22-23 August | 2016

12th Meeting of the SAGE Polio Working Group

Conclusions and recommendations

Note for the Record

World Health Organization

DRAFT AS OF 9/28/16

Background

The 12th face-to-face meeting of the SAGE Polio Working Group (WG) was held during 22-23 August 2016 at the World Health Organization in Geneva, Switzerland.

The meeting was attended by the following WG members: Yagob Al-Mazrou (Chair), Peter Figueroa (Ex-chair), Elizabeth Miller (Ex-chair), Walter Orenstein, Antoine Kabore, Kimberly Thompson, Nicholas Grassly, Walter Dowdle, Hyam Bashour and T Jacob John. Francis Nkrumah and Zulfiqar Bhutta were unable to attend.

This note presents a summary of the main findings, conclusions and recommendations of the meeting.

Context and objectives of the meeting

In April 2016, SAGE expressed its concern over the global supply shortage of Inactivated Poliovirus Vaccine (IPV), which will persist into 2017-18. SAGE urged that IPV suppliers make best efforts to fulfil their commitment to supply IPV, accommodate the needs of the programme (e.g. supplying more vaccine in 1-dose or 5-dose vials to reduce wastage), and inform the SAGE Polio WG of any further change in the IPV supply situation.

SAGE reviewed the Polio WG discussion on future polio immunization policy and requested the WG present a high-level policy direction in October 2016, and finalize its recommendations on future immunization policies for consideration by SAGE in October 2017.

The specific objectives of the WG meeting were:

1. To review the cVDPV2 epidemiology after the OPV2 withdrawal
2. To review the lessons learned from OPV2 withdrawal and discuss any follow-up issue (e.g. IPV shortage, catch-up vaccination, containment), including reassessment of type 2 response protocol
3. To discuss the risks associated with full OPV withdrawal and needs for bOPV campaigns prior to the switch
4. To discuss the roadmap for the SAGE discussions on future immunization policy (including duration of vaccination after OPV withdrawal, criteria to stop poliovirus vaccination and options for post-OPV immunization schedule)
5. iVDPV epidemiology and surveillance strategy

Topic 1: cVDPV epidemiology after the OPV2 withdrawal

The WG reviewed progress towards interruption of type 1 wild poliovirus (WPV1) and type 2 circulating Vaccine-Derived Poliovirus (cVDPV2).

WPV1

In the last six months, WPV type 1 cases have occurred in Nigeria, Pakistan and Afghanistan. As of 15 August 2015, the year to date case count in 2016 is 26 (41 in 2015). There are 14 cases in Pakistan (32 in 2015), 9 cases in Afghanistan (9 in 2015) and 3 cases in Nigeria (0 in 2015). 73 WPV1 positive samples were detected in Environmental Surveillance in both countries. In Afghanistan and Pakistan, there are two corridors of active transmission on both sides of the border (i.e. Nangarhar/Kunar-Khyber/Peshawar/Bannu and Kandahar-Helmand/Baluchistan). In Afghanistan and Pakistan, accessibility and Supplementary Immunization Activities (SIA) quality have continued to improve in 2016, but access remains an issue. The current challenges include: 1) critical gaps in SIA quality in Pakistan (especially in Karachi and northern Sindh as well as in high-risk mobile and underserved populations), and 2) the need to increase access in the Eastern region, and to improve SIA quality in accessible areas in Afghanistan.

