1 %) had lethargy/altered state of consciousness, 32 (31.4%) had fever

Level of dehydration

The assessment from the respondents revealed 32 (31.4 %) had severe dehydration, 61 (59.8%) had some dehydration, 9 (8.8%) had no dehydration others had severe dehydration.

Level of treatment during interview

Among cases 86 (84.3%) were on treatment and 16 (15.7%) of cases did not get treatment.

Source of water

83 (81.4 %) get water source from pond/chirosh**, 13 (12.7%) from river, 3 (2.9%) from well, 1 (1%) from spring and remaining two cases get water from other sources.
50 (50.5 %) of cases reported water source interruption and 49 (49.5%) of respondents had no water source interruption. Alternative source of water was from lakeTurkana for 46 (93.8%) respondents.
5 (4.9 %) of cases had access to latrine the rest 97 (95.1 %) had no latrine access.
Only 5 (4.9%) of cases had history of travel and the rest 97 (95.1%) had no history of travel to other localities.

48 (47.1%) of cases reported that they new others with similar illness like them and the rest 54 (52.9%) did not know. 41 (40.2%) of cases had close contact with cases and 61 (59.8%) had no contact. 24 (58.4%) had contact while attending patients and 17 (41.5%) those who had contact were by sharing food with cases. 43 (42.2%) of cases reported presence of drought in their locality and 59 (57.8%) reported no climatic change. Among respondents 4 (3.9%) wash hands after latrine use and 98 (96.1%) did not.
From respondents 3 (2.9%) reported washing hands before preparing/eating food and 99 (97.1%) were not washing their hands before preparing and eating food.

Based on results obtained from respondents following risk factors identification analysis was done by calculating OR, CI and P-value determination

As results of risk factors identification analysis clearly indicated having access to latrine use which has OR= 0.799 which entails that it has preventive role for the OR was < 1 which probably may result in decreased vulnerability of susceptible families to acute watery diarrhea infection. Similarly washing hands before preparing and eating food and interruption of contaminated water source supply with OR = 0.469 and OR = 0.752 respectively have preventive effects against spread of acute watery diarrhea infection in Dasenech woreda. On the other side hand washing after latrine use and drinking water source (safe) with OR= 1.306 and OR =1.306 respectively have statistically significant association though it was not strong entails that non practice of hand washing after latrine use and inadequate and unsafe water use for drinking and other household purposes enhances vulnerabilityof communities to AWD infections. Moreover likelyhood of similar vulnerability to infection could have been increased if significantly higher proportion of cases and controls were taken to assess such situation and indeed the association could be strong one. There fore this situation strongly calls for intensive intervention activities which bring about reduction in risk factors burden to prevent and control problem of acute watery diarrhea in Dasenech woreda if the problem was not amenable to efforts made to address this cause**.**

Discussion on the risk factor association

Even though the above mentioned selected risk factors were pertinent to be probable conditions to increase vulnerability to AWD infection/illness results obtained did not show association (OR of protective value for three possible risk factors) .

In addition there occurred narrow confidence interval range and the values (all) crossed 1 which is cut off point for determining status of association no (1) , protective (<1) , there is association some/moderate/strong (>1) .

More over P-value /Fisher exact tests were higher than P-value at 95% (p-value= 0.05) demarcating point for level of significance.

This was most probably due to late arrival, possible risk factors were identical for cases and controls, and taking delayed out break investigation communication of results and implementation of intervention activities.

If early active case searches, detection, prompt out break investigation, result communication and pertinent intervention measures were taken the level of association and statistical significance could have

increased markedly when these selected exposure variables of risk factors effects analysed and compared with outcome variable in this case Illness.

Action taken by the team

1. **Co-ordination**

During the time of arrival of intervention team from Federal ministry of health (PHEM) to Dasenech woreda AWD prevention and control task force established previously was non functional.Therefore re-activation of multi-sectoral response co-ordination committee was done by the team. Discussions were made with representatives of health offices from Dasenech woreda, S. Omo zone and Regional health bureau, Local authorities at various level, sectors, partners and segments of communities, etc was made on daily basis. After 05 days of intervention activities, multi sectoral response coordination became stonger as evidenced by increased level of social mobilization which resulted in improved AWD case search and management, increased involvement of sectors, communities, local authorities and partners in efforts made to prevent and control the outbreak. In the second week, close monitoring of intervention activities were undertaken by implementing multi sectoral response coordination activities as a result of which many sectors improved their level of undertaking shared specific activities. Moreover Zonal administration head took over coordination of intervention activities at the beginning of second week.Following this official communication with kebeles was made, member of preventiontask force started to supervise most affected kebeles, neighbouring woredas communicated for preparedness and active surveillance. Moreover, coordination of multi sectoral response became stronger, active search and management of AWD cases showed marked improvement, level of logistics, supplies and other required materials provision increased and level of close monitoring and evaluation of intervention activities became markedly stonger.

2. **Surveillance and Case Management**

Efforts were made by the team to enhance/strengthen surveillance activities particularly of proper recording and reporting of suspected cases and related events, Active case search, detection and management by and large to undertake relevant surveillance activities. To enable this practice happen

orientation with current intervention measures to be taken to contain the outbreak was givento health service providers on the issue of use of registry with sufficient variables daily reporting. Woreda health team was oriented on how to compile, interprate and report on the daily meetings for action as well as sending reports to zone, region and federal ministry of health. Moreover orientation was provided to woreda AWD prevention and control taskforce on how to strengthen Zero report from non affected kebeles and distribution of reporting formats was done.

3. **Case management**

In attempt of enhancing/strengthening active case management the team provided on site orientation to health workers on case treatment protocol. In collaboration health offices (woreda, zone, and region) and partners the team identified organizations to support CTCs sites with required materials needed for intervention. As an outcome of effort made UNICEF provided required materials for 5 CTCs, IRC started to cover overall hygiene and sanitation activities, UNCIEF & IRC jointly started to provide safe water to the sites. On the other hand provision of ORS, water guard, PUR, Ringer lactate solutions and essential drugs including materials required for infection prevention precaution purpose and other required logistics and supplies provided from regional health bureau and partners were distributed to affected kebeles to effect better case management and strengthen prevention and control measures**.** As a result of collaborative efforts made tasks of constructing latrines in CTCs centers where severely affected patients admitted were accomplished, CTCs establishment /strengthening and application of National/WHO 's AWD management formulations and guide lines became stronger than that of which practiced before and active case search and management activities using current protocol to contain AWD outbreak/epidemic improved markedly.

4. **Social Mobilization and community participation**

To surve purpose of enhancing /strengthening multisectoral response coordination which play important role in dealing with the outbreak the team communicated/discussed with health service providers, stakeholders, partners and communiies representatives on issues of increasing level of social mobilization and increase level of active involvement of various parties including communities. In addition the team

participated in effeorts made to organize one social mobilization team in the capital town of Dasenech woreda, Omorate. After establishment social mobilization team in collaboration with communities started to clean the surroundins, identified food and beverage establishments with poor sanitation status and took appropriate intervention measures to improve the situation. Moreover the team communicated with kebele/religious/cultural leaders and elders and provided advice which enabled them get involved in intervention activities recommended by woreda AWD prevention and control taskforce

5. **WASH Activities**

In collaboration with woreda AWD prevention task force and partners the team organizd establishment of WASH team in the woreda. To effect this happen it discussed about the issue with partners (UNICEF, IRC, etc...) and Dasenech woreda private farm organization to solicit resources required for intervention activities. Based on agreement reached IRC in collaboration with woreda water sector office installed two additional water treatment machine and provided one pick-up vehicle with its running cost and 2000 Jerri-cans,2000 soaps and estimated 130,000 sachets of PUR.Oreda pricate farm organization availed vehicles for water tankers transportation, which indeed helped to reduce the queue time to fetch water in the town. In response to fulfilling shared responsibilities as per the agreement woreda water office and IRC atarted to provide adequate and safe water to the community. Zonal health department and regional health bureau in collaboration with woreda water office identified the amount of safe water needed and availed safe water& water treatment chemicals and supported in distribution/transporting including other materials to where they were needed. Moreover they initiated and got involved in community awareness creating activities.

Together with WASH group the team actively involved in initiation and public awareness creating activities on the issue of personal/family hygiene and environmental sanitation protection. As an outcome of joint efforts status of provision of adequate and safe water to affected kebeles showed marked improvement eventhough was not that sufficient. Supervision activities on food/drink establishment sites and similar activities in residential houses, latrines, market places, schools and other vulnerable areas where mass dinning/gathering were undertaken and relevant intervention measures were taken.

6. **Logistics and Medical supplies**

In collaboration with woreda taskforce, regional health bureau and partners and participating in co-planning activities which was made to avil reguired materials, logistics and supplies for intervention activities the team took part in the efforts made and as result the joint team secured transport vehicles to needy kebeles and provided support on appropriate utilization of available materials and medical supports

7. **Challenges encountered**

Eventhough unreserved efforts were made through enhancing multisectoral response coordination,social mobilization, active communities involvement enhancement, provision of required logistics and supplies together with undertaking supportive supervision activities were undertaken to contain the outbreak in limited time possible, there were confronting challenges encountered which indeed impeded progress of intervention activities undertaken, which include: Multi-sectoral response coordination was relatively weak. It was difficult to provide adequate number of CTCs and those availed were poorly constructed and there was shortage of CTCs kits (materials) on time to be utilized for intervention. The fact that infection prevention precaution activities were inadequate, inadequate provision of safe and adequate water supply together with inadequate access to safe latrine increase vulnerability of individuals and families to AWD infection, increased level of person to person transmission and thereby brought about increase in time to contain the outbreak.

Other factors which contributed to encountered challenges included that during intervention period some of he kebeles were geographically inaccessible and there was transport problem. Communication facilities (Telephone, radio and others) used to impart information between kebeles, kebeles and woreda, woreda and health facilities were poor and/or non existent in some areas. There was cultural barriers including taboos which negatively contributed to keeping personal/family and environmental hygiene, close individual and family home care giving and timely reporting. Moreover absence of electric power in all kebeles and also the capital town (Omorate) only using generator for short time, no shelter was provided for the team to undertake field work in kebeles, allowed time to undertake field investigation was very short and there was mix up of assignment/investigation,

coordination, surveillance & case management undertaking activities schedule which hindered proper undertaking of intervention activities to contain the outbreak in reasonable time.

Conclusion

Registry books of the Omorate Health center and case management centers, pattern of disease report in each kebele, observation of patients in treatment sites suggested existence of AWD out break. Further more stool examination from the patients using the Rapid Test kit confirmed Cholera 01 strain of Inaba. Verification supported with Diagnostic culture and sensitivity.

As investigation revealed cases were reported from the village called Derelere which is bordering with Kenya (South of the woreda) spread to other villages (Northern, Eastern and Western part of the woreda) ,additional to this there was no recent outbreak in neighbouring woreda or special woreda like Konso and Arbamich town (Gamogofa zone) fact which made them not to be incriminated to be site of source for this outbreak (infection).

Identifying the index case, incubation period of the disease and spread of the infection the outbreak had propagated character.

In addition , the fact that more than 80% of cases got their drinking water from unprotected water sources, inappropriate personal hygiene practice (no developed culture of washing hands after latrine use/before eating and preparing food) ,very low sanitation coverage (<5%) and related factors were most probable risk factors .

Gap in early preparedness (case search, detection and managing cases from Kenyan side), undertaking active surveillance to search, detect and manage cases ,weak prompt report/delayed notification/and limitations to take strong and coordinated intervention measures to prevent and control further spread of the out break were among influencing factors which were incriminated to effect the spread of the outbreak of AWD to Dasenech woreda.

Recommendations

Based on the assessment findings of reports and records, discussions made with AWD prevention and control task force, partners and communities, site visits, observations, supportive supervision and case/control survey results following recommendations were made

As clearly explained in conclusion section in order to contain the outbreak and prevent and control future outbreaks various intervention measures have to be taken. To begin with close follow-up of the Woreda Co-ordination of multi-sectoral response must be on place to prevent and control ongoing outbreak and take further preventive measures to control emergence of future spread of AWD. To effect dependable success in intervention activities continous in service AWD management training should provided to health service providers. Strengthening of social mobilization activities focusing on improving personal and environmental hygiene practice should be undertaken. Utmost emphasis should be placed on undertaking cose monitoring of active surveillance activities by woreda AWD prevention taskforce, availing CTC materials and maintaining standard of CTCs and case management as per guideline, continous restocking of adequate amount of AWD treatment medications (ORS, ringer lactate solutions, Antibiotics, disinfectants and other related materials).

Due attention should be given to provide adequate amount of safe water, strengthening public awareness creation activities with regard to AWD prevention and control issues, constructing and availing adequate number of safe latrine in affected and vulnerable families,villages and kebeles. In addition unreserved efforts should be made to prepare systematic contingency plan and make relentless efforts to solicit and distribute necessary and adequate logistics and supplies to needy communities, avail vehicles at least two vehicles with secured running cost and additional financial support, availing field equipment for PHEM/FELTP teams to enable them undertake field investigations in the future. Moreover utmost emphasis should also placed to undertake timely supportive supervision, conduct periodic monitoring and evaluation activities and ensure strengthening of Ethio-Kenyan cross border communication on cross

border health related issues of vital importance to dependably prevent and control emergence of AWD in the future should be maintained.

Acknowledgement

Situation of acute watery diarrhea in Dasenech woreda as it was followedup, observed and investigated from its outset till its containment was a difficult task to be tackled. If prompt intervention measures were not taken it could be challenging to check it and further prevent and control its spread. It was by virtue of active involvement of all stakeholders, partners and by and large different segments of communities that it was possible to halt further spread and mitigate adverse effects of acute watery diarrhea in the woreda. Moreover had it not been acted upon collectively through concerted and conjoint efforts magnitude of the problem could have increased with devastating ill-effects.Therefore we would like to extend our sincere appreciation to following stakeholders and partners without whose unreserved efforts containing AWD outbreak could not be a success. So we are indeed indebted to Public Health Emenrgency Management office (PHEM/FMOH), SNNPR Health Bureau, Dasenech woreda administrative and health offices, Dasenech woreda AWD prevention and control task force, EFELTP/SPH/AAU, WHO, UNICEF and other partners and various segments of communities in Dasenech woreda.

Chapter II – Surveillance Data Analysis Report

2.1 Assessment report of Five years (2005-2009) Surveillance reports (IDSR) from 10 sub-cities and hospitals in Addis Abeba Submitted to Addis Abeba Regional Health Bureau June 2009

Introduction

Ultimate goal of Surveillance is to hand over produced scientific information to those in need for action. It is an out come of Epidemiological investigations undertaken on collected surveillance data most importantly that of active surveillance (ongoing data collection). As part of research finding descriptive epidemiology shows which people affected where, when and for how long and the like. Getting such findings at disposal greatly helps to target vulnerable groups for possible intervention activites be undertaken to address public health problem through implementation of disease prevention and control strategies. In addition to this, relentless efforts have to be made to realize their determinants which are direct causes and/or indirectly incriminated to increase vulnerability to diseases because of their higher influences they have in contributing for emergence and communicability of various diseases. More over comprehensive study has to be carried out to identify diseases frequency, distribution and their determinants in different group of population. The ultimate goal of such study is to produce dependable evidence based information about diseases and health related events in given defined population and use of such findings for health promotion, diseases and health related events prevention and control (unprecedented contribution of Epidemiology) .

Surveillance of Diseases

Upon accomplishing the very task of identifying of diseases frequency, distribution and their determinants the remaining cardinal undertaking to be tackled is surveillance activity. Surveillance systematic data collection, analysis, interpretation and communication of evidence based information about health and health related events to policy makers, health management bodies, health professionals and those concerned to take appropriate measures to address public health problems . It was not said without any reason “Information for action “,for it is evidence based which plays an imminent and

prominent role in each and every efforts made to enhance health promotion, diseases and health related events prevention and control activities. Being an outcome of reliable epidemiological study this information is used to evaluate status of health service provision progress, assessment of progress of diseases prevention and control intervention activities, monitoring and evaluation, undertaking active surveillance, formulation of prevention and control strategies, formulation of guidelines, development of health policy, development of health management systems and the like.

To effect aforementioned important outcomes which are of vital importance for further health development holistic approach should be used to collect accurate surveillance data of high quality which is very helpful to produce desired evidence based information to address most pressing public health problems. Surveillance data collection methods includes undertaking activities which are geared to gather reliable information through conducting active surveillance, passive surveillance, sentinel surveillance and other related undertakings.

Active surveillance activities are undertaken by an investigator or concerned health management body or its subordinates to seek possible solution for ongoing health problem or newly emerged outbreak of epidemic prone diseases without any delay or waiting reports of health institutions. Inaddition use of tele. Fax, e-mail and so on to get information quickly to address acute problems.

Passive surveillance is collected by waiting reports of health facilities in week/month/quarterly, etc.after analysis of which produced information is utilized to address health problems.

Collection of sentinel surveillance can be done periodically in selected places and used to determine magnitudes and trends of diseases of public health importance and take necessary measures to address the problem

In face of acute health problems such as emergence of new outbreaks undertaking active surveillance of great value in that quick information seeking for action in no time waiting. Prompt situation analysis on issue of acute problem is done as a result of which case definition will be formulated which will be of vital importance to identify characteristics and set criteria for suspects, probable and confirmed cases to

take prompt measures to prevent and control the out break. Based on the set criteria out break investigation procedure will be followed to verify the out break by line listing of socio-demographic factors, history taking (suspects), physical examination, environmental assessment and laboratory testing. After describing the out break by person, place and time formulation of hypothesis will ensue which is very helpful to investigate the outbreak? Analysis of collected data and interpretation of results will be of great importance to arrive at plausible conclusion to make sound recommendation which is vey helpful to prevent and control by taking prompt measures.

To effect mentioned outcomes in predicted/scheduled time it is advisable to use dependable attributes of good surveillance for the problem can be no time waiting and for there may be resource constraints and other related factors the sooner the better.

To address most pressing and attention deserving public health problems particularly acute health problems over all procedure of undertaking surveillance activity should be well scrutinized. Its undertakings should not be complicated for it can be carried out easily by using systematic planning system using available resources. No need of rigidity during its execution for the system it self uses evidence based facts for its accomplishment. Good surveillance activity undertaking is geared to entertain all possible conditions which are related and helpful to seek reliable solution to health problem in question and by so doing it is sensitive. Well planned and organized surveillance activity has wider scope and if done correctly its findings can be inferred to general population making it representative. In face of some of unique diseases their over all investigation has to deal mostly on its different features and required specific tests have to be done to get results specific to it.

During investigation time utmost emphasis be placed to get higher level of tests predictive value with higher yield. More over it will be wise to be cognizant of current health system which is operating with limited and scarce resource as a result of which successful execution of health problem solving surveillance undertaking has to be cost effective and carried out as effectively and efficiently as possible. More over the ultimate goal of undertaking good surveillance activity is to produce very helpful evidence based information to be disseminated to those who are in earnest need of it to promptly address pressing health problem of society. There fore communication of findings is of vital importance for it can be used

to increase response through building concerted efforts of all stake holders and creates conducive atmosphere to take conjoint action to address public health problems of our society.

Integrated surveillance activity

For it is quite evident that we are encountering many epidemic prone diseases spreading throughout the country being distributed in time/place and person we will be incapacitated while dealing with individual diseases for we may be running short of very essential resources required to address public health problems including those which are most pressing and acute. In face of such problems integrated approach of dealing with group of diseases collectively and acting conjointly not only it is cost effective but also serves purpose of better management and brings about wonderful success in addressing most pressing and priority seeking problems reliably.

Purpose of the Assessment of surveillance data

The ultimate goal of assessing surveillance data is to produce evidence based information which is of great value in giving dependable clues about the situation of health and related intervention activities, increased magnitude of already existing diseases and newly emerging ones and using findings to address health problems. Therefore purpose of this assessment of five years (2005-09) surveillance reports submitted to Addis-Abeba regional health bureau was to determine magnitudes of various diseases,give epidemiological description, identify 05 years trends of diseases and make sound recommendations which contribute to address problems of assessed diseases and in strengthening of further prevention and control activities

Background of Addis Ababa City Administrative Region

Addis Ababa was established 119 years ago and it is located in the heart land of the country within an area of 540 square kilometers. It is situated between 9 degrees latitude and 38 degrees east longitude in the Plateau that stretches at the range of 2,200-2800 meters of latitude above sea level. The climate varies from seasons of summer of 9 months to cool months of rainfall of about three months with an overall maximum and minimum temperature of 22.9 and 10.8 degree centigrade respectively and total mean rainfall of 1,195.5 mm/year (CSA, 1994,RHB , Surface area 540 Sq. Kms and Population density (5046 people per square kilometer) .

Total population of Addis Ababa is estimated to be 2,738,248 (1999 E.C, CSA) of which 1,387,481 (49%) are males and 1,444,113 (51%) are females. The age and sex structure is of pyramidal type which is typical of developing countries wide at the base and sharp at the tip. The rate of natural increase is estimated at 1.5% (MOH, 1999, E.C) considering the net migration of 1.29% the population growth rate is 2.8%. Children under one year of age constitute 2.3% of the total population while children less than 05 years account for 10.2%. Woman of child bearing are 35% from the total. Dependency ratio is calculated to be 28.99%. Regarding religion of the population 86.6% of the population are Christians (81.3% Orthodox, 3.9% protestants, 0.8% Catholic) and 12.6% Moslems. Among those beyond age of 15 years 43.9% are married, 38.8% are never married, 5.8 widowed and 9,3% are divorced (CSA,1999, E.C)

The city is divided in to 10 Sub-cities and 99 kebeles for administrative purpose. Each sub-city has health department status of which is equivalent to zonal health department in regions. There are 46 health posts (HP), 774 Clinics, 27 Health centers and 36 Hospitals in the city

Objectives

1. To describe Magnitude of diseases under surveillance from 2004/05 to 2008/9 in Addis Ababa city administrativ region
2. To describe trends of morbidity and mortality of epidemic prone diseases
3. To describe diseases burden in time, place and person which can be used to formulate hypothesis?
4. To make recommendations to take appropriate intervention measures

Methodology

Five years secondary data of 23 diseases under surveillance which was collected from July 30/2004- June 30 /2009 and reported to Addis Ababa regional health bureau was reviewed. Surveillnce data reported from health centers,hospitals under control of regional health bureau,federal hospitals, private clinics and hospitals, Non governmental clinics and hospitals and other governmental health facilities were included in review and evaluation of the surveillance system

Inpatient, out patient cases and deaths reported from the year 2004/05-2008/09 were used for review and evaluation purpose. Indepth interviews and thorough discussions was made with diseases prevention and control officials of regional health bureau and IDSR focal persons of sub-cities health departments under Addis Aaba health breau. International diseases classification code (ICD) was used to identify diseases. Consent was obtained from Addis Aaba regional health bureau.Data was analysed using excel and Epi-Info 3.3.2 version

Results

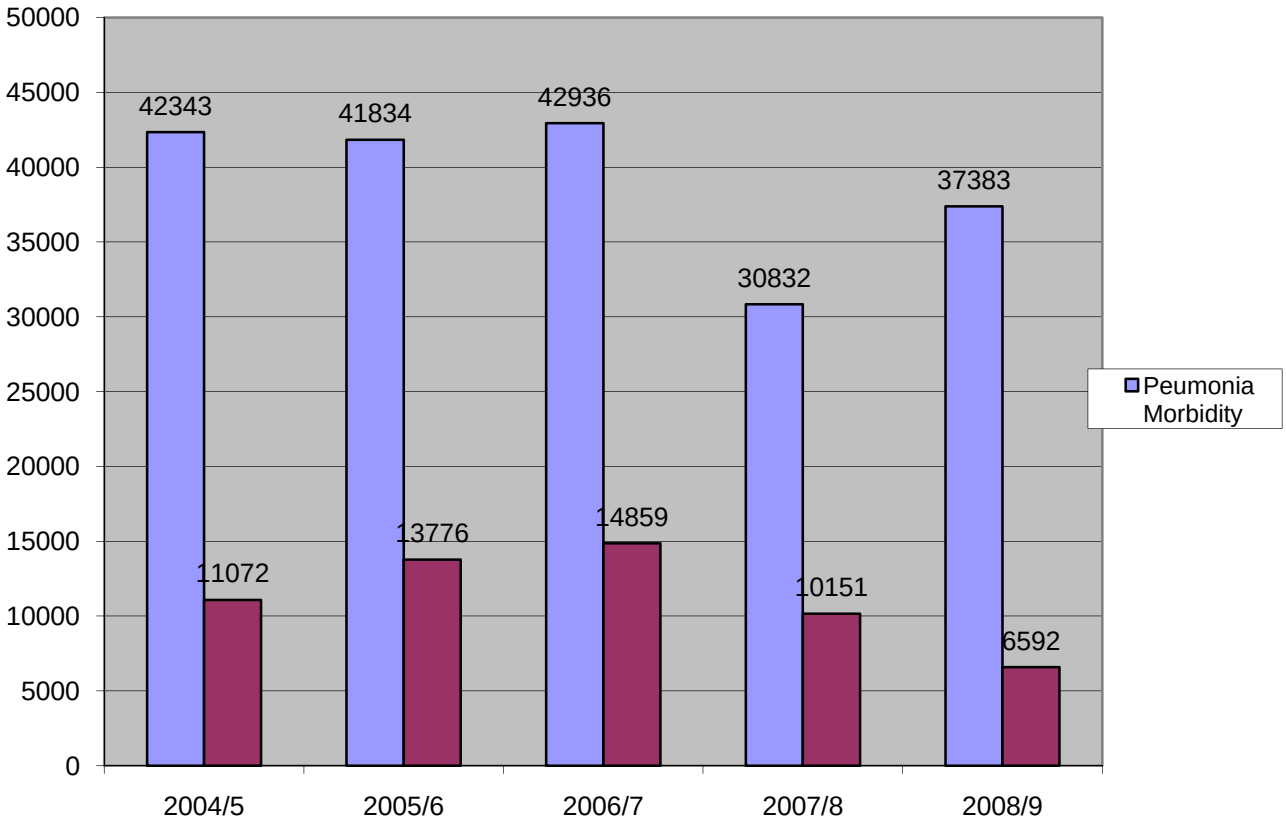


Figure 2.1.1 Five years trend of pneumonia in < 5 children as compared to total cases of pneumonia in Addis Ababa (2004-2009), Addis Ababa, Ethiopia, August 2009

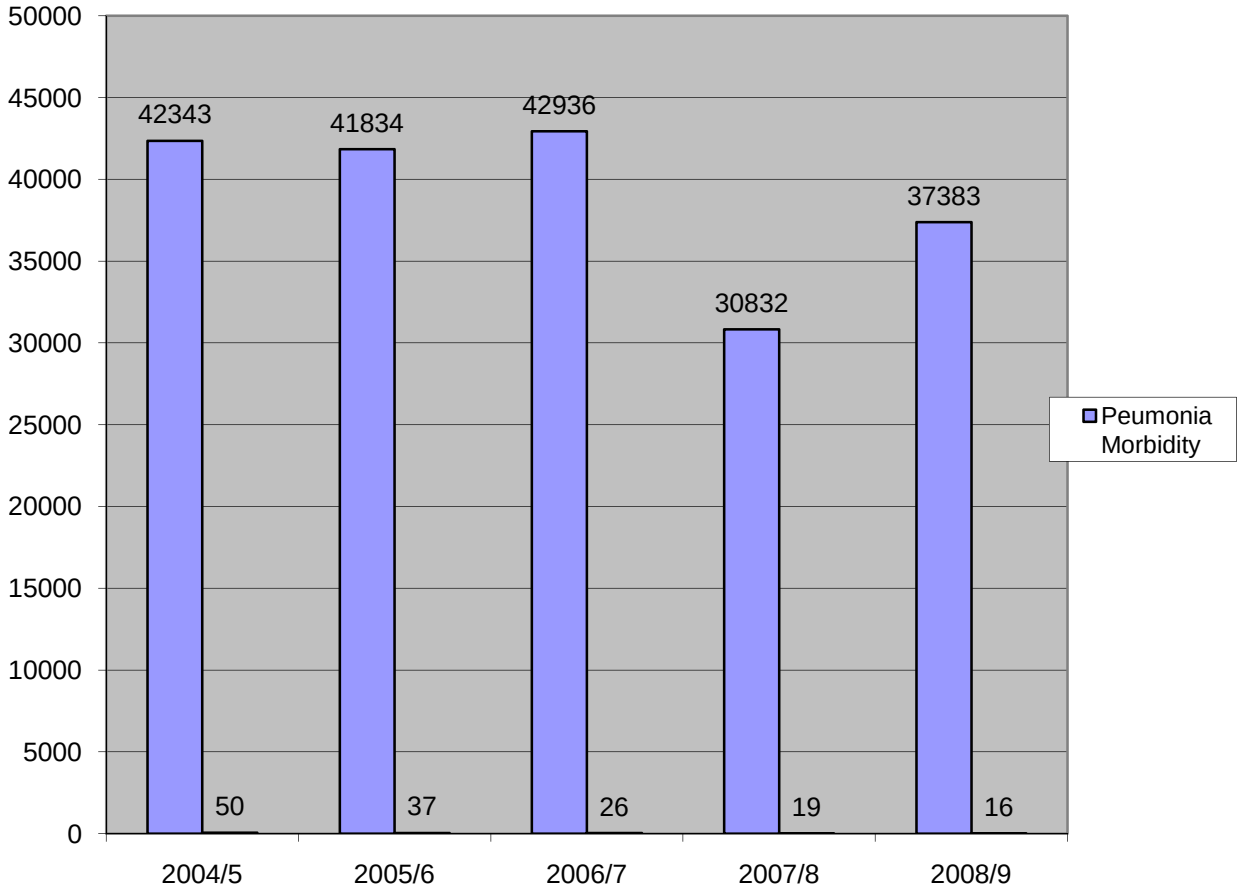
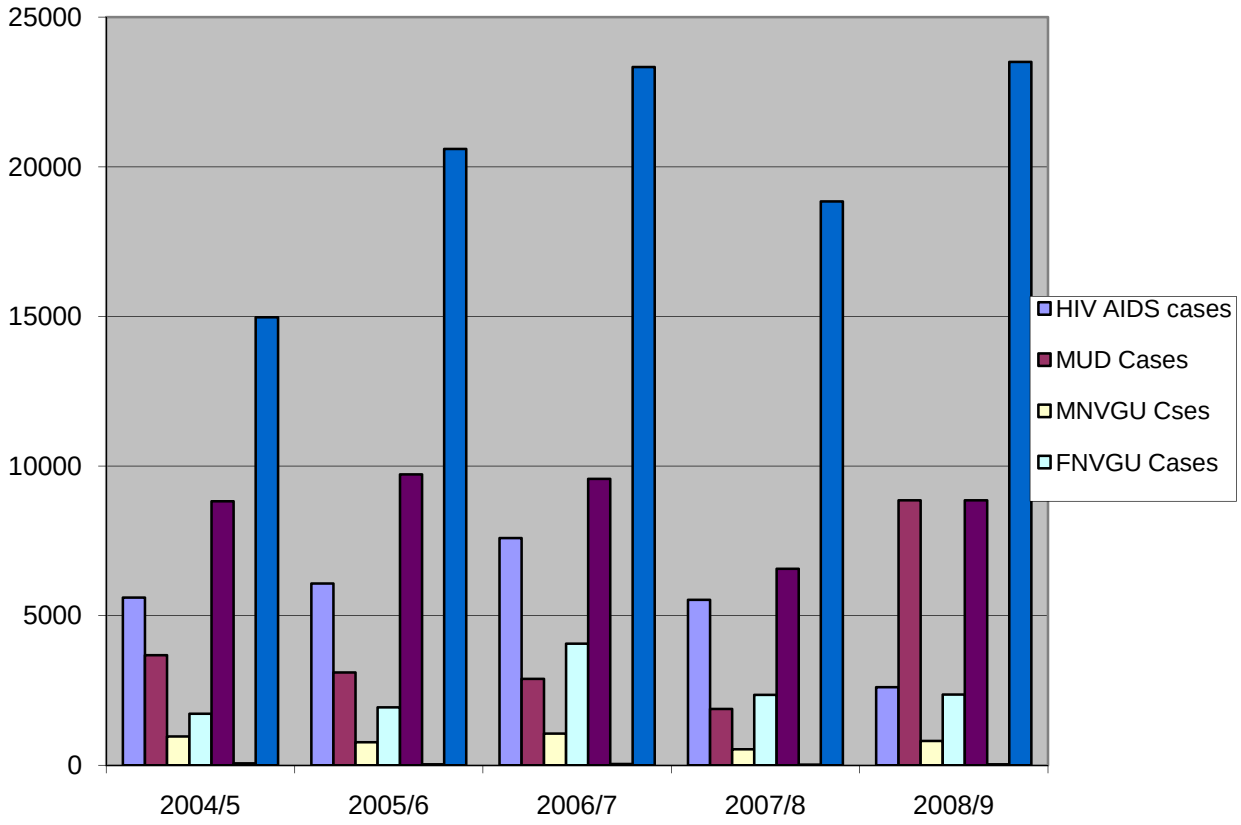


Figure 2.1.2 Graph showing total number of puemonia cases in Addis Ababa from year 2004-05- 2008-09, Addis Ababa, Ethiopia, August 2009



Figur 2.1.3: Showing cases of HIV-AIDS, Male urethral discharge,Male genital ulcer and Female genital ulcer in Addis Ababa city from the year 2004-05-2008-09, Addis Ababa, Ethiopia, August 2009

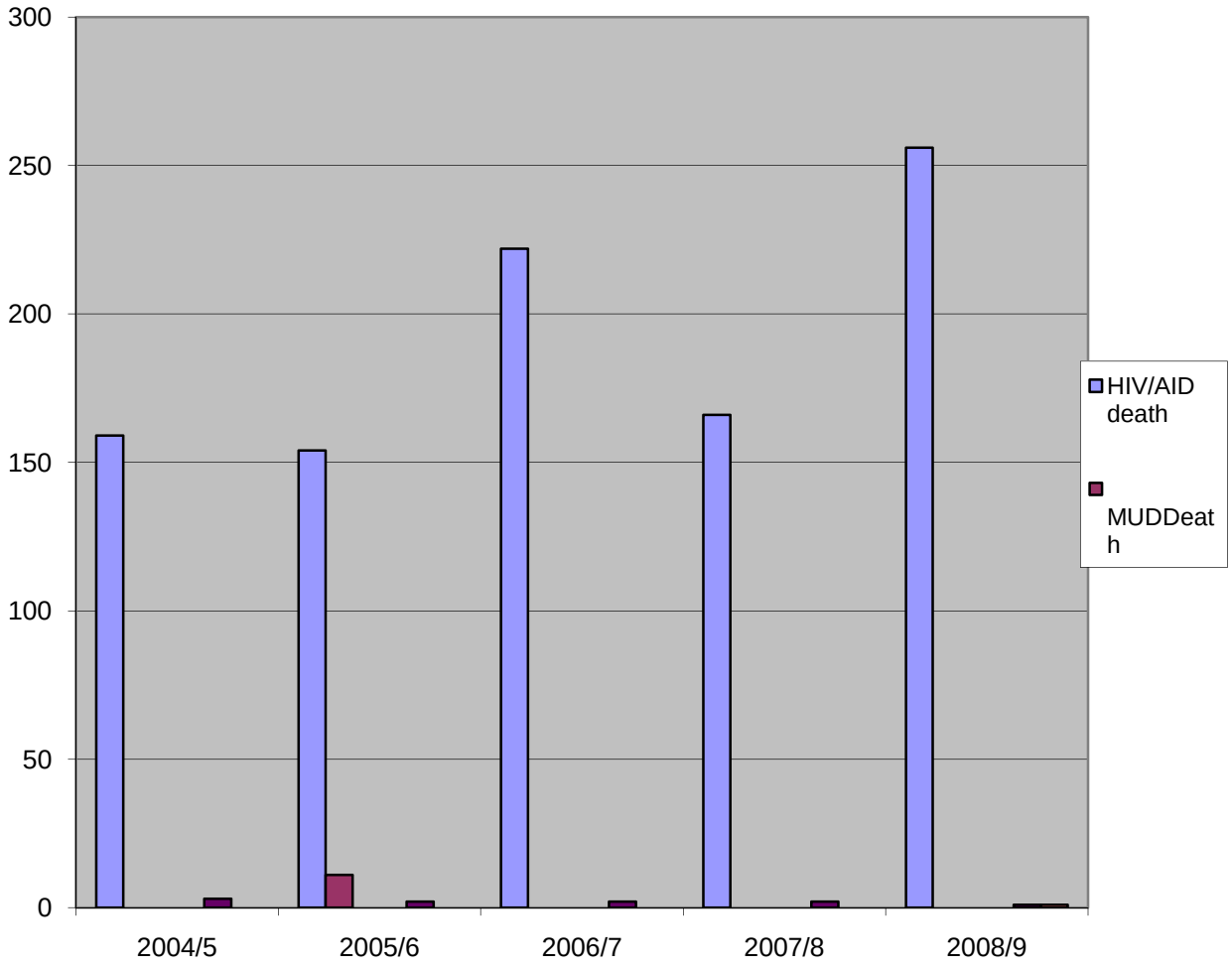


Figure 2.1.4: showing deaths from HIV-AIDS as compared to deaths from male urethral discharge from the year 2004-05-2008-09 in Addis Ababa, Ethiopia, August 2009

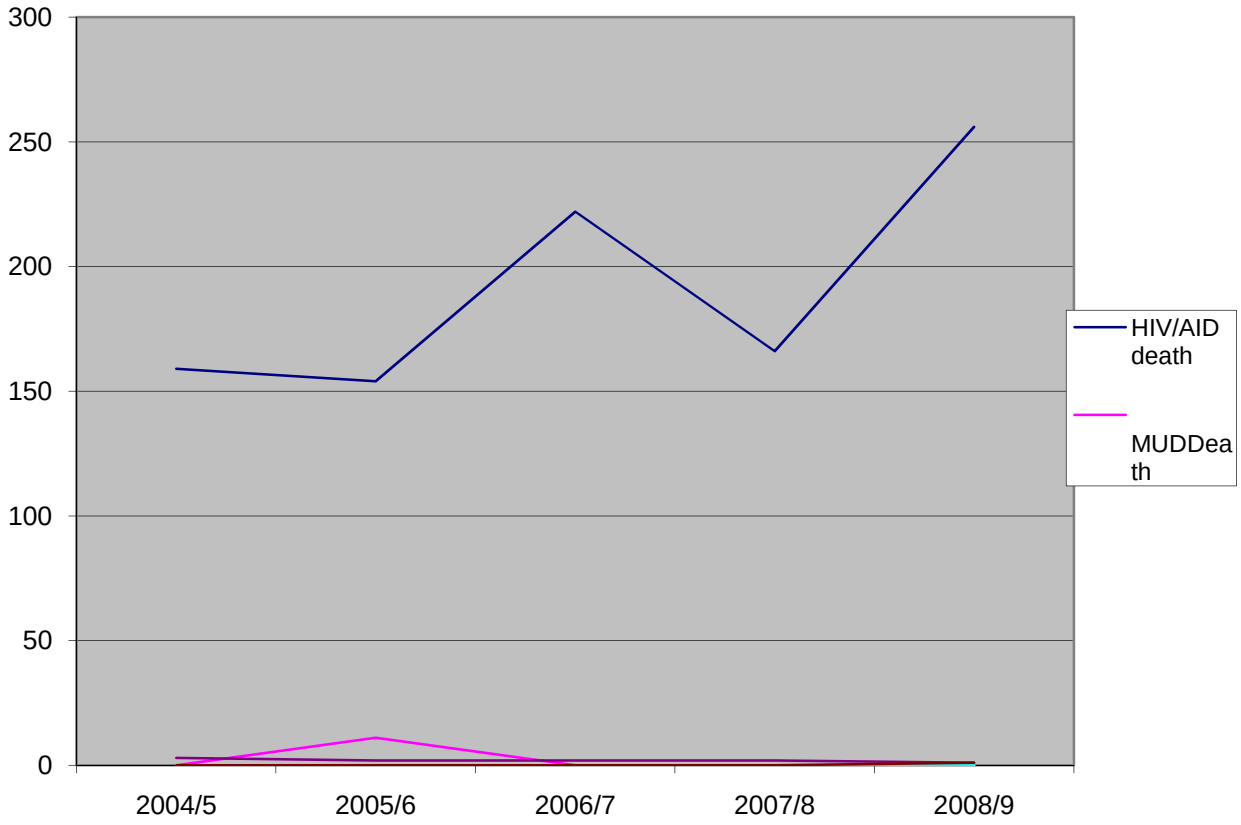


Figure 2.1.5: showing trends of death from HIV-AIDS and death due to male urethral discharge in Addis Ababa from the year 2004-05-2008-09, Addis Ababa, Ethiopia, August 2009

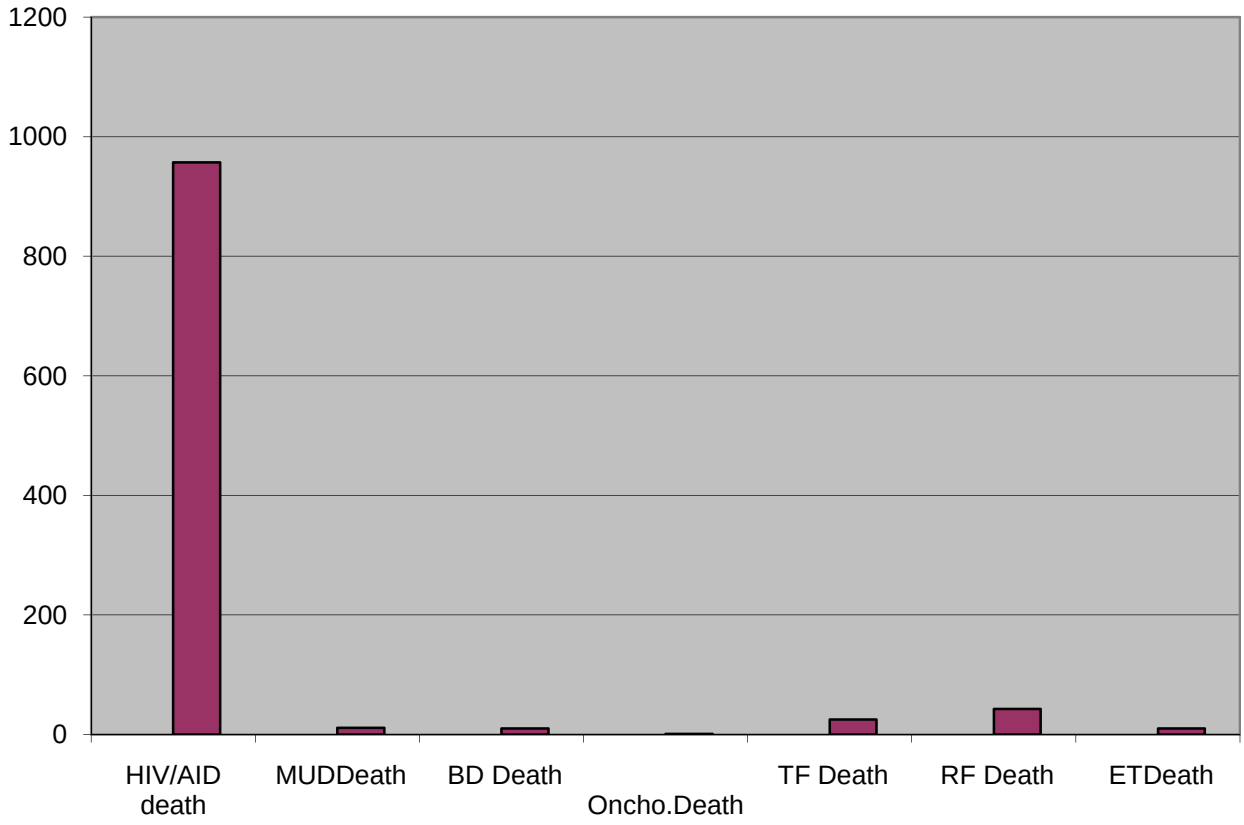


Figure 2.1.6: showing deaths from HIV-AIDS, Male urethral discharge, bloody diarrhea, Onchocerciasis, Typhoid fever, Relapsing fever and Epidemic Typhus from the year 2004-05-2008-09, in Addis Ababa, Ethiopia, August 2009

Table: 2.1.1 Table depicting number of inpatients, outpatient, deaths, case fatality rate and cause specific mortality rates of epidemic prone diseases reported to Addis Ababa regional health bureau from 2004-05-2008-09, Addis Ababa, Ethiopa, July 2009

Serial Number	**Disease**	**Total number of inpatient and outpatient cases**	**Total no. OF Inpatient cases**	**Total no. of inpatient Deaths**	**Case fatality Rate(CFR)**	**Cause specific Mortality Rate (CSMR)from total Death1229**
1	Malaria		**4330**	**47**	**1.1**	**3.8**
2	**HIV-AIDs**		**4953**	**948**	**19.2**	**77.1**
3	Pneumonia <5		**12175**	**148**	**1.22**	**12**
4	Diarrhea with SDH	**60638**	**4873**	**71**	**1.5**	**5.8**
5	**Tyhoid Fever**	**102001**	**754**	**25**	**3.3**	**2**
6	Epidemic Typhus	**57201**	**483**	**10**	**2.1**	**0.8**
7	Relapsing Fevever	**6979**	**2219**	**43**	**2**	**3.5**
8	MNU	**4232**	**85**	**0**	**-**	**-**
9	FNU	**12957**	**523**	**0**	**-**	**-**
10	**Rabies**		**22**	**13**	**59**	**1**
11	Onchoserciasis					
12	Bloody Diarrhea	**43992**	**455**	**10**	**2.2**	**0.8**
13	MUD	**20928**	**511**	**11**	**2.15**	**0.9**

Key Findings :-

Assessment of Diseases reported from Sub-cities and Hospitals in Addis Ababa to Addis Abba regional health bureau from2004-05 to 2008-09 was done and following results were obtained .

Table 2.1.2 Trends of case based/Line listed Immediately Reportable cases From the year 2004-05 to 2008-09 in Addis Ababa city, Addis Ababa, Ethiopia, August 2009

S/No.	Disease	2004-05	2005-06	2006-07	2007-08	2008-09	Total
1	Polio	12	25		20	41	98
2	Cholera	0	0		0	0	0
3	Dranculculiasis	0	0		0	0	0
4	Measles	119	298		187	132	736
5	Meningitis	119	63		73	83	338
6	Neonatal	0	2		0	3	5
7	Tetanus	0	0		0	0	0
8	Plague	0	0		0	0	0
9	Yellow Fever	0	0		0	0	0
10	Viral Haemorrhagic Fever	0	0		0	0	0

As can be seen from the result trends of both Measles and Meningitis decreased from 2005-06 to 2008-09 except for 2006-07 (Data not available) . Cases of Polio showed increase in 2005-06 and 2008-09.

Table 2.1.3 Table depicting number of inpatient cases, inpatient deaths and outpatient cases reported to Addis Ababa regional health bureau from 2004-05-2008-09, Addis Ababa, Ethiopia, August 2009

Yea	Inpatient cases	Inpatien t Deaths	Outpatient cases	Total
2004-05	8268	244	101,665	110,177
2005-06	8393	250	114,656	123,299
2006-07	3298	285	125,258	128,841
2007-08	4023	196	88,932	93,151
2008-09	5443	324	109,034	114,801
Total	29425	1229	539,545	570,269

Malaria

Malaria under five years

There were 2169 reported cases of <5 five years of malaria from 2004-05 to 2008-09 (290, 408, 182, 995, 294 respectively in increasing order) and there were a total of 6 deaths. Among mentioned cases 526 were uncomplicated laboratory confirmed PF cases and 704 cases were uncomplicated laboratory confirmed PV cases. Other cases 'Diagnosis was made based on clinical findings (Empirically).

Malaria cases in population greater than five years of age

There were a total of 8824 reported cases of Malaria>5 years from the year 2004-05 to 2008-09 (2368 ,2612 , 1644 ,647 ,1553 respectively in increasing order) and there were 3 deaths . From mentioned cases 3572 were uncomplicated laboratory confirmed PF cases and 6621 were uncomplicated PV cases . There were 11,423 uncomplicated laboratory confirmed cases of under five and malaria >5 years cases out of which 4098 were PF malaria and 7325 were PV . There were 246 cases of severe anemia in under fives and294 cases of severe anemia in age group of > 5 years with 4 deaths. Number of malaria cases in pregnancy in the last 05 years was 36 and there and there was one reported death in pregnancy.

Pneumonia

There were a total of 193,060 cases of pneumonia <5 out of which 5404 were inpatients and (28%) and 187,656 (72%) cases were outpatients and there was no registered death . With regard to severe anemia <5 there were a total of 23,649 cases of severe anemia out of which 6771 were inpatients and 16,878 cases were out patients and number of inpatient deaths was 148 making case fatality rate from severe pneumonia< 5 years 2.2% .

Diarrhea

There were total of 49701 diarrhea in <5 years with some degree of dehydration out of which 2062 were inpatient cases and 47,639 were out patients and there was no reported death . There were total of 10,937 cases of severe dehydration in <5 out of which 2811 were inpatients and 8126 were outpatients and total number of deaths in five years was71 making case fatality rate from severe dehydration 2.53 % (05 years case fatality rate) and cause specific mortality from diarrhea with severe dehydration was 5.8%

Male Urethral Discharge

There were total of 20,928 cases of MUD (Male urethral discharge) out of which511 were inpatients and 20,417 were outpatient cases .Total number of inpatient deaths encountered was 11 making case fatality rate from MUD 2.15%

Male Non vesicular Genital ulcer

There were total of 4232 cases of Male Non vesicular Genital ulcer out of which 85 were inpatients and 4147 were out -patient cases on the other hand there was no registered death from male Non vesicular genital ulcer.

Female Non vesicular Genital Ulcer

There were total of 12,957 cases of Female Non vesicular Genital Ulcer out of which 523 were inpatients and 12,434 were outpatient cases and there was no death reported .. From total of 38,117 sexually transmitted and related diseases cases 20,928 (55%) were cases of male urethral discharge ,4232 (11.1%)were cases of male non vesicular genital ulcer cases and the remaining 12,957 (33.9%) were cases of female non vesicular genital ulcer.

Bloody Diarrhea (Dysentry)

There were total of 43,992 cases of Bloody Diarrhea reported in a period of five years out of which 455 cases were inpatient cases and 43,537 were outpatient cases and there were 10 deaths. Case fatality rate from bloody diarrhea was 2.2% and cause specific mortality rate of bloody diarrhea is 0.81%.

Onchocerciasis

There were total of 185 reported cases of Onchocerciacsis out of which there was one inpatient case and the rest 184 cases were outpatient cases and there was no reported death from this disease.

Typhoid Fever

There were total of 102,001 cases of Typhoid Fever out of which754 were inpatients and 101,247 were outpatient cases. On the other hand there were 25 reported deaths from typhoid fever. Case fatality rate of typhoid fever is 3.32% and cause specific mortality of typhoid fever was 2%.

Relapsing Fever

There were total of 6979 cases of Relapsing fever out of which 2219 cases were inpatients and 4760 were outpatient cases .total number of deaths from relapsing fever for the last 05 years was 43 making case fatality rate 1.93%, cause specific mortality being 3.5% .

Epidemic Typhus

There were total of 57,201 cases of Epidemic Typhus out of which 483 were inpatients and 56,718 cases were outpatients and there were 10 deaths. Case Fatality from this disease was 2.07% and cause specific mortality was 0.81%.

Rabies

There were total of 22 inpatient cases and 13 inpatient death and no outpatient cases .Case fatality rate of Rabies was 59% and cause specific mortality rate being 1.05%

Discussion

Five years reported data of Diseases under surveillance was assessed and following results were obtained. There were total of 570,269 cases and deaths reported in period of 05 years. Of the total , number of outpatient cases was 539,545 (94.6 %) ,that of inpatient was 29,425 (5.16%) and number of inpatient deaths from all causes was 1229 (0.22 %) and inpatient case fatality of all diseases was 4.2% . In the year 2004-05 there were total of 110,177 reported cases out of which 8268 (7.5%) were inpatient cases, 244 (0.22%) were inpatient deaths and 101 ,665 (92.33 %) were out patient cases and inpatient case fatality from all causes was 2.96 % .

Number of total inpatient cases ,inpatient deaths and outpatient cases in the year 2005-06 was 123 ,299 out of which 8393 were inpatient cases ,250 were inpatient deaths and114 ,656 were out patient cases with inpatient case fatality rate of 2.98 % . In the year 2006-07 there were 3298 inpatient cases ,285 inpatient deaths and 125 ,258 outpatient cases making total of 128 ,841 with inpatient case fatality rate of 8.64% . There were total of 99 ,151 cases in the year 2007-08 out of which 4023 were inpatient cases ,196 were inpatient deaths and 88,932 were out patient cases with 4.9 % case fatality . In the fifth year 2008-09 total number of reported cases was 114,801 out of which 5443 were inpatient cases, 324 were inpatient deaths and 109,034 were outpatient cases and inpatient case fatality of all diseases was 5.9 %. Magnitude of inpatient cases, inpatient deaths and outpatient cases in the year 2005-06 and 2008-09 showed increasing pattern as compared with their preceding years (2004-05 and 2007-08). As the result indicates five year trend of inpatient cases and outpatient cases showed decreasing pattern where as five years inpatient deaths showed relatively increasing pattern.

Five years assessment result showed relative decrease in magnitude and trend of most of specific diseases situation assessed. As compared to other diseases Rabies ,HIV-AIDs ,Typhoid fever , Bloody Diarrhea and Male urethral discharge cases have case fatality rate of (59% ,19.2 %

,3.3% ,2.2% and 2.15 % respectively) were found to be top five causes of mortality as compared to other assessed diseases . As assessment result indicated cause specific mortality from HIV-AIDs was 77.1 % which is by far higher than cause specific mortality from sum of all other causes added together. This indicates that impact of HIV-AIDs on society is tremendous in terms of causing severe illnesses, deaths and debilities as a result of which it stood to be most pressing and priority deserving public health problem demanding prompt intervention activities to be undertaken to contain this pandemic. Following HIV-AIDs Pneumonia < 5 and Diarrhea from severe dehydration have relatively higher cause specific mortality rates as compared to others (12% and 5.8% respectively). Cause specific mortality from Malaria and Relapsing fever was 3.8% and 3.5% respectively and their burden is higher as compared to other diseases assessed. For magnitude of these mentioned diseases was very high as compared to others they are ranked to be top five causes of mortality as a result of which seek utmost attention. Magnitudes of other unmentioned diseases were shown in result section.

It was mentioned earlier that there could be incompleteness in data because of under reporting, delay in reporting, never reporting and the like and the situation of the magnitude and trend of diseases and overall picture may change if data were available as expected.

Limitations

Inaddition the fact that report did not includea data from clinics and some private hospitals and it was not possible to gather necessary information from newly assigner IDSR focal persons in subcities may also make the data incomplete. Moreover shortage, high turnover and mismanagement of IDSR human resources brought about gap in proper transfer of information with regard to surveillance activities. Similarly gap in providing relevant training to IDSR focal persons on surveillance activities and ineffectiveness of health management information system in planning activities together with gap in undertaking periodic monitoring and evaluation activities of surveillance system may contribute to limitation encountered there by affecting generalizability of findings.

Conclusion

As assessment result entails there is an increased magnitude and trend of most pressing public health problems from communicable and epidemic prone diseases through five years period and if proper reporting and handling of data not done burden of health problem might be higher therefore the need to take appropriate measure to address this problem remains the tasks to be accomplished promptly.

Recommendations

As can be ascertained from plausible conclusion reached aftereffects of communicable diseases particularly epidemic prone ones if left unchecked can pose increasing problem by becoming leading most pressing public health problem and may have far reaching consequences in terms of causing severe illnesses, deaths, longstanding disabilities together with having enormous adverse effects (e.g: as imposed by HIV-AIDS) to soicio-economic development progress by and large on gross development. Inorder to halt diseases further spread and mitigate their after effects there remains demand driven need to preventand control such diseases. Intervention activities which need to be undertaken should be geard at addressing this need. Enhancing increased public awareness, IEC/BCC production, distribution and communication, active disease search and management, improving quality of diagnostic, treatment and rehabilitation facilities together with provision of realted logistics and supplies should be given utmost emphasis. Moreover improving surveillance systems, conducting supportive supervision as required, undertaking periodic monitoting and evaluation activities and conducting demand driven research activities and use of findings to address most pressing public health problems of society remains as vital importance to deal with such problems to eventually bring about reliable success in diseases prevention and control by and large enhance progress in health development

Acknowledgement

Getting necessary five years data of diseases under surveillance was not an easy task to accomplish. Materials and technical supports needed to undertake analysis of collected data could not be possible if dependable supports were not provided. Efforts made to evaluate surveillance system of Addis Ababa regional health bureau could not be possible had it not been for unreserved supports provided. Therefore I would like to express my heart felt gratitude to Dr. Richard Luce, EFELTP advisor, Dr. Adamu Addissie, EFELTP, Coordinator, Sr. Seble Tadesse, Addis Ababa regional health bureau, IDSR unit team leader and Addis Ababa regional health bureau for their unreserved supports to bring this work in to reality.

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Chapter III – Evaluation of Surveillance System

3.1: Evaluation of Measles Surveillance in Sidama Zone SNNPR, Region, Ethiopia, NOV 16, 2010 to December 30, 2010

Introduction

Ethiopia experiences a heavy burden of disease with a growing prevalence of communicable infections. Many Ethiopians face high disease morbidity and mortality largely attributable to potentially preventable infections, diseases and nutritional deficiencies (1). Most communicable diseases are caused due to poor environmental hygiene practices and nutritional deficiencies.

The most common causes of death and illness in the country are acute respiratory infections, diarrheal diseases, malaria and Tuberculosis, HIV-AIDS and vaccine preventable diseases (2). The challenging trends of epidemic prone diseases coupled with unstable climatic conditions and increasing population movement have posed serious challenges in prevention and control of diseases. These conditions clearly showed the need to have timely, reliable and complete information for effective responses. However efforts to collect organize and utilize data from health services have not been successful for a long time due to inadequate trained personnel, poor data collection and processing system and inadequate laboratory services. In addition lack of regularly updated guidelines, lack of coordination, lack of feedback system and inadequate utilization of data for action have made disease prevention a meaningless exercise (3).

Public health surveillance is the ongoing systematic data collection, analysis, interpretation and dissemination of data about health related events for use in public health action to reduce morbidity and mortality by and large to improve health (2, 3), and it is essential to the planning, implementation and evaluation of public health practice, closely integrated with timely dissemination of these data to those who need to know (3). Health surveillance is an essential component of evidence based decision making practices (4).

A well functioning disease surveillance system therefore provides information for planning, implementation, monitoring and evaluation of public health programs. It includes case detection and registration, case confirmation, data reporting, data analysis, outbreak investigation, response and preparedness activities feedback and communication (5). Public health surveillance activities are generally authorized by legislation and carried out by public health officials; public health surveillance systems have been developed to address a range of public health needs. In addition public health information systems have been defined to include a variety of data sources essential to public health action and are often used for surveillance. These systems vary from a simple system of collecting data from a single source, to electronic systems that receive data from many sources in multi injuries formats to complex surveys (6).

A public health surveillance system is dependent on a clear case definition for the health-related event under surveillance. The case definition a health related event can include clinical manifestations, laboratory results, epidemiologic information (i.e, person, place, time) and/ or specified behaviours as well as levels of certainty (i.e. confirmed/definite probable/presumptive or possible (suspected). The use of standard case definition increases the specificity of reporting and improves the comparability of the health related events reported from different sources of

data including geographic areas. Case definitions might exist for variety of health related events under surveillance, including diseases, injuries, adverse exposures and risk factors or protective behaviours (6).

