

GLOBAL POLIO ERADICATION INITIATIVE: KEY INFORMATION BANK

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Contents

Remaining challenges to WPV eradication 1

 Missed children..... 2

 Inaccessibility 2

 Microplanning 3

OPV background 3

 Different formulations 4

Phased OPV Cessation 5

The Operational Benefits of bOPV: Bivalent Oral Polio Vaccine..... 6

The Operational Benefits of IPV: Inactivated Polio Vaccine 6

New Vaccine Development for Post-Polio World 8

 IPV: Inactivated Polio Vaccine Development..... 8

 nOPV: Novel Live Attenuated OPV Type 2 Development 9

VDPVs: Circulating vaccine-derived polioviruses 10

VAPP: Vaccine-associated paralytic polio 11

Certification..... 12

Containment 12

International Health Regulation Procedures: PHEIC..... 13

Transition 15

Broader benefits 18

Routine Immunization 19

Remaining challenges to WPV eradication

Wild polio virus is currently still endemic in Afghanistan, Pakistan, and Nigeria.

Success will depend heavily on reaching the vulnerable populations - especially children - and on overcoming political, social, religious and cultural hurdles in areas that are remote or in conflict.

Missed children

- The GPEI is committed to reaching every child with polio vaccine. This means overcoming challenges to reach children who are not easily vaccinated, whether that is caused by cancelled campaigns (often due to local political or social pressures), the difficulties of accessing children in hard to reach areas, reaching populations on the move and problems posed when trying to reconcile cultural beliefs and tradition with children receiving vaccination.
- Solutions include better training of health planners, detailed mapping of communities and their movements, customized outreach to specific communities through appropriate channels, and measures to improve accountability of local officials and strengthen national ownership.

Inaccessibility

- Wild poliovirus transmission and outbreaks in some areas can be directly related to inaccessibility. These challenges can be physical, or security based.
- Particular efforts are being undertaken to reach children living in dense urban neighborhoods, and children who are part of nomadic or mobile communities are often hard to reach.
- The GPEI country coordinators plan supplementary immunization campaigns (SIAs) in line with seasonal conditions, to ensure that SIAs are not interrupted or less successful due to heavy rain or flooding.
- Infrastructure factors can also affect access: children can live in extremely remote locations in places where there are no roads or easy means of transport. Forward planning by regional teams aims to take this into account before SIAs go ahead.
- Maintaining the neutrality of health interventions is a critical lesson learnt in polio eradication. Once this basic humanitarian tenet is breached, health initiatives can quickly become a target. The program continually adjusts to security conditions to ensure that all children can be reached with the polio vaccine. To continue the global polio eradication effort, particularly in security-compromised areas, specific approaches are used to help access children. These include:
 - Ensuring that community concerns are fully addressed and that strategic communication efforts enhance community acceptance and trust. Community acceptance provides the most fundamental element of security and safety for local health workers.
 - Developing flexible and rapid vaccination campaigns based on windows of opportunity identified by security personnel. These “opportunistic vaccinations” help reach children who are on the move—in IDP camps or in health camps.

- Negotiating through appropriate channels at different levels with all parties involved in active conflicts and highlighting that vaccination efforts must be considered as neutral and impartial activities as per humanitarian law.

Microplanning

- A microplan is a widely used tool by polio vaccinators, allowing supplementary immunization campaigns (SIAs) to be planned in great detail, and followed effectively.
- A microplan is a map including the number of houses and children to be reached, and a detailed description and map of each area to be covered including start point, route to be taken, end point, important landmarks and special sites, like schools and playgrounds, that should be covered to ensure all children receive the vaccine. This functions as a systematic guide to vaccinators as they carry out their work.
- In some parts of the world, significant environmental and geographic challenges make it difficult for vaccinators to reach children. It is important for health workers to be aware of these different physical barriers when planning vaccination campaigns, as each requires different strategies to make sure we reach even the hardest to reach child.
- Once all of this is established, vaccinators can be identified who are appropriate for that community, and detailed activity plans can be created, allocating vaccination teams to cover specific mapped areas on specific days. Special plans are also made for vaccination teams to vaccinate at major transit points, and to cover hard to reach populations, such as nomadic populations or people living in areas with disputed borders.
- Other detailed plans are made covering vaccine distribution and logistics, social mobilization and communications plans, and reporting plans.
- The GPEI works continually to improve the quality of the data collected for microplans, and to ensure that all SIAs are effectively run.

