Definition and Rationale of risk Tiers for IPV Introduction

Type 2 wild poliovirus has been eradicated since 1999. The GPEI has therefore decided to initiate the global withdrawal of all type 2 containing oral poliovirus vaccines (OPV2) which are responsible for approximately 99% of recently reported VDPVs and an estimated 40% of the Vaccine Associated Polio Paralysis burden. In November 2012, the Strategic Advisory Group of Experts on Immunization (SAGE) recommended that all countries should introduce at least 1 dose of IPV in their routine immunization program to mitigate the risks associated with the withdrawal of OPV2. SAGE highlighted that post-OPV2 cessation, the primary role of IPV will be:

- to prevent poliomyelitis in IPV vaccinated individuals exposed to vaccine-derived poliovirus type-2 (VDPV2)
- to prime populations to improve the response to monovalent OPV type-2 (mOPV2) or an additional dose of IPV in the event of a type 2 polio outbreak
- to accelerate wild poliovirus eradication in remaining endemic countries by boosting immunity to wild poliovirus types 1 and 3

Because IPV introduction is a risk mitigation strategy, the IMG has established criteria to identify countries at the highest risk of a cVDPV2 outbreak and importations following OPV2 cessation. The criteria and rationale are explained in detail below:

Tier 1:
- Any country that has evidence of ongoing cVDPV2 transmission or has reported a cVDPV2 since 2000 is at highest risk of a type 2 outbreak, as a cVDPV2 outbreak will be the primary risk following OPV2 cessation. They are therefore top priority for IPV introduction.
- WPV endemic countries were classified as top priority because of the potential for IPV to accelerate wild poliovirus eradication by boosting immunity to wild poliovirus types 1 and 3.

Tier 2:
- Countries with any history of cVDPVs (types 1 and 3) since 2000 were classified as the second-highest risk priority because the risk factors for VDPV outbreaks are similar for all VDPV serotypes.
- Previous risk analysis and modeling studies have found that the most important predictor of VDPV emergence is low routine immunization coverage. For this reason, countries that have repeatedly reported routine immunization coverage estimates of less than 80% (as per WHO and UNICEF estimates of national infant immunization coverage, WUNIC 2013 data) over the past three years (i.e., 2009-11) were also classified as the second-highest risk priority.

Tier 3:
- Countries sharing a border with Tier 1 countries that have reported WPV since 2003 were classified as the third-highest priority, based on predicted future risk of cVDPV2 importations. In this case, the trends for importation of wild virus were thought to be predictive of possible future transmission of VDPV2.
• Countries that have experienced a WPV importation since 2011 were also included in this risk category. Any WPV importation since 2011 (the year in which India eradicated polio) reflects a current risk of importation from the remaining endemic countries.

• Additionally, countries that have experienced a WPV importation since 2011 were included. Since India eradicated polio in 2011, any WPV importation since 2011 reflects current risk of importation from the remaining endemic countries.

**Tier 4**

• All other remaining countries using only OPV

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<sup>1</sup> cVDPV data is available from 2000 onwards.

<sup>2</sup> Countries with estimated live birth cohorts of <20,000 children per year in 2015 were not included due to small population (as per UN World Population Prospect: the 2012 revision)