Strong surveillance and response systems are critical for effective communicable disease control. Unfortunately resource available for building national capacity for communicable disease surveillance and response are often inadequate so that efficient use of these resources must be made, better coordination and integration of surveillance functions will contribute to the effectiveness and efficiency of these systems. This concept is currently applied to communicable diseases through systematic assessment of national surveillance and response systems leading to the development of national plans of action (7). The evaluation of surveillance systems should promote the best use of public health resources by ensuring that only important problems are under surveillance and that surveillance system operate efficiently. In so far as possible the evaluation of surveillance systems should include recommendations for improving quality and efficiency, e.g, eliminating unnecessary duplications most importantly an evaluation should assess whether a system is serving a useful public health function and is meeting the system's objectives (8).

Public health surveillance systems should be evaluated periodically and the evaluation should include recommendations for improving quality, efficiency and usefulness. Evaluation of a public health surveillance systems focuses on how well the system operates to meet its purpose and objectives. A public health surveillance system should emphasize those attributes that are most important for the objectives of the system. Efforts to improve certain attribute (i.e the ability of the public health surveillance system to detect a health related event (specificity) might

detract from other attributes (i.e. simplicity or timeliness). An evaluation of the public health surveillance system must therefore consider those attributes that are of the highest priority for a given system and its objectives (6, 8).

In 1996 the government of Ethiopia introduced integrated disease surveillance (IDS) strategy focusing on 17 priority communicable diseases. Two years later in 1998 the 4th WHO Regional Committee for Africa adopted a resolution on integrated disease surveillance of communicable diseases recognizing and addressing the problem of vertical disease surveillance systems. Member states adopted IDS as a regional strategy for early detection and efficacious response to priority communicable diseases in the African region (9).

Therefore Measles surveillance is the corner stone of the public health decision making and practice thus evaluation of surveillance systems is vital for ensuring that it monitored efficiently and effectively. Thus evaluation of core and support functions and system attributes such as simplicity, flexibility, stability, timeliness, sensitivity and predictive positive value, quality of data and usefulness of measles surveillance system at districts, community/case detection level was conducted in Sidama zone, SNNPR region.

Literature Review

Measles is a leading vaccine preventable childhood killer. In each year measles currently kills 454,000 people worldwide, of these 410,000 deaths are among children under the age of five years. Global deaths due to measles fell by48% in 2004 from 87% in 1999. The largest reduction occurred in Sub-Saharan Africa where estimated measles cases and deaths dropped by 60%,. These statistics make measles one of the single leading causes of death among children in most developing countries despite the availability of safe and effective vaccine for more than 40 years. In 2000 a WHO/UNICEF strategic plan was developed with objective of reducing measles deaths by half by 2005. In 2003 the world health Assembly passed resolution to reduce global measles deaths by half 2005 compared to the 1999 level (10).

During 2001-2005 213 million children were reached with measles vaccination in Africa and a 60% reduction in measles was achieved by the end of 2004 (10). Measles is widely known in Ethiopia. Traditionally all children were expected to be infected with measles during their life time. Therefore mothers did not typically seek medical care for their children measles infection unless the illness was followed by complications. For this reason the primary diagnosis recorded by health workers is not usually measles but rather the complications of measles such as pneumonia, otitis media, diarrhoea or croup (1).

In developing countries with low vaccination coverage of epidemics often occurs every two to three years and usually last between two to three months although their duration varies according to population size, crowding and population immune status.

Study done at National level on health service surveillance system showed low effectiveness of the program due to high turnover of staff informants may lack some of the key information to be communicated. In Ethiopia the practice of documentation and hand over of documents to the successor is very weak and the resulting lack of institutional memory may have obscured some of the key successes and challenges in the course of IDSR implementation at various levels

Objective of Evaluation

General Objectives:-TO evaluate whether measles surveillance system is achieving its objectives.

Specific objectives

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1. To assess system attributes of measles surveillance system.
2. To assess usefulness of measles surveillance system.
3. To gather evidences regarding performance of the surveillance system
4. To assess effectiveness and efficiency of core components of measles surveillance (process, input, output and outcome of Measles surveillance system in IDSR implementation with regard to detection, reporting, analysis, preparedness, response, and feedback) at community to district levels.
5. To assess supportive components of IDSR implementation such as training, supervision, human, financial and material resources provided for surveillance.

Expected Outcome of the Evaluation

The expected outcome of the evaluation was to identify /find out opportunities, threats and related constraints (gaps), identify strengths of Measles surveillance interventionnactivities, document lessons learned and make recommendations to take necessary intervention measures

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Materials and Methods

Study Area:

Sidama zone is one of zone in SNNPR which is located 273 Km south to the capital Addis Ababa. Sidama zone is administratively divided into nineteen woredas and two town administration. According to the 2007 Federal Central Statistics Agency (CSA), the total population is estimated to be 3,232,308 by considering 2.9% as rate of natural increase, total male population is 1, 606,457 and total female population is 1, 625, 851, the total number of under-five children in the zone was estimated to be 504,240 based on the assumption that 15.6% of the total population is under-five children.

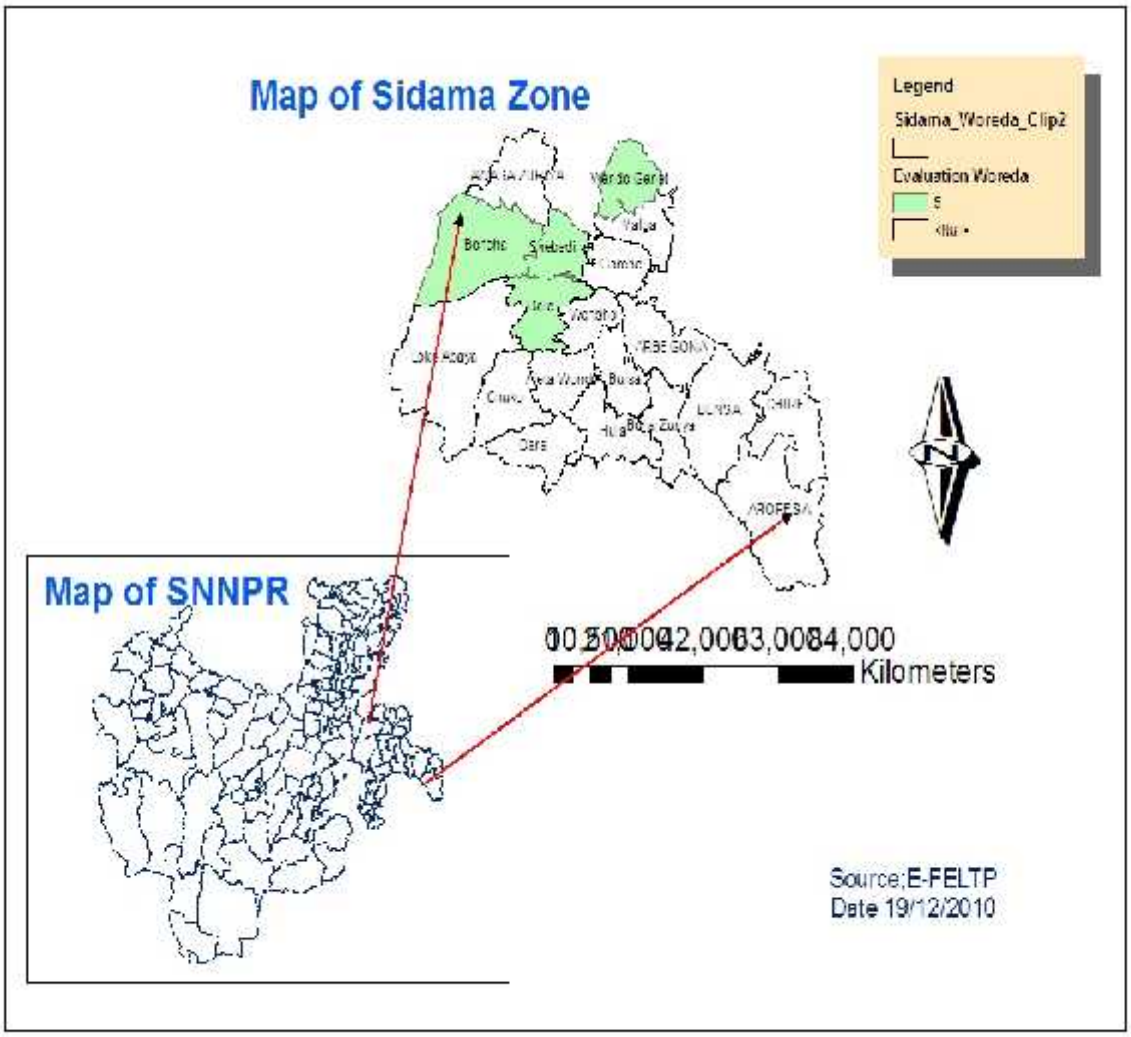

Figure 3.1.1: Map of Sidama zone showing its woredas and those woredas included in Evaluation, EFELTP, 19/12/2010

Study period:

The study was conducted from NOV to DEC, 2010

Sample size and Sampling strategy:

In order to collect representative data of surveillance system at each level and for understanding of common problems 5 woreda ,5 health centers ,1 hospital, 1 zonal health office and 1 regional health bureau were included in study sample. The qualitative and quantitative data in all aspects of measles surveillance collected from health workers at health facility staff at health centre/hospital working as IDSR focal person, Head of health facility because they are the first to detect, record and report cases and epidemics.

Data source and collection:-primary data and information on measles surveillance system was collected from district health offices and health facility key stake holders and secondary data was collected by reviewing of medical records from health centers and Hospitals.

Data collection instruments and techniques: - review of the measles surveillance records and documentation at all levels. Observation: of measles work-plans, data collection instrument, out puts of core function and the like was made.

Study design:

A descriptive Cross Sectional qualitative and Quantitative approach study was conducted. The system was evaluated using standard surveillance system evaluation guideline formulated by Centers for disease control and prevention (CDC) updated guidelines for evaluating surveillance system after selecting usefulness of the system and nine attributes as criteria to evaluate the performance of a surveillance system such as simplicity, flexibility, data quality, acceptability,

sensitivity, predictive value positive, representativeness, timeliness, and stability and the usefulness of the system.

1.1**: Acceptability**: Was measured quantitatively through reviewing completeness of report forms for the past three months and timeliness of data reporting.

1.2 : **Rrepresentativeness**: was evaluated by comparing DHS and National measles indicator survey and the number of health facilities actually covered by system compared with expected number of health units.

1,3**: Sensitivity of measles surveillance**: was expected to be assessed at the level of case reporting in health facilities through reviewing records in health facility including Government, private and NGO, preceding two months and compared with cases detected by the surveillance system .Undertaking these activities was not possible for surveillance data to be included for evaluation was not available from private and NGOs health facilities and this entails limitation of evaluation

1.4: **predictive positive value**: was expected to be calculated (analysed) by using surveillance data collected by districts and zone from 2008-2009 and comparing them with data collected from health facilities records considered as gold standard.

1.5**: Timeliness**: Was measured by comparing the actual reported with recommended reporting timeliness and by comparing the number of days/weeks taken from the onset of measles outbreak , date reported to the surveillance system and action taken with recommended time frame

1.6**, Usefulness and acceptability** :was assessed by using self administered questionnaires to the surveillance focal persons participating to this system and head of health administrators between NOV16 and DEC 30, 2010.Usefulness of measles system operation was assessed through ascertaining how surveillance objectives were achieved, and reasons for not achieving the anticipated objectives. Its usefulness to public health staff in taking actions as a result of interpreting and analyzing its data, detect diseases, estimates of the magnitude of morbidity and

mortality, detect trends, detection of epidemics and permit assessment of the effect of prevention and control programs. Then surveillance system considered being useful if it was contributing to performance measures or detected epidemics and action taken or achieved at least one of its objectives

1.7: **Data quality;-** TO improve the validity and reliability of the study data collection tools developed based on CDC guideline, FMOH measles guideline and it was validated by conducting pilot study in one of the district, and also during data cleaning,coding, entry and analysis through counter checking for maintaining its consistency

1.8: **Data management and analysis plan**: After the data was checked in specific set coded and entered into EPI Info version 3.2.2 and analysis was done by using EPI Info. Finally results were presented by table and graphs and findings were summarized to be communicated.

1.9: Ethical Clearance: Institutional ethical clearance for acceptance of the study was secured from, an ethical review board in Addis Ababa University, SNNPR Health Bureau (Sidama Zone Health Department), and permission to undertake the study was obtained from selected Health departments and districts Health offices selected for the study.

Operational definition

Acceptability

Willingness of persons, and organizations to participate in the surveillance system. (CDC) updated guidelines for evaluating public health surveillance systems.

Accessibility

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

Accuracy

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

Simplicity; Structure and ease of operation.

Specificity; Measure of how infrequently a system detects false positive health events, i.e., the number of individuals identified by the system as not being diseased or not having a risk factor, divided by the total number of all persons who do not have the disease or risk factor of interest.
Stability; Reliability (ability to collect, manage and provide data properly without failure) and availability (ability to be operational when it is needed) of the public health surveillance system.
Timeliness; Interval between the occurrence of an adverse health event and (i) the report of the event to the appropriate health agency, (ii) the identification by that agency of trends or outbreaks, or (iii) the implementation of control measures also "The variance between planned and actual dates for a product's availability for a particular user audience. Multiple dates, each one with meticulous recording to enhance collection of accurate information.

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

Validity; Degree to which statistical information correctly describes the phenomena it was designed to measure. It is usually characterized in terms of error in statistical estimates and is traditionally decomposed into bias (systematic error) and variance (random error) components. It may also be described in terms of the major source of error that potentially causes inaccuracy (e.g., coverage, sampling, non-response, response).

Positive Predictive Value; Proportion of reported cases that actually have health-related event under surveillance.

Flexibility; Ability of the surveillance system to accommodate changes in operating conditions or information needs.

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

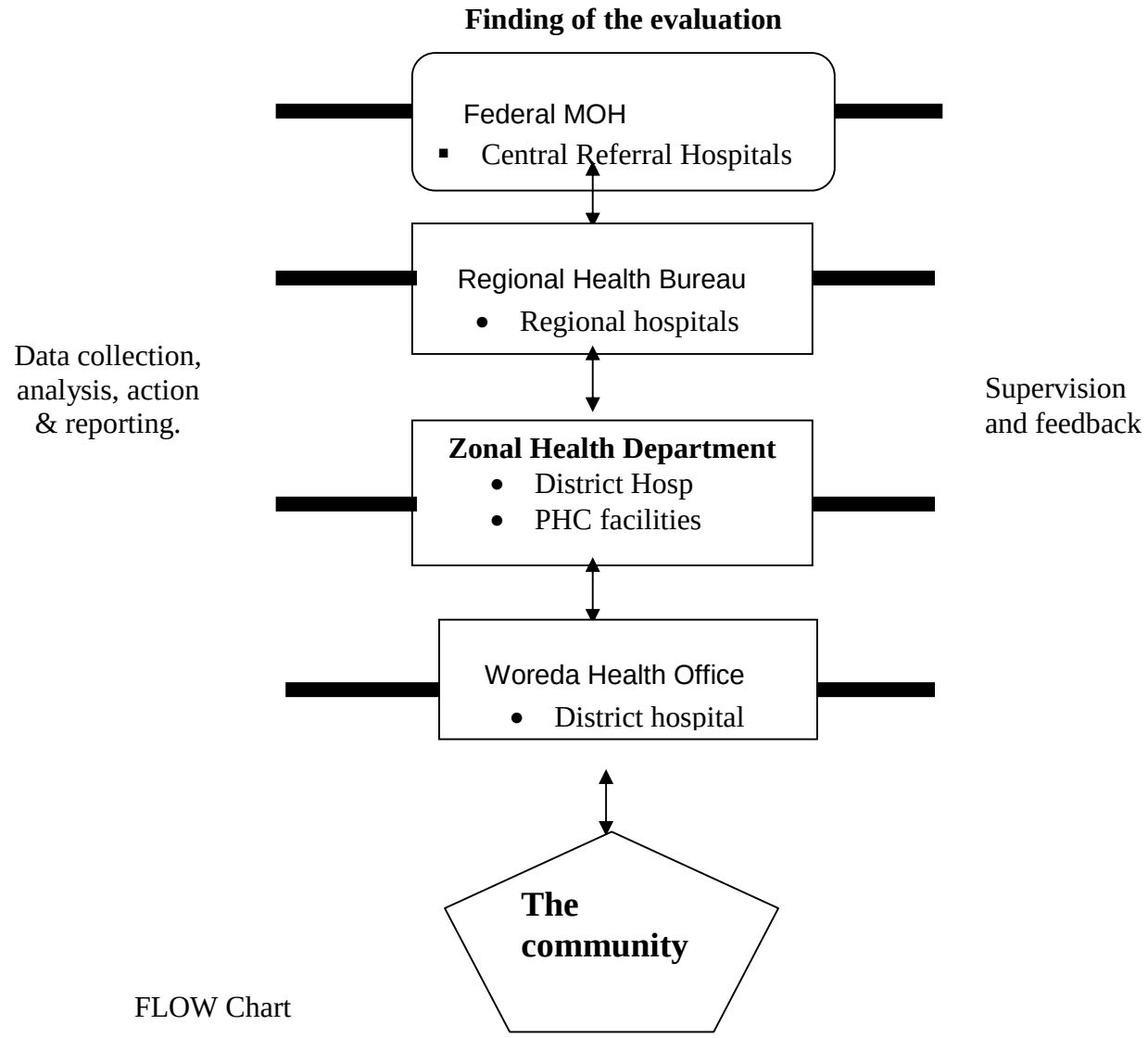

Figure 3.1.2: Data and information flow in IDSR indicating varying cycles atvarious levels.

This is Flow chart of the system show as, 48 hours after notification of any measles case from the community; an investigation is conducted by health workers, who fill out case investigation Forms, and collect blood specimens. Then Specimens are transported to central laboratory in EHNRI for confirmation.

Standard case definition

A suspected measles case is defined as:

i. Any person with **generalized maculo-papular rash and fever** plus one of the following: **cough** or **coryza (runny nose)** or **conjunctivitis (red eyes)**
ii. Any person in whom a clinician suspects measles cases

Confirmed Case: IgM+ or epidemiologic link to a confirmed

System Description

MEASLES surveillance is integrated with 20 other priority diseases

Active and Passive surveillance

•Laboratory support

Table 3.1.1: Respondents/Interviewees for measles surveillance Evaluation

Level	Respondent Unit
Regional Health Bureau (RHB)	DPCD/ IDSR Team
Woreda Health Office	PHEM STAFF/IDSR Focal Person
Health Facilities	Head of Health Facility/ IDSR Focal Person
Zonal health office	PHEM STAFF/IDSR Focal Person

The evaluation teams visited a total of 6 health facilities (5 health centers and 1 hospitals) and 1 zonal health department ,1 regional health bureau and 5 district health offices . Responsible and relevant professionals from woreda to regional level responded to the qualitative and quantitative questionnaire provided the required information

Information obtained using the quantitative data collection tools are shown in Tables 1-4. These findings indicate the overall performance of IDSR at various levels of the health system.

Finding of the assessment

The findings were compiled from analysis of the data gathered by the assessment team

This was through interviewing surveillance focal persons at various levels of the health System, including observations and discussions with key informants. Generally measles surveillance system was found to be functioning at all level.

However, in some areas the quality of information generated needs improvement. Measles data was not being collected, analyzed or reported on time. Inadequate coordination and supervision of the surveillance activities could have contributed to some of these shortcomings. Below are some of the major findings of the assessment. Corrected knowledge of epidemic threshold of measles

Measles surveillance system has been useful in the zone. It has detected outbreaks in most districts of the zone.

Table 3.1.2: Measles case detection rates at various levels

diseases	HF level	%	district level	%	zonal level	%	regional level	%
measles	6	80	5	80	1	100	1	100

Case detection

In order to detect cases of priority diseases, health workers require adequate training on Clinical diagnosis and be equipped with appropriate case definitions. MOH has distributed disease specific case definitions for use by the health facility staff. When asked to name the priority diseases in assessed site , over 50% of the respondents mentioned malaria, measles, diarrhea, dysentery, and Acute watery diarrhea ,neonatal tetanus .

The assessment found that majority of the health facilities (90 %) had national IDSR surveillance guidelines. These guidelines contain case definitions for priority diseases.80% of the districts said that they had a mechanism to capture information on outbreaks from the community. This is mainly through health extension worker and volunteers.

Only four (8.7%) of the health facilities reported shortage of weekly and monthly reporting in the last 12 months.

Table 3.1.3: Case detection performance levels (percentages) in health centers,district health offices, zonal health department and SNNPR health bureau

Parameter	Performance# (%)
Standard case definition material availability (cross checked) (HC, DHO ZONE, RHB)	13(90)
Knowledge about standard cases definition (HC,DHO)	11(90)

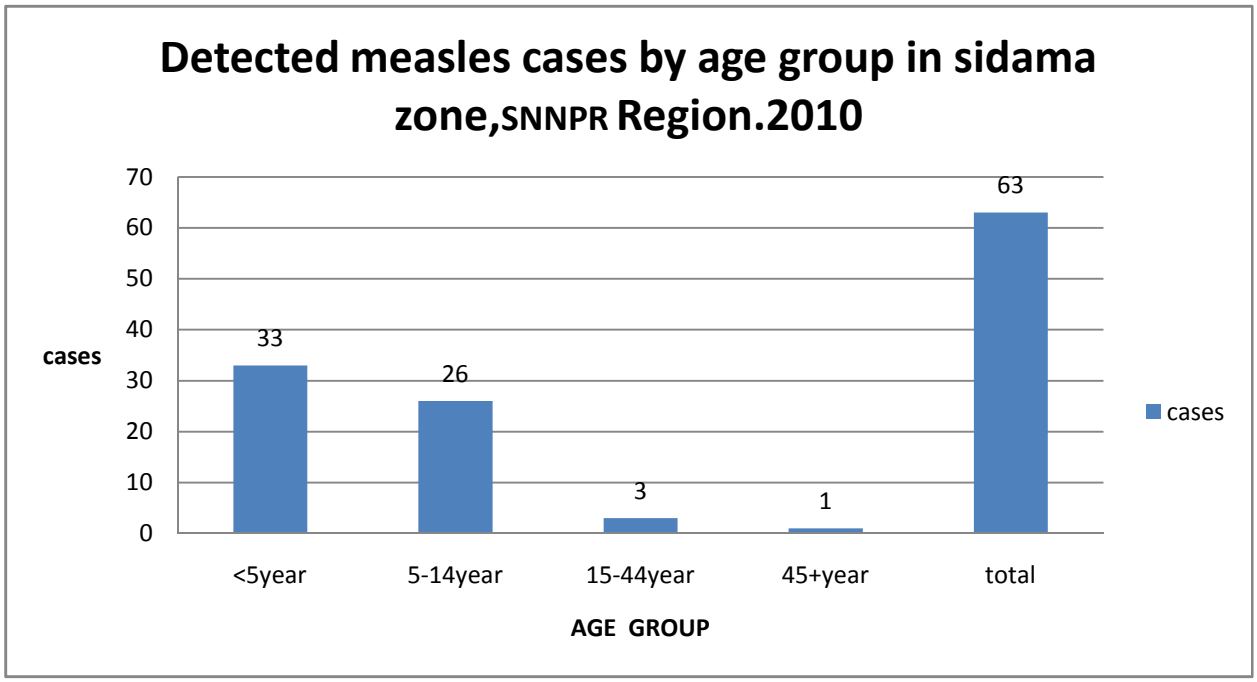

Figure 3.1.3: Detected Measles Cases by age group in Sidama zone, SNNPR, 2010

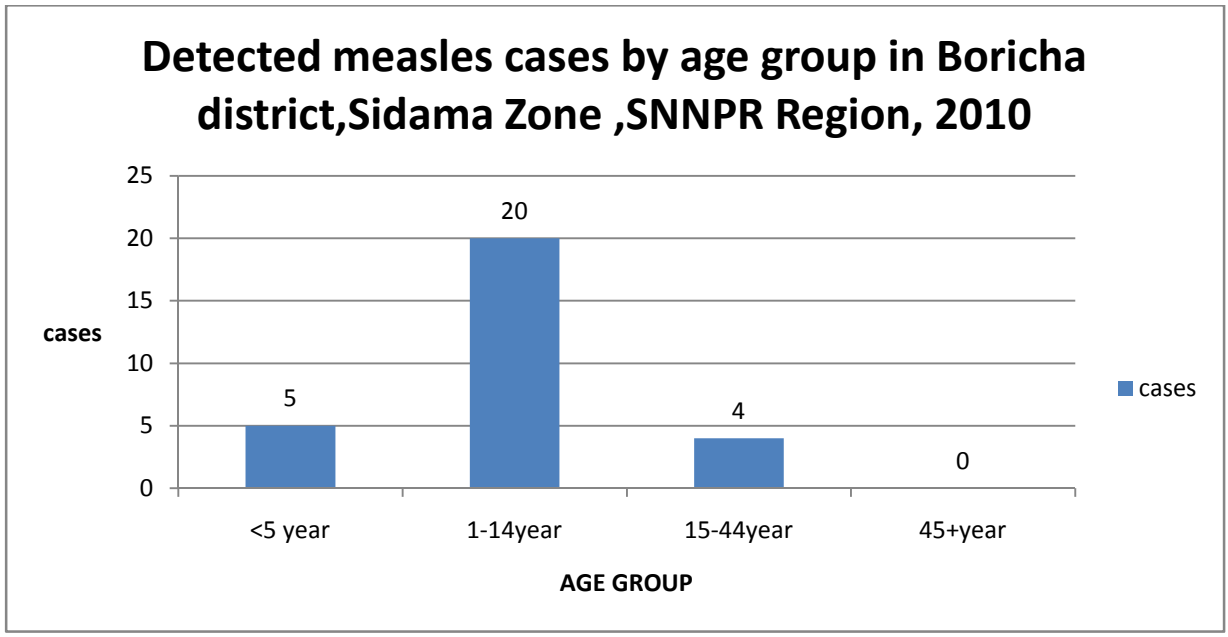

Figure 3.1.4: Detected Measles cases by age group in Boricha district, Sidama zone, SNNPR,2010

Case confirmation

Specimens could be collected and transported to central labs. At zonal level from 63 suspected measles cases blood sample were sent to central lab for confirmation out of this 63 cases 31 were positive ,16 negative 1 discarded the rest 15 cases were not known.

At the health facility level, there was no problem of specimen containers, transport equipment, and no problem of skills to collect specimens.

Table 3.1.4: Case confirmation at various levels in sidama zone SNNPR Region 2010

parameter	Performance # %
Capacity present to collect blood specimen(HC,DHO Zone, RHB)	11(85)
Equipments availability for specimen transportations	13(100)

Figure 3.1.3 Measles Laboratory results in Sidama zone, SNNPR, 2010

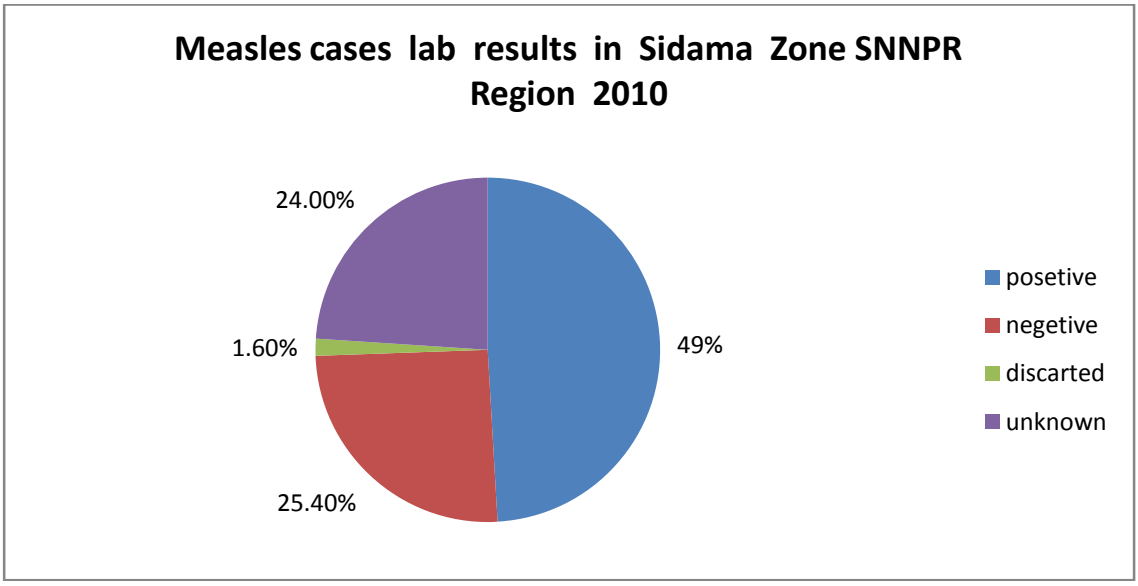

Figure 3.1.5: Measles Laboratory results in Sidama zone, SNNPR, 2010

Case registration and Reporting

Registration and reporting of priority diseases is important in surveillance. All the health facilities visited had an outpatient register and inpatient register (where appropriate) for recording cases. For example, the team counted the number of measles cases in all the registers facility and compared the number to those found in the cases based report format as an indicator of data quality.

Table 3.1.5: Timeliness and completeness of reports at health facility level in sidama zone SNNPR Region 2010.

name of HF	Completeness'%	Timeliness%
Yirgalem Hosp	97	80
Boricha HC	96	50
Mesenkela	80	70
Yirgalem HC	94	77
Leku HC	92	52
W.Genet HC	90	70

Table 3.1.6: TIMELINESS OF REPORTS BY WOREDA IN SIDAMA ZONE SNNPR REGION 2010

WOREDA	EXPECTED	REPORTED	LAT	NOT REPORTED	%
BORICHA	25	23	1	1	92
SHEBEDINO	25	24	0	1	96
DALLE	25	18	0	3	72
W.GENET	25	22	0	3	88
YIREGALEM	25	15	2	8	60

The weekly reports sent on time shows that except Dalle (72%) and yirgalem (60%) which was below standard. The rest three districts sent weekly report on time. This disparity will hamper the quality of work towards disease surveillance as the reporting weekly itself tells the sensitivity of surveillance system. But feedback from districts to the health facility was very weak.

Data analysis and management (usefulleness)

The integrated disease surveillance strategy recommends that data collected should be analyzed and used for action. The assessment found that very little analysis of measles surveillance data is done at the health center (17%), at district level (20%) zonal level were organized which is 100% and regional level 0%. The reasons given by health facility staff for not drawing graphs were: Lack of knowledge (3) lack of computer (1) and multiple responsibilities.

Table 3.1.7: Presence of epidemic curves or line graph (observed)

visited sit	≠ of respondent	evidence of graph	percentage%
regional	1	0	0%
zonal	2	yes	100%
woreda	5	1	20%
Health center	6	1	17

Epidemic preparedness and Response

Epidemic management committees should provide guidance and mobilize resources during outbreaks. On the other hand the rapid response teams are the fire fighters during disease outbreaks. Therefore both should be part of an epidemic preparedness plan.

90 % of the district and 80 % of the health facility said that they had epidemic management committees but only 1/5 (20%) of the districts and 0 % of the health center could produce minutes of the committees meetings.

Table 3.1.8: Epidemic preparedness in sidama Zone SNNPR Region 2010.

Variables	RHB n=1	Zone n=1	Districts=5	HF n=6
Observed written reports in %	0	100	20	0
Availablity of emergency stock drug &supplies	100	100	50	17
Experienced shortage of drug during recent epidemic	0	50	70	80
Presence of budget line for epidemic response in %	100	100	60	0
Observed epidemic mgt meeting minutes in % reports in %	0	100	20	0
Have rapid epidemic response team in%	100	100	100	70

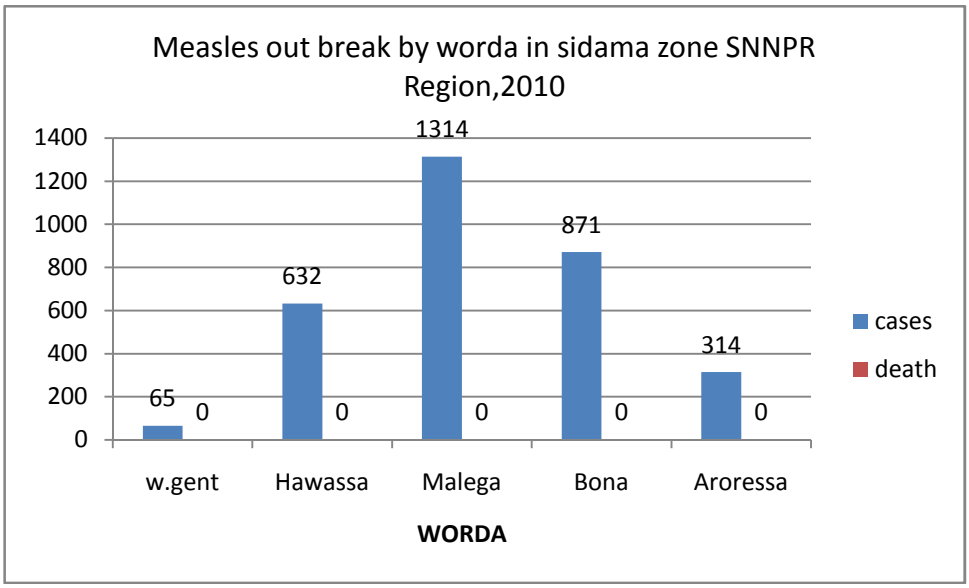

Figure 3.1.6: Measles outbreak by woreda in Sidama zone, SNNPR, 2010

Feedback

Giving feedback is one of the ways to motivate staff. This also serves as an assurance that what they are doing is appropriate and is being continuously monitored. It is recommended that feedback be provided at all levels. 22 % of the district provided written feed back in the next level in the last 12 months. No health facility provided written feedback on measles surveillance to the community.

Acceptability

Acceptability is quite high. The participation rate is high, almost all the facilities in the region are part of the system

Table 3.1.9: Acceptability Measles surveillance by woreda in Sidama Zone, SNNPR, 2010

NAME OF WOREDA	POPULATION	PLANNED	ACHIEVED	PERCENT %
W.GENT	130,117	3	6	200
SHEBEDINO	253,769	4	8	200
Boricha	274,349	5	5	100
DALLE	234,497	5	0	0

In accessing acceptability, we found that 5 districts (100%) and above. All suspected cases had Completed CIF surpassing national target of 80%

Simplicity

Forms are easily to complete by 95 % of the respondent and also flow of information most of them are used telephone and hard copy, few of them used fax

Satisfaction with the Performance of measles surveillance

90% of the respondents were satisfied with the performance measles surveillance at all level.

Supervision

Supportive supervisory visits are very crucial especially for the staff. It is an opportunity to orient health staff on new developments and reinforce good practices. The interaction motivates the staff and builds their capability. 70 % of the zone and 50 % of the districts had at least two supervisory visits in the last 12 months.

Similarly 50% of the districts and 60% health facilities had received supervisory visit from a higher level. No checklists were available or used during the supervisory visits.

Various reasons were given for the inability to conduct supervision visits to the lower Levels the main ones were that there were no vehicles dedicated for surveillance activities but poor transport is provided on request but the process takes a long time and depends on the availability of the vehicle

Human resources

The staff that assigned as IDSR focal persons or acting as focal persons for disease surveillance at various level most of them were nurses ,health officers and 1 information and technology (IT) person

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Training

In order to perform efficiently surveillance focal person needs to have some basic Epidemiological knowledge. Most of the health personnel providing services at the peripheral health facilities have basic training .Out of the # 6 respondents at the peripheral health centre, 90% had in service training on IDSR, and only 17.3% have had training on data management and on epidemic management.

Communication

Good communication is essential for the surveillance system to be effective. However, communication was poor in some districts. Weekly reports, monthly and other reports are sent from health facilities by hard copy and telephone and few by fax

Table: 3.1.10: Resources available at various levels in Sidama zone, SNNPR, December 2010

types of resourse	RHB n=1	zone n=1	districts=5	HC=6
Site having the following in %				
Electricity	100	100	100	100
Motor cycle	100	100	70	60
Vehicle	90	80	60	30
Adequate stationary	100	100	100	80
Calculator	100	100	60	40
Computer	100	100	40	17
Printer	100	100	40	17
Telephone	100	100	90	80
Fax	100	100	0	17
Radio call	100	100	0	0
Poster	100	100	100	80
Megaphon	0	100	70	50
Flip chart	100	100	80	70
Tvset	100	100	60	30
Generater	100	100	40	17
types of resourse	RHB n=1	zone n=1	districts=5	HC=6
Site having the following in %				
Electricity	100	100	100	100
Motor cycle	100	100	70	60

Discussions and Recommendations

Based on the findings of the assessment and taking into consideration the need to Strengthen measles surveillance and response in the zone, the following was recommended

Case detection and reporting

Collection, analysis and reporting of surveillance data for action is very important. Some information should be acted upon immediately therefore sent using the case based reporting form as recommended above. The current weekly BES reporting system is very important and should be retained but the quality of the data should be verified through regular supportive supervision and training of the staff

Data analysis, management and communication

The assessment showed measles surveillance data was hardly analyzed at the peripheral health facility level. The peripheral staff should be able to manually organize, summarize and display data in tables and graphs as appropriate. Those in the district, zonal and regional directorates should be able to manually and electronically (using computers) manage surveillance data

Recommendation

Conduct training on disease surveillance and response at the district and health facility levels and Strengthen supervision at all levels to ensure that health workers acquire and retain the necessary skills

Train health personnel on data management at the health facility and district focal personnel using the appropriate software

Epidemic preparedness and response

Epidemic management committees where available were only meeting during epidemics i.e. ad hoc and in most cases there were no records of their meetings. There was no clear schedule as how frequent the meetings should be held

Recommendations

Revitalization of committee at central, regional, zonal and district levels by providing guidelines for their operations should be made and provision of guidance on membership and regularity of meetings should be maintained.

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Rapid Response Teams (RRTs) are the technical arm of the Epidemic management committee. These were not operational at all levels and therefore need to be reactivated. Establishment/reactivation of operational RRTs at regional, zonal and district level should be realized and provision of relevant training fornational, regional, zonal and district rapid response teams should be made.

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Feedback

There were no strong feedback mechanisms from the districts to peripheral health facilities and also from zonal to districts.

1.4.1 Recommendation

The surveillance focal persons at the zonal and district levels should ensure regular transmission of feedback to the health facilities

Supervision

Supervisory visits by surveillance focal persons to all levels were found to be irregular and few. This should be reviewed to ensure that whoever goes to the facility can also assess the performance of the staff and advise accordingly.

Recommendation

Initiate regular supportive supervision using a checklist for the supervisors at the district and zonal levels.

A Supervisor should visit each health facility at least twice every year.

Human resource and training

The assessment team noted high turnover rate of trained staff or of health workers at all levels of the health system, but the Government is addressing this issue through pre service and in service training.

1.6.1 Recommendation

Conduct in- service training of health workers on disease surveillance and response using appropriate training materials should conducted

Generally the assement team concluded and recommended:-

The major positive findings during the evaluation include:

- IDSR is successfully introduced in sidama zone at all levels of the health system.
- Availability of IDSR trained focal person at all level.
- IDSR Implementation has shown strong and remarkable progress since the start of its implementation BPR.
- National Technical Guideline and Posters for Standard case definitions were available in most visited sites
- A multi-sectoral emergency Prevention and Preparedness Committee (EPPC) exists in many Woreda in which the health sector is a member.
- Data Analysis was practiced by some woreda health offices and health facilities. This was evidenced by tables and graphs.
- Feedback to lower level was provided, mainly verbally.

Weakness

- Evidence of data analysis was not observed in some Woreda Health Offices and Health Facilities
- In all visited health facility and woreda they have epidemic prepardenes committee but not well functional.
- There was no proper filing of documents like reports, guidelines, reference materials, etc. making retrieval of documents like reports, guidelines, very difficult. This, combined with high staff turnover threatens quality & sustainability of IDSR.
- Computers, communication equipments and other essential items for improved implementation of IDSR were not consistently available in all areas

- Contingency stocks of recommended drugs, vaccines and other medical supplies were not uniformly observed in many Woredas There was no budget earmarked for epidemic response

Recommendations

Sustainability of IDSR requires strengthening the coordination and integration mechanisms, establishing continuous staff training mechanisms, developing simplified guidelines and engaging the lower level health system, placing mechanisms to update IDSR technical tools including the guideline, strengthen multi-sectoral response teams at all levels, strengthen emergency preparedness at all levels with the necessary resources including minimum stocks of drugs and vaccines; strengthening data processing capacity at all levels by providing necessary computing facilities where needed; strengthening feedback system at lower levels; strengthening laboratory facilities and network system; strengthen documentation and document retrieval system at all levels; and creating mechanisms for retaining trained staff with appropriate incentive/motivation.

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Chapter IV – Health Profile Description Report

4.1: Health Profile of Sidama Zone, SNNPR, December 2010

Introduction

This is an overview of the profile of sidama zone in SNNPR Region in terms of geography and climate; population; education; administrative structure; socio-economic environment, health status and health system organization.

Objective

To Assess And Describe Health Related Issues About Health Status, Health Indicators And To Identify Problems For Priority Setting.

Methods

From Nov 09-12, 2010 health and health related data were collected in sidama zone. Interview and standard check list were the main tools used for data collection. The data source were the district health office, hospital , health centers other district sectors like district education sector and reports from national census and research articles. Finally data was compiled and analyzed manually and using Microsoft excel.

Location

Sidama zone is among 13 zones and 8 special woredas/districts found in Southern Nations, Nationalities and Peoples Region (SNNPR), Southern Ethiopia. It is located 273 kms way from Addis Ababa, capital city of the country and has a total area of around 6981 square kilometers. Regarding boundary of the region it borders with Oromia region in the north, with Oromia in the

east, Wolayita zone in the west, Gedeo zone and Oromia region in the south and Oromia region and Wolaiyta zone in the southwest.

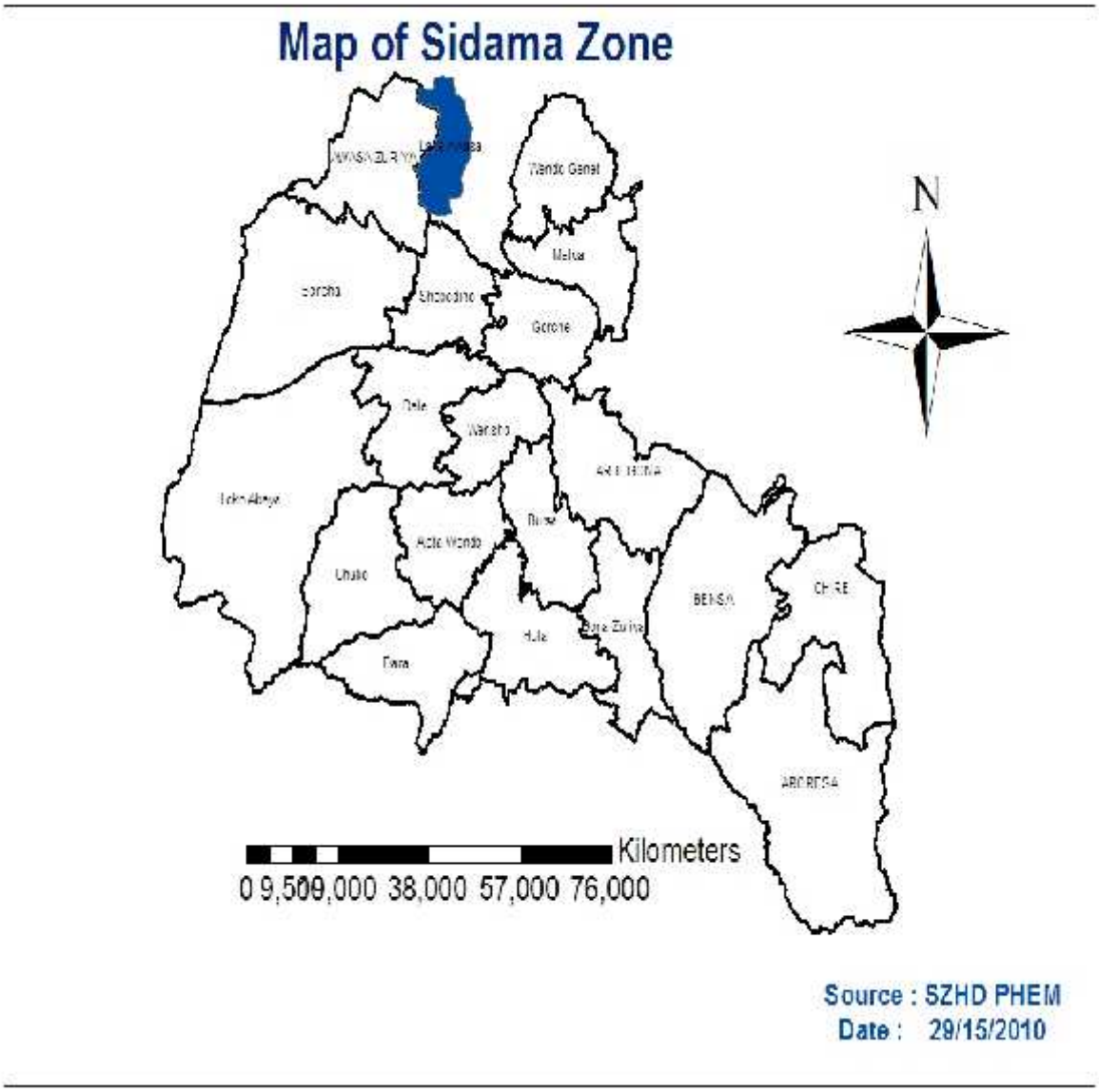

Figure 4.1.1: Showing map of Sidama zone December 2010

Transport, Communication and Power Supplies

Road is main means of transport. All district capital towns are connected with district capitals by road. Sidama is also connected by road with capital city and other cities.

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The zones have good communication facility like telephone, mobile and internet services (in few units of zonal health department) including the districts and also it has a 24 hours electricity power supply

Weather Condtion

Its topographic features range from peaks as high as 3300m above sea level (at tip of Garamba mountain, Arebegona district) to 1200 meters low land area above sea level. . In general, the highlands receive more rain than the lowlands with annual rainfall ranging from 800 mm to over 1600 mm per annum .Mean annual temperature is 21 degree centigrade, range being from 10-32^0c

Climate

There are three broad ecological zones that follow the above topography, “Kolla.” or hot lowlands, the “Weyna Dega “ or moderately hot plateau land and “Dega” or cool temperate, highlands.

Administration Structure

Sidama zone has a total of 21 woredas comprising of 2 City administrations and 19 woredas, the zone has a total of 558 Kebeles of which 527 are rural Kebeles and 31 urban Kebeles.

Table 4.1.1: Showing woredas (urban/rural), and kebeles of Sidama zone, SNNPR, December 2010

Structure	Urban	rural	Total
Woreda	2	19	21
Kebele	31	527	558

Population

According to Statistics Agency (CSA), the total population of sidama zone is estimated to be 3,232,308 by considering 2.9% as rate of natural increase, total male population is 1,606,457 and total female population is 1,625851. Nearly half of the population (50.2%) are females. The average household size is 4.9 and 94.3% of the total population live in rural areas.

Table 4.1.2 Population distribution by sex, age and by resident

S/No	Descriptions	%	Total Population	Remark
1	Total Population		3,232,308	
2	Female	50.2	1625851	
3	Male	49.8	1,606 457	
4	Urban Population	5.1	183,312	
5	Rural Population	94.9	3,049,003	
6	Under 1 years	3.9	126060	
7	Under 3 years	8.31	268605	
8	Under 5 years	13.94	450584	
9	Pregnant Women	3.9	126060	
10	Non Pregnant women	18	581815	
13	Number of house hold	-	158383	4.9 person/HH

Economic Aspects

The major economic income of the zone is dependent on cash crop like coffee and chat. .
Since over 94% of Sidama people live in rural area agriculture is major means of subsistence. Various sorts of cereals, vegetables and fruits are being produced in the zone. Enset, teff, barley, wheat, sorghum, cabbage, carrot, beetroots, costa, tomatoes, potatoes, beans, peas, papaya, mango, avocado, banana, etc are among some of agricultural products. Coffee and chat grow abundantly in many of the woredas found in the zone and remain major cash crop products. Enset (false banana) is staple diet of Sidama people. Mixed farming is common practice in the zone. Cattle (cows, bull) sheep, goats, hens and other products are used for consumption as well as income generating means. Other domestic animals reared(donkeys, mules, horses) are used as a means of transporting people from one place to other and if razed in excess they are used for sell to generate income for families to cover their health, education, tax and other social and related services.

Social Services

8. **1: Health System Organization**

Functional Health facilities in the zone include 2 hospitals (1 zonal hospital and 1 district hospital) 101 health centers, and 432 health post

Table 4.1.3 Types of Health institutions found in sidama zone

S/No	Description	Quantity	Remark
1	Hospital	2	1Zonal&1 District
2	Health center	101	
4	Standard health post	432	
6	Drug store	5	
7	Pharmacy	11	
8	Rural Drug vendor	2	
9	Private clinics	6	

Human Resources

There are various categories of health professionals who provide health services in different health facilities for needy population in the zone which include: -

22 General practitioners, 64 public health officers, 744 nurses, 85 laboratory technicians, 31 environmental workers and 1332 Extension Health Workers. health professional to pop. ratio Physician ratio 1: 161 615,Nurse (diploma) 1:4345, Nurse(BSC) 1:10101 ,Health office 1:50, 505 Psychiatric nurse 1:32322 and Health extension worker 1 :3132 , according to world health organization(WHO) one Physician for 10,000

Table 4.1.4 Human resource distribution by type of profession

Profession	At Sidama Zonal level
Physician	22
Health officer	64
pharmacist	3
Pharmacy Technician	82
Nurse(BSC)	32
Nurse(Diploma)	744
Certificate nurse	155
Environmental Health Worker (BSC)	1
Laboratory Technologist (BSC)	18
Laboratory Technician (Diploma)	63
Radiologist	3
X-ray technician	6
Sanitarian (BSC)	9
Sanitarian (Diploma)	22
Anesthetist	22
Health assistant	20
Health extension worker	1032
Dentist	2
Ophthalmic nurse	3

Health Care Coverage and Utilization

Table 4.1.5 Potential service coverage and outpatient visit proportion

ZONE	POPULATION	Potential service coverage (%)	Outpatient visits per capital
SIDAMA	3,232,308	90.9	0.2

Education

Sidama zone is also home to one of the notable universities of Ethiopia; the HAWASA University. The university is spread over acres of land outside the city and is a small village in itself. .

The general level of education has marked influence on the spread of diseases, the acceptability of health practices and utilization of modern health services. However, the literacy status of the population is low. The total adult literacy rate is 38% (50% for males and 26.6% for females). The gross enrollment ratio in primary schools at zonal level is 74.2% (67.6% for girls).

Table 4.1.6a: Educational Statues By Zone/Woreda In Sidama Zone SNNPR Region 2010.

YEAR	Number of Institutions/ educational status								
	KG			1—8Grade			9—12Grade		
	M	F	Total	M	F	Total	M	F	Total
2002E.C/2010	5832	4784	10606	391782	349749	741517	27336	11293	38629

Table 4.1.6b Total Number of school in Sidama Zone, SNNPR 2010.

S/No	Descriptions	Quantity
1	1st Cycle(grade 1-4)	363
2	2nd Cycle(grade 5-8)	2
3	1st & 2nd cycle(1-8)	280
4	Grade 1-10	0
5	Grade 9-10	15
6	Grade 9-12	5
	Total	**665**

Health service Performance

Table 4.1.7 Maternal and child health activities in sidama zone2009.

S/NO_	Activities	Coverage %	Remark
1	BCG	96	
	Penta-1	106	
	Penta- 2	99	
2	$Penta_3$	99	
3	Measles	104	
	Polio	96	
4	Fully Immunized	93	
5	TT2+ PW	102	
6	TT2+ NPW	44	
7	Family planning	76	
8	ANC	71	
9	Delivery	41	
10	PNC	43	

HIV/AIDS Prevention and Control Programme

It is now more than two decades since the HIV/AIDS epidemic started in Ethiopia. HIV/AIDS was recognized as top priority The National HIV/AIDS Policy supporting disease prevention and case management (including home-base care), strengthen IEC/BCC, mobilization of resources and coordinating multisectoral effort to ensure proper containment of the spread of the disease and reduce its adverse socio-economic consequences.

The priority intervention areas in the country in relation to HIV/AIDS to date were IEC/BCC, condom promotion and distribution, voluntary counseling and testing (VCT), management of sexually transmitted infections (STIs), blood safety, infection prevention/universal precaution, prevention of mother to child transmission of HIV (PMTCT), management of opportunistic infections, care and support to the infected and affected, legislation and human rights and surveillance and research.

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HIV/AIDSs prevention and control activities of the zone.

Form a total of **364,259** (10%) individuals **were** counseled and tested 921(2.5%) were positive for HIV and from total of 1101suspected cases 430 (39%) were positive. From a total 1499 pregnant women who received PMTCT service in the zone 330 (2.2%) were found to be positive for HIV.

Adult **HIV**/AIDS Prevalence of the zone is 2.2% and HIV-AIDS prevalence rate of children of less than five years of age is 0.15 %. According to assessment results of Anti retroviral treatment (ART) service conducted in Yirgalem hospital there were a total of 1620 who received ART out of which 471 were males (29%) and 885 (71%) were females and number of HIV-AIDS orphans was 2144.

According to assessment findings there were 364,259 (10%) of Sidama zone people were councelled and tested (VCT). Of mentioned proportion of people who received VCT service 925

(2.5%) were positive for HIV. Out of 1101 suspected cases of HIV 430 (39%) bécame positive for HIV.Among 1499 pregnant women who received PMTCT service in Yirgalem hospital and Choko health center 330 (2.2%) tested pregnant women have HIV in thier blood.Adult HIV prevalence of Sidama zone is 1.6% and under fives HIV prevalence was 0.15%. According to results of the assessment number of HIV-AIDS Orphans was 2144. Anti retroviral treatment (ART) service has been provided by Yirgalem hospital and 1620 (35%) of people received ART service of which 471 were males and remaining 585 were females.

Malaria and Other Vector-borne Diseases Prevention and Control

Malaria is one of the country's foremost health problems ranking top in the list of communicable diseases. Three quarters of the landmass of the country is malarious and around two-thirds of the population is at risk of infection. Considerable attention has been given to malaria from the very inception of HSDP in order to reduce the overall burden of the disease.

Table 4.1.8 Number of Malaria cases seen and examined in the health facility.

Total malaria cases	Total examined	Total positive	PF	PV	P.Malaria	Malaria Admit ion	Malaria death	
240,121	159,728	55,196	NA	NA	NA	NA	NA	

Table 4.1.9: Malarious Kebele and ITNS coverage by woreda

S/No_	Woreda	Total kebele	Malarias Kebele	Malarias Kebele Popn_	No of HH	Six month ITN Distributed 2/HH	Coverage
1	Awassa	23	23	105256	21051	6000	28.5
2	W/Genet	18	12	113240	22648	5000	22
3	Shebedino	32	19	171795	34359	4000	11.6
4	Boricha	42	42	248553	49711	5650	11.3

5	Dale	31	24	185183	37037	4000	10.8
6	A/wondo	27	12	164470	32894	4000	12
7	Chuko	27	20	180584	36117	6000	6.6
8	Bensa	38	17	134862	26972	3500	13
9	Dara	35	8	49104	9821	4500	45.8
10	Loka Abaya	25	25	95926	19185	4750	24.7
11	Bona	28	8	78490	15698	3000	19
12	Aroressa	32	9	80775	16155	3500	21.6
	Total	**358**	**219**	**1,479420**	**295884**	**53900**	**18.2**

- 1998 ITN Coverage **28%**
- 2001 ITN six month Coverage **18.2%**
- Total Coverage **46.2%**

The above table showed as all woreda found in the zone are malarious or malaria prone area and also even though there was problem to get the recent information about the ITNS coverage in 2008 it was 46.2%.

Environmental Health

One of the targets was increasing access to toilet facilities, increased access to sanitation, and also increasing Access to safe and adequate water.

The coverage of access to safe water supply is 31%, latrine coverage is 65% and sanitation coverage is 87%.

Access to safe water supply is 31%, latrine coverage is 65% and sanitation coverage is 87%.

- Coverage of access to safe water supply----------31%
- Latrine coverage----------65%
- Sanitation Coverage----------87%

17.0. TB and Leprosy Control Programme (TLCP)

The general objective of the TLCP is to reduce the incidence and prevalence of TB and Leprosy as well as the occurrence of disability and psychological suffering related to both diseases and the mortality resulting from TB to such an extent that both diseases are no longer public health problems. The general objective has been specified for the various TLCP activities as follows:

Case detection: to diagnose TB and Leprosy patients at an early stage of the disease to the extent that the case detection rate of new smear positive pulmonary TB patients is at least 70% of the estimated incidence and the proportion of disability grade II among new leprosy patients is less than 10%.

Treatment: to achieve and maintain success rate of at least 85% of newly detected smear positive pulmonary TB patients (PTB+) and extra pulmonary TB patients treated with DOTS. For Leprosy, treatment should achieve a treatment completion rate of at least 85% and prevention of Leprosy related disability during chemotherapy should be below 3%.

Generally performances of TB prevention and control activity done in 2001 E.C by the zone are the total new smear positive were 1823 , smear negative PTB case 675 and Extra pulmonary TB were 743 in number. Regarding treatment outcome of registered TB patient 1823 TB patients were cured 1591 completed TB treatment and Cases detection rate being 48.9.

As assessment findings indicated there were 1823 new smear positive pulmonary TB cases, 675 smear negative PTB cases and 743 extra pulmonary TB cases. Regarding treatment outcomes of Tuberculosis there were total of 1845 registered TB patients. Total number of TB cured and those completed treatment were1591. Treatment success rate in Sidama zone was 86.2% and case detection rate was 48.9%

18.0. DISEASE STATISTICS

Table 4.1.10: Ten top causes of morbidity in Sidam zone, December 2010.

S/no	DX	CASES	%
1	Malaria	45,574	36
2	I.P	20,739	16
3	Pneumonia	14,835	12
4	UTI	11,952	9.4
5	Gastritis	9024	7.0
6	Fighting	7032	6.0
7	Typhoid fever	5178	4.0
8	Diarrhea diseases	4491	3.6
9	URTI	4334	3.4
10	Skin infection	3624	2.9

Table 4.1.11: Top Five causes of Morbidity in Under five (<5) in the year 2002 (E.C)

Serial Number	Disease	Number of patients	Percent (%)
1	Malaria	15391	49.5
2	Pnuemonia	8058	26
3	Intestinal parasite	3281	10.5
4	Diarrheal disease	2224	7.2
5	Upper Respiratory tract Infection	2127	6.8
Total		31081	100

19.0. **Health Priorities And Programming**

The burden of disease (BOD) in SNNPR, measure by morbidity and premature death from all cases, comes primarily from preventable causes and is dominated by communicable diseases. The leading causes of morbidity and mortality in the zone are mostly attributed to lack of clean drinking water, poor sanitation, and low public awareness of environmental health and personal hygiene practices.

Communicable diseases, particularly Malaria Acute Watery Diarrhea (AWD), Measles and Meningitis occur repeatedly in the region and cause considerable morbidity and mortality. The control interventions such as early detection and treatment of cases, selective and mass vaccination, community mobilization, and vigilant surveillance of the situation are crucial in saving lives and preventing further dissemination.

The Main Positive Finding Of The Heath Profile Assessments

Accessibility it has very good road even inside the city and also there is transportation facility in every direction.

Sidama zone has various means of communication facilities which includes: Tele., postal service, Fax. IDSR focal person at various level communicate using their own mobile cell phones to communicate situation of diseases under surveillance in their woreda/health facility. Internet service is provided to some sections/units at zonal health department level. As a result of undertaking intervention activities through using various strategies and communicating findings to those in need for possible response current health service coverage of Sidama zone is 90%. Maternal and child health services among others in the zone are relatively in a good state of condition.