RESOURCES:

- Web article: The Microplanning Puzzle: <http://polioeradication.org/news-post/the-microplanning-puzzle-planning-for-an-effective-vaccination-campaign/>

OPV background

Oral polio vaccines (OPV) are the predominant vaccine used in the fight to eradicate polio. There are different types of oral poliovirus vaccine, which may contain one or two different serotypes of

attenuated (reduced in virulence) vaccine. Each has their own advantages and disadvantages over the others. Oral polio vaccine is safe and effective, and because it is administered orally, it can easily be given by volunteers during large vaccination campaigns. Most importantly, it has a unique ability to induce mucosal immunity, needed for interrupting person-to-person spread of the virus.

- OPVs are inexpensive (US \$0.12-\$0.18 for countries procuring through UNICEF in 2016).
- They are safe and effective and offer long lasting protection against the serotype(s) that they target. OPV stimulates mucosal immunity, which is why it is so effective at interrupting transmission of the virus. Virtually all countries to eradicate polio used OPV to interrupt person to person transmission of the virus.
- In extremely rare cases (at a rate of approximately 2 to 4 events per 1 million births) the live attenuated vaccine-virus in OPV can cause paralysis. In most instances, this is triggered by an immunodeficiency. The extremely low risk of vaccine-associated paralytic poliomyelitis (VAPP) is well accepted by public health programs, as the benefits of the vaccine outweigh this risk.
- Very rarely, when there is insufficient coverage in a community the excreted vaccine-virus originally contained in OPV may be able to circulate, mutate and, over the course of 12 to 18 months, reacquire neurovirulence, causing cases or even outbreaks. This is known as a circulating vaccine-derived poliovirus.

Different formulations

Historically, OPV has been available in different formulations:

Vaccines available against polio:

Oral Polio Vaccine (OPV)	Inactivated Polio Vaccine (IPV)
Administered by drops	Administered by injection
Contains live, weakened virus	Contains killed virus
Provides immunity through the gut and associated herd immunity	Provides immunity through the blood
<p>Trivalent Oral Polio Vaccine (tOPV) protects against serotypes 1, 2 and 3</p> <p>Bivalent Oral Polio Vaccine (bOPV) protects against serotypes 1 and 3</p> <p>Monovalent Oral Polio Vaccine (mOPV) protects against only one serotype: 1, 2 or 3</p>	IPV protects against serotypes 1, 2 and 3

- WPV type 2 has been eradicated since 1999, removing the need to immunize every child with trivalent OPV. Since the switch to global use of bivalent oral polio vaccine, trivalent OPV is no longer used in routine immunization. **For more information on the switch, see section on phased OPV removal.**

THE BOTTOM LINE

- OPV is the predominant vaccine used to eradicate polio globally. Looking ahead, GPEI is taking additional steps to boost immunity and secure a lasting polio-free world.
- GPEI is planning to stop using OPV as soon as possible after WPV has been certified as eradicated. **For more information, see section on phased OPV cessation.**

RESOURCES:

- Introduction to OPV: <http://polioeradication.org/polio-today/polio-prevention/the-vaccines/opv/>
- OPV new developments: <http://polioeradication.org/tools-and-library/research-innovation/opv/>

Phased OPV Cessation

- The Global Polio Eradication Initiative (GPEI) Polio Eradication and Endgame Strategic Plan (Endgame Plan) called for the introduction of inactivated polio vaccine (IPV) into routine immunization programs globally, as part of the phased removal of oral polio vaccines (OPV). These efforts are part of GPEI strategy to secure a lasting polio-free world, free of both wild- and vaccine-derived polioviruses.
- In April 2016 a switch was implemented from trivalent OPV to bivalent OPV in routine immunization programs, removing the type 2 serotype from OPV. The switch from trivalent OPV to bivalent OPV is associated with significant public health benefits. This is because more 90% of all cVDPV cases were caused by the type 2 component of trivalent OPV, along with up to 38% of all VAPP cases (approximately 200 cases per year). Post switch, these should no longer occur.
- bOPV follows the same immunization schedule and route of administration as tOPV, and has exactly the same composition as tOPV, with one difference: it does not contain the type 2 component.
- The switch was the subject of comprehensive monitoring and validation, ensuring that the transition to bOPV was successful, and that all countries were fully supported to fulfil their responsibility of confirming the withdrawal of tOPV and the safe disposal of remaining supplies of tOPV. While it was

impossible to monitor every single vaccination service point in a country, a targeted strategy for high-risk areas was recommended to provide reassurance and meet reporting requirements.

