

**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: Mesafint Alebachew

**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

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Approval by Examining Board

Chairman, School Graduate Committee

Advisor

Examiner

Examiner

I. Acknowledgment

The end over of this kind would never been finalized without the good will and cooperation of Addis Ababa University, College of Health Sciences, School of Public Health.

It is difficult to mention all, but I wish to acknowledge the following who have special contribution to my work .I would like to express my heartfelt thanks to my friends and others for their technical support.

I am very much grateful to my advisors Dr. Assefa Seme and Dr. Ababi Zergaw, Addis Ababa University (AAU), Faculty of Medicine, SPH for the unreserved guidance and constructive suggestion and comments from the stage of proposal development to this end.

I would like to thank OHB, heads of West Arsi zone and Woredas chief administrators, heads of health, water resources, education, finance and economic development offices as well as to health professionals and religious leaders for their willingness to provide us valuable primary and secondary data, at last but not least our deep appreciation goes to those household members who were included in the assessment. Owe thanks to the subjects and data collectors of this document.

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II. Preface

Background; epidemic and natural disasters are serious public health emergencies. Particularly, they occurred with little or no warning in the areas where health system is unprepared to deal with the emerging problems.

From February 2001 to February 2003 E.C. stay in field epidemiology and training program, in Addis Ababa University and resident attachment in Addis Ababa region and field assignment by FMOH to different region we carried out outbreak investigation, surveillance data analysis, surveillance system evaluation, health profile assessment, accepted abstract for scientific presentation, Public Health need assessment, research proposal and other additional outputs.

Epidemiological investigations of two outbreaks conducted during these periods. Descriptive epidemiology and outbreak investigations of acute AWD and HINI conducted.

Five years Surveillance data analysis on descriptive epidemiology of disease under surveillance in Addis Ababa Regional Health Bureau was also performed in March 2001E.C. In addition to these morbidity and mortality data was obtained from Federal Ministry of Health, Plan and program department and Addis Ababa city Administration Health Bureau gathered and analyzed.

The aim of this data analysis was to provide an insight on the burden of morbidity and mortality disease under surveillance. Surveillance system evaluation was also carried out in selected health facilities, in Kirkose sub-city health office and regional health bureau in 2003E.C.

The purpose of this evaluation was to describe how well the communicable disease surveillance system in the region is working to meet its purpose and objectives. Data were gathered through interviewing of concerned bodies using questionnaire coupled with reviewing of existing records and reports and analysed by system attributes like simplicity, timeliness and completeness.

The Belg (Sugum) Public Health and Nutrition emergency need assessment was conducted jointly with other partners within selected Woredas in zone Two and Four in Afar region in July 2002E.C. The purpose of the assessment was to identify potential risk for the occurrence of public health emergencies, current preparedness status and response capacity of the region. Existing records and reports were reviewed to obtain data on leading causes of morbidities and mortalities, health human resources, immunization and ITN coverage epidemic prone diseases and current stocks emergency drugs and medical supplies using data collection checklists. Formal interviews was made with Woreda officials and health professionals to obtain in-depth understanding about major health problems, occurrence, distribution, and duration of the disease outbreaks, current preparedness status, and response capacities .

Finally research proposal on Prevalence of Salmonellosis among febrile out patients in Addis Ababa by 2003 E.C was prepared and submitted to Addis Ababa University Ethical Review Board and approved. Apart from mentioned above acute watery diarrhoea outbreak response supportive supervision in Addis Ababa 2002 E.C also conducted.

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VI. Abbreviations

AAU	Addis Ababa university
AARHB	Addis Ababa Regional Health Bureau
AWD	Acute Watery Diarrhea
BCC	Behavioral Change and communication
BPR	Business Process Reengineering
BD	Bacillary Dysentery
CSA	Central Statistics Authority
CSMR	Cause specific Mortality Rate
CDC	Center for Disease control
CBSS	Community Based Surveillance System
CFR	Case Fatality Ratio
CLTS	Community Led Total Sanitation
CTC	Cholera Treatment Center
CDC	Center for Disease Control and Prevention
CFR	Case Fatality Rate
CSA	Central Statistics Authority
CI	Confidence Interval
DW	Deep well
EFY	Ethiopian Fiscal Year
EMWAT	Emergency Water Treatment
EPRP	Emergency Preparedness & Response Plan
EHNRI	Ethiopian Health and Nutrition Research Institute
EFELTP	Ethiopian Field Epidemiology and Lab Training Program
EPI info	Epidemiology Information
EPHA	Ethiopian Public Health Association
EHNRI	Ethiopia Health and Nutrition Research Institute
F	Functional
FMoH	Federal Ministry of Health
HC	Health Center
HDW	Hand Dug Well
HEW	Health Extension Workers
HSDPIII	Health Sector Development Program three
HMIS	Health Management Information System
HSEP	Health Service Extension Program
HW	Health Worker
HWTC	Household Water Treatment Chemical
ICD	International Classification of Disease
IDSR	Integrated Disease Surveillance and Response
IEC	Information Education and communication

IPL	Improved Pit Latrine
L-HWF	Latrine with hand washing facility
NA	Not Applicable
MOH	Ministry Of Health
MUD	Male Urethral Discharge
NF	Non Functional
NGO	Non Governmental Organization
OD	Open Defecation
ODF	Open Defecation Free
OHB	Oromia Health Bureau
OGHF	Other Governmental Health Facilities
OPD	Out Patient Department
OR	Odds ratio
ORWRB	Oromia Regional Water Resource Bureau
OSHO	Oromo Self Help Organization
PHAST	Participatory Hygiene and Sanitation Transformation
PHC	Primary Health Care
PHEM	Public Health Emergency Management
PMTCT	Prevention of Mother to child Transmission
Pri	Primary School
PF	Plasmodium falciparum
PV	Plasmodium vivax
PUR	Purifier of Water
RHB	Regional Health Bureau
Sec	Secondary School
SCHD	Sub City Health Department
SPH	School of Public Health
ShL	Shared latrine
SW	Shallow well
STI	Sexual Transmitted Disease
TB	Tubercle Bacilli
TF	Typhoid Fever
TPL	Traditional Pit Latrine
U.S.A	United States of America
VCT	Volunteer and Counseling Test
WASH Co	Water Sanitation & Hygiene committee
WaSH	Water & Sanitation Hygiene
WC	Water Seal
WHO	World Health Organization
WorHO	Woreda Health Office

Chapter I – Outbreak/Epidemic Investigations

Outbreak Investigation of AWD, in Oromia Regional State, West Arsi Zone, Ethiopia.

By: Mesafint Alebachew

AAU, Medical faculty/SPH, EFELTP

August, 2001 E.C.

1.1.1. Introduction

AWD is one of the oldest diseases affecting humans. It is caused by the gram-negative bacteria *Vibrio cholera*. Six pandemics occurred between 1808 and 1915E.C, caused by *Vibrio cholera* O1, Classical biotype.

The ongoing 7th pandemic is caused by *Vibrio cholera* O1, El Tor biotype, which started in Indonesia in 1961, reached the Indian subcontinent in 1966 and then spread to the Middle East It reached Africa in 1970 and extended rapidly throughout the continent, creating new endemic zones that had not seen cholera for over a century.

It took another 20 years for the 7th pandemic to reach the Americas: the first cases were reported in Peru in 1991 and within one year the disease had spread throughout Latin America Human is the main reservoir of *Vibrio cholera*. Other potential reservoirs are water, some molluscs, fish and aquatic plants.

AWD is often mild or without symptoms (80%), but sometimes it can be severe in (20%). Approximately one in 20 infected persons has severe disease characterized by profuse watery diarrhoea, vomiting, and leg cramps. In these persons, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

The pandemic of the late 1952E.C hit Ethiopia in 1962 E.C apparently from Djibouti resulting in several thousand deaths in Eastern, central and southern part and contained in 1963E.C. AWD vaccination became a requirement for travel in to Ethiopia after this epidemic In 1965, another epidemic struck the country making its way through some Red Sea ports and the Awash valley which affected Afar pastoralists & migrant farm workers on the irrigation farms in the Awash valley.

The AWD outbreak in 1977E.C apparently spread from Hararge to other parts of the country, including Addis Ababa another AWD epidemic started in West Arsi zone of Oromia in 1990E.C which had spread to other 11 zones of the region with over 42,000 cases registered. The current outbreak reported from Moyale woreda of Borena zone, Oromia at the end of January 2001. 6 zones are currently reporting.

Oromia Region is Ethiopia's largest national regional state, sharing internal borders with all regions except Tigray. It also shares international borders with the Sudan to the west and Kenya in the south. Land area is estimated to be 359,619.8 square Kms, roughly 30 % of the country's total land mass. Oromia is classified into three agro-ecological zones; highlands (8%), midlands (75%), and lowlands (17%).

Administratively, the region is divided into 17 zones and 1 special zone, comprising 284 Woredas (districts). There are 6,438 rural kebeles and more than 375 towns of which 6 towns have zonal status.

Case definition

Confirmed case: In a patient age 5 years or more, with severe dehydration or death from acute water diarrhea, in which *Vibrio cholera* O1 or O139 has been isolated in the stool.

Suspected case: If there is a cholera epidemic, a suspected case is any person age 5 years or more with acute watery diarrhoea, with or without vomiting.

Based on the 1999 E.C Population and Housing Census projection, total population is about 29,362,377, with a 1:1 sex ratio. Age of the population is typical to developing countries, with 44 % under the age of 15 years, 51 % between 15-59 years, and 5 % aged 60 years and above. A large proportion of women (24%) are in the reproductive age (15-49 years).

Regarding health infrastructure and delivery, Oromia has 22 hospitals, 342 health centres, 556 health stations, and 1,814 health posts. Additionally, 8 hospitals, 5 health centres, 195 health stations, and 5 health posts are owned by NGOs and OGOs. Thus, Oromia has total of 30 hospitals, 347 health centres, 751 health stations, and 1,819 health posts. Potential health service coverage of the region for 2000 EFY is estimated to be 82%. Water supply coverage of the region is 45%, and the rural population of the region has limited access to improved water supply service. This is even very low for the sanitation coverage, which is only 28.5 %.

The burden of disease in the region is mainly due to preventable communicable diseases, which are the common causes of morbidity, mortality and disability including persistent Acute Watery Diarrhoea (AWD).

Oromia regional state has experienced various health emergencies like drought and flood which have affected the health of the population in 1995/1998 E.C. Acute Watery Diarrhoea was first reported from the region May 1998 from Arsinegle Woreda of west Arsi zone, and eventually the AWD epidemic involved 10 other zones (Guji, Arsi, E/ Shoa, Bale, Jimma, Borena, E/Harar, W/Harar, S/W/Shoa and W/Shoa) and 91 Woredas.

From June 1998 E.C up to Nov. 1999, More than 42,233 cases and 389 deaths were reported with CFR of 0.9%.

On January, 1999 E.C the first case was reported from Borena zone of Oromia region. Since then the Region has experienced a rise of AWD cases where four zones (West Arsi, East Hararge, East Shoa and Arsi) and Shashamane town were affected. As of 9th July 2003, the region had reported 1909 cases with 30 deaths with a CFR of 1.6 %

. The prevention and control activities conducted so far have not brought as such much change to control or prevent further spread of the disease and it has re-emerged again and continued currently in 2003 E.C.

1.1.2. Back Ground Information about West Arsi Zone

W/Arsi zone is one of the seventeen administrative zones of Oromia Regional state. Administratively the zone is subdivided in to 12 districts and 308 rural and 27 urban kebeles having a projected total population of 1,814,956 among which 312,172 are under five children and 75,502 Pregnant women which are more vulnerable group to malnutrition from the total population.

The zone capital city is Shashamane which is located 250 KMs from Addis Ababa in southern part of the region on the main road to Borena. The zone shares border with SNNPR in south, East Shoa and Arsi zone in the east and Bale zone in the west.

There is one hospital, 10 health centres and 20 nucleus Health centres, 32 Health stations and 140 health posts in the zone with potential health service coverage of 80%.

In 1998 E.C., the zone had been one of the most affected with acute water diarrhoea of which all Woredas were affected in the zone with total cases of more than 13,751 and 126 deaths with CFR of 0.9% and attack rate of 8 per 1000 population.

On 1st May 2001 E.C. the first 7 case was reported from West Arsi zone of Shashamane woreda. Since then the zone has experienced a rise of AWD cases which has affected few parts of the zone especially the woreda around shashemene town. As of 15th May 2001, the zone had reported 48 cases with 6 deaths. Cases are currently being reported from 4 Woredas in West Arsi zone and one town administration namely Shashamane Town.

1.1.3. Objectives

1. To describe the magnitude and distribution of the outbreaks in west Arsi zone, august,2001,Oromia
2. To identify the risk factors for transmission of outbreaks in West Arsi zone ,Oromia august,2001E.C.
3. To make recommendation and communicate the result to the districts, zone, Region and Ethiopia Field Epidemiology and Laboratory Department.

1.1.3.1. Specific Objectives of the Investigation

1. To confirm the etiological agent of the outbreak
2. To identify the risk factors for transmission of outbreaks in West Arsi zone ,Oromia August,,2001 E.C
3. To describe prevention and control measures mounted on AWD epidemic and to measure household water treatment chemical availability and utilization before, during and after the outbreak);

1.1.4. Methods

1.1.4.1 Study area, Population

Study population:

Peoples of West Arsi zone includes 8 districts of affected by AWD outbreak: shashemene, shala, kofele, Arsi negele kore, Gedeb Asasa and kokosa living in the same village with total population estimated 1,814,956 in Oromia Region, 2001 E.C

1.1.4.2 Diagnosing criteria

Laboratory and clinical based

By using case definition for AWD stool specimens were taken from nine suspected cases for AWD, who fulfilled standard case definition and all of them were positive for V.C.Inaba in EH-NRI laboratory.

1.1.4.3. Study design, Study period, and data collection instrument:

Cross sectional community based and the study was conducted from July26 to August16, 2001 E.C. using restructured questionnaire which designed by FEL residents relevant to the local settings of the rural population of West Arsi zone

The qualitative data collected by visiting 80 households including cases. The data on latrine use, personal, water and its source collected by Observation water source and discussion conducted with communities.

1.4.4 Data Collection methods

Review documents, Interviewed, Observation, discussion and surveillance data of the nearby health facilities from july26, to August 16, 2001 E.C. collected.

Laboratory confirmation

1.4.4.1 Data collection Technique:

Structured questionnaire was used to collect information from randomly selected households and were interviewed by EFLTP residents.

1.1.5. Ethical clearance

Oral consent given from West Arsi Zone and Shashamane districts and they participated in the study. Study population asked permission before interviewing and specimen collection.

1.1.5. Results

During three weeks period from July 26 to August 16, 2001 E.C. there were 497 AWD cases and nine deaths reported from eight districts in West Arsi zone of Oromia Regional Health Bureau.

The highest attack rate reported from Arsi Negele district followed by Shashamane and kofele while the highest case fatality rate reported from Shala district 10% and kofle 5.7 %.

From the total number of 497 cases who fulfilled surveillance case definition for acute watery diarrhoea of which 9 confirmed cases and 9 deaths same areas were participated in the study. The proportion of the respondents were female 63% and 37% male respectively. The majority of the respondents were above 20 years old. Median age was 37.

Table 1.1.1 Shows attack and case fatality rate by pace of the eight affected districts in west Arsi Zone, Oromia from July 26 to August 16, 2001 E.C

S.No	Name of Districts	Total population	Cases	Death	Attack rat per 10,000	CFR
1	Shashamane area	265513	209	1	7.9	0.5
2	Shala	130431	10	1	0.8	10.0
3	Shashamane Town	106388	10	0	0.9	0.0
4	Kofele	148564	70	4	4.7	5.7
5	Arsi Negele	149453	181	3	12.1	1.7
6	Gedeb Asasasa	183558	2	0	0.1	0.0
7	Kokosa	131895	2	0	0.2	0.0
8	Kore	122810	13	0	1.1	0.0
	Total W/Arsi Cases	1238612	497	9	4.0	1.8

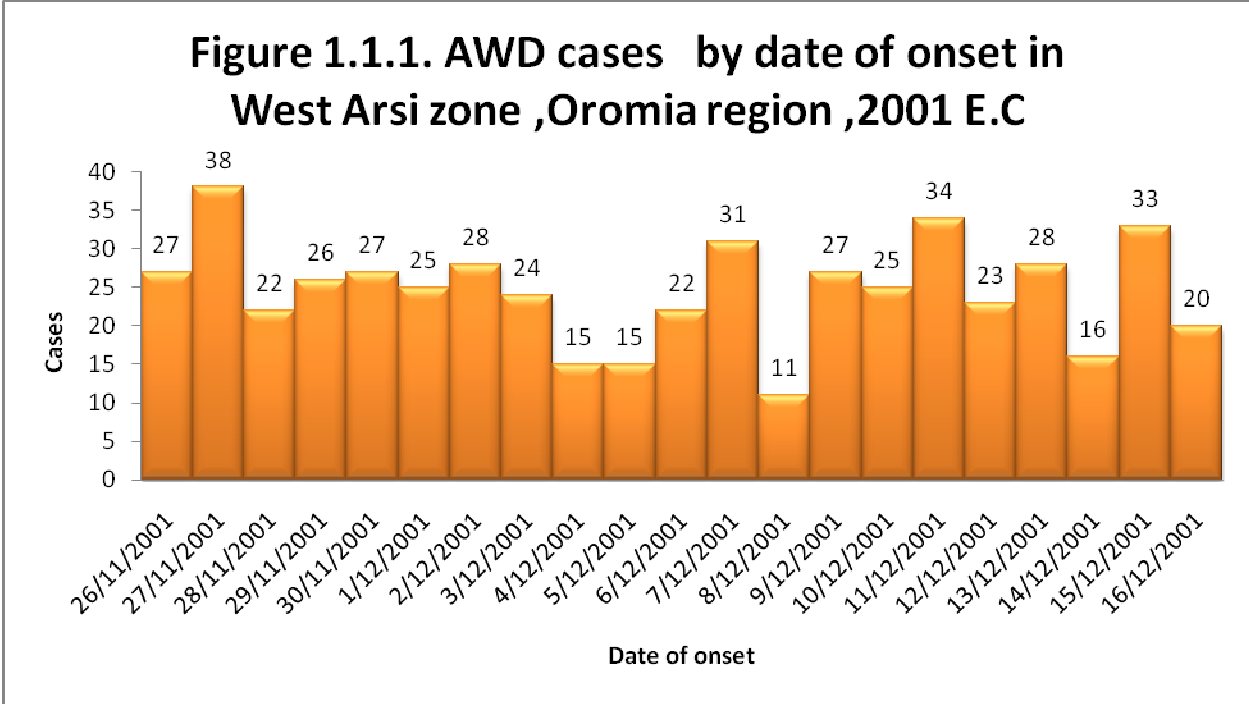


Figure 1.1.1. AWD cases by date of onset in West Arsi Zone,Oromia region,2001 E.C.

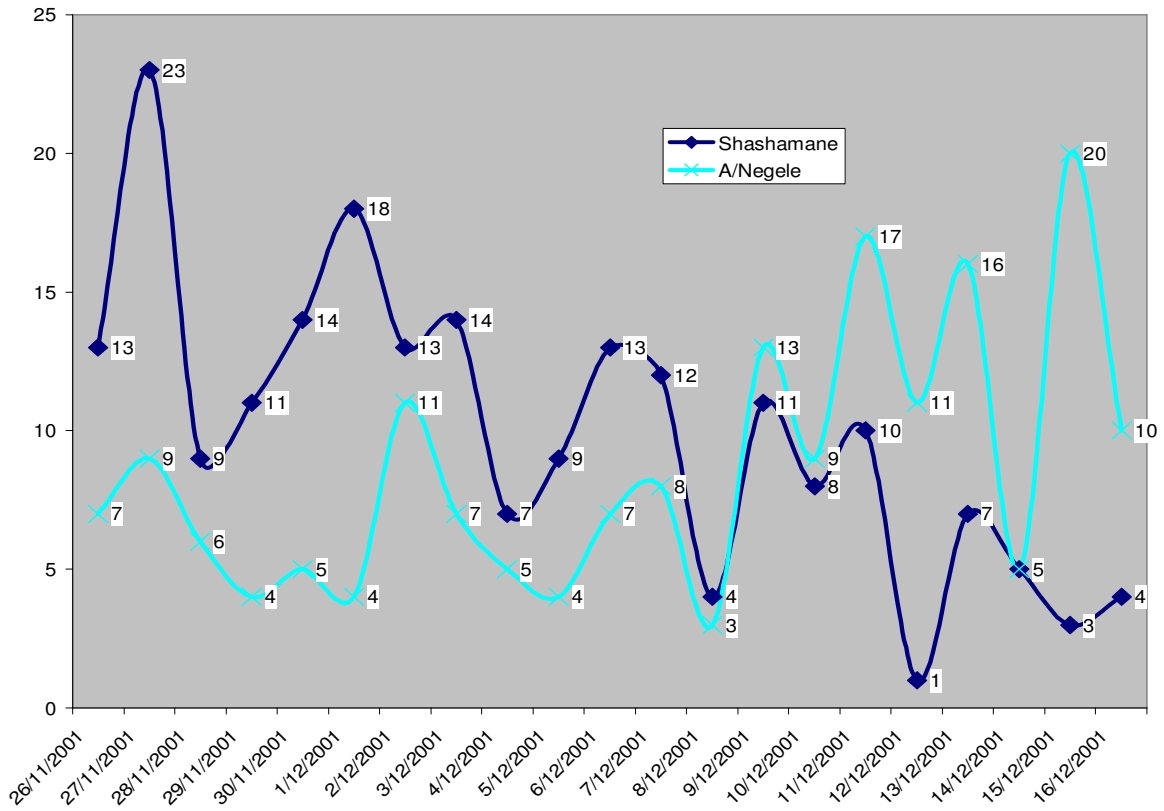


Figure1.1.2. AWD cases in shashemene and Arsi negele in West Arsi, Oromia, and 2001 E.C

1.1.6 Discussion

The highest attack rate reported from Arsi Negele district followed by Shashamane and kofele while the highest case fatality *rate* reported from Shala district 10% and kofle 5.7 %. This showed poor intervention and poor quality health service(WHO recommend CFR should be <1%.)

Number of cases decreased in shashemene while number of new cases in Arsinegle increased during the outbreak period of time. This showed early detection and response was better in Shashamane than Arsinegle.

Poor hand washing practice after toilet in the area before and during the out break

Low awareness about AWD in all affected areas due to lack of information etc, were the major problems in the area. Water Source for the Majority of the dwellers was river.

None of the respondents used water chemical at house hold level. Stakeholders and line offices were not involved at a time of outbreak except one NGO.

Observational data from environmental survey finding showed several risk factors for AWD outbreak are: low latrine utilization, lack of adequate safe water supply, contamination of food, poor hand washing practice and others.

These helps in planning and evaluation of activities, assessing the health status of the affected community, to allocate resources, generate possible measures to control the outbreak and made a correct policy and strategy decision.

Hand washing was associated with increase odds of illness. This may be due to washing hands after toilet and or with untreated water Increasing community awareness, building capacities and stakeholder's involvement.

Permanent solution to interrupt the occurrence and distribution of the AWD outbreak requires reliable investment on health, water resources and community empowerment. However, to prevent the reoccurrence of AWD the following action points have been put as recommendation

No supervision conducted at the period of outbreak .No training was given for the health workers about AWD.

1.1.7 Conclusion /Recommendations

1.1.7.1. Conclusion

Number of cases decreased in shashemene while number of new cases in Arsinegle increased during the outbreak period of time. This showed early detection and response was better in Shashamane than Arsinegle.

Low awareness about AWD in all affected areas due to lack of information etc, were the major problems in the area. Water Source for the Majority of the dwellers was river.

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Data from environmental survey finding showed several risk factors for AWD outbreak are: low latrine utilization, lack of adequate safe water supply, contamination of food, poor hand washing practice and others

The majority of cases 209(42%) reported from Shashamane district this might be people come from different areas where AWD reported.

1.1.7.2. Recommendations

Supportive Supervision is important for routine surveillance and the current AWD outbreak, Prepare standardized and comprehensive AWD supervisory check list to be used at all level. Environmental hygiene, water treatment and case management should be strengthen since shashemene is market centre and highest attack rate reported from Arsi Negele district followed by Shashamane while the highest case fatality rate reported from Shala district was 10% ,Provision of Water chemical for all rural areas as soon as possible, Strengthen health education by using local media to increase awareness about the AWD, latrine utilization and hand washing practice.

Training should be given about AWD for health workers, Reactivate early preparedness and response committee and preventive measures of AWD and poor hygiene practices were found among risk factors for the outbreak community participation is mandatory. Officials should give attention operational budget for monitoring of interventions and operation and maintenance of water supply scheme

AWD Case Management

CTC was established primarily using available materials where few were replaced by standard CTC later. Some Woredas like Ada'a established CTC & treated AWD cases without having read the case management & treatment protocol while in areas of repeated AWD epidemic like Shashamane the protocol was accessed by professionals. Ada'a Woreda received the protocol after the establishment of the CTC.

Moreover, almost all professionals engaged in the prevention & control of AWD complained lack of training. In addition, Seru Woreda has provided AWD case management with a mobile health team in camps for the pilgrim returnees of Dire Shek Hussen.

There were misdiagnosis & discharges of patients without adequate treatment. There was also a report of risky CTC closure ceremony in Ada'a Woreda where by a community member offered an ox & the CTC team along with the community feasted in the same location where the CTC was located.

Moreover, there was no referral of patients between private health service providers & the government health institutions. Health education should be given to the community about latrine utilization, hand washing practice during the outbreak. Immediate Supervision of CTC should start by this time period to improve case management. Training should be given for the health workers about AWD. Urgent intervention should start as more number of cases found in Shashamane. Identification of cases & deaths from affected areas on daily basis. Active search in no affected areas to make epidemic report promptly when it occurs. Meet and orient the Regional council and all relevant sector offices heads and NGOs on the AWD situation.

Reactivate regional epidemic preparedness and response (EPR) committee and RRT at zonal and woreda level.