Problem Identified

It is quite obvious that development and strengthening of existing health profile status plays considerable role in enhancing increased level of health status and through taking continuous intervention measures through implementation of systematic plan to meet set objectives and achieve dependable success to attain desired goals it will bring about progress in health development.

To effect mentioned desired outcome various essential tasks have to be accomplished through time. To enhance improvement of health services provision in quality and quantity and type to needy communities certain prerequisites have to be fulfilled. Empowering capacity of health facilities with updated equipment, facilities, proper allocation of resources which include: health service providers of various categories (adequate in number and needed specialities,medical instruments and related materials needed to undertake service provision and availing required logistics and supplies including drugs.

Moreover close follow up of service provision activities, periodic review and evaluation of activities plays prominent role for its findings are used to take any necessary corrective measures to improve level of quality of service provision. Undertaking periodic supportive supervision may serve purpose of filling the gaps created in the process of service provision activities. In addition strengthening of harmony between different health services providing departments has to be maintained. In face of many communicable diseases which afflict health of various segments of communities and increased magnitude of emerging and reemerging epidemic prone diseases it is quite clear that there is a need to strengthen ongoing active surveillance and improve/encourage epidemiological investigation of outbreaks/epidemics to produce and communicate findings for possible intervention measures to be taken is of vital importance. If undertaking of mentioned activities are not accomplished regularly and as required provision of required health services with dependable quality cannot be realized. As results of health profile system assessment indicates that there are some gaps which need to be fulfilled.

Number of health service providers belonging to different categories and rendering services for 101 health centers and 2 hospitals seems to be inadequate. Ratio of service provider to population particularly of doctors is incredibly very low as compared to recommendation of WHO. WHO recommends that there has to be 1 physician delivering service for 10,000 population where as in Sidama zone one doctor delivers service for more than 161,000 population. In addition to low level of allocation of service providers there is an increased rate of attrition of health workers belonging to different categories

Communicable diseases have been commonest causes of morbidity and mortality in the zone affecting different segments of communities. According to results of assessment findings Malaria, diarrheal diseases and Measles were top three diseases which affected this population. Malaria remained to be the first from top ten diseases which cause morbidity where as ITNS distribution coverage is only 48% in 2001 (E.C). This finding indicates that even though malaria is most pressing public health problem of the zone intervention activities undertaken to prevent and control this disease was not that dependable. Moreover epidemic prone diseases such as acute watery diarrhea, measles and the like frequently occur in the zone and it is quite obvious that there is earnest need to escalate response through concerted efforts and conjoint action actively involving sectors, partners and by and large communities to prevent and control their after effects and further prevention of their future occurrence. Moreover Tuberculosis detection rate of the zone is far behind set standard of WHO which indicates that intensifying intervention activities to prevent and control of Tuberculosis is very important.

Even though periodic review and evaluation activities has been undertaken in the zone it seems there is strong need to conduct timely supportive supervision to identify possible gaps and take prompt corrective measures to improve quality of services provision and undertake active surveillance activities to detect possible outbreaks of epidemic prone diseases and enhance early response and further prevention and control of outbreaks in the future.

Prioritized Health Problem

As assessment results of health profile system of the zone clearly showed among top ten diseases which cause morbidity in the zone Malaria, Acute watery diarrhea and Measles remained top three diseases which afflict communities frequently. Moreover low detection rate of Tuberculosis as compared to set WHO standard seems to deserve due attention implicating the need to strengthen intervention activities to prevent and control its adverse effects. Moreover this zone is

among other zones and special woredas where epidemic prone diseases occur frequently emphasis which should be placed to strengthen intervention activities remains to be underlined.

Recommendations

In face of emerging and reemerging communicable diseases particularly epidemic prone diseases our all efforts being made to address public health problems in the zone can be regarded as encouraging. But due to emergence of communicable diseases in higher rates during various seasons and affecting communities there is clear gap to be filled to prevent and control spread of diseases and their after effects

Based on plausible conclusion reached there is increasing need to undertake various intervention activities involving all parties working in the zone and enhancing active involvement of communities.

To effect dependable success in diseases prevention and control in the zone following intervention activities for action are recommended to be undertaken to promote health, prevent and control communicable diseases particularly epidemic prone ones. Improving ITNS distribution and utilization coverage should be enhanced using all available means. Communicable diseases prevention and control tasks are expected to be tackled by all those concerned therefore strengthening of multisectoral response coordination is of vital importance. In face of communicable diseases burden in the zone strengthening of surveillance activities

plays dependable role to reduce spread of outbreaks. The fact that ultimate goal of diseases prevention and control is to eventually enable individuals and families to produce thierown health. Therefore enhancing active involvement of various segments of communities is of paramount importance, improving quality of case detection and management of epidemic prone diseases is expected to significantly decrease spread of such diseases.To effect such results allocation of adequate number of health service providers of different categories and specialities play enormous role.

Moreover undertaking timely supportive supervision,periodic monitoring and evaluation and conducting demand driven research activities and use of findings to address pressing public health problems is of vital importance to eventually enhance health promotion and thereby health development progress.

Chapter V – Scientific Manuscripts for Peer reviewed Journals

5.1 Epidemiology of Acute Watery Diarrhea Outbreak and Challenges Of Control—Afar, Ethiopia, 2009

Abstract

Background

Acute watery diarrhea (AWD) is becoming a big problem in Ethiopia. The aim was to rapidly investigate the outbreak epidemiologically and provideguidance for response activities in the affected districts of Afar from April-June 2009.

Methods

A line list and case register log book of the districts were reviewed as per the world health organization case definition. 31 cases and 23 controls were interviewed with a structured questionnaire. A checklist also applied to observe case treatment centers and investor camps. Stool and drinking water samples were also collected, transported and examined as per standard Microbiologic procedures. Then analysis was done using EPi Info version 3.3.2.

Results

A total of 1076 cases and 48 deaths were reviewed with an attack rate of 0.9% and a case fatality rate of 4.4%. 87.8% (945) of cases were males. Hand washing after latrine use was protective of illness (OR = 0.13, p= 0.03) while unsanitary latrine (OR = 10.5, P-value= 0.001), contact with a case (OR = 200, P-value= 0.001) and visiting a place which has similar illness (OR=33.6, P=0.001) shown statistically significant association. Vibrio cholera 01 serotype Inaba and Escherichia coli were isolated from 89 % (9) of stool and100 % (4) of water samples respectively.

Conclusion

V. cholera 01 serotype Inaba was confirmed as etiologic agent in all districts. Drinking untreated water, close contact with a case, not practicing hand washing and unsanitary latrines were likely determinants for this outbreak. Therefore, provision of safe drinking water supply and raising community awareness about hygienic practices to control diarrheal disease is necessary.

Key words: Acute watery diarrhea, Vibrio cholera, Afar, Ethiopia

Epidemiology of acute watery diarrhea outbreak and challenges of control—Afar, Ethiopia, 2009

Introduction

Cholera is a diarrheal disease caused by infection of the intestine with the bacterium Vibrio cholerae, either type O1 or O139; usually transmitted through faecally contaminated water or food and remains an ever-present risk in many countries(1). It becomes also a global threat to public health and a key indicator of lack of social development. In 2008 alone, a total of 190 130 cases were notified from 56 countries, including 5143 deaths. Many more cases were unaccounted for due to limitations in surveillance systems and fear of trade and travel sanctions. The true burden of the disease is estimated to be 3–5 million cases and 100 000–120 000 deaths annually (2). In 2007, 62% (110,837) of the global burden of cholera cases notified to WHO were from African Region which resulted in huge economic loss with millions of US$ in different life expectancies (3).

In Ethiopia it was indicated that, there was cholera epidemic in 1990 which persisted with recrudescence of cases till 1998 (4). Moreover, from July 2008 to June 2009 in Ethiopia, there were a total of 9485 cases and 193 deaths (with case-fatality rate 2.0%) of acute watery diarrhea in six regions including Addis Ababa. Afar region took the highest share of cases [2,988(31.5%)] and deaths [99(51.25%)] of the country with a case fatality rate of 3.3% (5).

Afar National Regional State is one of the nine regional states of Ethiopia, according to the report of 2007 population and housing census the total population of the region was 1,411,092 out of which 55.7% were males and 44.3% were females(6), with 92.2% of population living in rural and 7.8% living in urban areas(7).

During 2006-2009, 8109 cases and 194 deaths were reported from three districts of Afar with a total case fatality rate of 2.4%. From these districts Burimedayto and Gewane reported cases of AWD only in 2007, but Amibara reported AWD in every four consecutive years.

On last week of May the Afar Regional health bureau requested the Federal Ministry of Health's Public Health Emergency Management (FMOH-PHEM) for assistance with investigating on an increased number of AWD cases. On June 06, 2009 a team from FMOH- PHEM which includes field epidemiology residents, prepared for field visit and deployed to Afar. The main objective of this investigation was to determine the cause of the increased number of cases, characterize the epidemiology of the disease that occurred from April – June 2009 and guide the intervention measures in three districts of Afar.

Materials and Methods

Study area and population

The outbreak investigation was conducted in three districts of zone 3, Afar Regional State. The population size was 63,280 in Amibara, 31786 in Burimedayto and 31,313 in Gewane districts. Many migrant laborers (around ten thousand; specific list couldn't discovered) were working for 11 companies (number of companies in Amibara were also not included) which engaged in cotton production. There were also wooden charcoal producers who came from other regions of the country especially from Wolyta and other Zones of South Nations, Nationalities and Peoples Region (SNNPR)

Study design and Sampling

We reviewed case register log books and morbidity and mortality report forms from May 7 to June 16 2009. An unmatched case-control study was conducted from a convenience and proportional sample of 31 cases and 23 controls within the three districts. Cases were selected from patients who came to case treating centers (CTCs) and those admitted in CTCs for their illness level was severe and others were selected from households of families affected by AWD. Controls were selected from house holds of families who were not affected by AWD. It was not possible to maintain appropriate/adequate number of sample size of cases and controls for there was security problem during data collection period in affected woredas of the region (conflict between clans of Afar ethnic group).

Data collection

Secondary data: line-lists of acute watery diarrhea cases were collected from all three district health offices and to verify that AWD cases recorded were consistent with the WHO case definition. A case log book in health facilities was also checked with the line list from the district health offices. Line lists contain variables such as date of onset of illness, age, sex, district and kebele (village) name, disease outcome. Variables recorded in the line lists and log books were few and lack uniformity among districts.

Case-control group:

We developed a structured questionnaire to interview cases and controls. Cases were identified using the WHO case definition and controls were recruited among neighbors or family member of cases who did not report clinical symptoms consistent with AWD in the previous 2 weeks.

Case definition:

The working case definition, “a patient aged 5 years or more which develops acute watery diarrhoea, with or without vomiting”, was used to identify cases of AWD. This definition bases the WHO standard case definition of cholera in epidemics (1)”.

Observation and intervention methods

The national assessment tool (checklist) for AWD, which is based on the WHO guideline (1), was used to collect data during observation of case treatment centers in health facilities, investor camps, and discussion with districts’ epidemic teams was made

After conducting brief discussion with respected districts administrative and health officials, the team engaged in reactivating the districts epidemic response task force to participate in active case detection & educating the community to control the epidemic. The team also accomplished activities like reporting daily cases and deaths, supportive supervision in case treatment centers (CTCs) on case management, communicated with Afar Regional Health Bureau and UNICEF in order to transmit messages of prevention methods through media by Afar language and gave advice for farm owners on how to control the epidemics and take care of their daily laborers.

Water and Stool sample collection

Nine stool samples from 9 cases and four drinking water samples from river source which served for the community were collected and transported to Ethiopian Health nutrition Research Institute Microbiology Laboratory keeping in cold chain. Cary-Blair transport medium was also used to transport the diarrheaic stool (8, 9).

Culture and identification

All samples were initially cultured on Thiosulphate Citrate Bile Salt Sucrose (TCBS) and Xylose Lysine Desoxycholate agar (XLD) (Oxoid, UK). After 18-24hrs growth of distinct colonies were identified, sub-cultured on non selective media and re-incubated for 18-24 hrs. Subsequent biochemical testing was done on Pink red colonies from XLD. Theconfirmation of Vibrio cholera was done by oxidase test and agglutination with polyvalent antiserum. Serotyping was made using monovalent antisera (9, 10).

Antibiotic sensitivity testing of V. cholera isolates was also done on Muller Hinton agar by the Kirby & Bauer disc diffusion method (11, 12).

Bacteriological water quality was analyzed using multiple tube method in MacConkey broth following standardized microbiological procedures at Ethiopian health and nutrition research institute (EHNRI) (13).

Data quality and analysis

Secondary data was compiled manually using a new line list from the log book and line lists of the health facilities and district health offices. Then all data transcribed electronically to Excel file and checked for quality. Data entry for the case control group, importing the secondary data from Excel file and analysis was also made using EPi Info version 3.5.1.

Ethical issue:

The outbreak investigation was done after the approval of the Ethiopian Federal Ministry of Health / Public Health Emergency and the districts of Gewane, Burimedayto and Amibara in Afar region. Consent was also secured from study participants.

Results

A total of 1076 cases and 48 deaths were registered during April 29 to May 16, 2009 in 3 districts (Gewane, Burimedayto, & Amibara) of Afar with an attack rate and case fatality rate of 0.85% and 4.4% respectively. Among cases 87.8% (945) were males and 52.1% were in age category of 15-44 years old.

The onset date of the first cases was recorded on April 29, 2009 in Gewane district. 639 cases and 24 deaths were reviewed from this district with a case fatality rate of 3.7%. Majority (83.2%) of cases were males and the age category 15-44 yrs old constitute78.3% (499). From Gewane district, the highest proportion of cases [28.0 %(178)] and deaths (26%) was seen in Geliadura village followed by Briforo with 19.7 %(125) cases and 26% deaths.

In Burimedayto district the onset date of the first case was on 3rd of May, 2009.From this date to 15th of June 2009, 329 cases and 22 deaths were reviewed from the district health office and health facility registry which gave a case fatality rate of 6.7%. Similar to Gewane district most of the cases [92.7 %(304)] were males and 38.80% (127) of the cases were in the age range of 19-24 yrs with median of 22 years old. All 13 villages / Kebeles in the district were affected by AWD and 68.6 %(225) of the cases were from Debel village followed by Fiaeto [18.3 %(60)]

In Amibara district, a total of 108 cases and 2 deaths were occurred from 13th -16thof June 2009.Only daily workers employed in a private cotton plantation farm which is found in Sheleko village were affected. All were males with age range of 15-44 years old. No report from the district health office or health facility was reviewed for any other village.

From a total of 24 villages affected in three districts the highest proportions of cases were reported from Debel (21 %), Geliadura (16.6%), Briforo (11.7%), & Sheleko (10.2%) villages

Table 5.1.1: Distribution of cases of AWD by villages/Kebeles, in three districts of Afar, Ethiopia, 2009

Ser. No.	Address Village/Kebele	Frequency	
		No	%
1	Amasabura	33	3.1
2	Bedula	1	0.1
3	Beida	1	0.1
4	Berimedayto	4	0.4
5	Briforo	124	11.5
6	Burka	2	0.2
7	Danglafia	1	0.1
8	Debel	225	20.9
9	Degita	1	0.1
10	Fiaeto	58	5.4
11	Geliabora	22	2.0
12	Geliadura	179	16.6
13	Gewane	63	5.9
14	Hengoyuo	1	0.1
15	Kodae	59	5.5
16	Leras	1	0.1
17	Melkawayou	1	0.1
18	Meteka	2	0.2
19	Morobiro	2	0.2
20	RassAdass	2	0.2
21	Sheleko	127	11.8
22	Subiro	1	0.1
23	Urafita	89	8.3
24	Yigil	77	7.2
Total		1076	100.0

Questionnaire based interviewed study group

From 31 cases and 23 controls (without symptoms of the disease), 85.5% were males and the median age was 20 years old.

It was shown that 80.6 % (25/31) of cases and 56.5 % (13/23) of controls were daily workers. Daily workers were also constitute 69.1% from the total respondents (cases & controls) followed by pastoralists (local community), which were 20% (Figure 1).

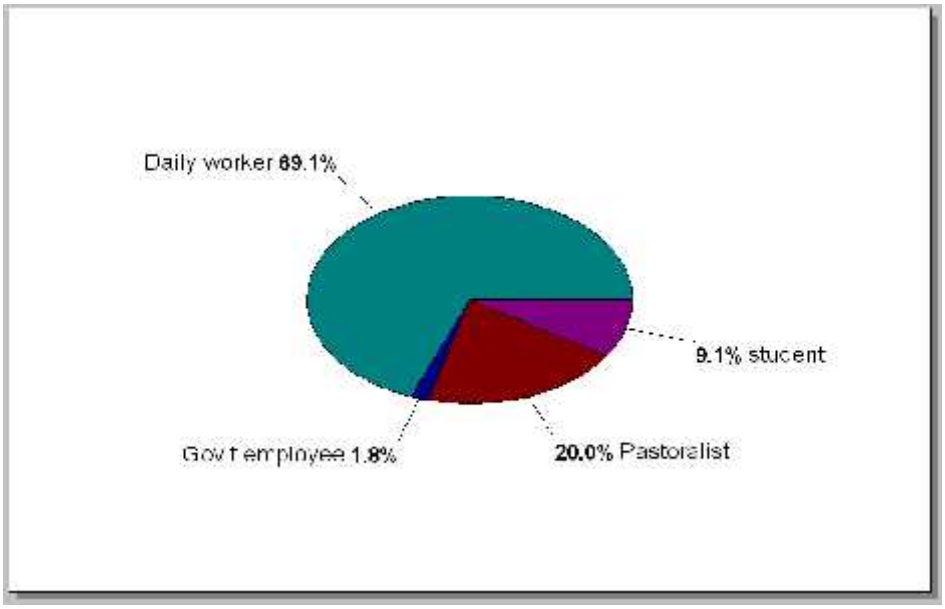

Figure 5.1.1: Distribution of cases and controls (combined, n=54) by occupation in three districts of Afar, 2009

Fifty eight percent (18/31) of cases and 91.6 %(22/24) of controls get drinking water from river. Of which only 12.9 %(4/31) cases and 34.7 %(8/23) of controls used treated water for drinking. 47.1 % of the respondents have access to latrine & from these 63.6% of them use it always. Only 13.2 % of respondents ate/drink in another's home/restaurant.94.4 % of the respondents wash their hands before having any meal/preparing food & 83.3 % practice hand washing after latrine usage.

Hand washing after latrine usage was protective of illness (OR = 0.13, p= 0.03), access to latrine (unsanitary latrine) [OR = 10.5, P-value= 0.001], contact with a case (OR = 200, P-value= 0.001) and visiting a place which has similar illness (OR=33.6, P=0.001) had shown statistically significant association with being a case. Whereas, Shortage of Water supply (OR=1.9, CI=.05-6.25, P=021), Washing hands with soap/detergent before having meal and preparing food (OR=0.65, CI= 0.05-7.74, P=0.61) and Eating /drinking in another's home in a week before your illness (OR=0.48, CI= 0.09-2.41, P= 0.3) could show statistically significant association (Table 2).

Table 5.1.2: Univariate analysis for possible risk factors of acute watery diarrhea in a case-control study (unmatched) in three districts, Afar, Ethiopia, 2009

Risk factors	Cases	Controls	OR (95%CI)	P-value
	Yes Number (%)	Yes Number (%)		
Access to latrine	19(61.2)	3(13.0)	10.6[2.5-43.3]	0.001
Interruption of water supply (in this season than any other before)	13(41.9)	6(27.2)	1.9[.059-6.25]	0.21
Washing hands with soap before having meal and preparing food	29(93.5)	22(95.6)	0.65[0.05-7.74]	0.61
Washing hands with soap/detergent after latrine	23(74.1)	22(95.6)	.13[0.01-1.13]	0.03
Usage of water treatment chemicals before drinking	4(12.9)	8(34.7)	0.27[0.07-1.07]	0.05
Any travel history a week before your illness	3(9.6)	-	-	-
Presence of similar illness in the visited place	28(90.3)	8(34.7)	33.6[7.13-158.15]	<0.001
Close contact with a case/person with similar illness	30(96.7)	3(13.0)	200[19.4-2061.4]	<0.001
Eating /drinking in another's home in a week before your illness	3(9.6)	4(18.1)	0.48[0.09-2.41]	0.3

Regarding to treatment, 54.8% of the patients treated with antibiotics, IV fluid and ORS whereas 32.3 % of them get only IV fluid. 78.1 % (24/31) of cases had vomiting and 80.6 %(25/31) had more than 3 episodes of diarrhea within 24 hours. Of which 25.8(8/31) had 7 episodes within 24 hours. Only 9.6 % (3/31) of cases had fever.

Observation for farm camps situation

The team observed the daily workers hygiene and sanitation condition in all 11 investor camps and there were no latrines or safe drinking water sources for daily workers. Water was fetched directly from river Awash. They live in overcrowded (>60 persons/room) conditions, with shared drinking and eating utensils (1 utensil for > 50 individuals), inadequate /no provision of medical supplies, and except for one investor camp (in Amibara) all others have no any clinic and health worker to provide treatment and health education activities.

Observation for local community situation

The team visited and observed different villages in the districts; similar to the investor camps, the local communities reside in villages (rural) without access to safe drinking water (see photo June 16 2009) and latrines.

Health extension workers and & other health professionals are scarce, and there are inadequate medical supplies and other resources (hygienic materials, water treatment kits, etc). The team also observed the awareness of the rural community to personal hygiene, the causes and prevention of diarrheal disease and which found was low.

Figure 5.1.2: Afar Women fetching water from canal used for irrigation (Awash River) for drinking and other household purpose, Geliadura village, Gewane, Afar, June 16/2009

Laboratory confirmation

Vibrio cholera 01 serotype Inaba was isolated from eight of the nine stool samples which were collected from three districts. All Vibrio cholera 01 Serotype Inaba isolates were sensitive to ciprofloxacin, doxycycllin, tetracycline, erythromycin, amoxicillin, and chloramphinicol. However, all isolates were resistant to co-trimoxazole. No any other enteric pathogenic bacteria were isolated from stool samples.

Escherichia coli type I and other faecal cloiform bacteria were also isolated from all four water samples collected from the canals that residents and daily laborers in Farm Companies were being used for drinking and other home purposes.

Discussion

The onset date of the first case was on April 29th in Gewane, on May 3rd in Buriemedayto, and June 13th in Amibara. The rapid spread from Gewane to Burimedayto was likely due to the proximity and frequent movement of residents and daily laborers from one village to the other. The outbreak in Amibara started late on 13th of June 2009 and stopped after a week. Amibara is 70 Km from Burimedaytu & 100 km from Gewane so there is less frequent contact with cases from the two adjacent districts. In addition, workers have access to health care services from their own company which may have reduced the magnitude and severity of the outbreak in Amibara.

The overall attack rate (AR) and case fatality rate (CFR) was 0.9% and 4.4 % respectively (Total districts' population of & total cases were taken as denominator); which is almost similar with the cholera outbreak in Kampala-Uganda and Tanzania [11, 12]. Age and sex specific attack rate and case fatality rate could not be calculated due to lack of estimate population and uniformity in data compilation system in the districts.

The CFR was high as compared to the WHO guideline; which was supposed to be less than 1 % [(1)]. This could be ignorance in the investor farm camps, shortage of medical supplies & poor case management in CTCs. However when we compare with outbreaks occurred in other African countries, such as in Nigeria 6.1% (similar serotype isolated like in our outbreak investigation)[13], in Lusaka 5.1% [14], in Kenya 4% [15], and in Burundi 3% [16] ours case fatality rate became median value. Unreported & unregistered cases and deaths especially in the 11 villages/kebeles of Burimedayto district might underestimate the total number of cases as well as the case fatality rate.

In all districts most of the cases were males & daily laborers employed in the farm companies (cotton plantations). This could be due to overcrowding which in fact was similar like refugee camps). The highest numbers of cases (21 %, 16.6% &11.7% respectively) were occurred in Debel, Geliadura, & Sheleko villages (Table 1). This might also be due to the high number of daily laborers residing in these villages/Kebeles and the prolonged duration of the epidemic which took more than one and half month. The Epi-curve has many peaks (Figure 2) which showed a progressive person to person transmission, this could be due to the absence of health infrastructure in the investor companies and weak response activity of the districts Epidemic task force. Risk factors like hand washing after latrine usage, drinking treated water, access to latrine (unsanitary latrines) & contact to a case and visiting someone with similar illness had shown statistically significant association with AWD in univariate analysis. But shortage of Water supply, washing hands with soap/detergent before having meal and preparing food & eating/drinking in another's home were not significantly associated (Table 2).

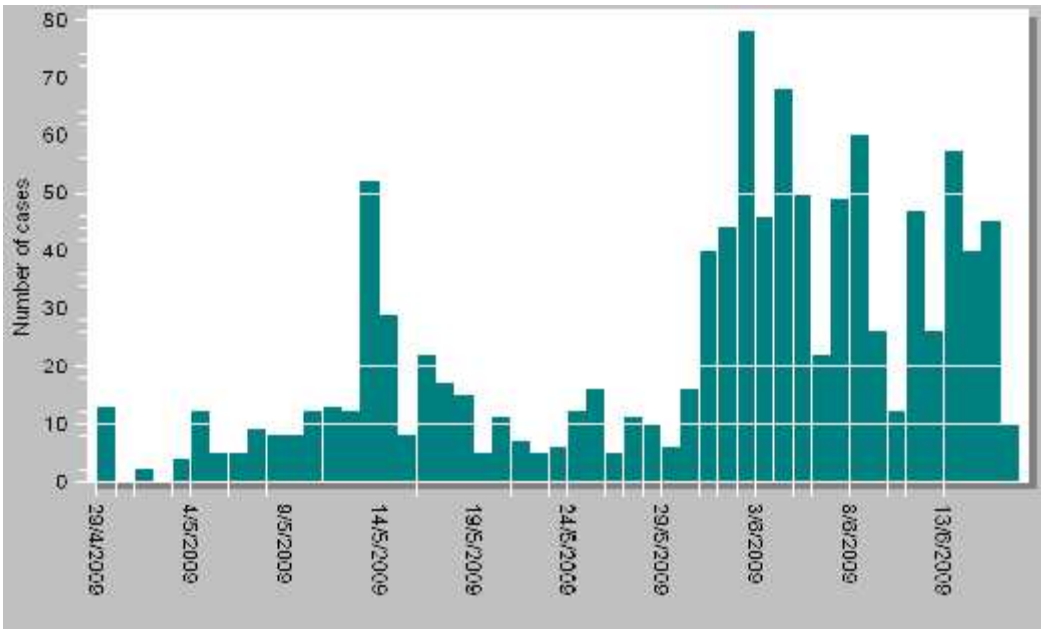

Figure 5.1.3: Epicurve of acute watery diarrhea by date of onset in three districts of Afar, Ethiopia, 2009

Challenges during intervention and limitations of the study

It was difficult to get gathered and give health education about the disease that came from other regions and engaged in the production of wooden charcoal. Eleven villages in Burimodayto district were inaccessible for vehicle transport because of Awash River during the investigation period. The epidemic response task force of Gwane district couldn't also involve full time on board for the intervention of AWD because of other priorities like resolving dispute among clans.

It was difficult to undertake probability matched case-control study and interview more subjects during rapid epidemic response and investigation in a dispersed population. The team also reached late in the area and couldn't spend much time on investigation of the outbreak rather engaged in the intervention activity.

In conclusion, in this outbreak the overall case fatality rate (4.4 %) was higher than the WHO's recommendation. Vibrio cholera 01 serotype inaba was responsible for the acute watery diarrhea outbreak in all three districts. Isolated organisms like Escherchia coli Type I and other faecal

coliform bacteria from drinking water sources could also support the cause for the situation in the area. Drinking untreated water, close contact with a case, unhygienic latrine and not practicing hand washing were the possible risk factors for the outbreak. The hygiene and sanitation condition in the farm camps was found be nasty and the response was also weak in districts which could resulted in increased number of cases and prolonged duration of an outbreak.

So, stake holders at all levels should work on AWD and other diarrheal diseases prevention and control activities such as strict monitoring of hygiene and availability of safe water for daily workers in the investor companies and in the local community. Furthermore, early investigation and strong rapid response is indispensable to control further spread and not to encounter extended outbreaks.

Acknowledgements

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5.2: Motor Vehicle Accident and Fatality Surveillance, (2000-2009) Addis Ababa, Ethiopia, Feburary 2010

Introduction: In 2004, World Health Organization estimated 1.3 million death and 20 to 50 million cases motor vehicle injuries in the world. .

Methods: Handwritten logbooks containing information on motor vehicle accidents from July 2000 through June 2009 collected from the Addis Ababa Traffic Police. Data were extracted, transcribed, and entered into an Excel database for analysis.

Results: We identified 25110 Motor vehicle accidents resulted in injuries. The fatal injury were 13.6 %(3415), major injury 30 %(7526). The mean number of fatalities per year was 342 with a range of 247-345. In 2009 there were 8.2 licensed vehicles per 100 populations in Addis Ababa and fatality rates per 100,000 populations were 13.3 and 16.8 per 10,000 licensed motor vehicle. Most of fatalities were pedestrians, 2970 (87 %) followed by passengers 297 (9%) and drivers 148 (4%). The incidence of death in pedestrians was significantly higher than in passengers or Driver ($P<0.0001$,)) .Males were significantly more likely than females to die in MVA (75% to 25%, $P<0.0001$).

Conclusion: Pedestrians comprise the large majority of fatalities due to motor vehicle accidents in Addis Ababa. Efforts to reduce the public health burden of these accidents must focus on strategies that separate pedestrians from roadways and vehicles to reduce the number of pedestrian associated injuries and deaths.

Introduction

Motor vehicle injuries are major public health problem in the world (1, 2, and 3). In 2004 World Health Organization reported that an estimated 1.3 million death and 20 to 50 million annual cases of motor vehicle injuries (4). In 2020, it will become the third leading contributor to the global burden of disease and injury (5). More than 90% of the world's roads deaths occur in low-income and middle-income countries (6, 7).The highest reported in Africa 28.3 per 100,000 populations when compared with 11.0 in Europe (8). The number of vehicles less than one licensed vehicle per 100 inhabitants in low-income Africa versus 60 in high-income countries and, in South Africa, the most developed African country, there were 17 licensed vehicles per 100 inhabitants in 2005 (9). Studies in most European countries showed the risk has been reduced by more than 40% between 2000 and 2008 (10) as a result of economic development (11).

In Africa pedestrians contributed for 55% motor vehicle deaths (12).In developing countries, pedestrians, in urban areas contributed for 55% to70% of the fatalities and while drivers contributed for 60% of motor vehicle fatality in developed countries, and less than 10% fatality in less motorized countries (13). In 2008, among African countries, the pedestrians' fatality reported in urban hospitals ranges from 55% in Mozambique to 44 % in Uganda, and urban setting Zambia 50% to 38% in Benin (5). Most of them adolescents and young adults worldwide and men comprise a mean 80% of casualties (1, 14); particularly affect the productive age group (15- 44years) and children. In 1998 the fatality rate for children aged 0- 4 years wsa29.5 per 100 000 population in South East Asia low income countries, compared with 4.5 deaths per 100 000 population in high income countries, for older children, aged 5- 14 years, the fatality rate was 28.1 per 100 000 population in Africa (13). In Kenya, Pedestrians and passengers account for 80% of the deaths (15) and In Mozambique the age group most affected is 25-38 (39.5%), followed by 16-24 (20.8%) (16).

In Ethiopia, 1,800 people died in 2003. Moreover the death rate is 136 per 10,000 vehicles (22).In 1996 death per 100,000 populations reported 2.9 and 195.1 per 100,000 vehicles (33). In 1998Pedestrians contributed for 51%, passenger 41%, and driver 7% of Death in Ethiopia. Likewise in Ethiopia, pedestrians represented 85 percent of all casualties within Addis Ababa yet only 40 percent nationwide, second to passengers (50 per cent). In 1991 59.5 death per 10000 vehicle (60 000) and 17.9 (1.6) per 100000 population reported from Ethiopia (34) Addis Ababa is located in the heart land of the country in an area of 540 square kilometre and population density of 5046 people per square kilometre .Population nearly 2,738,248 based on current Census Addis Ababa city contributed for 77% of registered motor vehicles and 60% of all motor vehicle accidents registered in Ethiopia (22). In 1999 Motor vehicle injuries accounted for 41% of all trauma causes among which 93% of them were pedestrians (32).Studies on the epidemiology of motor vehicle accidents in developing countries reported different factors for increasing trends of morbidity and mortality from road traffic among behavioural factors alcohol reported as one of determinant factors (3, 13, 14 and 17), increasing use of motor vehicles; increasing urbanization, and overcrowding and in children, use of street for play areas (2). Male pedestrians, and in productive age group and high speed reported as risk factors for injury and its outcome (12, 18) and, inadequate signs, lack of protection for pedestrians, and inadequate traffic law enforcement (19). Case control studies reported an increased risk of child pedestrian RTIs in area with high vehicle volume, absent lane demarcation, high vehicle speed, and high street vendor (20). Modification of environmental risk factors reduces the risk of pedestrian–vehicle injury (21). Despite the high burden of motor vehicle injury, on public health, and level risk by road user in the general urban population not investigated. The only information comes from small, unrepresentative samples, particularly younger men, and pedestrians reported from Hospital settings. Therefore reliable data and evidence are essential for describing the burden of motor vehicle injuries, assessing risk factors, developing and evaluating interventions, providing information for policy-makers and decision-makers, and raising awareness. Without reliable information, the priorities for road traffic injury prevention cannot be rationally determined. Thus, we investigated distribution motor vehicle death by road users and Motor vehicle accident fatality rate and risk and factors associated with Motor vehicle accident death in Addis Ababa city; and areas for further epidemiological and prevention work identified.

Methods and Materials

Study Area/Population

The study was conducted in Addis Ababa City Administrative regional state, Addis Ababa, Ethiopia. Addis Aaba has an estimated population of 3 million residing within an area of 504 square kilometers. The city is divided in to ten sub-cities and 99 kebeles for administrative purpose.

Study Design:

Retrospective analytic study was conducted using secondary data on Road traffic accidents reported from sub-cities to Addis Ababa regional traffic police bureau from the year 2000 to 2009 (10 years). Studied sample size was 25,110 motor vehicle accidents occurred in Addis Ababa which resulted in severe and mild injuries and fatalities in the time period between July 1/2000 and June 30/2009 reported to Addis Ababa Regional Traffic Police Bureau.

Retrospective secondary data was collected by two FELTP residents used forms designed based on the purpose of the study. Then entered to excel for analysis and imported to EPI Info version 3.3.2 for further analysis for that factor in relation to all other factors with 95% confidence intervals. Statistical significance was set at $P < 0.05$. We described motor vehicle injury by time and person in Addis Ababa city. We calculated motor vehicle fatality rate and risk. Denominator data for Population-based rates were obtained from Population estimates for 2009 and age-specific entire study period by assuming a straight line increase in population during the years for which census. Data for vehicle-based rates, 225,657 Licensed Motor vehicles registered in Addis Ababa in 2009 collected from federal Transportation Authority of Ethiopia. Computation of fatality Rates and risks were obtained by dividing the number of fatality within each category of interest by total population or registered vehicles and multiplying the quotient by 100 000 and 10,000 respectively.

Standardizations: - most commonly cited definition of a road traffic fatality is: “any person killed immediately or dying within 30 days as a result of an injury accident” (23). However, , in the European Union, Greece, Portugal and Spain use 24 hours, France uses 6 days; Italy uses 7 days and the other countries use 30 days (24). In the United Kingdom, studies comparing hospital and police records suggest that some 36% of road traffic injury casualties are not reported to the police (24). In addition, around 20% of incidents reported to the police remain unrecorded. In some low-income and middle-income countries, levels of underreporting can be as high as 50% (24). Both the World Bank and TRL Ltd to correct for different definitions of death, they used the European Conference of Ministers of Transport adjustment for high-income country values (a maximum of 30%, depending on the definition used), and they added 15% to all figures from low-income and middle-income countries (25, 26).To correct under reporting and variation in case definition correction factors were not used for this report.

4. Result

4.1 Descriptive Epidemiology

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4.1.1 Socio-Demographic characteristics

The number of studied sample was 25110 Motor vehicle accidents resulted in injuries and death in Addis Ababa between July 1, 2000 and 30 June 2009 reported to Addis Ababa traffic police department. Most of them (74.5%) were male. The pedestrians were 79.8 %(n=20044), passengers 16 % and drivers 4.2 %. The fatal injury were 13.6 % major injury 30 %(7526) and minor injury 54.4 %(14169), with annual average of death 342 and injury 2511(Table 1).

Table 5.2.1: .Frequency Distribution of causalities affected by road traffic injuries in Addis Ababa, Ethiopia, 2010.

Characteristics	Death Injury or Death		Non fatal Injury		Total	
	frequency	%	frequency	%	frequency	%
Gender Male	2691	78.8	16018	73.8	18709	74.5
Female	724	21.2	5677	26.2	6401	25.5
Total	**3415**	**100**	**21695**	**100**	**25110**	**100**
Causality Type						
Pedestrians	2970	87	17074	78.7	20044	79.8
Passenger	297	9	3709	17.1	4006	16
Driver	148	4	912	4.2	1060	4.2
Total	**3415**	**100**	**21695**	**100**	**25110**	**100**
Age in year						
Pedestrians Under 7	123	4.1	490	2.9	613	3.1
7 to 14	215	7.2	1867	10.9	2082	10.4
15 to17	121	4.1	1571	9.2	1692	8.4
18 to 30	966	32.5	6772	39.7	7738	38.6
31 to 50	886	29.8	4007	23.5	4893	24.4
51+	659	22.2	2367	13.9	3026	15.1
Total	2970	100	17074	100.0	20044	100.0
Passenger Under 7	**2**	**0.7**	**27**	**0.7**	**29**	**0.7**
7 to 14	6	2.0	76	2.0	82	2.0
15 to17	16	5.4	198	5.3	214	5.3
18 to 30	167	56.2	2073	55.9	2240	55.9
31 to 50	78	26.3	1124	30.3	1202	30.0
51+	28	9.4	215	5.8	243	6.1
Total	**297**	**100.0**	**3709**	**100**	**4006**	**100.0**
Driver < 18 years	20	13.5	36	3.9	56	5.3
18 to 30	71	48.0	469	51.4	540	50.9
31 to 50	52	35.1	337	37	389	36.7
51+	5	3.4	70	7.7	75	7.1
Total	**148**	**100.0**	**912**	**100**	**1060**	**100.0**

pedestrians contributed for 87 %(2970) of deaths, the passengers 9 %(297) and drivers 4 %(148).The magnitude of Road traffic deaths varies by sex and age group. Male attributed for 78.8% of all road traffic deaths .Among pedestrians 77.7 %(2307), passengers 80.8% (240) and driver 97.3 %(144) of death were male. Most of death (35.3%) reported 18 to 30 age group and 29.8% 30 to 50 years age group. The annual case Fatality rate from total motor vehicle injury increased from 10.7% in 2000 to 17.4% in 20009. Pedestrians were contributed for most of deaths(87%) during 10 years period and annual number of pedestrians death from motor vehicle were increasing from 269 in 2000 to 345 in 2008 and decreased to 337 in 2009 (Table 2).

Table 5.2 2: Fatality and non fatal motor vehicle injury distribution by road user type in Addis Ababa Ethiopia, 2010

	Fatal Injury or Death				**Non-fatal Injury**					
Year	Pedestrians N (%)	Passenger N (%)	Driver N (%)	Total	Pedestrians N (%)	Passenger N (%)	Driver N (%)	Total	Total Injuries	CFR %
2000	269(86.5)	25(8.0)	17(5.5)	311	1808(81.7)	338(15.3)	68(3.1)	2214	2525	10.7
2001	251(86.6)	30(10.3)	9(3.1)	290	1791(78.8)	404(17.8)	78(3.4)	2273	2563	9.8
2002	247(86.1)	32(11.1)	8(2.8)	287	1830(82.9)	305(13.8)	73(3.3)	2208	2495	9.9
2003	289(88.9)	22(6.8)	14(4.3)	325	1876(83.9)	303(13.5)	58(2.6)	2237	2562	11.3
2004	289(85.3)	30(8.8)	20(5.9)	339	2009(78.2)	476(18.5)	85(3.3)	2570	2909	9.9
2005	296(85.8)	35(10.1)	14(4.1)	345	2045(79.0)	412(15.9)	131(5.1)	2588	2933	10.1
2006	326(85.8)	38(10.0)	16(4.2)	380	1971(78.7)	402(16.)	133(5.3)	2506	2886	11.3
2007	321(88.2)	28(7.7)	15(4.1)	364	1373(73.8)	414(22.3)	73(3.9)	1860	2224	14.4
2008	345(87.3)	30(7.6)	20(5.1)	395	1239(73.9)	335(20.)	102(6.1)	1676	2071	16.7
2009	337(88.9)	27(7.1)	15(4.0)	379	1132(72.4)	320(20.5)	111(7.1)	1563	1942	17.4
Total	2970(87.0)	297(8.7)	148(4.3)	3415	17074(78.7)	3709(17.1)	912(4.2)	21695	25110	11.8
2000-2009	25.3%	8%	-11.8	21.9	-37.4	-5.3	63.2	-29.4	-23.1	

4.1.3 Trends in Fatality Rates and Risk 2000 to 2009 in Addis Ababa, Ethiopia

Fatalities per 10 000 registered vehicles.

Pedestrians age 18 to 30, 31 to 50 and above 50 age groups were at increasing trends in number of annual death from road traffic injury. Annual number of male pedestrians' death increases 207 in 2000 to 263 in 2009 and similarly female pedestrians increased from 62 in 2000 to 73 in 2009. Fatalities per 100 000 population, in 2009 incident rate of MVI in Addis Ababa were 105/100,000 and crude fatality rate 13.3, male were 21 and females were 6.1 per year per 100,000 populations, and fatality rate per 10,000 licensed motor vehicle were16.8 .

The Fatality rate per10 000 vehicles were continuous decline in Addis Ababa from 2000 to 2009 whereas the rate of deaths per 100 000 population has shown a slight increase.

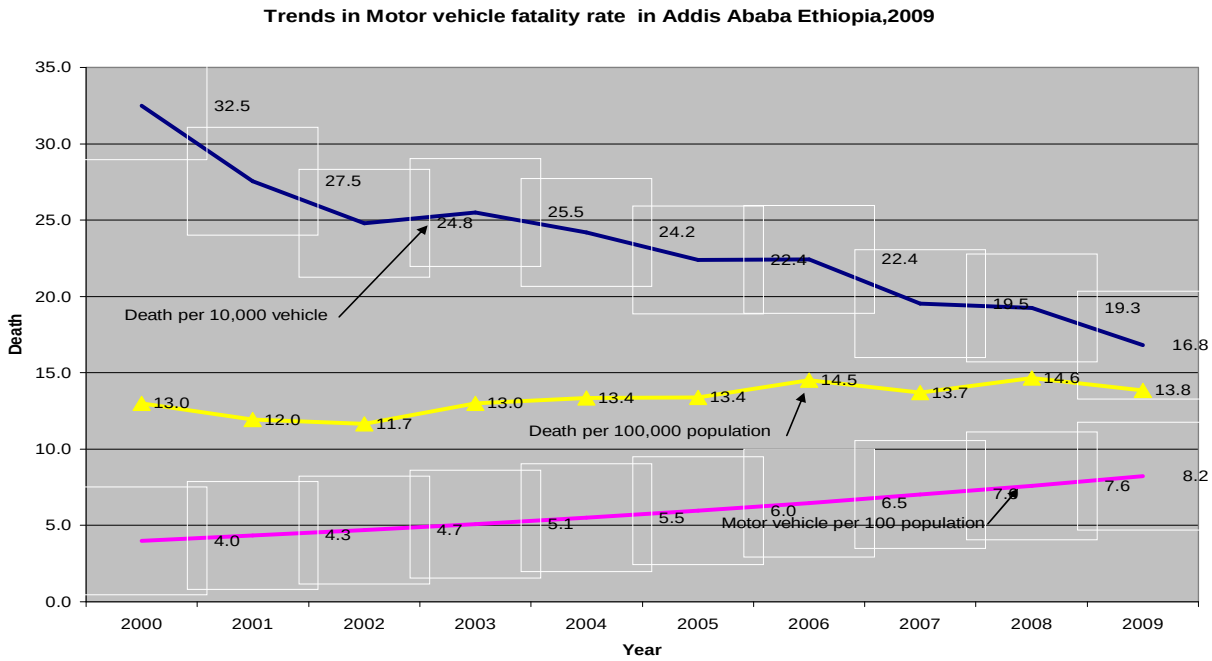


Figure 5.2.1: Trends in Motor vehicle fatality rate in Addis Ababa, Ethiopia, 2009

4.1.4 Age groups

The number and rate of fatalities varies with age. Young people (18-30) are high risk group fatalities increased by 54.79%2000 to 2009. The highest road fatality rates of pedestrians (in

terms of fatalities per population) are among young adults (18-30 years,31 -50)and elderly people (over 50); children aged 0-7 have the lowest fatality rate.

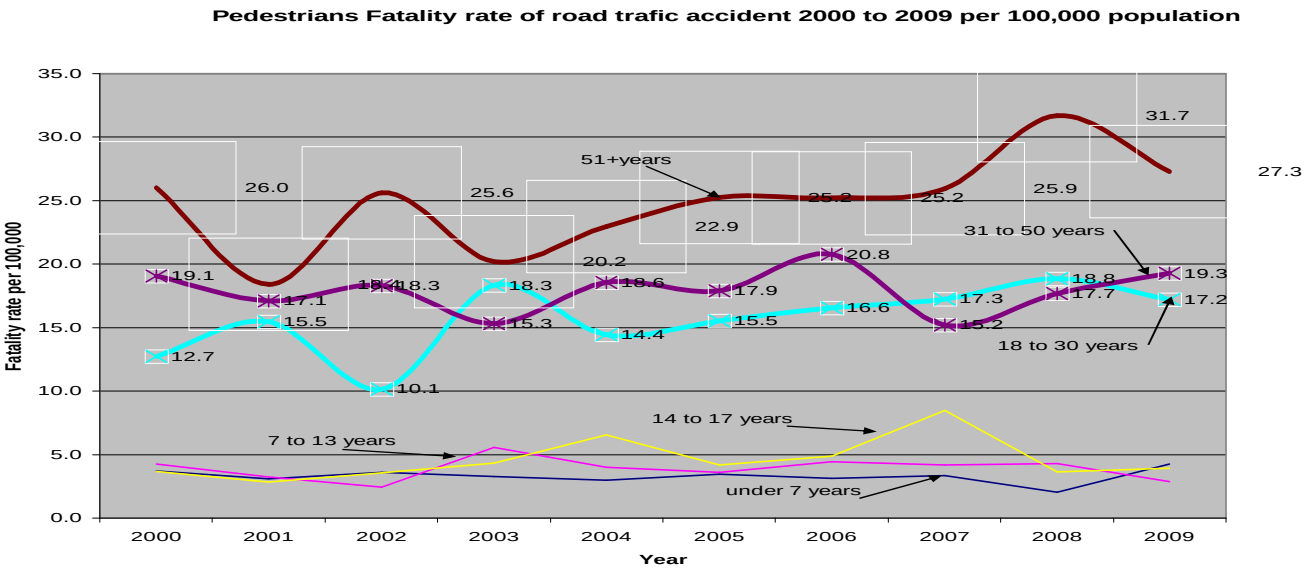
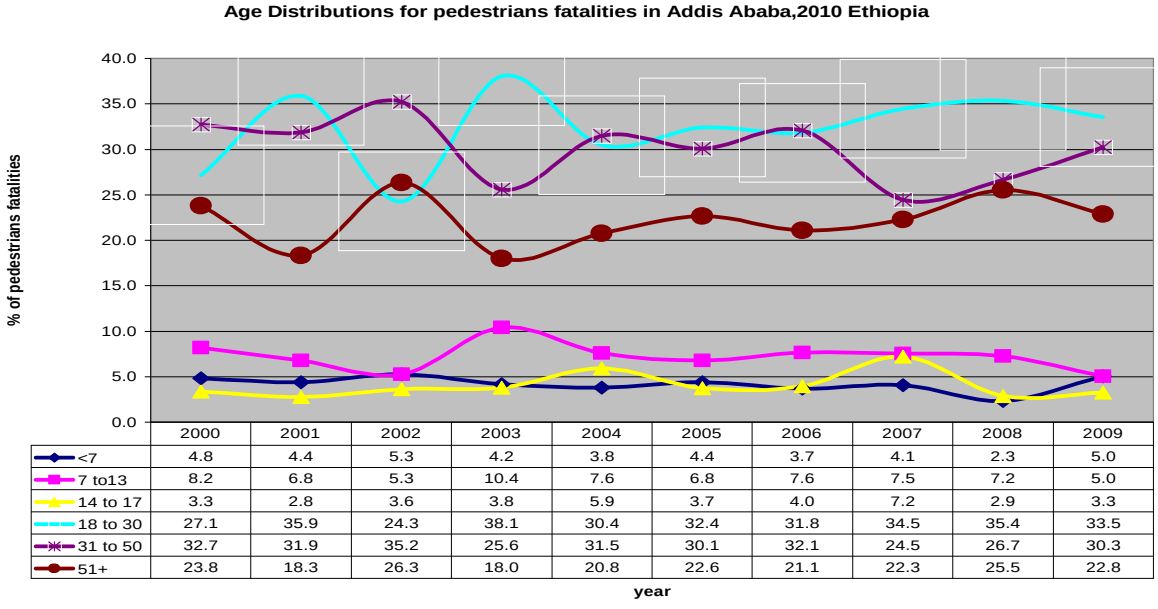


Figure 5.2.2: Pedestrian Fatality rate of road traffic accidents from the year 2000 to 2009 in Addis Ababa, Ethiopia, July 2009



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<7	4.8	4.4	5.3	4.2	3.8	4.4	3.7	4.1	2.3	5.0
7 to13	8.2	6.8	5.3	10.4	7.6	6.8	7.6	7.5	7.2	5.0
14 to 17	3.3	2.8	3.6	3.8	5.9	3.7	4.0	7.2	2.9	3.3
18 to 30	27.1	35.9	24.3	38.1	30.4	32.4	31.8	34.5	35.4	33.5
31 to 50	32.7	31.9	35.2	25.6	31.5	30.1	32.1	24.5	26.7	30.3
51+	23.8	18.3	26.3	18.0	20.8	22.6	21.1	22.3	25.5	22.8

Figure 5.2.3: Distribution of pedestrians' fatalities by occupation and palace of accidents in Addis Ababa, Ethiopia, 2009

Most of pedestrians fatalities 59 %(1749) were workers, followed by students 16.2 %(481) and similarly the proportion of minor injury among Worker 67% and students 18.7 %. Most of pedestrians fatalities occurred in office area 48.9 %(1585), residential area 19.5 %(631), market area 19.5% (420) and recreational 6.8 %(222) The main reasons were, failure to give priority for pedestrians accounts for highest proportion of traffic road fatalities 74%(63-84%), not keeping right side 6%, Speed 3%, not giving priority for other vehicle 3% and 14% is attributable to other causes.

4.1.6 Occurrence of road traffic accidents by time and days in Addis Ababa, Ethiopia, 2009

During all years in an average, most of the accident occurred in 12-18 hours 38.3%), then 6 to 12 hours 36.2%. Most of accidents 66.93% occurred during emergency hours of hospitals and health centers with limited human resources in health facility and 25.8 Sunday and Saturday (figure1, 2).

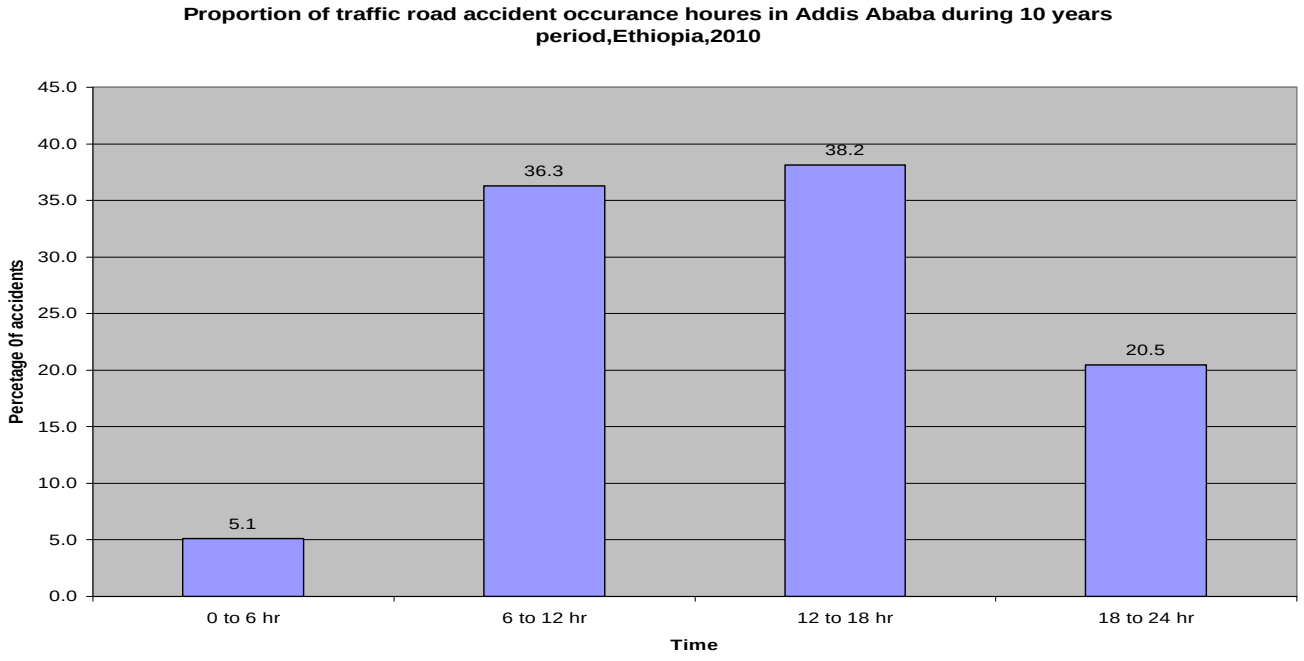


Figure 5.2.4: Proportion of road traffic accident occurrence hours in Addis Ababa during 10 years period, Addis Ababa, Ethiopia, 2010

4.2 Inferential Epidemiology

Trends in numbers of fatalities and injuries from motor vehicle accident increasing. Between 2000 and 2009 the number of fatalities increased by 21.86% and injury increased by 24% and pedestrians death 2000 to 2009 increased by 3% and 2001 to 2009 increased by 36.4%. These are high increments as compared to other countries with same settings.

The pedestrians consistently contributed for the most of increment. The incidence of death in pedestrians was significantly higher than in passengers or Driver (P<0.0001,)) .Males were significantly more likely than females to die in MVA (75% vs. 25%, P<0.0001).The fatality rate per 10,000 vehicle significantly decreased as the Motor vehicle per 100 population increased(x2 67.8, P.value 0.000076, r=0.89). Fatality rate per 100000 population increased significantly with motor vehicle per 100 population (P.value 0.011, x2 =11.7, r=.59).

Discussion

The burden of motor vehicle traffic accidents in Addis Ababa, Ethiopia examined in relation to casualty characteristics, such as *type of road users*, *gender* ,*age*, and its burden assessed by fatality rates and risk,.

There are wide variations in the characteristics of motor vehicle accident between countries and regions of the developing world. Pedestrians are most vulnerable to injury and death which contributed significantly highest proportion of death and fatality rate of motor vehicle injury in Addis Ababa. Trends in death of pedestrians from motor vehicle injury increased during 10 years periods as compared to other road users. These were highest proportion of pedestrians fatalities reported in developing countries from magnitude of pedestrian fatalities estimated to 11% in the very low-mortality sub region of the Americas (AmrA) and highest 55% in the high-mortality African sub-region AfrE (12), and 18% in high-income countries 29% in middle-income countries to 45% of road traffic fatalities in low- income countries (12).Kenya pedestrians and

passenger contributed for 80%(13) . In 2008, among African countries, the pedestrians' fatality reported in urban hospitals ranges from 55% in Mozambique to 44 % in Uganda, and urban setting Zambia 50% to 38% in Benin (5). Study in Iran Urban setting reported that pedestrians contributed for 11.8% driver 57% and passengers 29.4% of death (27). In developed countries pedestrians were the least vulnerable road users, in 2008 in Australia pedestrians death were 13%, passenger 68%, Canada in 2006 Pedestrians contributed for 50%, Czech Republic in 2008 pedestrians 19% and passenger 54%,Denmark pedestrians 14%,passenger 50%,Finland pedestrians 15%,and passenger 59%,and France 13% were pedestrians and 52% passenger(10).This highest pedestrians for motor vehicle death in study area in comparison with other area may be due to lack of pedestrian facilities in road design, poor knowledge and practice of road safety measures by the general population. Driver fault reported as main cause by traffic police, high speed driving, and low levels of vehicle ownership. *Traffic violations such as not giving way for pedestrians,* speeding and not keeping right side during driving *reported as* the main cause of fatal and non fatal road traffic injury for pedestrians consistently recorded by traffic police during study period. There may be other contributing factor such extreme findings. Several risk factors reported for Pedestrians fatalities such as having failed to look before crossing and inappropriate child supervision *(28)*

The analyzed data show that men are more at risk than women of being injured in crashes. This preponderance of males may be attributed to their greater exposure to traffic and other associated factors. Similar evidence is well documented in several studies in industrialized countries (1,2,3,4,5) While most motor-vehicle drivers are men, a high proportion of males involved as pedestrians, passengers or cyclists, suggests the co-existence of other social and behavioral factors contributing to their vulnerability.

The findings showed productive age groups 18 to 30 years had the highest proportion of fatalities for all categories of road users, then 31 to 50 years. Adolescents and young adults are at high risk of traffic injury are well documented in many reviews on the subject. This has important economic impacts as these are people in their most explained by more activity and travel increase risk of exposure to road traffic accidents.

The highest case fatality rate observed among pedestrians and its trend generally increasing despite improvement in health service accessibility and delivery. These may be due to the most of accident reported at emergency time of Hospitals and Health centers with limited human resource for trauma patient's care. Evidence showed that Data from traffic police usually under reported mild case than sever injuries and death from road traffic injury. However, it needs further investigation to understand the real factors for the poor outcome of road traffic injury.

There were continuous decline in deaths per 10 000 vehicles, whereas the rate of deaths per 100 000 population has shown a slight increase. Over the same period, there has been a growth in motorization from 4 to 8.2 per 100 populations .This inverse correlation between trends in the two indicators reported from Malaysia which experienced from 1975 to 1999(31). This may be road traffic fatalities have increased more slowly and rapid increased of the vehicle population in Addis Ababa.

Fatality risk, per 100,000 population, in 2009 Highest as compared to less developed countries Traffic deaths per 100 000 population were higher than as compared to with countries reported least fatality rate in 2008 Australia 6.8, Canada 7.18, France 6.91. This finding was similar to those countries with highest fatality rate Greece 14.43, Korea 12.72, Poland 14.26 and lowest as compared to Malaysia 23.5(10).

The observed reductions in fatality rates per 10,000 vehicles strongly correlated with rise in the number of motor vehicles per 100 inhabitants.

The most common places identified for the occurrence of injury& death was office, residential, recreational place and school, and workers accounting for and students of death from motor vehicle injury between 2000 and 2009.

