GOVERNMENT OF MALAWI

MINISTRY OF HEALTH

In-depth National Surveillance Review Report May, 2012

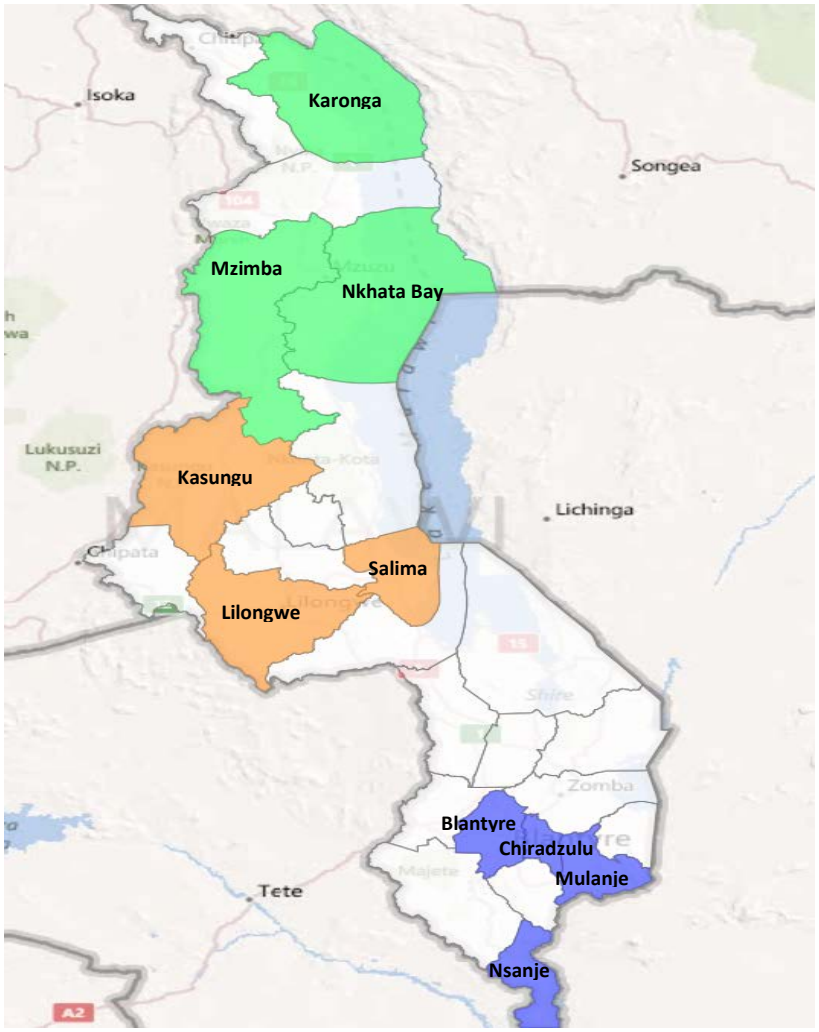

Table of Contents

List of Acronyms

AFP	Acute Flaccid Paralysis
CDC	Centres for Disease Control and Prevention
	CMYP Comprehensive multi-year plan
	DHMT District Health Management Team
EHP	Essential Health Package
EPI	Expanded Programme on Immunisation
NNT	Neonatal Tetanus
PBM	Paedeatric Bacterial Meningitis
TA	Traditional Authority
VDPV	Vaccine Derived Polio Virus
WPV	Wild Polio Virus
OPV	Oral Polio Vaccine
ARCC	African Regional Certification Committee
NID	National Immunization Days
SNID	Sub national Immunization Days
SIA	Supplementary Immunization Activities
TT2	Tetanus Toxoid vaccination 2nd dose

1. Executive summary

The Government of Malawi is committed to the polio eradication global efforts and has made significant progress in implementing the recommended strategies for polio eradication. The review team has noted the progress towards Millennium Development Goals targets especially towards MDG 4 in reducing child morbidity and mortality. The under 5 mortality per 1,000 live birth has reduced to 112, the infant mortality to 66 per 1,000 live birth. Through the routine immunization program, new antigens have been introduced (PCV) and planned (rotavirus) specifically to curb the major causes of childhood killer diseases in Malawi.

Concerted efforts have been made by the immunization program team at national level to include in their comprehensive multi-year work plan strategic activities that are in line with global and national priorities. In addition to the cold chain inventory conducted in 2011, the rehabilitation plan will address challenges identified during preparation for the introduction of new and underutilized vaccines. The program intends to further update skills of health workers in reaching every child with vaccination using the Reaching Every District (RED) strategy that needs to be scaled up ensuring resources availability.

Malawi has an EPI structure which is functional but needs a number of updates to be implemented including updating and development of various critical documents as detailed in the main report.

The VPD surveillance is functional with committed staff at the all levels. However it needs to be strengthened as the last couple of year's performance indicators have not been met and there is a need that it is sensitive enough to detect any circulating polio virus as per WHO standard. It is critical for ACTIVE case search which is currently defunct to be revived and technical supervision by the extended DHMT to go along with it. The performance review meetings that are used to continuously update focal person's needs to be maintained. There is a need to institute the use of late stool questionnaire to address issues of inadequate stools. The monitoring and feedback mechanisms need to be more frequent and can be provided at least monthly (electronic to districts and regions). A system to replace outgoing focal persons at all levels is critical to sustain sensitive surveillance performance.

The IDSR guidelines were last updated in 2005 and there is a need to adapt the 2010 revised guideline to address the rising non-communicable diseases as well as the existing communicable diseases that are of national public health priority.

At the national level, the linkage with immunization program and the Epidemiology Unit needs to be strengthened through regular data harmonization meetings. The Epidemiology Unit at the national level needs further strengthening in human, communication, and financial resources.

The last three-year measles surveillance reviewed showed achievement of standard indicators. However the 2010 measles outbreak has indicated that information was missing key variables from the line listing.

Although there is a database of NNT at national level there was no feedback on the response conducted on the NNT cases. The data needs to be used to respond locally to such cases using 3-dose schedule as opposed to the current 2-dose schedule in use.

Cold chain issues need to be addressed as it is vital to maintain the potency of vaccines in particular, temperature recording needs to be extended to include weekends, a system to repair and maintain broken refrigerators needs to be strengthened/developed.

In conclusion,

- Despite the existence of a surveillance structure, the gaps outlined particularly at operational level puts the country at risk of not being able to TIMELY detect Wild Polio Virus (WPV) and/or Circulating Vaccine Derived Poliovirus (cVDPV) should this occur. Furthermore that timely detection of outbreaks of other vaccine preventable diseases or diseases of public health importance could be delayed or compromised altogether. Key activities to address the gaps include documented
  - Implementation of the **ACTIVE SEARCH** process
  - Re-introduction of the **TECHNICAL SUPERVISION** by the extended DHMT
  - **MONITORING** of implementation of AFP surveillance activities at operational level by the Zonal and National level
  - Monitoring and recording all rumours of outbreaks followed by immediate investigation
- While the cold chain system is in place at all levels, current status of monitoring vaccine potency and unclear arrangements to maintain the cold chain equipment at all levels, puts the quality of vaccines at risk.

- The linkage between IDSR and EPI particularly on surveillance is weak and needs to be strengthened to allow synergy.

2. Introduction

a. Country Background Information

Malawi is a sub-Saharan African country located south of the equator. It is bordered to the north and northeast by the United Republic of Tanzania; to the east, south, and southwest by the People's Republic of Mozambique; and to the west and northwest by the Republic of Zambia.