In collaboration with regional EPR committee develop regional AWD control and prevention plan a multi sector and integrated POA

Do site visits with regional representatives and assess the control and prevention interventions in the affected areas as well as non affected woredas using the standardized and comprehensive AWD supervisory checklist.

Based on identified gaps give technical assistance and support to all involved in the control and prevention activities.

Final report preparation and submission to the regions, FMoH/PHEM, FMoWR and also share to the partners with AWD plane of action (POA).

Further study should be plan for prevention and treatment of AWD.

Table1.1.2. Recommended AWD prevention interventions & responsible bodies to implement the suggested actions

Action points	Responsible body	Target
Provide & promote Household Water Treatment (HWT) for adequate period of time	WRB	Population at risk
Cascade AWD prevention & control training to all health workers.	OHB, ZHD & WorHO	Health workers
Conduct further study on HWTCs to identify appropriate HWT options for the different localities.	OHB, WRB, WHO & UNICEF	NA
Develop regional hand washing strategy & launch regional hand washing campaign.	OHB & development partners	NA
Conduct an in depth study on latrine utilization	OHB	NA
Increase the universal provision of safe & adequate water supply (with special emphasis to AWD prone & pilgrim sites)	OWRB	Population at risk of AWD
Mapping of all religious sites throughout the region (country) , assessing diverse belief systems and high level advocacy has to be organized to bring about a change in perception among religious leaders and to gain their support and active and sustained involvement in AWD prevention and control efforts	ORHB & ORWRB with their respective structure	Religious areas
All hot spot zones and Woredas are expected to put AWD issue on their top weekly cabinet agenda for discussion and sectoral evaluation of performance	Zonal & woreda council	AWD issues
Discussion and consultation on cross border issues of AWD prevention and control between Oromia and Somali Regional states and Kenya at large	MOH,ORHB and Somale RHB	AWD P/C
Establishing NGO forum at zones/Woredas to mobilize resource.	Regional/Zonal/Woreda council	

Annex 1.1. Questionnaire

On AWD outbreak in West Arsi zone, Oromia Region, 2001 E.C

From July 26, 2001 E.C to August 16, 2001 E.C

I. Identification:

1. Full Name of Respondents _____
2. Sex _____ C. Age _____ C. Occupation _____

D. Address

- a. Name of zone _____
- b. Name of Woredas _____
- c. Name of Kebele _____

II. Respondent condition: if No go to question no 12

1. Are you sick
 - a. Yes
 - b. No if no go to number
2. If yes, symptoms of the disease
 - a. Diarrhoea
 - b. Vomiting
 - c. Diarrhoea and Vomiting
3. If diarrhoea present number of episodes per day
 - a. Three
 - b. Four
 - c. Five and above
4. Date of onset of disease _____
5. Date seen at health facility _____
6. Hydration status
 - a. No dehydration
 - b. Some dehydration
 - c. Very severe dehydration.

III. Contact History:

7. Did you have any travel history to other area before the illness
 - a. Yes
 - b. No
8. History of contact to a person of the same symptoms
 - a. Yes
 - b. No
9. Other sick person in the family
 - a. Yes
 - b. No
10. Did you eat food outside your home?
 - a. Yes
 - b. No
11. If yes what kind of food?

- a. Raw fruits like, mango, banana, orange, etc
- b. Vegetables, salad, sugar cane
- c. Sanbusa
- d. Other

IV. Drinking water source:

12. From where you can get drinking water?
- a. River
 - b. Pond
 - c. Well
 - b. Pipe
 - e. Other specify _____
13. What treatment mechanism do you use for drinking at home?
- a. boiling
 - b. chlorination
 - c. nothing
 - d. other
14. Is water treated at the source?
- a. Yes
 - b. No
15. If yes, how often?
- a. Every month
 - b. Every quarter
 - c. Every six month
 - d. During emergency
16. Was there any metrological event, heavy rain, and flood?
- a. Yes
 - b. No
17. Is the water source located down the waste disposal sites and/or latrine?
- a. Yes
 - b. No

V. Latrine usage

18. Do you have latrine in your compound
- a. Yes
 - b. No
19. If yes, do you use it
- a. Yes
 - b. No
20. If yes, how often do you use it
- a. Always
 - b. Some times
 - c. Never

VI. Hand washing practice:

11. IZADI SHAHROKH Zahedan Univ. Medical Sci.) SHAKERI HEDAYAT(Sarbaz District Health Center, Sarbaz, Irn) ROHAM PEDRAM(Sarbaz District Health Center, Sarbaz, Irn) SHEIKHZADEH KHODADAD(Sistan-va-baluchestan Province Health Center, Zahedan) , Cholera Outbreak in Southeast of Iran: Routes of Transmission in the Situation of Good Primary Health Care Services and Poor Individual Hygienic Practices, J Infectious Diseases VOL.59;NO.3;PAGE.174-178(2006)

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Chapter I (2)1.2.1 Outbreak Investigation of Novel Influenza A (H1N1) - Ethiopia, 2001E.C

By: Mesafint Alebachew

AAU, Medical faculty/SPH, EFELTP

July, 2001 E.C

1.2.1. Introduction

Pandemic (H1N1) 2001 E.C virus has been causing major concerns around the world because of its epidemic potential, rapid dissemination, rate of mutations, and the number of fatalities. Novel Flu (H1N1) Pandemic is new strain of Influenza A virus sub-type H1N1Type of swine Influenza, first detected in April 2001 E.C.

Outbreak began in Mexico (Veracruz). Pandemic (H1N1) virus has been causing major concerns around the world because of its epidemic potential, rapid dissemination, rate of mutations, and the number of fatalities. Influenza infects 5-15% of global population annually Cause severe illness in 3-5 million with 250,000 - 500,000 deaths worldwide.

Approximately 36,000 deaths/year (USA) Severe illness and deaths occur in high –risk population of infants, the elderly and chronically ill patients (industrialized countries).

Groups at high risk; Children younger than 5 years old, Persons aged 65 years or older, Pregnant women Adults and children who have chronic pulmonary, cardiovascular, hepatic, haematological, neurologic, neuromuscular and metabolic disorders .Adults and children who have immunocompromised due to medications

Children and adolescents, younger than 18 years who are receiving long-term aspirin therapy (Reye syndrome) Influenza A subtypes are determined by the two Glycoprotein (GP) on the surface. Hemagglutinin (HA) Neuraminidase (NA), 16 HA's and 9 NA, Human disease, 3 HA (H1, H2, and H3), 2 NA (N1 and N2). More recently, additional HA subtypes, including H5, H7, and H9 (all from avian origin)

The H1N1 strain of influenza is a single stranded RNA virus composed of a segmented genome originated from various influenza viruses. An infection of mixtures of various influenza viruses results in the release of progeny viruses containing novel arrangements of segments.

In Asia, North America, and much of Europe, viruses of the H1N1 subtype are the most commonly isolated. However, for the purposes of this study, we have chosen to focus on the Pandemic (H1N1) 2001 virus isolates that have been of great worldwide public concern this year.

The Pandemic (H1N1) 2001 E.C, viruses differ in the origins of their genomic components from these previously circulating H1N1 strains and belong to the classic swine lineage, which is genetically related to the human H1N1 viruses responsible for the 1910 E.C. Spanish influenza pandemic

Pandemic situation and preparedness in Ethiopia

- Through, July, 2001 to September, 2002 E.C, a total of 80 suspected cases and 10 laboratory-confirmed cases of influenza A pandemic (H1N1) 2009 were reported in Ethiopia, which is likely a substantial underestimate of the true number.
- September 2000 E.C. formal launch of 2 influenza sentinel surveillance sites in Addis Ababa were established (1 for ILI at St. Paulo's and 1 for SARI Tikur Anbessa
- PHEM preparation of implementation guidelines, training materials on H5N1 influenza & new influenza A/H1N1
- June 2001 E.C establishment of MOH Emergency Operation Canter (EOC) National training for 138 health workers and Established quarantine facility at Bole airport
- Influenza briefings for flight crews and airport staff
- 4 hospitals in Addis prepared for case admission and Tikur Anbessa and St. Paulos for referral cases

Influenza A (H1N1) cases in 2009 outbreak

Source: WHO (<http://www.who.int/csr/>)

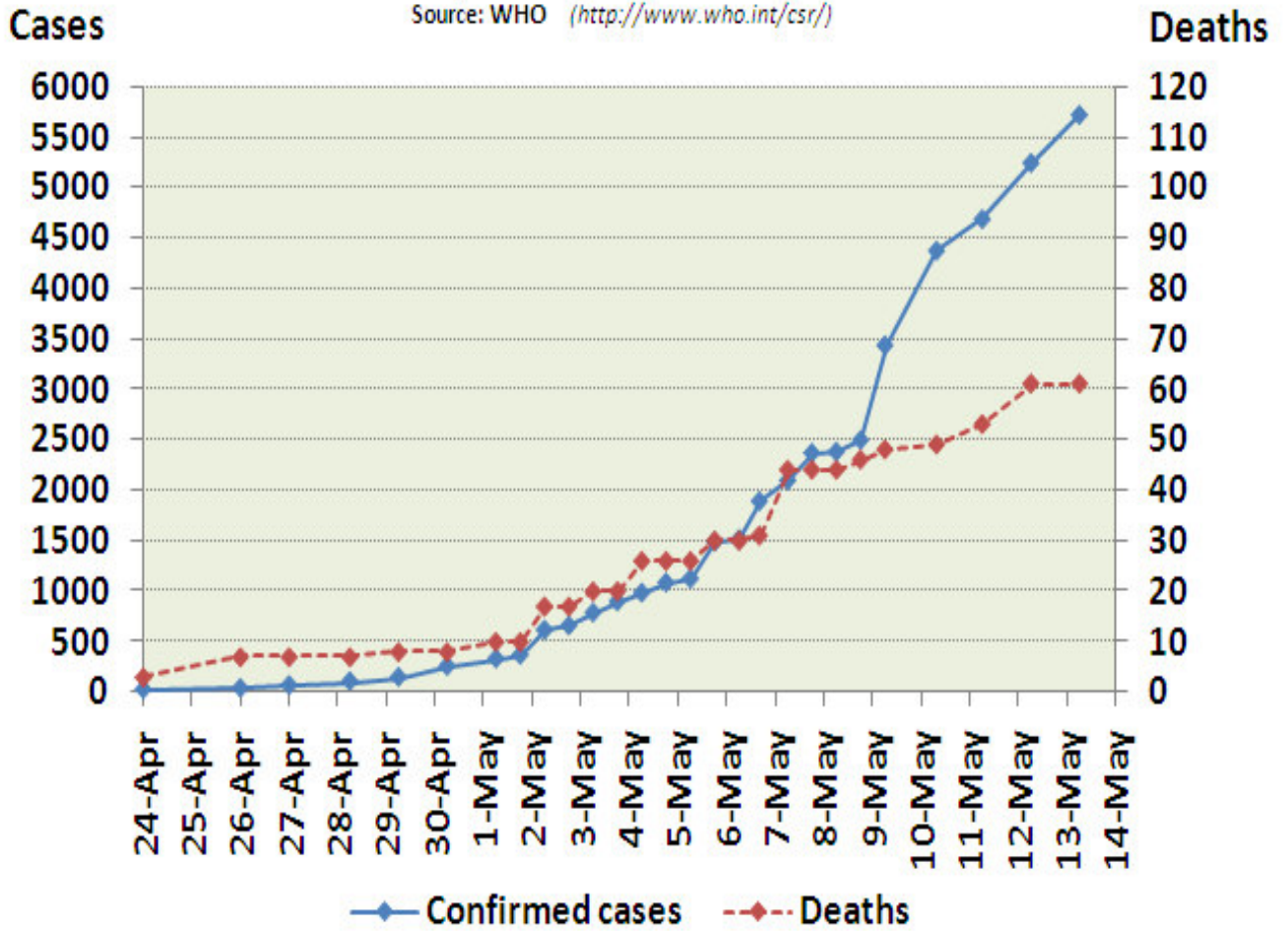


Figure1.2.1 Global reported cases and deaths of Influenza A (H1N1) Epidemic, 2009

Table 1.1.1 Geographical distribution of confirmed cases of influenza A (H1N1) in African Region: 10th August 2001 E.C.

Country	Cumulative total	
	Cases	Deaths
Algeria	19	0
Botswana	23	0
Cape Verde	24	0
Côte d'Ivoire	2	0
Ethiopia	4	0
Gabon	1	0
Ghana	2	0
Kenya	26	0
Mauritius	21	1
Namibia	7	0
Seychelles	3	0
South Africa	1307	1
Swaziland	2	0
Tanzania	10	0
Uganda	9	0
Zambia	4	0
TOTAL	1464	2

Steps of Investigation during the period of the outbreak

1. Verify existence of suspected case/cluster.
2. Conduct active case/cluster finding.
3. Identify and follow-up with contacts.
4. Collect samples for laboratory tests.
5. Characterize the outbreak (descriptive epidemiology).
6. Investigate reservoir or source of infection.
7. Report cases to the next level.

Implement immediate containment measures

Case definitions of Novel influenza A (H1N1)

Suspected Case definition of novel influenza A (H1N1)

A person with an acute respiratory infection who was in close contact to a confirmed case of swine influenza A virus infection while the case was ill or is an acutely ill person with a recent history of contact with an animal

Probable Case definition of novel influenza A

(H1N1) An individual with an influenza test that is positive for influenza A is unsubtypeable by reagents used to detect seasonal influenza virus infection or individual a clinical compatible illness or died on an explained acute respiratory illness who is considered to be epidemiologically linked to a probable or confirmed case.

Confirmed Case definition of novel influenza A (H1N1)

H1N1 influenza virus infection is defined as a person with ARI with laboratory confirmed H1N1 influenza A by one or more of the following tests Real time RT-PCR and Viral culture.

Transmission; Person to person through coughing or sneezing and Fomites (contact with surfaces or object) across mucous membranes (eye, mouth, etc.) has been identified in animals - pigs, turkeys, ferrets, and cats.

Diagnosis; Collect nasopharyngeal, nasal or oropharyngeal swab, Real time (RT-PCR) is preferred, processing time for the test is 2-4 days .Isolation of pandemic H1N1/09 from viral culture is diagnostic and Negative test result does not exclude infection

1.2.2. Objectives of the Investigation

To determine and confirm the extent of the outbreak and Identify risk factors contributing to transmission and make recommendations to limit and control the pandemic.

1.2.3. Methods of Case Detection

Active case finding, passive reporting, Case contact tracing and Using Influenza Sentinel surveillance Lab

1.2.4. Reporting and epidemic threshold

1. Reported immediately by case based format/2hrs
2. Single case considered epidemic/pandemic
3. Throat specimen collected for laboratory confirmation immediately
4. Zero report/week.

1.2.5. Results

80 suspected cases identified and tested, all of them came from eight different countries of the world. Among the above suspected, 10 cases were laboratory confirmed H1N1. But complete data available for 10 confirmed cases only, among these cases 9 were Female and 1 male. The Mean age of the cases was 23.5 yrs, range 14-45 years among the confirmed 5 airlines cabin crew, 4 students and 1 other

No secondary transmission and deaths reported during the outbreak, all of them came from eight different countries outside Ethiopia.

1.2.6. Limitations of the outbreak investigation

Lack of complete data on: Date detection, confirmation, and notification.
Lack of cooperation (PHEM).

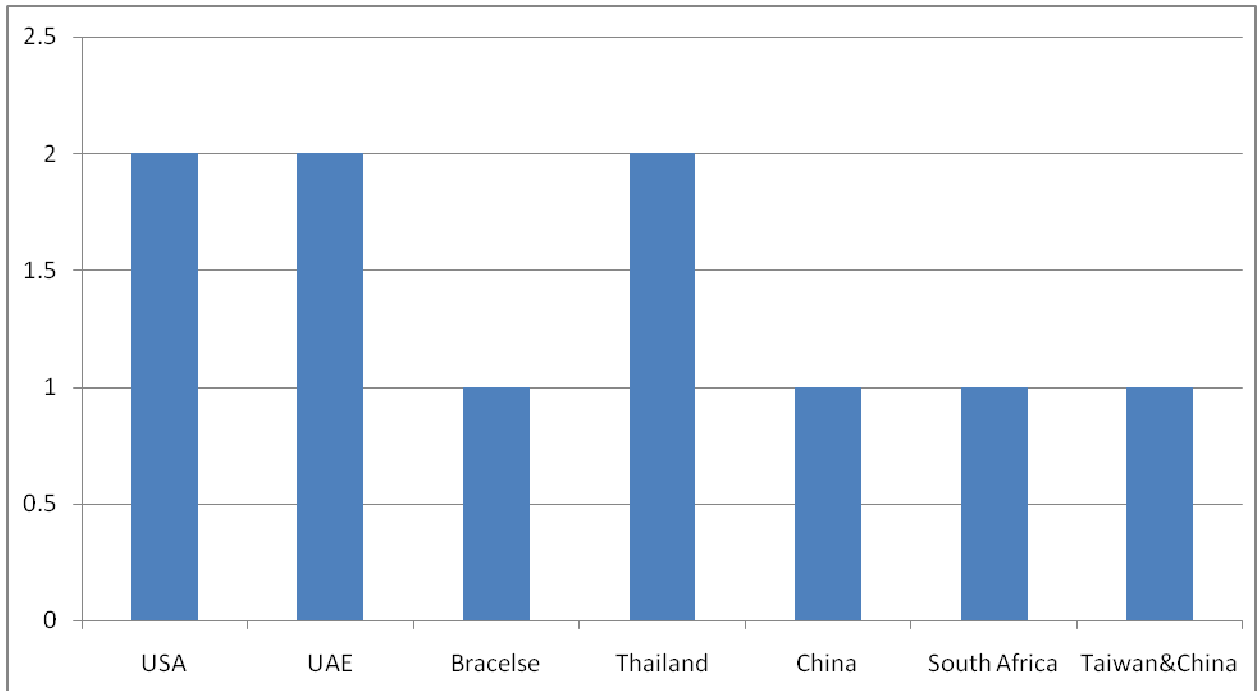


Figure1.2.2. Confirmed H1N1 cases from eight different countries within seven days of clinical symptom onset July, 2001 E.C Addis Ababa

Epicurve of H1N1 by date of onset

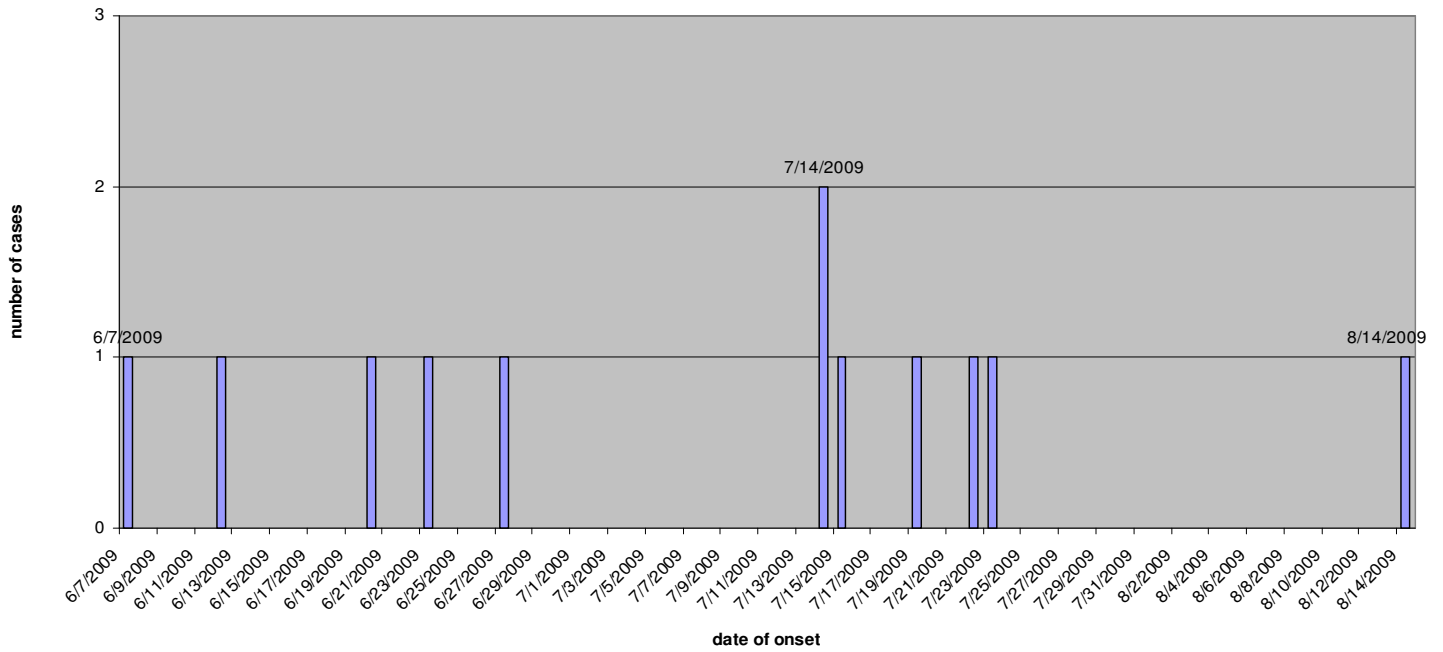


Figure: 1.2.3. Confirmed H1N1 cases within seven days of clinical symptom by date of onset, Addis Ababa, July, 2001 E.C

Table 1.1.2 Global Distribution of H1N1, 2001 E.C.

Pandemic	Year	Influenza virus type	People Infected(Approx)	Deaths World wide	Case fatality rate
Spanish flu	1918 -1919	A/H1N1	33% (500 Million)	20-100 million	>2.5%
Asian flu	1956-1958	A/H2N2	?	2 Million	< 0.1 %
Hong kong flu	1968-1969	A/H3N2	?	1 Million	< 0.1%
Seasonal flu	Every year	Mainly A/H3N2,A/H1N1&B	5-15% (340 million)	250,000-500,000 /year	<0.1 %
Swine flu	2009	Pandemic /H1N1	>526,000	9,634 (Confirmed).>6770(WHO	?

1.2.8. Conclusions

H1N1 introduced in Ethiopia via international travel from 8 different countries

The majority of cases are airline hostesses and students

The majority of confirmed cases were female (9), aged 14 to 45 years

No secondary transmission detected no death reported

1.2.9. Recommendations

Strengthen the national H1N1 surveillance system in all health facilities including private hospitals & clinics, Distribute & Follow standard influenza prevention and control activities

Consider targeted H1N1 vaccination for at risk populations like cabin crews, Sentinel surveillance for selected health facilities in Addis Ababa and Health information for the whole community by using local media.

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Chapter II – Surveillance Data Analysis Report

Addis Ababa City Administration Health Bureau IDS Data Analyses

By: Mesafint Alebachew

AAU, SPH, EFELTP, Resident

June, 2001 E.C.

2.1.1. Introduction

Back ground information of Addis Ababa

Addis Ababa established 119 years ago & it's located in the heart land of the country in 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 2,200-2,800 meters of latitude above sea level.

The climate varies from seasons of summer, 9 months, to cool months of rainfall, about three months, with an overall average maximum and minimum temperature of 22.9 and 10.8 degree centigrade, respectively, and total mean rainfall of 1,195.5 mm/year. The Region Surface Area is 540 Sq.km 5046 people per Sq.km.

The 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 a developing country that is wide at the base and sharp at the tip.

The rate of natural increase is estimated at 1.5% (MOH, 1999 EC), 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 fewer than five accounts for 10.2%. Women of childbearing age are 35 %. Dependency Ratio is calculated to be 28.99%. Religious wise 86.6% of the population is Christians (81.3 % orthodox, 3.9% protestant, 0.8% Catholic) and 12.67 % are Muslims. Among those beyond the age of 15 years, 43.9 % are married, 38.8% never married, 5.8% widowed and 9.3% are divorced (1999 E.C).

According to the amended Addis Ababa City Government Charter Proclamation No. 311/2002 the structure of the organs of power of the City include the City Government, 10 Sub-Cities & 99 Kebeles. The organs of power of the City Government are the City Council, Mayor, City Cabinet, City Judicial Organs, & the Office of the Chief Auditor of the City.

The organs of power of a Sub-City are the Sub-City Council, Sub-City Chief Executive, & Sub-City Standing Committee; and that of Kebele are Kebele Council, Kebele Chief Executive, Kebele Standing Committee, and Kebele Social Court. Sub-city Health Department 10, Health Post 46 Clinics 774 Health Center 27 Hospitals 36

2.1.2. Objectives

1. To describe Magnitude of morbidity from 1996/97 to 2000/2001 E.C. of region and in order to identify risk groups
2. To describe trends and Magnitude of morbidity and mortality.
3. To generate Epidemiological hypothesis based on the data.

4. To collect five years data for further assessment

5. To draw possible conclusion and some recommendation for ministry of Health and Regional Health Bureau

2.1.3. Methods

1. Study population 2.738,248 million, Data Source, Regional health bureau

2. Data type secondary, Hospitals and Health centers IDSR report

3. Variable: Inpatient cases and deaths, Outpatient Morbidity report

4. Period, July 30, 1996 to June 30, 2001 E.C.

5. Instrument, existing international diseases Classification code (ICD),

6. Analysis, decoding, Excel sheet

7. Presentation by Graph and Table

8. Sub cities health departments report, Federal hospitals, private clinics & NGO, OGHF (other governmental health facilities)

Limitation of data analysis

Report not include Health post, Health Station and few private hospitals

1. Newly assigned IDSR focal persons in all health facilities by BPR

2. Shortage, high turnover of human resource.

3. Inappropriate and low quality of IEC/BCC services.

4. Ineffectiveness of HMIS in supporting planning, M&E and decision-making in health

5. Poor Management and Utilization of Financial Resources.

2.1.5. Results

Assessment of Diseases reported from Sub-cities and Hospitals in Addis Ababa to Addis Ababa regional health bureau from 1996/97 to 2000/2001 E.C. was done and following results were obtained.