In Nigeria, after the absence of WPV detection since 2014, two WPV1 cases were detected in Borno (Jere and Gwoza LGA) in July 2016. Accessibility in most of Borno State remains highly compromised due to ongoing conflict. Genetic sequencing results of samples collected from the cases, suggests that these two viruses are closely related but not identical; furthermore, that these viruses were circulating undetected since 2011, which

indicates ongoing programmatic failures to reach un- and under-vaccinated populations in these areas. The Global Polio Eradication Initiative (GPEI) plans to conduct a rapid outbreak response with 5 bOPV immunization rounds (the first was conducted during 15-22 August), targeting the immediate outbreak area as well as surrounding Lake Chad Basin countries. Until April 2016, a considerable proportion of Acute Flaccid Paralysis (AFP) cases occurring among children of internally displaced families in safe areas of Borno were incorrectly reported using their original home address in conflict-affected inaccessible parts of the state recorded as their residence, not the place of case detection, which occurred in accessible areas, giving the inaccurate view that surveillance was taking place in areas where there was actually no surveillance. This misallocation of addresses has been corrected.

Due to the outbreak response in Nigeria and other SIAs, the global supply of bOPV will be constrained. The programme is reviewing planned SIAs in other countries to manage bOPV supply. The WG also raised concerns about delaying preventive SIAs that the programme needs to conduct to maintain high population immunity.

cVDPV2
The WG reviewed cVDPV2 outbreak in Myanmar and Guinea, which were reported in the second half of 2015.

Myanmar has not detected any cVDPV2 case since 5 October 2015. The outbreak response assessment determined that "cVDPV2 transmission may have been interrupted", however uncertainty remains due to gaps in surveillance." The WG expressed concern that the outbreak response SIAs failed to achieve high coverage in insecure areas.

Guinea detected 7 cVDPV2 cases in 2015 and conducted 4 SIAs after the last case. While no cases have been detected in 2016, the outbreak response assessment determined that "circulation may not have been interrupted" and recommended intensifying surveillance as well as preparing for mOPV2 response if needed.

Since the switch from tOPV to bOPV in April 2016, there has been one continuing cVDPV2 outbreak since November 2014 (Nigeria, with 32 nt changes from Sabin 2 and 20 nt difference from the closest match), and six VDPV events (one AFP case in Nigeria with 8 nt changes, three ES detections in India with 8-14 nt changes and two ES detections in Pakistan with 8-12 nt changes). Nigeria conducted three mOPV2 campaigns as a response to the cVDPV2 outbreak. In addition, in Hyderabad, India, a fractional dose IPV (fIPV) outbreak response campaign was conducted to address immunity gaps, the first ever undertaken globally. The target group for the fIPV campaign were children aged from 6 weeks to 3 years (estimated to be 291,305 children). The campaign was limited to areas from which sewage drains to the Amberpet sewage treatment plant and which were considered at high risk of a potential outbreak of cVDPV, based on coverage of routine immunization and the quality of prior polio campaigns (such as in Hyderabad district); it was also conducted in the adjoining high-risk slum and migrant populations of Rangareddy district. Overall, the quality of ID injection, vaccine utilization per vial, and campaign coverage was high: 80-90% observed injections demonstrated bleb formation; 40-47 fractional doses utilized/10 dose vial, and an estimated >90% coverage was achieved.

Over the next 12 months, the priorities of the programme include: 1) Ensuring high quality coverage of outbreak response activities in Nigeria, and all 5 Lake Chad basin countries, 2) Continued support to Pakistan and Afghanistan (e.g. implementation of National Emergency Action Plan for Polio Eradication (NEAP), improvement of SIAs quality, additional allocation of IPV for 2017 SIAs), 3) Reassessing risk in all security compromised areas (e.g. Nigeria, Afghanistan, Pakistan but also Syria, Somalia, Sudan, Iraq, Yemen), 4) Maintaining political advocacy and resource mobilization, and 5) Strengthening and sustaining outbreak response capacity at global and regional levels.

