WHO-EM/POL/452/E

Summary report on the

Twenty-third intercountry meeting for directors of poliovirus laboratories in the WHO Eastern Mediterranean Region

Muscat, Oman
10–11 December 2023

World Health Organization
Eastern Mediterranean Region

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1. Introduction

The twenty-third intercountry meeting for directors of poliovirus laboratories in the WHO Eastern Mediterranean Region was convened in Muscat, Oman, on 10–11 December 2023 by the WHO Regional Office for the Eastern Mediterranean. Directors of poliovirus laboratories from Egypt, the Islamic Republic of Iran, Jordan, Kuwait, Morocco, Oman, Pakistan, Saudi Arabia, Syrian Arab Republic, Sudan and Tunisia attended the meeting. Participants also included scientists from: the Centers for Disease Control and Prevention (CDC), United States of America; the Medicines and Healthcare Products Regulatory Agency (MHRA), United Kingdom; the National Institute of Public Health and the Environment (RIVM), Netherlands; the Kenya Medical Research Institute (KEMRI), Kenya; and the National Center for Public Health Laboratories, Yemen; along with staff from WHO headquarters and the WHO Regional Office for the Eastern Mediterranean.

Dr Hamid Jafari, WHO Regional Director for Polio Eradication, welcomed the participants and commended the excellent work of the Eastern Mediterranean Regional Polio Laboratory Network (EPLN). He expressed appreciation for the achievements of the Network's laboratories in providing timely and accurate results and supporting the validation and development of new methods and techniques for poliovirus diagnosis. Dr Jean Yaacoub Jabbour, WHO Representative to Oman, also welcomed participants and expressed WHO's appreciation for the support of Oman's Ministry of Health for joint activities in the country and their commitment to polio eradication.

2. Summary of discussions

Regional update

An update on the regional epidemiological landscape, priorities and strategies was presented. Currently, there are two wild poliovirus type 1 (WPV1) endemic countries (Afghanistan and Pakistan) in the Eastern Mediterranean Region, and four countries with ongoing circulating vaccine-derived poliovirus type 2 (cVDPV2) outbreaks (Egypt, Sudan, Somalia and Yemen).

Participants acknowledged the collective efforts of laboratory personnel and extended their appreciation for the timely support and provision of accurate results, particularly within the context of the growing number of cVDPV2 outbreaks.

This surge in cVDPV2 cases has inevitably led to an increased workload within the Global Polio Laboratory Network (GPLN). WHO global and regional polio laboratory coordinators shared valuable insights into the performance, activities and challenges faced by GPLN laboratories.

They also highlighted the achievements of regional polio laboratories, including the efficiency and high-quality work of acute flaccid paralysis (AFP) and environmental surveillance laboratories. EPLN laboratories continue to provide high-quality information on poliovirus isolation and characterization in a timely manner, which is essential for guiding GPEI activities. Laboratories in the Region are also actively engaged in validation of new methods/technologies, such as direct detection demonstration projects and direct detection nucleotide sequencing studies.

Status of polio eradication

Encouraged by the success of global smallpox eradication in 1980, the World Health Assembly in 1988 passed a resolution launching the Global Polio Eradication Initiative (GPEI). At that time, it is estimated that there were > 350 000 paralytic polio cases annually in 125 countries. Although the initial GPEI target of eradication by the year 2000 has long passed, it is noteworthy that significant progress has been made despite the enormous challenges and obstacles, thanks to the efforts of countless thousands of personnel and millions of vaccinators. By 2023, only 12 polio cases and 136 environmental samples were positive for WPV1 in two countries: six human cases and 46 environmental samples in Afghanistan and six human cases and 84 environmental samples in Pakistan.

The problem of persistent cVDPV2 transmission has continued, detected in four countries in the Region in 2023: Egypt, Somalia, Sudan and Yemen. Somalia has had persistent transmission of cVDPV2 since 2017 and is the longest cVDPV2 outbreak so far. The virus is mostly limited to the south-central areas of Somalia, with spillover to Ethiopia, Kenya and northern Somalia.