- Following WPV1 and WPV3 eradication, use of all OPV in routine immunizations will be phased out entirely.

RESOURCES:

Details on the three different formulations of OPV: <http://polioeradication.org/polio-today/polio-prevention/the-vaccines/opv/>

The Operational Benefits of bOPV: Bivalent Oral Polio Vaccine

- The type 2 component of tOPV interferes with the body's immune response to poliovirus types 1 and 3. bOPV has the operational benefit of greater efficacy against poliovirus type 1 and 3 (the two strains that are not yet eradicated) than tOPV. This makes bOPV the most cost efficient and logical choice of type 1 and 3 vaccine for reaching every child, especially those children living in inaccessible areas or amongst mobile populations. This is because for children living in difficult situations, vaccinators cannot guarantee when they will be able to reach this particular child again – it is thus highly important to give them the most effective vaccine whenever they are reached.
- The switch means that more than 90% of all cVDPV cases, previously caused by the type 2 component of trivalent OPV, and up to 38% of all VAPP cases, no longer occur – a significant public health benefit, and a removing of the threat that the type 2 component of tOPV posed to the eradication of all polio strains.
- The introduction of bOPV as the primary vaccine for routine immunization programs also provided the GPEI with a 'push' for the global cessation of all OPVs. The switch worked as a practice run for the cessation of use of all OPVs upon global eradication. Key lessons were learnt that ensure that this process can now be implemented in the safest and most efficient manner.

RESOURCES:

- Preparing for the withdrawal of all oral polio vaccines (OPVs): See page 8 http://www.who.int/immunization/diseases/poliomyelitis/endgame_objective2/oral_polio_vaccine/OPVswitch-FAQs-Feb_2015.pdf

The Operational Benefits of IPV: Inactivated Polio Vaccine

IPV consists of inactivated (killed) poliovirus strains of all three poliovirus types. It produces antibodies in the blood against all three types of poliovirus. In the event of infection, these antibodies prevent the spread of the virus to the central nervous system and protect against paralysis.

KEY INFORMATION:

- IPV is extremely effective in protecting children from polio caused by WPV and cVDPV, but has limited ability to stop the spread of virus in a community.
- The advantages of IPV are that as it is not a 'live' vaccine, it carries no risk of VAPP or cVDPV. IPV also triggers an excellent protective immune response, preventing paralytic disease caused by all three types of poliovirus.
- IPV is also one of the safest vaccines in use. No serious systemic adverse reactions have been shown to follow vaccination.
- The disadvantages of IPV include that it is over five times more expensive than OPV. Administering the vaccine requires trained health workers, as well as sterile injection equipment and procedures. Most importantly, it has limited ability to induce mucosal immunity, needed to interrupt person-to-person spread of the virus.
- Beginning in November 2014, countries around the world began introducing at least one dose of IPV into their routine immunization schedules.
- Throughout 2016-2017, global IPV supply has been constrained – it is estimated that by April 2018, at least 38 million children will not have received IPV as a result. To minimize the potential risks, the available IPV supply is globally managed to prioritize delivery of IPV to countries at the highest risk. Based on a review of supply forecasting and allocations conducted in mid-2017, the situation is expected to gradually improve to enable all countries to be supplied by mid-2018.
- Research has shown that two fractional doses of IPV (one fractional dose is 1/5th of a full dose) can be given intradermally (between layers of the skin) at 6 and 14 weeks of age and generate better immunity than one full dose delivered into the muscle. This approach, recommended by the Strategic Advisory Group of Experts on Immunization (SAGE), can be used in both routine immunization and vaccination campaigns, and offers a potential solution to IPV supply constraints.
- After OPV cessation, IPV will be the only vaccine available for routine use, to eliminate the risk of VAPP and cVDVPs.

