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# Assessing the quality of the Acute Flaccid Paralysis surveillance system in Edo state, Nigeria 2017

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### ABSTRACT

This paper accesses the quality of the Acute Flaccid Paralysis (AFP) surveillance system in Edo state using the May/June 2017 Rapid Surveillance Assessment tool for reviewing existing surveillance systems.

This was a descriptive cross-sectional study involving the Disease surveillance and notification officers (DSNOs), and their assistants (ADSNOs) in all 18 Local Government Areas (LGAs).

All the surveillance officers were 100% knowledgeable on the AFP case definition. About, 94% of the ADSNOs knew how the AFP stool specimens were transported. Only 75% and 50% of the DSNOs and ADSNOs respectively could mention all seven AFP differential diagnosis stated in the AFP surveillance guidelines.

Active surveillance was conducted by 89% of the DSNOs in their respective LGAs within the last six months prior to this study. Only 22% of the ADSNOs were actively involved in surveillance activities.

Records of documentation of AFP surveillance activities dating as far back as three years were readily available at the offices of 90% of the DSNOs and with the state epidemiologist.

Edo state has shown attributes of a quality surveillance system in terms of knowledge, AFP surveillance and documentation. We however encourage a surveillance system that is more inclusive with active participation from the ADSNOs.

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## Introduction

Nigeria, alongside Afghanistan and Pakistan remains the last three countries still endemic with wild poliovirus (WPV)<sup>1-3</sup>. Though much progress has been made in interrupting the transmission of WPV, Nigeria will need to improve Routine Immunization (RI), strengthen Acute Flaccid Paralysis (AFP) surveillance systems, and enhance the quality of polio vaccination campaigns in order to completely eradicate poliomyelitis and attain a polio free certification.<sup>4</sup>

A highly sensitive AFP surveillance system that involves the immediate investigation of AFP cases and specimen collection for viral isolation is critical for the detection of WPVs with the ultimate objective of polio eradication.<sup>5,6</sup> In fact the most important criterion for the certification of a country will be the absence of WPVs for at least three years in the presence of certification standard AFP surveillance system.<sup>7,8</sup> This highlights AFP surveillance as the major player in the Global Polio Eradication Initiative (GPEI).

Given the crucial role of AFP surveillance in the GPEI, it is imperative that the quality of the surveillance system be periodically assessed to ensure that they deliver on the objectives for which they were set up. Assessing the quality of the AFP surveillance system is amongst other factors, centred on accurate documentation of AFP surveillance activities, as without valid supporting documentation, a country will be unable to evidence the quantum and quality of work done to support a polio-free status.<sup>9</sup>

In Nigeria, periodic Rapid Surveillance Assessment (RSA), which was introduced under the guidance of the Expert Review Committee (ERC) on Polio Eradication and Routine immunization, is among the tools being used to assess and identify gaps in the quality of the AFP surveillance system towards quick intervention and resolution.<sup>10</sup> This paper highlights activities of the May/June 2017 RSA in Edo state, Nigeria with major emphases on the critical aspects of AFP surveillance such as

knowledge of AFP surveillance, AFP surveillance activities/support and most importantly, data management and documentation, while making recommendations and providing best practices which should help improve the quality of AFP surveillance as the country matches towards a polio free certification

## Method

### Study Location

This study was carried out in Edo state Nigeria. Edo is one of the six states in the south-south geopolitical zone of Nigeria with Benin City as capital. The state is divided into 18 Local Government Areas (LGAs) and 192 political wards. The population of people in this state is estimated at four million people based on the last national population census of 2006.<sup>11</sup>

Edo state has 579 Health facilities, 150 AFP case reporting site and 855 AFP community informants spread across the 18 LGAs under the supervision of designated Disease Surveillance and Notification Officers (DSNOs) and Assistant Disease Surveillance and Notification Officers (ADSNOs) per LGA. The AFP surveillance performance for 2012, 2013 and 2014 showed a non-polio AFP rate of 14.2, 26.7 and 25.5 respectively. Corresponding figures for percent stool adequacy was 98%, 97% and 99%.

