Revised on 1st September 2021

NATIONAL PREPAREDNESS AND RESPONSE PLAN FOR POLIOMYELITIS

1. Executive Summary:

Poliomyelitis is a debilitating disease caused by a poliovirus which is transmitted mainly by the faeco-oral route and affecting the nervous system resulting in paralysis. Children under 15 years are mostly affected with lower limb palsies.


Mauritius was having epidemics of polio in the 1940s and 1950s and the last case of polio was reported in July 1967. Since then, Mauritius has been free of the disease. As polio is still endemic in two countries (Pakistan and Afghanistan), the risk of importation of the virus is an event that merits due consideration for any country. The National Preparedness and Response Plan for Poliomyelitis addresses the strategies to be adopted in the likelihood of such an event in Mauritius to contain and prevent any local transmission of poliovirus.

A single case of poliomyelitis would qualify as an event of national public health emergency and would activate the plan.

The plan has three phases:

1. A preparedness and planning phase with the setting up of
   - The National Task Force on Poliomyelitis
   - The Intersectoral Committee
   - The Emergency and Response Committee
   - The Rapid Response Team

2. Containment phase:
   - With case detection, isolation and contact tracing
   - Enhanced surveillance
   - Massive mop-up immunization campaigns

3. Outbreak cessation phase
   - Documentation of cessation of the outbreak following twelve months of enhanced surveillance.
WHO support would be enlisted from the very beginning up to the end of the outbreak.

2. PURPOSE OF THIS DOCUMENT

This response plan has been prepared for use should one or more cases of poliovirus infection occur in Mauritius and outline the routine surveillance procedures currently in place to detect potential poliovirus infections. The Ministry of Health and Wellness has prepared this document as a guide for key stakeholders involved in disease surveillance and control, as part of the country’s preparedness in addressing the potential public health impact of a case of polio.

3. INTRODUCTION

Poliovirus Poliomyelitis (polio) is a highly infectious disease caused by poliovirus, a small, non-enveloped enterovirus of the family Picornaviridae. Poliovirus infection occurs principally person-to-person via the faecal-oral route. The virus is ingested and replicates in the gut, mostly without causing symptoms, and then is excreted in faeces. Poliovirus is readily shed from symptomatic and asymptomatic cases: it is detected in the nasopharynx for up to two weeks after infection and virus are shed in the faeces for up to 5–6 weeks or significantly longer in those individuals who are immunosuppressed. Vaccination may attenuate virus shedding. There are three serotypes of poliovirus (serotypes 1, 2 and 3).

The incubation period is commonly 7-14 days for paralytic cases but can range from 3-possibly to 35 days. Cases are most infectious during the days before and after onset of symptoms and the period of communicability occur for the period of time the virus is excreted. Transmission can be enhanced by poor sanitation.

Acute anterior poliomyelitis caused by poliovirus typically follows a prodrome of systemic symptoms and signs that include fever, vomiting, diarrhea or constipation, muscle pain and headache. In less than 1% of cases (1 in 200) the virus invades the nervous system, causing acute flaccid paralysis (AFP), usually involving the legs.

Rapidly progressing flaccid paralysis begins while the child is still febrile and reaches maximum involvement within 2 or 3 days. The anatomic distribution of weakness is usually asymmetric, beginning in lower or less often upper, extremities. Muscle atrophy follows and functional recovery is minimal.

Bulbar paralysis, presenting with paralysis of the respiratory muscles occurs in 8% to 18% of patients in the tropics with a mortality of between 5% to 10%.

Polio can strike at any age, although the World Health Organization (WHO) reports that over 50% of all cases are in children under the age of three. However, as most cases
are asymptomatic, poliovirus transmission can occur rapidly before a case of paralysis is seen.

Polio cases have decreased by over 99% since 1988, from an estimated 350 000 cases in more than 125 endemic countries then, to 74 reported cases of wild poliovirus in 2015.

**The Global Polio Eradication Initiative:**

- In 1988, the forty-first World Health Assembly adopted a resolution for the worldwide eradication of polio.
- It marked the launch of the Global Polio Eradication Initiative (GPEI), spearheaded by national governments, WHO, Rotary International, the US Centers for Disease Control and Prevention (CDC), UNICEF, and supported by key partners including the Bill and Melinda Gates Foundation.
- This followed the certification of the eradication of smallpox in 1980, progress during the 1980s towards elimination of the poliovirus in the Americas, and Rotary International's commitment to raise funds to protect all children from the disease.
- In 1988, when the Global Polio Eradication Initiative began, polio paralyzed more than 1000 children worldwide every day.
- Since then, more than 2.5 billion children have been immunized against polio thanks to the cooperation of more than 200 countries and 20 million volunteers, backed by an international investment of more than US$ 9 billion.
- In 1994, the WHO Region of the Americas was certified polio-free, followed by the WHO Western Pacific Region in 2000 and the WHO European Region in June 2002.
- On 27 March 2014, the WHO South-East Asia Region was certified polio-free, meaning that transmission of wild poliovirus has been interrupted in this bloc of 11 countries stretching from Indonesia to India.
- Of the 3 types of wild poliovirus (type 1, type 2 and type 3), type 2 wild poliovirus transmission have not been detected since 1999 and the last case of type 3 was in November 2012.
- More than 10 million people are today walking, who would otherwise have been paralyzed.
• In 2013 the Global Polio Eradication Initiative launched its most comprehensive and ambitious plan for completely eradicating polio.

• It is a 5 year all-encompassing strategic plan that clearly outlines measures for eliminating polio in its last strongholds and for maintaining a polio-free world.

• The new Polio Eradication and Endgame Strategic Plan 2013-2018 presented at a Global Vaccine Summit in Abu Dhabi, United Arab Emirates, at the end of April 2013 is the first plan to eradicate all types of polio disease simultaneously – both due to wild poliovirus and due to vaccine-derived polioviruses.

• As endemic transmission is continuing in Pakistan and Afghanistan, failure to stop polio in these last remaining areas could result in as many as 200 000 new cases every year, within 10 years, all over the world.

The Polio Eradication and Endgame Strategic Plan have 4 major objectives:

1. **Poliovirus detection and interruption**

To stop all WPV transmission by the end of 2014 through enhanced surveillance, national emergency plans and rapid outbreak response. It also includes stopping any new polio outbreaks due to a circulating vaccine-derived poliovirus (cVDPV) within 120 days of confirmation of the index case.

2. **Immunisation systems strengthening and OPV withdrawal**

To eliminate all VDPV risks, in the long term all OPV must be removed from routine immunisation programmes. It entails strengthening immunisation systems and introducing at least one dose of IPV into routine immunisation programmes globally (145 countries) and replacing trivalent OPV with bivalent OPV in all OPV-using countries.

3. **Containment and Certification**

It encompasses the certification of eradication and containment of all WPVs in all regions by the end of 2018. Criteria have been established for the safe handling and biocontainment of such polioviruses and processes to monitor their application so as to minimise the risk of poliovirus reintroduction in the post-eradication era. All 194 Member States of the World Health Organisation are concerned by this objective.

4. **Legacy Planning:**

As the polio programme approaches eradication, successful legacy planning will include mainstreaming essential polio functions into ongoing public health programmes at national and international levels, ensuring transfer of lessons learnt to other relevant
programmes and transitioning assets and infrastructure to benefit other development goals and global health priorities.

All 4 major objectives of the Plan are not sequential but run in parallel.