RESOURCES:

- What is IPV? <http://www.who.int/biologicals/areas/vaccines/polio/ipv/en/>

- What are the advantages/disadvantages of IPV? Safety, efficacy and recommended use:
<http://polioeradication.org/polio-today/polio-prevention/the-vaccines/ipv/>
- IPV introduction, the Endgame plan:
http://www.who.int/immunization/diseases/poliomyelitis/endgame_objective2/en/
- IPV implementation:
http://www.who.int/immunization/diseases/poliomyelitis/endgame_objective2/inactivated_polio_vaccine/implementation/en/
- Fractional Dose:
http://www.who.int/immunization/diseases/poliomyelitis/endgame_objective2/inactivated_polio_vaccine/fractional_dose/en/
- SAGE Update on vaccine supply, April 2017:
http://www.who.int/immunization/sage/meetings/2017/april/Changblanc_Polio_Vaccine_Supply_Update_SAGE_April2017.pdf?ua=1

New Vaccine Development for Post-Polio World

- In the post-polio world, new vaccines will be developed that can control outbreaks, and carry a minimal risk of transmitting a vaccine-derived poliovirus in to the environment or individuals.
- This is a crucial part of post-certification, in which biosecurity is a major concern to maintaining a polio-free world after the disease has been eradicated.
- Currently, after polio eradication, the only source of infectious materials will be facilities continuing to retain stock of poliovirus, called Polio Essential Facilities (PEF), for either research/diagnostics or manufacture of the vaccine. This means there will be a very low risk of poliovirus exposure or re-introduction.
- However, the use of non-infectious materials in vaccine production processes would greatly further reduce the risk of poliovirus exposure or re-introduction, and would also enable manufacturers in developing countries to produce vaccine, thereby greatly increasing global supply at more affordable costs.

IPV: Inactivated Polio Vaccine Development

KEY INFORMATION:

- To ensure that usage of OPV can be phased out globally, affordable long-term IPV options are needed for every country. To meet this objective, the Global Polio Eradication Initiative is pursuing a multi-pronged research agenda.

- IPV contains inactivated poliovirus-vaccine strains. A stock of live, seed-strain virus is therefore needed by vaccine manufacturers, before the seed-strains are inactivated and formulated into the resulting IPV. These live seed-strains are in essence infectious materials, and as part of the manufacturing process, must be secured by manufacturers under high levels of biosafety handling requirements to minimize the risk and consequences of a containment failure. The required high levels of biosafety requirements contribute significantly to the current high costs associated with IPV.
- Use of non-infectious seed materials would not necessitate the same levels of biosafety requirements. Production costs would as a consequence be significantly reduced.
- This could include the development and license of IPV produced from Sabin strains (sIPV), which pose less of a threat in the event of an intentional or unintentional release from the production facility.
- Such technology could be transferred to manufacturers in developing country settings, resulting in further price reductions and the build-up of local/national domestic vaccine production capacity.
- Given these benefits, work is continuing to develop and license new products and approaches for IPV, including investigating the use of inactivated polio vaccine based on the non-infectious seed strain material, with the clear aim to secure further reductions in the cost of IPV and address the issue of biosecurity risk.

THE BOTTOM LINE

- To make vaccines more affordable in the long term, the GPEI is investing in research across a range of areas.

RESOURCES:

- Information on affordable IPV options: <http://polioeradication.org/tools-and-library/research-innovation/affordable-ipv/>

nOPV: Novel Live Attenuated OPV Type 2 Development

KEY INFORMATION:

- For the moment, mOPV2 will continue to be used for outbreak control purposes taking place after the trivalent to bivalent vaccine switch. However, research is currently underway to develop a novel live attenuated OPV type 2 (nOPV), which would carry a lesser risk of cVDPV transmission, and of subsequent cases of vaccine-associated paralytic polio (VAPP).

- This is being led by a global consortium of governmental, non-governmental, academic and global health organizations and investigators, who have been working together to develop a suitable nOPV2 vaccine candidate, which would be significantly less likely than existing OPV2 to cause VAPP or cVDPV.
- The data generated so far from pre-clinical evaluation on the two nOPV2 vaccine candidate strains suggests that the risks of reversion to neurovirulence associated with these candidates is substantially lower than the risks from Sabin-2.
- Based on this data, and the public health need of having such a vaccine for use in outbreak response, these candidates will be evaluated in human clinical trials, taking place in Belgium in 2017.

RESOURCES:

Description of nOPV research: <http://polioeradication.org/tools-and-library/research-innovation/opv/>

VDPVs: Circulating vaccine-derived polioviruses

Circulating vaccine-derived polioviruses (VDPVs) are rare strains of poliovirus that have genetically mutated from the strain contained in the oral polio vaccine, and which can only emerge and circulate in under-immunized communities.