### Study Design and Population

This was a descriptive cross-sectional study conducted between May 30<sup>th</sup> and June 6<sup>th</sup> 2017 in all 18 LGAs in Edo states. The participants in this study were State Disease surveillance and notification officers (State DSNO), Disease surveillance and notification officers (DSNOs) and Assistant Disease Surveillance and Notification Officers (ADSNOs) of all 18 Local Government Areas (LGAs) of Edo states and the State Disease surveillance and notification officer (SDSNO) making a total of 37 participants

### Tools for data Collection

The tools used were structured RSA questionnaires and WHO-adapted facility checklists. These tools were used to capture

observations and responses in various areas, including the organization of AFP surveillance, knowledge, AFP case detection, stool collection, data- management and documentation. These tools were adapted from the generic WHO guidelines for rapid assessments of AFP surveillance. The assessment teams administered the questionnaires to the DSNOs, ADSNOs and (SDSNO) after verbal consent were attained at their respective offices.

### **Assessment Teams**

Joint surveillance teams were made up of Public Health Physicians recruited from the University of Benin Teaching Hospital, Benin and the Irrua Specialist Teaching Hospital, Irrua. Local Government Area Facilitators from the State World Health Organization (WHO) office acted as local guide in the conduct of the assessment.

### **Data Analysis**

Collected data was analysed using the SPSS software package.

### **Ethics approval and consent to participate**

The Ethics Committee of the Cross River State Ministry of Health approved this study. Reference: (CRS/MH/CGSE-H/ 018/Vol/126). Verbally informed consents were obtained from all the participants in this study.

### **Consent for publication**

Not applicable

### **Results**

Disease surveillance is an important source for data collection for an effective and efficient AFP surveillance system. It is therefore important that the people charged with the mandate of data collection for the preventive and effective control diseases are well trained with up-to-date information on AFP surveillance strategies given the importance of the office of disease surveillance and notification (DSN). Table 1 shows the quality of surveillance officers engaged in the AFP surveillance network in Edo state.

Here, all of the surveillance officers understand the importance of AFP surveillance and quality

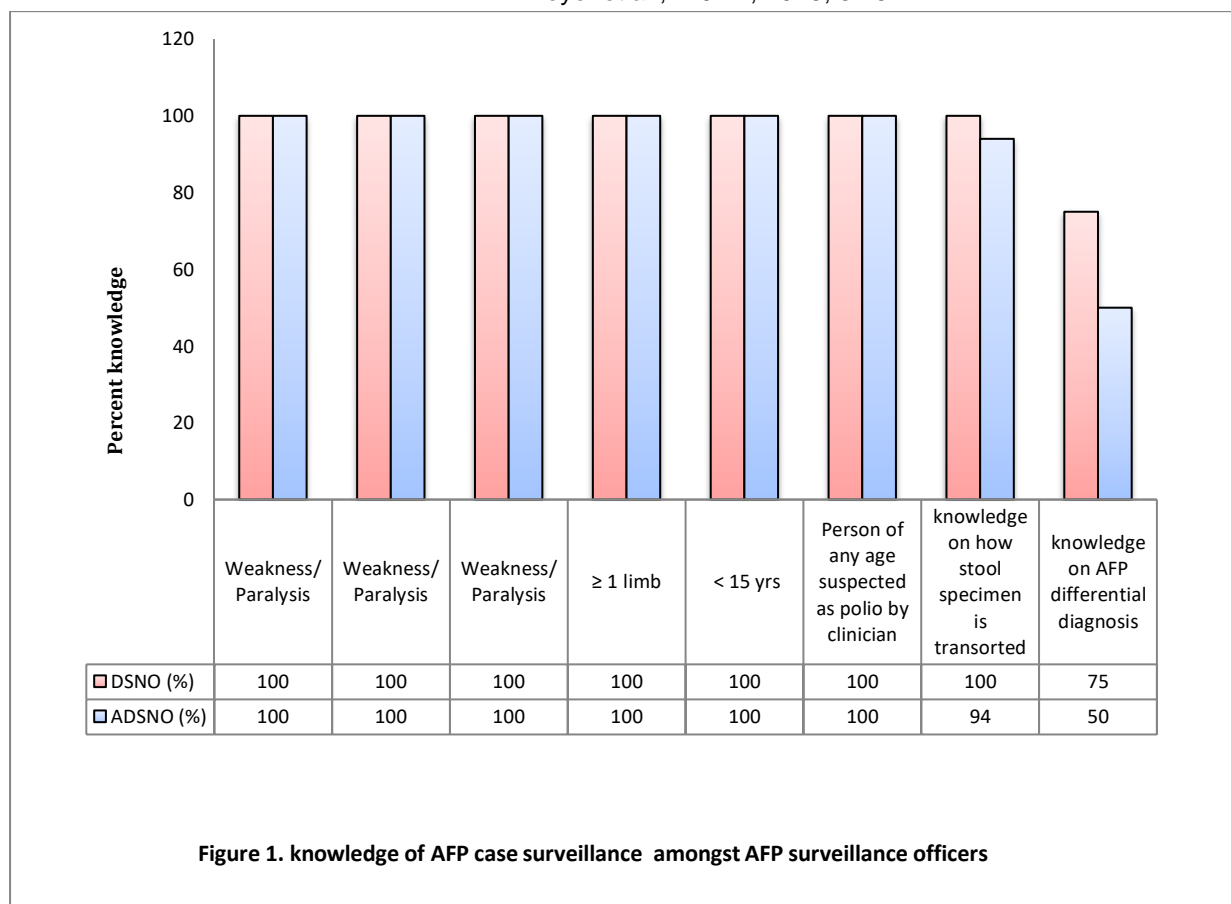
documentation of surveillance activities and have received various on-the-job and formal training on latest strategies of the AFP surveillance system.