**Polio Vaccines**

Oral Polio Vaccine (OPV) and Inactivated Polio Vaccine (IPV) are trivalent vaccines designed to protect against all three serotypes. In recent years, monovalent OPV vaccines (mOPVs) against each of the attenuated types of polio virus (type 1, type 2 or type3) have been developed in collaboration with WHO. These vaccines (mOPV1, mOPV2, mOPV3) offer protection against the specific polio virus type. Monovalent OPVs against type-2 is not used but is stockpiled if it is required (as endemic circulation type 2 virus has been halted). A bivalent OPV vaccine, with attenuated Sabin type 1 and 3 polio virus (bOPV1&3) was licensed in 2009.

**Vaccine Derived Polio Viruses (VDPV)**

A vaccine derived poliovirus (VDPV) has by definition, ≥ 1% variation in the VP1 nucleotide sequence compared to the reference OPV strain. Genetic variation arises from long-term virus replication, in particular in those individuals with an immunodeficiency (iVDPV), or by person-to-person transmission in a location with low vaccine coverage and continued use of OPV (circulating or cVDPV). This variation may result in the poliovirus reverting to “wild type” with the potential for significant mortality and morbidity. In 2013 Afghanistan, Pakistan and Nigeria continued to have endemic cases. Importation of WPV1 was reported in the Horn of Africa, Central Africa (Cameroon and Equatorial Guinea), Israel and Gaza Strip, Syria and most recently Iraq. In Israel and the Gaza Strip although no polio cases have been reported but the virus WPV1 has also been isolated in environmental samples. In 2015 only 2 countries were endemic for wild poliovirus transmission viz. Pakistan (54 cases) and Afghanistan (20 cases). Circulating virus derived polioviruses (cVDPVs) were found in Madagascar and Laos PDR, Guinea, Myanmar, Ukraine, Nigeria and Pakistan. On the African continent, in 2015, Nigeria did not report any wild poliovirus cases (the last one had onset of paralysis on 24 July 2014) but cVDPV2 have been identified in environmental samples on 23 March 2016 indicating that the strain has been circulating for almost 2 years in the environment.
4. BACKGROUND

The Republic of Mauritius constitutes mainly of the island of Mauritius and Rodrigues.

Mauritius is about 2040 km² with a population density of 654 per sq.km and is situated 2000 km off the east coast of Africa in the Indian Ocean. Rodrigues is situated 560 km North East of Mauritius. In 2015, the per capita income for the Republic of Mauritius had attained $9187.4 with a per capita public expenditure on health of $212.

Mauritius is divided in 9 districts, with Rodrigues Island as the 10th district. The population of Mauritius in 2015 was 1,262,862 and that of Rodrigues was 42,058. The whole Republic of Mauritius comprises of 6 Health Regions, designated specifically to cater for the implementation of a decentralized health service. Each Health Region consists of two Districts in Mauritius. Rodrigues is the 6th Health Region by itself. The primary healthcare services are delivered through a satellite network of 126 (112 in Mauritius and 15 in the Island of Rodrigues) Community Health Centres, 22 Area Health Centres and 5 Mediclinics. Vaccination is fully integrated in the primary healthcare system and is delivered mainly through AHCs and CHCs and is entirely financed by government and is free of charge. There is a health center within 3 km of residences of the population. In addition to this, Mauritius has good sanitation, safe drinking water and regular services for disposal of refuse. According to the national population census in 2011, the number of households with electricity was 99.4%, with piped water supply on premises 99.4%, with flush toilet 96.4% and with a regular collection of garbage of 96.3%.

Mauritius has made considerable progress in the health status of the population. In 2015 the maternal mortality rate was 0.47 per thousand live births and the Infant mortality rate was 13.6. The country is now faced with an ageing population (14.8% above 60 years in 2015 compared to 5.9% in 1972). At present the age group 0-14 yrs forms 19.6% of the population. The population aged less than 5 years amounted to 69,224 (5.5% of population) with 13,033 (1.0% of population) aged less than one year in 2015. The life expectancy in 2015 was 71 yrs for males and 78 yrs for females.

Mauritius is a country with an efficient and excellent immunization program reaching over 95% of the children immunized with all childhood vaccines (inclusive of both public and private sectors).

There has been a routine Notification of Poliomyelitis cases in Mauritius in the year 1945 with the beginning of Polio epidemics. In fact, according to previous health reports there is evidence that a project analogous to AFP Surveillance was in place since 1925, but reporting was in the form of infantile paralysis (Public Health Ordinance 1925).
Following polio epidemics in the 1940s and 1950s, with the last case of wild poliomyelitis reported in 1967, there has been a continuous passive zero reporting surveillance system for poliomyelitis, which was incorporated in the existing reporting system with other infectious diseases like malaria, diphtheria; whooping cough, etc. that were present in the country.

Following the visit of Dr. MbayeSalla, of WHO/AFRO in April 2002, active AFP Surveillance was introduced. Consequently Active Acute Flaccid Paralysis Surveillance was started on field for the Republic of Mauritius on 4th August 2003. In order to sensitize all stakeholders that would be involved in the implementation of AFP Surveillance, seminars were organized in Mauritius and the island of Rodrigues. The targeted health personnel consisted of Paediatricians, Neurologists, ward managers, public Health nurses, records officers, and parties from private clinics.

The Ministry of Health and Wellness of Mauritius has committed itself to The Global Polio Eradication Initiative of the WHO and following the recommended strategies mainly:

- High routine OPV coverage
- Implement Reaching Every Community (REC)
- Accelerate Acute Flaccid Paralysis Surveillance
- Training of Health workers

Immunization in general has always been an essential component of the Mauritian health services. The first activities related to Polio Immunization dated back to 1957, when Salk vaccine was given to all children (80,270) under the age of 5 years. In August 1959, Sabin live polio virus vaccine was introduced. Since 1960, Vaccination against Poliomyelitis with Sabin vaccine has become a regular feature of the immunization programme of Mauritius. For example, in 1967, 94% of school entrants aged 5 years and 96% aged 6 years were vaccinated against polio and Diphtheria/Tetanus (1967 Health Report).

Mauritius has been free from wild polio virus since 1967. Given its insularity characteristics, Mauritius does not share any borders with any country. And no countries in the Indian Ocean are Polio endemic for wild Polio Virus. Should there be any importation, no particular region or group of regions are suspected to be more vulnerable to outbreaks that any other part of the country.

To enable monitoring and evaluation of immunization coverage, the Health Statistics Unit of the Ministry of Health and Wellness publishes a monthly EPI report.

The main indicators in the monthly report are number and coverage rate of all antigens in the immunization schedule. Coverage is given in terms of percentage of live births.
This report helps health workers to evaluate their performance and take corrective measures.

5. **Acute Flaccid Paralysis (AFP) Surveillance:**

5.1 **Case Definitions:**

A suspected Case is defined as a child under 15 years of age presenting with acute flaccid paralysis or any person of any age with paralytic illness if poliomyelitis is suspected.

Acute flaccid paralysis syndrome is characterised by rapid onset of weakness of an individual’s extremities, often including weakness of the muscles of respiration and swallowing, progressing to maximum severity within 1 – 10 days. The term “flaccid” indicates the absence of spasticity or other signs of disordered central nervous system (CNS) motor tracts such as hyperreflexia, clonus, or extensor plantar responses. (Excerpt from Acute onset flaccid paralysis; World Health Organisation 1993; WHO/MNH/EPI/93.3. Geneva)

Acute Flaccid Paralysis may have multiple causes including viruses, bacteria, toxins and immunological origins (Annex 1)

Active surveillance is a strategy for public health staff to “actively” identify cases and collect information (Annex 2) by visiting health facilities regularly (instead of waiting “passively” for case reports). Since many acute flaccid paralysis cases may not be reported on time or may not be reported at all, weekly visits to major health facilities must be conducted to look for unreported cases (especially general hospitals with departments of paediatrics or neurology). During these visits, the responsible public health staff should search for unreported cases of acute flaccid paralysis.