KEY INFORMATION:

- A cVDPV occurs on very rare occasions, if a population is seriously under-immunized.
 - In practice, this means that there are enough susceptible children for the excreted vaccine-derived polioviruses to begin circulating in the community. If the vaccine-virus is able to circulate for a prolonged period of time uninterrupted, it can mutate and, over the course of 12-18 months, reacquire infectious strength.
 - The lower the population immunity, the longer the cVDPV can survive. The longer they survive, the more they replicate, change, and exchange genetic material with other viruses as they spread.
 - A cVDPV can cause cases of paralysis in those it circulates to.
- If a population is fully immunized against polio, it will be protected against the spread of both wild and vaccine derived strains of poliovirus.
- The switch from trivalent to bivalent oral polio vaccine (OPV) has dramatically reduced the risk of cVDPV. This is because the greatest risk of cVDPV arises from type 2 polio vaccine, which is absent from bivalent OPV.

THE BOTTOM LINE:

- cVDPVs are very rare, and only occur when a population is seriously under-immunized.
- A fully vaccinated population is protected against the spread of both wild and vaccine derived strains of poliovirus.
- The GPEI works continually to reach every child with vaccine, reducing their chance of contracting a cVDPV.

RESOURCES:

- What are circulating vaccine derived polio viruses?: <http://www.who.int/features/qa/64/en/>
- What are the numbers and locations of circulating vaccine derived polio viruses since 2000?: <http://polioeradication.org/polio-today/polio-now/this-week/circulating-vaccine-derived-poliovirus/>
- Fact sheet on vaccine derived polio virus: http://polioeradication.org/wp-content/uploads/2017/09/GPEI-cVDPV-factsheet_September-2017.pdf
- Managing the risks of circulating vaccine derived polio viruses: <http://polioeradication.org/tools-and-library/research-innovation/vaccine-derived-polioviruses/>
- Research publications and updates on cVDPVs: <http://polioeradication.org/tools-and-library/research-innovation/research-publications/>

VAPP: Vaccine-associated paralytic polio

Vaccine-associated paralytic polio is caused by a strain of poliovirus that has genetically changed in the intestine from the original attenuated vaccine strain contained in OPV. It differs from cVDPV because whilst the VAPP virus may paralyze the child or their contact, it does not spread to cause cases of paralysis in others.

KEY INFORMATION:

- OPV is made with live attenuated (weakened) polioviruses that can result in a case of vaccine-associated paralytic polio (VAPP) at a rate of approximately 2 to 4 events per 1 million births. VAPP is associated with a single dose of OPV administered in a child or can occur in a close unvaccinated or non-immune contact of the vaccine recipient who is excreting the mutated virus. It occurs virtually only at the first dose, as on subsequent doses, a child will have begun to develop immunity against polioviruses (whether wild poliovirus or the weakened vaccine virus contained in OPV).

RESOURCES:

- Fact sheet on vaccine derived poliovirus, VAPP risk discussed briefly at the end of document: http://polioeradication.org/wp-content/uploads/2017/09/GPEI-cVDPV-factsheet_September-2017.pdf
- Managing the risks of vaccine-associated paralytic polio: <http://polioeradication.org/tools-and-library/research-innovation/vaccine-derived-polioviruses/>

Certification

The global certification of wild poliovirus eradication is conducted by an independent body of experts known as the Global Commission for Certification of the Eradication of Poliomyelitis (GCC). Regional certification is conducted by independent expert groups known as the Regional Certification Committees (RCCs).

There are a number of criteria which countries and regions must meet, before a region (and subsequently the world) can be considered for certification, including the absence of wild poliovirus from any source for a period of at least 3 years; certification-standard surveillance; and, containment of polioviruses in laboratories.

Currently, the certification criteria is related to eradication of wild poliovirus only. Discussions and evaluations are ongoing, to determine if an official validation of the absence of vaccine-derived polioviruses will also be necessary, following global wild poliovirus certification and the removal of OPVs.

RESOURCES:

- Introduction to certification: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/certification/>
- Information on the Global Certification Commission: <http://polioeradication.org/tools-and-library/policy-reports/certification-reports/global-certification-commission/>
- Information on the regional situation of certification: <http://www.emro.who.int/polio/certification/>

Containment

The aim of poliovirus (PV) containment is to ensure that all poliovirus material (in laboratories, vaccine manufacturing facilities and private and public research institutions) is safely and securely stored and handled, to minimize the risk of reintroducing polioviruses into the population after eradication and OPV cessation.