Malaria

Malaria under five years

There were 2169 reported cases of <5 five years of malaria from 1996 to 2001.E.C. (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 >five years

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 anaemia in under fives and 294 cases of severe anaemia 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 anaemia <5 there were a total of 23,649 cases of severe anaemia 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% .

Diarrhoea

There were total of 49701 diarrhoea 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 was 71 making case fatality

rate from severe dehydration 2.53 % (05 years case fatality rate) and cause specific mortality from diarrhoea with severe dehydration is 5.8%

Male Urethral Discharge

There were total of 20,928 cases of MUD (Male urethral discharge) out of which 511 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 Diarrhoea (Dysentery)

There were total of 43,992 cases of Bloody Diarrhoea 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 diarrhoea was 2.2% and cause specific mortality rate of bloody diarrhoea is 0.81%.

Typhoid Fever

There were total of 102,001 cases of Typhoid Fever out of which 754 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 is 2.03%.

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 is 2.07% and cause specific mortality is 0.81%

Rabies

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

Table: 2.1.1 IDSR report of MUD, MNVGU, FNVGU and Dysentery, Addis Ababa Health Bureau, 2001 E.C.

Year	HIV/AIDS			Male Urethral Dis-charge		Male Non-vesicular Ge-nital Ulcer		Female Non-vesicular Genital Ulcer		Diarrhea with blood (Dysentery)	
	Cases	Death	OPD	Cases (death)	OPD	Cases (Death)	OP D	Cases (death)	OPD	Cases (death)	OPD
1997	1417	159	5607	258(0)	3683	47(0)	966	170(0)	1724	102(3)	8823
1998	1251	154	6075	253(11)	3103	36(0)	773	121(0)	1931	121(2)	9725
1999	935	222	7593	0(0)	2890	2(0)	1063	0(0)	4061	71(2)	9567
2000	543	166	5526	0(0)	1884	0(0)	530	0(0)	2356	61(2)	6565
2001	1077	256	2613	0(0)	8857	0(0)	815	0(0)	2363	100(2)	8857

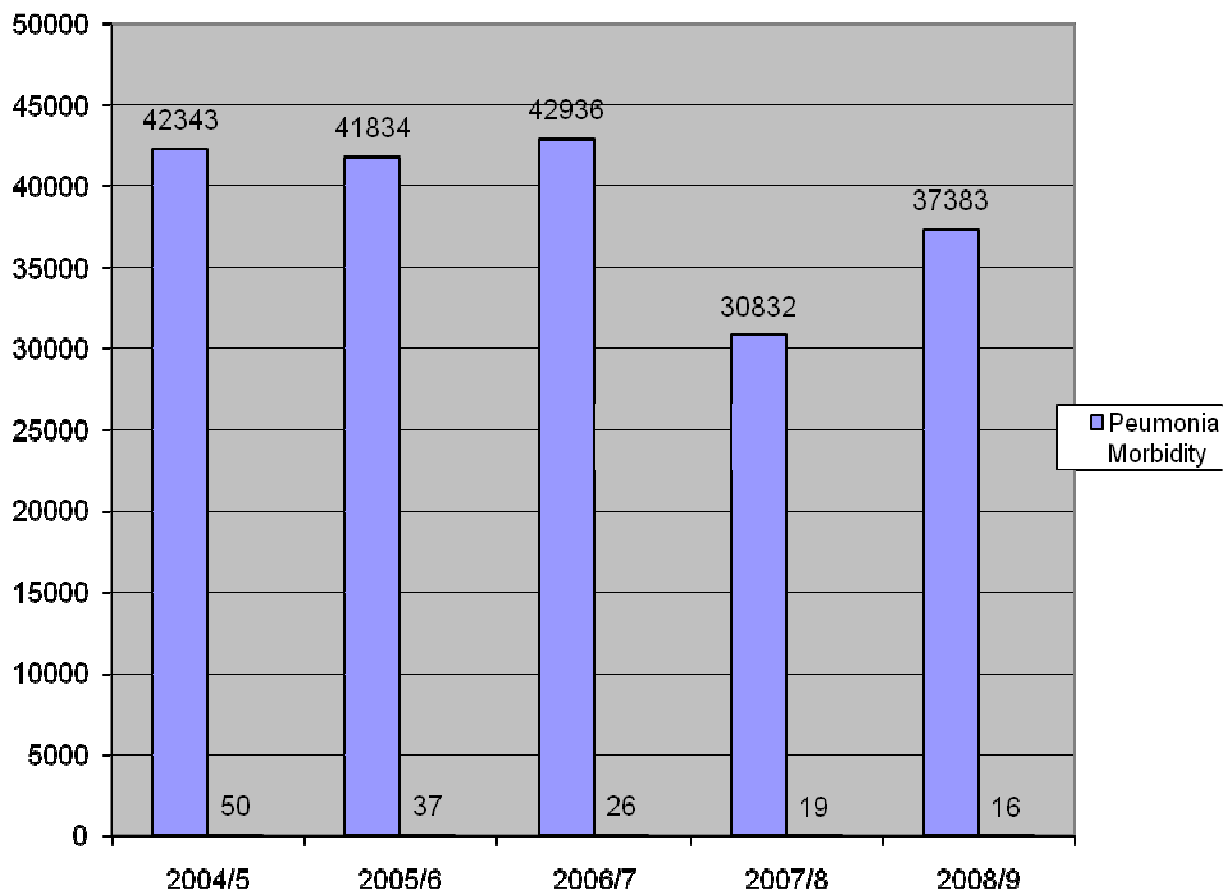


Figure2.1.2, Five years Pneumonia morbidity of under five children, Addis Ababa Health Bureau,2001 E.C.

Pnumonia Death

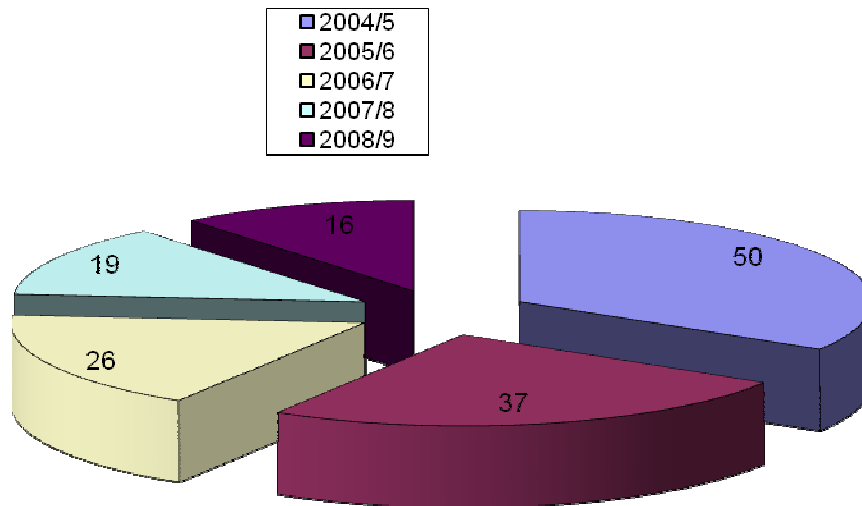


Figure2.1.3, Five years Pneumonia mortality of under five children, Addis Ababa Health Bureau,2001 E.C.

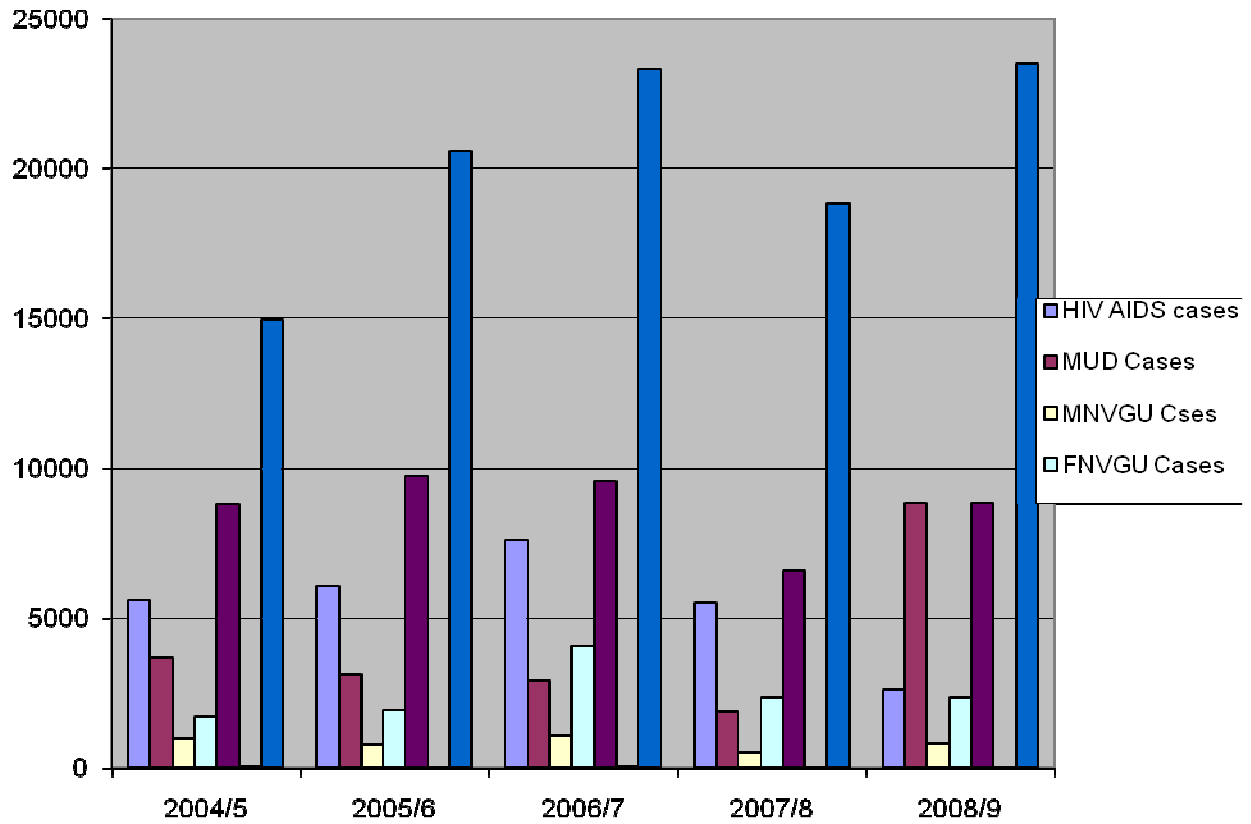


Figure 2.1.4 Shows, HIV/AIDS.MUD, MNVGU and FNVGU cases 2004-2009, Addis Ababa city Health Bureau, 2001 E.C

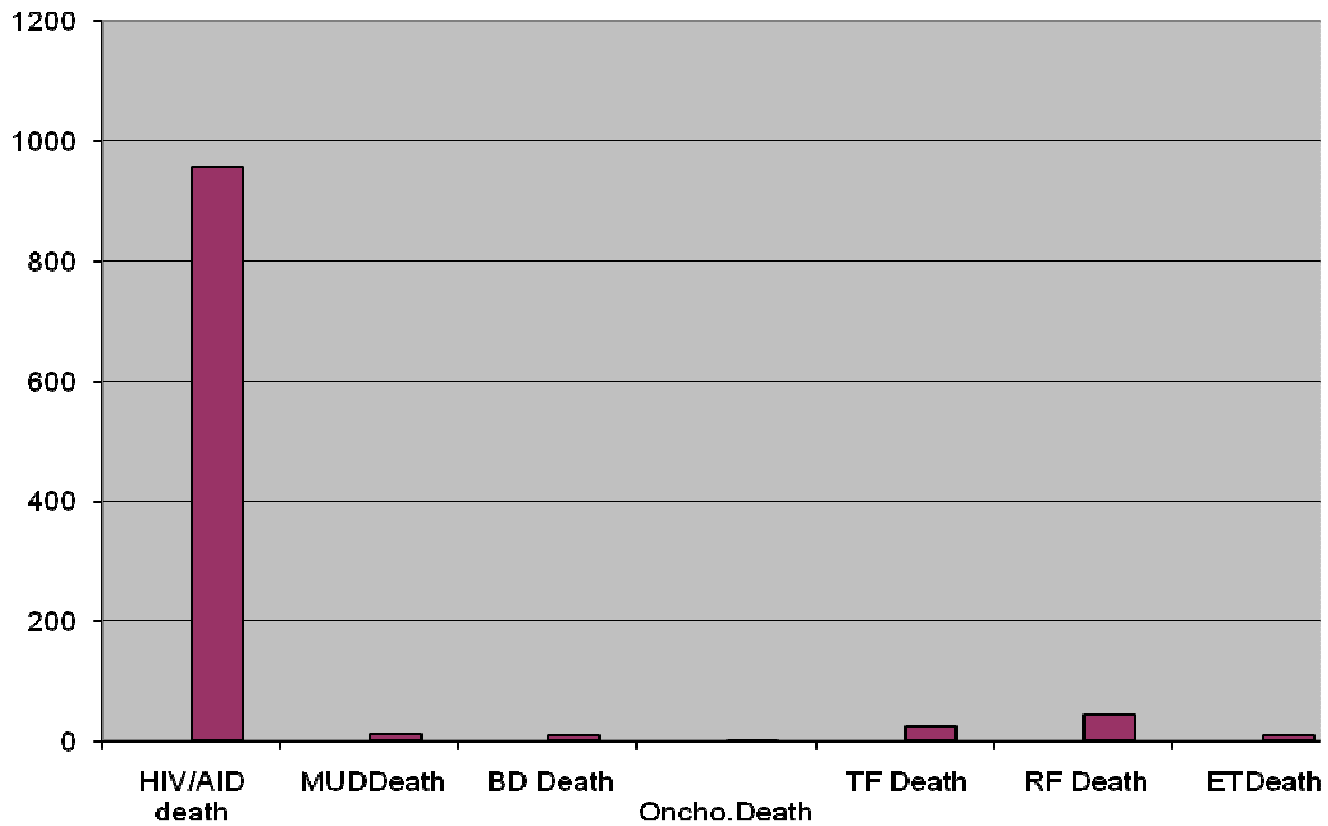


Figure 2.1.5 HIV/AIDS , TF,RF,ET and MUD morbidity cases 2004-2009, Addis Ababa city Health Bureau, 2001 E.C

Table 2.1.2. Distribution CFR,CSMR among in patients &outpatients from the total death 1229

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	Tyroid Fever	102001	754	25	3.3	2
6	Epidemic Typhus	57201	483	10	2.1	0.8
7	Relapsing Fever	6979	2219	43	2	3.5
8	MNU	4232	85	0	-	-
9	FNU	12957	523	0	-	-
10	Rabies		22	13	59	1
11	Onchoseriasis					
12	Bloody Diarrhea	43992	455	10	2.2	0.8
13	MUD	20928	511	11	2.15	0.9

2.1.7. 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 5 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 1996/97 E.C 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 outpatient cases and inpatient case fatality from all causes was 2.96 % . Number of total inpatient cases ,inpatient deaths and outpatient cases in the year 1997/98 was 123 ,299 out of which 8393 were inpatient cases ,250 were inpatient deaths and 114 ,656 were outpatient cases with inpatient case fatality rate of 2.98 % .

In the year 1998/99 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 1999/2000 E.C. out of which 4023 were inpatient cases ,196 were inpatient deaths and 88,932 were outpatient cases with 4.9 % case fatality .

In the fifth year 2000-2001 total numbers of reported cases were 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 1997/98 and 2000,2001 E.C. showed increasing pattern as compared with their preceding years (1996/97 and 2000/2001 E.C.) As the result indicated, five-year trend of inpatient cases and outpatient cases showed decreasing pattern, where as five years inpatient deaths showed relatively increasing pattern.

2.1.7. Conclusions

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 Diarrhoea 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 HIVAIDs, Pneumonia < 5 and Diarrhoea from severe dehydration have relatively higher cause specific mortality rates as compared to others (12% ,5.8% respectively) . Cause specific mortality from Malaria and Relapsing fever was 3.8% and 3.5% respectively .

tively 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 underreporting, delay in reporting and never reporting to show the situation of the magnitude and trend of diseases and overall picture may change if data was available as It expected.

2.1.8. Recommendations

As the 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

Appropriate person should be assigned for data collection compilation and Documentation.

Training should be given for surveillance focal persons.

Collected data should be revising for its completeness before reported.

Based on the plausible conclusion reached following recommendations were made Increase public awareness with regard to communicable disease.

IEC/BCC: preparation, production and distribution.

Promote active involvement of responsible bodies for Proper Diagnosis, treatment and prevention of communicable diseases and Periodic Monitoring and evaluation of intervention activities.

Timely impact assessment of intervention activities and Undertake periodic active surveillance activities. Undertake relevant research activities and communicate research findings.

**Chapter III. Evaluation of Surveillance System of IDS in Kirkos
Sub-city Addis Ababa, Ethiopia, 2002 E.C.**

By: Mesafint Alebachew

EFELTP- AAU

December, 2002 E.C.

3.1.1. Introduction

Kirkose sub city is one of the eleven sub cities in Addis Ababa. The sub -city located in the Eastern part of the city. The health delivery of the Sub city is being delivered through the sub city health office. The sub city has boundary with Arada from north, Akaki from East, Kolfe from west and Bole sub cities from the Northeast. According to CSA 1999 E.C projection ,Total population estimated 235208 of which 49 % males and 51% are females children under 5are 16935 and child bearing age group women 15-49 age groups are81382. There are 2 hospitals, 3 health centres and 2 health post owned by the government while 4 hospitals, 99 clinics (clinics of different categories) owned by the private sector. According to human resource, there are a total of 214 professionals of different categories working in the Health office and different health facilities. The sub city has the same health problems as of the city: communicable diseases are the leading cause of morbidity while HIV/AIDS is the leading cause of mortality. Disease surveillance and response is one of the activities of the sub city's health office. This activity is carried out by disease surveillance team under the diseases prevention and health promotion sub process. Disease under surveillance in the sub- city are 20 in numbers of which 13 are immediately reportable while the rest 7 diseases are expected to be report on weekly basis (Annex VI)

3.1.2. Objectives of the Assessment

To evaluate the system attributes by Simplicity, Sensitivity, Representativeness, Timeliness and usefulness of IDS. In addition to this core and support functions were also assessed. Finally to assess strengths and weakness of IDS System and Alert Network in detecting disease outbreak in Addis Ababa using the newly adopted national PHEM Guideline using key performance indicators

3.1.3. Methods & Materials Used

The total population of Addis Ababa is estimated to be 3,147,000 (1999 E.C.) of which 1,542,030 (49%) are males and 1597970 (51%) are females the primary health service coverage of the residents is nearly 100% (AARHB 2008report) we are using simple random method for the study. Currently there are 10 administrative sub cities and 116 kebeles, under which four regional governmental hospitals, twenty seven health centres and 30 private hospitals ,774 private clinics and ten sub city health offices are working with Addis Ababa RHB while the study area's total population estimated 235208 of which 115252(49%)are males and 119956(51%)are females. The health service delivery carried out through 99 clinics (clinics of different categories) 4private and 2 government hospitals and 3 governmental health centres in the study area

Selection criteria: Kirkos sub- city Health office is selected randomly among the ten Sub city health offices in AA administration

In the same way one private and one governmental hospitals and one governmental health centre in the sub city were selected.

Four Surveillance focal persons in each institute interviewed and data collected using the prepared questioners.

5 clinicians working at paediatrics and Adult OPD were interviewed. Weekly reports of the health facilities to the sub city are entered in to the computer using and analyzed using Excel in addition to these reviewed other relevant documents.

3.1.4. Study Design:

Cross sectional institutional based evaluation undertaken.

3.14.1. Data collection instrument and technique:

Structured questioners/checklists, interview, observation and document review conducted.

3.1.4.2. Data source:

Secondary data/surveillance immediately and weekly reporting formats, work plan and registration books

3.1.4.3. Data entry and analysis:

Data entered and analyzed using X-cell, used tables and graphs

Study time frame:- This study was conducted from December 1st to 30th ,2002 E.C. in Addis Ababa City Administration, kirkos sub city

3.1.5. Results

3.1.5.1 Completeness and timeliness

We tried to entered all the IDS data of kirkose sub city by the year 2002 E.C, and found a total of 536 hard copy reported from the health facilities

According to the finding 25 private clinics of different category, 2 private hospitals and 3 governmental health centres are reported at least once, during 2002, as of 49th WHO Epidemic week.

Totally 1567 reports were expected and only 32 % (507) were sent to the sub city. Out of the 507 reports only 75% of the reports showed the date of WHO epidemic reporting weeks and others 25% were indicating mixed weeks either only months or only reporting date. Over all from the 1567 expected reports, 24% showed the reporting week. This showed the sub- city didn't maintain the 80% expected completeness by WHO but It was found 52% on week 28 and 4% on week 49 of 2002 E.C.

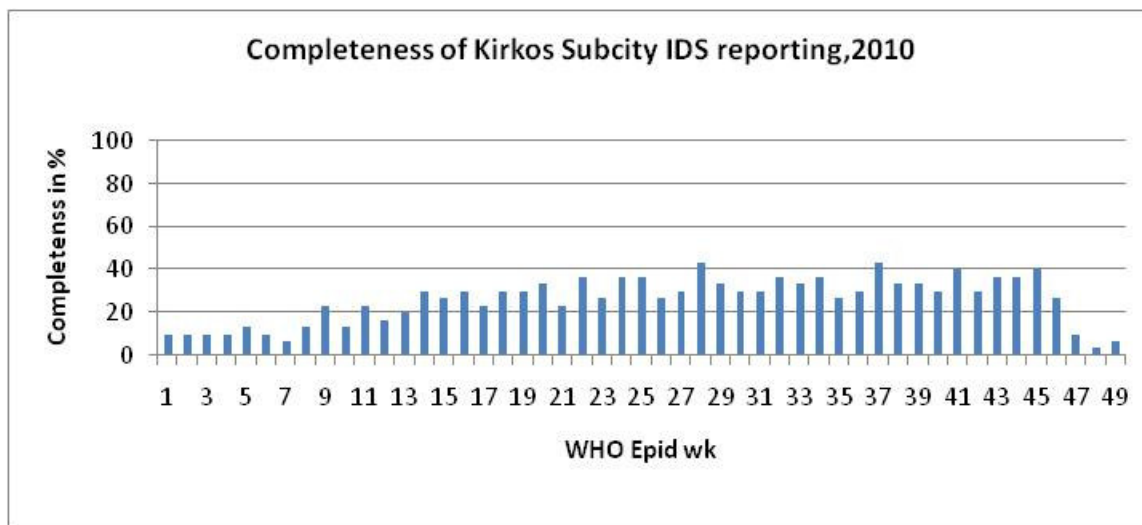


Figure: 3.1.1 Kirkose IDS reporting completeness, 2002 E.C.

3.1.6. Health facilities reporting frequency.

3.1.6.1 Private sector

Reporting frequency varied among the private health facilities, which was ranging from 4% to 94%.

84% to 94 % reports came from 3 health facilities, while 81.7 % of the health facilities

Reported less than 80 % , (from the expected 1517 reports).

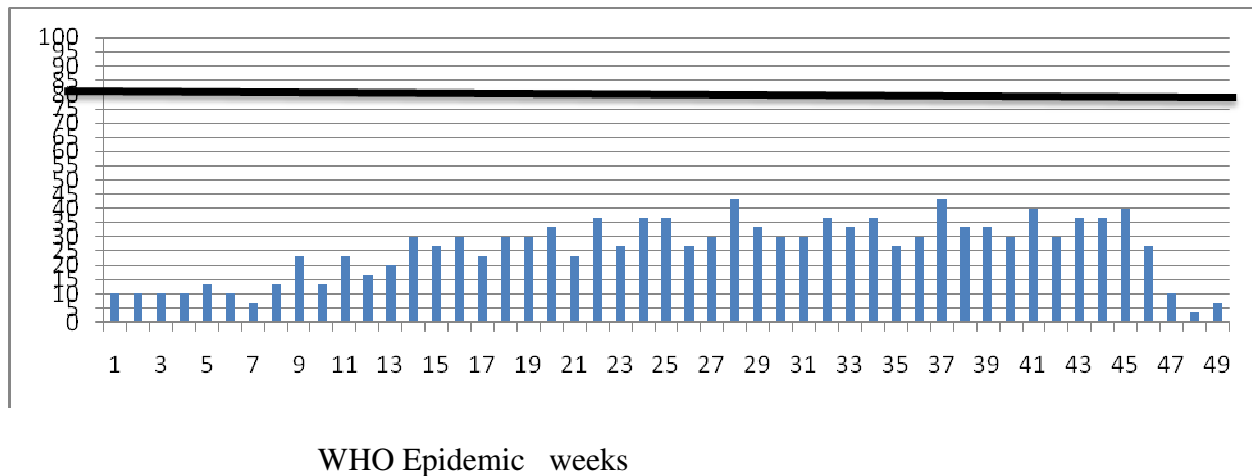


Figure 3.1.2 Report frequency by WHO epidemic week Kirkose sub-city , 2002 E.C.

3.1.6.2. Governmental health centres

Only 33% hard copy report of Health centres reached to the sub city per week.

Data of 3 health centres showed no report from week 1-8, in 2002. From 147 expected reports 48 (33%) reports submitted to the sub city. Out of this 13 (73 %) reports didn't indicate the reporting epidemic week

3.1.6.3. Data quality in terms of timeliness

The overall reports, (15%) found to have the epidemic week and date of report to the sub city

Private sector

Totally from 1421 expected reports from the private sector 459 (32%), reported up to week 49. From the reported 459 reports 67 %(346) showed the reporting epidemic week while 9(3%) reporting date.

3.1.6.4 Usefulness

The reported data expected to be utilized by higher officials for decision making like the Sub city administration head, health office and the Health facility heads. Among the 3 interviewed focal persons 33 %(1) respond that the data was utilized by their superiors immediately and 67% were not responsive for this question.

3.1.6.5 Representativeness of the surveillance system

Representativeness shows how far the routine surveillance report is covered by the health service delivery system and how many facilities are reporting to the office.