The knowledge of the surveillance officers on AFP case definition/surveillance was illustrated in figure 1. Aspects of knowledge of AFP assessed included knowledge on the presence of weakness, presence of sudden onset, flaccidity and floppiness, involvement of one or more limbs, surveillance age range of less than 15 years, clinicians definition of AFP, method of stool specimen transportation and on the various AFP differential diagnosis.

All the surveillance officers (DSNOs and ADSNOs) were 100% knowledgeable on the above-mentioned pointers to a true case of AFP as is contained in the case definition. About, 94% of the ADSNOs knew how the AFP stool specimens were transported. However only 75% and 50% of the DSNOs and ADSNOs respectively could mention all seven AFP differential diagnosis stated in the AFP surveillance guidelines.

Since AFP surveillance underpins the entire polio eradication initiative, it would be impossible to pinpoint where and how wild poliovirus is still circulating (should there be any), or verify when the virus has been eradicated in the wild without active participation in surveillance by the both the DSNOs and ADSNOs. In table 2, the levels of participation in surveillance activities by the DSNOs/ADSNOs were accessed.

Here, all the DSNOs participated in supportive supervisory visits to their priority health facilities in the LGAs within the last six months. Active surveillance was also conducted by 89% of the DSNOs in their respective LGAs within the last six months. ADSNOs participated minimally in surveillance activities with only 22% of them conducting supportive supervisory visits to priority health facilities in their respective LGAs.



**Figure 1. Knowledge of AFP case surveillance amongst AFP surveillance officers**

**Table 1. Quality of surveillance officers engaged in the AFP surveillance network in Edo State**

Parameters	DSNO (n =18)	ADSNO (n=18)
Mean age distribution of surveillance officers (years)	45.5	37.9
Mean duration of service as surveillance officers (years)	6	3
Average number of on-the-job training of surveillance officers in the last one year prior to this study by WHO staff (Supportive supervision)	36	15
Surveillance officers with at least two formal trainings in the last one-year prior to study period (%)	18(100)	10(55.5)
Surveillance officers having at least one formal training in the last one year prior to study period (%)	18(100)	18(100)
Surveillance officers with strong understanding of the importance of surveillance and quality documentation of surveillance activities (%)	18(100)	18(100)

**Table 2. Level of participation in surveillance activities by LGA DSNOs/ADSNOs in the AFP surveillance network in Edo state**