The containment requirements that are recommended for facilities retaining polioviruses are described in the “WHO Global Action Plan to minimize poliovirus facility-associated risk after the type-specific eradication of wild polioviruses and sequential cessation of oral polio vaccine use” (GAPIII). To support the implementation of GAPIII, WHO developed the *Containment Certification Scheme (CCS)*, which defines the recommended mechanism for certification of poliovirus-essential facilities (PEFs) and a *Guidance for non-poliovirus facilities to minimize risk of sample collections potentially infectious for polioviruses* which is under public consultation. GAPIII was endorsed by the WHO Strategic Advisory Group of Experts (SAGE) on Immunization in October 2014 and the World Health Assembly resolution WHA68.3 in May 2015. The CCS was endorsed by SAGE in October 2016. The guidance is expected to be endorsed by the Containment Advisory Group (CAG) of experts at the end of November 2017.

RESOURCES:

- Introduction to virus containment: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/containment/>
- Key points about polio virus containment: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/containment/key-points/>
- Containment supporting groups (e.g containment advisory group): <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/containment/containment-supporting-groups/>
- WHO Global Action Plan for Polio Virus Containment (GAPIII): http://polioeradication.org/wp-content/uploads/2016/12/GAPIII_2014.pdf

International Health Regulation Procedures: PHEIC

The WHO International Health Regulations (IHR) are an international agreement among WHO Member States, which provide a legal framework and public health guidance aimed at preventing, protecting against, controlling and responding to international spread of disease.

The Emergency Committee is a mechanism under the IHR to provide advice to the WHO Director-General on whether an event in question is a Public Health Emergency of International Concern (PHEIC), and if it is, whether temporary recommendations are necessary to prevent the spread of disease and avoid unnecessary interference with international traffic. The DG first seeks advice from an Emergency Committee of public health experts, and then makes the final determination.

An International Health Regulation Public Health Emergency of International Concern (PHEIC) is “an extraordinary event which is determined, as provided in these Regulations: to constitute a public health risk to other States through the international spread of disease; and to potentially require a coordinated international response”.

The international spread of polio is considered to be a PHEIC, and is subject to regular meetings called by the IHR Emergency Committee.

KEY INFORMATION:

- On 5 May 2014 the Director-General declared the international spread of poliovirus in 2014 a Public Health Emergency of International Concern (PHEIC) under the International Health Regulations [IHR 2005], issued Temporary Recommendations to reduce the international spread of poliovirus, and requested a reassessment of this situation by the Emergency Committee every 3 months.
- This enabled the coordination of an expansive international response, essential to prevent the spread of poliovirus as countries entered the high-transmission season (approx. May to Nov/Dec every year).
- At the time of the declaration, ten countries had active poliovirus outbreaks that, it was feared, could spread to other countries through the movement of people. This included several countries that were also the victims of complex non-polio related humanitarian emergencies, and as a result had severely weakened routine immunization services that were in a vulnerable position to mount an effective polio outbreak response.
- The recommendations made by the Director General differed between countries that were exporting poliovirus to other countries, and countries that had managed to keep all infection contained within their borders. Measures for both countries included that the head of state or government for each country should officially declare the interruption of polio transmission a

national public health emergency, and that all residents and long term visitors (over 4 weeks) should receive an additional dose of OPV or IPV between 4 weeks and 12 months before each international journey. Other measures were also enforced, lowering the chance of poliovirus transmission across borders or into new areas.

- The recommendations state that countries can move between the categories as their situation develops, and that a country may lift the emergency measures only once the country has passed 6 months in the category of ‘countries that have poliovirus but are not exporting’, without the detection of wild poliovirus transmission in the country from any source.
- The fourteenth meeting of the Emergency Committee was held in August 2017.

RESOURCES:

- GPEI webpage on Public Health Emergency Status: <http://polioeradication.org/polio-today/polio-now/public-health-emergency-status/>

Transition

Transition planning is a critical part of preparing for and sustaining a polio-free world. In its time, the Global Polio Eradication Initiative (GPEI) has supported many countries across the world to become polio-free. Over 90% of the GPEI resources that contributed to this achievement are currently concentrated in 16 countries, all of which have been identified as a priority for transition planning.