The routine surveillance covers all private and governmental health facilities. According to the result 30 health facilities (3 governmental and 27 private owned) are functioning in the sub city and all 30 facilities reported at least one time in the year 2002 E.C..

The surveillance covers all population under the sub city catchment area.

Laboratory facility

All health facilities are equipped with laboratory facility for some of IDS diseases like Malaria, Bacillary Dysentery, Relapsing Fever and Typhoid Fever. Measles and Polio samples are sent to EHNRI. The regional lab did not used for all investigation purpose during the evaluation period.

3.1.6.7. Simplicity of the surveillance

Simplicity of the surveillance is tried to see how the Standard case definitions

Is Simple, easy and understandable and help full for data organizing, entry and data analysis.

All clinicians 100 %(5) responded that SCD are easy and understandable and 2(40%) remember and use during patient examination and 40% (2) did not used. One respondent (20%) refrains from response.

The result showed 100 %(5) of the interviewed clinicians and 67%(2)of the focal persons were not trained about PHEM, National guideline and IDS.

60% of the clinicians don't know the disease under surveillance

3.1.5.5. Methods and communication of transmitting reports and information:

The sub city expected to send the IDS report to the Addis Ababa RHB on weekly basis and also notify with in 30 minute for immediately reportable diseases and weekly reports also expected to the same office and to the Sub city Administration office at the end of the week.

Reporting channels with in the catchment area differs, the health centres are reporting to the sub cities and kebele while the private Health facility is reporting to the AA RHB and Kirkose

Sub- city and the other Governmental Hospitals report to the Addis Ababa Regional Health Bureau.

Responses of the clinicians revealed 40% of the immediately reportable disease was reported to the focal person after working hour, and other 40% are reported immediately.

Communication of Clinicians and focal persons during immediately reportable diseases were found to be verbal communication (80%) other 20 % (1) using mobile.

All weekly reported data of the health facilities to the sub city and the sub city to the regional health bureau were hard copy.

Immediately reportable and some weekly reportable diseases were complemented using telephone. All Health Facility focal persons have access to use telephone.

Five Health facilities didn't have computer, Fax, e mail and also didn't have vehicle to send weekly reports.

Data entry and compilation: Data entry and compilation were found 100% manual. 67 % (2) respondents indicated nearly half day will take to compile the weekly data.

3.1.7. Data base, Data analysis and feedback

During the assessment there was no well organized data base. Due to the newly Design BPR arrangement, difficult to documentation no practice of using soft data base was observed. Discussion with the sub city experts revealed only verbal feedback was practiced apart from the routine supervisory visit.

The assessment showed that 67% (2 of the 3) focal persons at health facility have knowledge of IDS analysis by person, place and time and the same is true for the sub city health office

No practice of giving feed back in all direction (to Regional health office, health facilities or internal departments). During our visit, it was difficult to found the charts of disease trends observed.

3.1.7.1. Data quality

Inclusion of data quality variables to be fulfilled within the report was assessed. The main variables were: whether the Zero reporting maintained, date of report, epidemic week and reporting facility name considered to be at least good reporting. Based on the result 11 reports fulfil these criteria (who score zero).

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Government Health Facilities

As the result showed Report of 3 health centres assessed, that all of them didn't report from week 1-8, in 2002 E.C.

Totally 48 (33%) reports submitted to the sub city compared to the total 147 expected report,. Out of this 13 (73 %) didn't indicate the reporting epidemic week

Private sector

The private sector reported 459 (32%) from 1421 expected reports. From the reported 459 reports only 67 %(346) of the reports clearly indicates the reporting epidemic week.

Zero reporting

Zero reporting is one of the main criteria in the surveillance system. From all reports, Only 90 reports (15 %) clearly indicated zero reports

Documentation of reports in Kirkos sub-city health office

All IDS hard copy reports of the health facilities kept in diseases prevention and health promotion sub process room of the respected health office. There was no soft copy documentation practice of the routine surveillance report system. No separate data base for the IDS .

Other Health facilities

It was difficult to found all the hard copy reports of the Kirkos health Centre and Zewditu Hospital except few reports. Discussion with the focal persons showed all data were misplaced after the BPR and there was no hand over system for the body of works of IDS. Folder of the Hard copy reports found in one of the visited private hospital

3.1.7.2. Data base

The assessment revealed there is no well organized data base at all level. Due to the newly Design BPR arrangement with in the health system, it was difficult to got the even last year data . No practice of using soft data base.

Availability of formats and Guidelines

80% of the clinicians have Standard Case Definition (SCD) and reporting formats while 67% of the focal persons have guideline and 33% have SOPS. All SCD (100%) posted in the clinics and entered manually. During the assessment, in all Health facility there was no computer.

Epidemic detection capacity

Even though data analysis initiated at all level, it was difficult to see any trend of the weekly reporting progress. 67% were respond that the trend analysis done on weekly basis but didn't detect outbreaks on time.

Only 80% of the health facilities performed according to the IDS guideline for immediately reportable diseases like measles detected and reported timely and also investigated within 24 hours.

3.1.8. Discussion

As indicated on the finding it was difficult to measure the actual timeliness of the reporting system of all health facilities. discussion with the sub city experts about timeliness it is understood and sometimes corrected through telephone communication of which the assessment team found information gap between focal persons and physicians.

Based on Completeness the Sub city didn't reach the national indicator which is 80% and above. The reduction in Completeness will lead to misleading judgment on the overall health burden (morbidity and mortality)

Under reported cases may increase potential of the occurrences of outbreaks and also leads for late investigation and late responses.

Less involvement of sub city health office about the usefulness of the surveillance and using the generated data for health promotion activities like environmental sanitation and other activities observed.

Over all data and available information of the sub city health office was depended on the health facility health care delivery system. Irregularity of reporting system in all private and governmental health facilities observed. The health service delivery follows the national referral system (health centre/clinic-regional hospital-central referral hospital).

Completeness of the health facility is by far less than 80%. This shows more data/reports are supposed to be availed in order to give the true picture.

Laboratory diagnostic facility is available at all level according to its capacity to diagnose most reportable disease except for polio, measles, Yellow Fever, Sever Acute Malnutrition and Influenza for which referral lab facility is designated which is EHNRI. The Sub city Experts and also the Clinicians are not using the regional lab as referral laboratory for the diagnosis and also the regional lab should be start IDS referral system in all health facilities.

100% of respondents agreed the case definitions are easy and understandable. But 40% responded remembered at a time of diagnosis .

Majority of the Focal Person and all interviewed clinicians not trained,60% of the clinicians don't know the disease of priority ,1 (20%) didn't know the category of the Priority diseases. Only One of the three(33%) focal person knew time of reporting others 67%(2) are stressed on

quarterly and monthly reporting system (the old guideline of IDSR). The absence of immediately reportable diseases within 30 minutes to the next level, weekly reportable diseases in every Monday of the coming week, showed lack of training.

Lack of computer, e-mail and Fax delayed data compilation in time and brought additional burden during report transfer. Not utilizing the vehicle of the health care delivery system for IDS or not availing vehicle/transportation is bringing additional burden for the focal person.

3.1.9. Conclusions

Timeliness was found the major problem to take measures, response and action on time.

Lack of Fax, e-mail and transportation/vehicle, motor bicycle are some of the burden for the program. Problem of budget allocation

Absence of supervision, monitoring and evaluation

3.2.0. Recommendations

The sub city should strengthen the recording and reporting system of the Health facilities and make corrections on a timely manner

We are recommending the sub city to produce the findings and give feedback reorganizing advocacy forum for private sectors.

Officials should give attention and priority for late investigation and late responses of outbreak investigation and early prevention. .

Training for clinicians and newly assigned focal persons is the backbone of the surveillance system and also Training on basic Computer utilization for all focal persons.

Monitoring and Evaluation, supervision and feedback should be strengthened so needs special attention and priority should be given budget allocation.

Utilization of the central referral Lab is encouraging. The utilization of Regional Laboratory should be initiated and strengthened. The Sub city should initiate laboratory surveillance.

Lack of Fax, e-mail and transportation/vehicle, motor bicycle are brought some of the burden for the program in reporting so needs special attention and priority in equipping with fax, e-mail and transportation/vehicle, motor bicycle.

The regional Health office should give Continuous follow up of reports.

Emphasis should be given in monitoring the availability of analyzed data.

The sub-city should reactivate its supervision, giving feedbacks to all Health facilities to keep the reporting time and also ensure data are well documented.

The sub- city, health office continuously support and update the private clinics.

Monitoring, evaluation, supervision and feedback should be strengthening.

The sub city should plan (allocate budget) to equip the facilities with Fax, email and vehicles to strengthen the IDS

3.2.1. Limitation of the Assessment

We faced problems in identifying the reporting weeks of the health facilities like, didn't indicate the reporting weeks (date covered) and also the reporting date which hamper the analysis of timeliness completely.

1. Difficult to get high officials and Focal persons during the assessment.
2. Additional assignment was given from the school besides to the assessment.
3. No budget allocated for the Evaluation.
4. Difficulty of get the hard copies of the Health facilities report for cross checking.

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Chapter IV – Health Profile Description Report

HEALTH PROFILE OF ADDIS ABABA, 2001 E.C.

AAU, SPH, EFELTP, Resident

By: Mesafint Alebachew

October, 2002 E.C.

4.1.1. Introduction

Background of Addis Ababa

Addis Ababa established 119 years ago & it's located in the heart land of the country in 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 2,200-2,800 meters of altitude above sea level. The climate varies from seasons of summer, 9 months, to cool months of rainfall, about three months, with an overall average maximum and minimum temperature of 22.9 and 10.8 degree centigrade, respectively, and total mean rainfall of 1,195.5 mm/year

The 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 a developing country that is wide at the base and sharp at the tip.

The rate of natural increase is estimated at 1.5% (MOH, 1999 EC), 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 fewer than five accounts for 10.2%. Women of childbearing age are 35 %. Dependency Ratio is calculated to be 28.99%. Religious wise 86.6% of the population is Christians (81.3 % orthodox, 3.9% protestant, 0.8% Catholic) and 12.67 % are Muslims.

Among those beyond the age of 15 years, 43.9 % are married, 38.8% never married, 5.8% widowed and 9.3% are divorced, 1999 E.C.

According to the amended Addis Ababa city government charter proclamation No.311/2002 the structure of the organ of power of the city includes the city government, ten sub-cities and 116 kebeles. The organs of power of the city government are the city council, Mayor, city cabinet, city judicial organs and the office of the chief Auditor of the city.

The organs of power of the sub city are the sub-city council, sub-city chief executive, & sub-city standing committee; and that of kebele are social court sub-city. There are 36 hospitals, 27 health centers, 774 clinics in the city regarding to man power there are 146 specialists among these 99 are general medical practitioner, 788 Nurses, 14 health officers, 8 pharmacists, 15 lab Technologists, 99 lab technicians, 4 environmental health workers

Addis Ababa Health Bureau was established in 1985 E.C pursuant to the proclamation number 311/95 Addis Ababa City proclamation of municipality service No.2/1995.

The bureau is authorized to organize, Co-ordinate and regulate public health activities in the city.

As of the re-organization and decentralization process of the Addis Ababa City Administration in 2000 E.C BPR a new structure is put in place for the Bureau having two cores and four sub processes supporting at the head quarter level. Each line core process has case teams under it, which perform the day-to-day activities of their respective departments.

The five hospitals and the Clinical Nurses' Training School are also accountable to the Bureau. The 10 Sub-city Health Departments that manage the city's Health Centres, clinics and Health Posts, are directly answerable to their respective Sub-City Administrations.

As per the BPR new organizational structure of the health manpower and of administrative staff are fulfilled to make the structure functional, and the remaining portion will be acquired through hiring new staff, transfer from different regions and other possible options.

4.1.1.1. Economic Condition

The economic activities in Addis Ababa are diverse. According to official statistics from the federal government, some 119,197 people in the city are engaged in trade and commerce; 113,977 in manufacturing and industry; 80,391 homemakers of different variety; 71,186 in civil administration; 50,538 in transport and communication; 42,514 in education, health and social services; 32,685 in hotel and catering services; and 16,602 in agriculture. In addition to the residents of rural parts of Addis Ababa, the city dwellers also participate in animal husbandry and cultivation of gardens.

Many poor Ethiopians from the rural areas come to Addis Ababa as beggars and fill some of the streets. Recently, the number of beggars declined after a government and NGO attempt to move some of them and provide education and jobs.

It is a relatively clean and safe city, with the most common crimes being pick pocketing, scams and minor burglary. The city has recently been in a construction boom with tall buildings rising in many places. Various luxury services have also become available and the construction of shopping halls has recently increased.

About 53% (1999 E.C.) an active rate of the population aged ten and above years of age engages in some kind of employment with the cross sectional actual employment status of 37.47% (economically active population).

The peak employment age is represented by 20-29 age groups (34%). 30% of the active population is unemployed. The city has got about 100 big scale factories and 2209 small scale including cottage factories and handicrafts with a total of 114,000 industrial workers (18% of the total employment). 1.4% of the total population dwells in rural areas engaging in traditional farming. Informal sector in agriculture is also available in the outskirts of the city including gardening, dairy and poultry farming used for commercial purposes. Primary school enrolment for both sexes is 91%, while secondary is 33%. Female primary enrolment is 53.2% and secondary 51% (Addis Ababa Education Bureau, 1996 EC).

Table4.4.1. Basic health indicators of 2002 E.C

Total Population	3,147,000
Total fertility rate:	2.24 children per women in life during her reproductive ages.
Infant mortality rate :	61/ 1000 live birth
Maternal mortality rate:	566 per 100.000 live births
Life expectancy at birth:	64.1 & 60.3 years for females and males respectively.
Access to safe Water supply	70%
Access to excreta disposal	75%
DPT 3	73%
ANC coverage	80.4 %
Contraceptive Prevalence Rate	37.8%
Attended Delivery	40%
Potential Health Service coverage	100%
PHC unit coverage	100%

The potential health service coverage in Addis with regard to geographical accessibility is 100%. The primary health care units (Health center) availability indicator, at a rate of 1 health center for 75,000 populations (as opposed to the national standard of 1 HC /25,000 residents) is about 64% currently.

Major Activities

1. Manage and coordinate governmental regional health institutions.
2. Assist, facilitate, and promote investment in health services by the private sector.
3. Assist, and facilitate involvement by non-governmental organizations to render health service in the city.
4. Follow-up and inspect private and NGO health institutions.
5. Coordinate drug supply management and follow up the rational use of drugs in the city.
6. Design a strategy to improve the participation of traditional healers incorporating modern medicine.
7. Carry out proper resource mobilization and utilization to improve quality of the health service.
8. Provide and promote maternal, adolescent and child health programs as well as nutrition

9. Prevent and control communicable diseases by strengthening integrated diseases surveillance and response system. Provide refresher and on the job training to ensure the quality of health care delivery system in the city.
10. Prepare and disseminate guidelines and standards for health service based on the national health policy and guidelines.
11. Develop IEC/BCC strategy for health promotion and disease prevention.
12. Coordinate and develop Health Management Information System and promote research activities.
13. Coordinate the overall health sector response for the prevention and control of HIV/AIDS
14. Maintain medical equipment (Informal mandate).

4.1.1.6. Major Health Problems

The socio-economic determinants of the population are the lowest that is similar to like many developing nations. This is characterized by low per capita income, substandard housing conditions, high infant and maternal mortality rate, poor MCH services, poor sanitation, poor infrastructure (Road) and social related hazards. The health sector specifically is characterized by the following problems: The major problem in the City has now become high rate of accident, i.e. the first in the ten top diseases of Hospital morbidity in the past few years.

The main cause of morbidity and deaths are communicable & nutritional diseases that could be prevented through primary health care activities; HIV/AIDS, TB, and nutritional problems are assuming greater importance. Regarding the health infrastructure, Primary health care units are still inadequate and the beneficiaries do not efficiently utilize the existing levels of health infrastructure. The environmental health services continue to be the City's major public health concern that the Government, NGOs, the private providers and the community are not integrating their mutual efforts towards the alleviation of the associated sanitation problems. The Health services rendered to mothers and children are not reinforced in such away to decrease the related preventable diseases and deaths. Inadequate health care financing system, which does not collaborate different sectors in the health care delivery system.

The causes of ill health and morbidity in some or other ways are attributed to behaviour related diseases that could be prevented through proper and careful planning, and the intervention that could be suggested as behaviour directed. HIV in association with TB, infant malnutrition, improper human waste disposal is instances condition that can be linked to the need of skill, knowledge, and proper practice development in attaining positive behaviour.

Most of our health services are not available to all; poor urban disadvantaged group of population, marginalized people, poor rural residents, street children, and the health conditions in whom is felt more severe as compared to the general population.

4.2.1. Objectives:

To show the magnitude of annual morbidity and mortality of major communicable diseases in the city by 2001 and 2002 E.C.

4.3.1. Methods & Materials Used:

Review the two years regional health bureau annual report, IDSR documents and analyzed by using tables and graphs.

4.4.1. Results:

Table 4.4.2. Ten Top Causes of Morbidity for Male category 2002 E.C

Acute upper respiratory infections	76964
Dental and gum diseases	38580
Trauma (injury fracture etc.)	38272
Other or unspecified diseases of the eye and adnexa.	38048
Pneumonia	33740
other or unspecified diseases of the digestive system	27248
Other or unspecified diseases of the respiratory system	26764
Diseases of the musculoskeletal system and connective tissue	26560
Diarrhoea (non-bloody)	25836
other or unspecified diseases	22252

Table 4.4.3. Ten Top Causes of Morbidity for Female category year 2002 E.C

Acute upper respiratory infections	88372
Dental and gum diseases	64548
other or unspecified diseases of the eye and adnexa	41736
Diseases of the musculoskeletal system and connective tissue	39616
Urinary tract infection	38596
Dyspepsia	35212
Other or unspecified diseases of the digestive system	34788
other or unspecified disorders of the genitourinary system	31104
hypertension and related diseases	29896
Pneumonia	28276

Table4.4.4.Ten Top Causes of Morbidity for Under 5 years 2002 E.C

Acute upper respiratory infections	165384
Dental and gum diseases	103260
Other or unspecified diseases of the eye and adnexa	81608
Diseases of the musculoskeletal system and connective tissue	66468
Pneumonia	63544
other or unspecified diseases of the digestive system	63236
Trauma (injury, fracture etc.)	59240
urinary tract infection	56416
Dyspepsia	54324
Diarrhoea (non-bloody)	52260

Table 4.4.5.Ten Top Causes of Morbidity report for Above 5 years category year 2002 E.C

Acute upper respiratory infections	165424
Dental and gum diseases	103260
Other or unspecified diseases of the eye and adnexa	81608
Diseases of the musculoskeletal system and connective tissue	66468
Pneumonia	63544
other or unspecified diseases of the digestive system	63236
Trauma (injury, fracture etc.)	59240
urinary tract infection	5656
Dyspepsia	54324
Diarrhoea (non-bloody)	52260

Table4.4.6.Ten Top Causes of Mortality 2002E.C

ADIS-all forms	424
Severe acute malnutrition	244
Low birth Weight newborn	232
Birth asphyxia	168
Meningitis	136
Pneumonia	100
Tuberculosis all forms	92
Human immunodeficiency virus (HIV) disease	92
Cerebrovascular accident (stroke)	92
Other or Unspecified diseases of the digestive system	92

Table 4.4.7. Number Of health facilities in Addis Ababa city 2002 E.C.

Type of HI	AAHB	Federal	AAU	Army	Factory	Police	Private	NGO
Governmental Hospital	5	4	1	2	-	1	33	2
Health centres	27	-	-	-	-	-	1public	2
Private Clinics		-	-	-	102	-	420	29
Health posts	34		-	-	-	-	-	8
Pharmacy	-	Public 15	-	-	-	-	135	3
Drug shop	--	-	-	-	--		220	-

Table4.4. 8.Distribution of Man power by profession 2001 E.C, Health indicator, FMoH

No	Profession	No.
1	Specialists of all type	146
2	General medical practitioner	396
3	Health officer	170
4	Nurse(Diploma)	3,377
5	Midwife	244
6	Anaesthetist nurse	29
7	Pharmacist	8
8	Pharmacy technician	237
9	Laboratory technician	343
10	Environmental health	83
11	Radiographer	96
12	Health extension Worker /nurses	1442
13	All other supportive staff	258

4.5.1. Specific Health Problems

The infant mortality rate was 71 per 1,000 live births (lb) in 2001 EFY. The leading causes were conditions originating out of the perinatal period, congenital malformations, and infections from influenza and pneumonia there 40834 cases reported and 165384 cases in 2002 this shows increase number of ARI cases dental and gum 103260 cases were reported .TB, pneumonia low birth weight, severe malnutrition and meningitis were the leading cause of morbidity and mortality for the year 2002 E.C.

Vaccine-preventable diseases:

There were no cases of diphtheria. There were 35 suspected AFP, 3 NNT and 30 measles In 2002 E.C., there were also 30 suspected cases of measles reported in population <1 year and in young adults. In 2000 , E.C the coverage of vaccine-preventable diseases was: BCG 93%, Penta3 92% and measles 84%. In 2002, AIDS were the leading cause of death, with a rate of 13.4 per 100,000; Adults (20- 59 years) there were 5,249 new AIDS cases reported

4.5.1.1. Type of health problem

Vector-borne diseases:

No outbreak of malaria in the last four years occurred in the city.

Intestinal infectious diseases:

There were 148 cases of AWD reported in 2001 E.C and 9000 cases in 2002 E.C, There were 26,217 cases of typhoid, 25836 shigellosis and 12,771 epidemic typhus reported (health and health related indicator and surveillance report, FMOH2001 E.C)

Communicable chronic diseases:

In 2002 EFY The cumulative annual estimated new sputum smear positive TB cases was 4,843 of this 3,027 (62.5%) were positive this shows TB is still the problem of the people

Acute respiratory diseases:

The cumulative incidence of pneumonia and influenza less than five years of age was 1027 per 100,000 in (2001 EFY).

HIV/AIDS:

AIDS was the leading cause of mortality in, 2002 E.C. In 2001 EFY, there were 218,086 tested and 19,206 positive reported cases of HIV (8.8%) from the total PLWHA 190,558 the prevalence is 6.8% in males and 8.5% in females the total prevalence rate is 8.5% and the new HIV infec-

tion of the same year was 22,214 (1.5% adult HIV incidence) of which 906 were children which is 3.3 times greater compared to 2000EFY (6688 new cases) annual death of total age group 5,948 with a total 93,289 cases of AIDS orphans.

VCT service

In the year 2000E.C, the total number of tested were 260,734 of which 26,174 were positive (10%).

Sexually transmitted diseases (STI):

in 2001 E.C, female genital ulcer 2582 cases and male genital ulcer 788 and 2206 male urethral discharge reported, this shows , the cumulative incidence of STIs was 177 per 100,000 Hygiene and environmental health service :-

Access to safe water of the city is 95% while access to excreta disposal is 76% source health and health related indicators 2001 E.C, FMOH

Morbidity report of 2002 E.C

The report showed leading causes of morbidity in male category were Acute Respiratory Infections, Dental and gum disease, Traumatic injury Eye and Pneumonia. While the leading causes of morbidity in female category were Acute Respiratory Infection, Dental and gum diseases, other or unspecified diseases of the eye and adnexa.

Mortality Reports of 2002 E.C.

ADIS-all forms, Severe acute malnutrition, Low birth Weight newborn , Birth asphyxia, Meningitis ,Pneumonia ,Tuberculosis all forms ,Human immunodeficiency virus (HIV) disease, Cerebro vascular accident (stroke) and Other or Unspecified diseases of the digestive system were reported

4.6.1 Health sector expenditure and financing:

Total regional budget (from all sources: treasury, assistance and loans) allocated to the health sector for 2001EFY was 239,379,000 which is (3%) from total regional budget

Recurrent budget of 2001 EFY was 122,420,000 expenditure was 133,543,00 which means 109% this shows high utilization while capital budget of the region was 116,959,000 from this expenditure 39,625,00 (34%) which indicates high allocation low utilization

4.1.8. Definitions

Primary Health Service Coverage Proportion of population living within walking distance (10 km) from a health facility (HC and HP).

Health Service Utilization Rate: Ratio of visits made to health facilities for curative services (new and repeated OPD consultancies) over total population (Data Source Routine Health Information)

Total Per capita Health Expenditure from all sources: Government, donors, NGO/private, and household out-of-pocket (Data Source(s) National Health Account Survey)

Contraceptive Prevalence Rate: (CPR) The percentage of women, aged 15–49 in marital or consensual unions, who are practicing, or whose sexual partners are practicing, any form of contraception

Proportion of Births Attended by Skilled Health Personnel: The proportion of deliveries attended by skilled personnel is the percentage of deliveries attended by personnel trained to give the necessary care to women during pregnancy, labour and the post-partum period; to conduct deliveries; and to care for newborns. Skilled health personnel include only those who are properly trained and who have appropriate equipment and drugs (doctors, nurses or midwives). Traditional birth attendants, even if they have received a short training course, are not to be included

DPT3 Coverage: The proportion of children below 1 year of age receiving 3 doses of DPT according to national schedule

HIV Incidence: Proportion of new HIV positive adults over total adult population. The incidence is estimated through the percentage of pregnant women ages 15–24 whose blood samples test positive for HIV.

Inpatient Case Fatality Rates: Proportion of inpatients that died during admission (general and associated to specific diseases).

Tuberculosis Case Detection and Treatment Success Rates:

The tuberculosis detection rate is the percentage of estimated new infectious tuberculosis cases detected under the directly observed treatment, short course (DOTS) case detection and treatment strategy.

The treatment success rate is the percentage of new, registered smear-positive (infectious) cases that were cured or in which a full course of DOTS.