Parameters	Yes (%)	No (%)
Have the DSNOs conducted supportive surveillance supervisory visits across their priority (high, medium, low) health facilities in the LGAs in the last six months prior to study (n=18)	18 (100)	0 (0)
Have ADSNOs conducted supportive surveillance supervisory visits across their priority (high, medium, low) health facilities in the LGAs in the last six months prior to study period (n=18)	4 (22)	14 (78)
Have DSNOs conducted active surveillance conducted in the LGAs in the last six months prior to study period (n=18)	16 (89)	2 (11)
Do DSNOs (LGAs) have records of stool specimen sent to the laboratory for analysis for 2016 (n=18)	18 (100)	0 (0)
How many DSNOs regularly attend monthly surveillance meetings (n=18)	18 (100)	0 (0)
How many ADSNOs regularly attend monthly surveillance meetings (n=18)	6 (33)	12 (67)
Source of funding for surveillance activities (yes=WHO, no=LGA government)	WHO (100)	LGA (0)

**Table 3. AFP Data documentation among Disease Surveillance Notification Officers in the LGAs and State**

Parameters	No. Of LGAs with documents present (n=18) (%)	Documents present with State DSNO (yes/no)
AFP immediate case notification form (AFPF001). 3 years and above	18 (100)	Yes
AFP case investigation form (AFPC101). 3 years and above	17 (94)	Yes
AFP surveillance work plan. 3 years and above	15 (83)	Yes
AFP surveillance guideline	18 (100)	Yes
Updated list of all health facilities in the LGA. 3 years and above	18 (100)	Yes
Updated list of prioritized AFP case reporting site. 3 years and above	18 (100)	Yes
Updated list of AFP case community informants. 3 years and above	18 (100)	Yes
AFP health facility active surveillance form (LG01). 3 years and above	17 (94)	Yes
AFP line-list (LG02). 3 years and above	18 (100)	Yes
AFP weekly LGA report (LG03). 3 years and above	18 (100)	Yes
AFP LGA summary for timeliness of weekly health facility report (LG04). 3 years and above.	17 (94)	Yes
AFP spot maps on walls and posters for AFP surveillance with contact information of DSNOs.	18 (100)	Yes

WHO also provides 100% of the funds available to surveillance officers in the LGAs and state for disease surveillance activities

Good data documentation and management is the prerequisite for any good surveillance system. Table 3 assesses the availability of all the necessary documentation for the AFP surveillance system.

Records of all documents for the AFP surveillance system were archived both at the offices of the LGA DSNOs and state DSNO. The documents were mostly stored in arch lever files in all LGAs except Esan Central LGA where the documents were stored both in arch lever files and electronically.

Records of documentations as far back as three years for AFP surveillance guideline; List of all health facilities; Updated list of Prioritized reporting sites; Updated list of Community informants; AFP health facility active surveillance forms AFP line-lists, AFP spot maps were available in all 18 LGAs and at the office of the state DSNO.

## Discussion

As with any disease eradication program, periodic reviews of the existing surveillance system are necessary. The DSNOs/ADSNOs at the LGAs carry out AFP surveillance, and all disease surveillance activity, with supervisory oversight by the state epidemiologists and WHO Surveillance officers. Their responsibilities with respect to the polio eradication program cover critical areas of AFP surveillance such as active case search, case investigation, stool specimen collection and documentation of surveillance activities that are necessary for achieving a polio free certification. For this reason, the RSA conducted in Edo focused on the DSNOs/ADSNOs with the intention of assessing the quality of the AFP surveillance system and making recommendations that should help improve quality of the system in general.

Firm knowledge on the AFP case definition and the AFP surveillance itself is central to detecting