The country is 901 kilometres long and 80 to 161 kilometres wide. The total area is approximately118, 484 square kilometres, out of which 94,276 square kilometres is land. The remaining area is mostly composed of Lake Malawi, which is about 475 kilometres long and delineates Malawi's eastern boundary with Mozambique.

The country is divided into three regions: the Northern, Central, and Southern Regions. There are 28 districts in the country. Six districts are in the Northern Region, nine are in the Central Region, and 13 are in the Southern Region. Administratively, the districts are subdivided into traditional authorities (TAs), presided over by chiefs. Each TA is composed of villages, which are the smallest administrative units, and the villages are presided over by village headmen.

Table 1. Vital Statistics for Malawi

Statistic	Indicator
Annual Growth Rate	2.9%
Projected Total population (2012)	14,844,822
Percentage of under 15 Population	46
Percentage of children under 12 months immunised against measles	93
Total Fertility Rate	6.0 children per woman
Infant Mortality Rate	66 per 1000 live births
Under-five Mortality Rate	112 per 1000 live births
Maternal Mortality Rate	675 per 100, 000 live births
Male Life Expectancy at birth	51years
Female Life Expectancy at birth	54 years

Source: Demographic Health Survey 2010

Expanded Programme on Immunization (EPI)

The Malawi EPI was officially launched in 1979 and is integrated within the Preventive Health Services as part of the Essential Health Package (EHP) and presently runs as a vertical programme.
At National level, the programme is managed by the EPI Manager and assisted by a Deputy Programme manager, a logistics Officer, Data Officer and Vaccine Stores Officer/Cold Chain Officer. Of note is the fact that there is no Surveillance Officer Post established. The Regional EPI Officers in the North and South are responsible for coordinating EPI activities in their respective regions and assisted by the Regional Cold Chain Technicians. In each district

there are two EPI Coordinators assisted by Cold Chain Technicians who are responsible for control and allocation of vaccine supplies to health facilities. At health centre level, all health workers participate in EPI activities. Immunization activities are carried out along with growth monitoring, nutrition, and antenatal care throughout the country.

Polio Eradication in Malawi

Malawi has made significant progress towards eradication of polio with the establishment in the mid '90s, of a surveillance system for acute flaccid paralysis (AFP) throughout the country. Routine oral polio vaccine (OPV3) coverage in the country based on the administrative coverage report indicates sustained improvement over the years with most of the districts attaining over 80% coverage. In Malawi the latest clinically confirmed Wild Polio Virus (WPV) was in 1992 that means two decades of being polio free. The latest NIDs in Malawi were conducted in 1998 and SNIDs in 1999. Since then, the country has been relying on the routine immunization program to boost immunity against polio among the new birth cohort.

In October 2005, the country successfully presented its complete country documentation report on polio-free status to the Africa Regional Certification Commission (ARCC). However, over the last 2-3 years, there has been a decline in the performance of AFP surveillance in the country, especially at the sub-national level. Some large population regions (Central and Southern) have persistently performed sub-optimally during the period. In 2011 the stool adequacy rate was 76% which is below the minimum target of 80%.

Malawi is one of the countries in the sub-region with high routine immunization coverage. In 2009 and 2010, all the districts in the country reported OPV3 coverage of 80% or above according to the Joint Report Form (JRF). Although EPI coverage surveys have not been done, MDHS 2010 indicates that 93% of children under-12 months of age received measles vaccine dose.

Malawi has not been conducting Polio SIAs since the routine immunization coverage reported is sustained above 80%. However in response to the confirmed circulating vaccine derived polio virus outbreak in 2011 in Mozambique, and in line with WHO recommendations, 3 districts bordering Mozambique conducted preventive polio supplementation campaigns in late 2011 targeting 0-59 months children in neighbouring districts (Mulanje, Nsanje and Phalombe) along the border.

Measles and NNT Elimination in Malawi

The WHO AFRO has adopted the goal of elimination of measles by 2020. Malawi has been commended for the sustained improvement of MCV immunization coverage and case based measles surveillance performance. Malawi succumbed to the highest ever documented measles outbreak among the southern African countries in 2010. This main reason for the outbreak is the accumulation of unvaccinated children as evidenced by the documented shift of age group to young adults. The government responded by vaccination targeting the under 15 population. The surveillance from the outbreak information had some gaps in

variables as line lists were not completely documented from health facility level limiting detailed analysis of the affected population however, aggregate reports obtained indicate that over 118,000 cases with 264 deaths were notified from all the districts of Malawi.
As per the 2012 annual plan for Immunization, Malawi is to apply for GAVI support towards the 2nd dose introduction of measles through the routine immunization while it continues to conduct follow up measles immunization though campaigns to ensure advance is made in achieving the measles elimination goal target.
The national measles laboratory is WHO accredited and has the capacity to support measles surveillance towards the goal of elimination.

Malawi has achieved Maternal Neonatal Tetanus elimination as per the validation survey conducted in 2002. The coverage of Penta 1 being above 80% the country can now start monitoring protection at birth to reliably estimate the TT2+ protection among those who bring their infants for Penta 1 vaccination. Performance of NNT surveillance is not regularly analysed but from the data at national level, there are some districts that are notifying NNT for the year 2010 Dowa, Phalombe, Blantyre and Karonga have notified NT cases. The response to NT cases is not documented but it can be improved through the routine monitoring and feedback.

b. Justification of Review

Concerned about the declining AFP surveillance performance in particular and polio eradication in general in Malawi, the Africa Regional Certification Commission (ARCC) recommended the conduct of an urgent external in-depth disease surveillance review in the country. Only a desk review was conducted in 2007, actions were taken to address the recommendations resulting in improvement of the performance indicators until end of 2009 when the indicators started to decline again. Minimum targets have not been achieved in 2010 and 2011.

This in-depth surveillance review was requested by the Malawi Ministry of Health to identify causes of the decline in AFP and other VPD surveillance performance, provide guidance to address emerging issues, and recommend ways to reverse the declining trend. An external review is also in line with WHO standard recommendations where member states are advised to conduct review of their surveillance program at least once in 3-5 years.

c. Objectives

Overall objective
To assess the performance of the disease surveillance in Malawi with particular focus on vaccine preventable diseases and the extent of integration into the integrated disease surveillance and response (IDSR).

Specific objectives

- To assess the organization and the implementation of vaccine preventable diseases surveillance at all levels (including sentinel surveillance sites for PBM)

- To identify strength, weakness, threats and available opportunities in the disease surveillance system
- To assess the knowledge and the use of norms and standards of VPD surveillance by all focal persons involved
- To assess the quality of information collected and the utilization of this information
- To assess the level of implementation of the integrated disease surveillance and response
- To assess the extent to which AFP resources are used for the other VPD and IDSR
- To assess the existing mechanism for information sharing between all levels (Central, Regional and district) and with the other programs
- To formulate appropriate recommendations to all stakeholders

d. Methods

Based on criteria listed below, 23 health facilities in 10 districts were selected within the three regions of the country. At each site, documents were reviewed and in-depth interviews were conducted with key informants. There were three review teams, each comprised of Ministry of Health Officers and external reviewers from World Health Organisation and Centres for Disease Control and Prevention in addition to an officer from UNICEF and USAID MCHIP. The national level team was assigned to assess the surveillance though interviews of key informants, review of relevant documents as in Annex 1.