The limitation of the study

The distance traveled in kilometers missed from police record to calculate Fatalities per vehicle-kilometer traveled useful for international comparisons and the population of vehicle available

for 2009 in federal transport authority of Ethiopia, so we projected retrograded based on 10% annual increases for the year 2000 to 2008**.**

Reporting bias Routine data are known to be biased with regard to subject selection and completeness. Deaths and severe injuries are more likely to be reported than minor injuries; drivers and passengers also have a greater likelihood of being recorded by traffic police than pedestrians, cyclists and other non-motorized road users. Hospital-based data usually exclude casualties attending, health canters and those receiving self-treatment, and are recognized sources of reporting bias. Traffic-related morbidity and mortality statistics based on routinely collected data therefore represent an unknown proportion of the true values. The assessment of the cause of a motor vehicle accident by the police is subjective and likely to be inconsistent and, among other factors, depends on training of the police force and their investigative skills and integrity, which vary from country to country. Moreover, traffic crash investigations often emphasize the identification of who is at fault, while paying less attention to environmental factors, such as the state of roads or weather conditions. An in-depth investigation of a sample of motor vehicle crashes (fatal crashes, bus or multiple-vehicle accidents) by a multidisciplinary team composed of experts such as road engineers, traffic police, motor vehicle mechanics, sociologists and doctors, would yield more information than reports based entirely on police judgments

Conclusion

Highest risk road users for road traffic fatalities were pedestrians and male in gender most of them were economically productive age groups and workers in occupation. Pedestrians were exposed to highest risks of injury and fatality from traffic accident in Addis Ababa, among urban population groups, because the modes of transport affordable to these segments of the population expose them to higher risks than rest road users. These need to design and implement social policies focused on the vulnerable populations that bear the most burden of road traffic injuries. This could be a useful direction for future research in road traffic injury prevention, pedestrians in economically productive age groups should be investigated to identify risk factors and set appropriate prevention strategies that protect these risk road user groups. Most of accident

occurred in business, residential, recreation and school areas during 12 to18 hours. The case fatality rates per 100 road traffic accident in an increasing trend and from seriously injured cases with poor outcome. Most common reason for pedestrians' death recoded by police was due to not giving priority for pedestrians.

Recommendation

Based on these conclusions we recommended, first, efforts to reduce the public health burden of these accidents must focus on strategies that separate pedestrians from roadways and vehicles to reduce number of pedestrian associated injuries and deaths. Second, Promote involvement of community and strengthen traffic control in office, residential, recreation place & school. Third, strengthen the monitoring system of road traffic injury and its outcome. Finally, research on the quality of care for motor vehicle injured patients' emergency and trauma service to improve motor vehicle injury outcome, and epidemiological investigation to identify risk factors for pedestrians' motor vehicle mortality recommended.

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5.3: Relapsing Fever outbreak Investigation in Kebele 04, Kolfe-keranio Sub-city, Addis Ababa Regional Health Bureau, February 2010, Addis Ababa, Ethiopia

Abstract

Outbreak Of Acute Febrile Illness —Kolfe Keranio Sub-City, Addis Abeba, Ethiopia, February 2010, Million Tumato, MD, Mesafint Alebachew, Richard Luce, Ethiopia Field Epidemiology and Laboratory Training Program

Introduction: Acute febrile illness (AFI) is a common syndrome of diseases of multiple etiologies used to simplify diagnosis and treatment in resource-limited settings. Examples of diseases included in AFI are malaria, typhoid fever, brucellosis, epidemic typhus, and relapsing fever (RF). Surveillance data from Addis Ababa during 2005-09 included 6979 cases of RF with case fatality rate of 2%. In February 2010 AFI surveillance detected a suspected outbreak of RF in a health center in Addis Ababa. The objective of the investigation was to confirm the outbreak aetiology, determine magnitude of the outbreak and provide guidance on prevention and control measures.

Methodology: In-depth interviews and clinical examinations were conducted with suspect cases. Blood samples were collected and laboratory tested for confirmation of the diagnosis.

Results: There were 11 suspected cases of which 6 (55%) were female. Mean age for females was 38 years and median age was 39.5 years (range 16 -70 years). Mean and median age for males was 26 and 20 years respectively, (range 5 -60 years). *Borrelia recurrentis* was identified in the blood film laboratory testing of 5/11 (46%) of cases. There were no deaths associated with the outbreak.

Conclusion: A laboratory confirmed outbreak of RF occurred likely due to overcrowding, poor hygiene and sanitation in housing areas. The extent of the outbreak was limited due to prompt intervention and control activities.

Keywords: Relapsing fever, Borrelia recurrentis

Introduction

Communicable diseases particularly epidemic prone ones have been commonest causes of severe illnesses, deaths and disabilities throughout the world predominantly affecting developing countries. Sudden occurrence and spread throughout involved vulnerable communities and causing acute illnesses detrimental to life remained peculiar features of epidemic prone diseases.

Relapsing Fever is among epidemic prone diseases caused by bacteria group popularly known as Borrelia species. Two types of Borrelia are responsible to cause the disease relapsing fever. The first one is louse borne relapsing fever (epidemic fever) caused by one of Borrelia species called Borrelia recurrentis bacteria while the second which is known as tick-borne (endemic fever) is caused by Borrelia ornithodoros (among 15 spp.).

Louse-borne relapsing fever most commonly occurs in East, North and central regions of African continent, Europe, Asia and South America. Increased levels of incidence and prevalence of the disease usually encountered during wars, famine, drought and mass migrations. Cold weather and crowded living conditions have been recognized factors increasing magnitude of the diseases for they create conducive atmosphere favoring quite significant spread of body lice (1-2). Children and women are more affected for severity and increases fatality rate from this disease is more pronounced in these groups

Its incubation period is in the range between 4-14 days and infecting dose is attained when the victim crushes the louse causing its infected blood or body fluid to soak in to the affected bitten or abraded skin or mucus membranes. Diagnosis is made by taking blood samples from victims and undertaking laboratory investigation of blood film using Gemsia stain. Identification of louse-borne B.recuurrentis species is a confirmatory test to determine the diagnosis. Its clinical

feature is characterized by occurrence of relapsing high fever, head ache, chills, rigor, nausea, myalgia and arthralgia (2-4).

Failure in early recognition and treatment may result in manifestations of bleeding, coma, seizures, facial droop, neck stiffness and weakness as differentiating signs from other related infections. In its severe form several organ-systems can be involved as a result of septicemia and meningitis, myocarditis, arrhythmia, pneumonia and the like may occur as complications of the disease due to failure in management (3-4). The infection is amenable to antibacterial treatments of choice available including Tetracycline, Erythromycine, Chloramphenicol and Penicillin. Treatment with Penicillin may result in severe crisis (Jaricsh-Herxemers reaction) due to death of many bacteria and indeed may be fatal if early recognition and prompt management of such cases not undertaken (18, 21). Fatality rate of untreated cases may range from 10%-70% where as in lately treated cases fatality rate of 4%-14% may occur. Delousing, improving situations of crowded living conditions and proper detection and management of cases play prominent role in prevention and control of outbreaks/epidemics of relapsing fever (21).

The disease was well known during the time of Hippocrates (4th B.C) though relapsing nature of the disease not well ascertained. Since then it has been affecting various segments of population living indifferent regions of the world. Epidemics have been very common in overcrowded situations with poor hygiene. In the first half of 20^{th} century epidemic of relapsing fever affected 50 million people (cases) with fatality rate of 10%-40% globally. Largest epidemic killed 1 million people during world wars I and II (8-14).

Currently the disease is more prevalent in East Africa particularly in Ethiopia, Somalia and Sudan (17-20). In Ethiopia it is the seventh most common cause of hospital admission (2.5%, 3777 cases) and 5th common cause of death (0.9%, 42 cases) in 2004(5-9).

According to assessment results (2009) of surveillance data of relapsing fever submitted to Addis Ababa regional health bureau from 2005-2009 there were a total of 6979 cases of relapsing fever with reported 43 deaths. Case fatality rate (CFR) of relapsing fever was 2% and cause specific mortality was 3% (among 23 epidemic prone diseases assessed). Purpose of this study was to make an epidemiological investigation of the outbreak and determine its magnitude, find out risk factors and provide a guidance to take appropriate prevention measures to contain the outbreak.

Methods: Surveillance data was reviewed using line list of suspected relapsing fever cases at Kolfe-keranio sub-city health office. Active case search activities were undertaken in affected Kebele (04), Clinical examination of suspected cases and environmental assessment were made. Laboratory testing of collected blood samples was done using Gemsia stain to confirm diagnosis of the outbreak. Case definition criteria formulated by WHO was adopted to differentiate suspected cases to those of confirmed.

Case Definitions used:

Suspected case: Any person presented with an abrupt onset of rigors with fever usually remittent, head ache, arthralgia,myalgia, dry cough, epistaxis among others.

Confirmed Case: A suspected case with demonstration of Borrelia spp. (Borrelia recurrentis) in peripheral blood film

Results

11 suspected cases were identified in 3 households where 05 of suspects were found in one household and 03 suspects were found in each of remaining 02 households within 7-10 days time period. There were a total of 11 suspected cases of which 6 (55%) were females. Mean age of suspects was 30 years (range being from 5-70 years). Mean age of females was 38 years where as mean age of males was 26 years. Median age of females was 30 years and that of males was 26 years. Borrelia recurrentis spp. was identified by laboratory testing of blood films of clinical samples using Giemsa stain in 05 (40%) of 11 suspected cases. There was no reported death in the outbreak. Assessment findings showed delayed notification of the outbreak from the sub-city to Addis Ababa regional health bureau of 05 days. Cases were treated using Tetracycline and other antibiotics and there was no reported adverse effect of reactions to drugs particularly to penicillin treatment (Jarisch-Herxhemers reaction). De-lousing of cases and suspects households with DDT was conducted by Kolfe-keranio sub-city health office health team. Neighborhoods were provided with Doxycycline which was used as choice for prophylaxis to prevent and control spread of the outbreak. Kolfe-keranio sub-city health team provided appropriate health education to affected kebele population on issue of importance of hygiene and sanitation.

Discussion

The fact that all identified suspects (11 cases) fulfilled set criteria for case definition of louse – borne relapsing fever caused by Borrelia recurrentis and 05 (40%) suspects were positive for Borrelia recurrentis spp. and environmental analysis findings strongly suggests that there was confirmed outbreak of epidemic form of relapsing fever in kebele 04 Kolfe-keranio sub-city. Infection was introduced to this sub-city from index case that came to Addis Ababa from

Wollega zone, Oromia Administrative region to visit relatives. Transmission of this infection was enabled by poor living conditions (overcrowding), poor personal and family hygiene and poor sanitation in the household and the environment. Rapid response and conjoint action by concerned parties limited the extent of the outbreak and enabled containment of spread of the infection. Provision of clean and adequate water and sanitation, improved and enhanced surveillance for relapsing fever with more emphasis on improved timeliness and completeness of relapsing fever case reporting to Addis Ababa regional health bureau and tackling very tasks of making unreserved efforts to improve living conditions of communities was recommended to prevent and control future occurrence of outbreaks of relapsing fever in the sub-city.

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Chapter VI – Abstracts for Scientific Presentation

6.1: Investigation of Safety Belt Usage in Addis Ababa, Ethiopia, March 2009

Belay Bezabih, Beyene Kidu, Ghidey G/Libanos, Ketema Belda, Ketema Mehari, Mer'Awi Aragaw, Mesafint Alebachew, Million Tumato, Milliyon Wendabeku, Tadele Tsehaye, Tilahun Tafese, Yilma Bekele, Zayeda Bekele,Richard Luce, Adamu Addissie. Ethiopian Field Epidemiology and Laboratory Training Program, School of Public Health (SPH), Addis Ababa University (AAU), Addis Ababa, , Presented on Ethiopian Public Health Association conference in Addis Ababa, Journal of Public Health, Ethiopia, 2010

Introduction: At present motor vehicle accidents and related road traffic accidents are commonest causes of deaths, severe injuries and disabilities globally. Estimated 1.2 million people die and estimated 20-50 million severe injuries occur in the world annually. Proportion of fatalities caused due to road traffic accidents is significantly higher in developing countries. Case fatality rate of RTA in Africa is 32.2% as compared to Europe which is 11.2%. Currently 70 deaths per 10,000 registered vehicles occur in Ethiopia as compared to < 3/10,000 and 1/10,000 registered vehicles in Japan. Poor road conditions, vehicle maintenance and inconsistent use of safety seat belt are contributing factors. Purpose of this study was to determine prevalence of safety seat belt usage, characterize knowledge and attitude and obtain useful data findings of which be used to take intervention measures to address this cause.

Methods: Cross sectional survey was conducted using structured questionnaire. Data was collected by EFELTP residents from owners of private vehicles. Supporting letter was obtained from School of Public Health (SPH), Addis Ababa University (AAU). Data was collected after securing informed consent from respondents. Data was entered and analyzed using Epi-Info version 3.3.2.

Results: There were a total of 401 respondents of which 340 (84.8%) were males. Mean age of males was 36 years (range was 18-74) and that of females was 34 years (range 25-44). 69.6% of respondents were within age range of 25-44 years. Proportion of respondents who had awareness on safety seat belt use was 391/401 (97.5%). Out of the total 401 respondents 269 (67.1%) received training on safety seat belt usage and 335(83.5%) considered safety belt use "very important". 372 (93.2%) responded to use safety seat belt if law required. Only 13.5% of study participants used safety seat belts always while driving. From total of 61 females involved in

survey 20 (32.8%) always used safety seat belt while driving and only 73 (23.5%) males used while driving.

Discussion: Awareness with regard to safety seat belt usage among respondents was high while their consistency in using seat belt was relatively low. Awareness creating strategies implemented did not seem to result in increased safety seat belt usage. Utilization rate was higher among female drivers and accident and injury data reporting to traffic police was infrequent. Formulation and implementation of more effective strategies and strengthening of law enforcement options should be chosen to encourage and increase safety seat belt usage together with undertaking large scale studies the findings of which be used to contain "hidden epidemic" of MVA was recommended

Key words: Motor vehicle accident, safety seat belt, Addis Ababa, Ethiopia

6.2. Abstract: Epidemiology of acute watery diarrhea outbreak and challenges of contro, Afar, Ethiopia, 2009, Journal of Ethiopian Public Health, 2011

Abstract

Background

Acute watery diarrhea (AWD) is becoming a big problem in Ethiopia. The aim was to rapidly investigate the outbreak epidemiologically and providing guiding response activities in the affected districts of Afar from April-June 2009.

Methods

A line list and case register log book of the districts were reviewed as per the world health organization case definition. 31 cases and 23 controls were interviewed with a structured questionnaire. A checklist was also applied to observe case treatment centers and investor camps. Stool and drinking water samples were also collected, transported and examined as per standard Microbiologic procedures. Then analysis was done using EPi Info version 3.5.1.

Results

A total of 1076 cases and 48 deaths were reviewed with an attack rate of 0.9% and a case fatality rate of 4.4%. From mentioned total 87.8% (945) of cases were males. Hand washing after latrine usage was protective of illness (OR = 0.13, p= 0.03) while unsanitary latrine use (OR = 10.5, P-value= 0.001), contact with a case (OR = 200, P-value= 0.001) and visiting a place which has similar illness (OR=33.6, P=0.001) shown statistically significant association. Vibrio cholera 01 serotype Inaba and Escherichia coli were isolated from 89 % (9) of stool and100 % (4) of water samples respectively.

Conclusion

V. cholera 01 serotype Inaba was confirmed as etiologic agent in all districts. Drinking untreated water, close contact with a case, not practicing hand washing and unsanitary latrines were likely determinants for this outbreak. Therefore, provision of safe drinking water supply and raising community awareness about hygienic practices to control diarrheal disease is necessary.

Key words: Acute watery diarrhea, Vibrio cholera, Afar, Ethiopia

6.3: Outbreak investigation Of H1N1 Pandemic in Addis Ababa, Ethiopia July 2009

Million Tumato, Mesafint Alebachew, Richard Luce, Ethiopian Field Epidemiology and Laboratory Training Program, 47th annual conference of Ethiopoian Medical Association,Addis Ababa , Ethiopia .Ethiopian Medical Journal May 2011

Introduction

Influenza like Illnesses has been incriminated for being causes of substantial portion of discomforts, illnesses and deaths throughout the globe. Influenza epidemics affect 5-15% of Global population annually and cause severe illness in 3-5 million and 250,000 - 500,000 deaths worldwide. Magnitude of severe illnesses and deaths has been more pronounced in high risk population of infants, the elderly and chronically ill patients in Industrialised countries. According to the result of data collected from 1979 -2001 E.C killed 41,400 people in USA alone. In April 2009 a novel H1N1 influenza sub-type was identified in (Veracruz) Mexico and quickly spread worldwide. As of end of 2nd week of November 2009 there were 503,500 and 6206 H1N1 cases and deaths respectively registered from all WHO acknowledged regions of the world. Currently 206 countries have identified cases of H1N1 influenza. Magnitude of the

pandemic is more pronounced in some of WHO regions, however only 24 countries in Africa have confirmed the presence of H1N1. Ethiopia identified its first two cases of H1N1 influenza on June 16 2009 through October 30 2009. The objective of this study was to undertake epidemiological investigation on H1N1 pandemic in the country to determine magnitude of H1N1 infection, identify risk factors contributing to transmission, describe the outbreak in time /place and person and make sound recommendation for possible intervention activities to be undertaken

Methods: - Surveillance data was reviewed using line list and Clinical examination was done on 80 suspected cases meeting case definition criteria for H1N1. Nasopharyngeal swabs were collected from cases and contacts and analysed by RT-PCR for the presence of H1N1 virus.

Results: Out of 80 suspected cases investigated 12 (15 %) were confirmed H1N1 cases. Cause of introduction of H1N1 pandemic to the country was via International travel from various regions of the world and no confirmed cases of H1N1 virus was obtained after laboratory testing of nasopharyngeal swabs collected from contacts. Even though the outbreak which occurred in Addis Ababa was that of mild in severity magnitude of the problem could be higher if proper ongoing active surveillance activities had not been undertaken.

Conclusion: - Impact of the outbreak was limited due to prompt intervention activities undertaken and further active surveillance activities have to be implemented to prevent and control possible future spread of the pandemic.

Key words: - H1N1 pandemic, close contact, Addis Ababa, Ethiopia

6.4: Motor Vehicle Accident and Fatality Surveillance

ADDIS ABABA, ETHIOPIA, 2000–2009, Million T. Tumato, Yilma Bekele, R. Luce, Ethiopia Field Epidemiology and Laboratory Training Program, Addis Ababa University School of Public Health.(SPH), Addis Ababa University (AAU), January 2011, Addis Ababa, Ethiopia, Journal of Ethiopian Public Health and Ethiopian Medical Journal May, 2011

Background

Motor vehicles Road traffic accidents are increasingly becoming pressing public health problems of the world. Currently it is having far reaching consequences in terms of causing severe illnesses, deaths and disabilities. Every day 3000 people die on the world's roads. A total of 1.3 million people die and estimated 20 to 30 million people sustain non-fatal injuries. Magnitude of the problem is more pronounced in developing countries. Africa has the highest death rates per population in the world. 32.2 people per 100,000 populations are killed (Africa) , 195 deaths per 100,000 in Ethiopia in road crashes compared to 11 per 100,000 in Western Europe. About 80 people die in Ethiopia per 10,000 vehicles as compared to one per 10,000 in Japan. Currently Ethiopia is experiencing highest rate of such accidents resulting in fatalities. According to results of research done in the country in 2009 there were 85,842 accidents of which 8,696 were severe injuries and there were 2,800 deaths from 2004-2008. Data sources containing information needed to characterize morbidity and mortality associated with these accidents are limited and infrequently analyzed to evaluate their public health burden. The objective of this study was to determine magnitude and assess trends of the problem and provide evidence based information to undertake intervention measures to address this problem.

Methods: Handwritten logbooks containing information on motor vehicle accidents from July 2000 through June 2009 were obtained from the Addis Ababa Traffic Police. Data were extracted, transcribed, and entered into an Excel database for analysis.

Results: A total of 25,110 accidents and 3415 fatalities were recorded during the study time period. The mean number of fatalities per year was 342 with a range of 247–345. The mortality rate was 13.3 per 100,000 population. Majority of fatalities were pedestrians, (2970, 87%)

followed by passengers (297, 9%) and drivers (148, 4%). More than 75% of all fatalities were males.

Conclusion: Pedestrians comprise the large majority of fatalities due to motor vehicle accidents in Addis Ababa. Efforts to reduce the public health burden of these accidents must focus on strategies that separate pedestrians from roadways and vehicles to reduce the number of pedestrian associated injuries and deaths.

Keywords: motor vehicle fatalities, traffic deaths, Ethiopia

6.5: Measles outbreak in Kebele 10/11, Kolfe-Keranio Sub-City, Addis Ababa, February 2010

Million Tumato, Richard Luce, Ethiopian Field Epidemiology And Laboratory Training Program, School Of Public Health (SPH), Addis Ababa University (AAU), Addis Ababa, Ethiopan Field Epidemiology And Laboratory Training Program, Addis Ababa, Ethiopia,

Abstract

Background

Communicable diseases particularly epidemic prone diseases have been commonest causes of severe illnesses, deaths and disabilities in the world predominantly affecting children in developing countries. Measles is among vaccine preventable childhood diseases and leading cause of death in children of under 5 years of age. It alone kills 454, 000 children in the globe annually. Estimated 410,000 (90.3%) deaths occur in under five years of age (<5 years). More than 60% of deaths and cases occur in developing countries particularly in Sub-Saharan Africa. Case fatality rate (CFR) of Measles in Ethiopia is 4%. Reported cases of Measles in Addis Ababa from 2005-2009 was 119, 298, 254, 187, and 132 cases respectively (with mean cases of 198 per annum). The objective of this study was to determine magnitude of the outbreak, find out risk factors which increase vulnerability of children to this infection and provide guideline to take appropriate prevention and control intervention measures.

Methodology: Measles surveillance data was reviewed, in-depth interviews was made to suspected cases, cases were clinically examined, environmental assessment was done and blood samples were laboratory tested.

Results: There were a total of 26 measles cases out of which 16 were males. Mean age of cases was 8 years (range being from 7 months-28 years). Median age of cases was 8 years. Out of five cases whose blood samples taken and laboratory tested, four (80%) were positive for IgM. There were three reported deaths. Case fatality rate was (3/26). 12%

Conclusion: Index case patient was reported to have come from other region (SNNPR). Poor living (crowded) conditions, low level of immunization coverage, gap in timeliness and completeness together with delay in notifying and reporting of surveillance data were recognized factors to increase vulnerability of affected children to measles outbreak. Improving mentioned vulnerability increasing factors could have prevented the children from the outbreak. Upon detection of the outbreak active case search and management activities were undertaken and the outbreak was contained

Key words: Measles, outbreak, Addis Ababa, Ethiopia

6.6: Investigation of outbreak of RF (acute febrile illness situation) in Kolfe keranio sub-city Prison, Addis Abeba City administrative region, Addis Ababa regional health bureau.

Million Tumato, Richard Luce, Seble Tadesse, Addis Ababa, Ethiopia, September 2009

Introduction

Acute febrile illnesses have been commonest causes of illnesses deaths and debilities throughout the world. Magnitude of this problem has been more pronounced particularly in least developed countries of the globe. Most of the diseases which contribute to increased burden of acute febrile illnesses have been caused by inadequate personal/family hygiene and environmental health protection and poor sanitation .Diseases which have been incriminated to affect health of societies includes malaria ,pneumonia ,typhoid fever ,relapsing fever ,epidemic typhus, measles ,polio ,Acute respiratory illnesses ,Acute watery diarrhea to mention some among related illnesses . Most of these diseases can be prevented and controlled by undertaking active case search, detection, investigation and taking prompt intervention measures. Assessment of five years surveillance data in Addis Abeba (2005-09) showed total of 6979 cases of RF with CFR of 2% and cause specific mortality of 3.5% due to this cause. So far unreserved efforts have been made in Ethiopia to address problem of acute febrile illnesses but due to higher magnitude of the problem the effect was not satisfactory. The objective of this assessment was to investigate the out break and determine magnitude of the problem and identify risk factors which increase vulnerability of societies to acute febrile illnesses and make recommendations helpful to contain the out break.

Methodology: Suspected cases were interviewed, clinically examined and sufficient blood samples were collected from suspects and laboratory tested. Review of relevant reports and records and interviewing of key persons (Prison and sub-city health office representatives) was done considering them as possible source of information on situation of the outbreak.

Results: There were a total of 158 people in the prison out of which 6 were female (3.8 %) and the rest 152 (96.2 %) were males. Mean age for males was 22 and that of females was 24.

Borrelia recurrentis bacteria sps .was identified in the blood film laboratory testing of two male suspects. Incidence rate of Relapsing fever was (1.3%)

Conclusion: Outbreak of relapsing fever occurred due to over crowding, poor personal and living rooms and environmental health protection and inadequate sanitation. Emergence of out break could have been halted by promoting appropriate personal hygiene and environmental health protection and sanitation.

Recommendation: -Awareness creating activities, avoiding close contacts and over crowding and undertaking of case based intervention activities and active surveillance activities is of paramount importance to prevent and control further emergence of such out break

Key words: - Poor personal hygiene, overcrowding, Borrelia recurrentis, Relapsing fever

6.7 Outbreak of Acute Febrile Illness —Kolfe Keranio Sub-City, Addis Abeba, Ethiopia, February 2010,

Million Tumato,Mesafint Alebachew,Richard Luce, Adamu Addissie,Zegeye Haile mariam, Alemayehu Bekele, Ethiopia Field Epidemiology and Laboratory Training Program, Journal of Ethiopian Public Health 2011

Introduction

Acute Febrile Illness (AFI) is a Common Syndrome of diseases of multiple etiologies used to simplify diagnosis and treatment in resource-limited settings. Examples of diseases included in AFI are Malaria, Typhoid Fever, Brucellosis, Epidemic Typhus, and Relapsing Fever (RF). Surveillance Data from Addis Abeba During 2005-09 included 6979 Cases of RF with Case Fatality Rate Of 2%. In February 2010 AFI Surveillance detected a suspected outbreak of RF in a Health Center in Addis Abeba. The Objective Of this investigation was to confirm the Outbreak etiology, determine magnitude of the Outbreak and Provide guidance on prevention and control measures.

Methodology: In-Depth interviews and clinical examinations were conducted with Suspect Cases. blood samples were collected and laboratory tested for confirmation of the diagnosis.

Results: There were 11 suspected cases of which 6 (55%) were female. mean age for females was 38 years and median age was 39.5 years (range 16 -70 years). Mean and Median age For males was 26 and 20 years respectively, (range 5 -60 years). *Borrelia Recurrentis* was identified in the blood film laboratory testing of 5/11 (46%) of cases. There were no deaths associated with the outbreak.

Conclusion: A laboratory confirmed outbreak of RF occurred likely due to overcrowding, Poor Hygiene and sanitation in housing areas. The extent Of the Outbreak was limited due to prompt intervention and control activities.

Keywords: Relapsing Fever, Borrelia Recurrentis,

Chapter VII – Narrative Summary of Disaster Situation Visited

7.1: Report on Disaster (after effect of flood) situation in Kebele 11and 12, Chirkos Sub-City, Addis Abeba, Ethiopia, April 2009

Introduction

Natural calamities (disasters) which used to occur in different periods, seasons and different localities and regions of the world have been known to cause health problems, increase magnitude of already existing diseases and impede development of socio-economic progress in affected societies of the world. These natural disasters which may manifest as flood, drought, earthquakes, hurricanes and the like are noted to cause displacement of communities forcing them to evacuate from their accustomed residence area and find out and settle else where to seek possible support of getting (shelter, food, social security, medical supports) and other materials, logistics and supplies which are very important to rehabilitate them from encountered problems. After effects of such catastrophies if not promptly intervened can increase burden of health and socio-economc on those already existing ones. Because of instabilities created as an after effect of such calamities normal life leading activities of inbividuals.families can be impeded. Longlasting displacement may cause increased number of people to leave their area of residence and migrate to other places to get indispensable materials needed to maintain their survival. Displaced communities will be forced to be vulnerable to various communicable diseases such as malaria, measles, diarrheal diseases, HIV-AIDS/STI and other related diseases. Affected/displaced communities may also encounter other related problems such as security and social problems and magnitude of theses problems is higher on children/women/elderly and those marginalized. If affected affected groups do not get sustaining materials which are very essential to maintain their survival families who used to produce life supporting materials may be forced to live in poverty. Eventhough situation /magnitude of disaster in Kirkos sub-city was not that high for there was occurrence of similar flood problems in various sub-cities in rainy season of the city several times in the past. Prompt intervention measures were taken in the city to reduce aftereffects and prevent and control similar problems.

The purpose of this assessment was to determine magnitude of the problem (flood), identify risk groups and factors and provide guidance to reduce after effects of food and and prevent and control occurrence of such problems.

Methods:

Reviewing of surveillance and disaster situation information (data) was undertaken. Discussion was made(Regional health team) with task force established as rapid response team which was formed by representatives of Kirkos subcity administration,health department, partners, communities and those concerned. Moreover close follow up of dister situation was made and analysis was undertaken and its findings were communicated to those in need.

Results:

The team was called upon to follow the situation of disaster (food) after being informed about the problem encountered in mentioned kebele by IDSR team leader Seblework,It was on last Saturday 11/04/2009 that heavy rainfall mixed with snow inundiated mentioned kebele. As reported by kebele's information desk head it brought about serious problem to residents of the kebele in terms of loss of house hold items such as utensils, beddings ,sheets and other goods. The flood spoiled about 10 quintals of teff together with other cereals and grains. Moreover it displaced people living in 83 residential houses and commercial houses. It was estimated that about 400 people were displaced because of the flood. To address this emergency situation the kebele established two committee,situation analysing and finance committee respectively.

Response to address Emergency situation

Being led by established committee the kebele tried its level best in attempt of addressing this emergency situation through community mobilization, informing to concerned bodies and mass media. After that various segments of communities were called upon to increase concerted effort and take conjoint action to address this cause. Moreover on that very day kebele youth were attending their conference it was possible to use this force to give various support to affected

people. Affected people were made to settle in kebele 09 meeting hall where they were provided with food water, clothing and other indispensable materials which was offered by kebele and community members and other charity providers. To seek other on going support the kebele notified extent of the problem to other kebeles who reside in the vicinity to the affected one. Since the onset of the calamity till now Federal police members played very significant role in protecting properties of affected people including maintaining peace as usual. As informed by kebele health workers since the onset of the flood there has been no encountered health problem including diarrheal and other communicable diseases. The team discussed in detail about the potential threats of communicable diseases occurrence in the future with kebele health workers and recommended that ongoing preventive health education be given to community members on continuious basis. More over the team decided that close follow up should be made to address after effect of this disaster through case identification, detection, confirmation and reliable management and further follow up for possible intervention activities to be undertaken.

Second follow up:

As mentioned above follow up task was accomplished in attempt of evaluating the situation of the disaster. Basically there was no new finding apart from those seen on first visit. No signs and symptoms of diarrhea and other communicable diseases. The team saw location , source and and status the sewage and sewer system which was indeed poor and if prompt measures are not taken to minimize potential danger the likely hood of encountering flood in the coming rainy season will be high. More over the team also discussed with kebele health workers about ongoing health education which should be given to different segments of communities, together with efforts to be made to address issue of poor sewage and sewer system and other aspects of envoironmental health protection and minimize sanitation problems.

Recommendation:

Based on aforementioned situational analysis (follow up report evaluation) the following recommendations were made.

1. Collaborative activities have to be undertaken to clean the sewage and sewer system.

2. Awareness creating (public) have to be undertaken to various segments of communities with regard to environmental health protection and sanitation level improvement.

3. Regional health bureau and Kirkos Sub-city officials have to reach consensus to act conjointly to address this issue

4. Material, technical and other supports have to be sought from communities, donors and other concerned bodies to execute mentioned tasks.

5. Mass associations have to be mobilized (youth, Women) to support intervention activities.

6. Other diseases preventing and controlling activities have to be accomplished to minimize the likely hood of potential danger of disaster (Flood)

7.2: Report on Investigation on of Humanitarian Need assessment in SNNPR, July, 2010.

Executive summary

Belg season assessment was conducted from June 19 to July 8, 2010 in selected Zones and Woredas of SNNPR. Assessment was done on food and non food causes of hazards. Food causes of the problems were after effects of Drought, flood and the like. Non food causes of encountered problems resulted from diseases particularly communicable diseases. The objectives of the assessment was to determine magnitudes of hazards of various sort, identify risk factors, Identify vulnerable groups and make recommendations to take reliable intervention measures to address problems encountered. According to the findings of the assessment top five diseases which were incriminated to cause morbidity were Malaria, Pneumonia, intestinal parasite, diarrheal diseases and skin infection respectively. There was ongoing Measles outbreak in Bensa and Arorresa woreda in Sidama zone and West Badawacho woreda in Hadiya zone. There was malaria outbreak in Alicho woreda Silte zone and kemba woreda of gamogofa zone. Unlike the situation of outbreaks of AWD that occurred last year AWD cases were not encountered in Woredas as that of the previous year. There was no marked increase in number of communicable diseases. There was pressing problems of drugs and other necessary materials in all visited Woredas. All visited Woredas guide lines for management of AWD, Measles, Malaria and Meningitis. There was clear problem in reporting system in most of visited Woredas. 97% of visited woredas did not have or did nor prepare EPRP (Epidemic prevention preparedness and response. Co-ordination of multi-sectoral resoponse was present but far from being adequate in most of visited Woredas. There was a transport problem to reach inaccessible and distant areas. In some Woredas there was communication problem due to absence/interruption of Tele, Fax, E-mail and the like. Regarding nutrition there was shortage of -75 and F-100 in centers wherefood supplies are provided.There were 344,433 who were at risk of contracting malaria as result of which need ITN provision.There were 1,294,418 people at risk of being affected by AWD . Identified at risk population for Meningitis was 284,152. Provision of necessary supplies and logistics, strengthening of multisectral response co-ordination, Availing EPRP, periodic supportive supervision and intervention measures be taken to address problems encountered.

Background

Southern Nations Nationalities, Peoples Regional State is one of the Regions in the Federal republic of Ethiopia with estimated total population of 16,209,249residing in about 18,000 sq. km, living harmoniously with different languages diversity and has 56 ethnic groups. It is administratively divided in to 13 zones, 8 special Woredas, 125 woredas and 22 city administrations. Functional health facilities in the region are 21 hospitals, 164 health centers and 2904 health posts. There are 116 general practitioners, 177 health officers, 2706 Nurses, 428 Environmental health workers, 428 Laboratory technicians and 7242 Health Extension workers.

Communicable diseases among others have been commonest causes of morbidity and mortality in the region. Among communicable diseases which afflict people of the region includes AWD (Acute watery diarrhea), Measles, Meningitis and the like. Unreserved efforts have been made both regionally and nationally to prevent and control communicable diseases and others so far. The purpose of this assessment was to determine type, magnitude, risk factors, vulnerable groups and make sound recommendations to prevent further spread and mitigate their adverse effects.

Objectives

1. To assess the extent, types, magnitude, severity and likely of the different

Hazards (human epidemics and floods, etc) and risks to the population in the most vulnerable *Woredas* (including to identify the most vulnerable populations) for Health and Nutrition emergencies in selected Woredas of the region

- To identify areas where emergency assistance (health and nutrition) might be needed during the next six months of the year 2010 due to acute problems and come up with reasonable estimates of the size of the population needing emergency assistance for the upcoming 6 months period. Based on the findings of the assessment and the need to address potential emergencies, to develop necessary plans and complete preparedness actions early in the Health and Nutrition sectors for adequately addressing the potential emergencies

Methodology

Seasonal non food emergency need assessment for the year 2010 belg was undertaken on Health and Nutrition in the most vulnerable woredas of the Region. Hot spot woredas selected for seasonal assessment were identified by the region and then by zonal health department to be Shashego, East Badwacho, West Badwacho, Soro , Lemu , Kacha Bira, Tembaro, Doyogena, Mareko, Meskan, Kadida Gamela, Mirab Abaya, Zala, Kemba, Demba Gofa,Duguna Fango, Damot Woide, Humbo, Boloso Bombe, Konso special woreda, Hamer ,Dasenech, Derashe Special woreda, Bena Tsemay, South Ari,. Boricha, Bansa, Aroressa, Lokka Abayya, Hula, Hawassa zuria, Amaro, Burji ,Derashe and Burji special woredas, Lanfuro, Silti in Hadiya, Kembata Tembaro, Guragie,Gamogofa, Wolayita, South Omo, Sidama and Silte Zones

Both secondary and primary non food related data were collected using different checklists as an assessment tools. Regional, Zonal and Woredas level briefing and discussions were held prior to data collection together with the food assessment team. Concerned Regional, zonal officials and respective Woreda sector offices were interviewed during data collection. In addition randomly selected visit was made at sample OTP sites in the selected hot spot Woredas. Debriefing was done to respective Woredas, Zones and Region which was vital to communicate important findings to address problems encountered during the assessment period in all selected sites.

5: Findings of Health Emergency

5.1: Health Emergency Preparedness and IDSR at different level

Majority of districts 34(97%) and all zones do not have EPRP. Most of districts have trained health workers on Nutrition 96.2%, Malaria 84.6%, EPI 96.2%, IDSR 96.2% and PHEM 84.6%

and No Woredas has adequate stock for emergencies.Woredas with IDSR Timeliness Report Less than 85% were 9(28%)

5.2 Diseases condition

5.2.1 Malaria

Report of outbreak from

- Amaro Liyu Woreda in Keyate Kebele-
  - 308 cases (154 investigated, 125 positive for P.Falciparum, 24 positive for P.vivax)
- Kemba woreda-outbreak of malaria (Cases 1637)-Ongoing

1st top on list in
Amaro, Zala, Mihrab Abaya, Kemba, Demba Gofa,
Humbo, Damote Woide, Bolloso Bomba, Dugna
Fango

Woredas with ITN Coverage of Less than 80%

- Burji Special woreda-20%
- Aroresa-21%
- Meskan-45%
- Silte-67
- Bolosso Bombe-75%
- Lamfro- Data was not collected
- Mareko- Data not collected
- Hulla-Not applicable

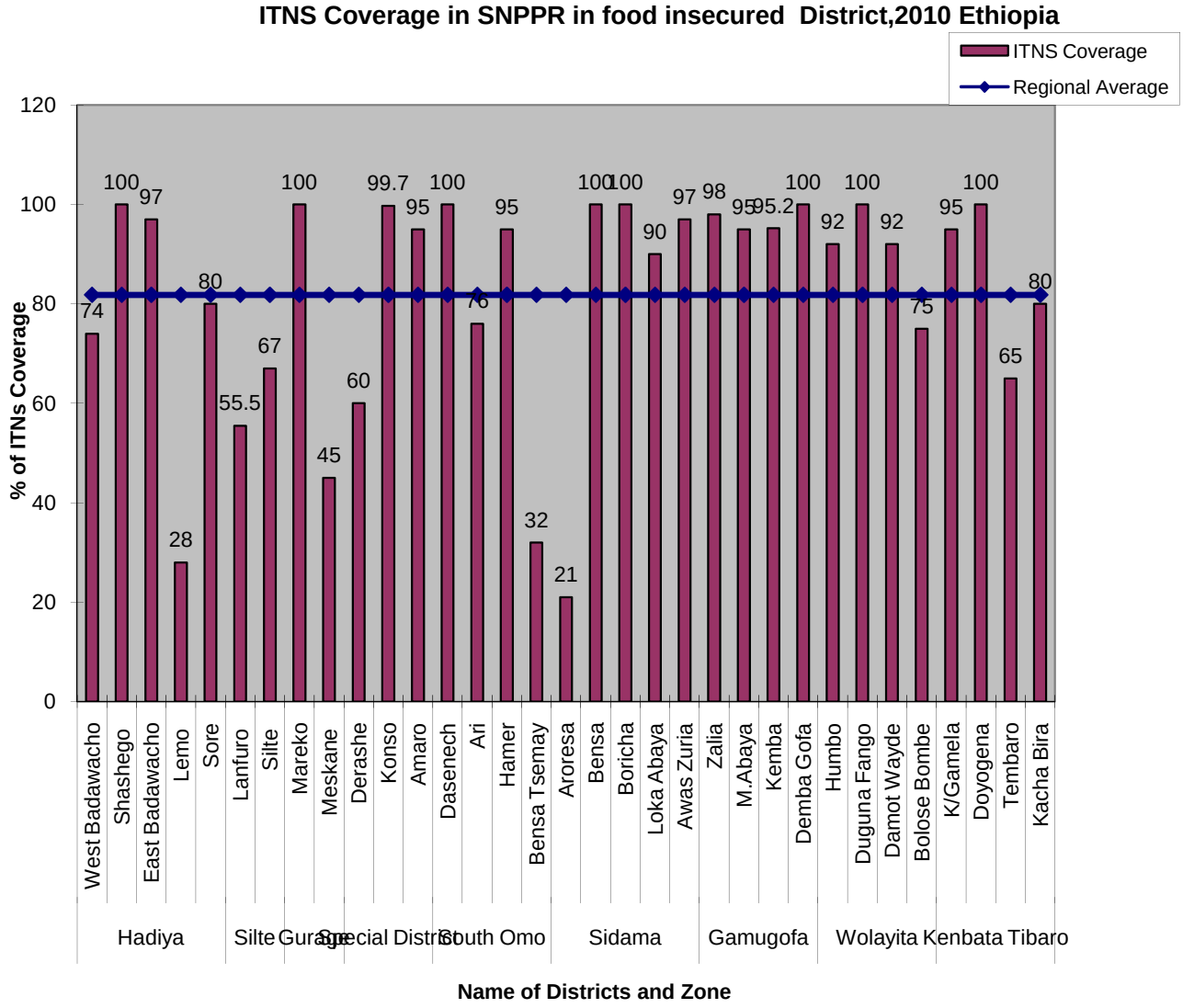

Figure 7.1.1 ITNS coverage in SNNPR in food insecured districts, SNNPR, Ethiopia, 2010

5.2.2. AWD

- Reported in the last 9 months from Boricha, Dugna Fango, Humbo, Damot
- Woide, Konsso, Dasench, Sorro, Mareko, Silite, Lamfro
-

5.2.3. Measles

Ongoing outbreak Aroressa, Bensa, South Ari, Benna Tsemay, West Badawacho

- Age shifting in Aroressa and Benssa
- There was report of epidemic in the last month in Hulla

5.2.4. Meningitis

Almost all the visited woredas are at risk of meningites

Identified Top five causes of morbidity which afflict people in the southern nations nationalities and peoples region (SNNPR) were: -

1) **Malaria**
2) **Pneumonia**
3) **Intestinal Parasites**
4) **Diarrheal Diseases**
5) **Skin Infections**

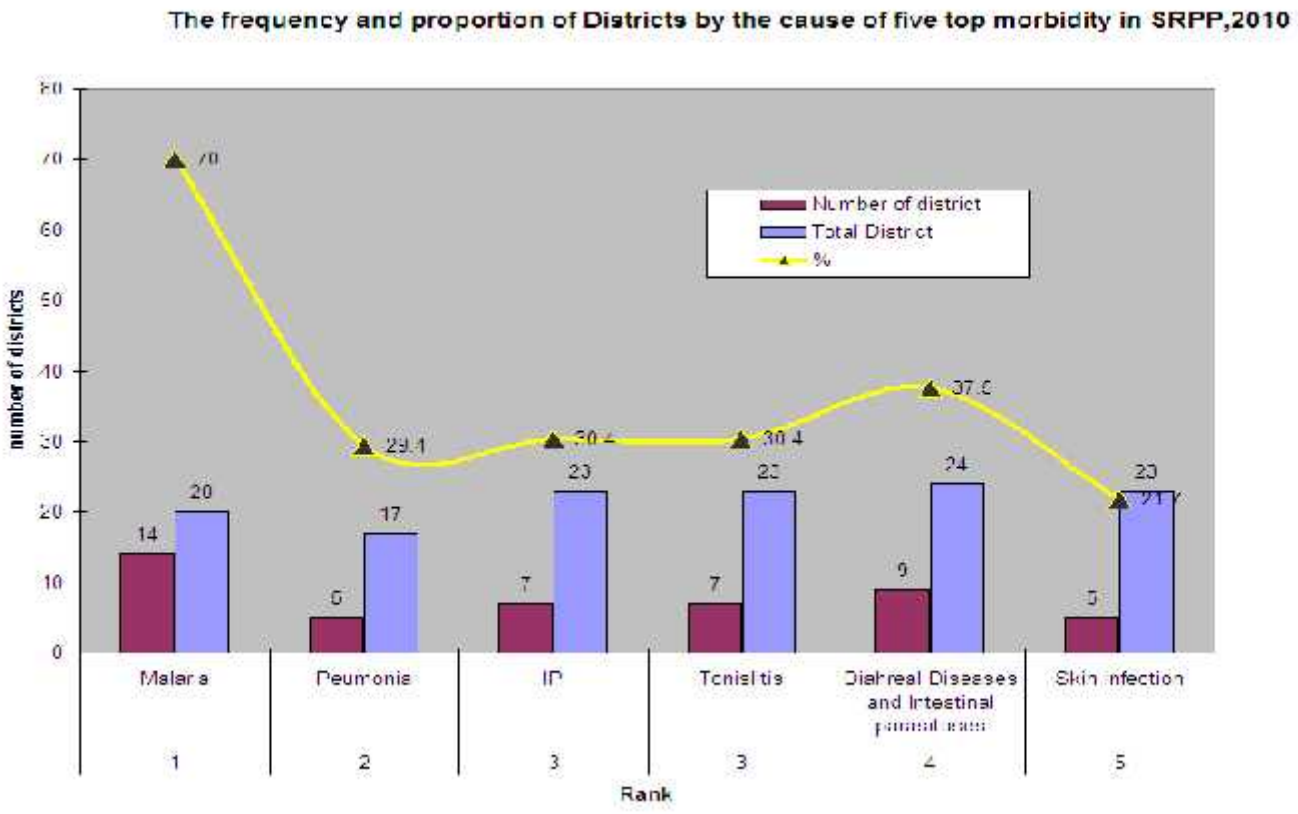

Figure 7.1.2 Frequency and proportion of Districts by cause of five top morbidity in SNNPR, Ethiopia, 2010

5.3 Vaccination Coverage

Proportion of Districts by EPI coverage and Human Resources

Among visited Woredas 67% (17) of them had pentavalent coverage of>80%. Twenty (74.1%) had Measles coverage of >80%. There was no woreda which has health officers <2, Less than 5 Nurses and no Laboratory technician in all visited Woredas during assessment period.

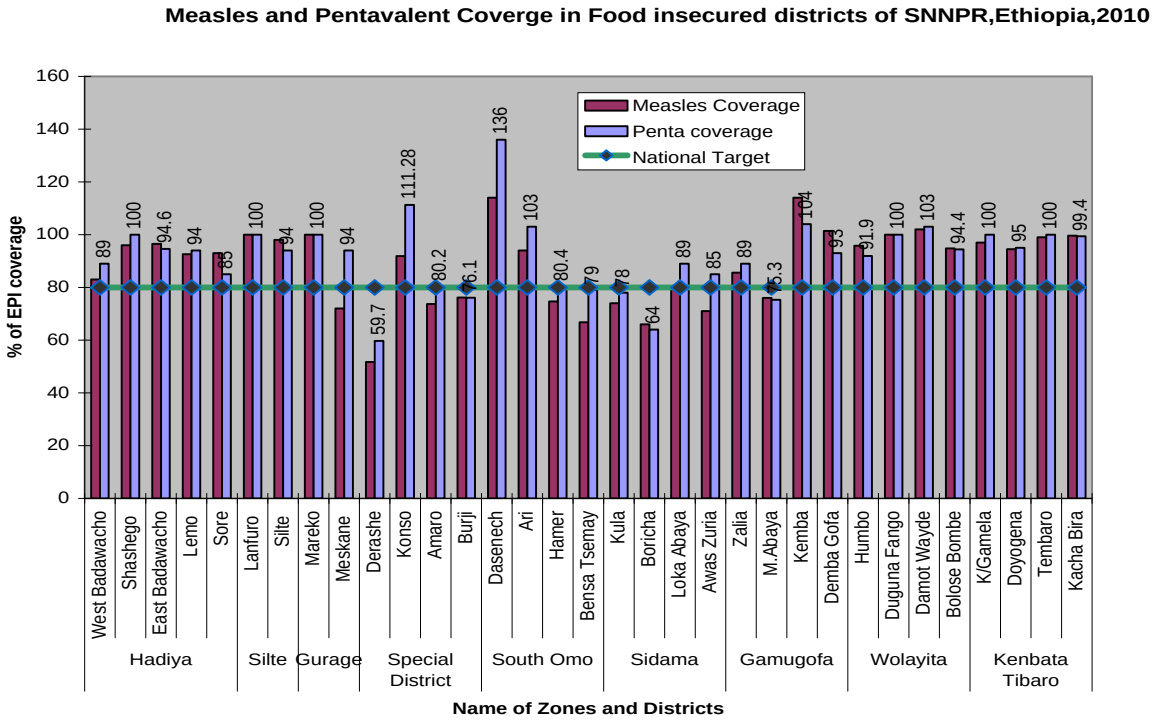

Figure 7.1.3 Measles and pentavalent coverage in food insecured districts of SNNPR, Ethiopia, 2010

1.2 Ongoing Outbreak

Regarding ongoing outbreaks in SNNPR, There was ongoing malaria outbreak in Alichoworeda in Silte zone. Nine villages (41%) were affected in mentioned Woredas with case fatality rate of 0.3%. In addition to this area there was also ongoing outbreak of malaria in Kemba woreda, Gamogofa zone. Regarding situation of Measles there was an ongoing outbreak of Measles in West Badawacho,Hadiya zone. In this woreda from 22 kebeles 13 (59.1%) were affected by measles and its attack Rate was7.4 per 1000

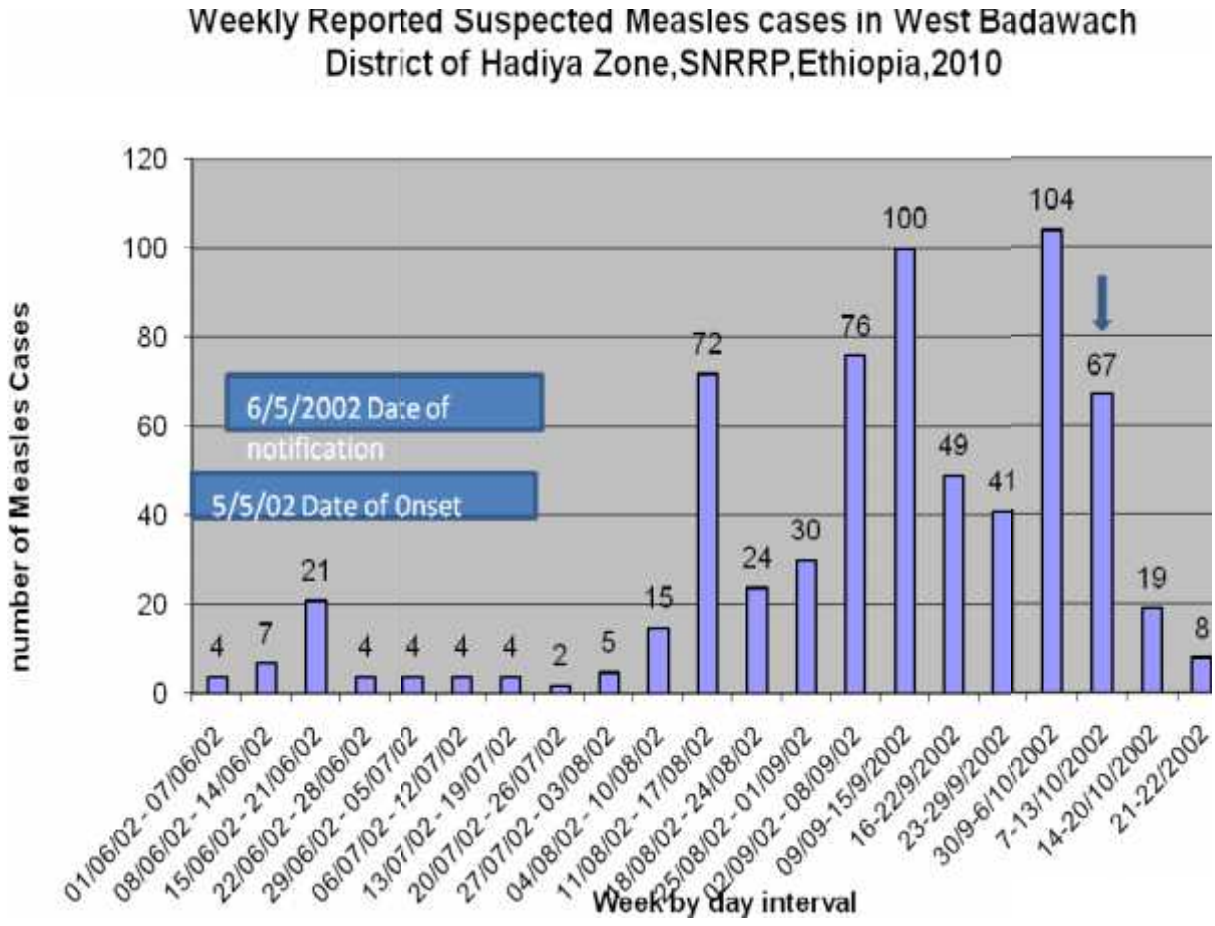

Figure 7.1.4 Weekly Reported suspected Measles cases in West Badawacho district, Hadiya zone, SNNPR, Ethiopia, 2010

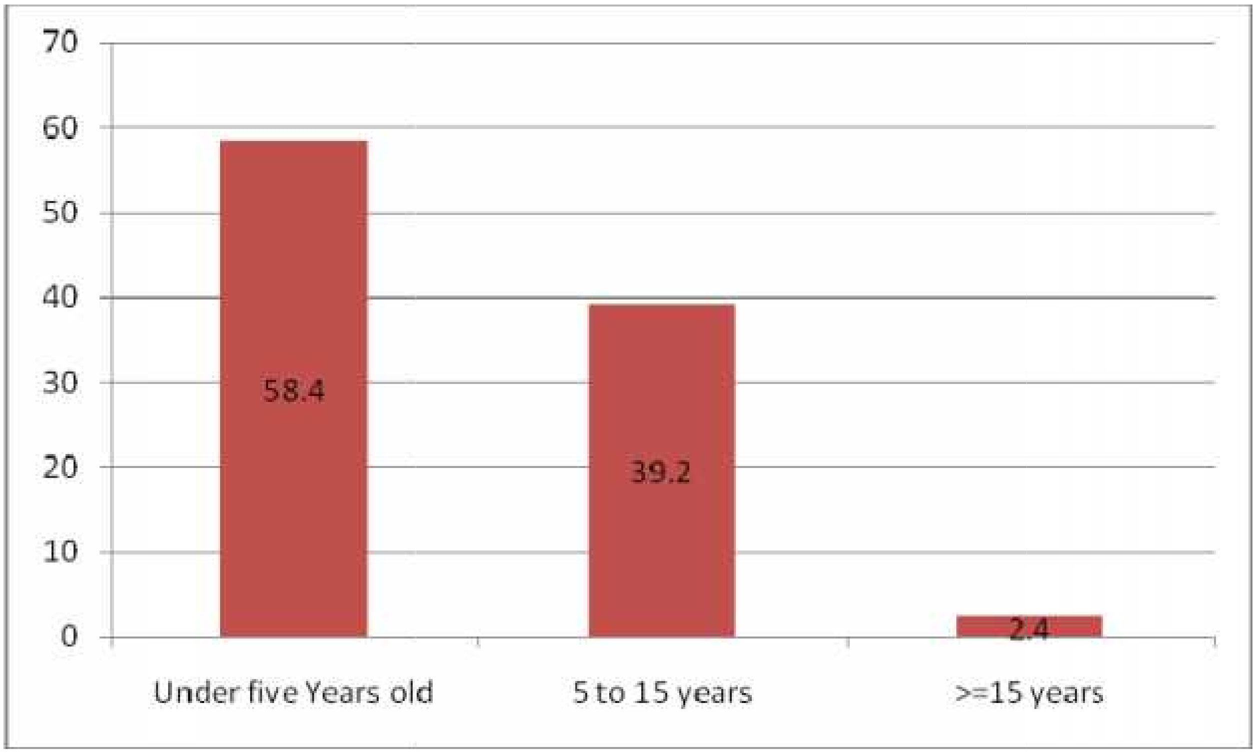

Figure 7.1.5 Distributions of Measles cases by age in W.Badawacho district of Hadiya zone,

2010

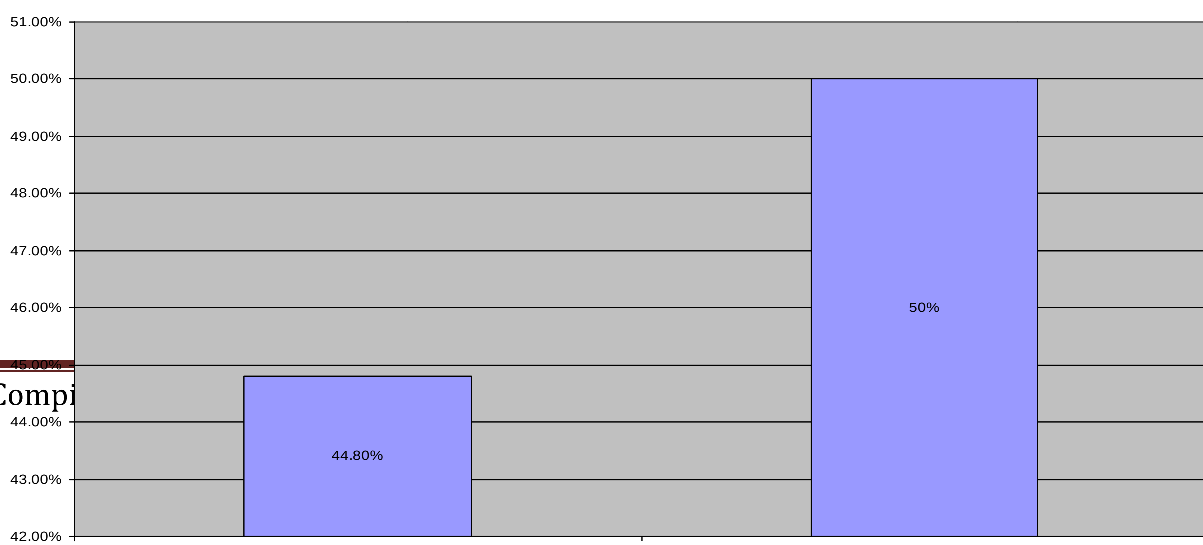

Figure 7.1.6 Measles vaccination status of 42 measles cases in West Badawacho district, in 2010

5.5 **Nutrition Emergency Need Assessment Findings**

- Unlike the previous year same period, the year 2010 belg rain onsets timely and the region received sufficient rain both in amount and distribution.
- Timely plantation of belg crops was thus possible in belg producing woredas of the region.
- Belg crops like irish potato, sweet potato, green maize, Haricot bean and green cabbage among others are under harvest currently in belg producing woredas of the region.
- The year 2010 belg crops harvest is reportedly better compared to the previous year same period though production of root crops is highly reduced due to excess rain occurred during harvest season (May 2010).
- production and productivity of livestock has also been improving due to improved pasture and water availability in the region.
- Besides, the year 2010 meher rain onsets timely and is expected to further improve food availability at household level in SNNPR
- Compared to same period of last year and preceding months therefore, SAM cases have been declining in all aforementioned woredas and further decline is expected here after.
- SAM cases are still apparent in eastern part of Gurage and Silte zones since the year 2009 meher harvest was performing poor.
- As per the record in Butajira Hospital, a total of 88 children were admitted during January-June 2010 period
- SAM cases reported for the last 5 months period in SNNPR in general and visited 26 woredas in particular is depicted here under as follows.