Yemen has experienced an explosive cVDPV2 outbreak starting in 2021, with 231 human cases so far. Transmission in the south was stopped following supplementary immunization activities (SIAs). However, cVDPV2 transmission has continued in north Yemen where no vaccination campaigns have been conducted.

Although Egypt closed its 2021 cVDPV2 outbreak in August 2023, a new emergence of cVDPV2 of novel oral polovirus type 2 (nOPV2) origin was reported on 18 August. The virus emerged and was detected in the Sinai and Ismailia governorates. Outbreak response SIAs were

conducted using nOPV2 in the outbreak zone targeting > 0.5 million children under 10 years of age.

Polio laboratory network performance

Performance of the EPLN regional polio laboratory network remains high despite the many challenges. All the Network's laboratories are fully accredited and maintain certification-standard performance indicators, efficiently supporting global polio eradication activities.

WPV1 and vaccine-derived polioviruses continue to be detected with speed and accuracy despite the rise in workload due to the outbreaks, improved AFP surveillance and increased sampling from contacts of AFP cases in infected districts. Some laboratories, such as those in Iraq and the Syrian Arab Republic, are performing under critical security situations. Sudan's laboratory stopped working after the onset of the current crisis, and samples from the country are being sent to VACSERA, the regional reference laboratory in Egypt.

In Egypt, VACSERA has been an excellent performer for several years. The laboratory is providing virus isolation, intratypic differentiation (ITD) and nucleotide sequencing services for Egypt and Sudan. Additionally, it serves as sequencing laboratory for the national polio laboratories in Iraq, Jordan, the Syrian Arab Republic and Saudi Arabia. Environmental surveillance was introduced in Egypt in 2001 and is well established, with collection sites covered in all 27 governorates.

The KEMRI poliovirus laboratory in Kenya supports testing for both AFP and environmental surveillance samples, serving Kenya, Comoros and Eritrea (until 2018) in the WHO African Region, and Djibouti and Somalia in the Eastern Mediterranean Region. The laboratory supports both AFP surveillance and environmental surveillance in Djibouti and

Somalia, in addition to Kenya. The overall performance of the laboratory has been good over the years, and all performance indicators on sample numbers, timeliness, accuracy and proficiency testing, as well as onsite reviews, have been consistently good since 2007. The laboratory coped with a substantial increase in workload during 2022 due to the testing of samples received from Djibouti, Somalia and Yemen. Despite these challenges, the laboratory maintained its performance.

The WHO regional reference laboratory in Pakistan continued to maintain high-level performance during 2023. Laboratory quality indicators such as cell culture results reported within 14 days and ITD results reported within seven days were well above the minimum requirements for both Pakistan and Afghanistan. Stool samples from 31 349 AFP cases and 7781 contacts were received from Pakistan during 2023, from which six WPV1 cases were identified. Furthermore, a total of six WPV1 cases were also confirmed from the stool samples of 10 058 AFP cases and 871 contacts from Afghanistan. The non-polio enterovirus (NPEV) isolation rate was 14% for both Afghanistan and Pakistan. In 2023, the laboratory analysed 2394 environmental samples from Pakistan and 481 environmental samples from Afghanistan.

Molecular epidemiology of WPV1

All WPV1 isolates from Afghanistan and Pakistan belong to the SOAS genotype. There has been a consistent decline in the number of genetic clusters observed over the years. In 2019, there were 13 active clusters, whereas only two active clusters, namely YB3A and YB3C, have been identified since 2022. During 2022, YB3A was confined to eastern Afghanistan and YB3C was limited to southern Khyber Pakhtunkhwa in Pakistan. However, YB3A was reintroduced to Pakistan in 2023 due to population movement from Afghanistan.

Southern Khyber Pakhtunkhwa serves as the epicentre for the YB3C cluster, which remains confined to this geography in Pakistan. The cluster is expanding within a single major lineage that originated in April 2022. It is still being detected in the same geographical area, with 24 orphan viruses from Pakistan belonging to the YB3C cluster (19 in 2021, two in 2022, and three in 2023).

