Expanded Program on Immunisation (EPI)

Infant mortality and under five mortality rates in Ethiopia are among the highest in the world. Diarrhoeal diseases, vaccine preventable diseases (VPDs) and malnutrition are responsible for a majority of childhood deaths in Ethiopia.

The Expanded Program on Immunisation (EPI) started in Ethiopia in 1980 with the intention of increasing the immunisation coverage by 10% annually and reach 100% coverage in 1990. At this point, the immunisation coverage figures vary largely between regions, from more than 80% DPT_3 coverage in Tigray to less than 5% in Somali and Afar regions, resulting in a national DPT_3 coverage of about 50% (DPT_3 = 3 doses of diptheria, pertussis and tetanus). The long-term goal of the Ministry of Health EPI Strategy is to achieve 90% DPT_3 coverage in all regions.

Ethiopia is a very diverse country, with a need for development of specific strategies for reaching each area. By the implementation of new approaches called Reaching Every District (RED) and Sustainable Out-reach Services (SOS), the present target is to increase the coverage in certain priority areas by 10% and in others by 5%, giving a total national immunisation increase of 6% in a year. The objective set in 1980 was not met because of factors such as poor health infrastructure, low number of trained manpower, high turn over of staff and lack of donor funding. The same factors still affect the program today.

The EPI program is run by the Ministry of Health (MoH) in close cooperation with WHO, UNICEF and other partners and implemented in each region by the Regional Health Bureaus. WHO provides technical assistance to the Ministry of Health and assists in planning, resource mobilisation and social mobilisation.

The six vaccine preventable diseases included in the EPI program in Ethiopia are measles, diphteria, pertussis, tetanus, polio and tuberculosis. Ethiopia has long term plans to introduce “new” and under-used vaccines, such as hepatitis B (HepB) and hemophilus influenzae type b (Hib). All vaccines are provided for free.

ROUTINE IMMUNISATION

SUPPLEMENTARY IMMUNISATION ACTIVITIES

POLIO ERADICATION INITIATIVE

EPI LOGISTICS

INJECTION SAFETY

Routine Immunisation

Routine immunisation is the basis of the EPI activities. On a regular basis vaccines for measles, diphteria, pertussis, tetanus, polio and tuberculosis, are provided in health facilities all over the country. Vaccinations are given in static, out-reach and mobile health facilities. The immunisation schedule including the above vaccines stretches over the child's first year and tetanus vaccination is given to women of childbearing age.

The routine immunisation coverage in Ethiopia has not reached the targeted figures and planned objectives. Sustainable improvements in the service delivery are needed, in order to protect the Ethiopian children from unnecessary suffering and death. According to the most recent EPI review, conducted in 2001, constraints of the program are lack of supervision, high drop-out rates, inadequate number of trained health workers and inadequate supplies like cold chain equipment.

DPT_3 coverage (link to map)

EPI schedule (link)

[The routine immunisation schedule in Ethiopia comprises six vaccine preventable diseases, namely measles, diphteria, pertussis, tetanus, polio and tuberculosis. The vaccines are provided free of charge to all eligibles. Before the age of one year, the routine immunisation schedule should be completed by all children. Women of childbearing age are given tetanus toxoid vaccine to protect their unborn babies from tetanus. The mothers and their future babies obtain full protection after completing the TT schedule.

Vaccine	Diseases	Age
BCG	Tuberculosis	At birth
DPT	Diphteria, Pertussis, Tetanus	6, 10, 14 weeks
OPV	Polio	At birth, 6, 10, 14 weeks
Measles	Measles	9 months

Table 1. Routine immunisation schedule.

Dose	Time for administration	Duration of protection
TT1	At first contact	No protection
TT2	4 weeks after TT1	Three years
TT3	At least 6 months after TT2	Five years
TT4	At least one year TT3	Ten years
TT5	At least one year after TT4	For thirty years (throughout a woman's reproductive life

Table 2. Schedule for Tetanus Toxoid administration.]