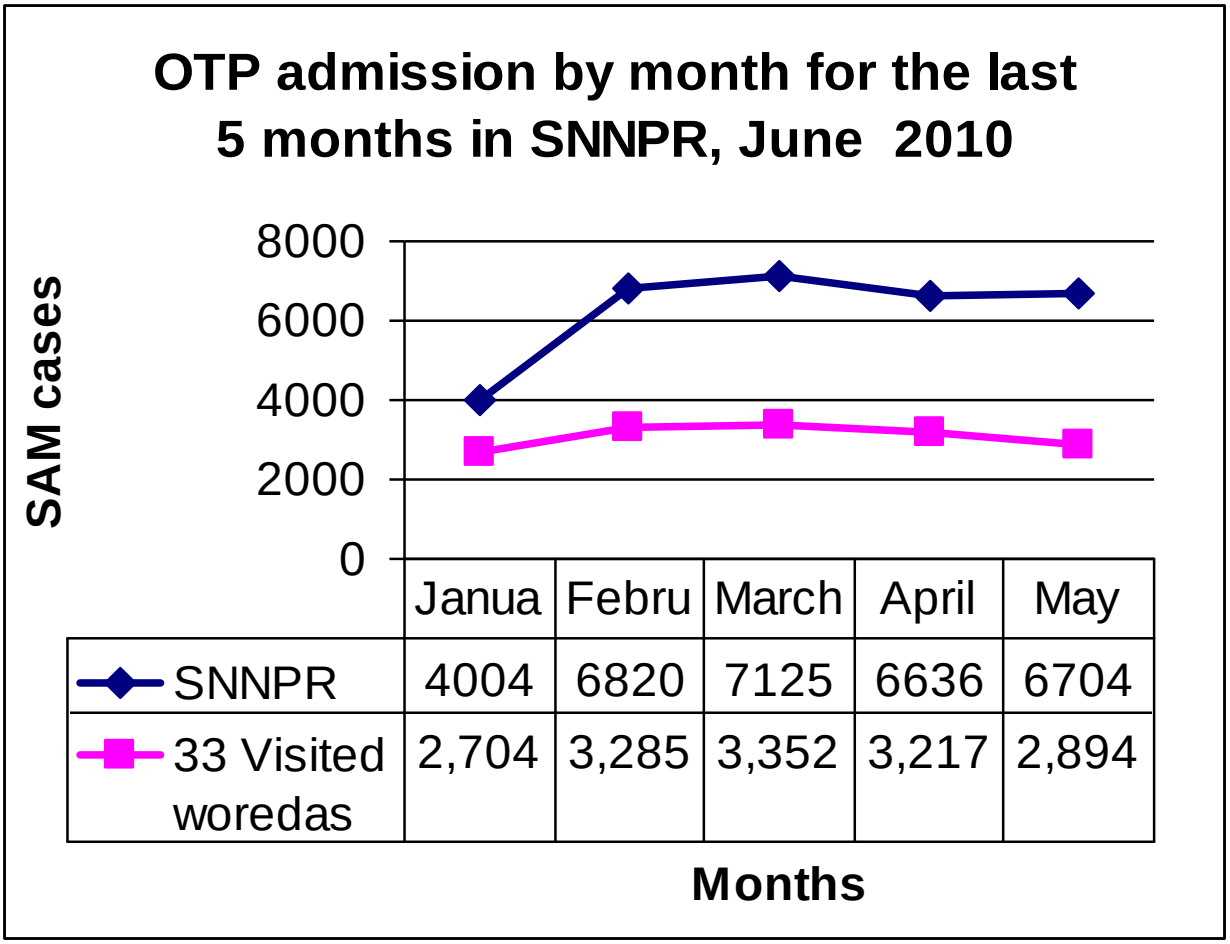

Figure 7.1.7 OTP admission by mouth for the last five months in SNNPR, June 2010

- As indicated above, OTP admission for the month of February and March was increasing
- at a decreasing rate followed by declining trend from the month of April 2010 onwards.
- It was not an actual increase in SAM cases on the ground but increase in the rate of reporting, inclusion of additional OTP sites and improved reporting quality among others

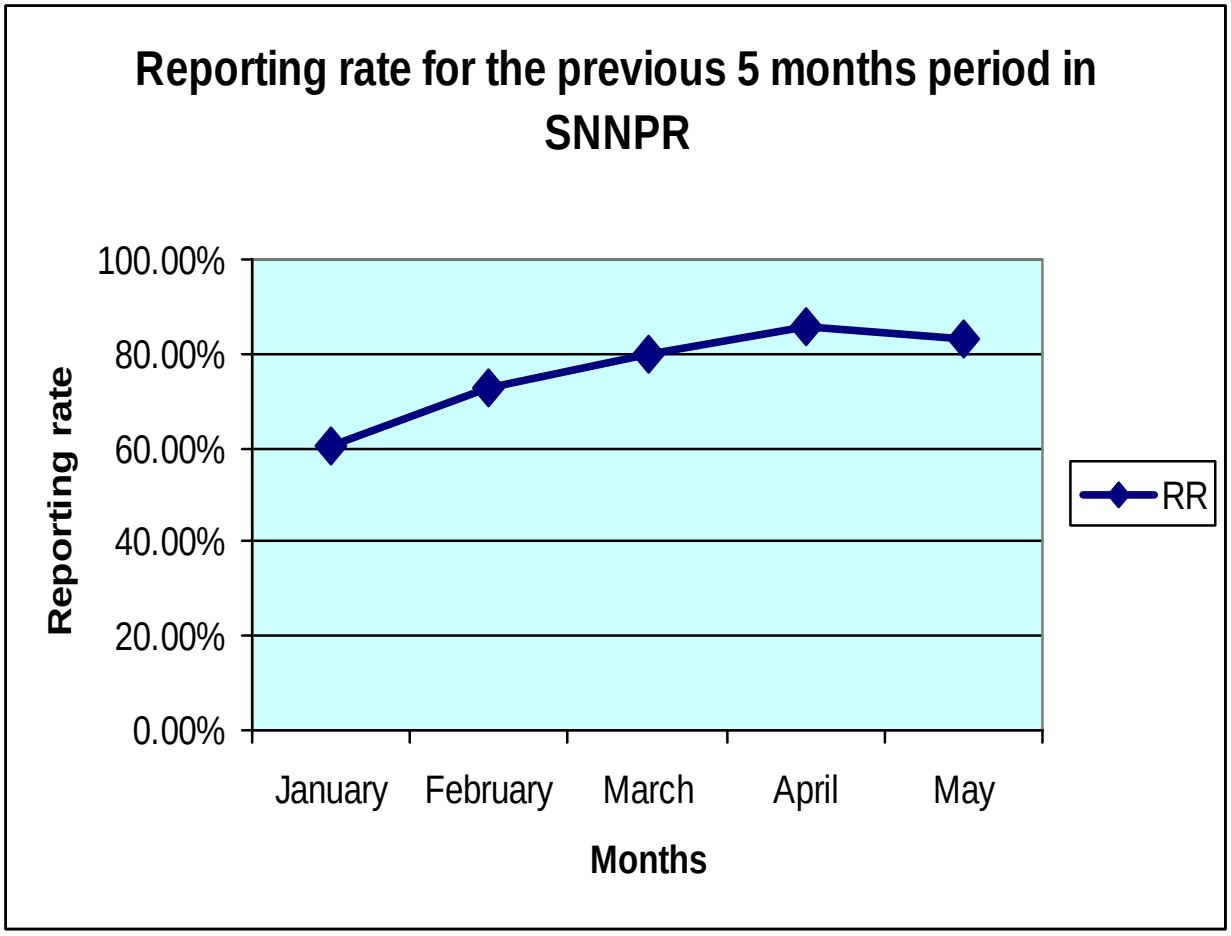

Figure 7.1.8 Reporting rate for the previous 5 months period in SNNPR, June 2010

Positive findings and Challenges

As evaluation of humanitarian needs assessment undertaken in selected priority woredas of SNNPR clearly indicated intervention activities to address issues of humanitarian needs were relatively in good state of condition. Efforts made to address encountered problems with regional

health bureau; partners and communities at large were promising. Implementation of multi sectoral response in addressing problems of epidemic prone diseases was good eventhough not well coordinated. Efforts made to enhance active involvement of communities through mass mobilization and community conversation forums were encouraging. Eventhough efforts being made by priority woredas, included zones, regional health bureau, partners and others concerned are encouraging following challenges were encountered.

Pertaining to nutritional humanitarian need, supplementary food to distributed for children discharged from OTP was absent in some woredas and was inadequate in some others which indeed increased readmission rate. There was shortage of F-75 and F-100 and routine drugs at feeding sites and shortage of timely delivery and distribution and transport of OTP and SC supplies. Moreover there was inconsistent OTP reports and unavailability of information on monthly reporting rate particularly in woredas of South Omo zone. In face of emerging and remergingdiseases / changing climatic conditions availability and proper distribution of necessary materials useful in intervention activities is of vital importance but as as assessment findings clearly indicated there was shortage of emergency drugs, vaccines,logistics, laboratory supplies in most of priority woredas. Inaddition epidemic prone diseases outbreaks such as malaria, measles, AWD and others occur in similar season of the year so epidemic prevention reponse plans have to be prepared before season of occurrence and communicated to responsible authorities and partners for possible intervention measures to be taken to prevent and control outbreaks and increasing awareness of IDSR persons with regard to public health emergency management should be maintained but as findings indicated there was lack of EPRP and there was low level of awareness on public health emergency management (PHEM) activities. Eventhough there was established multi sectoral reponse coordination of outbreak prevention and control task forces its functionality and strength was limited. The fact that undertaking ongoing surveillance activities has vital importance to identify health problems and take corrective measures there was serious problem of timely reporting and completeness of reported data in most assessed woredas. There was also problem of allocating earmarked budget for surveillance activities. Moreover there was significant gap in timely communicating occurrence of outbreaks and investigation findings to those in need to undertake intervention activities to contain outbreaks. There was also shortage of transport vehicles in selected woredas to deliver

materials needed for intervention and transport rapid response team to areas affected by outbreaks.

Table 7.1.1: Beneficiaries of public health emergency interventions

Public Health Emergency	Intervention	Districts		Total population	Risk population	Beneficiaries	Items Description	Quantity required
		Total	Targeted Districts					
	ITNs Distribution	35	34		344,433	344,433	ITNs	344,433
	Case Management of uncomplicated Malaria	35	34		313730	313730	Coartem	313730
	Sever and complicated case management	35	34	4718130	15687	15687		15687
Malaria					15687	15687	Quinine 300mg tabs	376488
					15687	15687	Quinine 300mg/ml	313740
					15687	15687	Iv fluids of 1000ml	156870
Outbreaks					15687	15687	40% dextrose	94122
	Distribution of water purifiers	35		4718130	1294418	1294418	Water purifiers/bottle	
	Case Managements				2589		ORS	16829
							Ringer's Lactate 1000ml	3107
							NG Tube	259
Acute Watery Diarrhea (AWD)							Doxycycline 100caps	1554
						2589	Erythromycin 250 mg Tabs of 1000 tabs	6214
	Vaccinatio	3	2	4718	284152	284152	AC Vaccine dose	284152

Meningococcal Meningitis	n	5		130				
Epidemics	Case Management					569	Crystalline Penicillin	2845

Recommendations

As clearly explained by conclusion of the assessment following recommendation were made.

Ultimate goal of undertaking humanitarian needs assessment is to determine magnitude of the problem, identify risak factors and groups and communicate findings to take appropriate measures to reduce impacts and prevent and control disasters and communicable diseases. Therefore there is a need to deliver supplementary food both for EOS program and for those discharged from OTPs giving special attention so as to achieve sustainable decline in SAM cases and improve the food security situation. Availing, allocating and distributing required logistics, supplies and other materials in due due time is very important and should be addressed byrespective woredas, zones, regional health bureau and partners. Regional health bureau has to organize and provide trainings on EPRP (epidemic preparedness response planning) and public health emergency management (PHEM) to IDSR focal persons working in health offices and health facilities at all levels. Unreserved efforts have to be made to strengthen multi sectoral reponse coordination at all levels. Surveillance activities which are geard to identify ongoing problems in diseases situation should be improved and strengthened. Moreover timely supportive supervision, periodic monitoring and evaluation and demand driven research activities have to be conducted and their findings be communicated to address problems of humanitarian need in affected woredas of SNNPR.

Chapter VIII – Protocol/Proposal for Epidemiologic Research Project

7.1: Five years (2006-2010) magnitude determination and trends identification of road traffic accidents in Southern Nations, Nationalities and Peoples region (SNNPR) and Oromia Region

Summary

Introduction: - Road traffic accidents occurring on public pathways have been increasingly becoming commonest causes of severe illnesses, deaths and disabilities throughout the world. Over 3000 people die on the world's roads every day. Total of 1.3 million people killed every year and estimated 20 to 30 million people sustain non-fatal injuries. If trends continue unabated death will rise to an estimated 2.4 million a year by 2030 and make road traffic accident to rise to fifth in the leading causes of death from current 9th place around the world. About 85% of all global road traffic fatalites, 90% the disability-adjusted life years lost due to road traffic accidents and 90% of children killed worldwide occur in low-income and middle-income countries. Magnitude of the problem is more pronounced in African countries among others. Death rate of road traffic accident in Africa is 32.2 people per 100,000 as compared to 11 people per 100,000 in Western Europe (2010). In 2003 death rate in Ethiopia was 136 per 10,000 vehicles. Magnitude of road traffic accidents in mentioned study areas is not well ascertained because of unavailability of data at hand but as objective reality of road traffic accident in the country entails it is expected to increase. Purpose of this assessment is to undertake an epidemiological investigation and communicate findings to responsible authorities and those concerned to address this cause.

Objectives: The aim of this study is to assess the magnitude and trends of road traffic accidents, perception, knowledge, and attitudes of long distance and taxi drivers in Southern Nations, Nationalities and Peoples Region (SNNPR) and Oromia Regions.

Methodology: Analytic retrospective study will be conducted using five years secondary data from SNNPR and Oromia Regional Traffic Police Bureaus from 2006-2010.

Additional cross sectional survey and qualitative interview among drivers will be done to assess their knowledge, attitude and perception about road traffic accidents and associated factors.

Work Plan: - Both Analytic retrospective and cross sectional survey will be conducted within period of three months and estimated budget to execute the study amounts 45,710 (Birr)

Introduction

1.1 Background

Road traffic accidents are increasingly becoming pressing public health problems of the world. Currently it is having far reaching consequences in terms of causing severe illnesses, deaths and disabilities. Every day 3000 people die on the world's roads. A total of 1.3 million people die and estimated 20 to 30 million people sustain non-fatal injuries (1-2). Magnitude of the problem is more pronounced in developing countries. Africa has the highest death rates per population in the world-32.2 people per 100,000 populations are killed in road crashes compared to 11 per 100,000 in Western Europe (3). Road traffic accidents kill 200,000 people every year in the continent. Situation of the problem is worse in Sub-Saharan region (3). Ethiopia is experiencing highest rate of such accidents resulting in fatalities. According to results of research done in the country in 2009 there were 85,842 accidents of which 8,696 were severe injuries and there were 2,800 deaths from 2004-2008. The results of trend analysis of traffic police data of ten years (2000-2009) showed that there were 25,110 injuries of which 7526 were severe and 3415 were deaths. Pedestrian males were more affected and this group belongs to most productive elements of our society (4). Moreover findings of Injury registry assessment done in Tikur Anbassa hospital in 1999 showed that from total of 3822 registered patients 2869 (75%) were males and 953 (25%) were females. Findings of undertaken assessment also revealed that from total of registered injuries in 1999 of the hospital 879 (23%) were intentional and 2943 (77%) were

unintentional. From total of 2943 registered unintentional injuries 1206 (41%) were caused by road traffic accidents and pedestrian injury accounts for 1122 (93%) of the total (15).

1.2 Problem Statement

Magnitude of road traffic accidents is not well known. In Ethiopia, however existing studies showed that the highest rate of death per vehicle in the world (WHO, 1999). About 80 people die in Ethiopia per 10,000 vehicles as compared to one per 10,000 in Japan (8). Factors which increase vulnerability to road traffic accidents include: - Low level of status of roads, inadequate maintenance of available roads, inadequate law enforcement, driving after taking alcohol and drivers not conforming to rules and regulations of traffic laws. There are also gaps in collaborative actions to be taken to prevent and control road traffic accidents. As a result magnitude of the problem is increasing more than ever. Most people who are victims are pedestrians who are within age group ranging between 15-44 years. Moreover awareness creating activities to general public is not dependable. Therefore if this problem is left unchecked the situation of road traffic accident is expected to be worsened and by the year 2030 it will be 3rd among top burden of diseases (8)

1.3 Expected outcome

The ultimate goal of this study is to investigate the issue of road traffic accident thoroughly and generate evidence based information which can be used to take necessary intervention to address this cause.

1.4 Rationale

As mentioned above the situation of road traffic accident is worsening as result of which it is among pressing and priority deserving public health problems. If proper problem identification through research activity not done and left aside the problem may have tremendous impacts in terms of causing severe illnesses, deaths and long-lasting disabilities. In face of the low socio-economic development status of the country it is not advisable to leave this problem unchecked. Prevailing objective situation strongly presupposes making unreserved efforts to address this problem. Therefore, there is convincing evidence that this problem be epidemiologically investigated the findings of which to be communicated to serve as weapon for strategic intervention activities tackled through coordinated and conjoint efforts.

Literature Review

Road traffic accidents occurring on public pathways have been increasingly becoming commonest causes of severe illnesses, deaths and disabilities throughout the world. Trends of fatalities and severe injuries due to road traffic accidents showed increasing pattern particularly in least developed nations of the world in the last decade. In 1998 there were 170,118, 125,959, 106,757, and 118,608 registered fatalities in Africa, Americas, Europe and South East Asia regions of the world respectively. Assessment findings of road traffic injuries also showed that there were 6,116, 559, 4, 410,736, 3,213,104 and 3,997,631 registered non fatal injuries in WHO regions of Africa, Americas, Europe and South East Asia respectively in the same year.

Findings of assessment done to determine current global magnitude of Road traffic accidents revealed that over 3000 people die on the world's roads every day (1). Total of 1.3 million

people are killed every year and estimated 20 to 30 million people sustain non-fatal injuries. If trends continue unabated death will rise to an estimated 2.4 million a year by 2030 and make road traffic accident to rise to fifth in the leading causes of death from current 9th place around the world (1- 2). Pedestrian males within age range between 15-44 years are most affected 2nd to HIV-AIDS (3).

Currently numbers of severe injuries encountered during road traffic accidents are increasing more than ever as a result of which there is a compelling reason to use one bed in ten for road traffic victims in many countries of the world (3- 4). The global financial cost of road traffic injuries is US$ 518 billion per year and the cost to low income and middle income countries is US$ 65 billion which is more than all incoming development AID. Financial cost of road traffic accidents in 15 EU countries is 180 billion pounds which equals annual budget of the organization. Even though it is having far reaching impacts throughout the world the burden on developing countries is more pronounced (3-6). Magnitude of the problem is four times higher in developing countries than in developed. In developing countries road traffic accidents rank among top ten leading causes of injuries ranking eleventh among the most important causes of lost years of healthy life. Over 90% of the deaths and severe injuries occur in low-income and middle income countries which have only 48% of the world's registered vehicles. In a hospital based study done in Bangladesh, 33% of hospital beds were occupied by injury related patients and 19% of the beds were occupied by injury due to road traffic accidents from which 70% belong to age group within range of 18-45 years (31).

Africa has the highest road death rate per population in the world which is 32.2/100,000 people are killed in road crashes where 200,000 people die per year (8). 50 people die per 10,000 vehicles in low income African countries as compared to 1.7 per 10,000 vehicles in developed countries (6). Economically productive young people are most at risk of road traffic injury. In Kenya at least 75% of injuries involve young family bread winners (5-10). Road traffic injuries are estimated to cost African countries between 1-3% of their gross national product. Research done to determine economic costs of road traffic accidents in some of Sub-Saharan Africa countries which includes; Ethiopia, South Africa, Zambia, Botswana and Kenya showed that traffic injuries claimed 0.8%, 1%, 2.3%, 2.7% and 5% from their GNPs respectively (7).

In Ethiopia 1,800 people died from motor vehicle accidents in 2003 having death rate of 136 per 10,000 vehicles. In reported deaths per 100,000 there were 195 deaths per 100,000 populations (13). There were 2517 reported road traffic fatalities in the country of which 78% occurred in males and the remaining 22% victims were females in the year 2006. Results of research done in Ethiopia in 2009 showed that there were 85,842 injuries of which 8,696 were severe injuries and there were 2,800 deaths from the year 2004-2008 (8). In the period of last five years 85% of road traffic accidents in the country occurred on new asphalt roads of the country and in Addis Ababa alone. From accidents occurred in the country 68% of them occurred in urban areas and 19% in the rural areas and most of accident victims were pedestrians (6-12). As trend assessment results of road traffic accidents which occurred in Addis Ababa from the year 2000-2009 showed there were 3415 deaths and 25110 injuries of which 7526 were severe. The assessment also showed that proportion of pedestrian injuries was 78%.

Road traffic injuries particularly affect the productive age group in developing countries. In 1998 the fatality rate for children aged 0-4 years was 29.5 per 100,000 populations in South East Asia and low income countries of the western Pacific region compared with 4.5 deaths per 100,000 in high income countries. For older children the fatality rate was 28.1 per 100,000 population in Africa compared with 4.8 for North America, Western Pacific countries and high income countries in Europe (5). Road traffic injuries in developed countries affect drivers as opposed to pedestrians, passengers and cyclists affected in developing countries. In US more than 60% of road crash fatalities occur in drivers whereas drivers make up less than 10% of the deaths due to road traffic injuries in least motorized countries such as (Kenya). In developing countries where most injuries occur in urban areas, pedestrians, passengers and cyclists combined account for around 90% of deaths due to traffic injuries. Urban pedestrians account for 55-70% of deaths. Research done in developing countries showed that growth in number of motor vehicles is a major factor in increasing magnitude of fatalities and injuries. In India the number of four wheel motor vehicles increased by 23% to 4.5 million between 1990 and 1993. In Vietnam, deaths increased by 31%, injuries by 16% and crashes by 12% between 2000-2001 whereas the number of motor vehicles is estimated to have increased by 14 %(5-12).

Higher number of people killed or injured per crash with low income. The numbers of people injured per 10,000 crashes were higher for Vietnam and Kenya than for the United States. The higher rates for Vietnam and Kenya are due to frequent crashes involving multi-passenger vehicles including buses and minibuses. Inadequacy of public health structure contributed to increased burden from vehicle accidents in developing countries. In 1999 in Kenya only 40% of public, mission and private hospitals were well prepared to treat trauma cases from traffic

crashes with 74% of the least prepared being public health facilities. In developing countries victims of vehicle accidents which include pedestrians, passengers and cyclists belong to low socio-economic group and could not afford cost in hospitals indicates poor access to health services. A study done in Ghana showed that only 27% of people injured in road traffic accidents used hospital services. Among patients with severe injuries, 60% of people injured in towns and cities and 38% of people injured in the country side received hospital care (14-23).

Other factors which contributed to increased level of accidents included behavior of drivers, poor status of roads, and low efficiency in driving and poor maintenance levels of vehicles. Findings of drivers behavior based study done in Michigan (US) in 2004 there were 16,694 alcohol related crash fatalities of which 39% were road traffic deaths, Young adult drivers aged 21-24 years have the highest rate of fatal alcohol related motor vehicle crashes, accounting for 31% of all such incidents (24-27). Behavioral factors (drinking) of drivers is directly associated with increased level of road traffic accidents. Findings of research done to determine magnitude of road traffic accidents in Ethiopia in 2009 showed that major causes of accidents in the country were due to behavioral (drunken driving) of drivers, lack of efficiency, low level of driving experience, lack of awareness about security and lack of technical fitness of vehicles (8). Use of safety belt while driving has greatly reduced level road traffic accidents in (US) (28-30). Cross sectional KAP study done on drivers' perception on use of safety belt in Addis Ababa in 2009 showed only 24% of drivers use safety seat belt while driving. Purpose of this assessment is to determine magnitude and trends of road traffic accidents in SNNPR and Oromia regions assess perception level of drivers in both regions and communicate findings to responsible authorities and concerned groups to take intervention activities to address problem of road traffic accidents.

2. Objectives

General objective:

To assess the magnitude and trends of road traffic accidents perception, knowledge, and attitudes of long distance and taxi drivers in South Nations, Nationalities and Peoples (SNNPR) and Oromia Regions.

Specific Objectives: -

1) To assess magnitude and trends of road traffic accidents in SNNPR and Oromia regions over 05 years
2) To identify determinants of road traffic accidents in the two regions during 05 years
3) To assess knowledge, attitude, practice and perception of long distance truck, minibus and bus drivers and urban taxi drivers on the causes and preventability of road traffic accidents

3. Methodology

4.1 Study area

This study will be conducted in South Nations, Nationalities and Peoples (SNNPR) and Oromia regions.

4.1.1. SNNPR

Southern Nations Nationalities, Peoples Regional State is one of the Regions in the Federal Republic of Ethiopia with estimated total population of 16,209,249 residing in about 18,000 sq.km. There are 56 ethnic groups living harmoniously with different languages and diversity. The region is administratively divided in to 13 zones, 8 special Woredas, 125 Woredas and 22 city administrations. Functional health facilities in the region are 21 hospitals, 164 health centers and 2904 health posts. There are 116 general practitioners, 177 health officers, 2706 Nurses, 428 Environmental health workers, 428 Laboratory technicians and 7242 Health Extension workers (SNNPR Health Bureau, 1999 (E.C)

4.1.2. Oromia Region

The region shares borders internally with Benishangul Gumuz, Gambella, and SNNPR regional states in the south and west, with Benishangul, Amahara and Afar regional states in the North, with Somali regional state in the east and internationally, with Sudan in the Southwest and Kenya in the south. The region lies between 300 40’ N to 10031’ N latitudes and 340 08’ E to 430 11’ E longitudes. The region covers an area of 359,619.8 square Kms, which is roughly 30 percent of the country’s total land mass. There are 303 administrative districts (Woredas), 18 zones and 12 town administrations in the region. There are 6500 peasant associations (PAs) and 564 urban kebeles in the region.

According to the latest census of the Central Statistical Authority (CSA), the total population of Oromia as of 1999 E.C. is estimated to be 29,362,372 with 1:1 sex ratio. Regarding health

service delivery, there are 22 hospitals, 342 health centers, 835 health stations and 3,093 health posts. About 13,164 technical health workers in the region of which 267 are Physicians (of which 215 are General practitioners and 52 are specialists), 162 health officers, 23 pharmacist, 415 pharmacy technician, 2630 different categories of nurses, 437 laboratory technicians, 42 X-ray technicians, 332 Environmental health workers, 176 health assistants, 109 malaria prevention and control workers and 8,433 health extension workers are serving in the government health institutions(Oromia Health Bureau, 1999 E.C).

4.2 Study Design

Two types of study designs will be utilized

1) For the trend analysis a retrospective analytical study will be conducted using a five year (2006-2010) secondary data from regional traffic police offices of SNNPR and Oromia
2) A cross-sectional study will be conducted using structured questionnaire to collect behavioral information from drivers on their knowledge, attitude, perception and practice towards road traffic accidents and safety measures. Convenient sampling technique will be used to collect data from 800 respondents, 400 respondents from each region. Moreover a qualitative study will be conducted using FGDs and in-depth interviews among drivers

4.3 Study Population

All cases and deaths involved in road traffic accidents within past five years and reported from 13 Zones and 8 special Woredas to Southern Nations, Nationalities and Peoples Region (SNNPR), regional traffic police and all zones of Oromia Region. Moreover, parts of Oromia in the Ethio-Djibouti high way road will be included in the qualitative part of the study.

4.4 Variables and Data collection Procedures

Variables used to be included in data collection include various characteristics of victims:

Age and gender characteristics, place of occurrence of the accident, characteristics of victims (pedestrians, passengers and drivers), time of occurrence of the accident (morning, afternoon, night, day/week end, etc…) and effects of the accident (death, severe injury, mild injury, no injury)

4.5 Data Collection Procedure

Data which will be collected include data reported to traffic police in last five years time, from structured self administered questionnaire involving respondents, focus group discussions and key informants. Ten data collectors and four supervisors will be trained on the issue of data collecting and administering procedure for three days and will be deployed in data collection and collation activities. Pre-test will be done to validate data collection process and based on analysis result corrective measures will be taken if at all problems are encountered before conducting main data collection activities.

4.6 Analysis and Presentation of Results

Road traffic accidents data will be extracted and entered using excel and imported to SPSS for analysis. The cross sectional data will be entered and cleaned using Epi-Info 3.2.1 version. Qualitative data will be transcribed and entered using open code and analyzed using thematic analysis. Descriptive findings will be presented using tables and graphs. Appropriate effects measures will be indicated for analytical findings based on the type of data.

4.7 Ethical Issues

The study will pass through the ethical procedure of the School of Public Health. In addition, permission will be sought from regional health bureaus and regional traffic police offices before undertaking research activities. Consent of respondents and office staffs will be secured before starting data collection process. Results of the study will be submitted to AAU/SPH/EFELTP office in due time and further dissemination of findings will be made to responsible authorities and those concerned and published in reputable journal.

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Work plan

Serial No.	Time Required to accomplish tasks of research Activities													
1	Proposal Development	Jan	Feb.	March	April	May	June	July	Aug.	Sep.	Oct	Nov.	De	Jan
2	Questionnaire preparation													
3	Finalizing proposal development													
4	Communicating respective regional offices and staffs													
5	Training of Data collectors and supervisors													
6	Data collection													
7	Data collation, cleaning, editing and entry													
8	Data Analysis													
9	Interpretation of Results													
10	Discussion, conclusion and recommendation													
11	Submission of Draft report													
12	Submission of Final Report													
13	Dissemination of Results													

Budget Proposal

Serial No.		*Activity Break down*	Unit of measure.	Quantity	Unit Price	Number of Days	Total Cost	Remark
I		*Training of Data Colle.*						
	1.1	*Stationary*						
	1.1.1	*Notebook*	piece	16	10		160	
		Clipboard	piece	16	20		320	
	1.1.2	*Pen*	Piece	16	2		32	
		Pencil	Piece	16	1		16	
	1.1.3	*Eraser*	piece	16	1		16	
		Sharpener	piece	16	1		16	
	1.1.4	*Training Cost*						
		Data Collectors		12	70	3	2520	For 2 regions
	1.1.5	*Supervisors*		4	100	3	1200	
		Tea/Coffee	Per/person	16	10	3	480	
II		*Data Collection*						Sub-Total
	2.1	*Stationary Cost*						
	2.2	*Photocopy (Quest.)*		8 pages/Que.		0.5x8x400x2	3200	
	2.3	*Cassette*		10	6		60	
	2.4	*Tape recorder*	1 piece				400	
II.2		*Data collectors/Sup cost*						
II.2.1	2.2.1	*Data collectors*		12	70	15	12600	For Oromia&SNNPR
		Supervisors		4	100	15	6000	
		Investigator		1	180	60	8100	
III	3.1	*Fuel*	Liter	20 lit./day	12	20x12x30	7200	For Oromia&SNNPR
	3.2	*Driver*	Person	1	70	70x45	3150	
	3.3	*Total*					45,710	

Chapter IX – Other Additional Output Reports

This chapter is designed to incorporate outbreak investigation and related health intervention activities which were undertaken either singly/ in small groups and/or tasks accomplished to address public health problems involving overwhelming majority of communities affected by various pressing health problems. Reports which were results/efforts outcomes of various intervention activities underwent and those which were not included in previous chapters are incorporated. This sub-chapter incorporates multi farious efforts made by several parties which include: local affected communities, health services providers, health offices at various levels including regional health bureaus and federal ministry of health, sectors, partners (WHO, UNICEF,etc) and by and large the public.

The report includes concerted efforts made and conjoint action taken to address most pressing public health problem in this regard (Afar region). Concerted efforts were made to prevent and control AWD in Afar. Various impact mitigating activities were undertaken by all parties to effect dependable result. Activities included as strategy used to addresss problem of AWD in Afar were, reactivation of multi sectoral task force, social mobilization, strengthening active involvement of communities, undertaking /strengthening of active surveillance, improving case search and management activities, technical support provision,undertaking supportive supervision, provision of needed logistics and supplies, incidentally undertaking monitoring and evaluation and other related intervention activities were undertaken by all parties to address issue of AWD in Afar. Moreover other intervention activities accomplished else where also included in this chapter.

9.1 Joint Federal Ministry Of Health/PHEM, WHO And Unicef Mission To Afar For AWD Outbreak Response Technical Support And Performance Monitoring

Figure 9.1.1: Joint Team visiting CTCs (case treatment centers) sites, Drinking Water source (Awash River) and discussion with community members about situation of AWD, Afar, Ethiopia, July 2009

Executive Summary

Concurrently AWD outbreak is affecting in 2006, 2007, 2008 and 2009 Afar Region Transmission season and outbreak coincide with land preparation for cotton farming and harvesting. The outbreak repeatedly affected majority of migrant daily laborers and also the indigenous local Afar Community. In 2008 the AWD outbreak was late and during the harvesting time. This year the outbreak started early and situation is more serious as compared to last year. According to the woreda health offices provisional data 3,465 cases and 111(3.2% CFR) was reported as of 24 July 2009. Thus, the National Health and Nutrition Task Force recommended a joint team mission to Afar Region for technical support and monitoring of AWD outbreak response performance. Based on the recommendation joint team from FMoH/PHEM, Ministry of Water Resources, WHO, UNICEF and Awash CARE visited the region from 16-26 July 2009. The joint team identified risk factors including performance of response which facilitate spread of the outbreak.

Risk factors are lack of safe water supply, inadequate sanitation (lack of latrine and poor hygiene practice), and overcrowded living condition among the private farm. Further factor facilitating the spread of the AWD outbreak are standard guideline and protocol were not implemented as expected; lack of proactive AWD response coordination committee from region down to kebele level and knowledge gaps among health workers on case management and hygiene precaution in CTC.

Based on gaps identified the joint the joint mission team provided recommendation during the debriefing and discussion meeting at CTCs, woredas, and region: Re-activation of multi-sectorial coordination at all level(from region-kebele), structured supportive supervision including training and implementation of the recent developed AWD outbreak response and preparedness plan, urgent supply of ORS and per-positiong at kebele/health post level, investment farm provision of basic health service, sanitation facilities/latrine, safe water supply and hygiene education for the migrant daily laborers.

In addition to the recommendation provided at regional level FMoH/PHEM has to assign technical team, who can provide technical support to the region on regular base to control the outbreak

Background

Afar region is one of the four major pastoral regions in Ethiopia located in north-eastern part of the country. The region is divided in to five administrative zones, which are further subdivided in to 32 woredas and 358 kebeles. The regional population is estimated to be 1.7 million of which 90% are pastoralists and 10% agro-pastoralists. Afar region is also one of the regions in Ethiopia where private investment farm and Government state farm are operational. The majority of the region is characterized by exposed rocky and sandy land categorized under desert and semi desert agro- ecological zones. Topography of the region is plainly with altitude ranging between 1500masl in the western high lands to 120mbsl in Dalol/Danakel depression. Annual average precipitation is very low ranging from 150mm-500mm and average annual temperature ranges b/n 20ºC and 48ºC.

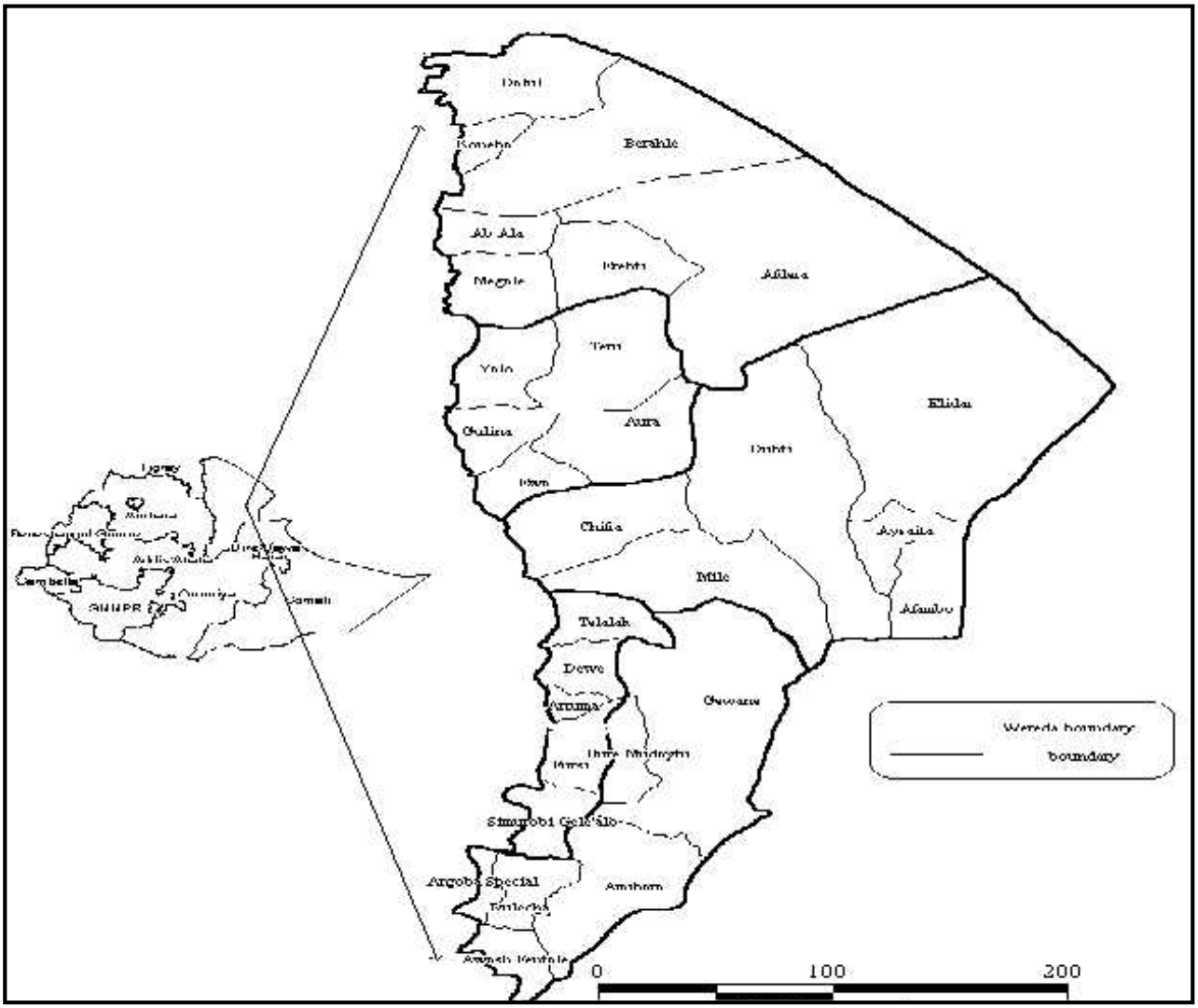

Figure 9.1.1b: Map of Afar Regional State

As the region is one of the emerging regions; social services such as health, education, water supply and sanitation are very low as compared to other regions of the country. Potential health service coverage is 39% (3hospitals, 14 health centers, 46 clinics, and 78 health posts in the region Currently in AWD affected and at high risk woredas health workers are available as depicted in table 1.of the total 182 health professionals only 32(17.6%) received formal in-service training on AWD

Table 9.1.1: Available health professionals staff in affected and at risk woredas

Woreda	Medical Doctor	BSc Nurse/HO	Diploma Nurse	Junior nurse	Environmental Health Technicians	Total Professional health workers	Trained staff in AWD
Amibara	1	3	15	4	2	**25**	2
Buremedit u		2	3	1	1	**7**	2
Gewane		2	5	2	2	**11**	2
Awash Fentale		5	13	4	2	**24**	2
Dubty	6	3	14	7	1	**31**	2
Asayita	1	4	12	9	2	**28**	2
Adear		1	3	0	0	**4**	2
Mille		3	6	4	1	**14**	2
Elidaar		2	1	0	2	**5**	2
Dalifege	2	2	4	1	2	**11**	2
Dawe		3	3	2	1	**9**	2
Afedera		2	6	1	0	**9**	0
Bidu			2	1	0	**3**	4
Kori		1			0	**1**	4
Afambo		4	1			**5**	2
Total	**10**	**37**	**88**	**36**	**16**	**182**	**32**

Potable water is a critical problem in rural areas of the region. The main source of drinking water for the rural population is Awash River, unprotected pond, hand dug wells, very limited shallow wells and motorized boreholes. In some parts of the visited areas there is lack of sufficient quantities of water that hinder the ability of rural population to practice good personal hygiene, food hygiene (food safety) which would greatly assist in stemming the tide of water- borne diseases including AWD outbreak. As per regional health bureau provisional data; latrine

coverage of the region is less than 5%. Regarding awareness rising on hygiene promotion and latrine construction, the effort has been made by the region as well as partners operating in the region. Thus, the effort is not at the level of preventing/controlling poor water and sanitation/hygiene born diseases.

3. Acute Watery Diarrhea (AWD) situation/ problem in Afar Region

AWD is frequently affecting Afar Region since 2006. As of 24 July 2009 six woredas were affected by AWD outbreak and unconfirmed cases also reported from Dulacha woreda. Out of 32 woredas 20 (62.5%) reported AWD outbreak during the last 3 years of which 8 of them were reported repeated outbreaks. AWD cases and deaths were high in the region as compared to other regions. This is as a result of poor health care service delivery, shortage of trained health workers, poor implementation of AWD case and CTC management guideline and high mobility of people to private investment farms.

Table 9.1. 2: AWD Case and Death Load by year and woreda, Afar Region, July 2009

S. No	Woreda	2006**			2007**			2008**			2009*		
		Case	Death	CFR	Case	Death	CFR	Case	Death	CFR	Case	Death	CFR
1	Afdera	489	2	0.4	2	0	0.0						
2	Telalak				10	1	10.0						
3	Awra	29	1	3.4	22	1	4.5						
4	Awash				28	2	7.1	72	2	2.8	80	3	3.8
5	Dalol				41	5	12.2						
6	Dalifagie				91	0	0.0						
7	Dewe				117	0	0.0						
8	Yalo				143	3	2.1						
9	Chifra	133	1	0.8	208	13	6.3						
10	Dubti	394	2	0.5	251	11	4.4						
11	Ewa	92	2	2.2	257	18	7.0						
12	Elidar	7	1	14.3	270	3	1.1				527	6	1.1
13	Afambo				719	6	0.8						
14	Mile	132	2	1.5	725	3	0.4						

15	Amibara	55	2	3.6	804	7	0.9	44	1	2.3	1325	34	2.6
16	Buremudaitu				1282	13	1.0				506	32	6.3
17	Asayta	74	2	2.7	1478	16	1.1				161	2	1.2
18	Gewane				2466	51	2.1				866	34	3.9
19	Argoba	108	0	0.0									
20	Gulina	169	3	1.8									
Total		1682	18	1.1	8914	153	1.7	116		2.3	3,465	111	3.2

* 2009 data collected from woreda health offices during joint field mission
** Data from weekly epidemic report of FMoH/IDSR

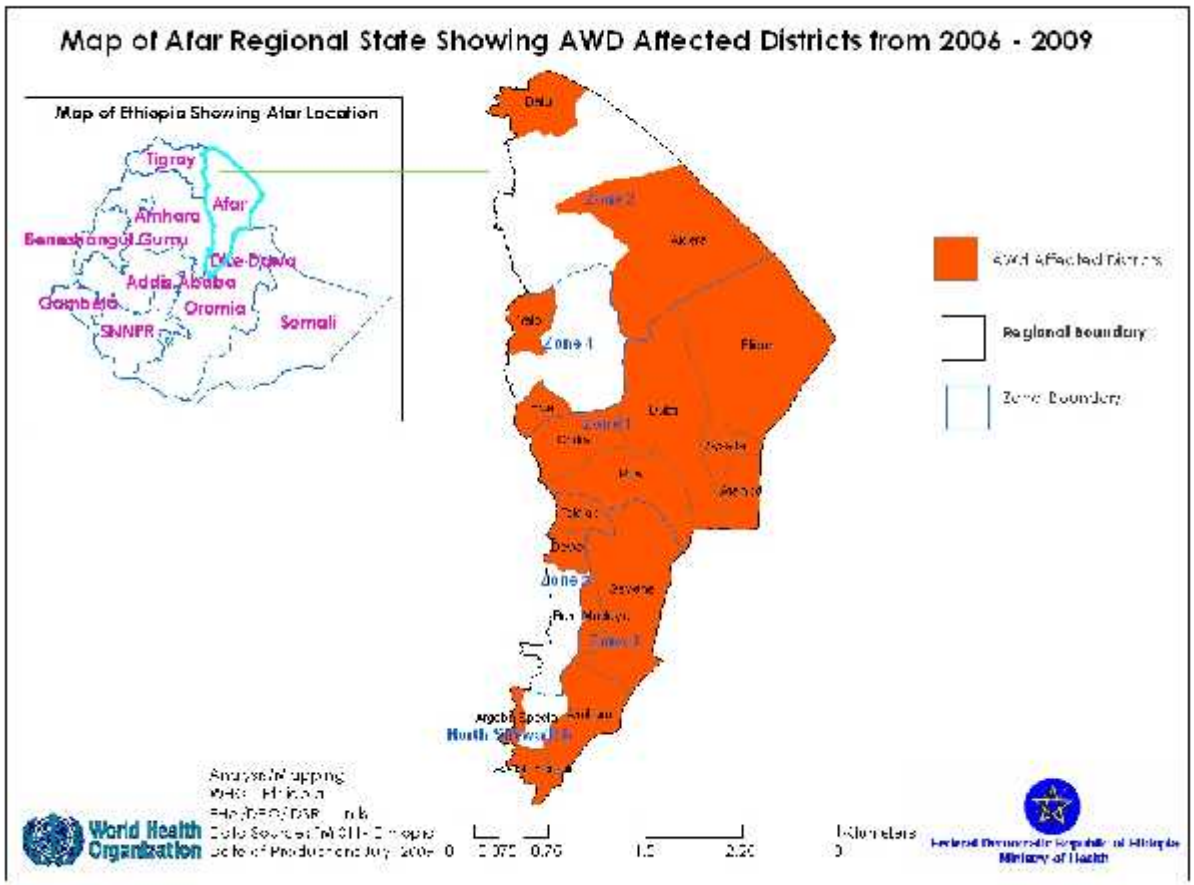

Figure 9.1.2: Map of Afar Regional State showing AWD affected districts from 2006-2009

The affected segment of the community were male adults who came mainly from other regions to work as daily laborers in the private and few government cotton farms and salt mining. Similarly, quite significant number of the local community was also affected following those cases in cotton farms. In 2009 as of 12 July case load was high among male and productive age group which was aggravated by migration to the region to search for work as daily laborers in the private investment farm and government cotton farm(fig 1)

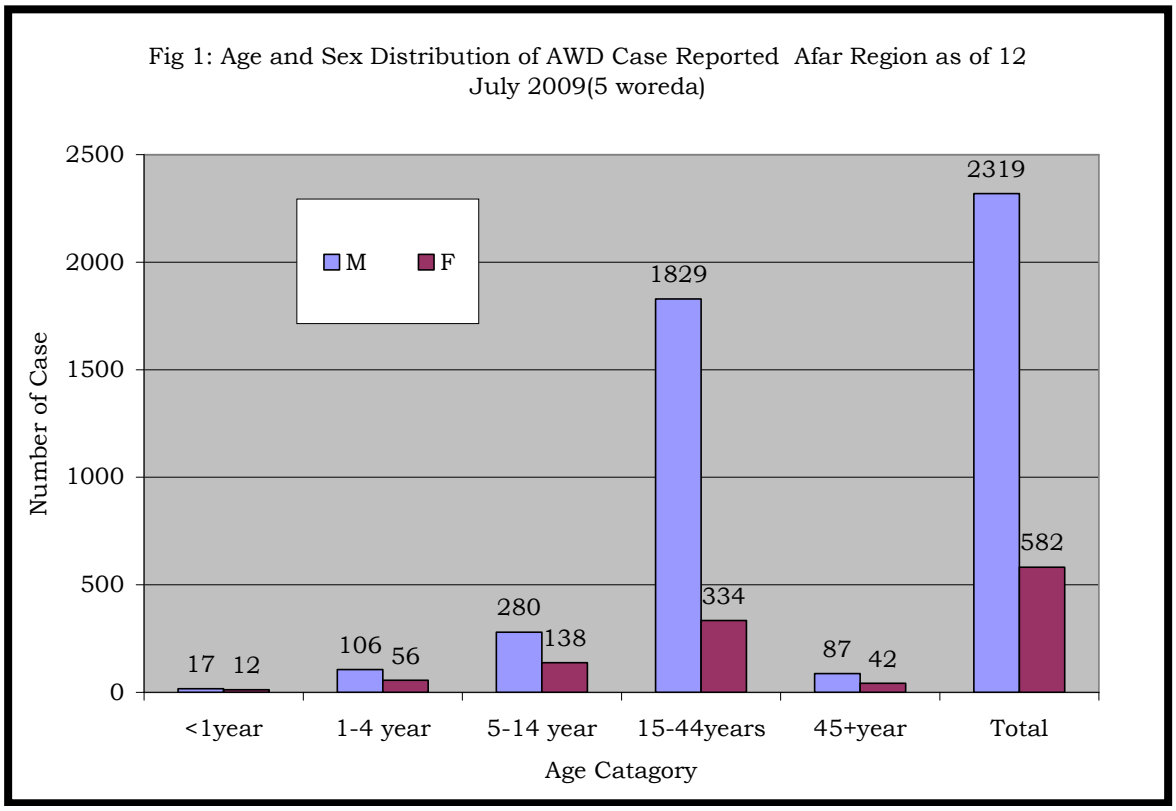

Figure 9.1.3: Age and sex distribution of AWD cases, Afar region, July 2009

In 2007 and 2008 onset of AWD outbreak was in the months of May and June at the time of daily laborers usually came for land preparation and sowing of cotton farms. However, the AWD cases load was usually higher from September to November when higher number of daily laborers came to the area for cotton harvesting. The major aggravating factors for the disease in the cotton farm are absence of latrine facilities as a result people use open defecation, using of drinking water directly from irrigation canals (not safe for human consumption), crowded living

situation (25m*7m 70-100 people on average), and un hygienic food preparation (lack of kitchen, preparing food at open place). This year the cases and deaths (CFR mostly >1%) load is high as compared to the pervious years. Based on the pervious year experience of AWD outbreak spread of the disease expected during the coming 2-3 months. Thus, the National Health and Nutrition Task Force recommended a joint team mission to Afar Region for technical support and monitoring of AWD outbreak response performance.

3. Objectives of the Joint mission:

- Reactivation/revitalization of the pro-acting epidemic prevention, preparedness and response task force committee which in this case has two sub-committees:
    - Main task force – chaired by the regional deputy president where the respective main acting bureaus: Regional Health Bureau, Regional Water bureaus, Regional DPPB, Women Affair, Investment Office, etc heads , UN-agencies
    - Technical Task force – Chaired by the regional health bureau with secretary regional Water bureau emergency focal person, Un-agencies and NGOs.
- Provision of technical support for intervention activity areas.
    - To assess the extent of the outbreak and identify areas at risk of being affected at woreda and CTC's.
    - To assess how CTCs run and identify the major gaps in AWD case management.
    - Identify the current resources available in terms of Health-personnel, drugs, financial and material resources.
- Revise and co-plan with the region on AWD Outbreak preparedness, response and prevention ,for the coming 3-4 months of 2009
    - Identify gaps and jointly revise developed EPR plan and provided relevant guidelines for the different levels(case management guideline, CTC management guideline and HWT chemicals guideline)

4. Approach/ Methodology

- Meetings and discussions were undertaken with the deputy president of the region, head of Health and Water Bureaus.

- Site visits to highly affected Woredas, selected CTCs, communities, private and government farm camps
- Discussion with community representatives
- Observation of case management in the CTCs.
- Interview staff assigned at the CTCs and community members.
- Observation of water, hygiene and sanitation situation in the CTCs and community.
- Debriefing findings and action to be taken to woreda coordination committee and regional coordination committee.

5. Key findings:

On the onset of the outbreak two woredas (Buremedaitu and Gawane woreda) were affected. As of 24 July 2009 six woredas reported AWD outbreak of which 5 confirmed as *v. cholerae* 01. According to the data from woreda health offices totally 3,465 cases and 111(CFR 3.2%) deaths reported.

5.1 Summary of main gaps and challenges identified during the field visit:

- Limited coordination among government institutions and some partners at woreda level
- Absence/ weak kebele level AWD response coordination;
- Critical ORS shortage;
- Case management lacks isolation almost in all visited CTCs;
- Lack of hygiene precaution in many visited CTCs;
- Poor hygiene, sanitation condition and lack of safe water supply are identified as a root cause and facilitating factors for spread
- Hygiene and sanitation has not been given emphasis in the communities as part of AWD outbreak response;
- Migrant daily laborers from high land to work in private investment and government farm living under poor sanitary and hygienic condition including lack of safe water supply

5.2 Coordination

Afar Regional Government reactivated the multi- sectoral coordination at regional level with involvement of sector bureaus and partners in 2009 as a result of AWD expansion to other woredas with in short period. The regional AWD coordination committee chaired by deputy Regional President. At woreda level there was sort of coordination but not strong (Asiyta, Buremedaitu and Awash Fentale). However multi-sectorial involvement was observed in Gewane and Amibara woredas. Partners like CARE, AMREF, APDA, and some private farm investors are actively involved in coordination and response.

Kebele level response coordination is almost absent and need push from woreda/ regional level. The major challenge at regional and woreda level is regular coordination committee meeting. Activities are intermittent based on case load (when the number of case decreases the coordination ceases immediately).

Figure 9.1.4: Discussion with Regional AWD response coordination Committee. Meeting was chaired by Deputy Regional President

Figure 9.1.5: Meeting with Buremedaitu Woreda Cabinet

Figure 9.1.6: Woreda meeting with woreda cabinet during the joint mission Asayita and Gawane

The joint team advised during the debriefing at woreda and regional level

- Establish kebele level coordination committee;
- The existing regional and woreda level coordination strengthen, proactive and involve all partners responsible sectors/institutions including investment farms in the multi-sectorial coordination;
- Linkage of all level coordination committee (from region up to kebele level);
- Sub-committee such as technical, social mobilization, supplies and logistics need to be proactive

5.3 Social mobilization and community participation

The woreda administration and political officials/ 'Cabinet members' has taken prompt action in almost all visited woreda to create awareness in affected kebeles on AWD prevention and control. House to house community mobilization was conducted with support of local NGO (APDA) by assigning 10 people. The team used to distribute household water treatment and demonstrating the community how to use the water treatment chemicals. Local drama was used in Ambira woreda and leaflet distribution in Gewane and in some private investment farm. The local community and daily laborers knowledge observed during the visit by team which is in favor of AWD prevention and control though behavioral change will take time. Most of the community mobilization activities seem to be done in ad hoc basis when the number of case increases. Most of the visited local community was not aware of the recently started radio message on AWD prevention and control in Afar language. Resistant/delay of behavioral

change, geographical inaccessibility and mobility of community are also challenges identified as barrier for community mobilization.

Figure 9.1.7: Joint team having Discussion with community during joint mission in Asyita and Eldar Woreda

During the debriefing meeting of woreda and regional level the following action points were agreed to be under taken:

- As the community used to listen radio health workers expected to inform the community the time of message broadcasting
- For inaccessible kebeles in Amibara and Buremedaitu woreda team has to be deployed with support from regional health and water bureau;
- Sending letter from woreda to all kebeles for community mobilization on AWD prevention and control by giving due attention to consider it as priority activity;
- Continued community mobilization through local drama, distributing posters and leaflet on AWD prevention and control; and
- Include latrine construction and household water treatment chemicals distribution as part of social mobilization activities

5.4 Case detection, Management, Surveillance, human/ health workers capacity and CTC management/hygiene precaution

In 5 visited woredas following the detection of index cases of AWD the causative agent identified in Central Laboratory at EHNRI except Asyita woreda. Above >70% of the samples were positive for vibrio cholerae, 01. In most visited CTCs the health workers were able to screen other co-infection such as *Bacillary dysentery* and malaria (in Amibara and Asayita woreda). Trained health workers exist in most visited health centers and CTCs. The IDSR format for the case reported to health center/CTC available in each woreda.

It was found that, AWD case management is not as per the national guideline (no isolation and recovery room all AWD patients with any status treated in single room). In some health centre AWD patients treated on the corridors of health centre (Gwane woreda). CFR is high; >2% in most visited CTCs as compared to WHO standard; <1%. Community level active surveillance of AWD outbreak does not exist including kebeles affected by AWD. Hygiene precaution (use of disinfectant/ decontamination of corps, used equipment in CTC are not following the CTC management guidelines. As case decrease immediately reluctance observed in most CTCs with respect to precaution including redness to treat AWD cases came after 1or 2 days zero report. Latrine, bath and water for the CTCs were gaps/not in the capacity of containing the disease in the CTCs. visited In Amibara woreda the surrounding community and animals have access to CTC as observed during the visit and patients from local communities have many care takers in the CTCs these factors facilitate the spread of AWD to the surrounding communities. Regarding corps handling some CTCs reported that hygiene precaution was not taken with respect to decontamination. As case decrease immediately reluctance observed in most CTCs with respect to precaution including redness to treat AWD cases came after 1or 2 days zero report.

Figure 9.1.8: Shows Some of the CTCs (case treatment centers) during the joint mission visit in Gawane and Eldar Woredas, Afar, Ethiopia, July 2009

Fiugure 9.1.9: Some of the CTCs (case treatment centers) during the joint mission visit in Gawane and Eldar Woredas, Afar, Ethiopia, July 2009

Figure 9.1.10: Animals and people observed in the CTCduring the joint Mission visit WareHealth Center, Ambara woreda

During the debriefing meeting of woreda and regional level the following action points were agreed to be under taken:

- Structured supportive supervision from region to woreda and CTC (technical people doing supportive supervision and woreda /CTC staffs need to agree on gaps identified and make corrective measure.). Copy of field check list has to be given to the staffs at woreda and CTC level for correction;
- National guidelines and protocol has to be used for case and CTC management;
    - Isolation (screening room, recovery, bath and latrine for the CTC
    - Hygiene precaution use of disinfectant and decontamination has to be applied as per the guideline
    - Provision of safe water supply in the CTC
- AWD case management and CTC protocol and household water treatment procedure provided to all health facilities and woreda health office during the joint mission.
- Organize training for the health workers through supportive supervision from the regional level on case management and hygiene precaution in CTC;

- Continuous awareness creation for the local community in order to reduce the number of care takers accompanying AWD patients; and
- Private investment farm need to assign care taker for the daily laborers affected by AWD (when admitted to CTC)

5.5 Logistics, Supplies, Transport and Operational Cost

Minimum stock supplies were available in all visited woredas and CTCs except ORS and some antibiotics. Operational costs were provided from RHB to woredas. Partners also supported in transportation for supplies distribution, community awareness creation (AMREF, CARE, Ethiopian Red Cross and 2 investors).

Critical ORS shortage exists at all level and not pre-positioned in affected kebeles and at risk kebeles. Storage at health center and woreda level not well ventilated. Expired water treatment chemicals were observed (Bure Mudayitu and Ambra). None of the visited site has stock balance and late request of supplies is common. Re-useable materials disposed after one outbreak (tents, Bucket, plastic sheets and others). Most of the woredas complained shortage of transportation (Buremedaitu, Aysaita and Amibara).