The YB3A cluster is geographically reseeding diverse areas. It was initially circulating primarily in eastern Afghanistan but was reintroduced to the other side of the border in Pakistan after being first detected in January 2023 in an environmental surveillance sample from Lahore. It is now spreading to new geographically distinct areas through multiple importation events. Major importation events have occurred in Hangu, Peshawar and Kohat in Khyber Pakhtunkhwa province. The YB3A cluster has four main active lineages, two lineages detected in the northern corridor (Khyber Pakhtunkhwa and Punjab), one expanding in Karachi, and one in the Quetta block of the southern corridor (Quetta, Pishin, Chaman and Kandahar). Despite a reduction in genetic diversity in terms of the number of active genetic clusters, there is an expansion of diversity among the remaining active clusters.

Vaccine-derived polioviruses

Geographically, Egypt consistently faces the risk of virus importation from neighbouring countries. Notably, all isolates have been from environmental samples, with no associated AFP cases. During 2020–2021, 11 viruses were isolated from the cVDPV2 emergence group CHA-NDJ-1, with one detection in 2020 and 10 in 2021. The initial virus was identified in October 2020 in environmental surveillance samples from Giza governorate, while the last isolation occurred in June 2021 in environmental surveillance samples from Qena governorate.

In November 2021, a cVDPV2 was imported from Yemen, exhibiting 15 nucleotide changes from the prototype, and belonging to the emergence group YEM-TAI-1. Subsequently, two viruses were also isolated in April and August 2022 from environmental surveillance samples from Giza and Cairo governorates, respectively, showing 25 and 26 nucleotide changes and belonging to another emergence group, NIE-ZAS-1.

Following two rounds of monovalent oral poliovirus type 2 (mOPV2) campaigns in February and March 2021 there were new seedings, resulting in 68 ambiguous vaccine-derived poliovirus type 2 (aVDPV2) isolates. These viruses exhibit differences in viral protein 1 (VP1) region, ranging from six to 29 nucleotides compared to Sabin 2.

The only cVDPV2 emergence group originating from Sabin 2 in Egypt was EGY-QEN-1, comprising three viruses. The first isolate was in May 2021 from environmental surveillance samples from Qena governorate, with a seven nucleotide difference, and the last in March 2022, showing 19 nucleotide changes in VP1 from the Sabin 2 prototype. The Egyptian cVDPV2 outbreak was officially closed in August 2023, but unfortunately a new cVDPV2 emergence of nOPV2 origin (EGY-NOR-1) was detected in the same month from North Sinai. This emergence resulted in a localized outbreak, with a total of seven positive environmental surveillance samples, exhibiting nucleotide differences ranging between nine and 15 in VP1 region compared to Sabin 2.

In Yemen, the emergence of cVDPV2 began in August 2021 and remains an ongoing concern. A total of 231 cVDPV2 cases have been identified, with 66 reported in 2021, 162 in 2022 and three in 2023, predominantly concentrated in northern Yemen. In addition to human cases, 43 environmental surveillance samples have tested positive for cVDPV2. These viruses are classified into two different emergence groups that originated in Yemen, namely YEM-TAI-1 and YEM-SAN-

1. There were nine isolates of YEM-SAN-1, eight from AFP cases and one positive environmental sample, with last detection in August 2022. YEM-TAI-1 has exhibited a wider spread, with 19 infected governorates and spillover to neighbouring countries such as Djibouti, Egypt and Somalia. This emergence persists and continues to circulate.

Surveillance of primary immunodeficiency disorder (PID) and immunodeficiency-related vaccine-derived polioviruses (iVDPVs)

Objective six of the Global Polio Surveillance Action Plan, 2022–2024 focuses on establishing iVDPV surveillance to ensure the sustainability of polio eradication efforts. PID/iVDPV surveillance is gaining increasing importance, particularly during the certification and post-certification stages. In 2021, substantial efforts were dedicated to integrating iVDPV surveillance into national poliovirus surveillance systems. Pilot testing during this period revealed various implementation challenges and the lessons learnt from this phase will guide the further scaling up of PID/iVDPV surveillance in the Eastern Mediterranean Region.