Training *(asked for info from Fred and will also collect from SocMob)*

Inter-Agency Coordinating Committee (link)

[There is a felt need by government and partners to co-ordinate technical and material inputs to the immunisation program. In light of current and future support, increased technical co-ordination would ensure efficient use and greater impact of technical, material and financial resources. To this effect a National Inter-Agency Co-ordinating Committee (ICC) was established in order to serve as an advisory body to the Ministry of Health (MOH) through the Family Health Department and Disease Control Departments with the following objectives:

- To provide technical support, and resource identification and mobilisation that is essential for program implementation.

- To participate in the planning, follow-up, management, monitoring and evaluation mechanisms of the EPI-Plus program and advise on improvement.

There is also a strong need of coordination of efforts at regional level. Two Regional Inter-Agency Co-ordinating Committees have been established to date and the plan is to expand the initiative to other regions.

National ICC

Regional ICC established in the Somali Region (link)

[Enthusiasm and strong commitment characterised the establishment of the first Regional Inter-Agency Coodinating Committee (ICC) in Ethiopia. In August, a Regional ICC was established in the Somali Region with the goal to make rapid improvement in routine EPI coverage and to increase the cooperation between partners and allies in the region.

In order to address EPI issues regionally in a successful and sustainable way, the MOH has suggested that Regional ICCs should be established throughout the country. The poor routine EPI coverage in the Somali region in combination with a vast presence of active UN agencies and NGOs were the major factors for the choice of region, in which the first Regional ICC in Ethiopia be established. The expectations on the Somali Regional ICC are high and the committee will serve as an example for the establishment of ICCs in other regions.

The need for more extensive coordination of efforts in the Somali region is clear, according to the Regional ICC members, who expressed their appreciation for the initiative taken towards the formation of the committee. The Somali Regional ICC progress and impact will be evaluated in February 2004 together with the National ICC. The Somali Regional ICC has representatives from the Regional Health Bureau, Save the Children-USA, Medecins Sans Frontieres-Belgium, Ethiopian Red Cross, Save the Children-UK, Mother and Child Development Organisation, UNICEF and WHO.

The newly assigned members of the Regional ICC were ceremonially recognised at the launching ceremony of the Somali SNIDs in the Somali Regional State Congress Hall, Jijiga. The committee members were dressed in colourful aprons by the acting Somali Regional State President, Ato Omar Hadji Ibrahim.

The establishment of the Somali Regional ICC is a landmark in the history of Ethiopian EPI. The Somali Regional ICC has full support both regionally and centrally, and the hopes and expectations for rapid improvements in routine EPI coverage are high. Following the establishment of Somali Regional ICC and TAG recommendations other regions are expected to establish their respective Regional ICC very soon.]

Southern Nations]

Proclamation on EPI by EOTC (link)

[The Federal Ministry of Health, WHO and UNICEF organised a high-level advocacy meeting with the Ethiopian Orthodox Tewahido Church (EOTC) on October 17, 2003 in Addis Ababa. At the meeting, His Holiness Abuna Paulos, Patriarch of Ethiopia, Archbishop of Axum and Ichege of the See of St Tekle Haimanot declared a proclamation on EPI in the presence of 550 bishops, archbishops, church leaders, representatives of the Ministry of Health, WHO, UNICEF and Rotary International. The purpose of the proclamation is to make immunisation he faithfuls' child upbringing culture. At baptism, the caretaker will be asked about the immunisation status of the child and encouraged to complete the vaccination schedule within the child's first year.

In the proclamation, EOTC reiterated its support to the Expanded Program on Immunisation (EPI) and called upon every church leader and clergy to implement it at grass root level by informing, through

different forums, parents and caretakers to have their children immunised against the six childhood killer diseases.]