The WG reviewed the status of detection of type 2 Sabin poliovirus through environmental and AFP surveillance, after the switch. Historically, in other countries (e.g. New Zealand, Yogyakarta in Indonesia, and Cuba), poliovirus was not detected from the environment 2-3 months after the switch from OPV to IPV. In Nigeria and Pakistan, type 2 poliovirus was not detected within six months after the last tOPV campaign was conducted (with continued tOPV in RI). After the type 2 withdrawal, Sabin type 2 was not detected through environmental surveillance in Afghanistan, Kenya, and Pakistan since July 2016. In Nigeria, Sabin type 2 was not detected through environmental surveillance, except for Borno, Jigawa, and Lagos, possibly due to mOPV2 campaigns being conducted in Borno. AFP surveillance did not detect Sabin 2, 3 months after the switch (August 2016), except in a few countries (Ethiopia, Nigeria, South Sudan and Somalia). The global experience

with OPV2 cessation also shows behaviour consistent with that predicted by modelling studies of OPV evolution and cessation, as summarized in the previous WG note.

The analysis of surveillance data also indicated the variance in performance in environmental sites (e.g. ability to detect Sabin virus after OPV campaigns). For example, in Nigeria, some environmental sites have less than 50% probability of detecting Sabin polio virus after an SIA. There are also significant variations in processing time (i.e. time between stool collection and entry in PolIS, and lab results). In most regions, it often took more than 40 days for data to be entered into PolIS and more than 100 days to obtain lab results.

WG decisions/recommendations

- The WG noted the significant progress in responding to and eliminating cVDPV2 after the switch, and highlighted that the disappearance of Sabin 2 poliovirus detected through environmental and AFP surveillance, is encouraging.
- The WG expressed concern over the unexpected detection and prolonged circulation of WPV in Nigeria, as well as continuing "persistent" cVDPV2 detection, and reiterated the importance of monitoring surveillance quality especially in access-limited areas (including the Lake Chad area).
- The WG recommended that the programme closely monitor and manage the supply/demand of bOPV, particularly as the outbreak response in Lake Chad will increase bOPV demand. The WG proposed not to exclude the use of tOPV in Nigeria to address WPV1 and cVDPV2 at the same time, if any manufacturers still have any tOPV available. It also urged the programme to maximize bOPV production to ensure sufficient supply, and that the programme increases its forecasts for vaccine needs.
- The WG recommended considering expansion of environmental sites and/or validating the sample analysis in high risk areas.

Topic 2: Implementation of OPV2 withdrawal

Lessons learned from OPV2 withdrawal

The WG received an update on OPV2 withdrawal. The switch was completed in all OPV using countries between 17 April and 1 May 2016. Indicators tracking the successful implementation of the switch were outlined and specific approaches to switch implementation were highlighted. Key strategies contributing to the success of the switch were emphasized, including strong partnership; clear distribution of roles; ownership at the country and regional level; defined timeframe; timely dissemination of guidance and updates; and dedicated funding and EPI staff support to facilitate country efforts. It was noted that a few countries (e.g. Iraq, Vietnam) as well as OPV suppliers, still hold tOPV stocks, therefore the program is closely following up with these countries and sites to ensure these stocks are destroyed.

IPV supply situation

The WG reviewed the current IPV supply situation. To date, 104/126 countries previously using tOPV-only have introduced one dose of IPV into their RI schedules. However, due to significant ongoing constraints in supply, 40% less IPV has been available than what was awarded through the initial UNICEF tender in 2014. As a result, 43 countries (about 22% of the global birth cohort) will face delays in IPV introduction or re-supply until Q4 of 2017. Specific mitigation measures to manage the IPV supply constraints were highlighted, including prioritizing supply to tier 1 and 2 countries (request for additional doses will be considered on a case by case basis); limiting supply to tier 3 and 4 countries; and the use of fIPV in outbreak response activities. The WG was in agreement regarding the need for catch-up vaccination for birth cohorts born after 1 May 2016 in countries where IPV introduction is delayed or disrupted.

Surveillance

The WG reviewed the quality of surveillance in high risk countries following OPV2 withdrawal (particularly countries with delayed IPV introduction or resupply, low OPV3 coverage, or history of cVDPV). Following the SAGE recommendation in April 2016, WHO amended the surveillance case definition to include type 2 Sabin so that all type 2 polioviruses will be notified under the International Health Regulations.