Figure 9.1.11: Expired water treatment chemicals, Buremudayitu woreda

Figure 9.1.12: Supplies store condition, Buremudayitu woreda

During the debriefing meeting of woreda and regional level the following action points were agreed to be under taken:

- Supplies has to be requested as per the developed plan follow up by RHB and water Bureau;
- Medical supplies , CTC tent , water purification chemicals and sanitary supplies at the CTCs received and used has to be monitored using registration(number of AWD patients treated Vs supplies used);
- Avoid expired water treatment chemicals(RHB and water Bureau make sure during supportive supervision);
- Provision of transport urgently to Buremedaitu and Amibara woreda from regional Health/Water; and
- Provision of additional operational cost and follow up of utilization pattern at woreda level

5.6 Community water supply and House Hold water treatment

As part of the AWD outbreak emergency response efforts has been made to provide safe water supply(distribution of house hold water treatment chemicals, expansion of pipes in 3 private farms, community level water supply treatment/EmWat Kit in 4 sites. Household water treatment chemicals utilization demonstration was done during the house to house community mobilization

and during distribution. Based on the orientation and demonstration utilization of the households water treatment chemicals observed during the visit.

Due to lack of trained technician community level water treatment tried but not successful (EmWat Kit) none of them were functional. There is no regular/systematized way of distributing HHWT; disposal of residue and empty sachet were not properly managed in all visited sites. Expired HHWT seen during the visit to Ambara and Buremadayitu woreda. In addition in all woreda stock balance was not available and the request was also not in line with the number of household.

During the debriefing meeting of woreda and regional level the following action points were agreed to be under taken:

- Training has to be given to woreda level technician (handling the EmWat kit) in line with installation of the kit. Regional water bureau has to give continues support to the woreda during the emergency on community water treatment and establishment of regular HHWT chemicals distribution;
- Stock balance has to be done on regular base and the request has to be based on the number of HH as per the regional AWD response and preparedness; plan; and
- Avoid expired water treatment chemicals(RHB and water Bureau make sure during supportive supervision);

Hygiene promotion was attempted in response to AWD outbreak through social mobilization. Open defecation is a common practice and according regional data latrine availability is less than 5% sanitation (community latrine construction) and it was not considered as one of intervention component for the outbreak response due to the local community life style.

During the debriefing meeting of woreda and regional level the following action points were agreed to be under taken:

- As per the national sanitation strategy and hygiene protocol sanitation ladder the cat system has to be promoted as part of AWD outbreak prevention and control through regional health support;
- Regular hygiene promotion has to be happened through the extension health workers and kebeles/local leaders using *dagu*[1] and local drama; and
- Dissemination of key hygiene promotion message in local language

Figure 9.1.13: Utilization of HHWT chemicals at community level and community water treatment(EmWat Kit non

5.7 Community level sanitation and hygiene promotion

5.8 Private Investment farm

As compared to the previous years, this year there is better involvement of few private investors to the current AWD outbreak response through provision of safe water supply (Tesgaye and Fiyato investment farms); good start in construction of latrine facilities for the daily laborers. In addition they take part in the woreda level coordination and supported transportation for the response in the local community.

Though there was good start in expansion of water supply and construction of latrine in some farms; still the number of population in the farm and the facilities are not balanced, besides the location of the facilities were not easily accessible. The living condition of the daily laborers was

[1] Afar information exchange system

overcrowded in hall (70-100 people 25m*7m), food preparation was in open & unhygienic and sharing of utensils like 1 cup for 40 people. Health care service was not available for the daily laborers except one farm in Amibara woreda. No care taker for AWD patients admitted to CTC from the farm. Thus, the effort made is not in a position to control and prevent the outbreak.

During the debriefing meeting of woreda and regional level the following action points were agreed to be under taken:

- The regional government put in a place the standard/ occupational safety for the investment farms for provision of service to the migrant daily laborers;
    - Basic Health service delivery,
    - Water supply,
    - Latrine
    - Living quarter
    - Food hygiene (Kitchens; utensils);

- Follow up of the implementation of set standards at woreda and regional level
- The investment farms should have emergency preparedness and response plan during land preparation and harvesting time (during high daily labors migration to the area); and
- Each farm should disseminate regular key messages to the laborers.

Figure 9.1.14: Visited investment farms situation during joint mission

6. Way forward/Recommendation

Lots of supervision was made by stakeholders including Federal Ministry of Health/PHEM. However, there was no systematized response supervision and performance monitoring. Improvement was not effected (CTC, case management, isolation, HWT chemicals utilization and latrine construction including utilization, community water supply treatment) as seen during the joint mission. Generally, the response to the outbreak was not adhering to the national guideline and protocol. Therefore, the team emphasized during the regional and woreda level debriefing the following action points which also need follow up of the Federal Ministry of Health/PHE:

- Strengthen the existing regional and woreda level multi-sectoral coordination and involve all partners responsible sectors/institutions including investment farms. Link multi-sectoral coordination from region-woreda-kebele.;

- Structured supportive supervision with system of accountability; health workers at health facility/CTC and to perform according to the set standard). Follow up and performance monitoring through establishing regional supervisor team (Clinician, environmental health & water quality/sector)

- Orientation training has to be given technical people providing technical support at woreda and regional level for all stake holders including PHEM Staffs
- Persistent social mobilization with involvement of the community leaders using different methodologies

- Pre-positioning of the minimum level of required emergency supplies at woreda stock (Improve storage condition) . Medical supplies , CTC tent , water purification chemicals and sanitary supplies at the CTCs received and used has to be monitored
- Support to woredas with transportation and operational cost

- Training has to be given to woreda level technician (handling the EmWat kit) in line with installation of the kit. Regional water bureau has to give continues support to the woreda during the emergency on community water treatment and establishment of regular HHWT chemicals distribution;

- Regional water bureau has to provide continuous support to the woreda water desk on operation system of emergency water treatment kit (EmWat kit) and community water source disinfection.

- Establish community based regular HWT chemicals distribution system and orientation and demonstration should include disposal way of residue and empty sachet

- Sanitation/latrine construction & utilization promotion based on the sanitation ladder as per the country sanitation protocol and strateg

9.2: Report on Investigation of AWD in affected woredas of Afar, Afar regional state, June 2009

Background

Afar region is one of the four major pastoral regions in Ethiopia located in north-eastern part of the country. The region is divided in to five administrative zones, which are further subdivided in to 32 woredas and 358 kebeles. The regional population is estimated to be 1.7 million of which 90% are pastoralists and 10% agro-pastoralists. Its altitude ranges between 1500 meters above sea level in the western high lands and 100 meters below sea level (Dallol) depression and gets 150-500 mm/annum of rain fall with varying temperature that ranges between 20-48 degree centigrade .Afar region is also one of the regions in Ethiopia where private investment farm and Government state farm are operational. The region has relatively very low social services availability such as health, education, potable water, sanitation and the like.

Burimudayitu , Gewanie & Amibara are three adjacent woredas 300 ,335 & 280 Km far from Addis Ababa with a population of 54247, 33721 & NA found in Zone 3, Afar region respectively.

All rural people are pastoralists, and daily laborers are working 11 companies engaged in cotton plantation. There are also coal producers who came from wolaita, SNNPR.

The overwhelming majority of rural population of mentioned woredas were pastoralists who wander from one locality to others seeking grazing fields for their Camels ,Goats sheep and other cattle. Remaining proportion of the population were fisher men ,Coal producers and Daily laborers working in private and Government cotton plantation farms to earn their living and most of the urban population are engaged in various sort of trade including vegetables ,fruits and commodities . Because of relatively lower socio-economic and socio-cultural development level of social services (Health ,Education ,Water ,Sanitation and others) are poor as compared to the situation in other regions .

According to the official data of regional health bureau health coverage is 39% and that of Latrine coverage is <5% .Provision of potable water including availability of adequate amount of water is a serious problem in the region . Main source of water for the region

is Awash river and other water source includes :-Unprotected pond ,Hand dug wells and very limited shallow and motorized boreholes . Insufficient water quantities hinders ability of most rural population to practice optimal personal hygiene, food hygiene increases vulnerability of the population to water –born diseases including AWD out break .Even though the regional health bureau and partners have been trying their level best to increase public awareness on hygiene promotion and latrine availability and use it is not in the level which dependably address problem of poor water and sanitation hygiene born illnesses .

Table 9.2.1: Available Health professional Staffs in Affected

Woredas (Amibara, Burimedayitu and Gewanies) of Afar region June 2009

Woreda	MD	BSC(Nurses/ HO	Diploma Nurses	Junior Nurses	Environmental Health Technicians	Total professional health workers	Trained staffs on AWD
Amibara	1	3	15	4	2	25	2
Burimudayitu		2	3	1	1	7	2
Gewanie		2	5	2	2	11	2
Total	1	7	23	7	5	43	6

AWD situation in Afar Region

AWD out beak has been frequently affecting mentioned woredas of the region from 2006-2009 .With in mentioned period AWD cases and Deaths were higher in the region as compared to that of other regions . This could be due to poor health care service delivery shortage of trained health service providers ,poor implementation of AWD case management guide line and high mobility of people to private and government cotton plantation farms and pastoralism .

Objectives:

- To Reactivate woreda epidemic prevention task force in prevention and control of AWD
- To provide technical support on intervention activities being undertaken in the woredas
- To investigate AWD out break and identify risk factors
- To evaluate the situation of AWD in investor camps engaged in cotton plantation in the woredas
- To make sound recommendations which are relevant to take dependable intervention measures to contain the epidemic

Methodology

- Reviewing of reports and records (Line listing ,Case based)
- Use of structured questionnaire to interview cases and controls
- Making site visits (Investment sites , Kebeles ,Health facilities)
- Observation
- Making discussion with concerned bodies (community leaders ,elders ,Task force ,partners and investors)

- Undertaking supportive supervision

Limitations

- Incompleteness of reports and records
- Shortage of time to support ongoing intervention activities
- Absence of some of the required investors during meeting sessions
- Geographically inaccessability of some of some of affected kebeles

Results

There were a total of 1217 cases and 48 deaths registered by health facilities in three woredas of Afar region of which 108 ,332 and 773cases were from Amibara ,Burimudayitu and Gewanie woreda respectively . Number of registered deaths were 2 ,22 and 24 in Amibara ,Burimudayitu and Gewanie woreda respectively .

Table 9.2.2: Depicting AWD Cases ,Deaths and CFR by affected woredas Afar region June 2009

Serial No	Woreda	Cases	Deaths	CFR
1	Amibara	108	2	1.6%
2	Burimudayitu	332	22	6.6%
3	Gewanie	775	24	3.1%
4	Total	1215	48	3.8%

There were a total of 108 AWD cases and 2 deaths in Amibara woreda and all cases and deaths were from Sheleko kebele of Amibara where cotton plantation farm was extensive

as compared to other kebeles . Eventhough population of Amibara was relatively higher than other woredas affected people was smaller for the cotton plantation farm had clinic which provided relevant health service to prevent and control AWD epidemic .

Of 332 registered cases in Burimudayitu woreda 127 (38%) were within age range of 19-24 years and median age was 22 years the age range being 2-60 years . 66% (219) of the cases were from Debel kebele and second largest proportion of cases were from Fiato kebele and rest of other cases were from other 11 kebeles of the woreda . According to the line listing made first cases were registered on 3 /9/2009 and the highest peak of cases was seen between 28-4/10/2009

Even though number of cases was decreasing after 16/10/2009 cases were coming till 16/10/2009

A total of 775 cases were reviewed from the daily report format in Gewanie woreda . From the total 499 (65%) of the cases were in the age range of between 15-44 years and withregard to sex of cases 82.2% were males and 16.8% were females . (23%) 178 of the cases were from Geliadura kebele and 16% (125) were from Briforo kebele and death toll of the two kebeles accounted 24% from the total deaths in the woreda . Onset of first cases was recorded on 28/8/2009 and the highest peak was seen on the 4th week of May,date of sharp rise and sharp fall being 7/10/2009 and 8/10/2009 respectively . 80% of registered deaths occurred within age range of 15-44 years.

From a total of 54 interviewed respondents 31 were vcases and the rest were controls . 85% were males the rest were females Source of drinking water for 74.1% respondents was Awash river and source of drinking water for 25.8% of respondents was pipe water . Proportion of respondents who used treated water was 22.2% .47.1% of respondents had access to latrine and from this proportion 63.6% of them use latrine always. Only 13.2% of respondents ate/drank in other homes/restuarants

2**. Outcome of Field Visit and Supportive supervision**

Registered cases and deaths

- Amibara woreda – From Sene 06-09/2001 there were 108 cases & 2 deaths
- Burimodayito – From Miazia 25/2001-Sene 09/2001there were 332 cases & 22 deaths
- Gewanie - From Miazia 21/2001 - Sene 09/2001 775 cases and 24 deaths
- Total cases 1217 & deaths 48
-

Investor camp situation

- Daily laborers working in cotton plantation farms do not have access to clean latrine.Their water source is Awash river as a result of which they do not get adequate quantity of potable water .
- Residential rooms of daily laborers were very crowded for they were designed to accommodate more than 60 laborers/room the status of which increases vulnerability of workers to AWD and other communicable diseases.
- House hold materials such ; drinking and eating utensils, blankets ,mattress ,bed sheets and the like are shared among people and one plate/cup used for more than 50 people.
- Provision level of essential medical supplies used for prevention and control of AWD was inadequate
- Awareness level of daily laborers with regard to keeping personal hygiene and environmental health protection and sanitation was significantly low as evidenced by no hand washing before eating and preparing food and open field defecation.

- From 11 cotton plantation farms only one investor camp in Amibara district had its own clinic providing health services to daily labore

Community situation

The population living in mentioned three woredas do not have adequate and safe water supply and their water source is mainly Awash river. There is pressing problem of access to latrine as a result of which open field has been used to dispose solid and liquid wastes. Even if efforts have been made by local and regional AWD prevention and control task forces to address the problem awareness gap with regard to keeping personal hygiene and environmental health protection and sanitation the outcome of intervention was not that of expected. Moreover there was inadequate medical supplies such as ORS ,Drugs and infection prevention precaution materials used in CTCs and health facilities. Number of health extension workers and other categories of health service providers was very limited

Activities undertaken by woreda task force

- Co-ordination of multi-sectoral response
- Social mobilization
- Establishment /strengthening of CTCs and provision of available support helpful for proper management of cases and prevention and control intervention activities
- Provision of logistic and medical supplies
- Making unreserved effort to increase public awareness on AWD using various strategies of option to contain the epidemic
- Support health workers to undertake active surveillance and case management activities including proper case/death registeration and record handling (Gewanie woreda)

Activities of FMOH Team

- Reported cases and deaths and problems seen in Investor companies on daily bases
- Re-activated woreda AWD prevention and control task force and provided technical support which enables them take actions like active case detection and management and strengthen social mobilization activities to contain the epidemic. Communicated with regional Health bureau, FMOH and UNICEF to facilitate messages and bring about concerted efforts to escalate response to address problem of AWD .
- Supervised the CTCs & support the case management
- Supervised investors camp's made discussion, gave advice and direction how to control the epidemics and handle their daily laborers
- Water and stool sample collected and submitted to EHNRI

Challenges

- ✓ Very low responsibility of the investors for their daily laborers against AWD and or any health related issues
- ✓ Burimudayto woreda has no vehicle for transportation
- ✓ 11 kebeles of Burimodayto are inaccessible because of Awash River & it needs to go through kombolch –Shewa robit or Addis Ababa – Shewarobit
- ✓ Shortage of medical supplies (like ORS, IV fluids, antibiotics etc) & health care providers
- ✓ Coal producers (group of people engaged in coal mining), daily laborers and other mobile social groups remain potential epidemic risk source to the local communities'

Conclusion

As assessment of surveillance reports , descriptive/analysis and field visit results entails causes of AWD outbreak occurred mainly due to poor personal/family hygiene and inadequate environmental health protection and poor sanitation conditions and this necessitates implementation of extensive intervention activities which of vital importance to detect and manage cases and strengthen further prevention and control efforts to address issue of AWD outbreak.

Recommendation

- Proper communication should be made with investors enabling them contribute their level best to improve over all living conditions of their workers(FMOH should discuss & avert the situation with Investors & other higher officials
- Proper infection prevention precaution procedures should be maintained
- CTCs and case management activities have to be undertaken according to deadline
- Active case search, detection and management activities have to be undertaken
- Provision of adequate logistic and medical supplies of vital importance to undertake intervention activities be given utmost emphasis
- Increasing public awareness activities with regard to AWD should be strengthened using selected strategies of option implementation of which enhance progress in prevention and control activities
- Strengthening level of social mobilizaton
- Provision of safe and adequate drinking water supply, appropriate latrine access and usage
- Avail vehicle for Burimudaito woreda

- Support the health office by medical supplies & health care providers.

9.3 Report on Situation of Mass Hysteria like event which affected students of Gibson's High School , reported to Addis Abeba Regional Health Bureau by IDSR team (Regional).

Date of Assessment : - 29 /04 /2009

Location of Assessment : - Gibson's High School and Hayat Hospital ,Bole Sub-City ,Addis Abeba.

Team members involved : -

Mrs Seble Tadesse AddisAbeba Health Bureau IDSR team leader.

Ato Alemayehu

Ato Mesafint Alebachew , EFELTP , Resident, AAU

Dr . Million Tumato EFELTP ,Resident ,AAU

Persons Communicated :-

Dr. Behailu Director ,Hayat Hospital

Ato Tesfa Mengesha ,Director ,Gibson's High School

Ato Kiflom ,Dean ,Gibson's High School

Affected inpatients and healthy students.

IDSR team was called upon after Gibson's High School administration informed about the problem to Addis Abeba Regional Health Bureau to identify and investigate the problem to seek possible solution.

Objectives

To investigate the problem in question and communicate findings useful in arriving at sound conclusion to address this problem.

Methods

Various methods were deployed to get accurate information about the problem ,the following strategies were used which includes : -

Interviewing ,mentioned School and Hospital technical leaders and administrators.
Interviewing ,Teachers, Health service providers, students and inpatients.
Discussing about the issue with mentioned groups.
Assessing medical records of in patients and out patients.

Results

As mentioned by the school Dean,the occurrence of such phenomenon was not new and has have happened since two months before. Students who were vulnerable for one or another reasons presented more or less with chief complaints of fever dry cough ,palpitation ,faintness ,shortness of breath ,restlessness ,chest pain and the like. Because of aforementioned complaints 10 students were taken to Hayat hospital out of which 8 of them treated accordingly and sent home. The remaining two whose conditions worsened were addimitted for further follow up, investigation and possible treatment and discharged improved after two days. Most of the students had similar problems but not identical. Admitted patients recovered from their illness after being given Oxygen by mask and taking Brochodilators. Further investigations were ordered by duty physicians to confirm cause of the illness which included ;-chest x-ray ,ECG , BF ,urine analysis and laboratory testing of throat swab also considered. To rule out possible causes of the illness, environmental analysis for possible presence of irritant chemicals which might have been deposited in school laboratory room , school building and environment around vicinity of the school was made to get conclusive diagnosis of the illness.

Even though several attempts were done to get diagnosis of the illness, results were not compatible with diagnosis of influenza-like illness ,though laboratory testing of throat swab was not done.

Conclusion

Confirmatory laboratory testing has to be performed to arrive at plausible conclusion to make sound recommendation which enables to take appropriate course of action to treat ,prevent and control future occurrence of such mass hysteri

Recommendation

Based on available information the following recommendation was made; -

psycho-social support be given to those affected.

Health education with regard to such illness be given in school communities.

Further environmental analysis activities have to be undertaken to confirm the diagnosis of the illness.

9.4 Report on situation of patients who went to St. Paulos Specialised Hospital to seek medical advice and possible treatment on April 30/04/2009.

IDSR team of Addis Abeba regional health bureau was called upon to investigate emergency medical situation after verbal report through telephone by responsible medical administrative staff.

Team members who participated on the assessment:-

Mrs Seble Tadesse Addis Abeba health bureau IDSR team leader

Dr. Million Tumato Field Epidemiology Resident (student)

Date of assessment:- April 30 /04 /2009

Upon arrival the team met Dr. Yared who wel-comed us briefed about the incidence. Based on the information provided the team started to assess the situation. Unfortunately, among five patints who went to the hospital to get available medical services we could only get one patient admitted as an inpatient. He presented with chief complaint of cough and fever of three days duration. No history of shortness of breath or difficulty in breathing, no history of travelling abroad or contact with any one who came from abroad recently. On admission his blood pressure was unrecordable and was put on iv fluid to

reverse his hypotension. He was febrile on touch and his respiratory rate was 20/min. As part of investigating the case X-ray and ECG was ordered and results were not available for it was on process. But during assessment time the patient was comfortable and his BP improved markedly. Regarding other patients the team reviewed their medical records and found the following results.

1. Yesebu Gorde a 32 years old male patient who was admitted in the hospital for possible treatment and follow up (see above).

2. Bezawit Gebru a 23 years old female patient presented with headache and difficulty of swallowing of 01 week duration .No history of travel outside of the country,no contact with any one who came from abroad recently, Gave no history of fever or shortness of breath. She was sent home after being treated and reassured.

3. Abinet Altaye a 24 years old female paient who presented with cough and nasal congestion of 03 days duration. No history of fever, cough,shortness of breath, travel abroad and contact with those who came from abroad recently.

4. Aniley Worku A36 years old female patient, presented with cough and fever of 04 days duration. No history of shortness of breath,travel abroad or contact with any one who came from abroad recently.

4. Woynit Gebeyehu a 25 years old female from Bole sub-city and presented with throat pain and swelling. She had contact with friends who came from abroad recently. No history of fever, shortness of breath or difficulty in breathing.

Regarding vital signs of mentioned patients all were within normal limit. As mentioned by duty physician those patients who were sent home received appropriate treatment and reassurance and told to come back if at all any problems encountered pertaining their complaints.

Except Woynit Gebeyehu who had contact with friends who came from abroad situation of other patients may not be that pressing. Even though some of the patients had some of acute respiratory illness symptoms there was no adequate evidence based facts to label them as having influenza –like illnesses which warrant diagnosis of Swine flu infection.

To confirm whether suspected cases has the disease or not further investigations such as X-ray, ECG, throat swab testing and other pertinent laboratory examinations have to be undertaken. It is only after confirmatory test results that interpretation will be made to arrive at plausible conclusion and make sound recommendation be made.

9.5 Proposal (Draft) for soliciting fund to build capacity of health services providers on health services management and Leadership , Submitted to Diseases Prevention and control Department (sub- Process) ,Addis Abeba Regional Health Bureau Addis ABeba

Introduction

To attain level of dependable health development and raise health status of given population available health services provision system has to be led by well formulated and standardised set guideline. To effect mentioned result awareness creation with regard to overall health management system has to be provided periodically to vanguard health service providers without whose unreserved efforts together with active involvement of various segment of communities, desired success may not be achieved. Therefore to register dependable success on health development various prerequisites have to be fulfilled. Provision of currently updated information with regard to health service management to service providers plays vital role to undertake implementation of health and related development programs and enhance reduction of magnitude of most pressing public health problems by and large raise health status of society.

More over currently health sector is implementing diseases prevention and control centered strategy of health policy, provision of evidence based information to service providers is of paramount importance to enhance health development. It is expected that use of evidence based information by health service providers , technical task leaders and Health service managers create conducive atmosphere to implement , monitor and manage health development projects to achieve dependable success. To get mentioned outcome health projects have to be well planned ,available resources be allocated appropriately to perform activities as planned , progress of implementation activities have to be monitored and evaluated periodically and proper over all leadership and management have to be provided. So far Addis Abeba health bureau tried its level best in attempt of building capacity of health professionals rendering services at various levels by sponsoring and co-sponsoring on job trainings ,under graduate and post graduate studies which has been very helpful to update already acquired health science knowledge

with advancing current situation and skill upgrading through attending higher level studies enabled health services providers ,broaden their horizon of knowledge in this field and greatly assisted them to discharge their responsibilities of providing health services of better quality to needy communities. Moreover provision and facilitation of short lasting trainings ,workshops ,seminars ,consensus building meetings ,review and evaluation of ongoing health services provision programs and the like , particularly on most pressing public health problems which among others included: -Malaria ,Tuberculosis ,HIV-AIDS and other epidemic prone diseases have greatly helped in refreshing and updating health service providers skills and indeed wonderfully boosted their moral as a result of which their level of providing quality health services markedly increased.

The purpose of this proposal is to secure fund which will be utilised to cover various cost which is needed to provide training to health services providers on issues of leadership and health management to enable health workers contribute their level best to enhance ongoing national efforts to bring about improvement in quality of health service provision there by enhance progress in health development. Therefore we kindly request Your office to put this issue in to very point of consideration and make unreserved effort as usual by securing fund for cost to be covered to conduct this Training

Objective

To build capacity of health service providers by availing training on Health Information Management system ,Health resource management ,Health Services Management and Leadership.

Methodology

Capacity building training will be given to health services providers recruited from various health service providing facilities at different levels which includes:-staffs of health offices (Health Bureau ,Sub-Cities ,Kebele) and Health Facilities (Hospitals , Health Centers) . Training will be given to 30 health service providers by selected higher level experts with enriched experience on mentioned topics. The training will be

conducted for four days on subsequently coming two week -ends. Up on accomplishing the very task of the training activity report will be submitted to funding partner within a period of two weeks.

Budget Break down

Number	Item	Quantity/No.	Training days	Cost/day/each	Total	Grand total	Remark
1	Trainers	4	4	500	8000		
2	Trainee	30	4	70	8400		
3	Hand out	30 copy		0.25 cents	375		
4	pens	30		$2	60		
5	Pencils	30		$ 1	30		
6	Marker	4		$80	320		
7	Flip chart	4		$ 100	400		
8	Refreshment	For 34 Participants	4	$10	1360		
9	Lunch	For 34	4	$25	3400	Conting.=	
10	Hall Rent	1	4	800	3200	2680.50 +	
11	Driver	1	4	70	280	Total=	
12	Fuel			$200	800	26,805	
13	paper	4 Rolls		$45	180		
14	Contingency	10%		$2680.50	26,805	Grand Total =$29,485.50	

9.6 Assignment-1: Description of Management Skills and Roles as related to Theoretical approaches.

Introduction" Management in health system is defined as process of planning, organizing, staffing, resource allocation, implementation and controlling overall project activities to meet set objectives of the health system and serve purpose of attaining desired goal successfully.

Managerial skills: Defined as technical, professional and overall managerial know how and experience required by a manager after execution of which the system is enabled to function properly according to formulated plan to register dependable success which is of vital importance to promote health, prevent and control communicable diseases and other health and related events and enhance progress in health development.

Managerial Roles : - Are initiatives, responsibilities and accountabilities shouldered by skillful manager to discharge his/her responsibilities to execute health development projects to meet set objectives

Description of Management Theories in relation to health system Management

To effect desired goal of organizations(health system) various management approaches have been deployed to execute management functions of organizations, There are two types of management theories approach which have been used which includes: -

1, **Earliest Management Theories**

2. **Contemporary management theories**

a/ **Systems theory approach**

b/ Dynamic engagement Approach and

c/ The contingency Approach

Earliest /classical management theories contributed their level best to modern/contemporary management theories and their approach strictly presupposed implementation of following activities to be undertaken to effect desired goal in management of organizations. This theory places utmost emphasis on performing managerial skills and roles by implementation of organization's (health system) activities as planned.In this approach organization's activities are accomplished through division of work assigned to various departments which perform tasks by groups of individuals who provide services which play considerable role in enhancing progress in activities being implemented. Communication between departments and individuals working in them and span of control is maintained through established chain of command. Application of scientific method is exercised to give response for organization's problems by using produced evidence based findings and for further communication of information within the organization and with outsiders. Using this well functioning organizational structure the manager leads the organization by discharging responsibilities managerial skills and roles to realize the organization achieve its desired goals.

Contemporary Theories

1. **The systems Approach**

According to systems theory a system can accommodate several interdependent sections in which each section can play important role that helps the system's function progresses smoothly and alteration (modification) of a section of an organization may have an impact on overall activities of other sections. This system sees the organization as goal oriented and has different departments with interrelated functions. Managers who make decision do so after they set priorities which do not affect functions of other departments

and the whole organization .The system presupposes preparation of systematic planning purpose of which is to organize, staffing, resource allocation and launching of implementation of organization's activities as scheduled. Moreover managers pay due attention in monitoring progress of activities to be implemented as planned. For example:- In health system it demands resources allocation appropriately in terms of facilities, equipment, materials, health service providers and execution of health projects as scheduled. Up on accomplishing the very task of monitoring and control activities the manager should measure out put, outcomes of the intervention against input and time to ascertain whether expected outcomes are effected or not. If expected results are not achieved corrective measures have to be taken after providing evidence based feedbacks to service providers and management staffs. In addition to the activities systems approach in a health system gives utmost emphasis on working in well structured and organized manner that health service providing institutions are well equipped with necessary facilities, supplies, logistics and materials to run their activities. Health service providers from different categories have to be deployed in health institutions including hospitals. Hierarchy of chain of command from lower to higher level and vice versa shall be maintained. Intra and interdepartmental communications have to be established and optimal relation ship between national and international health systems have to be maintained. Moreover the system theory emphasizes the dynamic and interrelated nature of health system tasks, provides a frame work to plan actions and anticipate both immediate and far reaching consequences and allows to recognize an unanticipated consequences as they emerge. This approach is a good way of thinking for managers but limited in providing final answers to organizational problems and lacks focusing on verifiable facts and practical learning even though it has attracting conceptual approach.

2. Dynamic engagement Approach

This approach recognizes that an organization's overall style of function is changing fast. Peculiar features of this approach strongly presupposes that there is an earnest need for new ways of thinking by reason of the following conditions prevailing in the world
Boundaries between cultures and nations are not well delineated, the world is becoming under influence of globalization, scopes of international and intercultural relation ships is rapidly expanding, manner of organizations activities are changing rapidly. According to this theory health or any other development organization manger depending on mentioned influencing factors he has to be vigilant enough to use updated evidence based information and he has to fit himself to rapidly changing environment and be flexible to re think once again to conform with objective reality and adjust his overall managerial activities of managing the organization effectively to achieve its goal. For example if he is manager of given health system (Hospital), he has to be flexible and should conform with rapidly changing environment. He has to be proactive in planning, organizing, staffing, allocate resources appropriately and embark upon implementation activities as scheduled. He has to closely monitor progress of health services provision by health workers so that health services seekers get quality health services by required health professional for illnesses in question. If in case health service provision quality deteriorates in one problem or other he has to take prompt managerial correction closely communicating with service providers and required supporting staffs. Because of rapidly changing environment it will be quite obvious that equipment, facilities, logistics and supplies required in the hospital together with upgraded status and position and remuneration of providers has to be in place. Moreover he has to encourage team work and create smooth communication with staffs and others concerned. He has undertake periodic review meetings with the staffs and take corrective measures if at all problems arise.It is after performing mentioned and other related activities that he can play dependable managerial role which of vital importance in enhancing progress in overall health service provision activities to achieve desired goal.

3. The Contingency Approach (Situational Approach)

This theory states that in order to accomplish the very task of managerial work he/she has to take in to serious point of consideration of given set of circumstances situation. According to this theory methods which are highly effective in one circumstance may not work in other situations by reason of several influencing factors which exert their own impeding/enhancing effects as a result of which effectiveness of methods differs and results also differ because of different affecting situations. By virtue of this fact situational Approach is of great help to sort out which technique will be effective under particular situation and at particular time. As the concept of this approach presupposes, in order to manage an organization effectively play enabling role in achieving set goal he/she has to identify factors in the organization such as workers education status, experience, equipment, facilities, resources(Socio-economic), socio-cultural and other conditions which may other wise affect implementation and progresses in the organization before he/she discharges managerial responsibilities to run the organization effectively. As assertion of contingency theory entails if the manager leads certain development organizations in developing and developed countries because of various influencing factors prevailing in these countries such as socio-economic, socio-cultural, educational status experiences of workers and the like even though he/she uses similar managerial techniques he/she obtains different results.

As can be recognized from cited descriptions of earliest/classical theories of management and that of contemporary management theories there is no management theory which can stand by its own to be universally accepted theory of management to lead overall functions and progress of organizations to extent of meeting their desired set objectives and targeted goal. Instead each theory plays complementary role to others to be complete and shoulder responsibilities of managing various functions of organization in question. Because of aforementioned facts contributions of earliest and contemporary theories be well taken and efforts of all has to be incorporated to effect universally sound and accepted theory of management.

Having briefly described management skills and roles adapted by organization managers in all management theories I here by present description of my managerial skills and roles I played in health system I was providing health services and management tasks in relation to theoretical approaches, During period of 17 years I used to get actively involved in health services provision professional and managerial skills and discharged various responsibilities and played demanded roles in attempt of contributing my level best to ongoing unreserved efforts being made to promote health, prevent and control communicable, non-communicable diseases and health related events to enhance progress in health development.

Opportunities I used to practice Managerial Skills and Roles in health Institutions I worked in

During my work stay of 17 years I got involved in many situations which demanded while rendering health services (curative, preventive and rehabilitative) which required professional and managerial skills. I worked in different areas and this helped me to increase my exposure through learning by doing and I got chance of enriching my experience by discharging human, technical and conceptual skills responsibilities. In Hawassa health center I served as management member and head of the center for 05 years. I also got actively involved in executing managerial skills and roles shouldering various responsibilities such as:'- As facilitator, coordinator and office head of HIV-AIDS prevention and control office of Sidama zone for 08 years. Moreover after I joined SSPR regional health bureau I got engaged in many tasks which required discharging of managerial responsibilities playing group leader roles. Regional health research and laboratory center was one of the departments among eight. I served as a health research team leader in health research and laboratory center of the region. Even though I participated in managerial skills provisions at zonal level in several activities I continued my involvement in discharging managerial skills and played roles in the region. Regional health research and laboratory center has many activities which required implementation

of management skills with well defined roles I used this opportunity to further enrich my managerial skills with defined roles.

Activities undertaken in health research and laboratory center includes: -

- Outbreak investigation on epidemic prone diseases and production of evidence based information to those concerned
- Laboratory testing to isolate various disease causing micro-organisms
- Laboratory services quality control and quality Assurance activities
- Sentinel surveillance activities for Tuberculosis (Technical)
- HIV- AIDS sentinel surveillance activities (Technical)
- Active surveillance for epidemic prone diseases
- Coordination of health research in the region
- Coordination of laboratory research activities
- Facilitation of training programs including training on health research methods (Technical)
- Facilitation of ethical clearance issuance for proposed research activities
- Undertaking supportive supervision in the region
- Coordination and involvement in regional health activities periodic monitoring and evaluation
- Collaboration activities in health and related issues that requires multi-sectoral response
- Collaborative activities in research activities proposed and implemented by regions, MOH, other institutions , stakeholders and partners and the like

For I was health research section team leader I used this opportunity to discharge responsibilities of management skills with defined roles as facilitator, organizer, coordinator, management committee of many of the activities undertaken in the research

center. Moreover I got involved with Strategic health, planning, Periodic review meetings, supportive supervisions and other related activities in the region.

Reference: - James A.F, Stoner, R.Edward Freeman, Daniel R.Gilbert Management Sixth Edition

Lectures on Health management and Leadership

My personal work experience

9.7 RelationShips between Supervision and Team Building and Their practical significance with in Health System in SNNPR, July 2010

Introduction

Supervision:- It is a task accomplished by an organization manager to ensure that staffs working in different departments of the organization discharge their responsibilities as effectively and efficiently as possible to register dependable success in meeting organizations objectives thereby achieve its goals.

It is act of watching over the work or tasks of another who may lack full knowledge of the concept at hand in organization. It does not mean control of others but only used to give any necessary guidance to realize proper function in overall work up of the organization. Such activities are undertaken by the supervisor to oversee the productivity and progress of employees who directly report to the monitor/supervisor.

Supervisory Skills:- Are practical knowhow and experiences acquired through training and enriched by un reserved active involvement in ongoing intervention activities of supervision in an organization in question. The supervisor who is in charge of managing the organization uses his enriched experience of technical, human and conceptual skills to facilitate proper function of the organization which is of vital importance in meeting desired goals of the organization.

Purpose of Supervision

Ultimate goal of supervision lies in that desired result be effected in an organization/health system through unreserved efforts made by the supervisor in collaboration with staffs working in different sections of the system to enhance progress in activities being performed for attaining designed objectives. To meet set objectives of health system there is an earnest need that every individual working in different section has to work in harmony through team work and paying due attention to set chain of command to accomplish tasks smoothly and dependably. If at all problems arise while

activities are being implemented the supervisor has to be proactive in overseeing productivity and progress of proper function. If systematic planning, organizing, staffing, proper allocation of available resources and implementation of activities together with controlling activities are at fault prompt corrective measures has to be initiated to reverse the situation. This could be effected through taking various corrective measures. Supportive guidance and training has to be given to staffs so that they perform their activities being aware of the situation in the system. Involving workers in every issue of the organization including their participation in decision making tasks of the system will boost their morale and enable them to execute their tasks as effectively and efficiently as possible there by make them more productive. Providing necessary resources and logistics to staffs and the system plays vital role in consolidating performance of the workers by and large that of the system. After creating conducive working atmosphere for the workers and the organization undertaking systematic performance monitoring and appraisal of activities greatly serves purpose of checking progress and take prompt corrective measures if at all problems arise during implementation period

Core skills in management and supervision

As supervision is a management activity and supervisors have a management role in the organization. To discharge this vital role and manage progress of health organization's activities successfully supervisors have to implement core skills which includes the following.

a) Problem solving and decision making
b) Planning
c) Delegation
d) Basics of internal communications
e) Meeting management
f) Managing self

Designing the organization staff

Staff recruitment and selection is one of the phases which have to be managed in the process of organizing the system. Before starting implementation of organization's activities defining a new job role is of paramount importance. It has to be decided that

what type of tasks be performed by whom and by which qualification and experience with whom and in which section and at what time. Task of hiring an employee has to be performed after undertaking promoting function, screening and selection. After meticulous selection of staffs working in different units of the organization is done establishing of various teams formed from individuals fitting background, skills and experience in required field should be chosen. Appropriate group be used for building productive teams who have reliable competence to undertake required implementation activities to meet set objectives of the organization. To effect desired result necessary job training has to be prepared and delivered to new employee to increase level of understanding about activities of the organization to be performed.

Employee performance Management

- Setting goals
- Supporting employee motivation
- Observing and giving feedback

Conducting, performance appraisal/Reviews. One of very important tasks of the supervisor is to conduct performance by creating conducive environment which enables active participation of the organization's management body and workers of all types. After accomplishing this task he has to apply standard supervision technique in collaboration with management body and workers to collect evidence based information which is of vital importance to check strengths and weaknesses together with other constraints of workers, management body by and large that of the organization. Based on the findings he has to give feedback pertinent to performance. Giving due attention to performance levels he has to appreciate best performers and systematically persuade low performers to improve their performance. Moreover he has to identify causes of poor performance and try his level best to address problems encountered in collaboration with the organization and those concerned

Firing of Employees be done if and only if after making various efforts which includes through education and persuasion in attempt of treating him/her to maximum extent possible based on rules and regulations of the organization

Personnel Policies. Developing personnel policies and manuals and giving dependable training to employees will greatly support workers to discharge their responsibilities of performing to their level best there by enhances increment in their achievement level which is very important to achieve set goals of the health system

Duties of supervisors

1) Conducting Basic management Skills

To register reliable success in organization they are managing supervisors have to implement basic management skills. They have to use evidence based information collected to define position of the organization. They have to be proactive in that they have to adapt systematic planning approach. They have to ensure that required planning, organizing, staffing, proper allocation of available resources and accomplishing of desired tasks be made as scheduled. After launching of implementation activities they have to undertake close monitoring of ongoing activities. They have to strengthen level of span of control in attempt of maintaining desired progress of intervention activities. Moreover they have to be firm decision makers. This skill greatly helps them to take prompt measures of correction if any sort of problem arises in the period of organization's activities implementation at any time. They have to make periodic review and evaluation of activities being undertaken. Based on the findings of the evaluation they have to take required corrective measures which can be of vital importance to further enhance progress in implementation activities of the organization. If they are overburdened by various tasks of management they have to delegate individuals who can take over their position as a supervisor and shoulder responsibilities of undertaking supervision function. If unexpected problem arises during implementation period they have to call upon individuals, groups, departments and management group of the organization and make thorough discussion to resolve problems. They have to implement participatory approach which enhances active involvement of employee in organization's affairs including in decision making. This greatly helps to do away any factors which impede proper functioning of the organization.

2) Organizing their department and teams
3) Noticing the need for and designing new job roles in the group
4) Hiring new employee
5) Training new employee
6) Employee performance management
7) Conforming to personnel policies

Problem solving, Decision making and proper organization Management

Define the problem

Supervisors have to define any encountered problem in the period of activity implementation. Verification of understanding of the problems is vital importance. Utmost emphasis has to be in place.

Upon defining the problem systematic work has to be done to find potential causes of the problem in the organization. Conforming to set specific objectives collection and evaluation of collected information has to be done. Based on the findings of the evaluation possible courses of actions have to be considered. Similarly possible adverse effects of courses of action to be taken have to be considered. After undertaking such evaluative task priority setting of listed problems to be resolved has to be tackled using appropriate decision making procedure. Based on the results of priority setting technique application systematic planning has to be made and after securing required resources implementation activities which are meant to address problems encountered have to be undertaken. To ensure proper progress of intervention activities being undertaken periodic monitoring and evaluation of implementation of the plan has to be carried out. After lapse of certain period verification of results of measures taken to resolve the problem has to be done. This step is of vital importance in that if in case the problem is not resolved as expected it will help us re- assess the situation and take appropriate courses of action and seek possible solution for difficult problems encountered in the process of implementation of activities chosen to resolve problems in the organization/

health system. There after continuous monitoring of intervention activities being undertaken has to be done to check progress of the organization till success in meeting the objectives and achievement of desired goals of the he system ensue.

Planning

In undertaking supervision activities in health system utmost emphasis has to be placed in order to accomplish various tasks of the system properly to achieve required goals of the organization. To achieve dependable results in health system intervention activities defining goals of the project and setting required general and specific objectives which relevant to attain goals is of vital importance. Strategies or activities which have to be accomplished to effect good results have to be selected based on results of situation analysis of the system. Proper allocation task forces in quantity and quality has to be made giving due attention to education background and experience of people working in the system. Similarly, appropriate allocation of other resources such as materials, Technologies, money and maintaining timelines has to be carried out. Cost of these all resources has to be prepared and submitted to concerned bodies who are in position to secure budget required for the implementation of overall health system activities. To be certain that planning activities are properly performed following steps in planning has to be maintained

Basic Phases in Planning

1) Mission description
2) Take stock outside and inside the system
3) Analysis (SWOT) through analyzing opportunity, threats, strengths and weaknesses.
4) Establish goals (Description of what is wanted to achieve)
5) Establish strategies to reach goals

6) Establish objectives along the way to achieving goals
7) Associate Responsibilities and Time lines with each objectives
8) Write and communicate a plan document
9) Acknowledge and celebrate accomplishment of the plan

Advantages of Undertaking Supervision

Supervision as part of management style in health system and if it is undertaken timely plays vital role in enhancing progress of intervention activities of health promoting, diseases and related events prevention and control projects/programs to meet their set objectives and achieve desired goals of the system. It helps to monitor ongoing intervention activities of health programs and to check for problems encountered in the implementation process and provide evidences for the problem to take necessary corrective measures which accelerate progress in the processes of intervention activities. Undertaking supervision activities also helps to provide tangible evidences for occurrence of various gaps which impede proper execution of the activities for possible measures to be taken. Other advantages of undertaking supervision in health system includes: -

- To closely monitor progress of intervention activities and ensure that activities are being progressing planned and if problems identified it will be communicated to responsible body to take corrective measures.
- To control over all processes of implementation activities
- To provide technical and material supports to enhance progress in provision of quality health services
- To provide tangible evidences in situations where competing problems arise findings of which is of vital importance to make relevant decision which enables high priority deserving problems be addressed first or more resources be allocated to its cause.
- To produce supporting evidences for possible evaluation of activities being undertaken
- T o communicate findings of evaluation to health facilities, health offices at various levels and those concerned

- To collect accurate information which may be useful before undertaking review and evaluation and impact assessment of implementation activities
- To promote team building activities and further encourage team work in all departments of the health system.
- To promote co-operation activities within a department and collaborative activities between departments and other related health organizations and partners.
- To identify best performers in the system and make them candidates for recognition/acknowledging , reward, etc.., and low performers to give positive criticism so that they can improve their performance
- To increase level of awareness of service providers on personnel policies and other standard guide lines for proper functioning of the system
- To communicate findings of impact assessment of external evaluators for possible courses of action to be taken
- To make periodic surveillance and identify gaps and after communicating of which participate in conjoint planning to address the gaps
- Moreover if the organizations performance becomes very low for several occasions undertaking supervision greatly helps to collect vital information useful to restructure the organization through re-planning which includes: - staffing, organizing, resources allocation, implementation and undertaking over all management activities to advance implementation processes.

Disadvantages of supervision

Undertaking supervision in situations where there is no/inadequate planning before doing it, no use of standard techniques, deficiency in supervisory skills, non participatory and the like can create obstacles which impede proper management function and contribute to low performance of workers and thereby to low achievements of goals of the health system.

Situations which are created in the process of undertaking supervision and having negative impact in overall health program implementation activities and which threaten achieving of set goals includes :

-

Before undertaking supervision its activities being performed has to be planned. What to supervise, why, how, where, when, with whom and other relevant information has to be communicated at least 02 weeks before conducting it.

Information also has to be imparted as which technique, standards to be used during supervision period. Others factors which contributes for organizations disadvantages due to deficient supervision includes: -

- If Autocratic type of supervision is conducted most of the activities will be dictated by the supervisor and if due attention is not given by supervisors to make it participatory role the management body the organization and that of workers will be insignificant and not corrected teams and individuals may lose interest in undertaking the tasks and decisions will be made by supervisors and the consequence this decreases productivity of workers resulting in low performance

- In situations where supervisors are over confident on competence, knowledge, experiences, education background and the like of workers (As occurs in Anarchic type of supervision) performers will be allowed to provide services as they like. If close monitoring is not done implementation activities may not progress as planned, resources will be depleted without use and after lapse of time under performance of workers will be realized as a result of which set objectives of the health system will not be met.

- During undertaking supervision if the supervisors use only negative supervision where negative criticisms given as feedback worker may get offended and lose

interest to perform as expected and the situation leads to underachievement in activities being undertaken. Therefore supervisors have to be careful while managing supervision activities.

- Failure to conduct meetings with workers and management body before the activities, failure to give feed backs in written form and verbally, failure to appreciate good performances creates clear gap between workers and the supervisors resulting in poor performance

- AS supervisors are managers they have to be meticulous while undertaking activities and they to create conducive atmosphere for management body and workers of the organization to actively participate in the process. They have to be sympathetic to workers have to appreciate their good performance in overall management activities, give rewards for good performers and persuade low achievers to improve their performance otherwise workers may not be comforted with the way they are treated and this may result in poor performance and there by low achievement.

Team Building

Is the process of organizing, establishing and strengthening of formed group/Team to take responsibility of performing on given task and achieve defined goal. This approach gives utmost emphasis in group work implementation of which is considered to be of vital importance to register dependable success in implementation activities of the organization to meet set objectives.

Team

A team is defined as special type of group having a small number (2-8) of people who are interacting and influencing each other to work for a common goal. They each have skills, some of which are complementary, supportive, specialized and others of which are overlapping, shared and common. No domination of one member by the other for they have attitudes of willingness to actively participates in the task being accomplished independently. They are lead by selected individual who performs co-ordination of efforts made to achieve desired goal and play collaborative roll between members. Even though the purpose of establishing a team is to accomplish given task and achieve dependable result it creates important forum for sharing various experiences acquired by team members in different skills.

Characteristics of self managed Team

- The team has responsibility for relatively whole task
- The members each possess a variety of task related skills
- The team has the power to determine such as work, methods, scheduling and assigning members
- The performance of the group as a whole is the basis for compensation and feedback

Types of Teams

Formal Team:-Is the team purposely formed to get desired task be accomplished

Informal Team: - Formed when ever people come together and interact with each other regularly and as a result of this they establish teams

Informal teams have four major functions which include: -

- Maintain and strengthen the norms(expected behavior) and values of members

- Give members feelings of social satisfaction Help members communicate, create channels
- Help solve problems

Stages of Team Development (Five)

1) **Forming**

This is the initial stage in the development of the group. It serves as orientation time in which members get introduced with each other. Moreover this occasion is used to share experiences between each other including likes, dislikes, hobbies, and etc.

2) **Storming**

In this stage members oppose the formation of the structure. They become doubtful on the structure of the team. They become resentful and as a result of created hostility they fight to the ground rules

3) Norming

This is the stage where conflicts treated in the second stage are well taken care of and addressed and resolved after making thorough discussions between team members. The interactions brought about agreement and their interrelationship became so consolidated that as a result of which their unity came in to reality.

3) **Performing**

This is stage where previous structural issues became resolved. The structure supports group's dynamics and performance. The structure is used as a fertile ground to execute desired tasks to meet set objectives.

4) **Adjourning**

This the stage in which the group upon accomplishing given task and fulfilling the mission the group wraps up activities. The attitude of the group varies from excitement to depression.

Advantage of Team Building/ Team work facilitation

1) Encouraged and strengthened team work enhances advancement in progress of quality health services provision activities
2) Use of well built team and related groups who are made to actively participate in undertaking health intervention activities plays vital role in problem solving as a result of which helps to increase level of achievement of set objectives
1) Use of well built teams/groups in organization's planning, implementation/decision making and other management activities greatly enhances proper implementation of health programs and enables to register dependable success to achieve set goals of the health system
2) Enables active involvement of consolidated teams in intervention activities decision making, problem solving which in turn enhances progress in quality health services provision in health facilities and offices of the health system.

3) Facilitates strong team building situation which enables realization of better performance in any activities as compared to individual efforts. (Achievements of team always surpass that of individuals).

4) Well designed team building efforts produces strong team. Strong team led interventions/operations will be reliable to register success to achieve set goals of the health system

Disadvantages of Team Building

In reality if team building process is done by using the right individuals at the right place and time to the extent situations require there will be no recognized disadvantages due to undertaking team building activities. But if precautions are not taken while designing and the like and other uncertain factors may create un advisable consequences.

1) If individuals who are not among the right persons may be selected to be member of the team as a result of which they may create conflict within the team and greatly harm performance of the team

2) In the design if the team has no leader who will be responsible and accountable to leading tasks being accomplished by the group members there will be negative effect of the team to achieve better results

3) If close supervision activities are not undertaken during team building process and using built team for accomplishing tasks desired the gaps created in between may impede proper performance of the group and their achievement will be lower

4) If there is a problem from establishing to strengthening of team building process, which includes, problem in planning, staffing, organizing, establishing and use of the group to undertake activities desired, their performance will greatly decrease and the possibility of achieving expected result will be minimal

Relationship between Supervision and Team work/Team Building

Supervision is part of the management system. Management is process in which the manager gets things done by others or through others. To get things done efforts of using individuals to achieve desired goal may not be as effective as using strong team who is well versed about the work to be done. Therefore role played by the action of strong team

at any step of managing implementation activities of the health system is of vital importance to enhance better achievement to meets set objectives of the health system. In the steps which includes:- planning, organizing, staffing, implementing, monitoring, control, decision making and undertaking overall management activities, there is no step which does not require need /support of strong group (team) for project implementation as well as its management/supervision to eventually achieve goals of the health system. Therefore cannot think one outside the other. They are interrelated/ interdependent to each other. One can be used as complementary of the other. Design of team building if it is well processed it will enhance establishment of strong and dedicated teams whose overall efforts will effect reliable success in achieving goals of the health system

Best experience from Practice

From the above discussion/Description Definitions, Advantages, Disadvantages and relationships between Supervision and use of supervisory skills and Team work which is aftereffect of overall team building work up it is quite obvious that they are not exactly the same but yet they are inter-related, interdependent and complementary to each other. Following these attempts will be made to explain their practical significance in real practical exercise of mine during 10 years period I engaged in HIV-AIDS prevention and control project established in Sidama zone in 1990 E.C. The experience is the outcome of health and related services I rendered during 10 years stay working at various levels of HIV-AIDS prevention and control project implementation.

In addition to descriptions made which were results of enriched experience sharing practice in the class and review of literatures from various sources such as books and internet search. I hereby attempt to explain them incorporating to above descriptions/explanations relating them to experience I acquired while managing HIV-AIDS project. This explanation is an outcome of use of accumulated supervisory skills for several years and unreserved efforts made to encouraged and build strong team work with colleagues for purpose of registering dependable success to meet set objectives of the project. From the outset I got involved in situation analyzing needs assessment

activities the results of which strongly favored establishment of HIV-AIDS prevention and control office in Sidama zone. After approval of the project became certain together with my colleagues we actively participated in planning, organizing staffing, implementation, monitoring by and large in project leading activities. After inception of the implementation we used to engage in close monitoring, control, decision making activities. After lapse of several months we used to make periodic review and evaluation. We used findings of the evaluations to take necessary corrective measures in several occasions where various mistakes were encountered which if prompt corrective measures were not taken they could have impairing effects. Three years after launching the project impact assessment activities were undertaken the findings of which explicitly showed where we were, what progresses were made, what types of gaps hindered proper implementation activities of the project and to what extent. I t was meant to determine magnitude of the epidemic, to identify possible influencing factors which includes socio-economic, socio-cultural, awareness, misconceptions and identify risk factors and identify most vulnerable groups. Based on the findings various corrective measures were taken and progress of project implementation was enhanced. An effort of supervisors and teams established at various levels was used to address these problems. More over periodic surveillance and research activities were undertaken. Operational research was done in collaboration with Jima University which was KAPS (Knowledge, Attitude and Practice with regard to HIV- AIDS) on various social groups. Results of the study were used to undertake dependable intervention activities to stop further spread and minimize adverse effects of the epidemic. These activities were undertaken from time of inception of the project to its expansion to various areas of the region. During the time of engagement in this project execution I together with my colleagues used supervisory skills know how to further enhance progress of implementation activities of the project to achieve its set objectives. While doing so none of us tackled any task single handed but we used to work in teams established in response to implementation of multisectoral approach as optional strategy to contain the epidemic. The teams were very much dedicated to be responsible to take part in implementation of activities, supervision and related management activities to enhance its progress and indeed we were very much

backed by strongly built teams dedicated to contribute to ongoing local and regional efforts being made to address issue of HIV-AIDS.

Learned experiences which were results of utilization of enriched technical, human and conceptual supervisory skills incorporated with well built and strong and dedicated teams greatly supported enhancement of progress of HIV-AIDS prevention and control activities of the project. Indeed this achievement was aftereffects of concerted efforts and conjoint actions of all segments of communities, sectors NGOS, Religious and cultural groups, partners and all concerned parties supported by well co-ordinate management work. The reason for this prompt response was at that very time there was high public panic for the magnitude and aftereffects of the epidemic was so high and public awareness level with regard to this pandemic was very limited. In addition to these situations of this epidemic was directly related to low socio-economic, socio-cultural, political commitment issues, misunderstandings, misconceptions and other related issues aggravated the situation and strongly called upon for prompt measures to be taken conjointly. The gap created at that time was issue of HIV-AIDS was considered as that of only health problem where as indeed it was development issue. Prompt response was highly demanded for the pandemic was devastating and was claiming lives of many individuals irrespective of sex, social group and other differences and available very expensive palliative drugs were not accessible and not affordable contributed to higher level of panic. Moreover realized far reaching consequences of the pandemic in terms of causing severe illnesses, deaths, debilities, socio-economic development progress retardation because of depletion of most productive elements of societies and anticipated stagnation in over all development made the problem most pressing and priority seeking as a result of which it deserved utmost attention of the government and the public at large.

By reasons of mentioned facts between year of 1989 and 1990 magnitudes of the problem in Sidama in particular and the country in general were high and many people died from it. Based on the findings of annual review and evaluation made on HIV-AIDS it was decided that this pandemic be combated through means of launching HIVAIDS campaign

involving each segment of communities. Consensus was reached between zonal health department, zonal administrative council and Irish AID Ethiopia to establish zonal HIV-AIDS prevention and control office in Hawassa. The office was established in 1990 (E.C). In the same year health team of four was sent to Uganda for 02 weeks for experience sharing of best practices achieved in Uganda. Up on return from Uganda briefing was done about learned best practices and adapted strategies used to contain the epidemic to multi-sect oral groups and concerned bodies in the zone. After making thorough discussion on the issue it was decided that the problem was pressing, attention seeking and priority deserving. Following this participatory strategic plan was prepared, resources mobilization activities were undertaken and initial running budget was secured by Irish AIDS ETHIOPIA. The campaign was launched giving utmost emphasis to implementation of co-ordinate multi-sect oral response to address this cause. Sesitization, mobilization and organizing activities were undertaken involving government sectors. NGOS. Religious and cultural groups, private sectors and partners working in the zone. Unreserved efforts were made to enhance active involvement of overwhelming majority of the local and regional people. Various chosen strategies of option were implemented to ensure active involvement of each segment of communities. Methodology used to enhance increased public awareness with regard to HIV-AIDS included enabling of selected representatives of various segments of communities to take part in awareness creating trainings, workshops, community dialogues, refresher courses for health service providers, preparation of question and answer forums, through attending dramas and the like. Public awareness creating activities were undertaken when ever and where ever people assembled. Occasions of political, development and other social gatherings were used as a forum to deal about HIV-AIDS issue. Anniversaries, religious and cultural celebrations events created fertile ground to address issue of the epidemic. Every available avenue was used to undertake mass rally activities to enhance increased public awareness. Public awareness creating have been used in schools, churches, mosques, market places, Idir, Debo areas, areas of wedding and mourning ceremonies on the streets and the like. Strictly speaking for the burden of the problem was so high and if left unchecked the situation was considered to be the worst each available opportunity was used to deal about the problem of this epidemic.

Peculiar Features of HIV-AIDS campaign in Sidama

The fact that Sidama zone is among highly populated zones of the region, being cash crops growing area (Coffee, Chat, etc.) as a result of which travelling to various areas including to towns and other regions to sell their products and stay out and the like increased their vulnerability to HIV infections. The people is subject like others to various influencing socio-economic, socio-cultural practices, misconceptions, backwardness, poverty and the like which increases their vulnerability to this infection. More over increased level of illiteracy and relatively inadequate level of intervention activities undertaken to stop further spread and mitigate adverse effects of the pandemic like other areas among others created worsening situation in the region. In face of such devastating condition there was a strong urge to tackle the very tasks of HIV-AIDS the only remedy of this unprecedented problem was considered to be remained only through calling up on the public to give prompt response in terms of each available means to address this issue. To give utmost emphasis on the issue and get active involvement of every one energizing "MOTTO" was formulated by the office and disseminated to each segment of communities to serve as enabling memorandum of understanding to possibly uproot foundation of HIV-AIDS in the region. Assertion of the motto presupposed among the followings.

Name of the campaign Launched: -

- Gatiso Gaado (Sidamic version 1990 E.C)
- Yemadan Zemecha (Amharic version 1990 E.C)
- Salvation Campaign (English version 1999 G.C)

- " Do what you can with what you have where you are" to contribute level best for containing the pandemic
- Participate in undertaking intensive and extensive socio-cultural uprising involving all segments of communities

- Contribute to strengthen multisectral response co-ordination
- Communicate every available relevant information gathered from local,regional, National and International sources to those who need
- Combat backwardness and poverty relentlessly
- Co-operate/Collaborate with every individual, groups, sectors,NGOS, Private sectors, Religious and Cultural groups, partners and those concerned who are affiliated to and/or working on the issue of HIV-AIDS
- Provide every available support to people living with HIV-AIDS and AIDS Orphans.
- Make unreserved efforts to strengthen active involvement of communities
- Close monitoring of intervention activities
- Make periodic review and evaluation of intervention activities being undertaken
- Do periodic impact assessment
- Promote behavioral change communication activities
- Undertake periodic surveillance and relevant research activities
- Communicate assessment findings to those who need
- Make unreserved efforts till further spread of the epidemic stops and its adverse effects are mitigated.

Undertaken Supportive Supervisions

1) Integration of programs and Services

During the campaign period unreserved efforts were made within the health system (all sections) to mainstream issue of HIV-AIDS as number one agenda of zonal health department. Other sectors were communicated to incorporate issue of HIV-AIDS to their day to day development activities. Later on all Non -governmental organizations, Religious and Cultural groups, various mass associations and partners were

communicated to incorporate issue of HIV/AIDS to their routine activities. After lapse of years most sectors including health, mass associations, partners and those concerned voluntarily started to secure budget to address this issue.