The Global Alliance for Vaccines and Immunization (GAVI) and the Vaccine Fund

The Global Alliance for Vaccines and Immunization is an alliance between the private and public sector committed to one goal: saving children's lives and people's health through the widespread use of vaccines. GAVI emerged in 1999 in response to stagnating immunization rates and widening global disparities in access to vaccines. International organizations, governments, the vaccine industry, research institutions, and major philanthropists collectively serve the shared GAVI objectives: expanding the reach of immunization services, introducing priority new vaccines, and establishing tools and systems to promote sustainable financing in developing countries.

The Vaccine Fund has been created to support the GAVI objectives. It provides financing to the world's poorest countries to strengthen health infrastructures and introduce new and under-used vaccines. Currently, the Vaccine Fund offers the following support to qualifying governments of the world's poorest countries:

(1) New and under-used vaccines - currently hepB, Hib and yellow fever;
(2) Funding to help governments strengthen their basic immunization services; and
(3) Safe injection equipment in the form of auto-disable (AD) syringes and safe disposal boxes.

Supplementary Immunisation Activities (SIAs)

Supplementary immunisation activities are carried out when there is a special need to improve the coverage of a certain vaccine in a certain area. Measles vaccination and Vitamin A supplementation campaigns are being conducted as part of an overall Ministry of Health measles control strategy, with prioritisation given to areas affected by drought.

In order to reach the target of a polio free world by the year 2005, polio eradication campaigns are conducted throughout the country and more recently in selected areas. More information about the polio activities can be found under Polio Eradication Initiative (link).

Map of immunisation campaigns, finalized and planned

- Measles
- Polio

Data

- NIDs/ SNIDs
- Measles

Reports

- National
- Regional

Polio Eradication Initiative

Polio is one of a small limited number of diseases that can be eradicated. The reasons why polio can be eradicated are:

- polio only affects humans, and there is no animal reservoir
- an effective and inexpensive vaccine exists, called Oral PolioVirus (OPV)
- immunity against polio is life-long
- the virus can only survive for a very short time in the environment

The Polio Eradication Initiative (PEI) is a global program with the target of a polio free world by the year 2005. In the African region, the transmission of poliovirus is limited to restricted areas, but the ease with which the virus could be transmitted puts all countries at risk. For the African region to be certified as polio free, there must be no detection of wild poliovirus and an appropriate surveillance system for three consecutive years.

Ethiopia has achieved tremendous progress in its Polio Eradication Initiative activities since it commended in 1996. OPV coverage rates have increased appreciably (from less than 400,000 children in 1996 to more than 14 million in 2001) leading to reduced transmission of the virus. Since January 2001, no wild poliovirus has been identified in Ethiopia and the country has been categorised as an area with low transmission. However, difficult access, security problems and migration mainly due to harsh weather conditions and cross border economic activities remains a big challenge to increased OPV coverage and good AFP surveillance in many parts of the country. Good quality SIAs aimed at reaching the last pockets of wild poliovirus have therefore become a key strategy to maximise the gains achieved so far in PEI and finally kick out the virus from Ethiopia.

Polio SIAs in Ethiopia dates back to 1996, when the first SNIDs were conducted in selected major urban centres. In 1997 and 1998, NIDs were conducted using the fixed posts strategy. House-to-house immunisation was conducted for the first time in Afar, Somali and Beninshangul-Gumuz regions during the 1999 NIDs. The 2001 NIDs was the first nationwide house-to-house polio campaign. The progressive improvement in the number of vaccinated children under 5 years, from 8 million children in 1998 to 14 million children in 2001, and the reduction in zero dose from 24% in year 2000 to 2% in 2001 indicate impressive improvement in the quality and reach of the program. Vaccine wastage has also improved, with the rates reducing from about 22% in 2000 to 10% in 2001.

TAG

The strategies used within the Polio Eradication Initiative are i) routine immunisation, ii) supplementary immunisation activities (SIAs), iii) disease surveillance and iv) mop-up campaigns.