Surveillance indicators in most of the 36 tier 1 and 2 countries, either reach or surpass global standards at the national level, except for Azerbaijan, Equatorial Guinea, Indonesia, Philippines, Cambodia, Laos, Timor-Leste,

and Papua New Guinea. Sub-national surveillance gaps remain in all tier 1 and 2 countries; however, it was noted that recent improvements towards closing these gaps have taken place in a number of tier 1 and 2 countries (i.e. Mauritania, Mali, Guinea, Central African Republic, Democratic Republic of the Congo, Mozambique and Madagascar). In addition, 14 of 36 tier 1 and 2 countries are conducting environmental surveillance, and 4 countries in Africa plan to establish environmental surveillance soon.

Surveillance indicators in the majority of the 43 countries without IPV (due to delayed introduction or resupply) either reach or surpass standards at national level, with surveillance gaps remaining at the sub-national level. However, some countries continued to have problems to achieve standard quality indicator levels at the national level, including Ebola affected countries (Sierra Leone and Liberia), Morocco, Djibouti, Sri Lanka, and DPRK. WHO will work with the Ministries of Health (MoH) in these countries to assess the situation and implement surveillance strengthening measures. Environmental surveillance was established in 7 of 43 countries; with a plan to expand to 5 additional countries in Africa.

Given the recent detection of cVPDV2 and WPV1 in Nigeria despite national surveillance indicators reaching global standards, there is an evident need for continued close monitoring as well as undertaking gap analysis 'beyond the indicators', including analysis of the impact of security, conflict and migration and possibility of over-reporting non-AFP.

Containment

The WG reviewed the progress towards the implementation of GAP III requirements, particularly in the context of formal declaration of the eradication of WPV2 in 2015 and OPV2 withdrawal in April 2016. An overview of the two phases of GAP III were detailed: the objective of phase I to reduce the number of facilities designated to handle poliovirus serotype 2; the objective of phase II, to reduce the risk of release of poliovirus and reduce the consequences of release from the designated facilities. Currently the programme expects that 21 countries will host 58 designated poliovirus essential facilities (32 labs, 6 IPV producers, 20 Sabin IPV producers).

Since the last WG meeting in October 2015, there has been significant progress, particularly regarding: 1) communication to regions, countries and facilities; 2) targeted engagement with countries at risk of lagging behind; and 3) intensified efforts for GAP III implementation.

To accelerate the implementation of GAP III, WHO is establishing a Containment Advisory Group (CAG) to provide further technical guidance on the implementation of GAP III. WHO is strengthening its headquarters containment team, and has conducted 10 regional GAPIII implementation and certification workshops. Phase I implementation is ongoing for WPV2 and cVDPV2 (phase Ia), and Member States were expected to report regarding OPV2/Sabin2 (phase Ib) by 31 July 2016, however, most countries have not completed phase to date. The WG encouraged the programme to recognize containment as an issue with the same or greater level of complexity as the coordination of the tOPV-bOPV switch, and urged the programme to significantly increase its staff and financial resources to manage containment.

Specific supporting activities to achieve implementation of GAP III were detailed, including the three phases of the Containment Certification Scheme; development of a pool of GAP III experts/auditors to provide technical support; the work in progress to align the WHO Technical Report Series 926 to GAP III; and development of guidance to classify Sabin samples into three risk categories (which is anticipated to be completed in September 2016). In terms of next steps, countries will nominate expert members to establish their National Authority for Containment (NAC), and the terms of reference and timelines for approval are being developed for selected members from the Global Certification Commission, who would provide oversight to the process.