2) Interdisciplinary Team work

This task was accomplished through establishing an Anti-AIDS clubs in schools out of schools, Factories,Industries,in Associations (Youth, women, etc..), Farmers associations, sectors, Religious and Cultural groups and the like. More over HIV-AIDS combating teams were established in places where people assemble periodically. Virtue of having interdisciplinary strong teams greatly supported enhancement of progress of implementation of activities.

3) Community Involvement

Relentless efforts were made to promote active involvement of each segment of communities through involving their representatives in trainings, workshops after attending of which played their level best to increase public awareness with regard to HIV-AIDS and in turn greatly supported intervention activities to contain the pandemic.

4) Inter-sect oral Collaboration

Each available supportive supervision was done to enable and strengthen intersect oral collaboration to escalate multi-sectoral response to reduce burden of the epidemic by contributing level best to stop further spread and minimize its ill effects.

5) Participatory planning and Implementation

From inception of the project to its expansion in many Woredas and other areas of the region selected representatives of sectors, NGOS, Religious and Woredas, urban and rural kebeles, cultural groups ,private groups and partners were made to participate in planning programs and implementation of HIV-AIDS containing activities.

6) Delegation of Responsibilities

For the strategy which was adopted was enhancing and strengthening of co-ordinate multi-sect oral response it was possible to establish strong multi-sect oral teams and it was possible to select the right person on the right place at the right time irrespective of profession difference. By so doing it was possible to lead coordinated efforts where ever one got involved and contributed level best to address this devastating and pressing public health problem.

7) Continuous Learning

The fact that intersects oral collaboration was in place it was possible to share from enriched experiences of groups including from outstanding figures and professionals of the region and the country. I was also possible to learn from accumulated experiences and knowledge of best practices from different Woredas of the zone, region and the country, Nations such as Uganda, Thailand and Senegal who performed best in attempt of containing the pandemic. Moreover behavioral change communication throughout the country enabled continuous learning teaching processes which doubtlessly increased level of strength to address issue of HIV-AIDS.

Achievements of the Campaign

As results of periodic review and evaluations showed that the campaign which was undertaken by giving utmost emphasis on implementation of multi-sect oral approach has

achieved dependable success as a result of this following achievements were registered. Coordinated multisectral response was strengthened as evidenced by active involvement all sectors, NGOS, religious and cultural groups, partners and each segments of communities was enhanced markedly. HIV-ADS prevention and control offices were established in ten Woredas of the zone. Among 560 Rural/Urban kebeles found in the zone it was possible to establish HIV-AIDS prevention and control technical committee was established from (1990-93) and these all were used to increase level of response to address issues of the pandemic. Anti-AIDS clubs which were established in schools, out of schools, factories, youth and women associations and other areas played tremendous role contributing their level best to ongoing regional and national efforts made. In general the outcome of this campaign was due to concerted efforts of all segments of communities and all mentioned parties. This was affected by implementation of available managerial and supervisory skills and by intensive and extensive use of strong and dedicated teams established at various levels.

Challenges

In the period of first three years after inception of the project there were several problems encountered which included gap in coordination of multisectral response, enhancing active involvement of various segments of communities, very low level of using condom, relatively higher levels of stigma and discrimination towards people living with the virus. There were commitment gaps in some segments of social groups and others. Moreover there were transport, supplies and logistics gaps which limited progresses of intervention activities which were being undertaken. To address these findings which were aftereffects of conducted impact assessment unreserved efforts were made to take corrective measures as a result of which progress of intervention activities was enhanced.

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9.8 Epidemic management of AWD/cholera in remote areas of Ethiopia.

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Introduction

Communicable diseases particularly epidemic prone diseases have been commonest causes of severe illnesses, deaths, and long lasting debilities. Even though all regions of the world have been affected by these diseases after effects of the problems they cause are more pronounced in developing countries most affected being least developed ones. Cholera is among the commonest epidemic prone disease which is known to afflict health of various segments of societies in different regions of the world causing mentioned health problems.

Cholera is the disease which is one of acute diarrhea causing diseases. It is caused by bacteria called Vibrio Cholera. It is manifested by acute watery diarrhea, vomiting, dehydration, lethargy etc. It belongs to El-tor type and its sub types are Inaba (01) and Ogawa (0139). Magnitude of cholera is more pronounced in developing countries than developed

Cholera is a Greek word which means the gutter of the roof. It was caused by Bacteria: Vibrio cholera, which was discovered in 1883 by Robert Koch during diarrheal out break in Egypt

The organism is comma shaped; gram-negative, aerobic bacillus whose size varies from 1-3 mm in length by 0.5-0.8mm in diameter, Its antigenic structure consists of a flagellar H antigen and a somatic O antigen. It is the differentiation of the latter that allows for separation in to pathogenic and non pathogenic strains. Diagnosis is confirmed by isolating Vibiro cholera of the sero group 01 or 0139 from feces. Only vibrio cholera serogroup 01 and 0139 are associated with epidemiological characteristics of cholera. Serogroup 01 occurs as two biotypes Classical and ElTor each of which occurs as three serotypes (Inaba, Ogawa and rarely Hikojima). The clinical illness caused by Vibrio cholera 01 of either biotype and by Vibrio cholera 0139 is similar because these organisms elaborate an almost identical enterotoxin. In any single epidemic one particular serogroup and biotype tends to be dominant but serogroup switching is common. (1)

Current Seventh pandemic is characterized by the 01 serogroup Eltor type. Before 1992 non-01 strains were recognized as causing sporadic cases and rare outbreaks of diarrheal disease, but were not associated with large epidemics. In 1992- 1993 large scale epidemics of cholera like disease were reported in India and Bangladesh caused by a new

organism Vibrio cholera serogroup 0139. (2)

Occurrence

Cholera is one of the oldest and best understood epidemic diseases. Epidemics and pandemics are strongly linked to conception of unsafe water and food, poor hygiene, poor sanitation and crowded living conditions. Typical settings for cholera are Peri urban slums where basic urban infrastructure is missing. Outbreaks of cholera can also occur on seasonal basis in endemic areas of Asia and Africa.

In 2000-2001 for example Kuwazulu-Natal, South Africa experienced an outbreak that resulted in more than 125,000 cases with a low case fatality rate of less than 0.5%, a low rate that has never previously been observed in an outbreak of that magnitude. In 2006 52 countries reported 236,896 cases of cholera and 6311 deaths to WHO- with an overall case fatality rate of 2.7%. During the 19th century, cholera spread repeatedly through six pandemic waves from the Gulf of Bengal to most of the world. During the first half of the 20th century the disease was confirmed largely to Asia, except for severe epidemic in Egypt. During the latter half of the 20th century the epidemiology of cholera has been marked by the global spread of the seventh pandemic of cholera caused by vibrio cholera ElTor. During the current Seventh pandemic which started in 1961 vibrio cholera of the ElTor biotype spread world wide from Indonesia reaching the Asian main land in 1963 and Africa in 1970 where it has remained endemic in many countries. Cholera reached Latine America in 1991 after nearly a century of absence causing explosive epidemic along the Pacific coast of Peru and in many countries. In late 1992 the new serogroup of V. cholerea designated 0139 Bengal emerged in Southern India and Bangladesh and spread rapidly throughout the region over the next four months.(2)

Reservoir

Vibriio cholereae does not have many areas, places, etc., but its main reservoir is humans, but according to the observations made in Australia, Bangladesh and the USA have shown that environmental reservoir exist in association with copepods or other zooplankton in Brackish water or estuaries but in absence of these presence of environmental reservoir can not be verified

Mode of Transmission

Absence of providing adequate and potable water , in adequate provision of safe latrine by and large gap in intervention activities to improve environmental health and sanitation together with other related factors have been incriminated to increase vulnerability of risk groups to be infected by Cholera. Cholera is acquired through ingestion of an infective dose of contaminated food or water and can be transmitted through other mechanisms such as sea food that come from vibrio cholereae endemic estuaries. Known risk for cholera outbreak include poverty, lack of development, high population density, low education and lack of previous exposure. Studies done in Bangladesh have also shown environmental associations with vibrio cholera including water Temperature, torrential rainfall, and copepods counts. These factors may contribute to the seasonality and secular trends seen in cholera outbreaks

Incubation period for cholera is from a few hours to five days, usually 2-3 days. As long as stools are positive the disease can be transmitted to other vulnerable person. Carrier state may persist for several months.

Susceptibility

Among influencing factors which increase risk of vulnerability to cholera infection gastric achlohydria is the one to be mentioned. Susceptibility of infants to cholera infection is protected by the fact that they are breast fed. Infection with either vibrio choleare 01 or 0139 result in a rise in agglutinating and antitoxic antibodies which are

readily detected following 01 infection are the best immunological correlate of protection against 01 cholera. In endemic areas most people acquire antibodies by early adult hood. However infection with 01 strain affords no protection against 0139 infection and the reverse is also possible.

According to results of experimental challenge studies done on volunteers an initial clinical infection due to vibrio cholereae 0139 conferred significant protection against diarrhea upon rechallenge with this strain.

As analysis findings of review of reported cholera outbreak world wide from 1995-2005 explicitly showed seventh cholera pandemic began in Indonesia. There after it spread through out the world reaching Africa in 1970 and South America in 1991 never appearing for more than a century. Previously it used to be endemic in large parts of South Asia but in current pandemic it has established endemicity throughout African continent. For the disease is associated with lack of clean water and poor sanitation which is after effects of low socio economic development magnitude of the problem is more pronounced in Africa.

Table-1 Number of Outbreaks and Total Number of Reported cases by Region of the World from 1995-2005, WHO report.

Region	Number of outbreak (%)	Total Number of cases	Percent (%)
Africa	417 (66.0%)	423,904	87.6
Americas	45 (7.1%)	13,099	2.7
Europe	8 (1.3 %)	479	0.1
Eastern Mediterranean	36 (5.7%)	29,105	6.0
South East Asia	106 (16.8 %)	15,188	3.1
Western Pacific	20 (3.2%)	2471	0.5
Global Total	632 (100%)	484,246	100

As can be realized from the above table, from the total of 632 outbreaks which occurred in the world 417 (66%) of them occurred in African region and from total (484,246) Cholera cases which were reported to WHO 423,904 (87.6%) cases were from African region particularly Sub-Saharan region.(2)

Table 2:- Proportions of Cholera cases, deaths and CFRs as compared to Global Cholera Cases, Deaths and CFRs from the year 1995 to 2008 WHO report

Period (1995-2008)	Africa				World		
Year	Cases	Deaths	Account for Global (%)	CFR (%)	Cases	Deaths	CFR (%)
1995	71,081	3024	36	4.3	208,755	5034	2.4
1996	108,535	6216	76	5.7	143,349	6689	4.6
1997	118,349	5853	80	4.6	147,425	6274	4.3
1998	211,748	9856	72	4.7	293,121	10586	3.6
1999	206,746	8726	81	4.2	254,310	9175	3.6
2000	118,932	4610	87	3.9	137,071	4908	3.6
2001	173,359	2590	94	1.5	184,311	2728	1.5
2002	137,866	4551	97	3.3	142,311	4564	3.2
2003	108,067	1884	97	1.7	111,575	1894	1.7
2004	95,560	2331	94	2.4	101,383	2345	2.3
2005	125,082	2230	95	1.8	131943	2272	1.7
2006	missing	missing	missing	missing	missing	missing	Missing
2007	166583	3994	94	2.4	177,963	4031	2.3
2008	179323	5074	94	2.8	190,130	5143	2.7

Analysis findings presented above clearly show that African region accounts for largest proportion of Global cholera cases and deaths. This implies that poverty, low socio-economic, socio-cultural problems, and related influencing factors mentioned above are situations which create fertile ground for spread of cholera and cause tremendous public health problems. In face of such a huge problem there is an earnest need to reassess magnitude and identify risk factors which increase vulnerability of various segments of

communities to cholera and produce evidence based information to undertake prompt intervention activities to contain outbreaks and further prevent and control future outbreaks, epidemics of Cholera .(2)

Literature review

The etiological agent that causes cholera is *Vibrio cholera* .(3)The infective dose of *Vibrio cholera* in man is becoming increasingly evident that the number of vibrios required to cause symptomatic infections is lower than previously believed. When a strain of the classical biotype was administered to adult volunteers in water, the ID_{5o} was 10^8-10^9 vibrios but Prior administration of sodium bicarbonate reduced the infectious dose to approximately 10^4_10^6. However, in recent studies using an El Tor strain, administration of 10^3 vibrios with bicarbonate resulted in symptomatic infection in 4 out of every 6 volunteers challenged(4).

Cholera is usually transmitted through faecally contaminated water or food (5), as well as by person-to-person contact through the faecal-oral route. (6) Contaminated water is more common as the usual vehicle for transmission in less developed countries than in more-developed ones.(7) Sanitary conditions in the environment also play an important role since the V. cholera bacterium survives and multiplies outside the human body and can spread rapidly where living conditions are crowded and water sources unprotected and where there is no safe disposal of faeces.(6)Cholera continues to be transmitted in environments characterized by inadequate water supply and poor sanitation.(8)

A study done in Fort-Dauphin, Madagascar concerned untreated water as the principal vehicle of epidemic cholera. The community was at risk for waterborne illness despite having access to piped water. Possible reasons for increased risk included inconsistent chlorination of municipal water and domestic storage in wide-mouthed buckets, which permitted hands to touch, and contaminate, stored drinking water. Not using soap to wash

hands increased the risk of cholera. Improving access to narrow-mouthed containers with covers and to soap would reduce the risk of disease. (9)

Another study which was done in West Bengal, India indicated that source of drinking water, method of hand washing, and sharing a latrine was associated with cholera incidence. Drinking water collected from shallow wells was statistically associated with cholera. Drinking water without chlorination also showed significant association with incidence of cholera. Washing hands with pouring water and soap significantly reduced the risk of cholera. (8)

Consumption of any of the raw vegetables included in the composite variable was also significantly associated with cholera .Hand soap was observed in 58% of case homes and 90% of control homes. The presence of hand soap was significantly protective against cholera. (10)

The results of the case-control study also indicated that persons who washed hands with soap before meals were at lower risk of illness from cholera. While hand washing with water alone, which was not protective, is a common practice in West Africa, hand washing with soap is more rare.(11)

Studies have also indicated that use of soap and hand washing promotion can achieve a 26 to 62% decrease in the incidence of diarrhea in developing countries. (11)

The lack of infrastructure to provide clean and safe water has made many parts of sub-Saharan Africa susceptible to cholera. Many studies have indicated that cholera outbreaks were associated with inadequate sanitation, poor hygiene. However, cholera outbreaks have not been effectively controlled because interventions for the prevention of outbreaks were not appropriately and sufficiently undertaken. (7)

However, the application of well-established public health principles—ensuring universal access to potable water and the separation of human fecal wastes from food and water sources—is sufficient to prevent widespread cholera transmission. Through these

measures, epidemic cholera was eliminated from Europe and the United States over a century ago. Although isolated cases and small, self-contained outbreaks of cholera still occur in developed nations. (12)

Efficient surveillance of cholera as part of an integrated surveillance system that includes adequate mechanisms to allow the sharing of information on a global level needs to be strongly encouraged. (13)

The bacterial agent is associated with conditions that force populations to live under conditions of overcrowding, inadequate housing, inadequate excreta disposal systems, lack of potable water, floods, unhygienic human behavioral practices, poverty, civil unrest leading to internal displacement of people, and unhygienic food production, distribution and handling systems. In sub-Saharan Africa, 63% of the population has no sustainable access to improved sanitation and 44% has no sustainable access to improved water sources. The ever-increasing proportion of vulnerable African populations who live in the above-mentioned unsanitary conditions is constantly at risk of cholera outbreaks (3).

In addition to human suffering caused by cholera, cholera outbreaks cause panic, disrupt the social and economic structure and can impede development in the affected communities. Unjustified panic-induced reactions by other countries include curtailing or restricting travel from countries where a cholera outbreak is occurring, or import restrictions on certain foods. For example, the cholera outbreak in Peru in 1991 cost the country US$ 770 million due to food trade embargoes and adverse effects on tourism (14).

An important cholera outbreak occurred during the civil unrest in Monrovia, Liberia, among the internally displaced population. A total of 34 740 cases were notified through the emergency surveillance system that was put in place by WHO (15).

Cholera has a seasonal pattern in endemic areas although the season varies from place to place. In Delhi most of the cases are encountered between May-October, this period covers part of summer and the whole of rainy season. Our observations also indicate that high relative humidity and high rainfall in the presence of high environmental temperature were associated with emergence of clinical cholera. (16)

The cause of death for persons who died early appeared to be acute dehydration and may have been because of late presentation to the cholera camp or because of inadequate initial rehydration. The cause of death for those who died late appeared to be from complications (infections with fever caused by prolonged use of IVs, etc.).(17)

Oral and intravenous rehydration is the recommended treatment for acute watery diarrhea with dehydration regardless of etiology; thus a rapid diagnostic test adds little to the clinical management of patients suffering from severe cholera. However, from a public health perspective, the detection of cholera cases in a new geographic region should trigger rapid preventive actions that minimize disease spread and resultant morbidity and mortality. (18)

Cholera, when not treated, is one of the most rapidly fatal diseases known. Fortunately, life saving replacement therapy is easily administered and inexpensive. Excess mortality can be expected during cholera epidemics among populations that don't have access to treatment. (19)

Continued monitoring of antimicrobial susceptibility as well as strain tracking are important in adapting policy for cholera control at national and global levels (20).

Recent AWD outbreak in Ethiopia

Past History information's indicates the existence of outbreak in Ethiopia starting 1634-35 . The cases were observed also in 1831 and 1836, 1856 and 1866-7, 1889-1892, 1906 (THE HISTORY OF CHOLERA IN ETHIOPIA by RICHARD PANKHURST PP 262-269).All out breaks were given different names(Fengil,Neftegna,Neftgna fengil,Agwert,Yenifas Beshita).Additional to this AWD was reported in 1963, 1966 and 1978 in Ethiopia, with poor documentation.

Recent AWD outbreak reported since 2006.And still cases are reporting in erratic form from different regions and Zones and wereda. The outbreak started in Gambella region, Gambella city, as of April 2006, where one case reported and end up with 100% case fatality. The assessment that the patient who died immediately at HF, had travel history to Sudan. In the following wk, cases started to build up and spread to 3 wereda. Totally 1398 cases and 12 deaths (0.86% CFR) reported on the same month from 3 wereda. Despite the response cases continued to be reported and the outbreak in Gambela controlled on June ,2006 reporting a total 2300 cases and 18 death(0.78 CFR) from 9wereda,of 2 zones.

The Outbreak was managed with coordinated effort establishing Teams of cases management and Diagnostic service, Surveillance, Water and Sanitation, Resource Mobilization and distribution, Health education and information promotion. All Response teams were lead by the President of The Regional government having the Health Office to be the secretary.

Actors in the response were Health sector, Water bureau, The Information and communication bureau, Youth and sport office, President office of The Regional Government ,UN organization (WHO,UNICEF),Local NGO-Red Cross society.

Following Gambela region ,AWD outbreak started to be reporting from Oromia on June,2006, followed by SNNPR, on July,2006,tigray,Amhara and AA on August,2006 and also Afar on October 2006

AWD outbreak incidence reporting by Month and Region,2006

	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Gambela				x								
Harari												
Oromia						x						
SNNPR							x					
Somali												
Tigray								x				
AA								x				
Amhara								x				
Afar										x		

Following the Gambela outbreak, regions started to report AWD cases with different frequency and also Coverage. Totally 8 regions and two Administrative cities (AA and DD) reported cases except Benshangul Gumuz Region. The topography coverage revealed 59 Zones and 319 wereda and 10 Cub cities of AA reported during 2006-2009.

The frequency of affected wereda is varies. Among the 319 affected wereda,195 (61%) reported once,85(27%) wereda affected twice,36(11%) affected three times and 3(1%) wereda affected four times in four year.

Totally 120, 267 cases and 1372death)(1.14% CFR) reported (relatively slightly high comparing the WHO guideline of <1% for good outbreak management). Female to male ration is 0.72. (N 107,418). Seventeen percent (17%) of the cases were children under five years of age while contributing 21% of death report from the total death report (N=107,418 cases and 1281 death). Case fatality rate in this age group observed to be 1.5% (N=18543 cases and 268 deaths)

Affected Age of above 45 years is found to be 10.8% of the total cases and also contributes 20.1% death report for the total death report. The age specific CFR for the cases above 45 years of age is found to be 2.2% (N=11587 cases and 258 deaths.

As favorable condition for the AWD outbreak was sited to be low pure and potable water coverage which was 35% (1995 EC) and Environmental health and sanitation coverage 7.6%.

In all years, AWD case reports starting to increase in June reaching the pick on august and decreased on November.

From the start of the AWD outbreak in 2006, The Federal Ministry of Health devised a mechanism in the control of the Epidemic at Federal level. In this regard organized the Multi sectoral AWD Prevention and Control committee chaired by the State Minister under which different expert special committees were organized. These expertise committees were answerable to the National Multi secotral committee.

These expertise committees were

1. Social Mobilization and Health Education chaired by Health Education and Communication Center
2. Hygiene and sanitation chaired by the Hygiene and Sanitation Department
3. Surveillance and Communication , chaired by Diseases Prevention and control Department
4. Case Management and Lab investigation , chaired by Diseases Prevention and Control Department
5. Resource mobilization and logistic utilization

6. Monitoring and Evaluation

All committees have its TOR and activities to be conducted. The Same arrangement was organized at Regional, Zonal and wereda level and supported to be functional.

Members of the Multi sectoral committee were Government line ministries who are stake holders in over all problem like Ministry of Water, Ministry of Communication, Disaster Risk M Food Security Sector, Ministry of Education; Department from FMoH, Regional Health Bureau (AA RHB and Oromia RHB); UN Organization like WHO,UNICEF,OCHA,USAID; NGOs; AA University; Representative of Private Health Organization.

Responsibility and activities of the Expertise committee were

1. Social Mobilization and Health Education: Develop health education material and disseminate the message, train the community; Inform public through different media(Radio, TV, News paper); organize press release

2. Hygiene and sanitation: Train community in personal hygien, safe water, food handling, on sanitation. Parallel to this identify the specific problem in the specific area in the concern of hygiene and sanitation. Worked also in safe water supply through availing and distributing water treatment chemicals and also installing water purification plants/machines where necessary.

3. Surveillance and communication: Active case search, day to day reporting and analysis, share the information on daily basis for the intervention. The Surveillance system developed its reporting rules, taking in account that AWD is one of the immediately reportable diseases. Even though timeliness of the report is not at expected level(less than the expected 80%)

4. Case Management and Lab investigation: Facilitate Laboratory investigation mainly stool and water samples, develop and distribute guide line when to suspect and collect stool sample, how to interpret the result , support in availing the transport media for the samples(which was Cary blair media) and sterile bottle for the water sample collection, disseminate the sample collection materials . Lab investigation was used only the culturing method of the stool, While water samples for water quality investigation. For confirming the outbreak the first 10-20 stool samples were selected ,sent to central/regional Lab for culture, . Parallel to the identification of the pathogen, drug sensitivity test was mandatory. In this regard, all results showed V.Cholera, Inaba O1,with resistance to Tetracycline & Bactrium and sensitive to many antibiotics like Doxacycline, Ampicilin, Amoxicillin and the like(Difficult to see and evaluate the whole lab result Data Lab result data). Recently ,there is an intention to use Rapid diagnostic kit which is on validation process.

Concerning Case management, developed/adopted the Case Definition: Suspect- In a patient age 5 years or more, with severe dehydration or death from acute watery diarrhea.

If there is a cholera epidemic, a suspected case is any person age 5 years or more with acute watery diarrhea, with or without vomiting and confirmed cases if sample is positive for Vibrio Cholera(see FMoH guideline); Adopted the guideline for the severity of the cases and its management according to the Guideline(See FMoH Guideline). In rural set up the use of Case Treatment Center is popular as one CTC will have shelter, equipment like Cholera bed, and necessary utensils like Cups, Jerican, drug and medical supply, disinfectants and water treatment chemicals, and also will have health workers with support staff. (The Aim for the rural setup is to treat patients at the near by area in order not to travel long distances, avoid cross contamination and as a purpose of isolation). In this regard if the district reported cases of AWD, stool will be investigated. If negative for Vibrio, management will be followed as other diarrheal Diseases out break and managed accordingly. If case is positive, repetition of sample will not be conducted, other cases will be managed as epidemiologically linked one, and all cases will be reported as AWD.

5. Concerning the case management issues identifies the necessary drug and medical supply, distribute to regions; Develop case management protocol, train Health workers on the Case management.

6. Resource mobilization and logistic utilization functioning as quantifying the necessary material or financial needs, communicating partners, securing the resource and distributing as per the need for the prevention as well as for the response. This committee also trying to see the gap and also utilization of the resources by the implementers ie, regions, zonal and wereda offices.

7. Monitoring and Evaluation: the expectation is to see the overall response for the outbreak in the specific geographic area. The Package of monitoring and evaluation is the status of Coordination in the overall response; case management, Hygiene and sanitation.

The above coordination mechanism also is functioning as field investigation team, as supervisor and technical assistants and also as monitoring and evaluation team working at the field level. Recent development through BPR, PHEM at EHNRI took the leader ship in the overall Epidemic Management in Ethiopia.

The back bone of the response is case identification, investigation, case management and also the prevention activities which lies on the Disease Prevention and Health Promotion directorate.

Observed problems

As the cause of AWD is multi factorial and even the general principle of management is identical, specific action for cholera induced outbreak is needed. For this purpose, early/immediately lab investigation is warranted. In this regard stool sample examination is the mandatory investigation which can be supplemented by Water sample investigation

- Delayed detection of the suspected case and epidemiological assessment
- Delayed in early reporting
- Lab investigation delayed
  - ✓ Most of the districts are far from the diagnostic facility which are EHNRI and Regional lab;
  - ✓ Some regional lab not functioning due to shortage of reagents;
  - ✓ Shortage of transport media;
  - ✓ Delayed time in sample delivery,
  - ✓ Inadequate trained man power in the affected area
- delayed lab result information dissemination,
- Some time samples not collected and transferred at all even all facilities are available.
- Samples are in poor quality? absence of full information about the sample,

As one of the major package in the epidemic Management, working in the environmental issues

- ❖ Difficulty to ensure pure ,adequate and potable water supply
- ❖ Difficulty to attain the household sanitation at the expected level
- ❖ Difficulty Avoid cross household contamination
- ❖ Difficulty assess quality of water and other environmental samples from distant epidemic sites

Laboratory confirmation

The treatment of dehydrated patients should not be delayed until laboratory testing of samples has been completed. Microbiological confirmation of Vibrio cholerae by direct observation can be obtained immediately, but it usually takes at least 2 days to get culture results. It is important to gather information on:

- Serogroup of Vibrio (O1 or O139);
- Antimicrobial sensitivity patterns.

NUMBER OF SAMPLES REQUIRED

Laboratory confirmation of the first 10–20 cases is essential to ascertain that this is a cholera outbreak. It is not necessary to take a sample from every patient with acute diarrhoea, once the cholera outbreak is confirmed: the clinical case definition permits detection of cholera and adequate treatment. However, it may be interesting to take a few samples randomly during the outbreak to make sure that the antimicrobial sensitivity pattern of the pathogen has not changed. Later, collection of about 20 stool samples is necessary to confirm the end of the outbreak. Where cholera is present but not epidemic, it causes fewer than 5% of all cases of acute diarrhoea.

Sample Collection

Take stool samples before giving antibiotics to the patient. There are several ways to take samples:

• Fresh stool can be taken (cotton-tipped rectal swab soaked in liquid stool, placed in a sterile plastic bag) and transported quickly (within 2 hours) to the laboratory.
• A transport medium such as Cary-Blair or peptone water allows better conservation of samples (see below for more details).

• Strips of blotting paper or filter paper soaked with liquid stool, placed in sealed tube or plastic bags, with 2 or 3 drops of normal saline (NaCl 9%) so that the specimen remains moist and does not dry out. Refrigeration during transport is not necessary. Tubes of Cary-Blair transport medium can be stored at ambient temperature for 1–2 years; the medium can be used as long as it does not appear dried out, contaminated, or discolored.

To use Cary-Blair medium:

• Moisten the swab in sterile Cary-Blair transport medium.
• Insert the swab 2–3 cm through the rectal sphincter and rotate.
• Withdraw the swab and examine it to make sure that it carries some visible faecal material.
• Immediately place the swab in the transport medium, pushing it right to the bottom of the tube.
• Break off and discard the top of the stick touching the fingers.
• Dispatch the sample to reach the laboratory within 7 days; it is not necessary to refrigerate the sample

Isolation and Identification of Vibrio cholera

Serogroups O1 and O139

Isolation and identification of *V. cholerae* serogroups O1 and O139 can be greatly enhanced when optimal laboratory media and techniques are employed.The methods presented here are intended to be economical and to offer laboratorians some flexibility in choice of protocol and media. Laboratories that do not have sufficient resources to adopt the methods

should consider sending the specimens or isolates to other laboratory facilities that routinely perform these procedures.

A. Isolation Methods

Before 1992, of the more than 150 serogroups of *Vibrio cholerae* that have been reported, only the O1 sero group was associated with epidemic and pandemic cholera. However in late 1992 and early 1993, large outbreaks of cholera due to a newly described sero group, O139, were reported in India and Bangladesh. This strain, like serogroup O1 *V. cholerae*, produces cholera enterotoxin. Because the cultural and biochemical characteristics of these two sero groups are identical, the isolation and identification methods described below apply to both O1 and O139. Both sero groups must be identified using O-group-specific antisera. Although *V. cholerae* will grow on a variety of commonly used agar media, isolation from fecal specimens is more easily accomplished with specialized media. Alkaline peptone water (APW) is recommended as an enrichment broth, and thiosulfate citrate bile salts sucrose agar (TCBS) is the selective agar medium of choice. In certain instances (for example, when the patient is in very early stages of illness), it may not be necessary to enrich specimens or use selective plating media. However, enrichment broth and a selective plating medium should always be used with convalescent patients, suspected asymptomatic infections, environmental specimens, and whenever high numbers of competing organisms are likely to be present in the specimen.

Enrichment in alkaline peptone water

Enrichment in APW can enhance the isolation of *V. cholerae* when few organisms are present, as in specimens from convalescent patients and asymptomatic carriers. *Vibrio* spp. grow very rapidly in APW, and at 6 to 8 hours will be present in greater numbers than non-*Vibrio* organisms.. APW can be inoculated with liquid stool, fecal suspension, or a rectal swab. The stool inoculum should not exceed 10% of the volume of the broth. Incubate the tube with the cap loosened at 35° to 37°C for 6 to 8 hours. After incubation, subculture to TCBS should be made with one to two loopfuls of APW from the surface and topmost

portion of the broth, since vibrios preferentially grow in this area. Do not shake or mix the tube before subculturing. If the broth cannot be plated after 6 to 8 hours of incubation, subculture a loopful at 18 hours to a fresh tube of APW. Subculture this second tube to TCBS agar after 6 to 8 hours of incubation.

Isolation from TCBS selective agar

TCBS agar is commercially available and easy to prepare, requires no autoclaving, and is highly differential and selective. Growth on this medium is not suitable for direct testing with *V. cholerae* antisera.

Inoculation of TCBS

For isolation of *V. cholerae* from fecal specimens. Inoculate the TCBS plate. After 18 to 24 hours' incubation at 35° to 37°C, the amount and type of growth (e.g., sucrose-fermenting or sucrose-nonfermenting) on the TCBS plate should be recorded on data sheets. Colonies suspicious for *V. cholera* will appear on TCBS agar as yellow, shiny colonies, 2 to 4 mm in diameter. The yellow color is caused by the fermentation of sucrose in the medium. Sucrose-nonfermenting organisms, such as *V. parahaemolyticus,* produce green to blue-green colonies.

Isolation of suspected V. Cholera

Carefully select at least one of each type of sucrose-fermenting colony from the TCBS plate to inoculate a heart infusion agar (HIA) slant or another nonselective medium. Do not use nutrient agar because it has no added salt and does not allow optimal growth of *V. cholerae.* Using an inoculating needle, lightly touch only the very center of the colony. Do not take the whole colony or go through the colony and touch the surface of the plate. This is to

avoid picking up contaminants that may be on the surface of the agar. If there is doubt that a particular colony is sufficiently isolated from surrounding colonies, purify the suspicious colony by streaking on another agar plate. Incubate the HIA slants at 35° to 37°C for up to 24 hours; however, there may be sufficient growth at 6 hours for serologic testing to be done. Slide serology with polyvalent O1 and O139 antisera is sufficient for a presumptive identification.

Screening tests for suspected V. cholerae isolates

Generally for suspected *V. cholerae* isolates from fecal specimens, screening with biochemical tests prior to testing with O1 and O139 antisera is not necessary. However, if the supply of antisera is limited, the oxidase test may be useful for additional screening of isolates before testing with antisera.

Oxidase test

Conduct the oxidase test with fresh growth from an HIA slant or any noncarbohydrate-containing medium. Do not use growth from TCBS agar because it may yield either false-negative or false-positive results. Place 2 to 3 drops of oxidase reagent (1% *N*,*N*,*N*′*N*′-tetramethyl-*p*-phenylenediamine) on a piece of filter paper in a petri dish. Smear the culture across the wet paper with a platinum (not nichrome) loop, a sterile wooden applicator stick or toothpick. In a positive reaction, the bacterial growth becomes dark purple immediately. Oxidase-negative organisms will remain colorless or will turn purple after 10 seconds. Color development after 10 seconds should be disregarded. Positive and negative controls should be tested at the same time. Organisms of the genera *Vibrio* (including *V. cholerae*, *Neisseria*, *Campylobacter*, *Aeromonas*, *Plesiomonas*, *Pseudomonas*, and *Alcaligenes* are all oxidase positive; all *Enterobacteriaceae* are oxidase negative.

Additional biochemical screening tests

The string reaction, Kligler iron agar (KIA) or triple sugar iron agar (TSI), lysine iron agar (LIA), Gram stain, and wet mount for motility are other possible tests that may be used for

additional screening of isolates before testing with antisera . The value of these tests should be assessed to determine their usefulness before they are applied routinely.

String test

The string test, using fresh growth from nonselective agar, is useful for ruling out non-*Vibrio* spp., particularly *Aeromonas* spp. The string test may be performed on a glass microscope slide or plastic petri dish by suspending 18- to 24- hour growth from HIA or other noninhibitory medium in a drop of 0.5% aqueous solution of sodium deoxycholate. If the result is positive, the bacterial cells will be lysed by the sodium deoxycholate, the suspension will lose turbidity, and DNA will be released from the lysed cells, causing the mixture to become viscous. A mucoid "string" is formed when an inoculating loop is drawn slowly away from the suspension. *V. cholerae* strains are positive, whereas *Aeromonas* strains are usually negative. Other *Vibrio* spp. may give a positive or weak string test reaction.

Kligler iron agar and triple sugar iron agar

Kligler iron agar (KIA) and triple sugar iron agar (TSI) can be used to rule out *Pseudomonas* spp. and certain *Enterobacteriaceae*. The reactions of *V. cholerae* on KIA, which contains glucose and lactose, are similar to those of lactosenonfermenting *Enterobacteriaceae* (alkaline (red) slant, acid (yellow) butt, no gas, no H2S). However, on TSI, *V. cholerae* strains produce an acid (yellow) slant and acid (yellow) butt, no gas, and no H2S.

KIA or TSI slants are inoculated by stabbing the butt and streaking the surface of the medium. Incubate the slants at 35° to 37°C and examine after 18 to 24 hours. Caps on all tubes of biochemicals should be loosened before incubation, but this is particularly important for KIA or TSI slants. If the caps are too tight and anaerobic conditions exist in the KIA or TSI tube, an inappropriate reaction will occur and the characteristic reactions of *V. cholerae* may not be exhibited.

Lysine iron agar

LIA is helpful for screening out *Aeromonas* and certain *Vibrio* spp., which, unlike *V. cholerae,* do not decarboxylate lysine. LIA is inoculated by stabbing the butt and streaking the slant. After incubation for 18 to 24 hours at 35° to 37°C, examine the LIA slants for reactions typical of *V. cholerae*. Organisms that produce lysine decarboxylase in LIA cause an alkaline reaction (purple color) in the butt of the tube. Organisms without the enzyme produce a yellow color (acid) in the butt portion of the tube. H2S production is indicated by a blackening of the medium. The LIA reaction for *V. cholerae* is typically an alkaline slant (purple), alkaline butt (purple), no gas, and no H2S. *Proteus* and *Providencia* spp. will often produce a red slant caused by deamination of the lysine.

It is important that KIA, TSI, and LIA be prepared so the tubes have a deep butt and a long slant. If the butt is not deep enough, misleading reactions may occur in these media. In LIA, the decarboxylation of lysine occurs only in anaerobic conditions and a false-negative reaction may result from insufficient

Medium in the tube.

Gram stain

Examining overnight growth from an HIA slant by Gram stain will demonstrate typical small, curved gram-negative rods. Staining with crystal violet only is a more rapid technique and will still demonstrate the cell morphology typical of *Vibrio* spp.

Wet mount

Dark-field and phase-contrast microscopy have been used for screening suspected isolates of *V. cholerae*. With these techniques, saline suspensions are microscopically examined for the presence of organisms with typical small, curved rods and darting (“shooting star”) motility.

B. Serologic Identification of V. cholerae O1 and O139

1. Presumptive identification using O1 and O139 antiser

For slide agglutination testing with polyvalent O1 or O139 antisera, fresh growth of suspected *V. cholerae* from a nonselective agar medium should be used. Using growth from TCBS agar may result in false-negative reactions. Usually after 5 to 6 hours of incubation, growth on the surface of the slant is sufficient to perform slide serology with antisera; if not, incubate for a longer period. If the isolate does not agglutinate in O1 antiserum, test in O139 antiserum. If it is positive in the polyvalent O1 or in the O139 antiserum, it may be reported as presumptive *V. cholerae* O1 or O139. Presumptive *V. cholerae* O1 isolates should be tested in monovalent Ogawa and Inaba antisera. Once one colony from a plate has been identified as *V. cholerae* O1 or O139, no further colonies from the same plate need to be tested.

Confirmation of V. cholerae O1 using Inaba and Ogawa antisera

The O1 serogroup of *V. cholerae* has been further divided into three serotypes, Inaba, Ogawa, and Hikojima (very rare). Serotype identification is based on agglutination in monovalent antisera to type-specific O antigens. A positive reaction in either Inaba or Ogawa antiserum is sufficient to confirm the identification of a *V. cholerae* O1 isolate. Isolates that agglutinate weakly or slowly with serogroup O1 antiserum but do not agglutinate with either Inaba or Ogawa antiserum are not considered to be serogroup O1. Identifying these antigens is valid only with serogroup O1 isolates. For this reason, Inaba and Ogawa antisera should never be used with strains that are negative with polyvalent O1 antiserum. Strains of one serotype frequently produce slow or weak agglutination in antiserum to the other serotype, depending on how well the serotype-specific antisera have been absorbed. For this reason, agglutination reactions with Inaba and Ogawa antisera should be examined simultaneously, and the strongest and most rapid reaction should be used to identify the serotype. With adequately absorbed antisera, strains that agglutinate very strongly and equally with both the Ogawa and Inaba antisera are rarely, if ever,

encountered. If such reactions are suspected, the strains should be referred to a reference laboratory for further examination and may be referred to as “possible serotype Hikojima.”

Slide agglutination procedures

Agglutination tests for *V. cholerae* somatic O antigens may be carried out in a petri dish or on a clean glass slide. Use an inoculating loop or needle, sterile applicator stick, or toothpick to remove a portion of the growth from the surface of HIA, KIA, TSI, or other nonselective agar medium. Emulsify the growth in two small drops of physiological saline and mix thoroughly. Add a small drop of antiserum to one of the suspensions. Usually approximately equal volumes of antiserum and growth suspension are mixed, but the volume of suspension may be as much as double the volume of the antiserum. To conserve antiserum, volumes as small as 10 microliters (0.01 ml) can be used. An inoculating loop may be used to dispense small amounts of antisera if micropipettors are not available. Mix the suspension and antiserum well and then tilt the slide back and forth to observe for agglutination. If the reaction is positive, clumping will appear within 30 seconds to 1 minute. Examine the saline suspension carefully to ensure that it does not show clumping due to autoagglutination. If autoagglutination occurs, the culture is termed “rough” and cannot be serotyped.

Confirmation of V. cholerae O139

A suspected *V. cholerae* isolate that reacts in O139 antiserum but not in polyvalent O1 antiserum should be sent to a reference laboratory. Confirmation of *V. cholerae* O139 includes testing for production of cholera enterotoxin and verification of the O139 antigen. No serotypes have been identified in the O139 serogroup.

C. Media and Reagents for V. cholera

Alkline peptone water

[Note: There are several different published formulations for this medium.]
Content: Peptone 10.0 g, NaCl 10.0 g, Distilled water 1000.0 ml.

Add ingredients to the water and adjust to pH 8.5 with 3 N NaOH solution. Distribute and autoclave at 121°C for 15 minutes. Store at 4°C for up to 6 months making sure caps are tightly closed to prevent a drop in pH or evaporation. When inoculated into APW for quality control, *V. cholerae* O1 should show good growth at 6 to 8 hours.

Kligler iron agar and triple sugar iron agar

[Note: There are several commercially available dehydrated formulations of KIA and TSI. These media can also be prepared from individual ingredients but there may be lot-to-lot variation.] Prepare according to manufacturer's instructions. Dispense a quantity of medium in appropriate containers such that the volume of medium is sufficient to give a deep butt and a long slant. For example, dispense 6.5 ml of medium into 16 x 125-mm screw-cap tubes (leave caps loose), and after autoclaving, allow the slants to solidify in a manner such that the medium in the butt of the tube is 3 cm deep and the slant is 2 cm long. Tighten caps and store at 4°C for up to 6 months.

Each new lot should be quality controlled before use. *E. coli* should give an acid slant and butt, with production of gas but no H2S. *S. flexneri* should give an alkaline slant, acid butt, without production of gas or H2S [Note: some *S. flexneri* 6 strains produce gas].

Lysine iron agar

[Note: Several companies sell dehydrated LIA. LIA may also be prepared from individual ingredients but there may be lot-to-lot variation.] Prepare medium according to manufacturer's instructions on the bottle. Dispense a quantity of medium in appropriate containers such that the volume of medium is sufficient to give a deep butt and a long slant. For example, dispense 6.5 ml of medium into 16 x 125-mm screw-cap tubes (leave caps loose), and after autoclaving, allow the slants to solidify in a manner such that the medium in the butt of the tube is about 3 cm deep and the slant is about 2 cm long. When the agar is

cooled and solidified, tighten caps and store at 4°C for up to 6 months. Each new lot of dehydrated medium should be quality controlled before use. *S. flexneri* should produce an alkaline slant and an acid butt without production of H2S**.** H2S-producing *Salmonella* strains should produce an alkaline slant and an alkaline butt with blackening of the medium due to H2S. *V. cholerae* strains are lysine-positive and will produce an alkaline reaction in the butt of the LIA.

Oxidase reagent

N,*N*,*N*N,*N*N-Tetramethyl-*p*-phenylenediamine dihydrochloride 0.05 g Distilled water 5.0 ml Dissolve the reagent in purified water (do not heat to dissolve). Prepare fresh daily. Positive and negative controls should be tested every time the reagent is prepared. *V. cholerae* is oxidase positive; *E. coli* is oxidase negative.

Sodium deoxycholate reagent (0.5%) for string test

Sodium deoxycholate 0.5 g Sterile distilled water 100.0 ml Add sterile distilled water to sodium deoxycholate and mix well. Store at room temperature for up to 6 months. Each new batch should be quality controlled before use. A *V. cholerae* O1 strain should be used as positive control. E. *coli* may be used as a negative control.

Thiosulfate citrate bile salts sucrose agar

[Note: Several commercial brands of thiosulfate citrate bile salts sucrose agar (TCBS) agar are available. This medium can also be prepared from individual ingredients, but results may be much more variable than with a commercial dehydrated formulation.] Follow manufacturer's instructions to weigh out and suspend the dehydrated medium. Heat with agitation. Medium should be completely dissolved. Cool agar in a water bath until cool enough to pour (50° to 55°C). Pour into petri plates, leaving lids ajar about 20 minutes so that the surface of the agar will dry. Close lids and store at 4°C for up to 1 week. Each new lot should be quality controlled before use since TCBS is subject to lot-to-lot and brand-to-

brand variations in selectivity. *V. cholerae* O1 should show good growth of yellow colonies. *E. coli* should have none to poor growth of translucent colonies.

Conclusion and Recommendation

Cholera is having far reaching consequences in terms of causing severe illnesses, deaths and disabilities on health there by impedes progress in socio economic development of societies to address this pressing public health problems result in containing the outbreak or epidemic is not appealing as expected .there is a need to address the following

- Build the capacity of Central and Regional lab
- Avail transport media at district level
- Validate and advertise Rapid Diagnostic Kit
- Ensure transportation mechanism from long distance
- Re establish the environmental Lab (Designed only for quality control)
- Cascade training on sample collection and transportation
- Strengthen systematic lab surveillance
- Ensure continuous feedback mechanism
- Initiate molecular typing
- Relevant epidemic investigation has to be undertaken

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Miscellaneous

1: Persistent conjoint action eventuate in reaping from what was sown ("A stitch in time saves nine")

Health development by and large socio-economic development advancement is an outcome of unreserved and relentless efforts of individuals (with distinguished capacity. Creativity and experience in co-coordinating development bearing efforts and related initiatives), families, social groups, Governmental sectors, mass associations, Organizations (professional, trade and Nongovernmental), active involvement of every segment of communities and over all ongoing National efforts of given country. To bear about dependable success in health and related development in question scaling up and consolidation of efforts should be enhanced by developing strong link between given Nation and health sector supporting partners through amalgamation of scattered initiatives and co-ordination of efforts of concerted multi-agency collaboration.

Health and overall development progress is not conceivable without attaining dependable health status of population in general and most productive elements of societies in particular. To attain reliable level of health status and overall welfare which enables productive forces of communities to produce myriads of health development bearing results which enable attainment of optimal health status level as an outcome, the need for co-ordination of concerted efforts and conjoint action is of great significance.

Even though co-ordination of Local/Regional/National scattered efforts of individuals, families, ethnic groups, religious groups, cultural groups, civil societies, various social groups, each segment of communities and by and large overwhelming majority of country's population is of cardinal importance to produce desirable results which enhance health development progress, poverty reduction and by and large over all development advance, amalgamated efforts which is eventuated through concerted multi sect oral, multi partner (National/International NGOS) and Inter-agency Collaboration plays vital role in supporting health development Endeavour of our country through provision of

required resources which include: -Medical equipment and facilities including those used to improve and upgrade laboratory services and performance, drugs, technical supports, consultative, co-ordination of efforts by and large provision of other materials, logistics and supplies. This dependable approach which placed utmost emphasis on implementation of strategy of involving national and international associations, organizations and partners has been very effective in dealing with most pressing public health and development problems in different countries of the world and implementation of this strategy resulted in wonderful success in meeting set objectives to achieve health development goals in respective countries. To put it in a nutshell, virtue of implementing this strategy remained an unparalleled option of choice to many countries particularly developing countries through implementation of which and consolidation of relentless efforts to reach set development goals required to be fulfilled in each specific country in 2015 (DMG 2015) as a matter of fact way used it to fortify their local efforts to attain desired goal. This citation is frankly used to provide witness for exemplinary role played by collaborative actors which include: Federal Ministry of Health (FMOH), Addis Ababa University (AAU), Center For Diseases Control (CDC, Atlanta), World Health Organization (WHO) and Ethiopian Public Health Association (EPHA) in bringing establishment of dependable discipline of Field Epidemiology in to reality and moreover have been conjointly acting since inception through this date in attempt of addressing public health problems in the country thereby contribute level best to ongoing National comprehensive efforts to enhance progress in health development. Since establishment of this project(from 2 February 2009) mentioned parties have been making unreserved efforts strictly placing emphasis to concerted multi-sectoral and multi-partner collaboration which is of vital importance to implement planned activities of Field Epidemiology to meet its set objectives and achieve desired goals of addressing most pressing public health problems particularly communicable diseases (epidemic prone diseases) and related health events thereby escalate efforts to enhance health development. To effect such dependable results they have been making considerable efforts through tackling shared tasks to be accomplished by individual party which in turn creates conducive atmosphere for discharging of responsibilities of others thereby enhance consolidation of their collaborative activities to attain desired goal. Main

objective of this program is to produce competent and confident trained health professionals who serve as reliable health cadres through discharging responsibilities of dealing with communicable diseases particularly epidemic prone diseases which are among most pressing public health problems of our country. In geared attempt of supporting improvement and progress in public health development the program placed utmost emphasis on supporting implementation of ongoing active surveillance, investigation of outbreaks/epidemics of diseases and health related events (emergencies following disasters and Bio-Terrorism) and provision of required support to upgrade laboratories capacity and improve level of quality of service delivery. Moreover the program used to render support to undertake health researches and produce evidence based information which is of vital importance to address attention deserving public health problems. Similarly the project also gave due attention for communication of research findings to those in need and use it to escalate response to address encountered health problems and has been providing necessary support (logistics, materials, consultation) in attempt of creating conducive atmosphere through establishing strong link with other sectors, Health research undertaking Universities, Health research institutions and International institutions and partners working on health

Being cognizant of need and requirements of field Epidemiology residents to get well trained on the issue and successfully fulfill demanded mission of dealing with pressing public health problems the program underwent training activities on topics pertaining to field epidemiology and related courses. Lectures/Instructions were delivered both by Ethiopians and foreigners (compatriots) who were specialists of public health with enriched knowledge, skills and experience of the discipline. Knowledge acquired from lectures was made to further be enriched by residents through participating during question and answer sessions, class exercises, home assignments, case studies thorough discussions and making presentations on chosen topics of interest. The fact that both domestic and foreign lecturers were involved in teaching learning process greatly enabled residents to increase their horizon of knowledge on field epidemiology and related topics through sharing from enriched experiences communicated which were acquired from practices done on the issue in many countries of the world with wider global scope.

Training was delivered to residents on various courses which include: -

- Basic Epidemiology
- Field Epidemiology
- Biostatistics
- Surveillance
- Computer skills pertinent to public health
- Communication of Scientific Information
- Health research methods/Outbreak investigation
- Medical Laboratory Technology
- Surveillance Evaluation
- Health Management and Leader ship
- Disaster management
- And other related topic included

Evaluation of Residents: -

Various means of Evaluation was used to assess performances of residents which include: Written examination, Oral examination, Computer skill practical examination, Presentation on analysis of selected epidemic prone diseases (analysis of IDSR reports) and submission of reports, class participation and the like.

Field Assignments/Attachments

After accomplishing very task of doing courses residents were divided in to three groups and assigned in three health institutions to fulfill required mission of making proactive active surveillance activities in attempt of making active search on communicable diseases particularly epidemic prone ones and if encountered make prompt outbreak investigation and produce and communicate findings to institution in charge for possible intervention activities to be undertaken to address the cause and further prevent and control outbreaks and health related events. Moreover residents were required to deliver any needed professional support to strengthen ongoing health service provision of health institution they were attached. Three residents were attached to Oromia Health Bureau, two in Addis Ababa Health Bureau and Eight residents in Ethiopian Health and Nutrition Research Institute (EHNRI).

FieldOutbreak/EpidemicsinvestigatiosandundertakingvariousField assessments/Evaluations of health and related issues in various regions of the country.

In addition to activities to be accomplished by residents in their field assignment institutions allocated residents were made to be mobilized to go and undertake outbreak investigations and assessments/evaluation of health and related events as situations presuppose. As a result they used to go to different regions of the country to undertake mentioned activities which further include: - Vulnerability risk assessment, surveillance

evaluation, Humanitarian needs assessments, International health Regulation status assessments and the like and undertook related activities, produced evidence based information in topic of interest and communicated findings to respective regional health bureaus, FMOH and others concerned.

Activities Accomplished by all residents assigned to various health institutions: -

During their stay in Field assignment institutions and on occasions when they were assigned to undertake various activities as situations of outbreaks and other related events presupposed to be addressed following intervention activities were undertaken by residents of field epidemiology in different regions at different times:-

- Outbreak investigation of AWD in Afar (02 times)
- Outbreak investigation of AWD in Oromia
- Outbreak investigation of AWD in Southern Nations, Nationalities and Peoples Region i(SNNPR)
- Outbreak investigation of AWD in Amhara Regional state
- Outbreak investigation of HINI in Addis Ababa city administrative region
- Outbreak investigation of Measles in kebele 10/11, Kolfe-keranio sub-city, Addis Ababa, Ethiopia
- Outbreak investigation of Relapsing Fever in Kebele 04, Kolfe-Keranio Sub –city ,Addis Ababa, Ethiopia
- Epidemiological investigation of ten years trends and magnitudes of Road Traffic accidents in Addis Ababa, Ethiopia
- Outbreak investigation of Shigellosis in Technology Faculty of Addis Ababa University , E thiopia

- Outbreak investigation of Measles in Kolfe-keranio Sub-city, Addis Ababa ,Ethiopia
- Outbreak investigation of Measles in Simada, Amhara regional state
- Investigation of Liver disease of unknown origin (etiology) in Tigray
- Investigation of Pertussis in Oromia
- Outbreak investigation of Measles in West Badawacho district, Hadiya zone, SNNPR
- Outbreak investigation of AWD in Addis Ababa, Ethiopia
- Outbreak investigation of Possible Shigellosis in Ziway, Oromia regional state
- Outbreak investigation of suspected Hemorrhagic fever in Afar
- Outbreak investigation of Malaria in Wollega zone , Oromia regional state
- Investigation of Magnitude and Trends of Road Traffic Accidents in Addis Ababa
- Vulnerability rapid assessment in selected regions of the country
- Analysis of IDSR reports of epidemic prone diseases submitted to various health bureaus including those reported FMOH
- Humanitarian Needs assessments in selected regions of the country
- Assessment of International Health Regulation status in selected regions of the country.
- Surveillance Evaluation of various epidemic prone diseases in selected regions of the country
- And other several outbreak investigations and assessments were undertaken at different places in different occasions was undertaken by Ethiopian Field Epidemiology Residents

As mentioned above Ethiopian Field Epidemiology in their two years stay while doing the course tried their level best in attempt of responding to encountered most pressing public health problems of regions in particular and the country in general. While undertaking such very important tasks which have significant public health importance residents learned a lot from their practice and doubtlessly enriched horizon of their knowledge in public health. This opportunity made our residents enabled our residents to become advantageous/ beneficiary from implementation of marvelous program of Field Epidemiology dependable basis of which is undertaking investigation to produce evidence based information which is of cardinal importance to address most pressing public health problems of our country. This event is indeed beyond shadow of doubt after affect of so much dependable, public health strengthening discipline (Field Epidemiology) implementation activities never done at any time in objective reality of our country so far. This was made possible due to unreserved and relentless efforts of concerted multi sect oral and partner's collaboration of (aforementioned collaborative actors who made unreserved efforts to bring discipline of Ethiopian Field Epidemiology and Laboratory Training Program in to reality thereby strengthening it). To put it in a nut shell, dependable outcome of implementation of Field Epidemiology program can be recognized as vital instrument (weapon) to address most pressing public health problems as evidenced by producing of reliable findings which is of cardinal importance in dealing with attention deserving public health problems of our country. And being impressed by its overall work up and proactively recognizing its unparalleled usefulness. If not mistaken this assertion can be considered as result of continuous observations and active engagement in learning and teaching process and investigation/evaluation/ monitoring and intervention activities undertaken in two years stay in this program and by the same token residents shared this opinion affirmatively as they were used to observe and actively involved in. Based on this tangible facts and related evidence and realizing this on behalf of Field Epidemiology residents and on my own behalf I dare to extend my sincere appreciation I have to establishment and further implementation of this program. So to speak, no words are strong enough to express my inner heartfelt gratitude I have for this program initiators and collaborators (FMOH, AAU. CDC, WHO and EPHA) for

playing eminent and prominent role in enhancing public health progress by becoming by stander in bringing this program in to reality and thereby flourishing it further. It may be too early to arrive at conclusion which heralds that this program is very much dependable and indeed promising in enhancing advancement of public health development progress. But there is most convincing evidence which strongly supports that implementation of Field Epidemiology program that was meant to achieve unprecedented results became successful in countries which undertaken such activities considering it as optional strategy to address their most pressing public health problems thereby met objectives of advancing their overall health development in last 04 decades . To put as a matter of fact way discipline of Field Epidemiology has peculiar feature which gives utmost priority to investigation of distribution and determinants of diseases and health related events and production and communication of evidence based information to those in need to promote health, prevent and control diseases and health related events and thereby dependably enhance progress in health development. Application of such approach is doubtlessly encouraging and very much promising for using science based information plays unparalleled role in addressing public health problems in particular and overall crucial development problems in general. The fact that use of pertinent evidence based findings of issue of interest and implementation of health and development activities by placing utmost emphasis on systematic planning, resources mobilization and allocation ,execution, close monitoring and control of intervention activities plays very significant role in meeting set objectives to achieve desired goals of interest. For attainment of improved health status and desired level of overall development progress of different communities, society and Nations could not be realized fortnightly it may not be questionable issue to extend period of health and development intervention activities to the extent that governing situations warrant. In so doing it is quite obvious that due attention be given to take any necessary corrective measures if evidence based pitfalls encountered in the process of implementation of intervention activities encountered through time. Moreover as period of implementation of intervention activities prolonged indefinitely because of influencing factors to be dealt with and other related obstacles to be addressed the situation can be considered as juncture which calls upon taking immediate measure to undertake periodic

implementation process, progress, achievement and impact assessments which may play vital role to take relevant corrective measures in attempt of consolidating efforts being undertaken to meet set objectives and achieve desired goals. Such sorts of making unreserved and relentless efforts continue as cyclic phenomenon till desired levels of attainment of health and development ensue. It was these cyclic processes which were cumbersome at times complicated that current most developed countries confronted with and made enormous efforts to deal with such challenges and eventually became victorious over health and development problems they encountered which indeed enabled them enjoy from outcome of highest level of health status and socio-economic development in the world (Developed countries), fact of using dependable evidence based information to address health and development problems through time and with utmost concerted and multisectoral/multi-agency collaborative efforts and perseverance. By the same token we can be cognizant of the issue as mentioned above and taking every achievement and success registered in two years by implementation of Ethiopian Field Epidemiology program as fantastic start (encouraging beginning) and if we manage to make unreserved and relentless efforts with utmost vigilance and perseverance, after acting persistently in attempt of escalating response till demanded period of time, we can doubtlessly make our country prospective benefiter not only from outcome of advanced public health development but also overall enhanced development including from outcome of enormous reduction in level of currently challenging poverty. Finally, to consider it as a matter of fact way, it can be comfortably asserted that ongoing implementation achievement of Ethiopian field Epidemiology program is appealing and indeed promising from the outset. This dependable success is ,if not mistaken attributes/after effects of unreserved efforts of many partners, stakeholders and concerned groups and these groups doubtlessly deserve sincere appreciation/ acknowledgement for their contributions in every affordable means to bring this project in to scene and make it most viable.

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- Government sectors at Regional level excluding health sector
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- Alemayehu Bekele, co-ordinator/facilitator, EFELTP (EPHA)

- Regional Health Bureaus of 9 Administrative regions and 2 City Administrative regions
- Zonal Health Departments of All regions where outbreak investigations, Assessments/Evaluations/ interventions undertaken
- Woredas/Districts Health offices and concerned sectors which supported field intervention activities undertaken by EFELTP Residents in the country
- Kebele health offices and relevant sectors which provided supports(in intervention areas)
- Communities and their members who provided their unreserved supports(in Health problems investigation/interventions of affected areas throughout the country)
- Field Epidemiology Residents who have been engaged in Outbreak investigation/ Assessments/Evaluations, Technical support provision/undertaking monitoring and evaluation/ supportive supervision and supporting intervention activities undertaken and the like
- All partners and stakeholders who were involved in implementation of EPELTP and health and related intervention activities being undertaken in the country.