Districts were selected for review using the following criteria:

- Failure to achieve expected non-polio AFP rate or stool adequacy rate from 2008 to 2011
- District bordering Mozambican provinces in which vaccine derived polio viruses (VDPV) were detected (Mulanje and Nsanje)
- Highly populated districts
- Presence of polio-compatible AFP cases (especially when they are clustering)
- Evidence of recent breakdown in reverse cold chain

Table 2. List of sites visited in addition to the National level

Region	***District***	***Health Facility***
North	Karonga	Karonga District Hospital, Nyungwe Health Facility
	Nkhata bay	Nkhata bay District Hospital, Mpamba Health Centre, Luwazi Health Centre
	Mzimba	Mzuzu Central Hospital, Mzuzu Health Centre, Ekwendeni Mission Hospital
Central	Kasungu	Kasungu District Hospital, Mtunthama Health Centre
	Salima	Salima District Hospital, Chipoka Health Centre
	Lilongwe	Nathenje Health Centre, Likuni Mission Hospital, Mitundu Community Hospital,
South	Blantyre	Blantyre District Health Office, Seventh Day Adventist Hospital, Mlambe Mission Hospital
	Nsanje	Nsanje District Hospital, Trinity Hospital, Makhanga Health Centre
	Chiradzulu	Chiradzulu District Hospital, St Josephs –Nguludi Hospital, Ndunde Health Centre
	Mulanje	Mulanje District Hospital, Mulanje Mission Hospital

Review tools

The review tools comprised of standardized questionnaires that covered the following aspects of disease surveillance: organization of surveillance, active surveillance sites, case-based surveillance, integrated disease surveillance and response, logistics and material resources for surveillance.

Key informants interviewed included:

- National level EPI officers, IDSR officer, chair persons of the National task force for Containment, National polio Expert committee and National Polio certification committee, Head of the National measles laboratory, the national cold room and vaccine store officer
- Zonal, district and health facility EPI focal persons
- District and health facility officers responsible for IDSR
- In-charges of health facilities (including hospital administrators)
- Surveillance focal persons in health facilities
- Clinicians and other health workers attending to children
- At least one traditional healer per district
- At least one guardian of an investigated AFP case in the past 6 months

Documents Reviewed at various levels included:

- Annual plan for surveillance, supervision plans and checklists, 2012 plan for EPI
- EPI and IDSR Surveillance field guides and manuals
- Written feedbacks (bulletins, reports, etc) on disease surveillance
- Trend of disease surveillance indicators including IDSR diseases for the past 5 years
- Trend of district routine immunization coverage for the past 5 years

Plan of work:

- Briefing and departed to regions (May 21)
- Interviews (May 22-26)
- Draft report and recommendations (May 28-30)
- Debrief with MOH & Stakeholders (May 31)
- Provide draft report before departure (June 1)

3. Key Findings and Recommendations

a. Organization of surveillance:

Based on the findings from the external disease surveillance review, there is an established surveillance system for vaccine preventable diseases (VPD), including acute flaccid paralysis (AFP), measles, and neonatal tetanus (NNT). This is evidenced by human resources assigned as focal persons at all levels (78%) of facilities visited, including Health Surveillance Assistants (HSA) at the health facility and community levels. In

addition, an opportunity exists to include local traditional healers who are available and willing to be a part of the AFP reporting system.

There is a reporting structure and availability of guidelines for implementation. The majority of health facilities visited achieved 100% completeness of reporting. The following guidelines were available: operational manual for immunization officers (2002), Reaching Every District (RED) Guideline (draft); VPD surveillance guideline (Draft), and training slides for surveillance covering AFP, measles and NNT. The 2012 annual work plan for immunization program includes strategic activities to improve surveillance for VPDs and has AFP, measles and NNT.

At national level, information is used for action. Monitoring and evaluation is conducted through periodic review meetings, where participation by interviewees in districts visited was 89%. Financial and logistical support is available for the program.

Refresher surveillance training was conducted in 78% of the districts visited and 56% of the district interviewees attended. At health facility level, health workers were trained in 39% of the facilities visited, and 30% of the interviewees attended. Surveillance data were available for AFP (100%), measles (89%), NNT (56%) in district offices.

Written supervision plan is part of the annual work plan at national and zonal levels and indicate that supervision should be conducted on quarterly basis. There is an integrated supervisory checklist that incorporates VPD surveillance. Supervisory reports included surveillance data quality and surveillance performance indicators.

Challenges:

There was no EPI Policy document, and the VPD surveillance guidelines are outdated. Terms of reference indicating tasks to be implemented by the EPI manager and for the Epidemiology/IDSR unit staff at the national level were not seen at the time of the review.

Two out of three zones (67%) and most districts (78%) did not have surveillance work plans. Surveillance terms of reference were not seen in 33% of the zones, 78% of the districts, and 94% of the facilities visited. Availability of operational guidelines varied at different levels and for different diseases as follows:

- Zones: AFP and measles 33%, NNT 67%
- Districts: AFP and measles 33%, NNT 44%
- Facilities: AFP and measles 78%, NNT 94%

Irregular supervisory visits to health facilities were observed, up to 40% had not been visited by national level, 48% by zonal level, 40% by district level in the last 12 months.

While administrative / management supervision takes place at district level, there was no evidence of technical supervision by extended District Health Management Team (DHMT). Written supervisory plans covering surveillance were not seen in at all three

zonal offices and 78% of the districts. Only 33% of the zones and 56% of the districts did not have a supervisory checklist.

The regular provision of feedback has been discontinued due to financial shortages although planned to be conducted through review meetings bi-annually. Last year the feedback meeting was tagged to IMCI activities supported by UNICEF. Five districts (56%) did not have documented supervisory visits. When visits occur, 78% of the districts did not receive written feedback from their zonal supervisors, and 91% of the health facilities from their district supervisors.

While there was prioritization of health facilities for surveillance, active case surveillance has not been conducted in most health facilities (65%). At health facility level, the availability of surveillance data for AFP and measles was 33% while that for NNT was 28% only. All these data were available at 67% of the zonal offices visited.

Four national review meetings were planned for 2011, but only two were conducted. Since 2009, these meetings have also been used as proxy refresher training due to financial constraints. At the facility level, 52% of the staff interviewed reported to have attended review meetings. Clinician sensitization on surveillance was not done at 74% of the health facilities visited. In addition, 56% of facilities do not receive written lab results for investigated cases.

Recommendations:

- MOH/EPI with the support of partners to develop an EPI policy document
- EPI with the support of partners should update the surveillance guidelines, print and disseminate before the end of 2012
- The zonal offices should disseminate as soon as possible the available TORs and operational guidelines provided by national level to Districts and health facilities.
- District EPI coordinators should develop comprehensive action plans to include supervision for the rest of 2012 in subsequent years, submit them to the zonal offices that should compile them and use as a basis for support supervision and monitoring implementation of activities.
- The national EPI should
    - Coordinate the development of a technical supervisory check list, reporting and feedback format to be used at all levels
    - Advocate with districts to revive the defunct technical supervision over and above the administrative supervision currently maintained.
    - Monitor the supervisory visits conducted at all levels through reports that should be shared regularly. This should be part of the national feedback document.
- While the laboratory results are made available to the national level, these results should immediately be shared with not only the EPI and IDSR Coordinators at district level but with their immediate supervisors. These officers in turn should ensure that the health facilities that detected the cases are provided with the results. These in turn should inform the parents of the case on the outcome of the investigation.

- Traditional Healers that form part of the first point of call for many illnesses, should be more widely involved in the surveillance system especially for AFP. Orientation in this regard is critical.

b. Active surveillance and Reporting:

At the national level there is a list of 236 government and private health facilities that have been prioritized for active surveillance as follows: high priority (59) to be visited weekly; medium priority (88) to be visited fortnightly; and low priority (89) to be visited monthly.

On a quarterly basis, national and zonal officers' conduct active surveillance visits to priority sites. Visits are documented through supervision reports instead of active surveillance management tools.

The monitoring of timeliness and completeness of reporting is done monthly for immunization coverage data but not for VPD surveillance. Feedback is provided during the quarterly review meetings at the districts/regions as and when they are which is quite irregular.

