Polio Outbreak in Ethiopia

Executive Summary:

On 25 February 2005, wild poliovirus was confirmed from the stool specimens of two children under 3 years old residing in Shire and Humera towns of Tigray Region in Northern Ethiopia with dates of onset in December 2004 and January 2005, respectively. These were the first cases of polio in Ethiopia in four years. Both cases are WPV type 1 and genetically linked to the WPV type 1 cluster circulating in neighboring Sudan. Between January and June 2005, 12 additional polio cases were detected in the country all due to WPV type 1.

An outbreak investigation was conducted within three days of receipt of the ITD result to identify the reasons for the outbreak and to determine the way forward. The investigation included clinical re-evaluation of the cases, information on travel history to and from the Sudan, community search for additional cases, EPI and cold chain assessment, and assessment for high risk populations. The affected age group ranged from 8 months to 14 years, 70% of them 3 years old or below. More than 70% were not adequately vaccinated with OPV before the illness; 43% had never received OPV and 29% received only 1 or 2 doses. Cold chain was satisfactory in most, while some gaps were observed in a few facilities.

Existence of high birth cohorts with inadequate immunity to polio through routine vaccination and the absence of large-scale immunization campaigns for the last three years contributed to the current outbreak. Ethiopia is at high risk of continuing spread of the imported wild poliovirus and for more importation from polio infected neighboring countries. The Federal Ministry of Health of Ethiopia in collaboration with WHO, UNICEF and other partners should urgently conduct a nation wide polio immunization campaign. They should also strengthen the routine immunization program and intensify surveillance for acute flaccid paralysis (AFP).

Methods:

A cross-sectional study design with a combination of quantitative and qualitative study approaches were employed to conduct the polio outbreak investigation in February and April following notification of the ITD results. Three districts (Kafta Humera, Tahtay Korraro and Tsegede) in Tigray Region and one district (Tach Armacheho) in Amahara Region were included in the study. Communities and villages in close proximity to the confirmed polio cases were primarily considered for the detailed and systematic epidemiological investigation including community case search and EPI assessment. All health facilities in those areas were visited for record review and cold chain assessment.

Results:

The initial case was two years and two months old male, born and living in Shire town, a low land part of western Tigray, 280 km away from the Sudan border. He was fully vaccinated for polio with oral polio vaccine (OPV) confirmed by vaccination card. Initial symptoms started with fever and convulsion for 2 days and he developed weakness of the lower limbs on 21/12/2004. The child was immediately taken to the nearest hospital where he was investigated as a case of AFP and stool samples were collected.

The second case was one year and seven months old female who developed weakness of both lower limbs on January 12, 2005. The child was immediately taken to the hospital where two stool samples were taken on two consecutive days (day two and three since onset of paralysis).

Fig.1: Distribution of AFP cases in relation to Population Density

The second case was one year and seven months old female who developed weakness of both lower limbs on January 12, 2005. The child was immediately taken to the hospital where two stool samples were taken on two consecutive days (day two and three since onset of paralysis).

... Continued on Page 3.
The Federal Ministry of Health (FMOH) initiated Integrated Diseases Surveillance (IDS) focusing on 17 priority diseases in 1996. Following the endorsement of IDSR as a regional strategy by WHO/AFRO in September 1998, the country adopted the strategy and conducted comprehensive assessment of the existing surveillance, epidemic preparedness and response system of the country in October 1999. Based on the findings, a five-year strategic plan covering 2000-2004 was developed and implemented. As the five year implementation period came to an end, the FMOH decided to conduct an evaluation of the implementation status with the following objectives:

• To review the process, inputs, outputs and outcomes of IDSR implementation.
• To assess the IDSR implementation with regard to support functions including training, supervision, resource mobilization and coordination.
• To review the quality of the surveillance system (completeness, timeliness, usefulness, and relevance);
• To identify the strengths, limitations, opportunities, and threats of IDSR implementation.

From 14 –31 March 2005, the evaluation was conducted in all regions in 32 selected zones, 64 health facilities and 22 laboratories. During the review, qualitative methods such as interviews, observations and focus group discussions as well as quantitative methods were applied. Record review was also part of the methodology.

Various activities have been undertaken to strengthen IDSR during the review period. The major outputs were as follows:

• Developed Guidelines for the prevention and control of selected epidemic diseases in Ethiopia;
• IDSR principles were introduced in the pre-service curricula of health training schools;
• Prepared a simplified version of the National technical guideline and training modules for health facility level focal persons training;
• Strengthened data processing capacity by providing woreda data analysis book and computers at the regional and zonal levels;
• Established system for monitoring of IDSR core indicators; and
• Established a feedback system through a monthly bulletin.

Major outputs of IDSR observed in the Laboratory were assessing the laboratory services, establishing national laboratory taskforce, training for 88 laboratory technologists/ technicians in support of the IDSR implementation, preparing training manual and SOPs for selected epidemic prone diseases and distributing lab supplies and computers.

The following strengths were observed by the review team:

• 75% of the regions have trained surveillance focal person compared to 55% in 1999;
• Data are collected from all health centers and hospitals on 22 priority diseases;
• Training conducted at all levels on the surveillance system;
• Assignment of IDSR focal persons in majority of woredas and health facilities;
• National Technical Guidelines and Standard case definitions are available in most visited sites;
• Working group on National Laboratory Networking is established; and
• A multi-sectoral emergency Prevention and Preparedness Committee (EPPC) exists in many woredas.
Following notification of the polio importation received in February 2005, the first phase (March 2005) SNID covering a wide perimeter of the country where routine vaccination coverage is generally lower was conducted as planned. Ethiopia declared a public health emergency and conducted two rounds of a nationwide polio campaign targeting all children under 5 years old in April and May 2005. Analysis of post-campaign evaluation data showed very good coverage in all parts of the country. There is no confirmed case of polio for more than 13 weeks. The last confirmed case had date of symptom onset in April 2005. The country is in a high transmission season for polio. A third round national polio campaign is scheduled from July 29-August 3, 2005 to prevent further transmission.