Acute flaccid paralysis is rare. Experience elsewhere has shown that hospital staff may simply miss cases and not report them, or they may be only found retrospectively through search of medical records. Delayed reporting prevents the timely collection of stool specimens and reduces or eliminates the possibility of laboratory confirmation of cases of wild poliovirus. Active surveillance is an effective way to remind and sensitize hospital staff to report acute flaccid paralysis cases if they are seen in the facility and to collect specimens from cases while they are still in the hospital.

5.1.1 **Rationale for surveillance**

- Poliomyelitis is targeted for eradication.
- Highly sensitive surveillance for acute flaccid paralysis (AFP), including immediate case investigation, and specimen collection are critical for the
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detection of wild poliovirus circulation with the ultimate objective of polio eradication (Annex 3).

5.1.2 Principal uses of data for decision-making:

- Track wild poliovirus circulation
- Use data for classifying cases as confirmed, polio-compatible or discarded (see Annex 4).
- Monitor routine coverage, as well as performance of surveillance (by means of the standard indicators listed above) in all geographical areas and focus efforts in low-performing geographical areas
- Monitor seasonality to determine low season of poliovirus transmission in the interest of planning national immunization days (NIDs)
- Identify high-risk areas with a view to planning mop-up immunization campaigns
- Provide evidence to certification commissions of the interruption of wild poliovirus circulation

5.1.3 Surveillance underpins the entire polio eradication initiative.

- Without surveillance, it would be impossible to pinpoint where and how wild poliovirus is still circulating, or to verify when the virus has been eradicated in the wild. Surveillance identifies new cases and detects importations of wild poliovirus.
- Nationwide AFP (acute flaccid paralysis) surveillance is the gold standard for detecting cases of poliomyelitis.

5.1.4 The four steps of surveillance(Annex 5) are:

- Finding and reporting children with acute flaccid paralysis (AFP)
- Transporting stool samples for analysis
- Isolating and identifying poliovirus in the laboratory
- Mapping the virus to determine the origin of the virus strain

5.1.5 Recommended types of surveillance:

- Aggregated data on AFP cases should be included in routine monthly surveillance reports
- Designated reporting sites at all levels should report at a specified frequency (e.g. weekly or monthly) even if there are zero cases (often referred to as "zeroreporting")
- All outbreaks should be investigated immediately
• All AFP cases under 15 years of age or with paralytic illness at an age where polio is suspected should be reported immediately and investigated within 48 hours, and two stool specimens should be collected 24-48 hours apart and within 14 days of the onset of paralysis
• Active surveillance: Regular weekly visits should be made to selected reporting sites that are most likely to admit acute flaccid paralysis patients (e.g. major hospitals, physiotherapy centers) to look for unreported AFP cases.

5.2 AFP SURVEILLANCE IN MAURITIUS

Mauritius has introduced Acute Flaccid paralysis [AFP] surveillance in 2003. The surveillance is being carried out for children aged less than 15 years. The surveillance covers exhaustively and methodically all the districts of the country. All activities of the AFP surveillance are carried out under the aegis of the Ministry of Health & Wellness, thus making full use of the existing health system, in terms of infrastructure, qualified and experienced human resources and also the available logistic support.

Every week, six Senior Public Health Nursing Officers undertake regular visits to a total of 22 AFP Surveillance sites (Annex 6), scattered evenly in the 6 health regions, under the supervision of a National Surveillance Officer. All Acute Flaccid Paralysis (AFP) cases in Mauritius are admitted either in a government hospital or in a private health institution (private clinic). There are 5 Regional Hospitals in Mauritius evenly distributed over the island: the Jawaharlal Nehru Hospital catering for the catchment population of the districts of Grand Port and Savanne; the Bruno Cheong Hospital for the districts of Flacq and Moka; the Sir Seewoosagur Ramgoolam National Hospital for the districts of Pamplemousses and Riviere du Rempart, the Dr A. G. Jeetoo Hospital for the districts of Port Louis and part of Plaines Wilhems district while the Queen Victoria Hospital covers the Black River district and the remaining part of Plaines Wilhems district. In addition there are 12 small sized private clinics which are also covered during this exercise. Rodrigues Island is the 6th health Region with 3 surveillance sites.

The Senior Public Health Nurse (SPHN) visits the wards of the hospitals/clinics and meets the staff enquiring about any admitted paralysis or weakness cases. For any AFP case the SPHN immediately notifies the Virology Unit situated at Central Health Laboratory, Victoria Hospital, collects 2 stool specimens (8-10 grams each) within 14 days of onset of symptoms and send these in an icebox (below 4°C) to the Laboratory accompanied with a duly filled data collection form. The Virology Unit at Victoria Hospital makes a booking by DHL for the shipment by air on the earliest flight to Institut Pasteur Madagascar. The clinical scientist at the Virology Laboratory ships the stools to Institut Pasteur Madagascar by triple packing using a Biosafety Cabinet level 2 (BSL-2). The National AFP Surveillance Officer is also notified and a regular followup on the clinical evolution of the case is undertaken by the Senior Public Health Nurse. The Institut
Pasteur Madagascar sends a report by post within 14 days of receipt of the stool specimens. These results are then communicated by the clinical scientist to the respective hospital and the Senior Public Health Nurse following the case, who in turn informs the National AFP Surveillance Officer.

A follow up of the case by the SPHNO and treating doctor is made at 60 days for any residual paralysis and the findings documented.

The National AFP Surveillance Officer after receiving the full documentation about the case convenes a meeting with the National Polio Expert Committee (NPEC) together with the AFP Secretariat for classification of the AFP case as polio, polio-compatible or non-polio AFP and submits a report to the National Certification Committee (NCC). Regular meetings are also held by members of the National Task Force for Containment (NTFC) Committee which then reports to the NCC. The NCC submits a final report to the WHO AFRO - Regional Certification Commission (RCC).

The Acute Flaccid Paralysis Surveillance team is composed of the following committees (Annex 7)

- The National Certification Committee
- The National Polio Expert Committee
- The National Task Force for Laboratory Containment
- The National AFP Surveillance Secretariat

5.2.1 Potential Scenarios for a Poliomyelitis Outbreak in Mauritius.

There are several possible presentation scenarios for a case of poliovirus infection in Mauritius and the most likely are presented below.

Scenario 1- Importation of wild poliovirus from an endemic country or a country with recently imported poliovirus;

Scenario 2- Importation of VDPV from a country that has circulating VDPV;

Scenario 3- Wild poliovirus isolated from the stools of an individual with no neurological symptoms or history of recent travel to a polio endemic area

Scenario 4- Wild poliovirus isolated from sewage or environmental samples (Annex 8)

Scenario 5- A case of vaccine associated poliovirus (VAPV).
Confirmation of a polio outbreak would require one of the following conditions to be met: multiple detection of wild polioviruses or VDPV in the environment; detection of a number of genetically distinguishable wild polioviruses or VDPV; and cases of paralytic polio or isolation of wild poliovirus or VDPV from infected person/persons.

The presentation scenario will impact on the extent of the required health response. Any notification of poliovirus in Mauritius will require epidemiological investigation to determine the likely source of infection. As stated previously, as poliovirus has been eradicated from Mauritius, a single case of wild poliovirus (WPV) or circulating vaccine derived poliovirus (cVDPV) infection would be considered an outbreak situation. A case of vaccine associated paralytic poliomyelitis (VAPP) will need to be investigated, however, is not likely to result in secondary cases and therefore would not lead to activation of this plan.