Polio eradication campaigns (link to SIAs)

AFP SURVEILLANCE

Ethiopia started Acute Flaccid Paralysis (AFP) surveillance, the detection and reporting cases of AFP in children under 15 years of age, in 1997. Acute Flaccid Paralysis can be a result of polio, but it can also be caused by other viral diseases and by injection neuritis. The surveillance system was initially staffed by one national focal person at the MoH and one national surveillance officer hired by WHO. Currently, the system is run by focal persons at health facility, woreda, zonal and regional health bureaus levels, in collaboration with surveillance officers hired by WHO. The WHO surveillance officers support and facilitate AFP surveillance at all levels. There are a total of 19 surveillance officers designated from WHO for this purpose, and the number will increase to about 30 in the near future. The surveillance has also benefited from external support of expertise, such as the Stop Transmission of Polio (STOP) team supported by CDC.

The surveillance quality at national level continues to show progressive improvement from year to year. Achieving uniform quality of surveillance at the lower level of the administration system in the country, especially at zonal and woreda levels, remains a great challenge. Uniform nationwide surveillance is crucial for ruling out undetected transmission of poliovirus.

Ethiopia has established a National Certification Committee (NCC) and National Polio Expert Committee (NPEC). The committees conduct regular meetings and discussions. The NPEC has classified AFP cases since 2000.

WHO surveillance officers – placement in regions (link to map)

AFP surveillance indicators in Ethiopia (link to the below table)

Parameter	Target	1997	1998	1999	2000	2001	2002	2003[1]
Annualised Non-polio AFP rate[2]/100,000 <15 yrs population	1	0.1	0.3	0.28	0.7	1.7	1.6	1.2
Proportion of AFP cases with 2 stool specimens collected within 14 days of onset of paralysis	80%	14%	12%	23%	45%	47%	69%	81%
Proportion of districts making monthly reports including zero reports[3]	100%	N.A	N.A	75%	73%	72%	70%	79%
Proportion of AFP cases investigated within 2 days of notification	80%	86%	91%	94%	84%	85%	88%	90%
Proportion of stool specimens arriving at national level within 3 days of being sent	80%	86%	56%	94%	99%	96%	95%	95%
Proportion of stool specimens arriving at the lab in good condition[4]	90%	64%	93%	64%	93%	86%	96%	100%
Proportion of stool specimens from which non-polio enterovirus was isolated	10%	0%	11%	19%	13%	25%	25%	16%
Proportion of stool specimens for which lab results were sent within 28 days of receipt at the lab	80%	0%	4%	49%	81%	40%	90%	99%

TAG recommendations (link)

2003 annual national IDSR/AFP surveillance review meeting recommendations (link)

1. [Endorse TAG recommendations to strengthen the quality of surveillance using innovative strategies; woredas, zones and regions with weak surveillance performance need to be prioritised and given due support at all levels.

[1] The data for 2003 is until November 30, 2003 and the NP-AFP rate is annualised.
[2] Non-polio AFP rate =
[3] Zero report =
[4] Good condition =

Suggested measures:

High number of late cases:

- Intensify social mobilisation
- Use local radios
- Analyse LSQ and act accordingly

Silent:

- Intensive clinician's sensitisation
- Community mobilization

Low case detection: as above

High NP-AFP rate:

- Re-evaluate cases
- NPEV/VAPV

2. Community participation in IDSR/AFP/measles surveillance needs to be strengthened through effective social mobilization and collaboration with NGOs and traditional healers.
3. Regional IDSR/AFP surveillance review meetings should be conducted regularly.
4. Data management training needs to be strengthened.
5. Data analysis and usage should be initiated at lower levels (woredas/ health units).
6. Capacity building of regional laboratories, establishing of lab networking and training of laboratory technicians to strengthen IDSR should be implemented.
7. Provision of radio communication to remote woredas needs to be effected.
8. Supportive supervision and feedback from central, regional, zonal/ woreda levels have to be strengthened to enable proper administrative and technical assistance at all levels.
9. Regions, zones, woredas should ensure integration and coordination of all resources (human, financial and material) for surveillance and immunization activities.
10. Regions should standardize purchase or request for cold chain equipment to meet WHO/UNICEF strategies to facilitate maintenance and provision of spare parts.
11. Measles case-based surveillance training need to be given to focal persons and clinicians at different levels.
12. Measles case-based surveillance should be implemented in areas covered with measles catch-up campaign and all opportunities should be used to support and integrate activities and to monitor and evaluate activities and results.
13. Measles outbreak investigation (collection of five blood samples) should be conducted in all areas including those not covered with measles catch-up campaign.]

WILD POLIOVIRUS DETECTION HISTORY (LINK)

[The first wild poliovirus in Ethiopia was detected in 1999, subsequently three cases were detected in 2000 and one in January 2001. No wild poliovirus has been detected in Ethiopia for the last 3 years. However, the Technical Advisory Group (TAG) for polio eradication pointed out in May 2002 that it was impossible to rule out missed wild poliovirus circulation.

Geographic location of wild poliovirus isolates (link to map). *Add pictures of the cases.*]

THE NATIONAL POLIO LABORATORY (LINK)

[The national polio lab is located in the Ethiopian Health and Nutrition Research Institute (EHNRI). The lab has made remarkable progress all from the start. In August 2001, the lab achieved WHO accreditation level as a full virological laboratory. In November 2003, the construction of a new building with all facilities of a modern laboratory was completed and is now in full function. The lab has six personnel, of which three are trained in virological inoculation, isolation and lab diagnosis for polio, measles, and yellow fever. The stool test results processed so far have been concordant with the other accredited AFRO Lab Network members. The polio laboratory has met the proficiency panel score test and the results were 80% for 2001 and 100% for 2002 and 2003.

Add pictures from the launching.]

EPI Logistics

- In support of routine immunization, supplementary immunisation activities and disease surveillance.

The objective of the EPI logistics team is to ensure that:

…in order to meet immunisation needs at all levels in a country.

COLD CHAIN

The 'cold chain' is a system of storing and transporting the vaccines at recommended temperatures from the point of manufacture to the point of use. There is also a concept called 'reverse cold chain', which is a system of storing and transporting samples at recommended temperatures from the point of collection to the laboratory.

The role of the cold chain is to maintain the potency of vaccines.

Essential elements:

- Personnel to manage vaccine distribution
- Equipment for vaccine storage & transport
- Maintenance of equipment
- Monitoring

The equipment included in the so-called 'cold chain' is expected to provide 'EPI standard' vaccine storage. The capacity needs to provide for transport and storage of all vaccines required for routine immunization of all children under 1 years of age (4%) and all women of childbearing age, groups that constitute 4% and 23% of the total population in Ethiopia, respectively. The cold chain is also expected to provide for the needs related to various supplementary immunisation activities at any given time.

In August/ September 2002, the Ministry of Health in collaboration with the World Health Organization, carried out a national inventory exercise in Ethiopia. The inventory was analysed mid-2003 and the following is a summary of the findings:

- Only 66% of the cold chain equipment was found functional at the time of the inventory. Excluding 3% of the equipment for which no record was available, 31% of the equipment was therefore not available to support immunization activities.
- Of the 31% non-functional equipment, over 600 units were reportedly awaiting spare parts and repair work.
- Of the non-functional units, 522 are over 10 years of age, thus making them uneconomical to repair. The average lifespan of EPI cold chain equipment is 7 to 10 years depending on environment and use.
- 51 different manufacturers account for the 4,833 equipment inventoried - a situation that makes it difficult to maintain adequate spare part stock for maintenance.

Three key observations/ recommendations are included at the end of the report, based on analysis of the inventory and technical considerations. They revolve around three key issues established in the report; the need for:

1. Standardization of equipment,
2. Development of a five-year rehabilitation plan and,
3. Establishment of sustainable equipment maintenance system and guidelines.