Completeness of reporting ranges from 75 to 100% in 7 out of 10 districts. Almost all district interviewees (89%) and all zonal interviewees mentioned some of the priority diseases under active surveillance, including AFP, measles, and NNT. Most of the districts (70%) and zones (67%) have updated lists of priority health facilities for active surveillance. EPI monthly reports and computers are available and in use for both EPI and IDSR focal persons.

Other means of communication (such as radios, landlines and mobile phones) were available and can be used to potentially improve timely reporting. In addition, interviews with traditional healers and traditional birth attendants (TBA) revealed they are available and willing to be involved in AFP reporting system.

Challenges:

Some of the challenges that were identified for active surveillance include but are not limited to the findings that only 50% of districts and 33% of zones conduct active surveillance. This is at variance with the knowledge of diseases for active search and that health facilities have been prioritized for this purpose. The main drawback to active surveillance is the inaccessibility of the available transport to the EPI and IDSR coordinators at district level.
Monitoring of timeliness and completeness occurs in only 40% of the districts and in 67% of the zones. All districts and zones are not using management tools for active surveillance visits. Additionally, 89% of districts are not aware of the frequency of visits to prioritized health facilities, and all districts did not conduct visits as planned in the past 6 months.

Clinician sensitisation was not conducted in the past 6 months by 67% of districts interviewees. Despite availability of physical transport for EPI activities, accessing this transport is difficult and can only be used for a limited time. This occurred before the fuel challenges and has continued and is linked to the absence of work plans, resulting in difficulty to allocate resources appropriately by the district administrations.

Some EPI and IDSR coordinators exhibit inability to organize their data. There is no back-up mechanism for the data, no is there an updated anti-virus to safe guard the data.

Recommendations

EPI and IDSR Coordinators should ensure that:
All EPI reports and Surveillance data forms are properly filed, appropriately stored and should easily accessible.

- Endeavour to display the EPI coverage and surveillance performance data in their places of work for ease of reference and daily use
- Health facilities submit weekly "ZERO" AFP and other epidemic prone disease reports for onward transmission and this should be monitored at all the three levels district, zonal and national.
- Implement the recommended ACTIVE SEARCH according to prioritization of Health Facilities
  - High priority: weekly
  - Medium priority: fortnightly
  - Low priority: monthly

c. Case-based surveillance

VPD Surveillance:

Malawi case-based VPD surveillance focuses on AFP, measles and NNT and is coordinated by the National EPI program. The team was informed that there was no data management protocol as yet. AFP, measles, NNT databases are kept (electronic and hardcopies); line list from measles outbreak of 2010 was observed. There are copies (electronic) of PBM data when shared from sentinel site otherwise no active data management is done for the PBM data.

There are plans to conduct data quality audit (DQA) and data quality self-assessment (DQS) in 2012. Data harmonization before dissemination is not carried out on a monthly basis as recommended, it was stated that this is only done when gaps are identified. Feedback reports are provided during the review meetings.

At national level, there was a multi-year measles elimination strategic plan covering the period 2012 to 2016. Interviewees were knowledgeable on AFP, measles, and NNT case definitions as well as standard investigation procedures. Standard case investigation

forms were available, AFP surveillance performance indicators are monitored and feedback provided during review meetings.

The specimen collection and transport kits are provided by the health facility laboratory (as per the guidelines, clean bottles are expected to be used for transportation of stool specimen from AFP cases; occasionally, TB sputum tubes and/or used ointment bottles are used; standard blood specimen collection bottles are provided by the health facility laboratory.

Appropriate measures are put in place to ensure case investigation forms (CIF) are provided to all districts/health facilities for reporting priority diseases under surveillance (AFP, measles, NNT). Likewise, mechanisms have been put in place to ensure availability of CIFs and specimen collection kits at zonal and district levels. At these levels, 67%, 78%, and 78% of sites visited had mechanisms in place to obtain kits for AFP, measles, and NNT, respectively.

Almost all districts (89%) and zones (67%) were aware of appropriate NNT response activities. Training was conducted in 2011 for EPI at zonal level and cascaded to district level. Review meetings for focal persons have been conducted and updates provided during such meetings. Most zones (67%) and districts (70%) and few health facilities (17%) have guidelines and reference materials.

Opportunities that can strengthen the system, including:

- Quarterly review meetings
- Previously implemented technical supervisory visits by extended DHMT
- Monthly feedback bulletins
- Existing technical guidelines, if distributed and used extensively.

Challenges

At national all three levels, surveillance data quality issues include gaps in key variables as captured in the case investigation forms especially date of onset of paralysis and vaccination status of the cases. In addition, there is a challenge to exchange information with border districts of Mozambique.

Knowledge on basic case-base surveillance information is generally inadequate at the all levels, as indicated in the table below:

Table 3. Knowledge on Case Base Surveillance by Administrative Level

	Knowledge levels of	Interviewees		
		Zone (n=3) %	District (n=10) %	Facility (n=23) %
AFP	Case definition	67	50	48
	Stool adequacy	33	60	26
	Core indicators calculations	67	10	4
	Investigation procedures	67	60	4
Measles	Case definition	67	70	57
	Core indicators calculations	0	0	N/A
	Investigation procedures	33	60	57
	Epidemiological linkage	33	60	30
	Suspected outbreak	33	30	39
	Confirmed outbreak	67	50	43
NNT	Case definition	67	60	30
	Appropriate response	67	80	N/A

Other challenges for the case-based surveillance system were identified. Although case-report forms and sample collection materials were available at the zone and district levels, over 50% of health facilities visited did not have case investigation forms and/or sample collection materials for AFP (57%), measles (65%), and NNT (52%).

Only 67% of districts and 33% of zones performed epidemiologic analysis of surveillance data. Calculation of performance indicators was done for AFP by 78% of districts and 33% of zones, and for measles by 89% of districts and 33% of zones.

There were no documented supervisory reports in 78% of districts and 67% of zones. Finally, despite availability of guidelines, the majority of district interviewees did not show knowledge of what is contained in them.

Recommendations:

- Regular feedback from national level to ensure sensitivity
- The multiyear strategic plan for measles elimination which runs up to 2016 should be updated in line with WHO AFRO recommendation towards achievement of elimination by 2020.
- Regular data harmonization with IDSR at lower levels so that national level gets consistent data; in addition, regular data harmonization with lab and Epidemiology Unit during outbreaks
- Feedback which currently is provided irregularly or not at all at all levels should be instituted using standard formats and preferably shared on a monthly basis.
- There is need to continue training and orientation of staff at all levels but in order to improve the quality of training for EPI surveillance, subsequent trainings should include at a minimum,

  - Pre and post tests
  - Hands on practice on case definitions, calculation of indicators, monitoring and presentation of surveillance data
  - Practical application of surveillance data collected
  - Completion of all fields on the Case Investigation Forms
- Future supervisory visits should include follow up on the retention of knowledge provided at the trainings (on the job training)
- (3)The staff at each level should hold technical meetings to orient staff that did not attend the training using hand outs and reference materials provided during the training sessions
- Case investigation forms and sample collection kits to be available at each point of patient contact
- In order to increase the accessibility of surveillance guidelines to staff, WHO/IST should provide sample pocket surveillance guides from other countries for consideration and adaption to Malawi context.
- On NNT, the team recommends
  - updating of the manual and guidelines to include 3-doses instead of 2 for response activities
  - Monitoring of protection for NNT at birth to validate the reported TT2 coverage which is usually underestimated.
  - Documenting in detail all responses to any NNT case detected
- Arising from the high numbers of late AFP cases with late stools, the late stool questionnaire should be introduced and administered to such cases to find out reasons and address them accordingly.