The clinical scientist/virologist upon receipt of confirmatory results for polio from Institut Pasteur Madagascar, will immediately inform the National AFP Surveillance Officer, the Director Health Services Preventive (also the National Polio Eradication Coordinator), the Director Laboratory Services and the Director General Health Services of the Ministry of Health and Wellness. The Director Health Services, Preventive, as the IHR Focal Point contacts the Officer in Charge of the WHO Local Office to report the case.

6. POLIO OUTBREAK RESPONSE PLAN

6.1 PREPAREDNESS AND PLANNING PHASE

6.1.1 Setting up of a National Task Force on Poliomyelitis

The national response plan would be activated by The Honorable Minister of Health and Wellness as Chair of the National Task Force on Poliomyelitis. This Task Force would be convened within 24 to 48 hours following the notification of a case of poliomyelitis by the Director General Health Services. The National Task Force on Poliomyelitis would oversee all operations relating to outbreak response and also would declare the end of the outbreak. The National Task Force on Poliomyelitis would comprise of the following members:

- The Honorable Minister of Health and Wellness (Chairperson)
- Director General Health Services
- Representative of WHO Local Office
- Directors Health Services (Preventive, Curative, Primary Health Care, Equipment, Training)
- Regional Health Directors
• Directors of Private Clinics
• President of Private Clinics Association
• President Private Medical Practitioners’ Association
• Director Laboratory Services
• Adviser in Virology and Molecular Biology
• Regional Public Health Superintendents
• Consultant Paediatricians
• Consultant Physicians
• Consultant Orthopaedic Surgeons
• Consultant Neurologists
• Community Physicians CDCU
• Director Nursing
• Director Pharmaceutical Services
• Chief Hospital Administrator
• Director Public Health and Food Safety
• Head Transport Division
• Principal Public Health Nursing Officer

This committee will examine all the facts concerning any confirmed case of Poliomyelitis that has been declared in the Republic of Mauritius and develop the following strategies:

1. Establish an Emergency Response and Monitoring Committee with Rapid Response Teams.
2. Conduct an initial investigation;
3. Make a complete risk assessment within 72 hours of confirmation of the index case;
4. Reinforce laboratory capacity and to inform Institut Pasteur Madagascar for a potential surge in stool samples for analysis.
5. Implementation of a minimum of three large-scale rounds of immunization:
   • conducting first-round supplementary immunization activities within two weeks of confirmation of the index case, with an interval of two to three weeks between subsequent rounds;
   • using a type-specific monovalent oral poliomyelitis vaccine or another composition of vaccine if appropriate;
   • targeting all children aged younger than five years in the affected and adjacent geographical areas;
   • ensuring that at least 95% immunization coverage has been reached;
6. Reinforce surveillance for acute flaccid paralysis for the duration of the outbreak and at least 12 months immediately thereafter; and
7. Sustain high coverage of routine oral poliomyelitis immunization of at least 80% and highly sensitive disease surveillance.

8. Calculation of the overall budget for the Action Plan with the following main activities:

- Enhancing Surveillance
- Funding for increased laboratory investigations and vaccines
- Supplementary Immunisation activities
- Transport expenses
- Training
- Communication
- Miscellaneous

### 6.1.2 Setting up of an Intersectoral Committee

To seek the support of other ministries and stakeholders, an Intersectoral Committee headed by the Honorable Minister of Health and Wellness would define the roles, functions and responsibilities of the different parties for a smooth implementation of the plan. The following ministries would be represented in the Intersectoral Committee:

- Ministry of Health and Wellness (Chairperson)
- Prime Minister's Office
- Ministry of Education and Human Resources
- Ministry of Environment
- Ministry of Finance
- Ministry of Local Government and Outer Islands
- Ministry of Tourism and Leisure
- Other ministries would be co-opted as and when required.

The inputs from the various stakeholders would be essential for the widespread sensitization and mobilization of the community required for the early detection, investigation of Acute Flaccid Paralysis cases and the rapid massive immunization response triggered by the outbreak.

The assistance of WHO will be sought in the following areas:

- providing WHO staff or other international experts to assist in conducting the risk assessment and reviewing the national emergency action plan;
- assessing the effectiveness of the control measures in place;
- attempting to find emergency funding;
- assisting in obtaining monovalent/bivalent oral poliovirus vaccine or IPV.
6.1.3 Setting up of the Emergency and Response Committee

The Emergency Response and Monitoring Committee will report to the National Task Force on Poliomyelitis and will be chaired by the Director Health Services Preventive with the following members:

- The Director Health Services, Preventive (Chairperson)
- Regional Public Health Superintendents
- An epidemiologist
- The Consultant Paediatrician
- A Neurologist
- The Virologist
- Community Physicians of CDCU
- The National AFP Surveillance Officer
- Director Public Health and Food Safety

The Emergency Response and Monitoring Committee would rapidly set up Rapid Response Teams (RRT) for outbreak investigations and timely response. The Committee through the Communicable Disease Control Unit at MOH will be coordinating the activities of the Rapid Response Teams operating at regional level. To ensure that these processes are carried out rapidly and competently, the Emergency Response and Monitoring Committee will meet immediately (within 24 hrs). The Committee is managerially and technically responsible for implementing the action plan and for coordinating all relevant activities during implementation.

The Emergency Response and Monitoring Committee will be advising on and monitoring the activities of the Rapid Response Team/s including the following:

1. Data collection and retrieving reports from the Rapid Response Team from the periphery.
2. Identification of high risk groups
3. Assess the risk (with environmental profile).
5. Communication with health professionals and the public.
6. Review the national emergency action plan (reviewing and updating the existing polio preparedness plan).
7. Providing logistics to the RRT
8. Epidemiological and environmental surveillance
9. Reporting to the National Task Force on Poliomyelitis
10. Document cessation of transmission
6.1.4 Setting up of the Rapid Response Team

The composition of the Rapid Response Team would be as follows:

1. The Regional Public Health Superintendent (Team Leader)
2. An epidemiologist
3. The Principal Public Health Nursing Officer
4. The Senior Public Health Nursing Officer
5. The Principal Public Health and Food safety Officer
6. The Principal Health Surveillance Officer
7. The Supervisor Community Health Rehabilitation Officers
8. The Immunisation Team

The main functions of the Rapid Response Team has been outlined in Annex 9. The Rapid Response Team will initiate investigations of the index case, trace contacts, identify “hot cases”, organize collection and transport of stools samples, assess vaccination status and implement supplementary immunization activities amongst others. The RRT will provide information and feedback daily to the Emergency Response and Monitoring Committee at headquarters.

A “hot case” is defined as a case of acute flaccid paralysis with fever which occurs in a child who has received less than three doses of poliovirus vaccine, has travelled from a polio-infected area or is a member of a high-risk group. Hot cases also include acute flaccid paralysis cases of any age that are clinically suspected to be poliomyelitis.

Once an acute flaccid paralysis case is flagged as “hot”, it is given top priority in the surveillance system to obtain final laboratory results as soon as possible.

This public health response to a case of suspected poliomyelitis in Mauritius would require the active participation of various stakeholders in the investigation of a suspected case of polio based on a communicable disease outbreak investigation, identifying the sequence of actions, roles and responsibilities, timing of events and critical success factors. Actions are not intended to be strictly sequential; some will occur in parallel (Annex 10).

7. EPIDEMIOLOGICAL INVESTIGATION OF POLIOVIRUS INFECTION

The public health response to a confirmed case of polio will be coordinated by the MOH in the affected area.

Any diagnosis of polio in Mauritius will be of international significance, so it will be imperative to ensure a nationally consistent approach to the release of information and
an effective national response, as well as international reporting via the WHO IHR Focal Point.

All cases of polio must be reported to the WHO as per WHO International Health Regulations.