Outbreak response protocol

The WG reviewed the results of a recent Bangladesh study (unpublished), which assessed seroconversion against poliovirus type 2 induced by one or two doses of mOPV2 administered in different immunization schedules and the role of IPV. In the study, subjects received first mOPV2 doses at 6 weeks, followed by the second doses given after 1-, 2- or 4 weeks. Other subjects received two mOPV2 doses at 6 and 10 weeks with IPV administered concurrently with the first mOPV2 dose. One dose of mOPV2 administered at 6 weeks induced immune response in 91% of subjects (after 4 weeks), with no difference between groups with IPV and groups without IPV. Two doses of mOPV2 administered at short intervals (1, 2 and 4 weeks) induced immune response in 93%, 95% and 97%, respectively, with the differences in immune response not being statistically significant.

The WG reviewed the possible implication of the results of this study, to the type 2 outbreak protocol. The WG agreed that coverage represented the key issue and suggested that high quality SIAs (i.e., >95% coverage in all areas, including the inaccessible ones) such that two mOPV2 doses are sufficient to protect individual children (without IPV). One workgroup member emphasized that population immunity to transmission is what needs to be managed, not individual immunity measured by the study, and the programme needs to consider both the individuals not reached by the outbreak response vaccine either directly or through secondary spread. In addition, no specific data assesses and compares the effect of mOPV2 alone versus mOPV+IPV on pre-existing mucosal immunity, although modelling studies suggest little benefit of the added IPV dose when giving both mOPV and IPV to the same vaccine recipient with respect to population immunity. In addition, the WG repeatedly emphasized the importance of ensuring high immunization coverage of outbreak response SIAs.

WG decisions/recommendations

- The WG commended the global and regional teams and countries for the successful implementation of tOPV-bOPV switch
- The WG expressed strong concern over the continued IPV supply shortage and encouraged WHO/UNICEF to continue to explore alternative options such as new IPV suppliers and adjuvanted IPV.
- The WG recommended catch-up vaccination of the missed children in countries with delayed IPV introduction when sufficient supplies of IPV become available. The WG requested WHO/UNICEF develop a priority algorithm for allocating additional IPV supply.
- The WG recommended that instead of focusing on the number of mOPV2 SIAs for outbreak response, the programme should focus on reaching all children with high coverage, which could imply fewer than the originally proposed rounds (i.e. minimum of 5 in zone 1 and 2, and 4 in zone 3 to 2-3, depending on the coverage achieved and transmission risk (zone)). In principle, mOPV2 is the primary choice of vaccine in outbreak areas. However, especially for OPV-primed populations, the addition of 1 fractional IPV dose may be considered in the outbreak affected area during SIA2 or SIA3 in combination with mOPV2, where operationally feasible, providing mOPV2 SIA coverage is not compromised. For response to an aVDPV, responding with one SIA using ID fractional IPV may be considered for highly OPV primed populations and otherwise low risk settings.
- The WG recommended increasing investment to facilitate GAP III implementation to accelerate the implementation of Phase I and II, as well as to ensure the provision of necessary technical support.

Topic 3: Risks associated with full OPV withdrawal

The WG reviewed analysis by two modelling groups (Kid Risk and Institute for Disease Modelling) on VDPV 1 and 3 emergence risks after the full OPV withdrawal and need for additional bOPV campaigns prior to the withdrawal.

Modelling groups agreed that the risk of cVDPV 1 and 3 emergence at the time of bOPV cessation should be relatively low in most countries, because the current population immunity against type 1 and 3 is high, due to the introduction and continued use of bOPV and IPV in routine immunization schedules. If the current level of routine bOPV and IPV coverage is maintained, most countries will not require additional bOPV campaigns prior to OPV cessation. However, if bOPV SIAs are not maintained and population immunity to transmission drops prior to OPV cessation, then areas with high force of infection and low RI coverage (especially in areas with under-vaccinated and/or inaccessible sub-populations), will need to conduct multiple bOPV campaigns prior to bOPV cessation to prevent cVDPVs after bOPV cessation.