For last few decades, WHO has been leading studies on iVDPV surveillance, with the support of the regional laboratory network in Egypt, Islamic Republic of Iran and Tunisia. In Tunisia, where there is no regular surveillance of poliovirus or enterovirus excretion in immunodeficient patients, studies were conducted as a collaboration between immunology laboratories, WHO and CDC in 1997, 2009–2010 and 2014, which contributed to the establishment of global and regional guidelines for iVDPV surveillance among patients with primary immunodeficiency. Notably, Tunisia has become the first country to systematically incorporate PID into its national poliovirus surveillance programme. Since 2015, the laboratory has routinely received requests for enterovirus detection in PID patients as part of its clinical virology diagnostic activities. As of December 2023, a total of 124 PID patients

had been identified for sample collection in Tunisia. The majority of these cases (42 patients) are of common variable immunodeficiency (CVID) and agammaglobulinemia (31 patients).

The integration of PID surveillance has facilitated incorporation of new sequencing methodologies, providing comprehensive and detailed information about the viral genome. This collaborative approach contributes to a more robust surveillance system for the timely and effective detection of potential threats related to poliovirus and other enteroviruses.

The VACSERA laboratory in Egypt reported three iVDPV cases (three iVDPV3 and one iVDPV2-n) in 2023. In previous years, from 2011 to 2022, the laboratory tested 772 PID patients and confirmed 33 cases as iVDPVs. Two iVDPV2 cases with nOPV2 origin were detected among the PID cases, one in 2022 and another in 2023, providing evidence that nOPV2 can seed iVDPV2 in children with PID.

In the Islamic Republic of Iran, the national polio laboratory initiated PID screening for poliovirus excretion in 2009 through a pilot project. The iVDPV project received approval in 2013, and by December 2023, 378 PID cases had been screened for poliovirus excretion. The country has reported 30 iVDPV cases since 1995, including 20 among AFP cases and 10 among patients with PID. Notably, among the 30 cases with isolated iVDPVs, four are identified as chronic excretors.

Environmental surveillance

Environmental surveillance is used to supplement AFP surveillance, sampling populations rather than individuals. It represents a powerful tool to detect wild or VDPV circulation and to guide further surveillance and immunization activities. The GPEI strategy 2022–2026 envisions the

implementation of a global environmental surveillance network that is extensive enough to contribute to the timely detection of polioviruses.

Optimization of environmental surveillance is an important part of the Global Polio Surveillance Action Plan 2022–2024. Optimization means not only expansion of the network, but also ensuring that current sites are effective and rationalized. GPEI field guidance for the implementation of environmental surveillance for poliovirus provides in-depth guidance on the implementation of environmental surveillance, environmental site selection, sample collection, validation, monitoring and evaluation of an environmental site, and closing of an environmental site.

Sixteen countries/territories of the Region – Afghanistan, Bahrain, Djibouti, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, the occupied Palestinian territory, Pakistan, Saudi Arabia, Somalia, Sudan, the Syrian Arab Republic and Yemen – have implemented environmental surveillance to detect polioviruses in sewage water in strategic locations. The remaining six countries aim to initiate/implement environmental surveillance by the end of 2024.

The regional reference laboratory in Egypt was a pioneer in implementing this technique. It started in two governorates, with five sites and five samples per month, and now covers all 27 governorates, with 510 samples per year from 44 sites.

Pakistan has the largest environmental surveillance network in the world, covering all high-risk and vulnerable districts. Since 2009, environmental surveillance has been conducted in strategic locations, and there are 119 active permanent sites. This has contributed significantly by detecting the virus in its initial stages, allowing the programme to respond quickly to new importation/transmission. To ensure the early detection of any WPV1 importation, the country also conducts ad-hoc sampling from

selected sites. In addition to this, 44 sites have been selected for parallel sampling through a bag-mediated filtration system.

Environmental surveillance was initiated in Afghanistan in 2013 in two cities in Kandahar province (Khandak and Rarobat). This has now been expanded to 34 active sites. A total of 481 samples were tested so far in 2023, with 13% shown to contain WPV1 isolates.