A suspected case of poliomyelitis is considered a public health emergency. Rapid Response Teams will be required at regional levels of the public health system. The primary response will be driven at the regional level with overarching coordination by the Emergency Response and Monitoring Committee at national level (Communicable Disease Control Unit at headquarters as the Incident Room).

The major considerations include not only where the infection may have been acquired, but any potential for transmission within Mauritius. The Rapid Response Team response will need to review the patient records and ensure that the following information has been collected for the index case:

- Age of patient, date of onset of paralysis;
- Residence or travel to a polio endemic country, or one that has recently reported imported cases or VDPV;
- Vaccination status, including timeframes and the vaccine used (OPV or IPV);
- Contact with persons recently immunized with OPV or persons who have recently travelled to a polio endemic country, or one that has recently reported imported cases or VDPV, or a country that uses OPV;
- Potential for further spread: health care workers and people who have contact with children, or are involved in food preparation have a greater chance of spreading infection to a larger number of people;
- Potential for exposure to laboratory strains of poliovirus; and
- Vaccination status of contacts.

The epidemiological investigation and collection of stool specimens may involve the local community, including childcare facilities, schools and other community groups.

The epidemiological investigation aims to establish where the infection was acquired and to where it may have spread. If the initial infected patient does not have a travel history that indicates they have acquired the infection overseas, or potential for laboratory exposure, the epidemiological investigation becomes extremely urgent to establish where the infection was acquired and to inform public health containment strategies.

The short incubation period and ability for asymptomatic patients to shed virus may mean that many individuals are exposed to the virus before a case of AFP is detected.
Laboratory testing of stool specimens is required to confirm poliovirus infection and to determine whether a poliovirus is a wild or vaccine strain.

All wild poliovirus isolations would necessitate an immediate public health response.

The response to isolation of a vaccine strain of poliovirus may vary according to the perceived risk for further person-to-person transmission. Isolation of a VDPV would be considered on same level as for isolation of a wild poliovirus, while the response to isolation of an OPV strain from a potential case of VAPP may not be as comprehensive (would necessitate expert opinion).

Since more specific laboratory tests are needed to differentiate a VDPV from an OPV strain of poliovirus, the initial public health response should assume isolation of a VDPV until laboratory results indicate otherwise.

Cases that cannot be confirmed due to the absence of virological evidence but are considered clinically as polio-compatible (i.e. from AFP Surveillance Algorithm for classification of AFP cases) would also initiate response under this plan.

8. CONTAINMENT PHASE

The containment of a potential outbreak of poliovirus will include the following:

- Isolation of infected individuals; (Annex 11)
- Tracing and management of potential contacts; (Annex 12)
- Cleaning and disinfection; (Annex 13)
- Immunisation (Annex 14)
- Education and increased surveillance (Annex 15)

Because preparation of the supplementary immunization activities (mass campaigns) is the largest and most complex activity of the emergency response and certain decisions (such as ordering oral poliovirus vaccine and mobilizing funds) should be made as soon as possible, planning the supplementary immunization activities dominates emergency response planning.

A risk assessment and grading of the outbreak would be performed upon WHO expert assessment and advice.

Major elements of the mass campaign, will include:

1. Immunisation
2. Enhancing surveillance
3. Planning communication strategies (Annex 16)
4. Planning training activities for staff
5. Data analysis, information sharing and timely reporting
6. Conducting the final evaluation  
7. Preparing a draft report  
8. Present the report to the Polio National Certification Committee  
9. The NCC sends report to the Regional Certification Commission at WHO-AFRO.

8.1 Immunisation:

The timeliness and extent of the immunization activities will largely determine the outcome of the response and will include the following steps:

- Selection of the vaccine to be used (monovalent oral poliovirus vaccine, bivalent oral poliovirus vaccine or inactivated poliovirus vaccine)
- Determining the immunization response needed
- The target territories will be defined and mapped
- The target population defined in terms of age groups and size
- The vaccine requirements calculated
- Strategies for vaccine delivery determined – House to house (outreach and/or mobile teams) – Combined (facility-based + outreach + mobile teams) (Annex 17)

- Selection of the dates for the vaccination campaign in response to the outbreak
- Planning logistics and the cold-chain
- Planning supervision and monitoring
- Planning evaluation of the quality of supplementary immunization activities

All children aged less than five years in the affected and adjacent geographical areas would be targeted for immunization. However, the target age group may need to be expanded depending on the results of case investigation(s) and the population immunity profile. Mauritius having been polio-free for many decades may need to vaccinate older age cohorts, particularly if cases include older children, teenagers or adults.

The following strategies for mass immunization would be considered:

a) house to house,  
b) health facility based,  
c) mobile teams or different combinations.

Mauritius with a well-established health infrastructure may consider applying a combined strategy using facility-based, outreach and mobile team approaches.

The response would consist of at least two large-scale rounds of immunization;
The optimum timeline indicates that the first round should be conducted within two to three weeks after the index case is confirmed with an interval of 2 to 3 weeks between the rounds.

Monitoring and supervision of supplementary immunization activities:

High-quality supervision is an indispensable part of supplementary immunization activities.

The minimum requirements for quality are a sufficient number of supervisors, correct training, appropriate tools and means of transport. Supervisors would plan and oversee the delivery of oral poliovirus vaccine, review daily plans with the teams, ensure that plans are implemented, take corrective action when necessary and solve problems for teams.

Simple action-oriented supervisory checklists would be designed for an effective daily reporting.

For maximum effectiveness, monitoring would be conducted both during vaccination activities and afterwards. Independent observers should carry out monitoring in addition to health ministry staff. The independent observers would be recruited from other Ministries and from NGOs or from other departments of the health ministry. Independent monitoring has proven an important factor in the rapid detection of problems.

Just before the national immunization day, all monitors would be thoroughly briefed on the areas to be monitored and on the methods of monitoring.

Daily feedback from all monitors to the health ministry would be established so that the immediate action can be taken. The monitors would report to the local Rapid Response Team and to the Emergency Response and Monitoring Committee at central level by phone and/or fax.

Given the short time for preparation and training and the urgency of the intervention, the following indicators would be used:

- the number of children immunized and missed on any given day per age group (0–11 months old and 12–59 months old) in a given area;
- the reasons for non-vaccination; and
- the quality of house and finger marking.

Surveys using simple convenience samples during and immediately after completion of the campaign would be useful for getting an indication of areas where all target children have not been reached. Strategies for selecting convenience samples will include interviewing parents of targeted children residing near the health post, at the
extreme end of the catchment area, of poorer sections or disadvantaged groups of the community.

8.2 Environmental Surveillance:

A risk assessment for the shedding of WPV and VDPV from potentially infected individuals will be undertaken. The index case of a WPV importation or person infected with a VDPV would be isolated in hospital until virus shedding ceased. While close contacts were being tested for secondary cases, the ramification of potentially shedding WPV or VDPV into the local sewerage network would need to be assessed. Similarly, the variable condition of septic tanks may be considered a potential public health threat if a WPV or VDPV infection was subsequently identified in a contact that had used this system.

Where the potential risk of poliovirus transmission by environmental sources was determined to be high, preventative strategies such as the installation of a sewerage trap should be investigated and environmental samples of sewage collected at the inlet to wastewater plants prior to treatment would be sent for examination for poliovirus at Institut Pasteur Madagascar.

8.3 Evaluation of supplementary immunization activities (Annex 18):

The activity must be reviewed during and immediately after each round for corrective action. Monitoring and anecdotal data would be reviewed at all levels – district, and national – to look for areas where children might have been missed to ensure that these missed children are covered subsequently.