Standard Case Definition of Immediately and Weekly Reportable Diseases / See in the Annex

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Chapter V

Scientific Manuscripts for Peer reviewed Journals Outbreak Investigation of Novel Influenza A (H1N1) - Ethiopia, 2001E.C

By: Mesafint Alebachew

AAU, Medical faculty/SPH, EFELTP

December, 2002 E.C

5.1.1. Introduction

Pandemic (H1N1) 2001 E.C virus has been causing major concerns around the world because of its epidemic potential, rapid dissemination, rate of mutations, and the number of fatalities. Novel Flu (H1N1) Pandemic is new strain of Influenza A virus sub-type H1N1 Type of swine Influenza first detected in April, 2001 E.C

Outbreak began in Mexico (Veracruz I Pandemic (H1N1) 2001 virus has been causing major concerns around the world because of its epidemic potential, rapid dissemination, rate of mutations, and the number of fatalities. influenza infects 5-15% of global population annually Cause severe illness in 3-5 million with 250,000 - 500,000 deaths worldwide . Approximately 36,000 deaths/year (USA) Severe illness and deaths occur in high risk population of infants, the elderly and chronically ill patients (industrialized countries)

Groups at high risk: Children younger than 5 years old, Person aged 65 years or older, pregnant women.

Children and adolescents, younger than 18 years who are receiving long-term aspirin therapy (Reye syndrome) Influenza A subtypes are determined by the two Glycoprotein (GP) on the surface. Hemagglutinin (HA),

Neuraminidase (NA) ,16 HA's and 9 NA ,Human disease , 3 HA (H1, H2, and H3) ,2 NA (N1 and N2). More recently, additional HA subtypes, including H5, H7, and H9 (all from avian origin).

The H1N1 strain of influenza is a single stranded RNA virus composed of a segmented genome originated from various influenza viruses. An infection of mixtures of various influenza viruses results in the release of progeny viruses containing novel arrangements of segments. In Asia, North America, and much of Europe, viruses of the H1N1 subtype are the most commonly isolated. However, for the purposes of this study, we have chosen to focus on the Pandemic (H1N1) 2001 virus isolates that have been of great worldwide public concern this year.

The Pandemic (H1N1) 2001 E.C. viruses differ in the origins of their genomic components from these previously circulating H1N1 strains and belong to the classic swine lineage, which is genetically related to the human H1N1 viruses responsible for the 1910 E.C. Spanish influenza pandemic

Pandemic preparedness in Ethiopia

- The 2001 E.C. outbreak of influenza A (H1N1) virus is an epidemic due to a new strain of influenza A virus
- April 12: an outbreak of influenza-like illness from Mexico, reported to WHO
- April 15-17: two cases of a new A(H1N1) virus infection identified in two southern California, U.S.A.
- April 23: new influenza A (H1N1) virus infection confirmed in several patients in Mexico
- April 24: WHO declares a public health event of international concern (PHEIC).
- April 27: WHO declares pandemic phase 4 - sustained community transmission in Mexico
- April 29: WHO declares pandemic phase 5 (2 countries affected)
- June 11: WHO declares pandemic phase 6 (spread to 2 WHO regions)
- In 9 weeks, all WHO regions reporting cases of pandemic (H1N1) 2001 E.C.
- July 1999 E.C. formal establishment of Ethiopian National Influenza Laboratory at EH-NRI
- September 2000 E.C. formal launch of 2 influenza sentinel surveillance sites in Addis Ababa were established (1 for ILI at St. Paulo's and 1 for SARI Tiku Anbessa)

Case definitions of novel influenza A (H1N1)

Probable Case definition of novel influenza A

(H1N1) An individual with an influenza test that is positive for influenza A is unsubtypeable by reagents used to detect seasonal influenza virus infection or individual a clinical compatible illness or died on an explained acute respiratory illness that is considered to be epidemiologically linked to a probable or confirmed case.

Suspected Case definition of novel influenza A (H1N1)

- A person with an acute respiratory infection who was in close contact to a confirmed case of swine influenza A virus infection while the case was ill or is an acutely ill person with a recent history of contact with an animal

Confirmed Case definition of novel influenza A (H1N1)

H1N1 influenza virus infection is defined as a person with ARI with laboratory confirmed H1N1 influenza A by one or more of the following tests

- Real time RT-PCR
- Viral culture

Four fold rise in H1N1 influenza virus A specific antibody

Transmission: from Person to person through coughing or sneezing Fomites (contact with surfaces or object) across mucous membranes (eye, mouth, etc.) Has been identified in animals - pigs, turkeys, ferrets, and cats.

Diagnosis ;Collect nasopharyngeal, nasal or pharyngeal swab,Real time (RT-PCR) is preferred,Processing time for the test is 2-4 days

Isolation of pandemic H1N1/09 from viral culture is diagnostic and Negative test result does not exclude infection

5.1.2. Objectives of the investigation

To determine and confirm the extent of the outbreak &Identify risk factors contributing to transmission and Make recommendations to limit and control the pandemic

5.1.3. Methods of Case Detection

Active case finding, passive reporting, Case contact tracing and Using Influenza Sentinel surveillance Lab

Reporting and epidemic threshold

1. Reported immediately by case based format/2hrs
2. Single case considered epidemic/pandemic
3. Throat specimen collected for laboratory confirmation immediately Zero report/week.

5.1.6. Results

Eighty suspected cases identified and tested, all of them came from eight different countries of the world. Among the above suspected, 10 cases were laboratory confirmed H1N1. But Complete data available for 10 confirmed cases only, among these cases 9 were Females and 1 male. The Mean age of the cases was 23.5 yrs, range 14-45 years among the confirmed 5 airlines cabin crew 4 students and 1 other. No secondary transmission and deaths reported during the outbreak, all of them came from eight different countries outside Ethiopia.

5.1.7. Conclusion

All cases of H1N1 introduced via international travel from 8 different countries of which the majority of cases are airline hostesses and students. The majority of confirmed cases were female, aged 14 to 45 years and No secondary transmission detected

5.1.8. Recommendations

Strengthen the national H1N1 surveillance system in all health facilities including private hospitals & clinics, Distribute & Follow standard influenza prevention and control activities

Consider targeted H1N1 vaccination for at risk populations like cabin crews, Sentinel surveillance for selected health facilities in Addis Ababa and Health information for the whole community by using local media.

Chapter VI – Abstracts for Scientific Presentation

By: Mesafint Alebachew

AAU, Medical faculty/SPH, EFELTP

July, 2001 E.C.

6.1.1 Abstract

Authors: Mesafint Alebachew, Million T. Tomato, R. Luce, A. Addissie, Z. Haile mariam

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Title: Introduction of Influenza A (H1N1) — Addis Ababa, Ethiopia, July–October, 2009

Background: In April 2009 a novel H1N1 influenza sub-type was identified in Mexico and quickly spread worldwide. As of December 2009, 8 countries in Africa have confirmed the presence of H1N1. Ethiopia identified its first case of H1N1 influenza on June 17, 2009. The objective of this study was to conduct an epidemiological investigation of the first H1N1 cases in the country, determine and confirm the extent of outbreak.

Methods: In-depth interviews and clinical examinations were conducted with the initial cases and their contacts using standard data collection instruments. Nasopharyngeal swabs were collected from cases and contacts and analyzed by RT-PCR for the presence of H1N1 virus.

Results: From June 17–November 30, 2009, 80 suspected H1N1 cases were identified and laboratory tested. Of these, 12 (15%) were confirmed H1N1 cases. All confirmed cases reported recent international travel from 8 different countries and 5 worked as cabin crew for the national airline; 9 were female. The age range of cases was 14–45. Clinical illness was mild in all cases and no deaths occurred.

Conclusion: Introduction of H1N1 in Ethiopia appears to have resulted from international travel. Secondary transmission was not identified; however, surveillance activities were limited to the period immediately following detection of the first cases in Addis Ababa. Wider circulation of H1N1 is likely as surveillance and testing was only conducted for a limited time period. Comprehensive understanding of the epidemiology of H1N1 influenza in Ethiopia necessitates larger scale, continuous surveillance and testing.

Keywords: Influenza (H1N1) surveillance, H1N1 outbreak, Ethiopia

Word count: 247

**Chapter VII – Narrative Summary of Disaster Situation Visited
Humanitarian Need Assessment conducted in Afar Regional State,
Ethiopia, June, 2002 E.C.**

By: Mesafint Alebachew

AAU, SPH, EFELTP, Resident

June, 2002 E.C.

SUGUM PASTEURAL /AGRO-PASTEURAL HEALTH AND NUTRITION NEED ASSESSMENT

GENERAL INFORMATION

Name the zone	Zone 2
Assessment starting date	June 21, 2002 E.C
Assessment completion date	July 9, 2002

TEAM COMPOSITION

Name	Agency	Position
Mr. Mesafint Alebachew	FMoH/PHEM	Member
Mr. Ali Esse	AWRB	Member
Mr. Kutbi Oudo	ARHB	Member
Mr. Dhaba Desisa	MOWR	Member
Mr. Osman Yiha	UNICEF-Afar	Member
Mr. Yared Legesse	WHO	Member
Mr. Beyene Kidu	FMoH/PHEM	Member

LISTS OF WOREDAS VISITED

Name of the Woreda	Share of livelihood in %	
	Pastoral	Agro-Pastoral
Afdera	100%	
Erebti	100%	
Dalule	100%	

7.1.1. Introduction

Afar region has been affected with by different types of hazards such as protracted drought and disease outbreaks including, Acute Watery Diarrhoea (AWD), Measles and malnutrition. As part of emergency preparedness and response, the Afar National regional state government in collaboration with Federal ministries and the partner organizations has been exercised seasonal food and none-food emergency assessments so as to identify potential risk for the occurrence of public health emergencies, current preparedness status and response capacity of the region.

The health and nutrition emergency assessment has identified immediate risk factors associated with the possible occurrence and distribution of disease outbreaks and nutrition emergencies, Woredas/ regional capacity to respond to the situation followed by preparation of the emergency preparedness plan.

7.1.2 Objective of the Belg Assessment

Similar to the previous years, the objectives of the current Belg assessment is aimed at assessing the types, magnitude, and the likely of the occurrence of different health and health related.

Emergency situations like human epidemics, identification of at risk and most vulnerable population. Furthermore, it aimed at assessing the current capacity of the Woredas/zones and their future needs to respond to suspected /predicted disease outbreaks

7.1.3. Methodology

Secondary data population, disease burden, cases of epidemic prone diseases, current stocks emergency drugs and medical supplies, immunization and ITN coverage have been collected by reviewing records and reports of selected Woreda health offices and regional health bureau. Interviews and formal consultations with Regional and Woreda officials and health professionals were made to obtain in-depth understanding about major health problems, occurrences and duration of the disease outbreaks, current preparedness status, and response capacities. Finally data were analyzed using Microsoft excel and results are resented using frequency tables and graphs.

7.1.4. Zonal Background Information

Zone-2 is one of the five zones of the Afar National Regional State Government. As of July 2002 E.C , population of the zone is estimated to be 518,364. Female population accounts for 47% of the total zonal population and 14.1 % are children under-five years of age. There are about 3500 Eritrean refugees settled in Dalol Woreda. Administratively, the zone is sub divided in to eight Woredas, namely Afdera, Bidu, Aba'ala, Dalule, Erebti, Megale, Kuneba and Berhale Woredas. Among these, Afdera, Erebti and Dalol Woredas have been covered by the Belg (Sugum) assessment.

7.1.5. Results

7.1.5.1 Disease Burden

7.1.5.2. Acute Watery Diarrhea (AWD)

Afdera and Dalol Woredas have experienced AWD outbreak at least once in the past four years. In 1998 and 1999 E.C., a total of 532 AWD cases and 7 deaths with CFR 1.3% have been reported from zone two. Currently, there is no ongoing disease outbreak in the zone. CFR was 30% above the maximum acceptable threshold (1%), which might be due to delayed response intervention, and/or late presentation of cases to treatment centers. The finding indicates, there is a need to work on improvement in quality of case management and infection prevention in CTC and at home as well as improving awareness of the community on early treatment seeking.

Reported AWD Cases and Deaths by woreda, zone 2, Afar region, (1996 – 2001E.C)

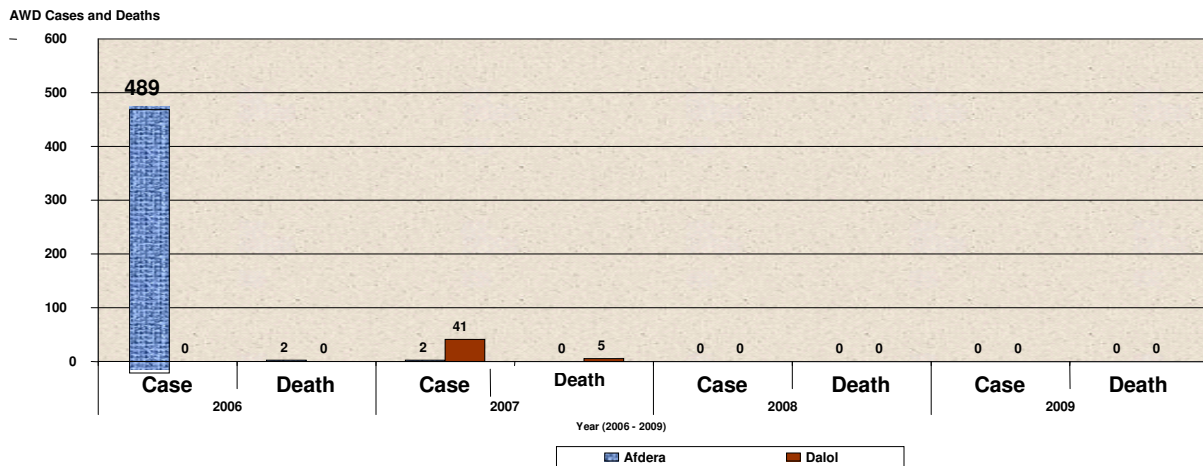


Figure7.1. Reported AWD Cases and Deaths by woreda, zone 2, Afar region, (1996 – 2001E.C)

7.1.5.3 Malaria

Large proportion of malaria cases were reported from Dalol Woreda followed by Erebti Woredas. Dalol Woreda data have shown that, there were a sharp increase in number of malaria cases from September to October, 2001 E.C. with slow declining trend and started to increase since March 2002 E.C. Occurrence and distribution of malaria cases in Erebti Woreda follow similar trend with that of Dalol . Based on the available information, there will be an increase in the number of malaria cases from September to November 2003 E.C

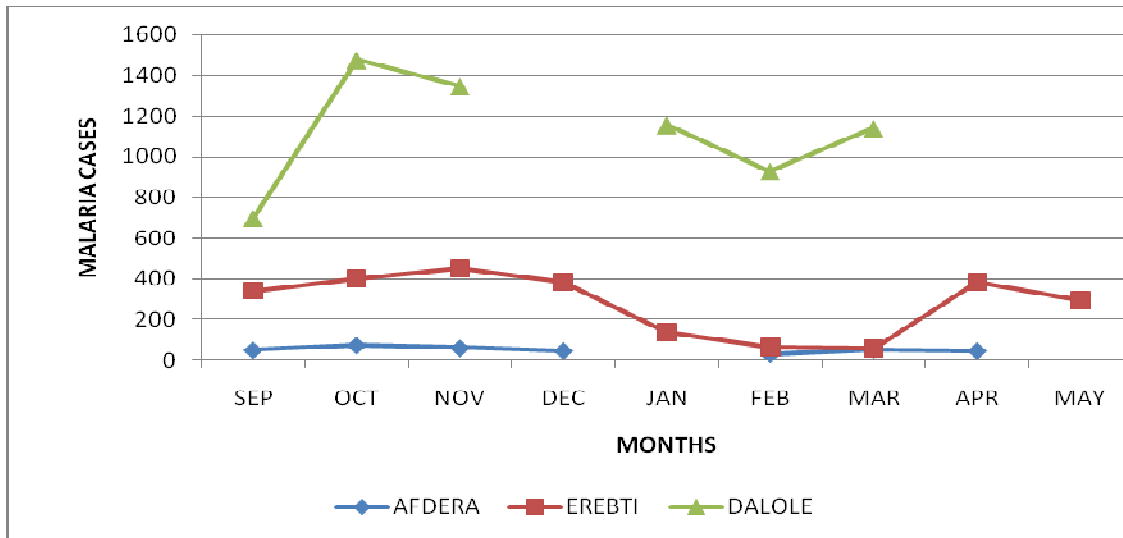


Figure 7.1.1. Monthly distribution of Malaria cases in selected Woredas of zone, Afar region 2003E.C

7.5.1.3 Measles

In October 2001 E.C, seven measles cases have been reported from Erebti Woreda no reported case from other Woredas. The likelihood of Measles outbreak is high in Woredas with low immunization coverage like Erebti (57%), Dalol (34%) and Afdera (0%). Efforts has been made by regional health bureau to increase measles immunization by conducting immunization campaigns in 2010. With existing routine measles immunization coverage level, the likelihood of interrupting measles outbreak is very low and there will be probability of an outbreak within coming six months of the year.

7.1.6. Epidemic Disease Prevention and Controls

7.1.6.1 Prevention and Control of Malaria Outbreak

Malaria is identified to be the leading cause of morbidity in the afar region and in selected Woredas. Environmental (seasonality), behavioural (low utilization of ITN), anthropological (immigration of labour force from different regions), and development activities (creation numerous vector breeding sites) are among the proven factors affecting occurrence and distribution of malaria.

Use of ITN has great contribution in halting malaria transmission in general and reduction of morbidity and mortality among biologically vulnerable population groups (under-five children and pregnant women). The effects of ITN on malaria transmission are affected by coverage and its consistent use.

This assessment mainly focuses on the availability of two per household (coverage) as a proxy indicator of utilization. With assumption that, higher coverage will have positive externality at community level in providing protection for non-owners/users by reducing vector density and biting rate. However, sleeping arrangement, design of housing structure, durability of the netting material, frequency of washing and climatic conditions significantly affect either negatively or positively an expected benefits of the ITN.

The assessment result shows that, on average 72% of the households in assessed Woredas have had at least two ITNs and the coverage in Dalol Woreda is very low compared to other Woredas in the zone. However, utilization of ITN in Afar Region might be below the achieved coverage level due to low ITN replacement rate and other environmental and behavioral determinants. Some of the areas in zone 2 lie below sea level (Dalol depression) and other areas of the selected Woredas are at an altitude below 2000 m.a.s.l, which favour the breeding of malaria vectors (mosquitoes).

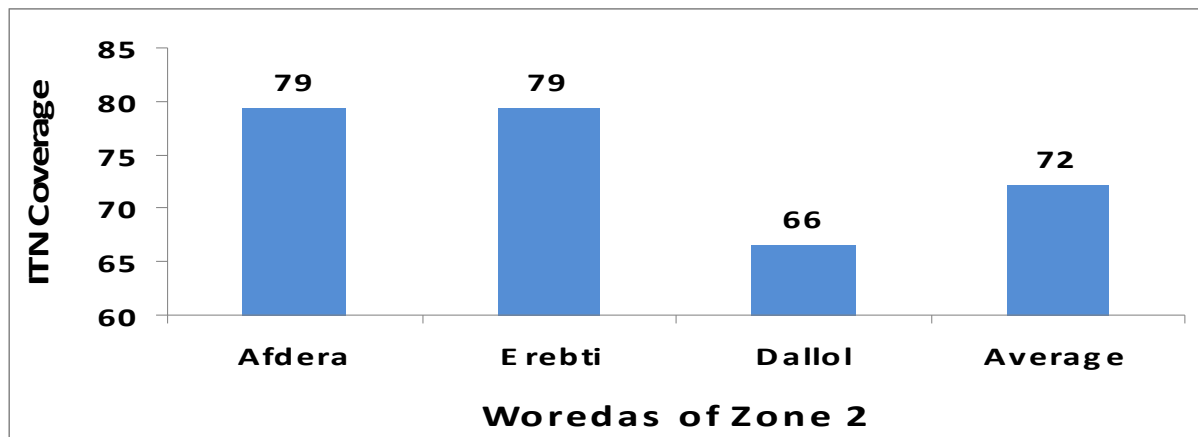


Figure 7.1.2.ITN coverage in selected Woredas of zone two, Afar Region, June 2002 E.C.

7.1.6.2 Prevention and Control of AWD outbreak

Without increasing communities’ access to improved water supply and excreta disposal facilities and improved awareness on proper hygiene, it is unlikely to prevent and control outbreaks diarrheal diseases including Acute Watery Diarrhea.

The assessment team could not able to find data on water supply coverage from Woreda water resource offices. Households access to latrine facility in the elected Woredas were very low with corresponding coverage 11%, 2% and 80% for Afdera, Erebt and Dalol Woredas, respectively. In sum, majority of the communities use water from unsafe sources and open defecation are common practice among the population, favoring the likelihood of the occurrence and spread of AWD outbreak in the zone.

Table 7.1.1. Water supply and sanitation coverage in the selected three Woredas of zone 2, Afar region, June 2002 E.C.

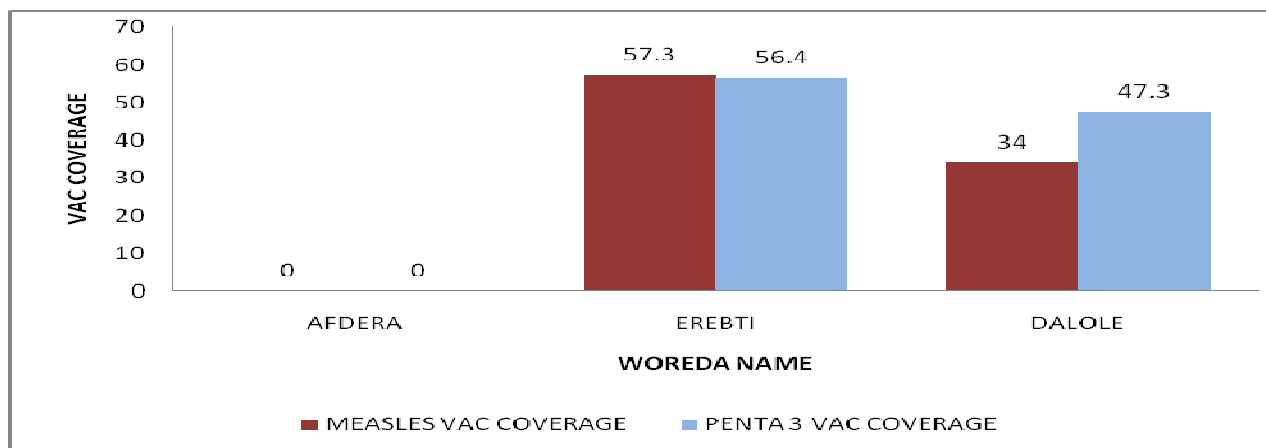
Woreda	Water supply coverage	Latrine coverage (%)	Remarks
Afdera	ND	11	
Erebt	ND	2	
Dalol	ND	81	

Note: ND = No data

7.1.6.3 Prevention and Control of Measles and Meningitis Outbreak

The overall measles immunization coverage in all selected Woredas is lower than the expected coverage level could not able to interrupt outbreak of measles. More than two third (42%) of children in Erebt Woreda and more than 50% of them in Dalol Woreda did not immunized against measles and are at higher risk of getting measles. In order to fill this gap the regional health bureau has conducted supplementary measles immunization campaign in 2002 EFY in some the Woredas with low immunization coverage. Further actions are required to decrease the likelihood of measles outbreak through strengthening routine immunization program and plan to capture possible outbreaks by strengthening emergency response actions.

Figure 7.1.3. Immunization coverage in 2001 E.C. among children under-one years of age in selected Woredas of zone 2 and 4, Afar region, July 2002 E.C.



Similar to zone four, meningococcal meningitis case is not reported from the zone. However, there is environment conducive for the occurrence of meningitis outbreak. As the likelihood of meningitis outbreak is dependent on climatic factors (dry windy season), anthropologic factor (population movement and crowded living condition) and immunization status, in the coming six

months the probability of meningitis outbreak will be high as a result of factors such as low immunization status of the regional population, immigration of labour workers from other regions, dry and windy weather condition.

7.1.7. Emergency Preparedness and Response

Current assessments have tried to investigate the preparedness status of the four Woredas in zone four. Regarding availability of emergency drugs and medical supplies and trained health staff, existence of active coordination committee, contingency plan, and budget at Woreda and zonal levels.

7.1.7.1 Emergency Prevention and Response Coordination Taskforce/Committee

Based on the assessment finding there is no active emergency response technical taskforce/committee in all visited Woredas. Moreover, there are no actively working multi-sectoral outbreak prevention and response coordination committees

7.1.7.2 Availability of Contingency Emergency Drugs, Medical Supplies and Budget

All visited Woredas have observed with no stocks of emergency drugs, medical supplies, epidemic Preparedness and Response plan, and have no contingency budget for all forms public health emergencies.

7.1.7.3 Early Detection of Outbreak, Reporting and Response

There were no lists of health institutions encompassed by IDSR system in all visited Woredas. IDSR reports were not regularly and timely received from health facilities and not reported to regional health bureau on a regular basis. Analysis and use of surveillance data for public health action is not practiced, which might be due to weak commitment, lack of knowledge and skill on data analysis, and lack communication and data analysis equipment to timely collect and analyze surveillance data from health facilities and to report to the next higher level

7.1.7.4 Availability of Trained key Health Workers

Availability of trained key health staff on various areas of emergency preparedness and response will have paramount importance in minimizing the impacts of public health and nutrition emergencies. A total of 36 key health workers have been reported working in the three Woredas. Of these, there is critical shortage of Health officers who can adequately provide technical and managerial support on prevention and control of disease outbreaks such as AWD, malaria and other water borne diseases.

Data collected from the selected Woredas have shown that, there are a total of 15 of the existing health staffs trained on various areas of emergency preparedness and response . In general, there is a critical shortage of trained staff in the zone and therefore, there is a need to provide in-service training for health staff on various areas of outbreak preparedness, prevention and con-

trol. Mobilization of health workers during emergency from other zones could be sought as an alternative means.

Table 7.1.2. Distribution health workers by professional category and training status in four selected Woredas of zone 2, Afar region, June 2002 E.C.