While eradication remains a top priority, as the world comes closer to the certification of global eradication, GPEI resources will gradually decrease, until the eventual closure of the program at the time of certification of wild poliovirus eradication, three years after the last detected case. These changes in financing require proactive planning by countries and agencies to ensure that activities and human resources are either responsibly concluded, or for those deemed necessary to continue, transitioned to sustainable long-term financing and management.

- There are three main goals to GPEI transition planning, to which the GPEI is providing substantial technical support:
 1. To keep the world polio-free, mainstreaming the functions needed to sustain eradication.
 2. Where feasible, transitioning the polio assets to support other broader health priorities.

3. Capturing and transferring the lessons learned, to benefit the wider health and development community.

KEY INFORMATION:

- Effective transition is an important task because the risks to global health and vulnerable populations in some of the world's poorest countries are high if the polio transition process is not effectively managed. At minimum, 50% of total polio staff time is spent supporting activities more broadly related to communicable disease control – from infectious disease surveillance to distribution of multiple interventions during polio campaigns. This reflects a strong reliance on polio-funded staff for broader immunization and health care goals. Hence, the complexity and urgency of the task ahead demands close coordination by multiple partners from within and outside of the health sector, with strong planning and engagement to ultimately ensure that services are not negatively affected.
- Each of the five GPEI core partners will be affected by the ramp down of its entire operations. WHO, UNICEF, Rotary, CDC, and the Bill & Melinda Gates Foundation all have significant assets at the regional and global levels that are being mapped and analyzed to identify organizational risks and opportunities. GPEI technical partners expect to have drafted their corporate transition plans by the end of 2017.
- To ensure the engagement of partners not typically involved in polio eradication and help drive financial or political support, an ongoing dialogue with countries is also being strengthened among all stakeholders, with a focus on governments, civil society, and donors.
- This includes coordination with other donor transition processes at the country level, including those of Gavi, the Global Fund, World Bank, Global Financing Facility and others. These efforts will be critical to maintaining and capitalizing on the systems and skills that were created for polio eradication, but are now central to broader global disease detection and control efforts.
- National governments are additionally leading the development of national transition plans in order to determine what polio functions will be integrated into other existing initiatives and what functions may be prioritized or phased out.
- The process of developing the national transition plan should closely involve local health sector partners, civil society and donors. Each national plan should address local needs and priorities, and may draw on lessons learned from the various pathways to achieving eradication. This will ensure

that the lessons, infrastructure and momentum of the polio program will have a sustainable impact on health for years to come.

- In May 2017, the Polio Transition Independent Monitoring Board was launched to oversee the transition process. It will also raise awareness about polio transition for other multilateral organizations, countries and the international community, with a focus on the critical importance of effective and timely planning. This will help ensure that the functions needed to maintain a polio-free world after eradication are mainstreamed into ongoing public health programs, and that transition processes eventually contribute to other health priorities, as appropriate.

Polio Post-Certification Strategy

- To maintain a polio-free world in the decade following certification, the polio Post-Certification Strategy is being developed in 2017 by GPEI to specify the technical standards for core functions that will be essential to sustain eradication, e.g., containment, vaccination and surveillance. This comprehensive strategy is being developed in consultation with global and regional partners, scientific experts, donors, and key stakeholders. A final version will be presented to the World Health Assembly in May 2018.
- The strategy is also identifying a number of **Enabling and Cross-Cutting Areas**, which will specify options for integrating ongoing polio functions (e.g., governance and management, monitoring, and research activities) into other institutions or organizations.

The strategy has three goals:

- **Contain poliovirus sources:** Ensure potential sources of poliovirus are properly controlled/removed.
- **Protect populations:** Withdraw the oral live attenuated polio vaccine (OPV) from use and immunize populations with inactivated polio vaccine (IPV) against possible re-emergence of any poliovirus.
- **Detect and respond:** Promptly detect any poliovirus reintroduction and rapidly respond to prevent transmission.

THE BOTTOM LINE

- The polio program is taking steps to ensure that the knowledge acquired, tools developed and infrastructure established by the polio program continue to benefit other child health challenges long after polio is gone.

- The program is also working to ensure that technical standards for core functions that will be essential to sustain eradication are maintained post certification, through the polio Post-Certification Strategy.