8.4 Immunisation of travelers:

Incoming travellers from abroad would be requested to be immunized against polio before their arrival in Mauritius. Outgoing travellers would be provided with oral OPV/IPV at the International Vaccination Centre (a Government facility), Port Louis free of charge between 4 weeks and 12 months before departure or at any time prior to departure in case of last minute unavoidable travel if they have not received a dose of vaccine in the last 12 months. They will also be issued an International Vaccination Certificate documenting the vaccination done.

9. OUTBREAK CESSATION PHASE

Documentation of cessation of transmission:

Enhanced surveillance (reinforced active case detection, examination of records at Accident and Emergency Departments of all Hospitals/clinics and health centres) would continue for the next 12 months after the last case of poliovirus or paralytic
An important part of the response to the importation of wild poliovirus or an outbreak is properly documenting that wild poliovirus transmission has been interrupted after the enhanced surveillance period.

The epidemiological background of case investigations, surveys, laboratory results, immunization responses and results of enhanced surveillance would require a detailed documentation. The report will summarize all findings and activities for the twelve months after the last case has been detected.

This report will be prepared by the Emergency Response and Monitoring Committee and submitted to the National Certification Commission. The NCC following expert consultation with the Regional Certification Commission AFRO then informs the National Task Force on Poliomyelitis which subsequently declares the end of the outbreak.

References:

WHO. Global Polio Eradication Initiative (GPEI).


WHO. Importation of Wild Poliovirus into Polio Free Areas – Preparedness for an Effective Response.
Annex 1:

Some causes of Acute Flaccid Paralysis:

Viruses:
- Poliomyelitis Virus
- Other Enteroviruses
- Echoviruses
- Adenoviruses
- Bacteria:
- Clostridium botulinium
- Poisons:
- Curare
- Snake Venoms
- Diseases:
- Gullain Barré Syndrome
- Transverse myelitis
- Reye’s Syndrome
Annex 2:

Data Collection Sheet:

- Case-based data
- (to be linked to specimen-based data for analysis)
- Unique identifier
- Geographical area (e.g. district and province names)
- Date of birth
- Sex: male; female; unknown
- Date of paralysis
- Date of notification
- Date of case investigation
- Total polio vaccine doses received: unknown
- Fever at onset of paralysis: yes; no; unknown
- Progression of paralysis within four days: yes; no; unknown
- Asymmetric paralysis: yes; no; unknown
- Date of 60-day follow-up examination
- Findings at 60-day follow-up: residual weakness; no residual weakness; lost to follow-up; death before follow-up; unknown
- Final classification: 1 = confirmed; 2 = compatible; 3 = discarded
Annex 3:

**Acute Flaccid Paralysis Surveillance Indicators**

The country’s surveillance system needs to be sensitive enough to detect at least one case of AFP for every 100 000 children under 15 – even in the absence of polio.

Percentage of all expected monthly reports that were received: target >=90%
- Annualized non-polio AFP rate per 100 000 children under 15 years of age: target >=1/100 000

- Percentage of AFP cases investigated within 48 hours: target >=80%

- Percentage of AFP cases with two adequate stool specimens collected 24-48 hours apart and <=14 days after onset: target >=80%

- Percentage of specimens arriving at the laboratory in good condition: target >=80%
- Percentage of specimens arriving at a WHO-accredited laboratory within three days of being sent: target >=80%

- Percentage of specimens for which laboratory results sent within 28 days of receipt of specimens: target >=80%

- **Condition of stool on arrival at laboratory:** At least 80% of the stool specimens should arrive at the WHO accredited laboratory in “good condition”. A stool specimen is said to have arrived in good condition if it was transported under reverse cold chain conditions (with ice packs and a temperature indicator) and was received by the WHO accredited polio isolation laboratory in sufficient quantity (at least 8 grams) and with correct documentation

- **Timeliness of case investigation:** At least 80% of AFP cases should be investigated within 48 hours of being notified.

- **Timeliness of transportation of specimens to the laboratory:** At least 80% of stool specimens collected from AFP cases should arrive at a WHO accredited polio isolation laboratory within 72 hours of being sent.

- **Timeliness of specimen processing in the laboratory:** At least 80% of specimen results should be sent from the polio isolation laboratory within 14 days of specimen receipt by the laboratory
- **Non-polio enterovirus isolation rate:** At least 10% of stool specimens submitted to the laboratory should have non-polio enterovirus isolated. This is an indicator of the quality of the reverse cold chain and how well the laboratory is able to perform in the routine isolation of enterovirus.

- **60-day follow up examination:** At least 80% of AFP cases requiring a follow-up examination should be examined at 60 days after the onset of paralysis, to verify the presence of residual paralysis or weakness.

**Acute Flaccid Paralysis Investigation:**

The investigation involves taking a detailed history, conducting a systematic examination, and collecting two stool specimens, 24 to 48 hours apart, within 14 days of onset of symptoms. The specimens are sent to Central Health Laboratory Mauritius and shipped to a WHO accredited poliovirus isolation laboratory, Institut Pasteur, Madagascar (Antananarivo).
Annex 4:

Algorithm for virological classification of Acute Flaccid Paralysis cases into confirmed, compatible, and non-polio AFP cases.

AFP cases.

Source: WHO
Annex 5:

Finding and reporting children with acute flaccid paralysis (AFP)

1. The first links in the surveillance chain are the staff in all health facilities – from district health centres to large hospitals. They must promptly report every case of acute flaccid paralysis (AFP) in any child less than 15 years of age. In addition, public health staff makes regular visits to hospitals and rehabilitation centres to search for AFP cases which may have been overlooked or misdiagnosed.

2. The number of AFP cases reported each year is used as an indicator of a country's ability to detect polio – even in countries where the disease no longer occurs.

3. A country's surveillance system needs to be sensitive enough to detect at least one case of AFP for every 100 000 children under 15 – even in the absence of polio.

4. In the early stages, polio may be difficult to differentiate from other forms of acute flaccid paralysis, such as Guillain-Barré Syndrome, transverse myelitis, or traumatic neuritis.

5. All children with acute flaccid paralysis (AFP) should be reported and tested for wild poliovirus within 48 hours of onset, even if doctors are confident on clinical grounds that the child does not have polio.

6. To test for polio, faecal specimens are analysed for the presence of poliovirus. Because shedding of the virus is variable, two specimens – taken 24-48 hours apart – are required and should be taken within 14 days from onset of paralysis.

7. Speed is essential, since the highest concentrations of poliovirus in the stools of infected individuals are found during the first two weeks after onset of paralysis.

8. Stool specimens have to be sealed in containers and stored immediately inside a refrigerator or packed between frozen ice packs at 4–8°C in a cold box, ready for shipment to a laboratory.

9. Specimens arriving in the laboratory must be of adequate volume (approximately 8-10g), have appropriate documentation (i.e. laboratory request form) and be in good condition, i.e. with no leakage or desiccation and with evidence that the reverse cold chain has been maintained (presence of ice or temperature indicator).

10. Undue delays or prolonged exposure to heat on the way to the laboratory may destroy the virus. Specimens should arrive at the laboratory within 72 hours of collection. Otherwise they must be frozen (at -20°C), and then shipped frozen,
ideally packed with dry ice or cold packs. The procedure is known as the "reverse cold chain".

11. In the laboratory, the virologist begins the task of isolating poliovirus from the stool samples.

12. If poliovirus is isolated, the next step is to distinguish between wild (naturally occurring) and vaccine-related poliovirus because the oral vaccine consists of attenuated live polioviruses and resembles wild virus in the laboratory.

13. If wild poliovirus is isolated, the virologist has to identify which of the two surviving types of wild virus is involved, whether type 1 or type 3. Wild poliovirus type 2 has not been recorded since 1999.