To prevent the risk of further internal spread as well as importation of polio from neighboring countries, it will continue to implement the following initiated tasks:

- Strengthen routine immunization particularly in those areas at especially high risk for WPV transmission due to low population immunity and proximity to infected areas.
- Conduct high quality Supplemental Immunization Activities (SIAs);
- Strengthening AFP surveillance, particularly sensitivity in priority areas.

**Polio Outbreak in Ethiopia**

There were additional cases in the vicinity which were already investigated and lab results were negative. No unreported cases were found in clinical registers. By April 2005, the number of confirmed cases were 14 and the virus spread from the north western parts to the central parts of the country. The affected age group ranged from 8 months to 14 years, with 70% 3 years old or below. More than 70% were not adequately vaccinated with OPV before the illness; 43% had never received OPV and 29% received only 1 or 2 doses.

**Results of response and evidence of impact**

In preparation for preventing an importation, Ethiopia had been conducting mass campaigns in various parts of the country. In October and November 2004 areas that follow the major transportation routes of the national capital were covered with two rounds of polio campaigns and 96% of the targeted under 5 year old children were vaccinated.

Two additional rounds of polio campaign were conducted in December 2004 and January 2005. High risk districts of the western parts of the country along the Sudan border were targeted at that time and achieved coverage of 99%. As part of the continuous efforts for prevention of polio importation, the country planned for a nationwide polio campaign beginning in March 2005.

During the review period, the following challenges and limitations were encountered: high staff turnover and attrition including those trained on IDSR; IDSR implementation is limited to health centers and hospitals in most of the regions; and lab system is not yet well developed. Concerning data, data analysis and utilization of data at woreda level is not practiced much. Further, case definitions require revisions to allow for categorization into “suspected”, “probable” and “confirmed”.

In conclusion, the IDSR strategy is successfully established in Ethiopia and procedures and materials used for IDSR are standardized. An adequate number of experts are trained on IDSR to sustain continuous human resource development at all levels. The review team has made some recommendations which may contribute for the success of IDSR in Ethiopia:

- Ensure availability of resources for IDSR at all levels.
- Strengthen community level information exchange.
- Promote widely the use of standard case definitions at all levels.
- Strengthen the functionality and proper use of laboratories at lower level.
- Provide information and communication facilities at all levels.
- Strengthen data analysis and presentation.
- Development of TOR and clear guidelines for different committees, and teams.
- Strengthen supervision and provision of written feedback.
- Structure and integrate surveillance activities along with routine responsibilities.
- Ensure long term human resource development for IDSR by integrating with pre-service.

**IDSR Evaluation Conducted**

...Continued from Page 2
In the first half of 2005, 177 cases were serologically (76) or epidemiologically (101) confirmed as measles. Among these, 97 (55%) were from Gambella before it conducted measles catch up vaccination campaigns. Outbreaks have also been reported from Afar (total of 16 confirmed cases) and Somali (total of 33 confirmed cases) Regions. Afar conducted in June 2005 a follow up campaign targeting children less than 5 years of age. Follow up campaigns are planned for September 2005 in East and West Harerge of Oromia Region. These two zones combined have reported 7 (64%) of 11 confirmed measles cases reported from Oromia Region.

Much progress has been made on measles surveillance in the relatively short period of time in which nationwide case-based surveillance has been implemented. However, performance on measles case detection remains below the targeted 2.0 per 100,000 population.

In Ethiopia, measles case based surveillance was launched in 2001. Systematic and formalized training was completed in all areas of the country following the completion of the nationwide measles supplementary immunization campaigns (SIAs). SIAs were completed between December 2002 and September 2004 in all areas except Gambella, which conducted its catch up campaign in May 2005.

The primary objectives of measles surveillance are to detect continuing measles transmission, to evaluate vaccination strategies in order to improve measles control, to identify, investigate, and manage outbreaks and to predict outbreaks by identifying geographic areas and age groups at high risk.

The community should report any person with a fever and rash to the nearest health facility. Whereas, health care providers should suspect measles in any person with generalized rash and fever plus one of the following: cough or coryza (runny nose) or conjunctivitis (red eyes). Cases should also be reported in any person in whom a clinician strongly suspects measles.

Now that the measles campaigns have been completed in all areas of Ethiopia the specificity of clinically diagnosed measles is low. Therefore, suspected cases and suspected outbreaks should be serologically confirmed. To confirm measles diagnosis, 5 ml of blood serum should be collected from all sporadic cases, and from the first five cases in suspected outbreaks occurring in a given location within 30 days.

From January 1 to June 30, 2005, 710 suspected measles cases were reported. For 597 (98%) of suspected cases (excluding epi-linked cases), adequate blood specimens were collected. In all, 73 (86%) of 85 zones or special woredas have reported at least one suspected measles case with a blood specimen. However, the annualized rate of suspected cases with blood specimens per 100,000 persons is currently at 1.63, which falls short of the 2.0/100,000 population target. (Note that the performance target is increased from 1.0/100,000 to 2.0/100,000 in 2005.)