PBM Sentinel surveillance

The paediatric bacterial meningitis sentinel surveillance is based at QECH in Blantyre. Data is generated through research studies conducted by the Wellcome Trust Research project. The site at present has a data manager, trained and supported by WHO. Annually the data manager has attended the PBM/Rotavirus surveillance network meetings. The post of site coordinator has remained vacant following the relocation of the first site coordinator to RSA for further studies almost five years ago.
Capacity exists data generated on PBM is shared with MOH and WHO.

Rotavirus and Paedeatric Bacterial Meningitis (PBM) Surveillance

Rotavirus Surveillance started in 1997 as part of a fellowship for PhD for Prof Nigel Cunliffe. This has gone on at varying levels of intensity until 2010. It was expected that surveillance activities would be taken over by the Ministry of Health but it did not materialise. Based on available evidences nearly a quarter of under-five children (23.3%) had diarrhoeal episodes in the previous two weeks of the survey. Furthermore, data from Queen Elizabeth Central Hospital in Blantyre shows that three-quarters of all diarrhoel infections under one year olds

were caused by rotavirus and in children less than 6 months of age, one-third was caused by rotavirus. These data led to informed decisions for the country to introduce the rotavirus vaccine. In preparation for the introduction, there is on-going discussion with Wellcome Trust to start the sentinel site for surveillance. The information will be very useful for MOH Malawi to monitor impact after introduction of the rotavirus vaccine.

Recommendations:

- Coordination and ownership of MOH to be prominent in the Rota surveillance re establishment
- MOH to lead the sentinel site coordination to ensure that the impact of the introduction of ROTA vaccine is effectively monitored.
- MoH should nominate a replacement site coordinator for PBM surveillance and WHO/AFRO should be requested to organize orientation of the nominee.

d. Assessment of IDSR

IDSR was adapted in 1999 and is coordinated and implemented by the Epidemiology Unit. Adaptation of the tools and guidelines was done in 2003. The trainings were completed in 2005. Since then, although there is high turnover of staff, no training has been conducted as the annual plans are not funded.

The Head of the Unit has been working in this capacity since 2009. The unit has five staff, two of whom are on study leave. There is no internet connectivity for the unit; personal resources are used to access internet. Though budgeted under the plan of work, committed finances often are not realized; hence the Unit focuses only on supporting outbreak management.

The surveillance coordinating committee (now named Epidemic Task Force) meets only during outbreaks and is coordinated and run by Epidemiology Unit. EPI meets this team only if there is an outbreak of VPD like measles. The national measles/rubella laboratory is actively engaged in confirming outbreaks and supports the EPI program for measles and rubella confirmatory tests.

EPI surveillance issues including financial support are discussed only at EPI technical working group meeting; however, following the visit by IST in June 2011 surveillance is discussed at the Essential Health Package working group attended by partners and representatives of WHO and UNICEF.

Booklets with reporting forms and standard case definition posters were available in all districts and health facilities visited. Outbreak monitoring support for cholera was evident in terms of reports and data as well as case management since 2011 to the current year.

IDSR had several important strengths at the zonal, district, and health facility levels. There is an IDSR Focal Person at all districts and most health facilities visited. Standard case definitions and training guidelines for IDSR were available in 78% of the districts.

Most districts (89%) reported that IDSR trainings were conducted between 2005 and 2007 and only one district trained in 2010. In some districts, there is clear evidence of use of the standard computerized tools to capture and analyse data. Lastly, 70% of facilities are using IDSR forms to report priority diseases

Challenges:

Human resources are not adequate at the national level. There is weak linkage with district levels as there is no focal person at Zonal level to coordinate with districts focal persons. This can compromise prompt detection of outbreaks. At national level, the proportion of districts with trained focal persons is not known as the last national training exercise was last conducted 2005 to 2007. There is a budget line for key IDSR activities; however, the funds do not flow as expected so the team has had to prioritize to support outbreak management activities only.

Reporting forms, training guidelines and standard case definitions are available since 2005; however, the AFRO 2010 updated guideline that is inclusive of non -communicable diseases has not yet been adapted.

The Surveillance Coordinating task force is not as active as it used to be prior to 2005 due to shortage of human resources. Except for outbreaks reported and investigated (e.g. on-going cholera outbreaks in 2011 and 2012), there is no evidence of monitoring and feedback of the routine surveillance activities such as monitoring timeliness or completeness of reporting. There are no graphs or tables displayed showing monitoring of IDSR indicators and disease incidence except for the cholera feedback showing six outbreaks investigated in 2011, three of which were contained with appropriate response.

The AFP surveillance system has not been optimally used to support IDSR, other than during the 2010 measles outbreak, where both EPI and Epidemiology Unit worked together.
The Epidemiology Unit believes that coordination among specific disease surveillance programs has not been effective under the IDSR framework, and there is a need to emphasize the benefit of IDSR to different programs that conduct vertical surveillance.
The only linkage that exists is with the HIV program that relies on the Epidemiology Unit for surveillance activities.

Several challenges in IDSR implementation remain at the zonal, district and facility levels. Although standard case definitions were available at the district level, 48% of health facilities did not have standard case definitions for IDSR priority diseases. With IDSR training last conducted by national level in 2007 in the South and in 2010 in one district in the North, findings are sub-optimal. Only 48% of health facility representatives interviewed had been trained and 56% of IDSR focal persons could correctly state country standards for timely reporting.
Tools for monitoring completeness and timeliness are used in only 33% of districts, and average timeliness of reporting from health facilities is at 47%. Line graphs used to

monitor trends of priority diseases were present in 33% of districts and 17% of health facilities. Only 33% of districts had a mechanism to record the occurrence of outbreaks.

Availability of computers for all districts to enable data entry and analysis and existence of some health workers trained in IDSR are two important opportunities that can be used to strengthen this system.

Recommendations

- MOH should initiate mechanisms to strengthen IDSR linkages with other disease specific surveillance programs especially EPI by instituting regular coordination meeting and having a strong advocacy forum, this will enable resource sharing and collaboration.
- IDSR programme with the support of partners:
  - Should update IDSR guidelines using the revised 2010 WHO guidelines
  - Print and disseminate the updated guidelines
- MOH should establish an IDSR position at the Zonal level in order to increase the capacity to supervise and monitor implementation of IDSR and related activities.
- With the availability of computers for IDSR at every district visited, IDSR should institute national level monitoring of key IDSR indicators through:
  - Ensuring utilization of the existing computerized monitoring tools to capture analyze, use and share data.
  - Establishing a strong and regular reporting mechanism requiring each district to submit the indicators on a monthly basis using the standard formats
  - Providing monthly feedback on the overall analyzed indicators to all levels.
  - Logging of all rumours and outbreaks with monitoring of action points taken to investigate the rumours and respond to any confirmed outbreaks.
- Provide internet accessibility at all levels to facilitate timely monitoring, reporting, and feedback mechanism.
- IDSR with the support of partners to organize training of new and refresher for the previously trained staff. create

National Measles Laboratory support for surveillance

The Head since 2005 is retiring in August 2012. There are 29 professional staff with degree (14), diploma (10) or laboratory assistant level of qualification (5). The laboratory is WHO accredited and offers serology, microbiology, haematology, blood chemistry, and blood transfusion services.

The performance for 2011 for measles serology was as follows: total specimens received 889; good condition 90%; confirmed IgM+ve was 34 as measles and 291 as Rubella (15 equivocal measles and 120 rubella equivocal); timeliness of results within 7 days is 80%.