In Saudi Arabia, environmental surveillance was initiated in 2022 with the establishment of an environmental surveillance laboratory at the national polio laboratory. During 2023, 52 samples have been collected and tested. Furthermore, the laboratory has been providing support to Bahrain, which initiated environmental surveillance in 2023 at three sites, collecting 15 samples to date.

The KEMRI polio laboratory receives environmental surveillance samples from Kenya, Comoros and Eritrea in the African Region and Djibouti and Somalia in the Eastern Mediterranean Region. During 2019, it received 243 samples from Somalia and Djibouti, and has maintained high quality standards, providing timely and accurate results.

Participants discussed plans for the further expansion of environmental surveillance laboratories in Oman and Tunisia. The environmental surveillance laboratory in Oman will provide support to Oman, Qatar, and the United Arab Emirates. Similarly, the environmental surveillance laboratory in Tunisia will cater to the testing needs of samples collected at sites in Tunisia, Libya and Morocco. This strategic expansion aims to strengthen environmental monitoring across the Region and enhance the capacity for early detection and response to any poliovirus risk.

Laboratory quality assurance

Annual proficiency testing and assessment of laboratories continue to be critical for the quality assurance of the performance of polio laboratories. Three different proficiency testing panels are used to evaluate virus isolation, ITD/VDPV screening using real-time reverse transcription polymerase chain reaction (rRT-PCR) and poliovirus sequencing.

The proficiency testing programme is coordinated by WHO in collaboration with the global specialized laboratories in the United States and the Netherlands. A standardized test to measure the sensitivity of the cell lines used for poliovirus isolation is also required for laboratories to be accredited. At the time of the meeting, all laboratories had passed the most recent proficiency tests for virus isolation with a 100% score, except for three which are waiting for a proficiency testing panel. Similarly, 11 laboratories, except for the national polio laboratory of Sudan, have passed ITD/VDPV proficiency testing. Five laboratories in the Region (in Egypt, the Islamic Republic of Iran, Oman, Pakistan and Tunisia) are performing nucleotide sequencing and passed proficiency testing with a score of 100%.

Earlier issues with rRT-PCR ITD/VDPV data interpretation and reporting by most of laboratories in the Region were resolved through using the ITD rRT-PCR practice files shared by the laboratory in Pakistan. Overall, regional laboratories are highly proficient in polio PCR assays, turnaround time is excellent for all laboratories and proficiency test results correlate with routine results.

Direct detection methodology

Currently, two distinct methods of direct detection have been developed and are under validation. The first is the direct detection-ITD (DD-ITD) method, developed by CDC. The second method, the direct detection

nucleotide sequencing (DDNS) algorithm, is a collaborative effort between Imperial College and the National Institute of Biological Standards and Control in the United Kingdom.

Laboratories within the EPLN are actively engaged in supporting validation testing of direct detection methods. Specifically, the regional reference laboratories in Egypt and Pakistan are conducting prospective testing of DD-ITD in parallel with recommended virus culture algorithms. The regional reference laboratory in Pakistan is additionally involved in validating the DDNS method. Furthermore, the national polio laboratory in Oman and regional reference laboratory in Egypt have received training on the DDNS algorithm and are poised to commence validation activities soon. These collaborative efforts signify a crucial step forward in strengthening global polio surveillance capabilities and progressing towards eradication.

3. The way forward

The participants discussed and agreed on actions to sustain and improve the performance of poliovirus laboratories in the Region.

Polio laboratory management

1. National polio laboratories should develop/update a comprehensive contingency plan to deal with challenges related to testing demands in outbreak or emergency settings and share with national authorities to integrate into national preparedness and outbreak response plans by the third quarter (Q3) of 2024.[1]
2. Laboratories should submit annual reports on laboratory performance through the Global Polio Laboratory Network Management System (GPLNMS) before 15 February of each year. Laboratory directors should frequently check the GPLNMS for resources and share updates with the relevant laboratory staff.
3. In anticipation of a global shortage of supplies, national polio laboratories should keep their laboratory supplies inventory updated and share with the regional laboratory coordinator, along with comments on critical item needs.
4. Special attention should be given to cell culture procedures. Laboratories should submit a cell sensitivity report at mid-level and before discarding, to the regional laboratory coordinator.[2,3]

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[1] Global polio surveillance action plan 2022–2024. Geneva: World Health Organization; 2022 (https://iris.who.int/bitstream/handle/10665/354479/9789240047310-eng.pdf?sequence=1&isAllowed=y).