14. Once wild poliovirus has been identified, further tests are carried out to determine where the strain may have originated.

15. By determining the exact genetic makeup of the virus, wild viruses can be compared to others and classified into genetic families which cluster in defined geographical areas.

16. The newly-found poliovirus sequence is checked against a reference bank of known polioviruses, allowing inferences about the geographical origin of the newly found virus.

17. When polio has been pinpointed to a precise geographical area, it is possible to identify the source of importation of poliovirus – both long-range and cross-border. Appropriate immunization strategies can then be determined to prevent further spread of the poliovirus.
Annex 6:

Revised Sentinel Sites for Acute Flaccid Paralysis Surveillance in Mauritius

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<tr>
<th>Health Region</th>
<th>Surveillance Site</th>
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<td>Port Louis</td>
<td>Dr A. G. Jeetoo Hospital</td>
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<td>City Clinic</td>
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<td>Rivere du Rempart AHC</td>
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<td>Long Mountain Community Hospital</td>
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<td>Grand Port/ Savanne</td>
<td>J. Nehru Hospital</td>
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<td>L’Escalier Medi Clinic</td>
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<td>Ministry of Health and Wellness: National Preparedness and Response Plan for Poliomyelitis</td>
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<td><strong>Queen Elizabeth Hospital</strong></td>
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<td><strong>Zita Jean Louis AHC</strong></td>
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Annex 7:

Roles of National Certification Committee

Monitor containment activities and receive the containment report as part of country documentation.

Independently scrutinize the reports and verify that all information is correct and data accurate (Field visit if necessary) before submission to ARCC (African Regional Certification Committee).

Monitor EPI progress and recommend additional activities if necessary.

Provide advocacy for Polio eradication and EPI in general.

Report regularly to ARCC.

Submit and present country documentation to ARCC.

The Roles of National Polio Expert Committee are

Final classification of AFP cases. (focus, scrutinize AFP cases with inadequate specimen)

Monitor quality and performance of AFP surveillance. (E.g. Surveillance indicators, case investigation issues, 60 day follow up, compatibles, etc…)

Provide technical support to the programme.

Roles of National Task Force for Laboratory Containment

- Survey all biomedical laboratories for any possibility of wild Poliovirus infectious materials.
- Infection control
- Verification of containment procedures
- Collection of stool specimens and dispatching to the Institut Pasteur, Madagascar

Roles of Polio Secretariat

- Brief different committee members on PEI (Polio Eradication Initiative) activities.
- Organize and attend meetings of NCC, NPEC & NTF.
- Ensure AFP final classification is entered in data base and send to WHO/ICP and AFRO
- Assembling all documents required for certification at country level.
- Support all committees to be functional.
• Preparation of reports of meetings.
• Preparation and finalization of annual reports, country documentation and annual updates.
• Keeping records.
• Act as a link between the NPEC and the NCC and NTF.
Annex 8:

- Environmental surveillance:

  - Environmental surveillance involves testing sewage or other environmental samples for the presence of poliovirus.

  - Environmental surveillance often confirms wild poliovirus infections in the absence of cases of paralysis.

  - Systematic environmental sampling (e.g. in Egypt and Mumbai, India) provides important supplementary surveillance data.

  - Ad-hoc environmental surveillance elsewhere (especially in polio-free regions) provides insights into the international spread of poliovirus.
Annex 9:

Major activities of the Rapid Response Team:

1. Contact tracing of index case and collection of stool specimens from contacts for poliovirus identification.
2. Immunisation of contacts after stool collection.
3. Identifying "hot cases" and mapping the geographical boundaries.
4. Micro planning with House to house numbering, identifying areas with poor sanitation, urban overcrowding, socioeconomically disadvantaged communities.
5. Community survey for weakness or paralysis of all children under 15 years in targeted area and organization of immediate transfer to the nearest regional hospital for suspected cases.
7. Health education on infection control measures and handwashing.
8. Community mobilization.
9. Conducting Supplementary Immunisation Response with immediate large scale two rounds of immunization for all children under 5 years in the targeted area.
10. Enhance surveillance for AFP cases.

In case of secondary spread, several Rapid Response Teams would undertake massive immunization of the population at countrywide level.
Annex 10:

KEY STAKEHOLDERS INVOLVED IN A SUSPECTED CASE OF POLIOMYELITIS

The key stakeholders involved in an investigation of a suspected case of poliomyelitis are listed below:

- The index case, their family or carers and their primary health care provider;
- Contacts of the index case;
- Diagnostic networks of neurologists, physicians, paediatricians, orthopaedic surgeons;
- Hospitals and care facilities in the public and private sectors;
- General practitioners;
- Director Health Services, Preventive;
- WHO IHR Focal Point;
- The Virology Unit, Central Health Laboratory;
- The National Polio Expert Committee (NPEC);
- National Polio Certification Committee (NCC);
- The National Task Force for Containment (NTFC);
- The Acute Flaccid Paralysis Secretariat.
Annex 11:

Isolation of infected individuals:

Individuals identified as being infected with poliovirus should be isolated to minimise potential for transmission.

Contact precautions should be implemented and, if hospitalised, the patient should have a single room. A stool specimen should be collected weekly for testing at the IPM.

Isolation should continue until two stool samples taken seven days apart are shown to be negative for poliovirus.

Poliovirus infection is usually cleared within six weeks by an immunocompetent person but long term shedding may occur in immunocompromised individuals immunized with OPV that may result in an immunodeficient VDPV (iVDPV).

Stool samples should be taken monthly in immunocompromised individuals until three consecutive stools samples are negative.

Families and carers of a patient infected with polio virus should observe good sanitation and hand washing.

All health care workers, carers and family should have evidence of adequate immunisation against polio (see Tracing and management of potential contacts below). As most cases of AFP require hospitalisation, health care workers should refer to the Infection Control Guidelines Manual for the prevention of transmission of infectious diseases in the health care setting for the correct infection control procedures.
Annex 12:

**Tracing and management of potential contacts:**

In order to contain the spread of poliovirus, which produces a large number of asymptomatic infections, contact tracing undertaken by the relevant Rapid Response Teams is important to identify potentially infected individuals.

There are four major categories of people who may have had contact with the index patient and therefore may have been exposed to poliovirus:

- **Household contacts** (people who lived with the index patient and shared a toilet during the infectious period). These people represent the greatest risk as they may have had contact with the index patient prior to the appearance of symptoms;

- **Toilet contacts** (people who shared a toilet with the index patient during the infectious period, and

- **Health care workers** (people who cared for the index patient during the infectious period) and laboratory workers involved with handling the patient’s specimens. It will be necessary to ensure that appropriate procedures are followed by laboratory workers during handling of suspect samples.

- **Public contacts**, including consumers, in the event that the case prepares food for others to eat.

Previous vaccination does not necessarily prevent infection and most people infected with poliovirus are asymptomatic.

**Management of infected individuals and potentially infected contacts:**

**Infected individuals:** Isolate in hospital or quarantine in a dedicated room in their dwelling and use contact precautions. A stool specimen should be collected weekly for testing at the IPM. Isolation should continue until two stool samples taken 7 days apart are shown to be negative for poliovirus.

**Household contacts** (people who lived with the index patient and shared a toilet during the infectious period):

Quarantine household contacts at home. Take stool samples > 3 days after the contact’s first exposure to the index patient. Contacts can be released from quarantine when two stool samples taken 24-48 hours apart are shown to be negative for poliovirus. A full course of IPV is indicated.
Toilet contacts (people who shared a toilet with the index patient during the infectious period, i.e. within 30 days before the case’s onset of illness or those who had contact with stools or faecal matter of the case within 30 days before the patient’s onset of illness, without using infection control precautions):

Offer education on hygiene and vaccination. A full course of IPV recommended.