The three recommendations have been incorporated into the WHO/EPI Logistics work plan for 2004 with intention to address them in collaboration with the Ministry of Health over the next five years. In addition, a four-week training of 35 regional cold chain technicians has recently been conducted by the

Ethiopian Science and Technology Commission (ESTC) on behalf of the Ministry of Health in collaboration with UNICEF and WHO. This training is expected to further enhance the capacity of the regions to independently run effective maintenance of their cold chain equipment.

Effective vaccine stores management and vaccine handling

In August 2003, an assessment was carried out on vaccine management at the National Vaccine Store by a combined team from the Ministry of Health and WHO, led by a WHO consultant. The assessment covered the period August 2002 to July 2003. Eight key indicators were assessed. Although the final report of the survey is yet to be published, results from a draft report are plotted on a spider web graph shown below.

Weaknesses identified during the above assessment are planned to be addressed through the 2004 plan of action. Planned interventions include rehabilitation of equipment to increase storage capacity, improved maintenance and spare part supply to enhance equipment availability, provision of computers at national and regional stores with LOGMAN software for stock management and capacity building.

TRANSPORT AND COMMUNICATIONS

As of the end of 2003, the WHO/EPI Unit operates 35 vehicles to support mainly AFP surveillance activities in the field, but also Supplementary Immunisation Activities and Integrated Disease Surveillance and Reporting (IDSR).

The 2003 transport report indicates:

- Five old vehicles are on their lifespan limits and are targeted for replacement in 2004.
- The vehicles covered an average of 3,301 km/month.
- Fuel consumption averaged 15.03 litres/100 km.
- Operational cost per kilometre (CpK) (excluding insurance) averaged USD 0.13.

Efficient management of the fleet has been one of the strong points of EPI Ethiopia as can be seen in the low cost per km (CpK). This has been achieved mostly due to the prudent management of maintenance and fuelling and the commitment of the drivers to support the vehicle management process. Regular transport reports (monthly, quarterly and annual) are produced and shared through the WHO Country Representative with the WHO Regional Office for Africa (AFRO).

Operations and safety of field teams (surveillance officers, consultants etc) is strongly enhanced by immediate access to a means of communication with the centre, and amongst themselves while in the field. All field vehicles have therefore been fitted with functional Codan HF radios linked into the UN security system and also to the WHO base station in the EPI office.

Injection safety

With concerns being raised globally regarding possible transmission of deadly blood borne pathogens through clinical invasive procedures, issues of injection safety have recently been taking centre stage in immunization.

In Ethiopia, field reports continue to indicate serious gaps in terms of distribution of injection materials and the bundling process, use of re-sterilizeable injection materials with little capacity to ensure quality sterilization process, inadequate reporting and follow-up of adverse effects following immunisation (AEFIs) and disposal of used injection materials.

In October/November 2000, an injection safety survey was conducted with the support of a consultant from WHO headquarters. In that survey, the assessors concluded the following:

"The results of the survey indicate that there is an urgent need for an injection safety policy in Ethiopia to reduce the re-use of non-sterile equipment, improve sharps waste collection, and manage sharps waste appropriately. This policy should be based upon (1) a regular supply of auto-disabled syringes for immunization and disposable syringes for therapeutic injections, (2) Communication activities to increase awareness in the community and among providers, and (3) an efficient sharps waste management strategy."

The nature of the problems associated with the gaps listed above, is such that an integrated approach is required by all areas of EPI and beyond. WHO/EPI took the lead, with the WHO Country Representative's approval, to set up a 'Working Group on Injection Safety'. The working group initially comprised representatives from the Ministry of Health and WHO, but it has since co-opted other key stakeholders, namely UNICEF and USAID. The working group expects to state its plan of action in the first few weeks of 2004. Among other activities, the plan will include an assessment on injection waste disposal.