[2] Polio laboratory manual, 4th edition. Geneva: World Health Organization; 2004 (https://iris.who.int/handle/10665/68762).

[3] Supplement to the *Polio laboratory manual* on the adaptation of newly received cells to local conditions (https://polioeradication.org/wp-content/uploads/2017/05/AdaptationOfCellsSupplement2.pdf).

5. Annual laboratory supplies should be ordered during early 2024. Directors are encouraged to find local suppliers to enable quick procurement.
6. WHO should maintain laboratory supplies at the WHO Region Office for the Eastern Mediterranean and the Dubai Hub.
7. Laboratories should update their standard operating procedures (SOPs) and quality assurance documents, training records, and storage, reporting and referral procedures.

Quality assurance

8. All laboratories should submit their request for proficiency testing panels and diagnostic kits via the International Reagent Resource (IRR). For the latter, laboratories should make an inventory of their current stock and place orders for 2024 based on their anticipated workload and requirements.
9. The 2023 sequencing proficiency testing panel is now available from the IRR for ordering. All sequencing laboratories must submit their requests in January 2024.
10. WHO should continue to support ongoing quality assurance procedures for poliovirus ITD/VDPV and sequencing assays. Laboratories should coordinate with the regional laboratory coordinator for any queries regarding proficiency testing panel scoring.
11. The 2023 virus isolation proficiency testing panel is anticipated to be ready by the first quarter of 2024. Laboratories will assist in securing the green light from the concerned authorities for panel shipment to facilitate seamless delivery. Any unusual or nonspecific observations found during panel testing are required to be documented and reported.

ITD and sequencing-performing laboratories

12. Low workload laboratories are advised to develop a plan for maintaining their ability to perform WHO-accredited laboratory assays.
13. Laboratories should regularly perform complete ITD and sequencing testing and analysis on at least five known samples every month to maintain competency and the quality assessment of equipment/reagents. Comprehensive documentation of these activities is essential and should be shared with the regional laboratory coordinator.
14. Laboratories should use the ITD 6.0 kit; additionally, consistent analysis of result files from rRT-PCR ITD/VDPV tests should be conducted at least once per month and shared as a component of the ITD simulation exercise.

Environmental surveillance system

15. The WHO Regional Office for the Eastern Mediterranean should support countries in the initiation and expansion of environmental surveillance and monitor/review the sensitivity and functionality of the environmental surveillance.
16. Environmental surveillance laboratories should assist the environmental surveillance system by maintaining regular communication and providing guidance on environmental surveillance site performance, aligned with laboratory indicators and local epidemiological conditions.[1]
17. All environmental surveillance laboratories should ensure that staff are adequately trained and that the WHO-recommended environmental surveillance testing algorithm is consistently used.

[1] Field guidance for the implementation of environmental surveillance for poliovirus. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/368833).

Any change in the processing of environmental surveillance samples should be communicated to the regional laboratory coordinator.

18. The GPEI is urged to perform a comprehensive analysis and evaluation of historical environmental surveillance sampling data obtained through various methods and to recommend the most effective environmental surveillance sampling method that enhances sensitivity.[1]
19. Thorough review and analysis of lessons learned from ad hoc sampling sites and one-time sampling sites is crucial. Clear guidance is needed to determine the optimal application timing, methodology and site selection.
20. Specific attention should be given to biosafety procedures during environmental surveillance sample processing and the documentation of biorisk management.[2]
21. All environmental surveillance laboratories are expected to participate environmental surveillance proficiency panel testing in 2024. This panel will be graded and is part of the environmental surveillance accreditation scheme.