Results are monitored weekly for samples and quarterly for performance. There was stock out of reagents in 2010 for a month linked to the measles outbreak when a lot of samples were received from the field; Uganda laboratory provided the additional reagents. The computer provided for data handling is still functional but the internet antenna is out of order hence e-mail communication directly from the programme is not possible.

The laboratory staff attends the quarterly feedback meeting with districts and national team where onsite feedback on laboratory performance is provided. Monthly data harmonization with EPI is planned but not conducted regularly. Results are shared regularly with EPI team. There is government funding for the laboratory, but there is no contingency stock plan if reagents are not provided through WHO. Other partners support the laboratory but these sources are not predictable.

Challenges:

- There is only one ELISA washer, and another back up machine is required as a breakdown of the current one would compromise investigation.
- The approaching retirement of the current head without an immediate alternative person to take over.
- The currently dysfunctional internet antenna.

Recommendation:

- MOH should request WHO to arrange to train additional staff before the retirement in August of the current head of the laboratory.
- MOH to request WHO to provide a backup ELISA washer as soon as possible.
- MOH to request WHO country office to repair or replace the internet antenna as soon as possible.

e. Polio Eradication committees

The National Task Force on Containment of Wild Polio Virus

NTF coordinator has been in this position since 2005 when he replaced the previous coordinator. NTF meetings have conducted regularly until 2010 when fewer meetings were held due to financial problems. This resulted in inability of the committee to update the laboratory survey in 2011 as per requirements.

The coordinator of NTF informed the team that an external validation of the polio containment report is awaited as per WHO guidelines. It was explained to the NTF coordinator that new developments require the NTF to do internal validation until the ARCC decides using new criteria, which countries need to have an external validation.

The NTF coordinator further informed the team that MOH is planning to establish Public Health Institute. A strategic plan 2009-2014 was developed for this purpose.

The core functions of the institute include surveillance for communicable and non-communicable diseases, Monitoring & Evaluation as well as Research. In addition it is planned to conduct field epidemiology training programs to build capacity for effective and efficient surveillance system in Malawi. This has great potential to strengthen IDSR in Malawi.

The National Polio Expert Committee

The NPEC that currently has three members is in place and functional. One of the NPEC members joined the group recently and has not received formal orientation. The committee has been meeting on average four times annually. The current chairperson has been a member since 2006 and Chairperson from 2007. NPEC secretariat has supported the NPEC functions including organizing NPEC meetings and taking minutes of the meetings, follow up of AFP cases that need expert opinion. The main challenge relates to the cross border collaboration with Mozambique on a yearly basis Malawi has been reporting AFP cases with inadequate stools from Mozambique. At 60 days follow-up and 90 days from date of onset of paralysis, the cases cannot be traced; this has necessitated the NPEC to classify such cases as compatible despite not being Malawian cases.

The National Certification Committee

The NCC is in place and at present has six members, only two attended the orientation held in Swaziland in 2009. The committee have terms of reference and post presentation annual report manuals. The committee has not been meeting on quarterly basis as planned, in 2011 the committee met twice. During meetings the committee supported by the secretariat received global, regional and national updates on the status of polio eradication, receives updates from the NTF and reviews the annual post presentation certification report when due. As part of the preparation of the report, NCC receives updates on classification of AFP cases for inclusion in the report. The NCC members have also been involved in Advocacy for example in 2011 having noted consistent suboptimal surveillance performance in three districts, a delegation led by the Chairperson of the NCC paid a visit to Chiradzulu district on an advocacy mission. However not all the proposed districts were visited as planned.

Recommendations:

- All committees with the support of the secretariat should update their activity plans annually and using these plans, EPI should request for resources for implementation from WHO in a timely manner
- WHO to provide technical guidance and financial support to conduct an internal evaluation of the country containment report.
- MOH should finalize the process of nomination of new members into the NPEC and request WHO to conduct an orientation of the new members.

- EPI should on detection of an AFP case from Mozambique within Malawi send the case investigation forms and other relevant information to IST/ESA to facilitate the transfer of such cases.
- Every year the NCC should present the draft Annual post presentation report to the Secretary for Health or to the Minister of Health before submitting copies to WHO AFRO by end June.
- NCC members should continue to be actively involved in advocacy visits to districts identified to be performing sub-optimally. The findings should be shared with the highest and relevant MOH authorities and the district should be required to report on the implementation of the recommendations/actions to EPI on a quarterly basis.
- The Secretariat should continue circulating updates on Polio in the region (AFRO Weekly polio update, ESA Monthly EPI bulletin, Global polio updates to committee members as well as other stake holders.

f. Support for Routine Immunization:

The 2012 work plan highlights all the planned key activities to allow the MOH reach the goals as per priorities identified. The costed multiyear plan can be used to advocate for required resources from Government and EPI partners. There is an established structure to provide immunization from national to health facility level including outreach services that have been reduced markedly due to funding constraints. EPI Policy document was not available for review at national level. Operational guidelines seen were not updated
There are RED guidelines in draft form that have not yet been disseminated. Routine immunization data is compiled on a monthly basis and shared with WHO/IST and other stake holders.

The Cold chain review conducted in 2011 led to the development of a rehabilitation plan being used to facilitate the uptake of planned introduction of new vaccines and also improve safe and effective vaccine storage, distribution and management. The distribution of vaccine is pull system.
The field manual developed for introducing the pneumococcal vaccine to guide the training is consistent with the recommended standards.
The team visited central, zonal district and health facility vaccine storage facilities Construction of the new cold store at national level is virtually complete awaiting installation of the cold rooms. Similarly, construction of the cold store in Southern zonal office and refurbishing of the one in the Northern zone are in progress but have been delayed.

Main challenges identified were that there were at least fifteen vaccine refrigerators at various levels which were not functional but of concern was the fact that there was not clear indication as to when and how these would be repaired. Some vaccines Measles (May), OPV (Aug) were about to expire at all levels visited in each of the zones, districts and some health facilities visited. VVM was also found to be at

stage 2 and 3 for OPV in some facilities visited. While packaging of vaccines was well done at the national and zonal stores, this was found to be sub-standard in a number of districts and health facilities visited with vaccine over packed and mixed up. Temperature monitoring was being done but it was inconsistent especially at the weekends at national level and some district as well as health facilities visited. At the zonal store in the South, the standby generator for the cold store is not functional due to overloading and unavailability of adequate funds to support maintenance costs. The generator also provides power to the rest of the offices in the Blantyre DHO building hence the overloading of the generator.

Recommendations

- EPI with the support of partners should develop a national EPI Policy document and disseminate to the lower levels appropriately.
- EPI with the support of partners should update EPI operational guidelines incorporating new developments and disseminate to lower levels appropriately
- EPI with support of partners should finalize the RED guidelines currently in draft form and disseminate as soon as possible.
- Funding for the Zonal level activities needs to be revisited to ensure that the Offices will be able to perform their roles better.

- Regarding management of vaccines, EPI should:
  - immediately withdraw the measles vaccine that is expiring in May 2012 and use up the OPV expiring in August or withdraw it appropriately
  - Write to all Zonal, District and Health facilities housing vaccine cold chain equipment reminding all levels the critical need to monitor vaccine refrigerator temperatures as per established standards.
  - Follow up on the critical aspects of cold chain during supervisory visits

g. WHO Support:

WHO is the key partner in supporting VPD surveillance. WHO Medical Officer has been on board since October 2007. He provides support to MOH at national level for all EPI activities. These include but are not limited to outbreak investigation, training, facilitation at EPI meetings, joint field supervision, development, review/updating of technical documents, preparation of reports to mention but a few.