Woreda	Number of Existing Health Professionals						Number of Trained health professionals on					
	HO	Nurses	Lab. Tech	EH W	HE Ws	Total	PHE M	IDS R	EP I	Ma-laria	Nu-tri-tion	To-tal
Afdera	0	6	1	0	ND	7	0	1	1	2	2	6
Erebt	0	5	1	1	ND	7	0	0	2	0	0	2
Dalol	0	18	3	1	ND	22	0	1	3	1	2	7
Total	0	29	5	2	ND	36	0	2	6	3	4	15

Note: HEWs* = Health Extension Workers, EHW= Environmental Health Workers, HO= Health Officer

7.1.7.5 Availability of Case Management Guidelines (Treatment Protocols)

Availability of technical guidelines for disease prevention and control programs in general, and case management protocols is important to ensure quality of services across the nation. None of the visited Woredas reported to possess guidelines /treatment protocols for management of AWD, Malaria, Meningitis, and measles cases.

7.1.8. Discussion

Drought is the major hazard affecting the livelihood of the population in zone two of Afar region, which affected livestock and consequently have caused food shortage. As reported from the Woreda health offices, communicable diseases such as malaria, diarrhoeal diseases and upper respiratory tract infections were among the top five leading causes of morbidity. Malaria and pneumonia are reported to be leading causes of mortality in the zone. Acute Watery Diarrhea (AWD), Malaria, Measles outbreaks and SAM were reported to be the causes of the health emergency in some Woredas of the zone in 1999, 2000, and 2001 EFY. In addition, outbreak of unknown cause has been reported in December 2001 E.C. from Dalol Woreda.

Acute Watery Diarrhoea (AWD), malaria and Measles cases have been reported in epidemic prone area of the zone in the last two to four years (1998 – 2001 E.C.). Current coverage level of the prevention and control programs could not provide adequate guarantee in protecting at risk population and would not able to interrupt the transmission and spread of disease outbreaks.

In assessed Woredas, trends of malaria cases in the past nine months and potential risk factors indicate the likelihood of malaria outbreak in the coming six months. In general, low ITN cover-

age, Low immunization coverage (Penta-3 and Measles immunization), low water supply and sanitation coverage, and un hygienic practices, all together directly or indirectly contribute to the likelihood of occurrence of malaria, AWD and Measles outbreaks in the zone.

On the other hand, zonal/Woreda level preparedness and response capacity with regard to keeping stocks of emergency drugs and medical supplies, securing contingency budget, organizing rapid response team, and coordination status are observed to be non-existent. Shortage of trained health staff on various areas of emergency preparedness and response, Weak surveillance system characterized by poor information management, inconsistent reporting and non-use of data for disease prevention and control action was observed short comings in all visited Woreda

7.1.9. Conclusions

Low coverage of safe water supply and sanitation and Low community awareness on prevention and control of water borne diseases Strengthen surveillance system (case detection, confirmation and reporting)

Poor surveillance system in health facilities (case detection, confirmation and reporting) and coordination mechanism among humanitarian partners.

Low Provision of drugs, medical supplies and equipments for management of AWD, measles and malaria cases and infection prevention at regional level.

No technical and management skills of health workers on case management, surveillance, vector control, communication and community mobilization

7.1.10. Recommendations

Increase Community awareness on prevention and control of water borne diseases and also Intensify community awareness creation on malaria, measles AWD and other epidemic prone diseases.

Provision of drugs, medical supplies and equipments for management of AWD cases and infection prevention of measles infection and Build technical and management skills of health workers on case management, infection prevention and strengthen the surveillance system.

Focal measles vaccination and vitamin A supplementation in areas with high risk of outbreak treatment chemicals and hygiene supplies Strengthen surveillance system (case detection, confirmation and reporting). Provide training technical and support for health workers on case management, surveillance, vector control, communication and community mobilization and also strengthen /establish coordination mechanism among humanitarian partners.

SUGUM PASTEURAL /AGRO-PASTEURAL HEALTH NEED ASSESSMENT

GENERAL INFORMATION

Name the zone	Zone 4
Assessment starting date	June 21,2002 E.C
Assessment completion date	July9, 2002 E.C

TEAM COMPOSITION

Name	Agency	Position
		Team Leader
Mr. Kutbi Oudo	ARHB	Member
Mr. Dhaba	MOWR	Member
Mr. Osman Yiha	UNICEF-Afar	Member
Mr. Yared Legesse	WHO	Member
Mesafint Alebachew	FMoH/PHEM	Member
Beyene Kidu	FMoH/PHEM	Member

LISTS OF WOREDAS VISITED

Name of the Woreda	Share of livelihood in %	
	Pastoral	Agro-Pastoral
Ewa	100	0
Awura	100	0
Yalo	100	0
Teru	100	0

7.2.1. Introduction

Afar region has been affected with by different types of hazards such as protracted drought and disease outbreaks including, Acute Watery Diarrhoea (AWD), Measles and malnutrition. As part of emergency preparedness and response, the Afar National regional state government in collaboration with Federal ministries and the partner organizations has been exercised seasonal food and none-food emergency assessments so as to identify potential risk for the occurrence of public health emergencies, current preparedness status and response capacity of the region. The health and nutrition emergency assessment has identified immediate risk factors associated with the possible occurrence and distribution of disease outbreaks and nutrition emergencies, Woredas/ regional capacity to respond to the situation followed by preparation of the emergency preparedness plan.

7.2.2 Objectives of the Belg Assessment

Similar to the previous years, the objectives of the current Belg healthand health related emergency assessment is aimed at assessing the types, magnitude, and the likely of the occurrence of different health and emergency situations like human epidemics, identification of at risk and most vulnerable population. Furthermore, it aimed at assessing the current capacity of the Woredas/zones and their future needs to respond to suspected /predicted disease outbreaks

7.2.3. Methodology

Secondary data population, disease burden, cases and on malnutrition have been collected by reviewing records and reports of selected Woreda health offices and regional health bureau. Interviews and formal consultations with Regional and Woreda officials and health professionals were made to obtain in-depth understanding about major health problems, occurrences and duration of the disease outbreaks, current preparedness status, and response capacities. Finally data were analyzed using Microsoft excel and results are resented using frequency tables and graphs.

7.2.4. Zonal Background Information

Zone-4 is one of the five zones of the Afar National Regional State Government. As of July 2010, population of the zone is estimated to be 270,457. Female population accounts for 43.7% of the total zonal population and 16% are children under-five years of age. There are no special population groups such as internally displaced population, and migrant labour workers and refugees in zone four of the Afar Region.

Administratively, the zone is sub divided in to five Woredas, namely Ewa, Awura, Teru, Yalo and Golina, and four out of the five Woredas have been covered by the Belg (Sugum) assessment.

7.2.5. Key Findings

7.2.5.1 Disease Burden

Drought is the major hazard affecting the livelihood of the population resulting in loses of live-stock and consequently food shortage. As reported from the Woreda/zonal health offices, communicable diseases such as pneumonia, malaria, diarrhoeal diseases and upper respiratory tract infections were among the top five leading causes of morbidity, whereas, malaria and pneumonia are reported to be causes of mortality in zone 4 of the Afar region. Acute Watery Diarrhoea (AWD) and Measles outbreaks and SAM were reported to be the causes of the health emergency in the zone in 1999, 2000, and 2001 EFY.

7.2.5.2. Acute Watery Diarrhea (AWD)

All Woredas in zone four have experienced AWD outbreak at least once in the past four years. Awura and Ewa have experienced twice (in 2006 and 2007). No reported cases of AWD since September 2009, however, since 2006 a total of 1019 AWD cases and 25 deaths with CFR 2.45% have been reported from zone four. Currently, there is no ongoing disease outbreak in the zone. High AWD CFR indicates the need to improve case management and infection prevention in CTC and at home as well as improving awareness of the community on early treatment seeking.

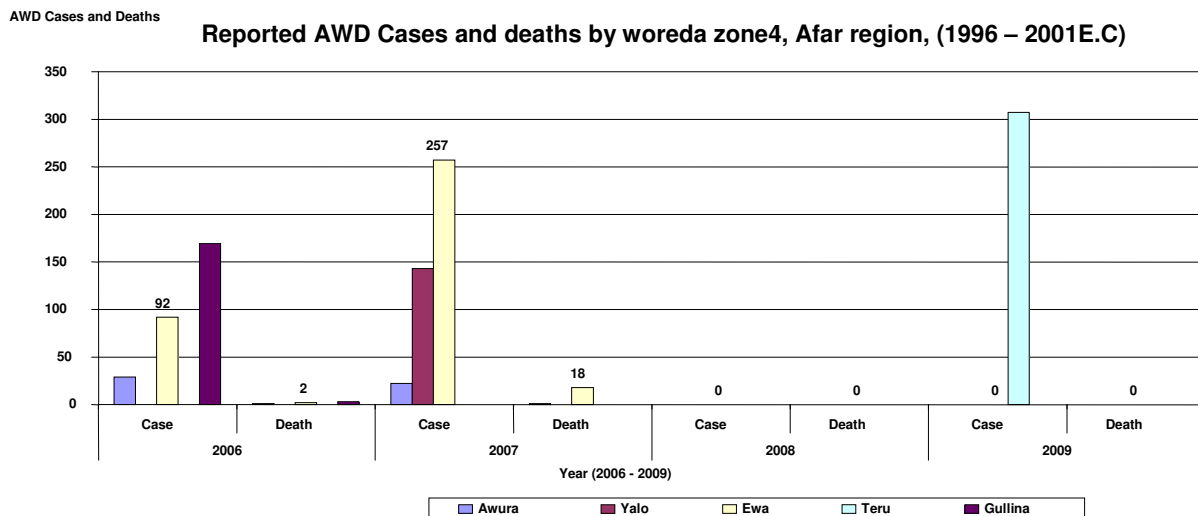


Figure 7.2.1. Reported AWD Cases and deaths by woreda zone4, Afar region, (1996 – 2001E.C)

7.2.5.3. Malaria

Occurrence and monthly distribution malaria cases in Yallo Woredas have shown escalating trend starting from October to December 2009 and slightly declined followed by sharp decrease from February to March 2010. In Awura Woreda, high number of cases has been reported in September 2009, showing slow decreasing trend until May 2010. Unlike the previous Woredas, a constant trend is observed over the past nine months in Teru and Ewa Woredas Past nine months trends of malaria cases indicate, Yallo and Awura Woredas might experience malaria outbreak in the coming six months probably starting from month of August in year 2010.

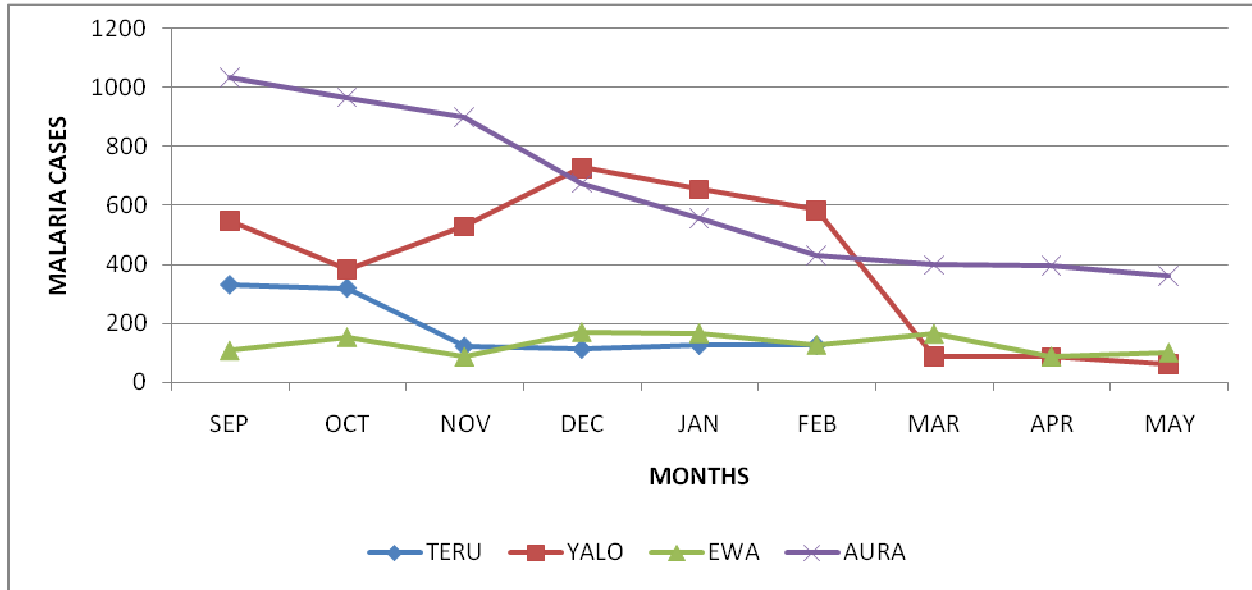


Figure 7.2.1 . Monthly distribution of malaria cases (September 2001 – May 2002 E.C.) in four selected Woredas of zone four, Afar Region, July 2002 E.C

7.2.5.4 Measles

To increase the coverage of measles immunization, the region has conducted supplementary measles immunization campaign in Woredas with low immunization coverage. As measles outbreak is likely to occur in Woredas with low measles immunization coverage, in October 2009 a total of 29 measles cases have been reported from the Aura Woreda and there were no reported cases of measles from other Woredas in zone four. With this coverage level, the likelihood of measles outbreak is higher in the coming six months of the year.

7.2.6. Epidemic Disease Prevention and Controls

7.2..6.1 Prevention and Control of Malaria Outbreak

Malaria is identified to be the leading cause of morbidity in the afar region and selected Woredas. Environmental (seasonality), behavioral (low utilization of ITN), anthropological (immigration of labour force from different regions), and development activities (creation numerous vector breeding sites) are among the proven factors affecting occurrence and distribution of malaria.

Use of ITN has great contribution in halting malaria transmission in general and reduction of morbidity and mortality among biologically vulnerable population groups (under-five children and pregnant women). The effects of ITN on malaria transmission are affected by coverage and its consistent use.

This assessment mainly focuses on the availability of two per household (coverage) as a proxy indicator of utilization. With assumption that, higher coverage will have positive externality at community level in providing protection for non-owners/users by reducing vector density and biting rate. However, sleeping arrangement, design of housing structure, durability of the netting material, frequency of washing and climatic conditions significantly affect either negatively or positively an expected benefits of the ITN.

The assessment result shows that, on average the ITNs coverage in four selected Woredas of zone four is at better proportion (78%). However, utilization of ITN in Afar Region might be below the achieved coverage level due to low ITN replacement rate and other environmental and behavioral determinants. Major areas of the selected Woredas lie below an altitude of 2000 b.s.l and possess rivers with intermittent flow favoring the breeding of malaria vectors (mosquitoes).

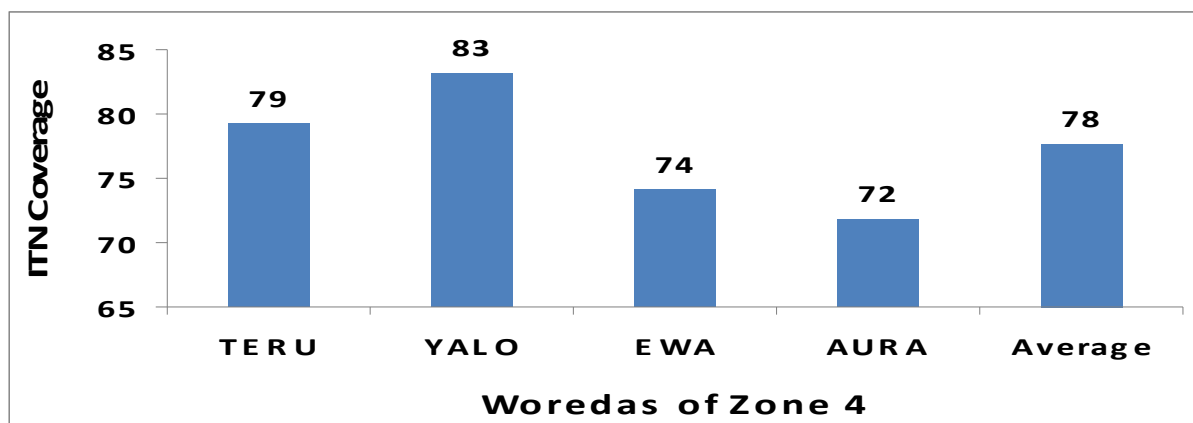


Figure 7.2.2. ITN coverage in selected Woredas of zone 4, Afar Region, June 2002 E.C

7.2.6.2 Prevention and Control of AWD Outbreak

Without increasing communities' access to improved water supply and excreta disposal facilities and improved awareness on proper hygiene, it is unlikely to prevent and control outbreaks diarrheal diseases including Acute Watery Diarrhoea. Data from the selected Woreda health and water resource offices have shown that, very low proportions of the population have had an access to improved water sources. Absence of water supply and sanitation coverage data from the se-

lected Woredas limited further comparative analysis and in general, majority of the population use water from unsafe sources and open defecation are common practice among majority of the population, favouring the likelihood of the occurrence and spread of AWD outbreak in the zone.

Table 7.2.1. Water supply and sanitation coverage status in the selected three Woredas of zone 4, Afar region, June 2002E.C

S. No	Woreda	Water supply cover- age	Latrine coverage	Latrine utilization
1	Ewa	22.00	0.54	ND
2	Awura	44.14	ND	ND
3	Yalo	ND	ND	ND
	Average			

7.2.6.3 Prevention and Control of Measles and Meningitis Outbreak

The overall measles immunization coverage in all selected Woredas is lower than the expected coverage level could not able to interrupt outbreak of measles. However, the coverage level in Teru Woreda is relatively higher than other Woredas in the zone . It is to be noted that, supplementation measles immunization campaign conducted in some the Woredas in 2002 EFY could have paramount contribution in reducing number of susceptible population. However, there will be accumulation of susceptible population in the community have not covered with supplementary immunization campaign and the likelihood of outbreaks of vaccine preventable epidemic prone diseases including measles outbreak is very high.

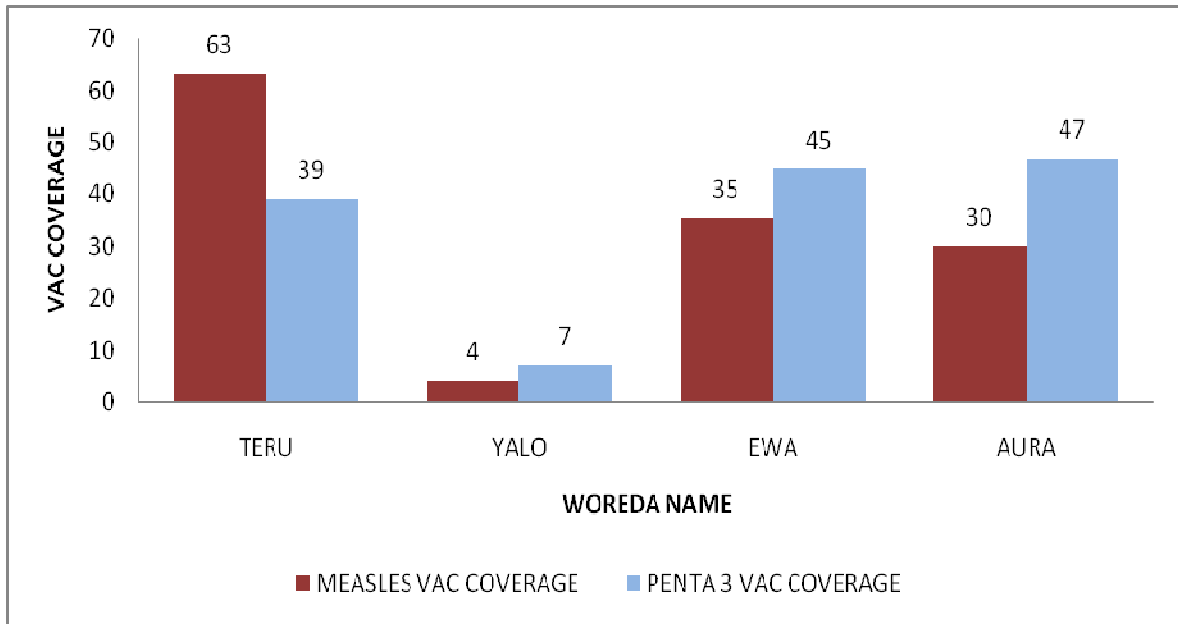


Figure7.2.3. Immunization coverage in 2001 EFY among children under-one years of age in selected Woredas of zone 4, Afar region, July 2002 E.C

In the last nine months, there was no reported case of meningococcal meningitis in the zone. On the other hand no one has been immunized against meningitis. The likelihood of meningitis outbreak is dependent on climatic factors (dry windy season), anthropologic factor (population movement and crowded living condition) and immunization status. With regard to these factors, the coming six months is with very low rain fall, occurrence of meningitis outbreak in neighbouring zone of Amhara region in the year 2009 (Kelela Woreda of the N. Wollo zone Amhara region) and low immune status of the over all population. Therefore, the likelihood of meningitis outbreak is very high in the region in general, and in the zone in particular.

7.2.7. Emergency Preparedness and Response

Current assessments have tried to investigate the preparedness status of the four Woredas in zone four. Regarding availability of emergency drugs and medical supplies and trained health staff, existence of active coordination committee, contingency plan, and budget at Woreda and zonal levels.

7.2.7.1 Emergency Prevention and Response Coordination Taskforce/Committee.

Based on the assessment finding there is no active emergency response technical taskforce/committee in all visited Woredas. Moreover, there are no actively working multi-sectoral outbreak prevention and response coordination committees.

7.2.7.2 Availability of Contingency Emergency Drugs, Medical Supplies and Budget

All visited Woredas have observed with no stocks of emergency drugs, medical supplies, epidemic Preparedness and Response plan, and have no contingency budget for all forms public health emergencies.

7.2.7.3 Early Detection of Outbreak, Reporting and Response

There were no lists of health institutions encompassed by IDSR system in all visited Woredas. IDSR reports were not regularly and timely received from health facilities and not reported to regional health bureau on a regular basis. Analysis and use of surveillance data for public health action is not practiced, which might be due to weak commitment, lack of knowledge, analysis skills, and lack of data analysis and communication facilities to timely collect surveillance data from health facilities and to report to the next higher level

7.2.7.4 Availability of Trained key Health Workers

Availability of trained key health staff on various areas of emergency preparedness and response will have paramount importance in minimizing the impacts of public health and nutrition emergencies. A total of 32 key health workers have been reported working in the four Woredas. Of these, there is critical shortage of environmental health professionals and health officers who can adequately provide technical support on prevention and control of disease outbreaks such as AWD, malaria and other water borne diseases.

Data collected from the selected Woredas have shown that 44 of the existing health staffs including 13 health extension workers have been trained on various areas of emergency preparedness and response . Yallo Woreda has high number of trained health staff compared to other the three Woredas in the zone four. In sum, there is a critical shortage of trained staff in the zone and therefore, there is a need to provide in-service training for health staff on various areas of outbreak preparedness, prevention and control.

Table 7.2.2. Distribution health workers by professional category and training status in four selected Woredas of zone 4, Afar region, June 2002 E.C

Woreda	Existing Health Professionals						Trained health professionals on					
	HO	Nurses	Lab. Tech	EHW	HEWs	Total	PHEM	IDS R	EP I	Ma-laria	Nutri-tion	Total
Teru	0	3	2	0	ND	5	0	2	3	0	0	5
Yallo	0	11	2	0	ND	13	13*	4	6	4	2	29
Ewa	0	5	1	0	ND	6	0	2	2	1	0	5
Awura	1	6	1	0	ND	8	0	2	3	0	0	5
Total	1	25	6	0	ND	32	13	10	14	5	2	44

Note: HEWs* = Health Extension Workers, EHW= Environmental Health Workers, HO= Health Officer

7.2.7.5 Availability of Case Management Guidelines (Treatment Protocols)

Availability of technical guidelines for disease prevention and control programs in general, and case management protocols in particular is important to ensure quality of services across the nation. None of the visited Woredas reported to possess guidelines /treatment protocols for management of AWD, Malaria, Meningitis, and measles cases.

Chapter VIII – Protocol/Proposal for Epidemiologic Research Project.

Proposal On

Assessment of Typhoid fever Prevalence among Febrile out Patients Addis Ababa, Ethiopia, 2002 E.C

Addis Ababa University college of Health Science School Of Public Health

Masters of public health (MPH), field Epidemiology Research Proposal submission

By: Mesafint Alebachew

August, 2002 E.C

Addis Ababa University college of Health, Science School

Of Public Health

Masters of public health (MPH),field Epidemiology Research Proposal submission

Name of the investigator	Mesafint Alebachew
Name of the Advisor	Dr. Assefa Seme Dr. Ababi Zergaw
Full title of the project	Assessment of Typhoid fever Prevalence among Febrile out Patients Addis Ababa, Ethiopia, 2002 E.C
Duration of the project	August, 2002 to December ,2002 E.C.
Study area	Addis Ababa,
Total cost of the project	15,000ETB
Address of the investigator	School of public health ,EFELTP/AAU Cell phone 0911425255 e-mail mesafintalebachew@yahoo.com

Summary

Typhoid fever is a systemic infection caused by *Salmonella enteric serotype Typhi*. The disease remains an important public health problem in developing countries. In 2000, it was estimated that over 2.16 million episodes of typhoid occurred worldwide, resulting in 216 000 deaths, and that more than 90% of this morbidity and mortality occurred in Asia. Globally, typhoid and paratyphoid fevers account for 12.5 million cases annually, and typhoid fever continues to present considerable health problems in many developing countries.

Due to limited evidence and lack of coordinated epidemiological surveillance systems on the Typhoid fever its prevalence not known in Ethiopia The published evidence suggests that typhoid fever is a current public health problem in Ethiopia although population based surveys, based on good microbiological diagnosis, are urgently needed. Only then can the true burden of enteric fever be estimated and the benefit of public health control measures, such as health education, safe water provision, and improved food hygienic practices will be practical. The purpose of this study was to find out the magnitude of typhoid fever and to see the demographic characteristics from out patients come from different segment of the community in health centers of Addis Ababa city and to analyze the impact of variables on the degree of knowledge and attitudes.