Health care workers (people who cared for the index patient during the infectious period) and laboratory workers involved with handling the patient’s specimens:

Offer a booster vaccination with IPV for anyone who has not had a booster within the previous 10 years. For health care workers in close contact with the index patient who have no recorded immunisation history, or are not completely vaccinated, take two stool samples, 24-48 hours apart, with the first being taken > 3 days after the contact’s first exposure to the index patient and offer a course of vaccination with IPV (three doses a minimum of one month apart).

Public contacts (including consumers, in the event that the case prepares food for others to eat.):

Offer education on hygiene and vaccination. Offer vaccination with IPV. Depending on the specific epidemiological circumstances and with advice from WHO-AFRO, mOPV or bOPV may need to be considered in a local outbreak response.

Tracing of toilet contacts (such as those sharing a workplace or childcare centre with the infected patient) is important to reduce the risk of onward transmission of infection. For containment, the tracing of contacts needs to be more rapid than the spread of the virus. One of the most important reasons for tracing of contacts is to educate them on hygiene and vaccination.

Contact tracing may not prevent the contact becoming infected with poliovirus, particularly if they are not adequately immunised, but stool sampling of household and incompletely vaccinated health care worker contacts (as outlined above) and increased surveillance for clinical symptoms such as AFP will identify spread of the virus and can prevent further transmission. Targeted tracing and immunisation of contacts such as health care workers, food handlers and child care workers, who have the potential to spread infection to a large number of people, should be prioritised.
Annex 13:

Cleaning and disinfection:

Proper cleaning and disinfection of areas contacted by an infected individual is required to prevent onward transmission.

Survival of poliovirus is favoured by lower temperatures and high moisture content. Once excreted, the virus can survive outside the human body for weeks at room temperature. Laboratory studies have shown that polio virus survival in the environment is enhanced at high relative humidity. Various studies have estimated poliovirus infectivity to decrease by ‘90% every 20 days in winter and 1.5 days in summer, in sewage every 26 days at 23° C, in fresh water every 5.5 days at ambient temperatures, and in seawater every 2.5 days under the same conditions.

Poliovirus survived on cotton fabric with minimal loss for 24-48 hours at ambient temperature and 35% relative humidity, with rapid loss after 48 hours. Poliovirus survived longer on woolen fabrics with recovery after 20 weeks at the same humidity.

Active disinfection procedures should involve the use of cleaning practices to remove soiling that may harbour and protect viral particles. Common disinfectants such as 70% ethanol, lysol and quaternary ammonium compounds are not effective against poliovirus. The virus is also resistant to lipid solvents (such as Dettol®) and is stable in many detergents at room temperature, although temperatures above 60°C for prolonged periods will reduced the infective capability of poliovirus.

Effective disinfectants are those which contain free chlorine, such as sodium hypochlorite or bleach, glutaraldehyde solutions, formaldehyde solutions and iodophores. Contact time is also important in inactivating the virus. Laundry should be soaked in chlorine bleach (diluted according to the manufacturer’s instructions) for at least 15 minutes.
Annex 14:

Immunisation:

At present, immunisation with IPV in contacts and health care workers without a known immunisation history of receiving at least three previous doses of an appropriate poliovirus vaccine (e.g. IPV or OPV), or with incomplete immunisation history, is recommended in order to ensure that all possible harm minimisation measures are implemented. Individuals offered immunisation should be reassured that IPV is not a live vaccine and will not cause polio infection.

IPV or bOPV will be administered to unvaccinated contacts whilst a full containment response is developed. The extent of the immunization response will to some degree depend on the scenario by which poliovirus infection occurs. A laboratory exposure to poliovirus may only require vaccination of known contacts whereas an importation of poliovirus may require a more widespread vaccination and containment response with community involvement in surveillance for symptoms of poliomyelitis. Large vaccination or re-vaccination campaigns may need to be implemented, depending on the time that has elapsed since the onset of paralysis in the index case and the population involved.

Massive immunization of all children under 5 in one or more districts with three rounds of immunization at intervals of 2 to 3 weeks between rounds would be required as a mop-up campaign.
Annex 15:

Education and increased surveillance

As part of the containment strategy, education will be essential as poliovirus infection has not been detected since 1967 in Mauritius. Health care workers need to be educated on appropriate contact precautions, testing and immunisation.

Cleaning staff will need to be educated on appropriate cleaning agents and contact times.

Potential contacts need to be educated on testing and immunisation and symptoms of which they should be aware.

In order to ensure that any further transmission is detected, clinicians and testing laboratories would need to ensure that all suspected cases of polio infection and cases of AFP have appropriate stool sampling and stools are referred to Virology Unit at Central Health Laboratory for onward transmission to Institut Pasteur Madagascar.

Wide dissemination of appropriate information about the importation of wild poliovirus is crucial for the success of the emergency response.
Annex 16

Planning Communication strategies:

Communication strategies would be initiated very early in the response phase to raise awareness and sensitise the population on poliomyelitis and the need for their collaboration in the implementation of the outbreak response plan.

The strategies would involve different communication channels for the following audiences:

- Community leaders;
- Media dissemination of accurate information through press, TV, radio, etc;
- Sensitisation of schoolchildren in educational institutions;
- Health professionals; and
- The public through community centres, social welfare centres, mass gatherings.

Various types of informative messages and/or documents should be prepared consistent with the most effective national methods for communication. Effective strategies for information, education and communication and social mobilization are needed to ensure that children remain at home for the house-to-house strategy; parents are sensitized to bring their children for immunization at vaccine delivery points.

Activities on information, education and communication and social mobilization will be carried out in coordination with the health ministry and WHO, and other partners as appropriate.
Annex 17

Strategies for vaccine delivery:

House to house House-to-house immunization is a campaign strategy that differs from immunization at fixed posts in that vaccination teams immunize children in their houses, and compounds or wherever else they may be living.

A house-to-house strategy reaches more children because:

• no one may be available in the household to take the children to the vaccination post;
• there may be lack of interest or motivation to have children vaccinated;
• the parents may fear or mistrust vaccination;
• children who need to be carried may not be brought to the vaccination site;
• sick children may be missed.

Because of these advantages, house-to-house immunization is the preferred strategy for polio outbreak control, at least in areas with high-risk subpopulations.

Plan and train an appropriate number of vaccination teams to implement a house-to-house strategy. The number of teams should not be determined only by the number of houses each team can visit in one day. Time must be allowed for teams to revisit houses on the same or following days as necessary. Experience has shown that the following standards are feasible:

• urban: plan for an average of 1 team for each 100–150 children to be visited per day, and extra teams may be required in high-rise buildings and office areas where many apartments may be empty; and

• rural areas: plan for an average of 1 team for each 60–80 children to be visited per day and adapt this to local circumstances, allowing time for travel and for revisiting houses; some teams may be able to reach only 40 children per day.

The strategy adopted may combine facility based, outreach, and mobile teams in its approach.
Annex 18

Evaluation of SIAs:

The following would be used in the evaluation process:

- the numbers of teams and supervisors actually in the field;
- the number of teams and supervisors using quality maps;
- the number of health centres with adequate planning tools (maps, work plan, etc.);
- vaccine use;
- implementation of the cold chain according to standards;
- proper use of vaccine vial monitors;
- potency of vaccine shown by vaccine vial monitors when examined by supervisors; coverage of target areas and proportion of households missed;
- social mobilization including visibility of banners at vaccination posts and targeting of parents by media or other announcements;
- adequacy in the number of supervisors;
- completeness of supervisory checklists;
- analysis of results and corrective actions taken.