NB: - This concept elaboration is a bit detailed and your comments will be well taken. My opinion is to coin up this concept so that it will be incorporated in conduced form to document it in the Bulletin. All corrections, suggestions and amendments most welcomed.

With Best Regard!

Million Tumato, MD, EFELTP Residents, Representative

2: Unprecedented influencing potential of/Public Health/ Epidemiology (Field Epidemiology) through providing vital asset (Information) used to enhance acceleration of Health Development Program

From time immemorial to present era various segments of societies residing in different corners of the world have been affected by aftermath of diseases and health related events. In lapsed remote past causes, predisposing factors, proper diagnosis and treatment of diseases were not reliable for situations did not permit to produce and thereby use evidence based information to determine causes, verify diagnosis and manage /treat cases appropriately. Moreover after effects of Disasters occurring in various regions of the world (Earthquakes,flood,drought, Hurricanes, Tornado,etc) and health impacts of manmade catastrophes (war, social and political crisis and the like) were not appropriately dealt with to control and mitigate their after effects due to poverty, limited development in technology, technical knowhow ,co-ordination of efforts, resources and so forth. As results of mentioned factors diseases particularly communicable diseases and disasters of various sorts remained most pressing public health problems and incriminated to cause severe illnesses, deaths and disabilities affecting significant proportion of world's population. It is no doubt outcomes of such huge calamities had impeded progress in health development by and large socio-economic advance of affected societies of the globe for presence of optimal health plays vital role in increasing productivity of productive elements of societies. In response to adverse effects of natural and manmade ill outcomes mankind had made tremendous efforts in attempt of preventing and controlling health impacts of these catastrophes. Efforts made in the last several centuries through undertaking industrial revolution, reformation and renascence and the like(which positively affected health development in one way or another) can serve as evidence for attempts made to enhance health and socio-economic development. Comprehensive approach adopted to confront encountered challenges resulted in advance in science and technology. Use of gains of recent technology enabled emergence and function of modern medicine. Advent of modern medicine became pivotal force to enhance progress of health development. Status of public health showed remarkable

advance in its approach and scope. Progress made in medicine enabled diagnosis of diseases accurately and seeking remedy of option to treat identified cases and render supportive follow up and needed rehabilitative services. Advance in public health greatly supported study of distribution and determinants of diseases and health related events and use of findings to promote health prevent and control diseases and health related events. More over application/practice of recently established approach of field Epidemiology has been playing enormous role in investigating of outbreaks/epidemics and emergencies and producing and communicating evidence based information which is of vital importance to address most pressing public health problems. The approach adopted to deal with health and related health events occurs in places where actual problems encountered can be unique feature of field epidemiology which is of vital importance in enabling collection of pertinent information at spot (event identified locality) and use analysis findings to address the issue at that typical area conveniently in attempt of preventing and control of public health problems. It is quite obvious that practice of this dependable field of Epidemiology (encouraging from the outset) is first of its kind in our country. Nevertheless, as results of implementation activities of this program underwent by deploying prospective field Epidemiologists (residents) and consultants/staffs of FMOH,AAU and partners for last two years convincingly explains, practice of /using/Field Epidemiology as reliable approach/strategy of option to investigate diseases and health related events and implement appropriate intervention activities for managing devastating aftereffects of most pressing public health problems of our country can be considered and indeed anticipated to have unprecedented influencing potential of greatly contributing to ongoing comprehensive national efforts being made to address public health problems by and large enhance progress in health development in the country. The secret behind this discipline unlike others is that it placed utmost emphasis on putting investigation of diseases and health related events in to serious point of consideration in geared attempt of producing and communicating evidence based information to health sector departments, health services providers, other related sectors, decision makers, policy makers, partners, public and other stakeholders concerned and those in need to address encountered health problem. Certainly, mentioned realistic assertion made it quite evident that production and communication of scientific evidences based on which

undertaking appropriately managed intervention activities at all levels plays cardinal role in enhancing and in the long run eventuating desired high level of health status of our society by and large advancement in health development in particular and gross development in general. Doubtlessly, this could be undeniable reason (use of evidence based information not only to address health problems but also other development problems at all levels and at different periods demanded) greatly helped developed countries from their yesterday's relatively lesser development levels to that of current highly improved and advanced health status and over all development. This achievement is indeed by no means an outcome of miracles but it is beyond shadow of doubt that an outcome of co-ordinated scattered initiatives, unreserved and relentless efforts of all social groups, segments of communities of given countries and concerted multisectoral, multi agency and partners collaborations and indeed brought about after overcoming confronting health and development challenges through undertaking required activities at given time with utmost commitment, determination, vigilance, perseverance and optimism.

At this very juncture, being cognizant of aforementioned facts it can be asserted that this newly established discipline of Field Epidemiology is at least in the right truck for it is trying level best to produce and communicate evidence based information to those who need to address pressing health problems of interest to promote health, prevent and control diseases and health related events thereby contribute to ongoing national holistic efforts to enhance health development progress in the country. Even though it may be too early to conclude that this program is effective in this short period of time, attempts made to consolidate active surveillance activities, to initiate and strengthen outbreak/epidemics/health related emergencies(Health events) investigations to produce and communicate findings to those who need can be considered as encouraging. Targeted tasks accomplished by field epidemiology residents with collaboration of staffs of FMOH, AAU, WHO, CDC and EPHA can be considered as success pathway paving even though intervention time was not that long. Field investigation activities and related intervention activities undertaken in different regions of the country to deal with communicable diseases particularly epidemic prone ones which include: - AWD ,

Measles, Polio, Relapsing fever, Meningitis, Shigellosis(bloody diarrhea), H1N1, and etc…) can give convincing clue for the effectiveness of this program as there was on such program implemented in the country so far which used to promptly investigate encountered acute health events at spot instantaneously and handover findings for possible intervention measures to be taken to address the cause. Moreover investigations, surveillance evaluations, Vulnerability risk assessments, Humanitarian Needs assessments, International Health Regulation assessments and related investigations and interventions activities undertaken in different regions of the country can be regarded as supporting efforts made in attempt of producing and communicating findings to Regional health bureaus, FMOH, partners and those concerned to address issues of public health problem of interest. To put it in a nut shell, Overall achievements of newly established program(Ethiopian Field Epidemiology and Laboratory Training Program) can be considered as fantastic start(wonderful beginning), for this very short time appealing and in the long run if all aforementioned unreserved efforts to be made strictly and meticulously checked for being implemented and managed as situations warrant, doubtlessly this program will have unprecedented potential to produce promising results which is of vital importance to address most pressing public health problems turn by turn and thereby enhance progress in health development of our country. If we try level best to strengthen and further enrich culture of using evidence based information to seek solutions for problems of not only health but that of development(various development problems) it will be quite obvious to register dependable success in all development affairs through using our resources adopting this optional strategy of coordination of concerted multisectoral, multi-agency and partners collaboration efforts no wonder with limited time period we can eventuate dependable level of health development by and large bring about enhanced development progress in our country. To produce aforementioned results and eventually bring about realization of development vision in to reality there is an earnest need to escalate response to health and development problems through acting in unison with utmost co-ordination and management of intervention activities, perseverance and sustained efforts. Moreover in face of various influencing factors (socio-economic, socio-cultural, management and the like) the challenges of which be confronted using allocated time to accomplish very task of achieving

dependable success in attaining desired progress in health and related development. Patience, tolerance, relentless and sustained efforts and undertaking overall management activities (using produced evidence based information as dependable guide/compas) plays vital role till success in development in question achieved(Mill of Public health /Epidemiology grinds slowly but surely,emphasizing on promising potential of Epidemiology (Information for action!) in enhancing health development. Finally to put it in a nut shell in order to register enormous success to eventually attain desired goals in development we have to be proactive, committed, determined and most important of all activists(promoters/advocators) by and large collaborators for the cause and on behalf of advancement in Development. We should not entertain/ not let program impeding obstacles negatively influence our efforts, To be rational eventhough wonderful achievements were registered as an outcome of this program implementation, there was serious problem of planning,shedulling, belongingness/ownership, etc which indeed resulted in low level of common understanding on the issue/program and low collaborative efforts and situation of which if left unchecked may eventually frustrate development endeavour of societies. Therefore prompt intervention measures have to be taken to abort ill effects of such discrepancies in planning and managing projects of such sort.

3: Crucial harmony to be maintained (By Million Tumato)

In field of medicine in particular and in all development Endeavour of society in general there is unavoidable strong link to be maintained in order to achieve reliable result between individuals or groups who are dedicated to accomplish required tasks to effect outcome of interest. Particularly in the field of medicine be it in clinical practice or public health all health services provision activities greatly presupposes team work where by health service providers are required to act in unison in order to discharge their responsibilities effectively and efficiently. In so doing activities performed by one member strongly facilitates smooth service delivery of the other. In clinical practice when patient comes to seek medical services collaborative activities begins from the guard at the gate (reception). If progress in the process is not blocked the patient is allowed to visit outpatient department physician. After the patient ' s history of illness including systems review is taken and physical examination is made by the doctor and if need arises to send the patient for laboratory examination there has to be open system so that without any delay patient has to be referred to respective units till he/she gets medication and related consultation supports. Therefore reception of the patient at every unit has to be quick and smooth so that every available support be delivered in due time to avoid any delaiance. If at all delay occurs in one unit or another his situation can create detrimental event where by patient may suffer or rendered to be affected by the diseases severely of if caution not taken the patient may succumb thereby die if the disease is acute and fulminating. Therefore if strong link among health service providers/ supporting staffs not maintained patients can be obliged to suffer from such consequences. But if mentioned harmony is maintained it will be quite possible for the team to save life of the patient. This sort of harmony is so marvelous that greatly enables life saving efforts of the team. By the same token in practice of public health it is quite evident that health service providers belong to various categories which include: -Physician/health office, nurse, Laboratory technologist, pharmacist, statistician, sanitarian, Environmentalist, social worker, community members and etc…, with all required logistics and supplies. Even though team members are supposed to deliver services pertaining to their field there is a need for maintain smooth and closer relationship between team members to discharge their

responsibilities accordingly which in turn facilitates provision of service by others. For example in situations of acute emergencies such as outbreaks/ epidemics and health related acute events their mutual collaborating activities plays an eminent and prominent role in taking prompt intervention activities to address issue of the emergency promptly. In the process of investigation of the event that is epidemic investigation (data collection, collation, editing, entry, analysis, interpretation, conclusion/recommendation) and possible prompt intervention activities to be undertaken facilitator co-operation of team members is of paramount importance. To effect this personality and behavior of team members contribute their part positively or negatively affecting overall service provision of health workers impacting required harmony level to be maintained.

Good attributes of personalities/ behavior of individuals/ team

- Be enthusiastic and show it
- Be creative/ innovative
- Be willing to undertake certain tasks of added value/importance
- Be positive (win –win attitude) say whatever the case may be/ whatever difficult task to be performed say I will do it perfectly.
- Be hard working
- Be ambitious but never over ambitious
- Be Assertive but never aggressive at any time/any circumstance
- Introduce yourself to team members or those concerned
- Do your tasks firmly and succinctly irrespective of any discomforts or inconveniences
- Do not talk too much instead work very hard

- Wait till your turn comes to talk
- When things go wrong bounce back
- Solicit constructive criticisms
- Be patient at any time
- Entertain diversity of ideas/ opinions/assertions forwarded by colleagues
- Be polite and courteous
- Admit mistakes openly and without excuse

Contributed by Million Tumato(From Reading)

4: Possible steps to be followed to seek solutions/ manage encountered problems of health development and development problem of any sort.

- Problem identification
- Enumeration of possible causes of problem of interest
- Specify its objectives
- Formulate hypothesis
- Collect facts/evidences
- Analyze and evaluate collected facts /evidences
- Arrive at plausible conclusion and make sound recommendations
- Consider possible courses of action
- Evaluate considered courses of action to be taken
- Evaluate adverse effects of possible course of action to be taken
- Prepare evidence based problem burden indicating selection criteria
- Set priority in order of magnitude of the problem and identify problem which seeks utmost priority
- Make systematic planning (organize, staff, resources allocation)
- Implement intervention activities
- Give due attention for close monitoring and follow up of activities being undertaken
- Conduct periodic review and evaluation
- Solicit constructive criticisms indicated by the findings and take corrective measures to rectify shortcomings encountered during process of implementation of intervention activities
- Perform periodic impact assessment activities

- Use findings of the assessment to intensify and consolidate progress of interventions
- Do not hesitate to tackle very task of undertaking ongoing information collection, analysis, production and communication of results helpful to address problems encountered at various levels and in different occasions
- Realize that at every junction between solution seeking steps that there is irrevocable need to stop for a while and think for effective and efficient use of produced evidence based information meant for action and making arduous struggle through time to seek remedy/solution to encountered problem of interest to bring about formulated vision in to reality
- Manage to undertake unreserved and relentless efforts (cyclic process) till set objectives of problem resolving actions are met and achievement of desired goals of interest (solution for different problems encountered) are successfully attained

With complement to vitality of using fact based information to address issue of public health problems by and large any pressing development problem of communities/country. This idea is forwarded not reinvent already existing concept nor to claim any originality. Secret of our relatively lower stage of development is partly because of the gap to be filled we have with regard to develop and consolidate culture of using evidence based scientific information to seek reliable solution to health and by and large overall development problems. Therefore there is strong need to play promoting and advocacy role in attempt of enhancing, strengthening and further fortifying to eventually enrich culture of using evidence based information at every step and occasion to deal with every health and development problem of our country.

Million Tumato ,MD, EFELTP Resident

Annex

(*Tables and Graphs for reference)*

Table 3: Isolated Vibrio cholerea and its drug susceptibility testing isolated from stool samples in acute watery diarrhea outbreak, Zone 3, Afar, April-June 2009.

Ser. No	Age	Sex	Woeda	Kebel	Isolated bacteria	Drug sensitivity testing		Remark
						Resistant	Sensitive	
1	11 month	M	Gewane	Ajip (Gewane town)	*No growth*	-	-	
2	15	M	Gewane	Buriforo	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa, Tetra,Erythr, Norflo,Ciprof, Doxy, Chloramphinicle	
3	22	M	Gewane	Gedera	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa, Tetra, Erythr, Norflo, Ciprof, Doxy, Chloramp	
4	18	M	Gewane	Kodae	*No growth*	-	-	
5	20	M	Gewane	Sebate	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa,Tetra,Erythr, Norflo,Ciprof, Doxy, Chloramphinicle	
6	18	M	Burimedayto	Debel	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa,Tetra,Erythr, Norflo,Ciprof, Doxy, Chloramphinicle	
7	14	M	Burimedayto	Debel	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa,Tetra,Erythr, Norflo,Ciprof, Doxy, Chloramphinicle	
8	16	M	Burimedayto	Debel	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa,Tetra,Erythr, Norflo,Ciprof, Doxy, Chloramphinicle	
9	22	M	Amibara	Sheleko	*Vibrio cholera 01 Inaba*	Cotrimoxazole	Amoxa,Tetra,Erythr, Norflo,Ciprof, Doxy, Chloramphinicle	

Table 4: *Possible risk factors of exposure for AWD in Burimedayto and Gewane districts, Zone 3, Afar, 2 April-June 2009*

Risk factors		*Ill*		
		Yes	*No*	*TOTAL*
Drinking water treatment	*Yes*	*4*	*8*	*12*
	No	*27*	*15*	*42*
Contact with other case	*Yes*	*30*	*3*	*33*
	No	*1*	*20*	*21*
Hands washing with soap/detergent after latrine usage	*Yes*	*23*	*22*	*45*
	No	*8*	*1*	*9*
eat/drink in a restaurant/another's home	*Yes*	*3*	*4*	*7*
	No	*28*	*18*	*46*
access to latrine	*Yes*	*19*	*3*	*22*
	No	*12*	*21*	*32*
TOTAL		*31*	*24*	*55*

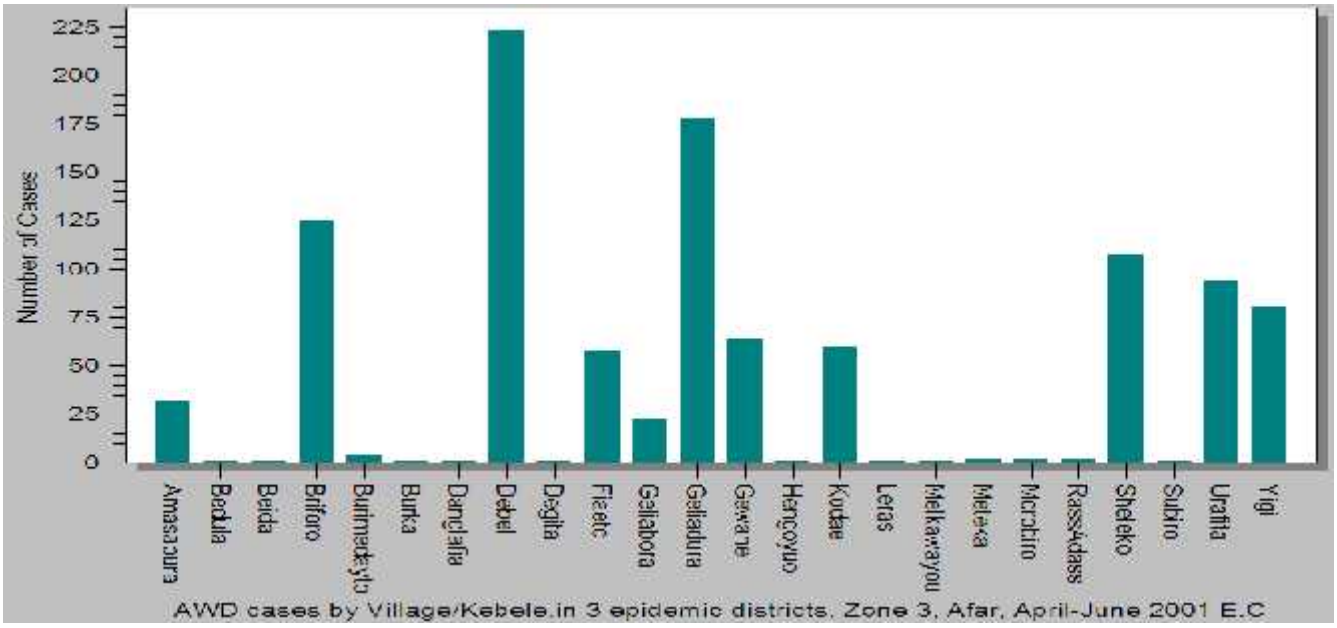
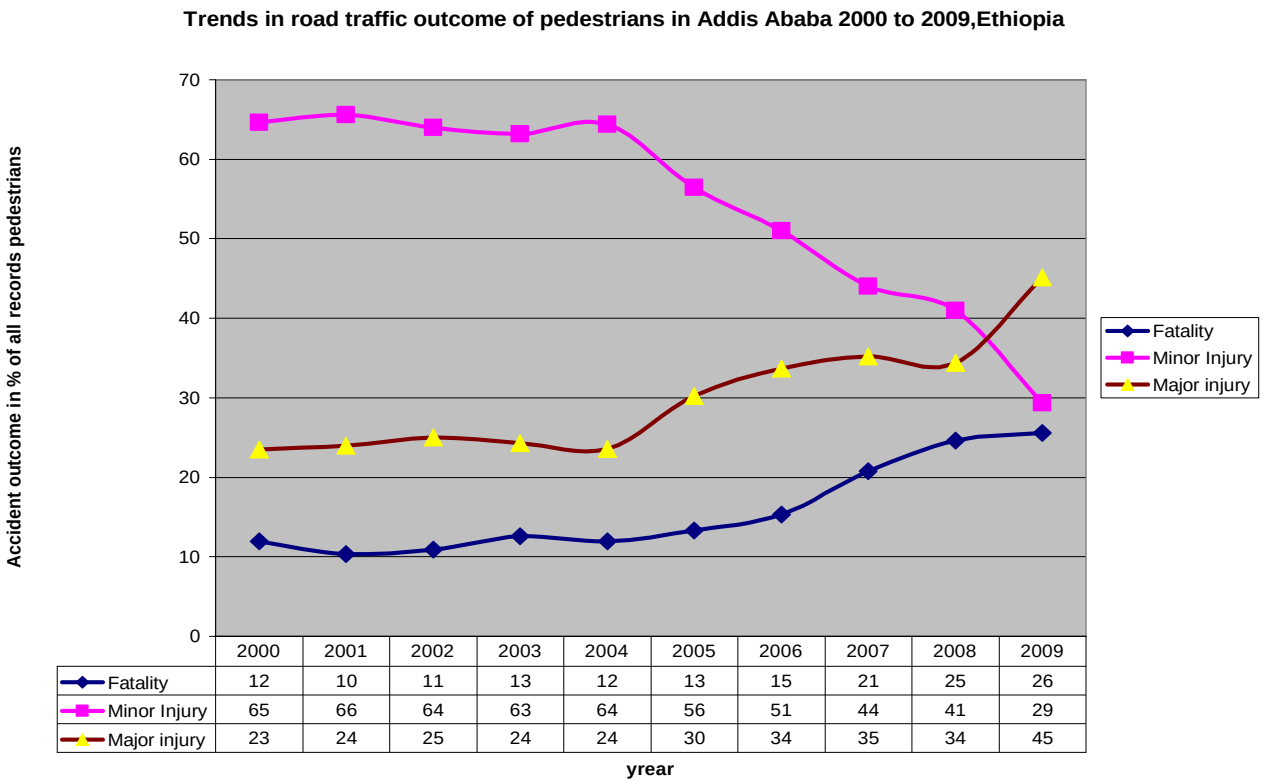
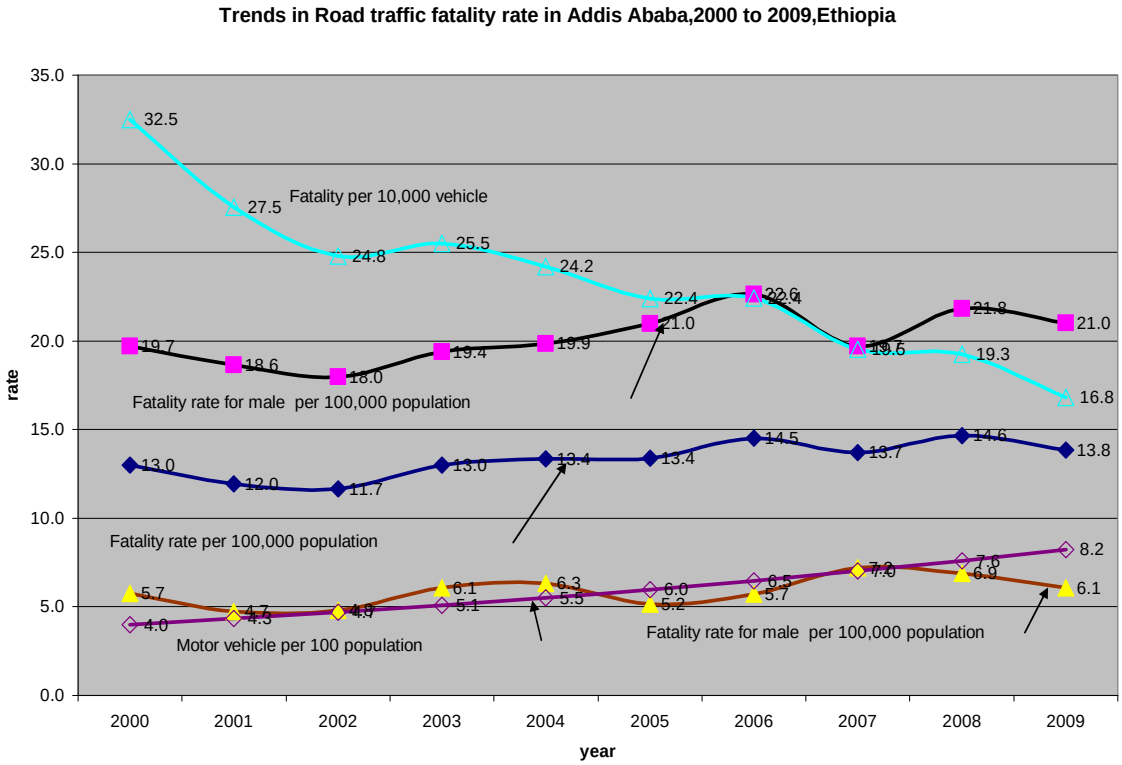


Figure 1.1.9: Distribution of AWD cases by village, Zone 3, Afar, April-June 2009



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Fatality	12	10	11	13	12	13	15	21	25	26
Minor Injury	65	66	64	63	64	56	51	44	41	29
Major injury	23	24	25	24	24	30	34	35	34	45

Figure 5.2.5: Trends in road traffic outcome of oedestrians in Addis Ababa, from 2000-2009, Ethiopia



Figur 5.2.6: Trends in road traffic fatality in Addis Ababa, 2000-2009, Ethiopia

Annex 7.1.1 Beneficiaries by District in SNPPR in 2010,Ethiopia

Sn	Zone	Name of Ditrict	Ditrict Popultaion	Under five years Population	Malaria Risk population	Households protectd with ITNS	population at risk of Malaria Epidemics within next 6 months	Total Malaria cases within next 6 months	sever and complicated Malaria within next 6 months	Risk Population need ITNS	ITNS required (3perHH)	Coartem required in Doses
1	Hadiya	West Badawacho	89842	14015	62889	74	8,200	3988	199	8,200	4,920	3988
2	Hadiya	Shashego	110343	17213	77240	100	NAD	14,267	713	NAD	NAD	14,267
3	Hadiya	East Badawacho	193198	30138	135239	97	NAD	17856	893	NAD	NAD	17856
4	Hadiya	Lemo	127696	19920	89387	28	NAD	1198	60	NAD	NAD	1198
5	Hadiya	Sore	217452	33922	152216	80	NAD	3745	187	NAD	NAD	3745
6	Silte	Lanfuro	126486	19732	88540	55.5	11,847	27858	1393	11,847	7,108	27858
7	Silte	Silte	182877	28528	128014	67	NAD	25,704	1285	NAD	NAD	25,704
8	Gurage	Mareko	73741	11503	51619	100	NAD	7656	383	NAD	NAD	7656
9	Gurage	Meskane	172178	26859	120525	45	NAD	7235	362	NAD	NAD	7235
10	Special District	Derashe	149907	23385	104935	60	NAD	11983	599	NAD	NAD	11983
11	Special District	Konso	256030	39940	179221	99.7	NAD	36915	1846	NAD	NAD	36915
12	Special District	Amaro	162761	25390	113933	95	9,401	7051	353	9401	5,641	7051
13	Special District	Burji	61584	9607	43109	NAD	11,664	8748	437	11664	6,998	8748
14	South Omo	Dasenech	55591	8672	38914	100	NAD	2212	111	NAD	NAD	2212
15	South Omo	Ari	207975	32444	145583	76	NAD	4113	206	NAD	NAD	4113
16	South Omo	Hamer	64458	10055	45121	95	NAD	2279	114	NAD	NAD	2279
17	South Omo	Bensa Tsemay	60568	9448	42398	32	NAD	3410	171	NAD	NAD	3410

Sn	Zone	Name of Ditrict	Ditrict Populaion	Under five years Population	Malaria Risk population	Households protected with ITNS	population at risk of	Total Malaria cases	severand complicated Malaria	Risk Population need ITNS	ITNS required (3perHH)	Coartem required in Doses
18	Sidama	Aroresa	185379	28919	129765	21	NAD	2056	103	NAD	NAD	2056
19	Sidama	Bensa	273533	42670	191473	100	2,232	1749	87	2232	1,339	1749
20	Sidama	Kula	142115	22170	0	NAP	NAD	NAP	NAP	NAD	NAD	NAD
21	Sidama	Boricha	274049	42751	191834	100	NAD	7534	377	NAD	NAD	7534
22	Sidama	Loka Abaya	108101	16863	75671	90	8,884	6663	333	8884	5,330	6663
23	Sidama	Awas Zuria	135586	21151	94910	97	10,364	7351	368	10,364	6,218	7351
24	Gamugofa	Zalia	80349	12534	56244	98	57,406	4148	207	57406	34,444	4148
25	Gamugofa	M.Abaya	81606	12730	57124	95	NAD	11367	568	NAD	NAD	11367
26	Gamugofa	Kemba	169695	26472	118787	95.2	NAD	2179	109	NAD	NAD	2179
27	Gamugofa	Demba Gofa	88426	13794	61898	100	70,521	7235	362	70521	42,313	7235
28	Wolayita	Humbo	136505	21294	95554	92	136,505	13604	680	136505	81,903	13604
29	Wolayita	Duguna Fango	105111	16397	73578	100	0	17933	897		0	17933
30	Wolayita	Damot Wayde	104922	16368	73445	92	NAD	11976	599	NAD	NAD	11976

31	Wolayita	Bolose Bombe	99355	15499	69549	75	17,409	10696	535	17409	10,445	10696
32	Kenbata Tibaro	K/Gamela	97133	15153	67993	95	NAD	8637	432	NAD	NAD	8637
33	Kenbata Tibaro	Doyogena	84606	13198	59224	100	NAD	1208	60	NAD	NAD	1208
34	Kenbata Tibaro	Tembaro	114537	17867	80176	65	NAD	4352	218	NAD	NAD	4352
35	Kenbata Tibaro	Kacha Bira	124435	19412	87105	80	NAD	8824	441	NAD	NAD	8824
		Total	**4718130**	**736017**	**320321**		**344,433**	**313730**	**15687**	**344,433**	206,660	

Annex 7.1.2 Meningococcal Meningitis Epidemic Beneficiaries

Sn	Region	**Zone**	**Name of Ditrict**	District Populat aion	Male Population	Female population	Under five years Population	Special Population	Maningitis Epidemic risk	Risk population for Vaccination	
1	SNNPR	Hadiya	West Badawacho	89842	44023	45819	14015	0	No	NAD	NAD
2	SNNPR	Hadiya	Shashego	110343	54068	56275	17213	0	No	NAD	NAD
3	SNNPR	Hadiya	East Badawacho	193198	94667.02	98530.98	30138	0	No	NAD	NAD
4	SNNPR	Hadiya	Lemo	127696	62571	65125	19920	0	No	NAD	NAD
5	SNNPR	Hadiya	Sore	217452	106551	110901	33922	0	No	NAD	NAD
6	SNNPR	Silte	Lanfuro	126486	61978	64508	19732	0	No	NAD	NAD
7	SNNPR	Silte	Silte	182877	89610	93267	28528	0	No	NAD	NAD
8	SNNPR	Gurage	Mareko	73741	36133	37608	11503	0	No	NAD	NAD
9	SNNPR	Gurage	Meskane	172178	84368	87810	26859	0	No	NAD	NAD

10	SNNPR	Special District	Derashe	149907	73457	76450	23385	0	Yes	104,931	
11	SNNPR	Special District	Konso	256030	125335	130695	39940	0	Yes	179,221	
12	SNNPR	Special District	Amaro	162761	81263	81498	25390	0	No	NAD	NAD
13	SNNPR	Special District	Burji	61584	30176	31408	9607	0	No	NAD	NAD
14	SNNPR	South Omo	Dasenech	55591	27526	28065	8672	0	No	NAD	NAD
15	SNNPR	South Omo	Ari	207975	101908	106067	32444	0	No	NAD	NAD
16	SNNPR	South Omo	Hamer	64458	31584	32874	10055	0	No	NAD	NAD
17	SNNPR	South Omo	Bensa Tsemay	60568	30587	29981	9448	0	No	NAD	NAD
18	SNNPR	Sidama	Aroresa	185379	93040	92339	28919	0	No	NAD	NAD
19	SNNPR	Sidama	Bensa	273533	135077	138456	42670	0	No	NAD	NAD
20	SNNPR	Sidama	Kula	142115	71028	71087	22170	0	No	NAD	NAD
21	SNNPR	Sidama	Boricha	274049	137149	136900	42751	0	No	NAD	NAD
22	SNNPR	Sidama	Loka Abaya	108101	55122	52979	16863	0	No	NAD	NAD
23	SNNPR	Sidama	Awas Zuria	135586	68376	67210	21151	0	No	NAD	NAD
24	SNNPR	Gamugofa	Zalia	80349	39758	40591	12534	0	No	NAD	NAD

25	SNNPR	Gamugofa	M.Abaya	81606	39988	41618	12730	0	No	NAD	NAD
26	SNNPR	Gamugofa	Kemba	169695	83151	86544	26472	0	No	NAD	NAD
27	SNNPR	Gamugofa	Demba Gofa	88426	43788	44638	13794	0	No	NAD	NAD
28	SNNPR	Wolayita	Humbo	136505	66088	70417	21294	0	No	NAD	NAD
29	SNNPR	Wolayita	Duguna Fango	105111	51610	53501	16397	0	No	NAD	NAD
30	SNNPR	Wolayita	Damot Wayde	104922	51412	53510	16368	0	No	NAD	NAD
31	SNNPR	Wolayita	Bolose Bombe	99355	48694	50661	15499	0	No	NAD	NAD
32	SNNPR	Kenbata Tibaro	K/Gamela	97133	47788	49345	15153	0	No	NAD	NAD
33	SNNPR	Kenbata Tibaro	Doyogena	84606	41502	43104	13198	0	No	NAD	NAD
34	SNNPR	Kenbata Tibaro	Tembaro	114537	55698	58839	17867	0	No	NAD	NAD
35	SNNPR	Kenbata Tibaro	Kacha Bira	124435	60973	63462	19412	0	No	NAD	NAD
											284,152

Annex 7.1.3 Acute Watery Diarrhea (AWD) Beneficiaries in SNNPR in 2010, Ethiopia

Sn	Zone	Name of Ditrict	Ditrict Populaion	Male Population	Female population	Under five years Population	AWD Risk population	Total AWD cases within next 6 months	Total sever AWD within next 6 months	ORS required	Ringers Lactate	NGT	Doxycycline	Erthromycine
1	Hadiya	West Badawacho	89842	44023	45819	14015	36,000	144	3	936	172.8	14.4	86.4	345.6
2	Hadiya	Shashego	110343	54068	56275	17213	45000	90	2	585	108	9	54	216
3	Hadiya	East Badawacho	193198	94667.02	98530.98	30138	21,107	42	1	273	50.4	4.2	25.2	100.8
4	Hadiya	Lemo	127696	62571	65125	19920	37000	74	1	481	88.8	7.4	44.4	177.6
5	Hadiya	Sore	217452	106551	110901	33922	35,934	72	1	468	86.4	7.2	43.2	172.8
6	Silte	Lanfuro	126486	61978	64508	19732	27606	55	1	358	66	5.5	33	132
7	Silte	Silte	182877	89610	93267	28528	45000	90	2	585	108	9	54	216
8	Gurage	Mareko	73741	36133	37608	11503	NAD	NA	NA	NAD	NA	NA	NAD	NAD

								D	D		D	D		
9	Gurage	Meskane	172178	84368	87810	26859	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
10	Special District	Derashe	149907	73457	76450	23385	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
11	Special District	Konso	256030	125335	130695	39940	25600	52	1	338	62.4	5.2	31.2	124.8
12	Special District	Amaro	162761	81263	81498	25390	162761	326	7	2,119	391.2	32.6	195.6	782.4
13	Special District	Burji	61584	30176	31408	9607	61584	124	2	806	148.8	12.4	74.4	297.6
14	South Omo	Dasenech	55591	27526	28065	8672	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
15	South Omo	Ari	207975	101908	106067	32444	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
16	South Omo	Hamer	64458	31584	32874	10055	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
17	South Omo	Bensa Tsemay	60568	30587	29981	9448	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
18	Sidama	Aroresa	185379	93040	92339	28919	185379	371	7	2,412	445.2	37.1	222.6	890.4
19	Sidama	Bensa	273533	135077	138456	42670	273533	548	11	3,562	657.6	54.8	328.8	1315
20	Sidama	Kula	142115	71028	71087	22170	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
21	Sidama	Boricha	274049	137149	136900	42751	137149	275	6	1,788	330	27.5	165	660
22	Sidama	Loka Abaya	108101	55122	52979	16863	108101	217	4	1,411	260.4	21.7	130.2	520.8
2	Sidama	Awas	135586	68376	67210	21151	NAD	NA	NA	NAD	NA	NA	NAD	NAD

3		Zuria						D	D		D	D		
24	Gamugofa	Zalia	80349	39758	40591	12534	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
25	Gamugofa	M.Abaya	81606	39988	41618	12730	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
26	Gamugofa	Kemba	169695	83151	86544	26472	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
27	Gamugofa	Demba Gofa	88426	43788	44638	13794	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
28	Wolayita	Humbo	136505	66088	70417	21294	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
29	Wolayita	Duguna Fango	105111	51610	53501	16397	79214	159	3	1,034	190.8	15.9	95.4	381.6
30	Wolayita	Damot Wayde	104922	51412	53510	16368	95450	191	4	1,242	229.2	19.1	114.6	458.4
31	Wolayita	Bolose Bombe	99355	48694	50661	15499	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
32	Kenbata Tibaro	K/Gamela	97133	47788	49345	15153	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
33	Kenbata Tibaro	Doyogena	84606	41502	43104	13198	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
34	Kenbata Tibaro	Tembaro	114537	55698	58839	17867	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
35	Kenbata Tibaro	Kacha Bira	124435	60973	63462	19412	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Total			**4718130**	**2326047**	**2392083**	**736017**	**1,376,418**	**2,830**	**57**	18,395	3396	283	1698	6792

Annex 7.1. 1

-Definition of Terms

Road Traffic accident: Is a collision involving at least one vehicle in motion on a public or private road that results in at least one person being injured or killed.

Road traffic fatality: a death occurring within 30 days of the road traffic crash.

Road traffic injuries: fatal or non fatal injuries incurred as a result of a road traffic crash

Road user: a person using any part of the road system as a non motorized or motorized transport user.

Traffic mix: form and structure of different modes of transport, motorized and non motorized that share the same road network.

Vulnerable road users: road users most at risk in traffic, such as pedestrians, cyclists and people transport passengers, children, older people and disabled people may also be included in this category

Annex 2

Questionnaire

Questionnaire for quantitative data collection from respondents (Drivers) on their perception of safety belt use.

Table7.1: used to determine perception status (Knowledge, Attitude, Practice and Behavior) of Drivers on safety belt use.

S.No	Question	Code	Skip to
	Part I Socio-demographic		
1	Age	1. < 15 years 2. 15- 20 years 3. 21- 30 years 4. 31-40 years 5. 41-50 years 6. 51+ years	
2	Sex	1. Male 2. Female	Skip to
3	Area	1. Urban 1. Rural	Skip to
4	Occupation	1. Driver 2. Merchant 3. Government employee 4. Technician 5. Teacher 6. Private 7. Others---(Specify)	Skip to
5	Education	1. Elementary 2. Junior 3. Secondary 4. College completed 5. Tertiary	Skip to
6	Monthly Income	1. < 500 birr 2. 500-1000 birr 3. > 1000 birr	Skip to
7	Marital Status	1. Married	Skip to

		2. Single 3. Divorced 4. Widowed	
8	Number of Children	1. None 2. One child 3. Two child 4. More than two	Skip to
9	Religion	1. Christian 2. Moslem 3. Cultural belief 4. Other ----(Specify)	Skip to
10	Christian	1. Orthodox 2. Protestant 3. Catholic 4. Others ------(Specify)	Skip to
11	Is this vehicle yours?	1. Yes 2. No	Skip to
12	For how long have you been driving?	1.Month 2. 1 year 3. 2 years 4. 3 years 5. 4 years 6. other ---(specify)	Skip to
13	Have you got driving License?	1. Yes 2. No	Skip to
14	What is the status/grade of your present license	1. 1st 2. 2nd 3. 3rd 4. 4th 5. 5th 6. Other---(specify)	Skip to
15	Do you renew your License regularly?	1. Yes 2. No	Skip to
	Knowledge question		
16	Have you heard about safety belt use?	1. Yes 2. No	Skip to

17	If yes, through what channel/media have you heard?	1. Friends 2. Driver(s) 3. Radio 4. Television 5. News paper 6. Video 7. Family 8. Traffic police notice 9. Other—(specify)	Skip to
18	Have you ever attended training prepared on safety belt use?	1. Yes 2. No	Skip to
19	If yes, who prepared it?	1. Government 2. NGOS 3. Private 4. Other---(specify)	Skip to
20	After attending did you get adequate knowledge?	1. Yes 2. No	Skip to
21	If yes, what is the advantage of using safety belt while driving?	1. For self protection 2. To protect passengers 3. To protect pedestrians 4. To protect all and properties	Skip to
	Attitude questions		
22	Do you intend to use safety belt while driving?	1. Yes 2. No	Skip to
23	If not why not?	1. Don't like 2. Consumes time 3. Forgetting 4. Other—(specify)	Skip to
24	If yes, how often do you intend to use safety belt when driving?	1. Occasionally 2. Sometimes 3. Always 4. Never	Skip to
	Practice questions		
25	Do you use safety seat belt when ever driving?	1. Yes 2. No	Skip to
26	How often do you use	1. yes	Skip to

	safety seat belt while driving? If yes how often	2. no	
27	If yes, how often?	1. Occasionally 2. Some times 3. Always	Skip to
28	Have you ever encountered road traffic accident wearing safety seat belt?	1. Yes 2. No	Skip to
29	If yes, in how many occasions?	1. Once 2. Twice 3. Tree times 4. Others---(specify)	Skip to
30	Did you encounter any injury as an outcome?	1. Yes 2. No	Skip to
31	If yes , where did you go to get treatment?	1. Health center 2. Hospital 3. Private clinic 4. Others---(specify)	Skip to
32	Did you get severe injury?	1. Yes 2. No	Skip to
33	Did you recover quickly?	1. Yes 2. No	Skip to
34	Who else encountered injury during the accident?	1. Passengers 2. Pedestrians 3. Other----(specify)	Skip to
35	Was any of road traffic accident reported to traffic police office?	1. Yes 2. No	Skip to
36	If not why?	1. Distance problem 2. No vehicle 3. Not desired	Skip to
37	Have ever driven your car after taking alcohol/other substance	1. Yes 2. No	Skip to

38	Do you conform to road traffic Laws while driving?	1. Yes 2. No	Skip to
39	If yes in what ways?	1. Giving priority to pedestrians 2. Keeping right side 3. Reducing speed when required 4. Giving priority to other vehicle 5. Others--------(specify)	Skip to
40	If not why?	1. Not desired 2. It wastes time 3. Forget to do so	Skip to
	Behavior questions		
41	Do you encourage passengers in your car use safety seat belts when travelling?	1. Yes 2. No	Skip to
42	Do you attempt to persuade other drivers together with passengers in their car use safety belts?	1. yes 2. no	Skip to
43	Do you persuade other drivers conform to rules and regulations of road traffic laws?	1. Yes 2. No	Skip to
44	Have you ever persuaded other drivers not to drive after taking alcohol or other substance?	1. Yes 2. No	Skip to
45	Have you ever attempted to inform community members about importance of using safety belt?	1. Yes 2. No	Skip to
46	Do you encourage community members to participate in prevention and control activities of road traffic accident?	1. Yes 2. No	Skip to

Annex 3

Questions used to collect qualitative data from respondents on their perception of safety belt use.

Questions for Focus group discussion (FGD) participants (drivers)

1) Safety seat belt use

   Probing questions

   - Importance
   - Source of information
   - Any incidence positive or negative in the use of safety belt

2) Driving license

   - Hold a renewed License?
   - Importance
   - Regularity

3) Attitudes: -

Probes: -

- Do you like using safety belt?
- What do you feel when you do it?
- What do you feel when you drive without it?
- Do you think it will protect you from accident?
- What do you feel when people drive without it?
- Do you think everyone shall use it?
- When do you think should people use safety belt?

4) Practice: -

- Do you use safety belt when ever driving?
- How often do you use safety belt while driving?
- Have you encountered any accident while driving using safety belt?
- Did using safety seat belt protected you form accident?
- Do you drive after taking alcohol / other substances?
- What is the advantage of not driving after taking alcohol/ other substances?
- Do you conform to road traffic laws whenever driving?
- Do you report road traffic accidents when ever occurred?

5) Behavior(promotive /Advocacy role)

- Do you encourage passengers and other drivers use safety belts whenever travelling in the vehicle?
- Do you inform importance of using safety belt to community members in your village?
- Do you encourage community members participate in road traffic accident prevention and control activities
- Whom do you think can contribute to reduction of road traffic accidents? Probe further

Questions for focus group discussions (FGD) for Traffic police members

1) What is the prevailing (current) situation of road traffic affair?

2) What can be said about current burden of the problem? Probe further

3) What is the situation of recording, reporting and overall documentation process? Probe further

4) Do drivers receive regular trainings/refreshment courses on road traffic accident issues? Probe further

5) What is the situation of implementing formulated road traffic enforcing Laws?
6) What courses of actions taken for those who violate road traffic Laws? What was the impact?
7) What do you think about level of awareness of general public on this issue? What needs to be done to fill possible gaps? Probe further

8) Whose duty/concern should it be do you think contributing to reduce problems of road traffic accidents? Probe further

Annex 4: Woreda Specific Findings and Action Proposed by Joint Team

Annex 9.1.1: Asayita Woreda

Response activity	Strengthen	Weakness	Challenges	Action taken by team	Further action to be taken	Responsible body/organization for the action to be taken	Time schedule
Coordination	-Woreda health office & woreda administration started response -health center with woreda health office establish different committee form the health	No multi-sectorial coordination including woreda water office -2 NGOs exist but not involved	-The woreda administration and other sectors offices were not given priority -The 2 NGOs in the woreda were not willing enough to support	-Meeting conducted and woreda level coordination was re-activated in the presences of governments sectors (water, health, administrator, capacity building and 1NGOs) - advice the woreda administration to establish kebele level coordination	-Follow of the coordination meeting and involvement of the 2 NGOS -Link the coordination to regional AWD coordination committee	-Regional health bureau and regional AWD coordination committee -Woreda administration and woreda health office	Ongoing
Supplies & logistics	-Minimum stock of ORS, RL, antibiotics & HH water treatment chemicals were available at CTC	- ORS distribution sites in affected kebelels were not available -There is no sytem for community level HH water treatment chemicals	-Transportation for supply distribution to the affected kebeles	Advice was given to during the re-activation meeting of the woreda coordination committee expansion of the supplies per positioning in clinics	-Re-stocking of the supplies at woreda level -open ORS distribution points(CTUs)	Woreda health office will request RHB/NGO & RHB/NGOs will provide the supplies	As soon as possible
Case	-CRF relatively low	-Index case	-Delay of patients to	-Discussed with	-Continued	-Woreda	-

detection/Surveillance , management & follow up	(1.2%) -Health workers are available & on board -Management of other concomitant infection (malnutrition, malaria, Shigellosis)	was detected 1 month before the outbreak but action was not taken on time -There is no going active surveillance of AWD -CFR was not to the standard level (CFR<1%) -health post/clinics in affected kebele working only 6 hours	sick care at CTC -Absences of ORS distribution points at health posts/clinics -Centralized CTC (1CTC only at health center for 13 kebeles affected by AWD)resulted in far distance travel to bring the patients -Lack of flow up & supervision at kebele level due to absences of transportation for woreda	health staffs at CTC on case management and provided case management guideline; index case detection & early warning, prevention& control & re-activation	active surveillance -open additional CTC based on the case load & in identified central areas for nearby kebeles - Create awareness on sign & symptoms of AWD in each kebeles for early reporting & seeking medical care	health office, health center, NGOs & private investment farm, RHB in collaboration with partners	additional CTC, sign & symptoms awareness creation as soon as possible -AWD active surveillance on going -
hygiene precaution in CTC & corps handling	-Safe water supply available at CTC -applied decontamination as per the standard in the CTC & bed pans -Hand washing facility including gloves for precaution during handling AWD case - Handled as per	Single room tent used for case management (absence of screening & recovery room) - Bathing room was outside of the CTC compound - no neutral area for the staff & store of supplies	-shortage of additional tents for the CTC set up and CTC kits for additional planned CTC -Shortage of health professional for case management in planned additional CTC to be opened -Contamination of the environment by patient diarrhoea & vomit due to long travel to CTC	- Put in place tents for screening and recovery room - inclusion of the bath room within the CTC compound -Discussed with health center heads & health staffs about hygiene precaution in CTC and provided CTC guideline - advised the CTC staff to disinfect	-Provision of additional CTC kit -provision of spray machine -Training of health workers on CTC hygiene precaution	RHB, NGO and partners in collaboration of woreda health , water and woreda administration	15-30 August 2009

	standard guide line			transportation cart			
Household water treatment	Adequate supply & distributed to the community	-Lack follow up on utilization & disposal of the sachet & bottle -No sustainable(regular) distribution system - awareness creation coverage was limited on HWTS	-Awareness of the community is not in favour of HH water treatment chemical utilization				
Social mobilization	-trial by health centers at kebele level - involvement of woreda woreda administration	- there was no involvement of community & other sectors -ad hoc based activity -there was no hygiene awareness creation campaign(high case load)	- lack of transportation	-the team observed community awareness. -explain about prevention and control of AWD.	-regular awareness creation	-Woreda health office -adminstrator -Woreda RRT Coordination committee	.
Supervision & monitoring of the response performance	-Case treatment flow up by health center head	-lack of systematized supportive supervision	-transportation problem -running cost shortage -lack of commitment -knowledge gap	-on spot advise to contain the spread of AWD. -provision of guidelines.	-monitoring by the region	-establish technical team composed of Clinicians, Environmental health,	

						water technicians.	

Annex 9.1.2: Gewane Woreda

Response Activity	Strengthen	Weakness	Challenges	Action taken by team	Further action to be taken	Responsible body/organization for the action to be taken	Time schedule
Coordination	-multi-sectoral coordination exists/active. -NGO involvement namely AMREF and CARE -minutes recorded and documented per each meeting	-interruption of coordination when case load decreases.	-lack of involvement of investors	Held coordination meeting	-continued woreda coordination meeting -link at the coordination committee at regional level.	- administrator	
Supplies, logistics and operation	-got transport support from partners namely: ERCS, AMREF, CARE. -minimum stock of ringer lactate, water treatment chemicals. -government support of running cost by the region.	Timely request of supply. -no stock balance sheet Weak supply management like tent, buckets, Jerrycans.		-advise for timely request for supply.	-keep minimum stock for 100 patients -strengthen documentation for stock balance	- woreda health -regional health bureau follow up.	
Case detection/Surveillance , management & follow up	-timely detected. -laboratory confirmed -infection detected Guideline exists -Trained man power deployed by regional health bureau.	-poor practice of isolation -CFR ~ 4% -poor application of standard procedure in	-centralized CTC -lack of adequate CTC kit to expand	-share the guidelines -advised to follow up the standards	-decentralize CTC -expanding CTC supply of adequate CTC -continued surveillance in	-regional health bureau	

	-active surveillance	CTC management.			each kebeles		
WASH in CTC	-accessible to water supply -existing bath room -existing latrine.	-no foot bath/ no hand washing facility -no water storage at CTC -no disinfection -no water treatment guideline	-many care takers for a single patient - unwillingness of community to stay in CTC compound.	- provision of water treatment guideline	-provide continious awarness on prevention.	Regional water and health bureau	
Water supply	-town – piped water -water sample was taken and analysed. -have water treatment chemicals which are appropriate for the water source. -effort made installing EM-WAT kit.	-improper disposal of empty sachets and residue of treatment.	-lack of trained man power to manage the EMWAT kit -no regular distribution of water purification chemicals	-identify where the gap lies	-training on EMWAT kit for woreda technicians	Regional water bureau Company/rift valley	
Social mobilization	-involvement of higher officials -leaflet distribution -public announcement in Afar language Home to home awareness rising -involvement of kebele development committee -distribution of water	-intermittent community mobilization	-unable to get running cost continuously -long time requirement for behavioural change of	-advise to continuous community mobilization regularly.	-continuous community mobilization	Regional councils Regional technical task force comittee	

	treatment chemicals		community.				
Supervision & monitoring of the response performance	-Case treatment flow up by health center head	-lack of systematized supportive supervision	- transportation problem -running cost shortage -lack of commitment -knowledge gap	-on spot advise to contain the spread of AWD. -provide guideline	-monitoring by the region	-establish technical team composed of Clinicians, Environmental health, water technicians.	

Annex 9.1.3: Bure Mudayetu Woreda (over all intervention /effports evaluation)

Response activity	Strengthen	Weakness	Challenges	Action taken by team	Further action to be taken	Responsible body/organization for the action to be taken	Time schedule
Coordination	-Communicated and discussed with investors for action	-ad hoc coordination meetings/no documentation of minutes	-lack of technical capacity of all woreda sector offices	Held coordination meeting	-continued woreda coordination meeting -link at the coordination committee at regional level.	-administrator - all line bureaus of region	
Supplies, logistics and operation	-received operational cost from regions -have minimum stock for ringer lactate -investors,	-no documentation for stocks balance -late request of supply -poor store	-Transportation problem -no ORS, water guard, canula, deoxcy	-share the guidelines -advised to follow up the standards	-improve store situation -provision of transport -dispose	-regional health bureau -regional technical task force members	

	AMREF,CARE,ERCS provided support in transport, medicine	management(expired water makers not discarded)	-store is over crowded/no ventilation		expired water makers		
Case detection/Surveillance , management & follow up	-regional health bureau deploy human resource -stool sample taken & confirmed	-deployed staff were not oriented -poor practice of isolation -CFR is greater than 1	-high case load within short period of time -absence of care takers for daily labourers	-share the guidelines -advised to follow up the standards	-treatment should follow the standard	-regional health bureau -regional water bureau	
WASH in CTC	-no access to water supply -existing latrine.	-no foot bath/ no hand washing facility -no water storage at CTC -no disinfection -no water treatment guideline	-no technical capacity to implement hygiene precaution in CTC.	-provision of water treatment guideline	-need training on hygiene precautions -supervisors should provide on job training Avail guideline of hygiene and sanitation in CTC	Regional water and health bureau	
Water supply	-availability of house hold water treatment chemicals -water samples taken and tested -EM-WAT kit available	-improper disposal of empty sachets and residue of treatment. -EM-WAT kit is complex to be managed by woreda water office	-lack of trained man power to manage the EMWAT kit -no regular distribution of water purification chemicals	-identify where the gap lies	-training on EMWAT kit for woreda technicians	Regional water bureau -company/rift valley	
Social mobilization	-cabinet was assigned to all kebeles to mobilize the	-intermittent community mobilization	-unable to get running cost continuously	-advise to continuous community	-continuous community mobilization	Regional councils Regional	

	community -HEW's also take part in the activity		-long time requirement for behavioural change of community. -11 kebeles were not accessible due to Awash river	mobilization regularly.		technical task force committee	
Supervision & monitoring of the response performance	-Case treatment flow up by health center head	-lack of systematized supportive supervision	-transportation problem -running cost shortage -lack of commitment -knowledge gap	-on spot advise to contain the spread of AWD. -provision of guidelines.	-monitoring by the region	-establish technical team composed of Clinicians, Environmental health, water technicians.	

Annex 9.1.4: Amibara woreda

Response activity	Strengthen	Weakness	Challenges	Action taken by team	Further action to be taken	Responsible body/organization for the action to be taken	Time schedule
Coordination	-participation of the council, partners -daily review meeting -weekly coordination meeting with health professionals, investors, CARE	-outcome of coordinated effort was not seen in reducing case load and CFR -no outcome	Monitor the outcome of coordination	Held coordination meeting	-need technical support from the region	-administrator	

	-strong information exchange	monitoring					
Supplies & logistics , operation	-got support of medicine, supplies. From CARE, MSF-GR, RHB -have minimum stock for all supplies -received operational cost from RHB.	-weak documentation of supplies : stock balance -store ventilation.	-transport	-advise for timely request for supply.	-store ventilation -strength documentation -avail transportation.	- woreda health -regional health bureau follow up.	
Case detection/ Surveillance , management & follow up	-regional health bureau –good data analysis -active daily reporting -stool sample taken and detected	-poor practice of isolation -poor infection prevention precaution -health professionals knowledge gap -CFR > 1% -under utilization of case management guideline	-3 affected kebeles are not accessible in the coming rainy season -high case load within short period of time -absence of care takers for daily labourers -high turn over	-share the guidelines -advised to follow up the standards	Treatment should follow the standard.	-regional health bureau	
WASH in CTC	-3 town of woreda uses piped water. -Water sample taken and tested – disinfected water source based on the result.	-no foot bath -poor corpus handling with out docontamination -community has acess to CTC including animals -no standard CTC	-CTC management facilities further spread of AWD rather than continuing it.	-provision of water treatment guideline	-CTC compound should be accessible to community and animals. -establishemnt of standard CTC -Hygiene precausion should be	Regional water and health bureau	

					strongly followed.		
Water supply	-availability of house hold water treatment chemicals - -EM-WAT kit available	-improper disposal of empty sachets and residue of treatment. -EM-WAT kit is complex to be managed by woreda water office	-lack of trained man power to manage the EMWAT kit -no regular distribution of water purification chemicals	-identify where the gap lies	Training to be given for woreda water office	Regional water bureau -company/rift valley	
Social mobilization	-participation of higher officials /cabinet members -active involvement of communities -public awarness through drama and songs with local language	-community resistance for message providers	-behavioural change taking long time	-advise to continuous community mobilization regularly.	-continuer community mobilization Use of other methodologies as well.	-woreda officials Regional council	.

NB:

Part of Eldar and Awash Fentale woreda were visited by Joint team during the field mission. The team discussed with woreda health office and visited Awash Fentale health center.Perpardness of the woreda discussed on AWD outbreak was checked and the woreda reported that they are receiving cases from Amibara woreda. The hygiene precaution and CTC at the health center were not as per the guideline. In Eldar woreda the team visited one closed CTC at Dobi Baraha and as reported by the local militia there was no AWD for the last 2 days and the assigned health worker was already disappeared. However, like other woreda formal meeting was not conducted

.

Figureb 9.1.15: Situation of Closed CTC and water source near the CTC used by community Dobi Baraha, Eldar Woreda, Afar, Ethiopia, July 2009

Curriculum Vitae of principal investigator

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Nationality: Ethiopian

Educational Background

Elementary school: Rasdesta Damtew (Yirgalem), Completed in 1963 (E.C), 1971 (G.C)

Junior secondary: Rasdesta Damtew (Yirgalem), completed in 1965 (E.C), 1973 (G.C)

Senior secondary: Yirgalem Comprehensive high school, completed in 1975 (E.C), 1983 (G.C)

Higher level: Faculty of Medicine, Addis Ababa University (AAU), in 1985 (E.C), 1993 (G.C)

Trinity College of Dublin (Public Health), in 1991 (E.C), 1999 (G.C)

Work Experience

Worked as General practitioner (physician) in Hawassa Health Center, Hawassa from 1993-1994 (G.C)

Head of Hawassa Health Center, Hawassa, from the year 1995-1996(G.C)

Served as health expert and co-coordinator of communicable diseases particularly on HIV-AIDS/STIs, Zonal Health Department, Sidama zone, 1997-1998 (G.C)

Member of HIV-AIDS prevention and control office establishing committee, Head of Sidama zone HIV-AIDS prevention and control office, 1998-2004

Head of HIV-AIDS VCT service provision department in HIV-AIDS prevention and control office of Sidama zone, 2005-2006 (G.C)

Physician, Head of Hawassa Health Center, 2006-2007(G.C)

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Declaration

I, the undersigned, declare that this is my original work and has never been presented by another person in this or any other University and that all the source materials and references used for this thesis have been duly acknowledged.

Name: _Million Tumato_____

Signature: _____

Place: _____

Date of Submission: _____

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

Name of advisor: _____

Signature: _____

Date: _____