Direct detection

22. Laboratories (Egypt, Oman and Pakistan) should continue to support the development and validation of new polio molecular diagnostic methods (DD-ITD and DDNS).
23. The GPEI/GPLN should fast track the provision of guidance on accepted/recommended method/s of direct detection, preferably within the next 12 months.
24. WHO should keep polio network laboratories updated on the progress of pilot testing for direct detection of poliovirus.
25. The GPEI/GPLN should provide clear guidance and the required support for the operationalization of the direct detection

laboratories in Afghanistan and Yemen. Both laboratories are to be operationalized before end of Q2 2024.[1]

PID surveillance

26. Laboratories should support PID surveillance implementation and its integration into AFP surveillance. Any requirements for support in this should be identified and communicated to the WHO Regional Office.
27. The Tunisian regional reference laboratory should share its experiences and historical data.
28. The regional laboratory coordinator should facilitate the analysis of PID surveillance metadata from Egypt, the Islamic Republic of Iran and Tunisia.

nOPV2

29. All laboratories should be kept updated about the use of the nOPV2 algorithm for the detection of nOPV2 strains and incorporate this information into their SOPs and documentation.[2]
30. Laboratories should sequence all PV2 isolates, including VP1, within the context of nOPV2.[1]
31. Laboratories should be given clear instructions on PV2 isolates to refer to the Global Specialized Laboratory (GSL) for whole-genome

[1] GPLN guidance paper 9: Reporting polioviruses of programmatic interest detected using methods not-recommended or not-accepted by the GPLN-SWG. Geneva: Global Polio Eradication Initiative; 2023 (http://polioeradication.org/wp-content/uploads/2023/07/GP9_Reporting-virus-of-programmatic-interest-detected-using-not-recommended-or-not-accepted-methods.30.05.2023.Final_.pdf).
[2] Polio field and laboratory surveillance requirements in the context of nOPV2 use. Geneva: Global Polio Eradication Initiative; 2022 (https://polioeradication.org/wp-content/uploads/2022/06/nOPV2-surveillance-guidance.pdf).

sequencing. These may include both nOPV2-positive and nOPV2-negative PV2 isolates from AFP and environmental surveillance.

Containment and implementation of Global Action Plan III

32. All network laboratories are required to update and share inventories for all types of poliovirus for infectious materials (IM) and potentially infectious materials (PIM) biannually with the regional laboratory coordinator.[1]
33. The EPLN, being an essential part of polio containment, should support and assist national polio containment coordinators in poliovirus containment activities.
34. All network laboratories should perform an assessment based on all 16 elements of the biorisk management system. All laboratories should make use of the risk assessment tool which is available in the regional containment database management system. A mitigation plan should be developed based on the gaps and deficiencies found after risk assessment.[2]

Transition

35. Building on polio transition and the available window of opportunity for integrating functions and activities for mutual

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[1] Summary report from the twenty-fourth meeting of the Global Commission for Certification of Poliomyelitis Eradication, Geneva, Switzerland, 22–23 November 2023. Geneva: World Health Organization; 2024 (https://www.archive.polioeradication.org/wp-content/uploads/2024/05/Twenty-fourth-Meeting-of-the-Global-Commission-for-Certification-of-Poliomyelitis-Eradication.pdf).

[2] Global Polio Eradication Initiative. Global poliovirus containment action plan 2022–2024. Geneva: World Health Organization; 2022 (https://polioeradication.org/wp-content/uploads/2022/07/GPCAP-2022-2024.pdf, accessed 8 April 2024).

improvement of timelines and quality,[1] it is suggested that integration is explored for: sample (national and international) shipment and transportation; procurement plans for kits, reagents and sample collection kits either from the IRR or WHO e-catalogue; and building an integrated working force to accommodate the changes in workload.

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[1] Polio Eradication Strategy 2022–2026: Delivering on a promise; 2022 (https://polioeradication.org/wp-content/uploads/2022/06/Polio-Eradication-Strategy-2022-2026-Delivering-on-a-Promise.pdf).

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