Financial support received in the WHO country office covers contributions for general office running costs, NPO field activities, shipment of stool specimen as well as other specimen, active search, work of certification committees and any other

activities appropriately identified and planned with the EPI programme within the WHO rules.
The main challenge the officer faces is the increasing load of work which does not leave room for effective follow up of secretarial and administrative isseus issues pertaining to EPI especially when on field work. Additionally, there is no established post for surveillance officer at the EPI national level.

The EPI WHO focal person when asked to make suggestions for improving surveillance offered the following three points:

- Designate a substantive national surveillance officer to focus on surveillance and coordinate surveillance activities at lower levels.
- Delink the function of the Central region from the national level so that national officers can focus of national issues.
- Reinstate and request for STOP team support when the next window opens. The TORs for such support will be developed along the lines of needs identified in this review.

Consultation meetings held on 28 & 29 May 2012 at EPI Unit, Lilongwe , Malawi

1. Dr Sam Okiror, WHO IST/ESA IVD
2. Mrs A D Katsulukuta , National EPI, programme manager, MOH Malawi
3. Mr G Z Chirwa, Deputy EPI programme manager, MOH Malawi
4. Dr Kwame Chiwaya, WHO/Malawi (Secretary)

Back ground:

The meeting was held to update the National EPI programme manager on some of the preliminary finding of the external surveillance, appraise her on the review of the recommendations made during previous WHO IST ESA missions to Malawi and to map the way forward ahead of the debriefing.

1. **Data management at district level and STOP officers:** It was mentioned that all districts EPI coordinators received computers for use. However during the review it has been noted some of the coordinators have limited skills and knowledge on computer use and data management. It was proposed by Dr Okiror that Malawi could benefit for STOP Team support of Round 41. The country should request for two officers, a data manager and epidemiologist:

   Actions points: The MOH EPI manager agreed to request for two STOP TEAM officers in the next round (Round 41). Malawi will be expected to work out the TORs according to country needs.

2. **Nomination of New NPEC members**: It was noted that only there members of the NPEC are available. There is a need for additional members.

   Actions point: Names for nominees were submitted to the DPHS; National EPI programme manager to make a follow up on progress. IST/ESA will assist with the orientations o the new members over and above already planned Reorientations of the current Chairpersons of NCC and NPEC.

3. **Implementations of recommendations:** It was acknowledge that Malawi has implemented 24 out of 30 recommendations made during the Desk Review of 2007, for the country response to CVDPV in Mozambique and the WHO IST mission of June 2011. The country should finalise the implementations of the outstanding recommendations as work is in progress. Revise the EPI manual using the most recent AFRO generic guides. Key aspects of these guides should be made into fact sheets; Re-establish the EPI bulletin for sharing feedback ; Elaboration of an AFP surveillance action plan, based on the overall EPI national plan; Resumption of STOP team support; Introducing of AFP surveillance as a standing agenda item at the Essential Health Package (EHP) technical working group meetings; Government to expedite nomination of NPEC members and IST to arrange orientation of the members

4. **EPI comprehensive Review:** Noting that that last review took place in 2003, Dr Okiror recommended that Malawi should plan for the review and coverage survey preferably in 2012. The MOH EPI manager agreed to schedule this activity and inform IST for technical support and other partners for support.

5. **Feedback on performance to Districts:** It was noted that feedback used to be provided to districts by the National level (AFP line list and of performance). Copies of the feedback dating back to 2001 were found in the some of the districts. It was recommended that this should resume and on monthly basis and be expanded to include other data apart from the AFP line list

6. **Support for NCC:** Following a meeting with Dr Dzanjalimodzi, NCC member: It was requested that NCC meetings should be scheduled on regular basis by the Secretariat; Updates on Polio in the region should be shared, and involve the members in advocacy visits to districts like during SNIDS and also to inadequately performing districts as done with Chiradzulu. .

7. **Response to CVDPV**: It was noted that Mulanje, Phalombe and Nsanje conducted OPV SNIDs as part of the response. It was also noted that Thyolo was not able to access financial support from UNICEF due to outstanding financial reports from Thyolo District assembly.

   Action point: WHO/Malawi to find out from UNICE if the issue has been resolved.

MOH EPI, WHO-Malawi and UNICEF -Malawi to determine the way forward on SNIDs in Thyolo. Possibly Thyolo should be advised to add OPV during the June CHDs.

8. **Staffing at zone South West Zone**: It was noted that here is only one senior technical EPI officer in Blantyre, responsible for the whole southern Region (13 districts). Mrs Katsulukuta cited that efforts are underway to address the HRH issues in the zones including South East. With the constructions of the new cold room in Blantyre, additional staff will be deployed to South West Zone.

   Submission of Weekly AFP data to IST ESA: A concern was raised by Dr Okiror that Malawi is one of the five countries in ESA sub-region with poor indicators for timeliness for AFP and measles case based data. Noting that Mr Chirwa is also the Deputy programmer and has other responsibilities, a request was made to the EPI manager to consider assigning the responsibilities to Mr Tambuli, the other data manager who handles RI data.

   Action point: The EPI manager agreed to consider this suggestion in the interest of ensuring timely and complete submissions of data.

9. **Final classification of AFP cases for 2011**: It was noted that AFP data base for 2011 has not been closed and three cases from Mozambique reported by Malawi have not been traced and final classification not determined by NPEC. These cases were not transferred to Mozambique as per recommended procedures.

   Advice given: If Malawi reports cases from Mozambique , and at 60 days follow-up and 90 days from date of onset of paralysis., the case cannot be traced , Malawi should send the Case investigation Forms and other relevant information to IST/ESA who will in turn forward the same to Mozambique. A new EPID for Mozambique will then be issued for the cases.

   Actions point: The three cases for 2011 still appearing in the Malawi database should be classified as polio compatible.

10. Post External Surveillance Review: As per standards Malawi will be expected to submit an update on implementation of the External Surveillance after three months. It was proposed that the results of the in-depth surveillance review should be widely disseminated preferably a review meeting to be attended by districts, zone and priority health facilities. The meeting should also discuss the status in other districts and health facilities not visited. Planning for this meeting should include preparation of the relevant information as per questionnaire administered.

4. Conclusions

- Malawi has an EPI structure which is functional but needs a number of updates to be implemented including updating and development of various critical documents as detailed in the main report.

- Despite the existence of a surveillance structure, the gaps outlined particularly at operational level puts the country at risk of not being able to TIMELY detect Wild Polio Virus (WPV) and/or Circulating Vaccine Derived Poliovirus (cVDPV) should this occur. Furthermore that timely detection of outbreaks of other vaccine preventable diseases or diseases of public health importance could be delayed or compromised altogether. Key activities to address the gaps include documented
  - Implementation of the **ACTIVE SEARCH** process
  - Re-introduction of the **TECHNICAL SUPERVISION** by the extended DHMT
  - **MONITORING** of implementation of AFP surveillance activities at operational level by the Zonal and National level
  - Monitoring and recording all rumours of outbreaks followed by immediate investigation
- While the cold chain system is in place at all levels, current status of monitoring vaccine potency and unclear arrangements to maintain the cold chain equipment at all levels, puts the quality of vaccines at risk.
- The linkage between IDSR and EPI particularly on surveillance is weak and needs to be strengthened to allow synergy.