WG decisions/recommendations

- The WG encouraged the programme to ensure high routine immunization (bOPV+IPV) coverage in areas with under-vaccinated/inaccessible populations.
- The WG suggested the programme consider maintaining ongoing preventive SIAs in countries with insufficient routine immunization coverage and additional bOPV campaigns prior to OPV cessation in countries (areas) where population immunity remains low. The WG also emphasized the importance of the programme continuing to target and reach un- and under-vaccinated populations (e.g. those in inaccessible areas) until successful OPV cessation.
- The WG emphasized the importance of securing sufficient supply of bOPV including a stockpile for outbreak response.

Topic 4: Future immunization policy

In April 2016, the Polio WG proposed that SAGE work on future immunization policy, including: (i) an explicit decision on whether polio vaccination should be continued after global certification of eradication; (ii) the recommended IPV schedule (number of doses, timing, and formulation) after OPV withdrawal; and (iii) the criteria for when countries could stop polio vaccination. The WG began its discussions of specific recommendations and identified data needs to support discussions at its next meeting.

Currently, the programme anticipates OPV withdrawal in 2020 or 2021, one year after Global Certification Commission (GCC) certification of WPV eradication (i.e. 4-5 years after the last WPV1 case and minimum one year between GCC certification to OPV withdrawal).

Regarding future immunization policy, countries fall into 3 broad categories: 1) Countries hosting poliovirus essential facilities whereby GAP III requirements necessitate ongoing and indefinite routine immunization with IPV (Sabin retaining countries should have at least one dose of IPV with coverage ≥ equal to or greater than DTP3; WPV-retaining countries should have at least three IPV doses with ≥90% coverage); 2) Countries maintaining IPV for country-specific reasons (e.g. national security and bioterrorism risk); and 3) "all other countries".

The WG discussed the requirements for IPV in "all other countries," and agreed that these countries should maintain IPV in the routine immunization for some time (e.g. 5 or 10 years) after OPV cessation to maintain high population immunity against possible VDPV emergence, iVDPV excretion, as well as containment failure. Modelling identified the greatest expected incremental net benefits for a strategy of all countries continuing at least one dose of IPV in routine immunization for 5 years after bOPV cessation. Further modelling studies would be needed to explore additional options raised by members of the WG

The WHO secretariat proposed that in the post-OPV era, all countries should aim to achieve ≥90% population immunity against all three serotypes, to minimize the risks for poliovirus re-emergence from residual VDPV/WPV, containment failure, and iVDPV. The WG agreed this level of population immunity will require at least two fractional or two full IPV doses (for prime and boost). For example, studies have shown that either two full dose IPVs (administered at 2 and 4 months) or two fIPV doses (administered at 4 and 8 months) could achieve 90% seroconversion against all serotypes.

The WG discussed the potential use of fractional dose IPV to effectively stretch limited supply. However, operational aspects of fractional dose in routine immunization (e.g. acceptability, wastage, operational feasibility, and cost) should be further analysed and clarified to inform SAGE in determining its position on fIPV doses in routine immunization.

For countries choosing to use hexavalent vaccine containing IPV, the schedule and number of doses will likely be determined based on other antigens.

The WG reviewed the projected estimates of global IPV demand and supply. The IPV market may become more competitive around 2020 due to the potential production scale-up of existing suppliers and the establishment of new mostly Sabin IPV suppliers. However, significant uncertainties remain regarding future IPV supply and the WG needs to consider IPV supply issues in the context of any future recommendations that it makes regarding immunization schedules. A 2 IPV dose schedule will require at least 80M additional doses (or more if some countries choose to use 3 or more doses of combination vaccine) which may not be available in 2020, depending on the speed at which number producers effectively come on the market

The WG invited two IPV suppliers (Sanofi and Bilthoven Biologicals) to discuss their production scale-up plan and perspectives on future immunization policy. Both suppliers indicated that they anticipate significantly increasing the supply to UNICEF market by 2018. Both manufacturers requested clarity on the future immunization policy (e.g. duration of IPV, number of IPV doses, availability of sustained funding) to make a timely decision on their supply and necessary investment. Suppliers also noted that attention to GAP III implementation roadmaps is critical to support continuing IPV availability. The WG noted that in the absence of a GPEI strategic plan extending beyond 2018, financial commitments to all programmatic efforts remain

uncertain and recommended that the programme should initiate efforts to develop a strategic plan that will extend further in time.