Objectives: to determine the prevalence typhoid fever among febrile out patients visited in health facilities in Addis Ababa from December 1 to 20, 2002 E.C.

Methodology

Study design: facility based cross-sectional

Sampling Technique: One health Center randomly will be select from each sub-city in Addis Ababa. (Ten health centres)

Study Period: the work plan of the proposed research will be conduct December 1 to 20, 2002 E.C.

Study population: 384 Febrile out patients (those who are coming for examination and treatment with febrile illness lived and work in Addis Ababa, from randomly selected ten health centres)

Sample size 384 Febrile out patients.

Data Analysis: Data will be analyzed by using EPI-Info (3.3.2 version).

Ethical clearance will be obtained from school of public health faculty of medicine AAU and Addis Ababa City Administration Health Bureau.

Ethical committee: The result of the study will be disseminated to graduate coordinator, MOH, SCHD and other NGO.

Total cost of the project 15, 000, ETB

8.1. Introduction

Typhoid fever is a global health problem. Its real impact is difficult to estimate because the clinical picture is confused with those of many other febrile infections. Additionally, the disease is underestimated because there are no bacteriology laboratories in most areas of developing countries. These factors are believed to result in many cases going undiagnosed. On the basis of the literature (2, 3) and the incidence of typhoid fever recorded in control groups in large vaccine field trials with good laboratory support it has been estimated that approximately 17 million cases of typhoid fever and 600 000 associated deaths occur annually (4).

However, the estimates have been biased because study populations have usually been in areas of high incidence. Furthermore, these estimates of burden relate to the clinical syndrome of typhoid fever but not to *S. typhi* exposure. Since the prevalence of bacteraemia in febrile children is quite high (2_3%) in areas of endemicity it is suggested that exposure to the bacteria is higher than indicated by the figures that are based solely on the clinical syndrome of typhoid fever. The incidence of the disease in areas of endemicity may resemble the incidences observed in control groups in large vaccine field trials, viz. between 45 per 100 000 per year and over 1000 per 100 000 per year. Preliminary results from recent studies conducted in Bangladesh show an incidence of approximately 2000 per 100 000 per year.

Typhoid fever also has a very high social and economic impact because of the hospitalization of patients with acute disease and the complications and loss of income attributable to the duration of the clinical illness (5). It is important to note that reports from some provinces in China and Pakistan have indicated more cases of paratyphoid fever caused by *S. paratyphi* A than by *S. typhi*. In areas of endemicity and in large outbreaks, most cases occur in persons aged between 3 and 19 years. In 1997, for example, this age range was reported during an epidemic of the disease in Tajikistan. Nevertheless, clinically apparent bacteraemic *S. typhi* infection in children aged under three years has been described in Bangladesh, India, Jordan,

Nigeria, and elsewhere (6, 7). In Indonesia there is a mean of 900 000 cases per year with over 20 000 deaths. In Indonesia, people aged 3_19 years accounted for 91% of cases of typhoid fever and the attack rate of blood-culture-positive typhoid fever was 1026 per 100 000 per year. A similar situation was reported from Papua New Guinea. When typhoid fever was highly endemic in certain countries in South America the incidence of clinical typhoid fever in children aged less than 3 years was low. In Chile, however, single blood cultures for all children aged under 24 months who presented at health centres with fever, regardless of other clinical symptoms, showed that 3.5% had unrecognized bacteraemic infections caused by *S. typhi* or *S. paratyphi* (8).

Enteric fever had not been suspected on clinical grounds in any of the children.

In South America the peak incidence occurred in school students aged 5_19 years and in adults aged over 35 years. This kind of study has not been conducted in other areas of endemicity. 4 The diagnosis, treatment and prevention of typhoid fever

Between 1% and 5% of patients with acute typhoid infection have been reported to

become chronic carriers of the infection in the gall bladder, depending on age, sex and treatment regimen. The propensity to become a carrier follows the epidemiology of

gall bladder disease, increasing with age and being greater in females than in males. The propensity to become a chronic carrier may have changed with the present availability and selection of antibiotics as well as with the antibiotic resistance of the prevalent strains. The role of chronic carriers as a reservoir of infection was studied in Santiago, Chile, where a crude rate of 694 carriers per 100 000 inhabitants was

Case definitions of typhoid fever:

- **Confirmed case:** A suspected case with Widal test, “o” titers of 1/160 and more is very suggestive. Or with positive blood culture at the 1st week or positive stool culture at 3rd, 4th and 5th week of illness is very definitive
- **Suspected case:** Any person with gradual onset of remittent fever (rising in step ladder fashion) in the 1st week, headache, arthralgia, anorexia, constipation and abdominal pain.

8.1.1. Statement of the problem

Globally, typhoid and paratyphoid fevers account for 12.5 million cases annually, and typhoid fever continues to present considerable health problems in many developing countries. Salmonella infection is acquired from eating and drinking of infected foods and water. Salmonellae are found in many foods and drinks; both freshly prepared and stored food, and both hot and cold. Salmonella enter food service establishment on raw animal products or in the faeces and on the fingers of infected employees. Salmonella spp. Grow in food products when they are mishandled, under cooked, or re-contaminated after cooking and then allowed to remain at dangerous temperature. (15) Some of the most common causes of salmonella infections are improper cooling or refrigerated storage, improper heated storage poor food handlers hygiene, cross contamination among foods, infected food handlers, improper cooking and re heating contaminated raw ingredients unsafe and unapproved suppliers or food. Several food borne-disease outbreaks have been reported associated with poor personal hygiene food spoilage and poisoning during the production and distribution of food. Food handlers, if personal hygiene is unsatisfactory, they may cross contaminate raw and processed food stuffs or asymptomatic carriers of pathogenic organisms may contribute to the spread of disease (Walker, Pitchard, & Forsythe, 2003) in Addis Ababa the burden and impact of food borne disease is not clear and no continuous follow up and periodical medical check up among food handlers and the existence of many private clinics without standard treatment protocol make the diagnosis and treatment complicated.

8.1.2. Literature review

Typhoid fever continues to be a major public health problem in many developing countries. Its etiological agent is *Salmonella typhi*. Globally, TF is an important cause of morbidity and mortality in many regions of the world, with an estimated 12 - 33 million cases leading to 216,000 - 600,000 deaths annually (Pang et al., 1995; DeRoeck, 2007). disease is endemic to areas of Africa, India, South and Central America, characterized by rapid population growth, increased urbanization, and limited safe water(1)

The disease is transmitted through faecal-oral route via contaminated water and food, especially by food-handling carriers and human beings are the only known reservoir and host for TF (Butter, 1992). TF is of important socioeconomic impact because, most of the time, several months are necessary for a patient to recover ,Typhoid or enteric fever is an ancient disease, which has afflicted mankind since human populations grew large enough to contaminate their water and food supplies(2,3). It is caused by *Salmonella enterica* serovar typhi (previously known as *salmonella typhi*), a pathogen specific only to humans, as well as by certain non-typhoid salmonella (NTS), particularly Paratyphoid strains A, B, C. These waterborne gram negative aerobes are associated with poor sanitation and fecal contamination of water and food supplies. The syndrome needs to be distinguished from that caused by many other organisms. Today there are as many as 16-30 million cases per year, almost exclusively in the developing world, with a mortality rate of 10%. Recent developments in the mapping of the *Salmonella* genome have provided insights into its pathogenicity and how antibiotic resistance and human immunity develop. Typhoid fever is important surgically because abdominal complications such as intestinal perforation, bleeding, cholecystitis and pancreatitis represent the most serious complications of the illness. Typhoid perforation of the ileum is one of the most common causes of bowel perforation in the developing world. (5) Excellent reviews are available for both adult (2-6) as well as paediatric disease. (7) This Review will focus on recent developments in our understanding of this disease.

Typhoid fever was not well understood in the ancient world, probably because its symptoms are not primarily diarrheal, but rather systemic and non-specific. It was only in the mid-19th century that physicians began to distinguish it from typhus and malaria(8) Sir William Osler's clinical description remains unsurpassed. Typhoid fever was frequently associated with military campaigns and was a significant cause of death in the American Civil War and Boer War where deaths from typhoid exceeded those from combat. (9) With recognition that faecal contamination of food and water supplies was the main mode of transmission of the illness and measures taken to prevent these (10,11), typhoid fever has been restricted, in industrialized countries, to localized epidemics (12,13)) and infections in travellers returning from endemic areas. (14)

In contrast to that seen in the rich countries, typhoid fever remains an important cause of illness in the developing world where annual incidences in Papua New Guinea and Indonesia may reach 1200/100,000 population. A recent epidemiologic study showed that south-east and south-central Asia are the regions of highest endemicity with rates greater than 100/100,000 cases per year; the rest of Asia, Africa, Latin America, the Caribbean and Oceania (except Australia and New Zealand) are the next highest with incidence rates of 10-100/100,000 and Europe, North America and the rest of the developed world have low rates of disease. (15) Typhoid fever represents the

4th most common cause of death in Pakistan. (16)

The majority of patients, 60-90%, are treated as outpatients and, therefore, hospital based studies will underestimate true incidence. Two hospital based case-control studies from Vietnam found that risk of infection was related to recent contact with an infected person, lack of education and drinking untreated water. (17,18) *S. paratyphi A*, which normally causes about 15-20% of cases of typhoid fever in Asia, increasingly is becoming a pathogen in India (19) and China (20) possibly due to vaccination against *S. typhi*. Recent epidemiologic studies also show the rise of multi-drug resistant (MDR) organisms. (21) In a study of 1100 hospitalized children in Pakistan, the mortality rate of 1.6% was found to be related to younger age and MDR infection. (22) Traditionally the age range considered to be at greatest risk was 5-25 years. However this has been questioned in a study from a private laboratory in Bangladesh, which found that the 57% of *S. typhi* isolates were in children less than 5 years of age and 27% less than 2 years. (23) This has significant implications for vaccination policies.

8.2. Objectives of the study

To determine the prevalence of typhoid fever among febrile out patients seen in health facilities in Addis Ababa from December 1 to 20, 2010.

8.2.1 Specific objectives

- To assess the magnitude of Salmonellosis amongst out patients in health facilities of Addis Ababa.
- To determine proportion of patients infected by salmonella typhi among febrile illness of Out patients in Addis Ababa by, December, 2002 E.C
- To generate hypothesis and possible recommendation in the prevention Control and measures of Salmonellosis

8.3. Methods and Materials

8.3.1 Study Area

Addis Ababa established 119 years ago & it's located in the heart land of the country in 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 2,200-2,800 meters of altitude above sea level (1999 E.C) CSA

The total population of Addis Ababa is estimated to be 3,147,000 (1999 E.C.) of which 1,542,030 (49%) are males and 1,604,970 (51%) are females.. Religious wise 86.6% of the population is Christians (81.3 % orthodox, 3.9% protestant, 0.8% Catholic) and 12.67 % are Muslims. Among those beyond the age of 15 years, 43.9 % are married, 38.8% never married, 5.8% widowed and 9.3% are divorced

There are five regional, five FMOH, three MoD, thirty private hospitals and 27 health centers 774 private clinics which give primary, secondary and tertiary health services

8.3.2 Study Design

Facility based Cross sectional study will be conducted in ten randomly selected health centres selected in Addis Ababa,

8.3.3. Data Analysis

The data will be coded and analyzed by using CDC (EPI info, version 3.3.2) The results will present in tables in the form of frequencies.

Laboratory based

384 blood specimens will be collected from selected health centers to identify the positive result for salmonellosis by the following conditions.

- i. One laboratory technician in each health facility will be assigned
- ii. 384 blood samples will be collected within 10 days as per the routine program (96 per day) 16 for each health center
- iii. Widal and Widal test is available in selected health facilities

8.3.4. Source and study population

384 out patients according to the IDS case definition

Suspected case: Any person with gradual onset of remittent fever (rising in step ladder fashion) in the 1st week, headache, arthralgia, anorexia, constipation and abdominal pain who have the symptoms of typhoid screened and selected by the physician according to case definition (suspected cases) among different out patients

8.3.5. Sample size determination and Sampling procedure

Sample size determination

Sample size calculation: Assumption for, sample size has been calculated using the formula:

$Z = A$ confidence level of 95% is desired confidence level: conventional = 95% = 1 - α ; therefore, $\alpha = 0.05$ and $Z_{(1-\alpha/2)} = 1.96 =$ value of the standard normal distribution corresponding to a significance level of α (1.96 for a 2-sided test at the 0.05 level)

1. Precision (d) = 0.025 , plus

2. None response rate of 10%

Formula:

$$n = \frac{z^2 * p^2}{d^2} = \frac{(1.96)^2 (.50)^2}{(.05)^2} = 384$$

8.3.6. Sampling procedure

Total number of 384 out patients from all selected health facility screened by the physician and send to laboratory

Eligible individuals who have the sign and symptom of the disease according to the case definition (IDS) suspected case will be send to laboratory for widal test .

Study subjects 384 out patients those who are suspected febrile illness among out patients come for further examination and treatment

8.3.6.1 Laboratory Methods

Laboratory Diagnosis

The definitive diagnosis of typhoid fever depends on the isolation of *S. typhi* from

Blood, bone marrow or a specific anatomical lesion. The presence of clinical symptoms Characteristic of typhoid fever or the detection of a specific antibody response is

Suggestive of typhoid fever but not definitive. Blood culture is the mainstay of the diagnosis of this disease.

The diagnosis of salmonellosis requires bacteriologic isolation of the organisms from appropriate clinical specimens. Laboratory identification of the genus *Salmonella* is done by biochemical tests; the serologic type is confirmed by serologic testing. Feces, blood, or other specimens. The study aimed at felix-widal test is that almost all health centres in Ethiopia using for diagnose typhoid suspected cases at OPD .

Felix-Widal test

This test measures agglutinating antibody levels against O and H antigens. The levels

are measured by using doubling dilutions of sera in large test tubes. Usually, O antibodies appear on days 6-8 and H antibodies on days 10-12 after the onset of the disease.

The test is usually performed on an acute serum (at first contact with the patient). A convalescent serum should preferably also be collected so that paired titrations can be performed. In practice, however, this is often difficult. At least 1 ml of blood should be collected each time in order to have a sufficient amount of serum. In exceptional circumstances the test can be performed on plasma without any adverse effect on the result.

The test has only moderate sensitivity and specificity. It can be negative in up to 30% of culture-proven cases of typhoid fever. This may be because of prior antibiotic therapy that has blunted the antibody response. On the other hand, *S. typhi* shares O and H antigens with other *Salmonella* serotypes and has cross-reacting epitopes with other Enterobacteriaceae and this can lead to false-positive results. Such results may also occur in other clinical conditions, e.g. malaria, typhus, bacteraemia caused by other Organisms and cirrhosis. In areas of endemicity there is often a low background level of antibodies in the normal population.

Determining an appropriate cut-off for a positive Result can be difficult since it varies between areas and between times in given Areas. It is therefore important to establish the antibody level in the normal population in a Particular locality in order to determine a threshold above which the antibody titre is considered significant. This is particularly important if, as usually happens, a single acute sample is available for testing. If paired sera are available a fourfold rise in the antibody titre between convalescent and acute sera is diagnostic. Quality control of the test is achieved by running a standard serum with a known antibody titre in parallel in each batch of assays. The variations in the standard serum should not exceed one tube, i.e. double dilution.

Despite these limitations the test may be useful, particularly in areas that cannot afford the more expensive diagnostic methods. This is acceptable so long as the results are interpreted with care in accordance with appropriate local cut-off values for the Determination of positivity

Sample collection

Blood samples of 384 out-patient will be collected From randomly selected health facility (10 health canters namely: Arada,kolfe,gulele yeka,Akaki,woreda23,8,24, Lideta and Beletshachew) and send to their respective laboratory within one hour to the respective laboratory

4.11. Study variables

Dependent variables

Positive result blood sample for Widal test among febrile out patients for salmonellosis

Independent variable

- Socioeconomic variables
- Socio cultural variables

➤ Educational level of outpatients

4.12. Inclusion and exclusion criteria

Patients residing in Addis Ababa and presenting to a treatment facility with fever lasting 3 days will be eligible to participate in the study.

- A patient with fever (38°C and above) that has lasted for at least three days
- Unselected populations of sick children less than five years of age.
- Selected groups/populations of children above five years of age or adults with specific criteria for Inclusion into the study, for example investigation of only those with prolonged fever and a clinical diagnosis of possible typhoid fever.
- Patient meets the clinical case definition of typhoid fever.
- The onset of symptoms falls within three days.

8. 4.Operational Definition

A **carrier** is an asymptomatic person who sheds typhoid bacteria from stool or urine, occasionally from wound, tissues, and organs. There is a higher incidence in older women.

Chronic Carrier: Sheds typhoid bacilli for more than 12 months after onset of acute illness; or has no history of typhoid fever or had the disease more than 1 year Previously, but has two feces or urine cultures positive for *S. typhi* separated by 48 hours.

Convalescent Carrier: Sheds typhoid bacilli for 3 or more months after onset bacilli for 3 or more months after onset of acute illness

Other Carrier: Typhoid bacilli have been isolated from surgically removed tissues, organs, or from draining lesions.

Communicability: As long as patient sheds typhoid bacilli.

Cross-contamination: Pathogens naturally present in one food may be transferred to other foods during food preparation if the same cooking equipment and utensils are used washing and disinfecting in between. If the foods are ready-lead to illness. '

Fecal-oral route of transmission describes the ingestion of stool from an infected person or animal through food, water, or direct contact.

Food borne infections are caused by consuming foods or liquid viruses, or parasites. These pathogens cause infection in one of two ways:

Invading and multiplying in the lining of the intestines and/or other tissues

Food borne intoxications are caused by consuming foods or with a toxin. Sources of toxins are as follows:

Certain bacteria. (Note: Viruses and parasites cannot cause intoxications.) Poisonous chemicals.

Incubation period refers to the interval from the time an individual is infected.

Recovery period refers to the period when symptoms decline and illness improves.

Reservoir: Human (intestine, possibly gallbladder, kidney or wound).

Source: Feces and urine of infected person

Transmission: Direct or indirect contact with contaminated feces or urine. to the time when symptoms first appear.

Kebele; is the smallest administrative unit under governmental administrative structure

8. 5.Ethical Considerations

Ethical clearance will be obtained from the respective school of public health, FOM, and AAU ethical committees A formal letter will also be submitted to all the concerned bodies to obtain their co-operation. All participants' right to self-determination and autonomy will be respected. They will be given any information they needed, verbally and in writing. Participation will be voluntary and they can withdraw from the study at any time without explanation and without penalty or loss of benefit. The autonomy of each participant will be assured unless they needed assistance in filling out the questionnaire. In such cases, confidentiality will be assured and no personal details will be recorded or produced on any documentation related to the study

8.6. Dissemination of the result

After the research paper is approved by the advisor and other responsible bodies of the AACAHB,SCHD, FMOH,SPH, EFELP of AAU, it will be disseminated to the graduate coordinator of the department, MOH, and to those governmental (MOH, AACAHB, of different levels) and non governmental organizations that potentially could benefit from the study.

8.7. Tentative work plan

Table 1: showing tentative work plan of the project July, 2002 E.C.

S.No	Activity	August	September	October	November	December	January
1	Proposal phase						
1.1	Selection of research title						
1.2	Writing the draft of research proposal						
1.3	Amending the proposal as per the comments of the advisor.						
1.4	Submitting the approved proposal to the graduate coordinator of DCH						
2	Research phase						
2.1	Collecting letter of clearance & other supportive letters from research and publication committee						
2.3	Training of the data collectors /supervisors						
2.4	Pretesting of the questionnaire						
2.5	Data collection						
2.6	Stool sample will be taken						
2.7	Data entry, cleaning, and analysis						
2.8	Write up of the research draft						
2.9	Amending the re-						

	search paper as per the comments of the advisor						
2.10	Submitting the approved research paper to the DCH						
2.11	Defending the approved research paper						
2.12	Finalizing and submitting the approved research paper after incorporating the comments						

8.8. Budget

Activity break down	Inputs required					Cash requirement by month					Remark
	Unit of measurement	Qty	Unit price	Duration in days	Total cost	August	Sept	October	November	December	
Training											
Per diem											
Supervisors	Number	2	50birr/day	1days	100			200	-	-	
Data collectors	„	24	50birr/day	1day	1200			2000	-	-	
For lab tech at regional level	“	4	50birr/ day	1day	200			400			
Refreshment											
Tea/coffee	Cups	24	3.5birr/cup	1day	150			150	-	-	Morning
Tea/coffee	Cups	24	3.5birr/cup	1day	150			150	-	-	Afternoon
Soft drinks	Bottle	24	5birr/bottle	1day	240			240	-	-	Morning
Cookies	Kg	4kg	100birr/kg	1day	160			160	-	-	
Stationary											
Note book	Number	20	8birr	-	100			100	-	-	
Pen	Number	20	1.5birr	-	30			30	-	-	
Subtotal					2,330			2,330	-	-	
Pre-testing											
Per diem											

Supervisors	Number	2	50birr/day	1 day	200				100	-	
Data collectors	Number	10	50Birr/day	1 day	500				1000	-	
Principal investigator	Number	2	50birr/day	1 day	100				200		
Photo copy of the questioner	Number		50cents/page	-	1350				1350	-	
Subtotal					2,150				2,150	-	
Data collection											
Perdiem											
Supervisors	Number	2	50birr/day	4 days	400			800	-	-	
Data collectors	Number	24	50birr/day	4days	4800			5600	-	-	
Principal investigator	Number	2	50/day	4days	400			1600	-	-	
Sub total					5,600			5,600			
Stationary and supplies											
Printing	Page		2birr/page	-	500			500	-	-	
Photo copy of the questioner	Page	3800	50 cents/page	-	1900			1900	-	-	
Pencil	Number	24	1birr	-	20			20	-	-	
Eraser	Number	24	1birr	-	20			20	-	-	
Sharpener	Number	24	1birr	-	20			20	-	-	
Subtotal					2,460			2,460			
Data analysis & Documentation											
Secretary	Number	1	50birr/day	4days	200			400	-	-	
Data entry clerk	Number	1	50Birr/day	4 days	200			1,000	-	-	
First draft Printing	pages	2x50	1 birr/page	-	200		-	200		-	
Final draft	Pages	1000	2birr/pages	-	1300		-	2000	-		
Binding	Number	30	20birr	-	600		-	600	-		
Subtotal					2,400			2,400			
Total cost											
Grand total					15,000						

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ANNEX I Questionnaire

Part I: - Socio- Demographic Characteristics of the Respondent

No	Questions	Responses	Code	Skip
101	Respondents -----	years _____ sex _____		
102	What is your ethnicity?	1. Oromo 2. Amhara 3. SNNPR 4. Tigray 5. Other, specify _____		
103	What is your religion?	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Traditional 6. Other, specify		
104	Education status of respondent	1. Illiterate (can't read & write) 2. Can read and write (no formal grade) 3. Elementary school (1-6) 4. Junior high school (7-10) 5. Preparatory school (10-12) 6. Higher education		

105	What is your main occupation?	<ol style="list-style-type: none"> 1. Government/ employee 2. Mass org. employee 3. Self employee 4. Student 5. Daily laborer 6. Merchant 7. Pension 8. NGOs. Employee 9. Other, specify _____ 		
106	Marital status	<p>_____ 1 single</p> <p>_____ 2. married</p> <p>_____ 3 divorced</p> <p>_____ 4. other, specify</p>		
107	How many years have you live in this area	1 If less than 6 months stop interview		STOP

II Economic status

No	Questions	Responses	Code	Skip
201	What is your monthly Income Birr	<ol style="list-style-type: none"> 1. _____ Birr per month estimate 2. No response 3. no any income 		

ANNEXII DUMMY TABLES

Table 1 Socioeconomic and demographic characteristics of out patients who are positive for salmonellosis in Addis Ababa health facilities October,2010

Respondent		
Variables	Frequency	%

Age/year		
18-30		
31-40		
41-50		
51-64		
Mean age SD		
Ethnicity		
Oromo		
Amahara		
Tigray		
Benshangul		
Afar		
Sumali		
Adere		
Dorze		
Wolayta		
Sidama		
Gurage		
Gammo		
Siltie		
Others		
Religion		
Protestant		

Orthodox		
Catholic		
Muslim		
Traditional		
Other specify		
Educational status		
Illiterate		
Read and write		
Junior high school(7-10)		
Secondary high school(10+12)		
diploma and above		
Occupation		
government		
Private		

Table 8.1 Socio demographic characteristics positive result for widal test

Result		
Variables	No	%
Age		
1-9		
10-19		
20-30		
31-40		
41-50		
51-64		
Religion		
Protestant		
Orthodox		
Catholic		
Muslim		
Others		
Education		
Illiterate		
Read and write		
Junior high school(7-10)		
Secondary high school(11-12)		
Higher education		

Responsibility		
On Food preparation		
catering		
store		
marketing		
other		

Table 8.2. Total number, percentage of positive Widal test by health facility

Name of health facility	Total number of OPD cases	Total number of febrile cases screened	%of widal testnegative cases	%of widal test positive cases

Table.8.3. Proportions of out patients by laboratory result(widal test) by age

Age	Total number of out patients examined	Total number of febrile illness patient screened	%Widal testPositive	% Wi-dal negative	Proportion of widal positive among screend
0-9					
10-19					
20-29					
30-39					
40-49					
50-59					
>60					

Table 8.4.Laboratoryresult by Age distribution among screened female out patients

Female	Total number of screened	Widal testpositive	Widal test negative	Proportion of widal positives
0-9				
10-19				
20-29				
30-39				
40-49				
50-59				
>60				

Table 8.5 .Laboratory result by Age Distribution among screened male out patients

Male	Total number of screened	Widal testpositive	Widal test negative	Proportion of widal positives
0-9				
10-19				
20-29				
30-39				
40-49				
50-59				
>60				

Table 8.6.Distdibution of Laboratory result By Educational status

Educational level	Widal testpositive	Widal test-negative	% of widal positives
Illiterate			
Read and write			

Junior high school(7-10)			
Secondary high school(10+12)			
Diploma and above			

Table 8.7. Proportions of laboratory result (widal test) by occupation

Type of occupation	Widal testpositive	Widal test-negative	% of widal positives
Governmental			
Private			
Un employed			