RESOURCES:

- Introduction to transition planning: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/transition-planning/>
- Global and regional transition planning: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/transition-planning/global-and-regional-transition-planning/>
- Country transition planning: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/transition-planning/country-transition-planning/>

Broader benefits

The GPEI's infrastructure goes much further than polio eradication, supporting a wide range of health initiatives like routine immunization, measles campaigns, maternal and child health programs, humanitarian emergencies and disease outbreaks, and sanitation and hygiene programs.

KEY INFORMATION:

- GPEI has learned many valuable lessons on reaching hard-to-reach and high-risk populations, working in conflict affected areas and harnessing global commitment to a cause. A key component of transition planning is to capture and share these lessons for the benefit of the broader development community.
- Other areas of expertise to pass on include: engaging and mobilizing communities, cross-border cooperation, tracking and reaching migrant and nomadic populations and gender empowerment.
- Each country and region has its own experience of eradicating polio, with local knowledge incorporated into the program and contributing to its success. As part of the transition planning process, countries are encouraged to analyze their experience with the program, and document these lessons learned, with the support of GPEI.
 - The knowledge acquired and the infrastructure built by the polio eradication program have helped fight diseases like measles and Ebola, and also deliver other health services such as malaria prevention tools, Vitamin A supplements (helping prevent more than 1.5 million deaths globally) and improved disease surveillance.

- Nigeria was able to respond effectively to the 2014 Ebola outbreak in Lagos by using the trained health workers, quality surveillance system, planning and contact tracing developed by the polio program. Polio staff and infrastructure also helped respond to the meningitis outbreak that began in late 2016.
- In Iraq, polio campaigns were used to reach the public with essential cholera messaging during the 2015 outbreak. Polio staff also contributed to a measles campaign.
- In many countries, polio eradication staff are the single largest source of expertise for immunization, and many spend nearly half their time working on strengthening routine services.
 - In Bihar, India, polio efforts have helped boost routine immunization coverage from 31% in 2002-2004 to over 80% in 2012-2013.
 - In Sudan, polio assets are largely integrated with measles and rubella programs, as well as with Guinea worm eradication and Vitamin A distribution. Routine immunization costs are covered in large part by polio resources.
 - The polio program in India has helped to identify unimmunized children and integrate them into routine immunization planning to ensure that more children throughout the country receive life-saving vaccines.

RESOURCES:

- Detail on country transition planning can be read here: <http://polioeradication.org/polio-today/preparing-for-a-polio-free-world/transition-planning/country-transition-planning/>

Routine Immunization

Routine immunization is the best way to prevent the re-establishment of poliovirus through importations from other countries. It is the sustainable, reliable and timely interaction between the vaccine, those who deliver it and those who receive it to ensure every person is fully immunized against vaccine-preventable diseases.

KEY INFORMATION:

- Strengthening routine immunization is one of the pillars of the polio eradication strategy. In polio-endemic countries, the virus persists in marginalized populations, where health services are largely non-existent, and oversight and management are weak.

- However, the poliovirus cannot survive for long periods outside of the human body. Without an unvaccinated person to infect, the polio virus will die out. Strong routine immunization helps to facilitate the interruption of all poliovirus transmission and protect populations from re-infection.
- Routine immunization provides a sustainable platform for the introduction of inactivated polio vaccine (IPV), the switch from trivalent (tOPV) to bivalent oral polio vaccine (bOPV), and the eventual withdrawal of all oral polio vaccines.
- Polio eradication staff are the single largest source of external technical assistance for immunization and surveillance in many low-income countries, ensuring that routine immunization takes place successfully.
- The GPEI is also working with GAVI, the Vaccine Alliance, to strengthen routine immunization in focus countries targeted by the Polio Endgame Strategy. The focus countries all contain significant polio assets and numbers of partially and non-vaccinated children.
- Strengthening routine immunization involves:
 - Maximizing the reach of quality vaccines through a well-functioning supply and cold chain system, improving equity, detecting unreached groups, efficient service delivery and the capacity building of vaccinators and supervisors,
 - Managing programs with strong political and management support, effective planning, as well as policy and strategy development,
 - Mobilizing people to generate demand through community and caretaker engagement,
 - Monitoring program performance with rigorous disease surveillance, data analysis and evaluation.

RESOURCES:

- Introduction to routine immunization: <http://polioeradication.org/who-we-are/strategy/routine-immunization/>
- Strengthening routine immunization (incl. routine immunization sheet): http://www.who.int/immunization/diseases/poliomyelitis/endgame_objective2/routine_immunization/en/