AFP cases. Results show perfect knowledge of the case definition of AFP by all the LGA DSNOs and ADSNOs. This result is similar to another finding in Nigeria where all the surveillance officers exhibited perfect knowledge on the AFP case definition.<sup>12</sup>Firm knowledge of the surveillance officers on the pointers to an AFP case as is contained in the definition is a clear indication that surveillance officers are able to detect true cases of AFP and this gives confidence to the records of AFP cases reported and investigated. The complete eradication of poliomyelitis in a country is only possible with active surveillance. Health facilities within all LGAs in the country have been prioritized based on where AFP cases would most likely seek care. For example, high priority sites would be all hospitals and clinics where more than 40 children are attended in a day and low priority sites would be health establishments where only very few children are attended to in a day. It is therefore imperative that the surveillance officers conduct regular active surveillance as per prioritization within the communities in LGA, which they are designated. Active surveillance involves visiting health facilities (clinics, hospitals, traditional healers) for the detection of unreported AFP cases and for the investigation of those reported. Our results indicate that majority of the DSNOs conduct regular active surveillance and supportive supervisory surveillance visits to the health facilities in their LGAs with minimal participation in surveillance activities by the ADSNOs. The monthly DSNO meetings are minimally attended by the ADSNOs. This importance of these monthly surveillance meetings is that it provides avenue for the discussion of problems faced in surveillance and new strategies that enhances surveillance activities. We believe this minimal participation in surveillance activities by the ADSNOs to be the reason why they have gotten fewer on-the-job training in comparison to the DSNOs and hence were unknowledgeable on less obvious parts of AFP case surveillance that include method of stool specimen

transportation and the AFP differential diagnosis as is evident in figure 1. For quality AFP surveillance to be achieved, all workers in the surveillance system must be fully carried along. Hence, we encourage improved participation of ADSNOs in surveillance activities, we also advice the organizers of monthly surveillance meetings to make attendance compulsory for ADSNOs as opposed to just DSNOs. This way, ADSNOs are constantly reminded and equipped with up to date information on activities of surveillance.

Adequate funding is necessary for the smooth functioning of any surveillance system. Our results indicate that surveillance activities are completely funded by WHO. This agrees with another study carried out in Nigeria where WHO was the major contributor to the funding surveillance with little or no contribution from the local or state governments.<sup>12</sup> A similar finding regarding funding was also noted upon review of the surveillance system in Indonesia.<sup>13</sup>

WHO provides monthly stipends for surveillance activities, AFP surveillance tools, AFP specimen collection kit and motorcycles to surveillance officers for active surveillance. It is important to note here that healthcare provision in Nigeria is the responsibility of all three tier of government (Local, state and Federal government).<sup>14</sup> As such, the management of health-related activities, including the financing of Primary Health Care under which surveillance activities fall, is the sole responsibility of the Local Governments' Primary Health Care department, which is under the purview of the LGA authorities. With the level of dependency on external support for the basic running of the surveillance system, what happens to disease notification and prevention should the external supporters decide the pull out? Even though Edo state has been able to show conduct of good AFP surveillance some support from the Local government, we encourage the financial support from the respective governments in Nigeria to states for surveillance activities. Various studies in Nigeria reported that some of the surveillance

challenges noted from lack of funds, pointed to poor commitment of the responsible government authorities to surveillance activities in general.

The importance of accurate documentation of AFP surveillance activities to a polio free certification cannot be overestimated. Our results show that Edo state performed particularly well in terms of documentation with surveillance records going as far back as three years for the respective AFP surveillance data tools. These records were also properly archived in arch lever files. While we laud the efforts of the surveillance officers for proper documentation and archiving, we also advise that these documents be stored electronically too as seen with Esan Central LGA.

Edo was among the states lauded for good AFP surveillance and documentation in 2017 RSA. Some of the best practices impressed on the DSNOs/ADSNOs by the state WHO officers include: frequent On-the-Job training of DSNO/ADSNOs officers, Regular supervisory visit by WHO surveillance team to the LGAs, positive attitude towards surveillance that makes compliance rates to planned activities high, prompt collection and transportation of samples of AFP cases and monthly organized DSNO meetings with feedback/follow up on the resolutions of such meetings.

Edo state has shown clear indicators of a quality AFP surveillance system in terms of knowledge, AFP surveillance and documentation. We however encourage a surveillance system that is more inclusive with a more active participation from the ADSNOs in surveillance activities and financial support from local and states governments to aid surveillance activities.

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### **Authors Contribution**

FI, BEB, AOE, conducted a systematic review of the literature retrieval of data, extraction and

analysis, and wrote the first draft. WH, OA, OR, SG, FI, BF, BE, EH contributed to the data extraction process and also reviewed the first draft. FI, AOE, BEB conceived and led the design of the study and drafting of the article.

### Competing Interests

The authors have none to declare

### Data Availability

All data sets and materials used in this study are available in this published article.

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