Conditions to be used in the health centres and hospitals

I. Immediately Reportable			
No	Disease/ condition	Standard Case Definition	
		Suspected	Confirmed
1	Acute Flaccid Paralysis	Any child under 15 years of age with acute flaccid paralysis (AFP) or any person with paralytic illness at any age in whom the clinician suspects poliomyelitis.	A suspected case with wild poliovirus isolation in stool.
2	Anthrax	<p>Any person with acute onset characterized by several clinical forms which are:</p> <p>(a) localized form:</p> <ul style="list-style-type: none"> • coetaneous: skin lesion evolving over 1 to 6 days from a popular through a vesicular stage, to a depressed black eschar invariably accompanied by edema that may be mild to extensive <p>(b) systemic forms:</p> <ul style="list-style-type: none"> • gastro-intestinal: abdominal distress characterized by nausea, vomiting, anorexia and followed by fever • pulmonary (inhalation): brief prodrome resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnoea and high temperature, with X-ray evidence of mediastinal widening • meningeal: acute onset of high fever possibly with convulsions, loss of consciousness, meningeal signs and symptoms; commonly noted in all systemic infections <p>And has an epidemiological link to confirmed or suspected animal cases or contaminated animal products.</p>	A suspected case that is laboratory-confirmed with ELISA or Western blot, toxin detection, chromatography assay, fluorescent antibody test

3	Avian Human Influenza	<p>Any person presenting with unexplained acute lower respiratory illness with fever (>38⁰C) and cough , shortness of breath or difficulty of breathing. And one or more of the following exposures in the 7 days prior symptom onset.</p> <ol style="list-style-type: none"> Close contact (within 1 meter) with a person (e.g. caring for, speaking with, or touching) who is a suspected, probable, or confirmed H5N1 case; Exposure (e.g. handling, slaughtering, defeathering, butchering, preparation for consumption) to poultry or wild birds or their remains or to environments contaminated by their feces in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month; Consumption of raw or undercooked poultry products in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month; Close contact with a confirmed H5N1 infected animal other than poultry or wild birds; Handling samples (animal or human) 	A person meeting the criteria for a suspected case and positive results in a national and regional influenza laboratory.
4	Cholera	<ul style="list-style-type: none"> In a patient age 5 years or more, with severe dehydration or death from acute watery diarrhoea. If there is a cholera epidemic, a suspected case is any person age 5 years or more with acute watery diarrhoea, with or without vomiting. 	A suspected case in which Vibrio cholera O1 or O139 has been isolated in the stool.
5	Dracunculiasis / Guinea worm	An individual exhibiting a skin lesion or lesions with emergence of one or more Guinea worm (each individual should be counted only once in a calendar year)	

6	Measles	Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) OR any person in whom a clinician suspects measles.	A suspected case with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed cases in an epidemic.
7	Neonatal Tetanus	Any newborn with a normal ability to suck and cry during the first two days of life, and who, between the 3 rd and 28 th day of age, cannot suck normally, and becomes stiff or has convulsions or both	
8	Pandemic Influenza A (H1N1)	A person with acute febrile respiratory illness: fever, cough, sore throat, shortness of breath, difficulty in breathing or chest pains) with onset: <ul style="list-style-type: none"> • within 7 days of close contact with a person who is a confirmed case of the new influenza A (H1N1) virus infection 	An individual with laboratory confirmed new influenza A(H1N1) virus infection by real-time RT-PCR
9	Rabies	A person bitten by suspected rabid dog and presented with fever, , nausea, vomiting, agitation, pharyngeal spasms (hydrophobia/ aerophobia)	A suspected case confirmed by lab.
10	Smallpox	An illness with acute onset of fever $\geq 38^{\circ}\text{C}$ followed by a rash characterized by vesicles or firm pustules in the same stage of development without other apparent cause.	A suspected case with laboratory confirmed
11	Severe Acute Respiratory Syndrome (SARS)	Any person with history of fever, or documented fever $\geq 38^{\circ}\text{C}$ AND <ul style="list-style-type: none"> • One or more symptoms of lower respiratory tract illness (Cough, difficulty of breathing, shortness of breath) And • Radiographic evidence of lung infiltrates consistent with pneumonia or autopsy findings consistent with pathology of pneumonia or ARDS (Acute Respiratory Distress Syndrome) without an identifiable cause And • NO alternative diagnosis can fully explain the illness. 	A suspected case whose tests positive for SARS-Cov (cell culture)

12	Viral Hemorrhagic Fever (VHF)	Illness with onset of fever and not showing improvement to treatments of usual causes of fever in the area, and at least one of the following signs: bloody diarrhea, bleeding from gums, bleeding into skin (purpura), bleeding into eyes and urine.	A suspected case with laboratory confirmation (positive IgM antibody or viral isolation), or epidemiologic link to confirmed cases or epidemic.
13	Yellow fever	A person with acute onset of fever followed by jaundice within two weeks of onset of first symptoms. Hemorrhagic manifestations and renal failure may occur	A suspected case with laboratory confirmation (positive IgM antibody or viral isolation) or epidemiologic link to confirmed cases or epidemics.
II. Weekly Reportable			
1.	Dysentery	A person with diarrhea with visible blood in stool.	Suspected case with stool culture positive for <i>Shigella dysenteriae</i> 1.
2.	Malaria	Any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria.	A suspected case confirmed by microscopy or RDT for plasmodium parasites.
3.	Meningitis	Any person with sudden onset of fever (>38.5 ⁰ C rectal or 38 ⁰ C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal sign.	A suspected case confirmed by isolation of <i>N. meningitis</i> from CSF or blood
4.	Relapsing fever	Any person presented with an abrupt onset of rigors with fever, usually remittent, headache, arthralgia and myalgia, dry cough, epistaxis	A suspected case with demonstration of <i>Borrelia</i> in peripheral blood film
5.	Typhoid fever	Any person with gradual onset of remittent fever (rising in step ladder fashion) in the 1 st week, headache, arthralgia, anorexia, constipation and abdominal pain.	<ul style="list-style-type: none"> ▪ A suspected case with Widal test, “o” titer of 1/160 and more, is very suggestive, ▪ A suspected case with positive blood culture at the 1st week or positive stool culture at 3rd, 4th and 5th week of illness is very definitive

6.	Typhus	Any person with an abrupt onset of headache, chills and rapidly mounting fever, malaise, prostration and rash.	A suspected case with Weil-Felix reaction of the proteus strain OX-19 with fourfold rise in titer, or a single titer equal to or greater than 320 in the second week of illnesses.
7.	Severe Acute Malnutrition	Children age from 6 months to 5 years with MUAC less than 11cm and/or children with bilateral oedema regardless of their MUAC	Children with MUAC less than 11cm and/or children with bilateral oedema regardless of their MUAC

Annex V

Annex 1. List of priority Disease in Ethiopia, 2002 E.C

List of Priority Diseases in Ethiopia
Epidemic-Prone Diseases
Cholera
Diarrhea with blood (Shigella)
Measles
Meningitis
Plague
Viral hemorrhagic fevers
Yellow Fever
Typhoid Fever
Relapsing Fever
Epidemic Typhus

Malaria
Diseases Targeted for Eradication and Elimination
Acute flaccid paralysis (AFP)/polio
Dracunculiasis (Guinea Worm)
Leprosy
Neonatal tetanus
Other Diseases of Public Health Importance

ANEX VI.PHEM: List of Immediately and weekly reportable diseases, as of 2001 E.C

Immediately reportable diseases
1. Acute Flaccid Paralysis
2.Antrax
3.Avian Human Influenza
4.Cholera
5.Dracunculiasis (Guinea worm)
6.Measels
7.Neonatal Tetanus
8.Pandemic Influenza
9.Rabies
10.Severe Acute Respiratory Syndrome(SARS)
11.Small Pox
12.Viral Hemorrhagic Fever
13Yellow Fever
WEEKLY REPORTABLE
1.Dysentery
2.Malaria
3.Meningitis
4.Relapsing Fever
5.Typhoid Fever
6.Typhus
7.Malnutrition

Annex. VII Part I Questionnaires for Regional Health Bureau ,focal person

date of visit_____

1. profession_____ position _____ sex_____
2. Are you trained on PHEM/ IDS/Surveillance in the last one year? Yes
No
3. If yes date and year of training _____ topics_____ Duration _____
4. Did your office trained the sub cities focal persons in the last one Year Yes
No
5. Do you have skills to analysis data using computers? Yes
No
6. Is the PHEM instituted at your office Yes
No
7. Number of Staffs at Regional PHEM by level of education-----
8. Is PHEM instituted at Sub city level Yes
No

if yes number of staffs at each sub city-----

9. Do you have National guide line on the IDS/PHEM Yes No If yes check the availability
10. Do you have case definitions for all diseases under surveillance Yes No If yes check the availability
11. Do you have case reporting format/hard or soft copy Yes No
12. Is data's are compiled Yes No
13. What is the data entry and compilation instrument computer Manual
14. Please check your ability in computer usage MS word Xcell Epiinfo
Others _____
15. Do you have data base for the disease under surveillance Yes No
16. Please indicate the frequency of your data analysis weekly monthly
quarterly yearly
17. Are you giving feedback for sub cities Yes
No
18. If Question # 17 is yes describe frequency and methods used-----

19. If Question # 17 is no, describe the reason-----

20. Do your office-section(PHEM) has (tick√) Telephone Fax Internet con-
nection
21. Are the sub city Health officers trained Yes No if yes number of
trained staff by sub city-----
22. For whom are you reporting the routine surveillance data? PHEM/national City
Admin council WHO I don't know
23. Is the overall data collection, data compilation and reporting complicated? Yes
No

24. If Question #23 is yes, please elaborate it _____
25. What changes do you suggest to make the surveillances simple and effective _____
26. Where is lab confirmation done? Regional lab Hospitals Health centers
 contracted Private Lab
27. Do Regional PHEM have designated Car for its activity ? Yes No
- If no describe the usage mechanism.....
28. How frequent are you communicating with the sub city (tick✓ the Wright answer) ?
 Every day Once in a wk every 2 wks No regular time frame
29. Do regional PHEM has annual budget, for communication, response etc
 Yes No if yes how much birr allocated for the year2010.....
30. Do your office/PHEM/ has multi sectoral Emergency P & Response Task force?
 Yes No if yes see the minute.....
31. Is there preparedness and response plan Yes No if yes, check
32. In what frequency did the task force meets during outbreaks -----

33. Are health partners working together with AA RHB on emergencies Yes No
,If yes who are the major partners.....
34. Is AA has more additional concern apart from the National Disease under surveillance
Yes No
35. If yes, what disease is a threat for AA public _____
36. Did you change or have a plan to change the number of Disease under surveillance for AA Yes No
37. Did the Bureau heads and the city Administration head uses the generated data for the action Yes No if yes give one example
38. Number of reporting Health facilities expected to report weekly by sub cities(as of 2010)
39. Total weekly sub cities reports received (included late reports

WHO Epid wk	Subcities									
	Arada	Addis Ketema	kirkose	Lideta	Kolfe Keraniyo	Gulelle	Nifase Slk lafto	Yeka	Akaki Kaliti	Bole
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
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28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										

40. Number of HF reporting by wk Fill the table below

WHO Epid wk	Number of Health facilities reported	
	<i>Governmental HF</i>	<i>Non Governmental HF(Private,Ngos and Others)</i>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
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32		
33		
34		
35		
36		

41. Did you responded to outbreaks in the past 9 months Yes

No

If yes Type of epidemics/outbreaks detected and responded in the last 9 months (Fill table#-----)

Type of the outbreak	Date of onset	Date of report reached at RHB	Date of Outbreak investigation	Report sent to the next level/PHEM,	Date of Partners notification	Date of joint response initiated	Date of outbreak cotroled

42. Do you have supervision plan? Yes No If yes check for the plan
43. When are you expected to send weekly surveillance report to National PHEM?-----

44. When are you expecting weekly reports from sub city?-----

45. When is the wereda expecting weekly surveillance reports from HF-----

46. List the Regional lab capacity of conducting the lab investigation among the 20 identified priority diseases
47. What is the regional lab constraints Trained human resource consumables/reagents Lab instruments and working cabinet No specimen coming
48. What will you suggest to improve the regional lab capacity_____
49. What major challenges/constraints in the implementation of IDS did you face for the 9 month?_____
50. What was your Possible solutions_____
51. What was your Strengths?_____
52. What was your Weaknesses?_____

Annex .VII Sub city Level

Name of sub city_____ date of visit_____

1. position _____ profession _____ sex _____
2. Do you have address of the Regional, wereda's PHEM office/staffs Yes No if yes check some
3. Are you trained on PHEM/ IDS/Surveillance in the last one year? Yes No
4. If yes date and year of training _____ topics _____ Duration

5. Did your office trained the wereda/HF focal persones in the last one Year Yes
No
6. Do you have skills to analysis data using computers? Yes No
7. Number of Staffs at subcity PHEM by level of education-----
8. Is PHEM instituted at Sbucity level Yes No if yes number
of staffs at each subcity
9. Do you have National guide line on the IDS/PHEM Yes No If yes check the
availability
10. Do you have case definitions for all diseases under suveilance Yes No If yes
check the availability
11. Do you have SOPs for the diseases to be monitored Yes No
12. Do you have case reporting format/hard or soft copy Yes No
13. Is data's are compiled Yes No
14. What is the data entry and compilation instrument computer Manual
15. Do you have computer Yes No
16. If Question # 14 is yes,Please check your ability in computer usage MS word
Xcell Epiinfo Others
17. Do you have data base for the disease under surveillance Yes No
18. Please indicate the frequency of your data analysis weekly monthly
quarterly yearly
19. Are you giving feedback to the wereda Yes No
20. Were you received feed back from Regional Health Bureau Yes No if yes de-
scribe the regularity _____
21. If Question # 16 is yes describe frequency and methods used-----

22. If Question # is no, describe the resone-----

23. Do your office-section(PHEM) has (tick√) Telephone Fax Internet
connection
24. Are the sub city Health offices trained Yes No if yes number of
trained staff by sub city (consult Table #)
25. Whom are you reporting the routine surveillance data PHEM/national City
Admin council WHO I don't know
26. Where is lab confirmation of cases conducted Regional lab Hospitals
Health centers contracted Private Lab
27. Do the subcity PHEM have designated Car Yes No (de-
scribe the usage mechanism)
28. How frequent are you communicating with the wereda (tick√ the wright answer) ?
Every day Once in a wk every 2 wks No regular time frame
29. Do the subcity PHEM has annual budget, for communication, response etc
Yes No if yes how much in bir
30. Do your office/PHEM/ has multi sectoral Emergency P & response Task force?
Yes No if yes see the minute
31. Is there prepadenes and response plan Yes No if yes,check
32. In what frequency did the task force meets during outbreaks -----

33. Are health partners working together with AA RHB on emergencies Yes No
 ,If yes who are the major partners
34. Did the Subcity Health office head and the Admin head uses the generated data for the action Yes No if yes give one example
35. Number of reporting Health facilities expected to report weekly by the wereda(as of 2010)
36. Weekly Wereda reports received on time for the last nine month by who epid wk (jan—September,2010) Fill yes or No

WHO Epid wk	Wereda/Zone									
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
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32										
33										
34										
35										
36										

37. Total wekly wereda HO reports received (included late reports)

WHO Epid wk	Wereda/Zone									
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
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30										
31										
32										
33										
34										
35										
36										

38. Are you giving feedback to the Wereda HO based on the weekly reports Yes
No If yes check for the feed back

39. Do you have supervision plan Yes No If yes check for the plan

40. Do you have a checklist for regular supervision plan Yes No
If yes check for the checklist

41. Were you supervised by AA RHB in the past one year plan Yes No

42. Do you monitor the surveillance indicators plan Yes No

43. If _____ answered _____ for # _____ 43 is
no, why _____
44. Do you analyze data for all health facilities by time, place person Yes
 No If yes ,check last analysis result
45. When are you expected to send weekly surveillance report to Regional?-----

46. When are you expecting weekly reports from wereda?-----

47. When is the wereda expecting weekly surveillance reports from HF-----

48. How is the wereda communicating/notifying the subcity PHEM in case of immediately reportable diseases telephone fax regular weekly report
49. How is the sub city communicating/notifying the regional PHEM in case of immediately reportable diseases telephone fax regular weekly report
50. Explain what have been the major obstacles in submission of data.....
51. Does the sub city monitor the timelines/completeness of the wereda reports? Yes
 No. If yes check the knowledge. If no describe the resone
52. Did you send a summary or a short report to the administrative/program leaders addressing important issues at the Community level that have arisen through the surveillance? Yes No

If yes to who do you sent? _____

53. Do you had report of epidemic during last one years? Yes No not
awared of
54. If question number 53 is yes ,Fill table

Type of the outbreak	Date of onset	Date of report reached at RHB	Date of Outbreak investigation	Report sent to the next level/PHEM,	Date of Partners notification	Date of joint response initiated	Date of outbreak cotroled

55. Does the sub city analysis surveillance report? Yes No
56. If Question Number 58 is yes List Minimum analysis is performed in the past 9 months-----
57. Did you send a summary or a short report to the administrative/program leaders addressing important issues at the Community level that have arisen through the surveillance? Yes No

If yes to who do you sent? _____

58. Who have authority to mobilize emergency finance, emergency stocks of drugs and supplies at all times during the last 12 months? The sub city Head The sub city Health office Head Expert
59. Who is investigating outbreaks Rapid Response Team Staffs of the Sub city Experts organized randomly Regional Health office

60.. Have laboratory capacity within the woreda/zone/region that can confirm suspected cases of priority diseases Yes No

61.What major challenges/constraints in the implementation of IDS did you face for the 9 month?_____

62,What was your Possible solutions_____

63.What was your Strengths?_____

64.What was your Weaknesses?_____

Annex .IX Check list for collecting timeliness and completeness of reporting for the last 6 months, 2001 E.C

SNo	Name of Health facility in the district	Date of reports arrived at district					
		January	February	march	April	may	June
1							
2							
3							
4							
5							
6							
7							
8							
9							

Annex .X Health facility Level

Name of Health Facility_____ date of visit_____

1. Name of respondent profession_____ position _____
2. Do you have address of the Regional, sub-cities ,wereda's PHEM office/staffs Yes
No if yes check some
3. Are you trained on PHEM/ IDS/Surveillance in the last one year? Yes
No
4. If yes date and year of training _____topics_____ Duration
5. What is your major duty?_____
6. Do you have skills to do minimum analysis data ? Yes No
7. Are Staffs of the HF oriented on the surveillance Yes No
8. Do you have National guide line on the IDS/PHEM Yes No If yes check the availability
9. Do you have Standard case definitions for all diseases under surveillance Yes No
If yes check the availability
10. Do you have SOPs for the diseases to be monitored Yes No
11. Is case definitions posted Yes No check
12. Do you have reporting formats/hard or soft copy Yes No
13. What frequency of IDS reports are you expected by the sub-city/wereda immediately
weekly Monthly quarterly
14. Is data's are compiled Yes No
15. What is the data entry and compilation instrument computer Manual
16. Do you have computer Yes No
17. If Question # 14 is yes ,Please check your ability in computer usage MS word X
cell Epi infoOthers
18. Are all data recorded on registration and logbook gets completed? Yes No
19. Are data entry procedures simple and easy to use? Yes No
20. If answer for Question 19 is no, describe it_____
21. When are you compiling/Entering data Daily weekly monthly
22. How long it takes you to Compile/enter daily data on average < 1 hour 1-2 hours
>2 hours
23. Do you have data base/folder for the disease under surveillance Yes No
24. Please indicate the frequency of your data analysis weekly monthly
quarterly yearly
25. Were you received feed back from Wereda/Subcity Yes No if yes describe the re-
gularity _____
26. Do your HF have and using the mentioned facility (tick√) Telephone Fax
Internet connection
27. Whom are you reporting the routine surveillance data Regional Health Bureau
Subcity City Admin council Wereda/Kebele HO I don't know
28. Is Lab facility available for at HF for confirmation of cases Ex Malaria,RF,TF yes
 No

29. How frequent are you communicating with the Subcity/wereda (tick✓ the wright answer)
 ? Every day Once in a wk every 2 wks No regular time
 frame

30. Weekly HF reports sent on time for the last nine month by who epid wk (jan—
 September,2010) Fill yes or No

WHO Epid wk	Yes	No
1		
2		
3		
4		
5		
6		
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10		
11		
12		
13		
14		
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36		

31. Indicate weekly your HF reports sent (including late reports) Fill yes or no

WHO Epid wk	Yes	No
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
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36		

32. Are you receiving feedback from Subcity HO based on the weekly reports Yes

No If yes check for the feed back

33. Number and type of epidemic detected with in 24-72 hours (Fill table #-----)

34. Were you supervised by Subcity in the past one year Yes No

35. Do you analyze data at your level by time, place person Yes No If yes, check last analysis result
36. When are you expected to send weekly surveillance report to Subcity?-----
37. How are you communicating/notifying the subcity PHEM in case of immediately reportable diseases telephone fax regular weekly report
38. Explain what have been the major obstacles in submission of reports.....
39. Do you had report of epidemic /case buildup during last one years? Yes No not aware of
40. Are you performing analysis surveillance report? Yes No
41. If Question Number 35 is yes List Minimum analysis is performed in the past 9 months----

42. Is your HF participating in outbreak investigation? yes No I don't know
43. How many times were you supervised by subcity/wereda in the last 9 months
44. If you were supervised Did you received feedback based on the supervision?

yes No

45. Total hours required to record, collect, report and analysis of disease specific data?

46. Are the data entered in a timely manner? Yes No

Availability of Surveillance Documentation, Registers, and Forms(case detection)

47. Do you Have standard case definition? Yes No

47. Is the case definition posted? Yes No

47.2. Is there any outbreak occur by the last 9 month? Yes No

47.3. If yes, the number of reported outbreaks per year to sub city_____

Check data of date of onset & reported

Date of onset__ date of detected_____ confirmed _____ controlled____

“ “

48. Has the start of investigation ever been delayed beyond the recommended period in the past nine month? Yes No

49. Has the health center had a 2 months' supply for any outbreak at all times in the past 9 months?

Yes No

50. Did used analyzed data result in a management decision and response action in the past 9 months?

Yes No

If yes for what purpose did you use in the past 9 months

Useful for epidemic detection Yes No

useful to evaluate and monitor program Yes No

Useful for planning Yes No

Used for to monitoring disease trends Yes No

What major challenges/constraints in the implementation of IDS did you face for the 9 month? _____

51. What was your Possible solutions _____

52. What was your Strengths? _____

53. What was your Weaknesses? _____

54. Number of Health facilities with: transportation or logistical supports (vehicles with fuel, motor cycles) _____

54. Number of health facilities with supplies for carrying out data management (computers, statistical program package) Yes No

55. Health facilities with communication methods (reliable telephone service, facsimile, radio- phone, electronic mail) _____

56. Health facilities with human resources (trained IDSR focal person, laboratory technologists, data managers) _____

58. Are appropriate supplies available for responding to a confirmed case or epidemic?
 Yes No

Please list the supplies for carrying out a recommended response.

59. How often do you provide information and training in epidemic response to the _____

Annex IV CV/resume of Field Epidemiology Resident

CURRICULUM VITAE

PERSONAL DATA

Name	Mesafint Alebachew Negash
Place of birth	Gander
Date of birth	June 12,1967 G.C
Marital Status	Married
Nationality	Ethiopian
Sex	Male
Address	Woreda 8 Keble 7 House No. new(Kolfe keraniyo) sub city
	Mobile phone 0911 425255 home, 0113722195

EDUCATIONAL BACKGROUND

Elementary School 1974 - 1978 G.C Theodor's II

Elementary and Addis Zemen elementary School , Gondar, Ethiopia

High School 1979 - 1982 G.C Fasiledes Comprehensive 2nd School Gondar, Ethiopia.

Tertiary 1983 -1985 G.C Black lion Nursing school

Addis Ababa, Ethiopia, Diploma in Nursing

2001-2003 G.C Gander University, 1st Degree in public health and resident AAU, Medical Faculty SPH 2nd Degree, MPH, field Epidemiology since 2009,

QUALIFICATION

First degree in public Health and 2nd degree in Field

TRAINING

-Health education and communication

Tuberculosis and leprosy control program

Control of diarrhoea diseases in under 5 children

- Training on management of the young child with acute respiratory infections

- EPI Training course (mid level &periphery level)

- Research methodology

- Monitoring &Evaluation

- Project Management, formulation, implementation, M&E

- Surveillance

- Computer

EXPERIENCE

Nurse 1984 (Oct) - 1986 (Aug) Maji Nurse & 1987 (Sep.) - 1988 (Jan) Jimma hospital & Jimma health center

Nurse 1987 (Dec) - 1988 (Feb) war front (Eritrea)Hospital

Nurse 1988(MAR)-1988(Apr) rest

Nurse 1988 - (May) - 1990 (may Jimma Hospital

Nurse, 1990 - (June) - 1996 (Dec) higher 25 health Center Addis

Ababa, Ethiopia

Head nurse, July, 1997--Jan, 1999) Etagemesk, clinic, Addis Ababa, Ethiopia

EPI, Disease Prevention & control coordinator, Zone two Health Department (Feb, 1999-Feb, 2000)

Gondar University (April, 2000-July 2003)

AA city Administration Health Bureau Planning & Programming service and Senior Expert & Environmental health, Team leader (August, 2003-August, 2008)

LANGUAGE

Amharic and English

REFERENCE

1. Dr. Ayshesme Ademe (WHO, EPI, officer) 09 13 08 93 09
2. Fantu Tsegaye Head, AA Health Bureau 0911 74 83 27
3. Dr. Myllion Wondabeku, PHEM 09 11 00 52 19
4. Wolderufael Dirar, Process owner

11 5 513911./0911663611 AA health bureau

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: **Mesafint Alebachew**

Signature: _____

Place: Addis Ababa University, Medical Faculty

Date of Submission: _____

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

Name of advisor: _____

Signature: _____

Date: _____