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Distribution pattern of poliovirus potentially infectious materials in the phase 1b medical laboratories containment in conformity with the global action plan III

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Abstract

B : The containment of poliovirus infectious/potentially infectious materials in all biomedical facilities in Nigeria remain crucial to maintaining gains recorded towards polio eradication. Activities involved in the Nigerian Poliovirus type 2-laboratory containment survey in line with the 3rd Global Action Plan III (GAP III) for poliovirus containment are documented in this study. Through these activities, the overall preparedness for poliovirus eradication in Nigeria is assessed.

M : A cross-sectional survey was conducted from 19th September-31st October 2016 using structured Laboratory survey and inventory (LSI) questionnaires uploaded onto the SPSS software package in 560 biomedical facilities classified either as high risk or medium risk facilities across the 6 zones in Nigeria.

: In total, 560 biomedical facilities were surveyed in Nigeria in conformity with the GAP III. In total, 86% of the facilities surveyed were with laboratories while 14% were without laboratories.
Twelve laboratories with poliovirus potentially infectious materials were identified in this exercise. In total, 50% of the 12 laboratories were under the ministry of education for research purposes. While 33% were among those laboratories surveyed in the phase 1a exercise without any recorded inventory, but have acquired some since the phase 1a survey. A total of 13,484 poliovirus infectious materials were found in the 12 laboratories. Only 8% of the materials were immediately destroyed while the remaining materials (62%) were found in Oyo and Borno states scheduled for destruction within 3–4 months according to WHO protocol for destruction of poliovirus infectious materials.

C : This study has revealed the successful containment of all poliovirus infectious materials in the laboratories surveyed. It has also revealed some surveillance gaps. We recommend that the surveillance system be improved to maintain the gains from the containment exercise and avoid reintroduction of infectious materials into biomedical facilities. This reduces the chances of viral reintroduction to the population in general.

K : GAP III, AFP surveillance, Poliovirus infectious materials, Polio eradication

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B

Background

The world will be declared poliovirus free when the Global Certification Commission (GCC) is satisfied that all World Health Organization (WHO) regions have documented the absence of poliovirus for at least three years [1, 2].

In the past 11 years, Nigeria has made remarkable progress towards polio eradication with the striking decline in the number of Wild Polioviruses (WPV) from 1122 cases in 2006 to just three cases in 2016 [3–5]. The number of circulating Vaccine-Derived Poliovirus (cVDPV) cases has also declined from 27 cases in 2010 to just one case in 2016 [3, 6]. There has also been a notable improvement in the sensitivity of the Acute Flaccid Paralysis (AFP) surveillance system in the past year. Specifically, a total of 13,029 AFP cases and a 21.7 Non-polio (NP)- AFP rate was recorded between January and September 2016 in comparison to the 10,870 AFP cases and 18.7 NP-AFP rate recorded in 2015 [7]. Nigeria also participated in the globally synchronized switch from trivalent Oral Polio Vaccine (tOPV) to bivalent Oral Polio Vaccine (bOPV) in April 2016 after WPV2 was declared eradicated in 2015 by the GCC. [8, 9]

The safe handling and containment of unwanted poliovirus type 2 and indeed all poliovirus infectious/potentially infectious materials in all laboratories/biomedical facilities and health facilities in the country is therefore crucial if gains made towards polio eradication are to be maintained because it minimizes the risk of facility-associated poliovirus reintroduction [10, 11].

The Global Action Plan III (GAP III) for poliovirus containment champions the process of minimizing poliovirus facility-associated risks [12, 13]. All WHO member states implemented appropriate containment of WPV type 2 in essential laboratories and vaccine production facilities by the end of 2015 in preparation for the tOPV-bOPV switch. Biomedical facilities/laboratories and Health facilities (HFs) were then surveyed and checked in 2016 for compliance with the destruction of all tOPV/monovalent Oral Polio Vaccine type 2 (mOPV2) and containment/destruction of all poliovirus infectious materials months after the global withdrawal of Oral Polio Vaccine type2 (OPV2) in line with the GAP III.

The GAP III is divided into three phases in recognition of the changing nature of the risks during different stages of the eradication programme. Implementation of the GAP III's phase I in Nigeria was down in two strata: Phase 1a, which place in 2015 and phase 1b in 2016. Nigeria implemented part of the phase 1b when she updated the national list of laboratories and facilities after the phase 1a exercise, surveyed some selected biomedical laboratories (high risk, veterinary and research institutions, medium and low risk laboratories, twkrec theOnV147 GAPse I , coPo

professional group meetings, Disease Surveillance and Notification Officers (DSNOs), National and State Chapters of the Association of Medical Laboratory Scientists in Nigeria (AMLSN) and Guild of Medical Laboratory Directors in Nigeria.

The NC was responsible for maintaining and updating the generated list as the containment activities progressed.

D

The laboratory scientist completed the LSI survey questionnaires at the laboratory/biomedical facility. Immediate retrieval and validation of the completed survey form was done. Endorsed facility visitation/evidence of destruction forms were deposited in the laboratory/biomedical facility to provide evidence that such facility have been surveyed by the ZCs and WHO staff.

Laboratories/biomedical facilities with poliovirus or poliovirus potentially infectious materialscompleted the inventory form of the LSI and were immediately validated by the ZCs and WHO staff.Delisting of endorsed laboratory/biomedical facility followed this. Note that validation of laboratories surveyed for poliovirus potentially infectious materials in the country was done solely by the six ZCs covering the six geopolitical zones under the supervision of the NC.

C

Almost all the laboratories/biomedical facilities initially surveyed responded to the questionnaires. Follow-up attempts using telephone calls, text messages and physically going back to the laboratories to remind them of completion of the questionnaires were carried out by the ZCs and WHO staff.

Q

The completed LSI forms were retrieved and cross-checked by the ZCs and WHO staffs to make sure all variables were completed and validation was carried out.

D

Software (SPSS version 20) was used for data entry and analysis. The NC carried out data entry and also

Classification/types of poliovirus infectious material found are detailed in Table 3. A total of 31,484 unwanted poliovirus infectious/potentially infectious materials were found during this survey.. 19,710 (62%) of these materials were stool sample closely followed by Non-polio enterovirus (NPEV) isolates, 9383 (30%) and Sabin vials isolates, 1851 (6%).

Majority of the stool samples found came from Oyo, 10,124 (51%) and Borno sates, 7406 (38%) Oyo was the only state in the country to have stool sample, sewage waste, NPEV isolates and Sabin vials found in its laboratories. This

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