Annex 1 : List of Interviewees

National Level

Name of Interviewee	Responsibility	Institution
Mr Geoffrey Chirwa	Deputy EPI manager	MOH
Mr Tambuli Ajida	EPI program (Assistant Data manager)	EPI program
Dr Mathew Kagoli	Epidemiology unit head	MOH
Mr Moris M'bang'ombe	Surveillance officer	MOH
Mr Gervase Gamadzi	National Measles Laboratory	Kamuzu Central Hospital
Mr. Mwenda Reuben	Coordinator of NTF Deputy Director Health Technical support services	MOH Malawi
Dr. Kwame Chiwaya	NPO Surveillance	WHO
Mr. Kennedy Nowa	Admin /Logistics officer	WHO
Mr. Doopsy Mwanza	National EPI Cold Room Manager	MOH
Mr. Edward Soko	Central Region Cold Chain Officer	MOH
Mr Whitely Chirwa	Clinical officer	KCH
Dr Kelias Msyamboza	Disease Prevention and Control	WHO
Dr S Kabuluzi	NPEC Chairperson	MOH
Dr Edward Dzanjalimodzi	NCC Member	Private Practitioner

Northern Region

Name	Responsibility	Health facility	District
Mr Rouden Esau Mkisi	EPI officer	Northern Zone	Mzimba
Mrs Annie Ngulube	EPI Officer	Mzimba North DHO	Mzimba
Mrs Elleanor Mwalwanda	MCH Coordinator	Mzimba North DHO	Mzimba
Mr Stanley Ngoma	In-charge Clinical Officer	Mzuzu Health Centre	Mzimba
Mr Evance Chirambe	SHSA	Mzuzu Health Centre	Mzimba
Mr B H Chitete	Clinical Officer	Mzuzu Central Hospital	Mzimba
Mr HM Nyasulu	Senior Clinical Officer	Mzuzu Central Hospital	Mzimba
Mr Admiral-Heinz Chatsikah	Clinical Officer	Ekwendeni Mission Hospital	Mzimba
Mr Chatonda Kanyinji	Traditional Healer	Chikompulazi vge Ekwendeni	Mzimba
Mr Happy Nyirenda	EPI Officer	Nkhata-Bay District Hospital	Nkhata Bay
Hastings Sikoti	Clinical Officer	Nkhata-Bay District Hospital	Nkhata Bay
James Chiwaka	Medical Assistant	Luwazi Health Centre	Nkhata Bay
Mr Chawanangwa Luwe	Medical Assistant	MPamba Health Centre	Nkhata Bay
Mrs Siwandauka Nyirenda	Traditional Healer	Timbiri Village, Mpamba Health Centre	Nkhata Bay
Mr Edward Gondwe	IDSR Coordinator	Karonga District Hospital	Karonga
Mr Elias Phiri	EPI Officer	Karonga District Hospital	Karonga
Omega Mkandawire	Deputy Head Nurse	Karonga District Hospital	Karonga
Frazer Nkhoma	Clinical Officer	Karonga District Hospital	Karonga
Maria Kasambala	Traditional Healer	Malema II village near Karonga District Hospital	Karonga
Mr Future Mzumara	SHSA	Nyungwe Health Centre	Karonga
Martin Banda	Medical Assistant	Nyungwe Health Centre	Karonga

Central Region

Name	Responsibility	Health facility	District
Mrs Chitsa Banda	Zone Officer	Central West Zone	Lilongwe
Mr Mc John Chinkuzi	MCH Coordinator	Salima DHO	Salima
	IDSR focal person	Salima DHO	Salima
Mr Lazarus Juziwelo	MCH Coordinator	Lilongwe DHO	Lilongwe
Mr Benson Chidaomba	IDSR focal person	Lilongwe DHO	Lilongwe
Mr T Jose	EPI focal point	Mitundu R Hospital	Lilongwe
Mr Chola	EPI coordinator	Kasungu DHO	Kasungu
Mr Daniel Gamadzi	IDSR coordinator	Kasungu DHO	Kasungu
Mr Adams	Environmental Health Officer	Likuni Mission Hospital	Lilongwe
Mr Alfred Chadzabwanji	SHSA	Nathenje Health Centre	Lilongwe
Mr Agripa Kazuma		Chipoka Health Centre	Salima
Nyangatayani	Traditional Healer	Chinkokomo	Lilongwe
Mariko	Traditional Healer	Chapendeka, T/A chadza	Lilongwe
S Zoyanga	Traditional Healer	Namajika Village	Salima
Malita	Traditional Healer	Motolosi, village , Mitundu	Lilongwe

Southern Region

Name	Responsibility	Health facility	District
Mrs E Chinkono	EPI officer	South West Zone	Blantyre
Mr Guwende	Cold chain technician	South West Zone	Blantyre
Mrs R Kammwamba	EPI Coordinator	Blantyre DHO	Blantyre
Mr Alinafe Hauya	IDSR coordinator	Blantyre DHO	Blantyre
Mr J. Mulipa	HSA/cold chain technician	Blantyre DHO	Blantyre
Mr. B. Monamala	HSA/cold chain technician	Blantyre DHO	Blantyre
Mr S Duka	HSA & EPI focal person	Ndunde HC	Chiradzulu
Mr S Malongo	Medical assistant	Ndunde HC	Chiradzulu
Mrs I Chiduleni	HSA	Ndunde HC	Chiradzulu
Mrs K Banda	Community Health Nurse	St Josephs	Chiradzulu
Mrs Muonjeza	Enrolled Nurse/PHC	St Josephs	Chiradzulu
Mr N Kumwenda	EPI coordinator	Chiradzulu DHO	Chiradzulu
Mr A Zgambo	IDSR coordinator	Chiradzulu DHO	Chiradzulu
Mr K Ndau	EPI coordinator	Nsanje DHO	Nsanje
Mr Nguwo	IDSR	Nsanje DHO	Nsanje
Mrs Chimbalanga	CHN	Mulanje DHO	Mulanje
Mr l Pota	CO/ Surveillance focal point	Mulanje DHO	Mulanje
Mr A Kaipa	AEHO/EPI coordinator	Mulanje DHO	Mulanje
Mr B Chitsime	IDSR focal person	Mulanje Mission	Mulanje
Mrs Mwizawina	PHC Coordinator/EPI focal person	Mulanje Mission	Mulanje
Mrs O Kanyongola	CHN/EPI focal person	Mlambe Mission	Blantyre
Mrs Sikwese	Matron/supervisor	Blantyre Adventist	Blantyre
Mrs Mthyoka	CHN/EPI focal person	Blantyre Adventist	Blantyre
Mr Gama	Medical Assistant/In-charge	Makhanga HC	Nsanje
Mr Kamfosi	HSA/EPI focal person	Makhanga HC	Nsanje
Mrs A Nakuyipa	CHN/EPI focal person	Trinity Mission	Nsanje
Mr Kabethe	IDSR focal person	Trinity Mission	Nsanje

Annex 2: List of Review Team

External

1. Dr Samuel Okiror, WHO IST/ESA, Harare
2. Dr Messeret Eshetu, WHO IST/ESA, Harare
3. Mr Kennedy Chitala ,WHO IST/ESA, Kenya
4. Dr Jonathan Worthan , CDC Atlanta
5. Dr Trong Thanh Hoang AO, CDC/Atlanta
6. Ms Rufaro Chirambo, WHO /Zambia

Internal

7. Mr Allan Macheso, UNICEF/Malawi
8. Mr Dennis Mwagomba, MOH EPI / Northern Health
9. Mr Samuel Longwe, MOH/Northern Health Zone
10. Mrs E. Chirwa, MOH/Central East Health Zone
11. Mr Bright Kankhuni, MOH EPI / Northern Health Zone
12. Mrs Hanna Hausi, MCHIP/Malawi
13. Mr Settie Kanyanda, MOH / Epidemiology Unit
14. Mr G Banda, MOH / South East Health Zone
15. Mr Evans Mwendo, MOH EPI / National level
16. Dr Kwame Chiwaya, WHO /Malawi

Annex 3: Review team Photo