WG decisions/recommendations

- The WG emphasized the importance of advance preparations/communications for OPV withdrawal to facilitate OPV withdrawal following GCC certification of WPV eradication.
- The WG recommended countries without polio essential facilities should maintain IPV in routine immunization schedule at least for 5 years after OPV withdrawal (noting that countries with polio essential facilities will need to maintain IPV immunisation for at least the lifetime of these facilities). The WG will discuss future immunization policy in greater depth and detail at the next WG meeting.
- The WG agreed that countries should consider an additional dose of IPV into RI before global OPV withdrawal with the aim of achieving at least 90% seroconversion, but that the more detailed recommendations (e.g. the timeframe, schedule and dosing) will be further discussed during the next working group meeting. The discussions would include:
    - A comprehensive review of two-dose IPV schedule data
    - Analysis of feasibility of fractional IPV dose (e.g. operational feasibility, cost, wastage)
    - A cost-effectiveness analysis with two full or fractional IPV doses after the OPV cessation

Topic 5: iVDPV epidemiology and surveillance strategy

The WG received an update on the current known epidemiology of immunodeficiency-related vaccine-derived poliovirus (iVDPV) cases. Currently, there are 108 iVDPV patients in the WHO registry, many of which stopped excreting iVDPVs. The registry shows a substantial increase in reported cases that reflect increased surveillance efforts. Modelling and the registry suggest iVPDV prevalence characterized by two divergent trends – an increase in iVPDVs detected from middle-income countries (in part due to improved treatment of patients with primary immunodeficiencies (PIDs)) and a decrease from high-income countries (attributed to increasing use of IPV-only in these countries)). In terms of geographic distribution, there is clustering in the Middle East – possibly due to specific surveillance activities initiated by EMRO and higher rates of consanguinity. There is thought to be substantial underreporting, particularly for iVDPV cases without acute flaccid paralysis. Type 2 polioviruses account for the majority (~70%) of iVDPV cases. These iVDPVs may constitute a significant risk in triggering outbreaks among under-immunized populations post-OPV cessation. This risk appears to be concentrated in large and middle-income countries (e.g. India, Nigeria, Indonesia, and Egypt). The median duration of type 2 excretion decreased from 1.5-3.0 years during 1962, to 2011 and 1.0-1.3 years during 2011 to 2016.

The WG then reviewed the surveillance strategy for iVDPV case detection. Currently, there is no routine surveillance system to detect patients with PID in low/middle income countries. The WHO proposes to expand the AFP surveillance system for iVDPV cases, by identifying PID cases with a screening case definition for 'suspected PID' as part of AFP surveillance. Initially, the expansion will be implemented as a pilot test in up to five countries in the Middle East in 2016.

WG decisions/recommendations

- The WG commended the progress in detecting and analysing more iVDPV patients. It endorsed the proposed approach and pilot test to expand AFP surveillance system to detect more iVDPV patients.

Summary and next steps for the SAGE Working Group

The results of the WG will be presented at the October SAGE meeting for further discussions. In addition, the WG will continue to provide technical oversight on major areas, such as:

- Progress towards elimination of WPV and cVPDV
- Polio vaccine supply issues
- Risk mitigation strategy before the OPV cessation (e.g. bOPV campaigns before the cessation, detection of iVDPV cases)
- Future immunization policy (e.g. the timeframe, schedule and dosing)