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Effect of education on knowledge of acute flaccid paralysis reporting among private medical doctors in Ondo state, Nigeria

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ABSTRACT

Acute Flaccid Paralysis (AFP) surveillance system in Nigeria remains largely dependent on reporting from public health facilities while other potential reporting sources such as private medical facilities are neglected. An understanding of the knowledge and practice gaps on AFP surveillance among private medical doctors in Ondo State is essential to the design of programmes to enhance their involvement. This study was conducted in two stages. Stage one was a cross sectional survey, which involved the use of a semi-structured questionnaire which contained WHO surveillance criteria and was used to obtain baseline information. Stage two was a intervention, where respondents were divided into four groups based on their specific locations. A day training was conducted on AFP surveillance and reporting, using WHO reference standard, with a ten point knowledge scale. Good knowledge score was categorised as a score ≥5. Data were analysed using descriptive statistics and student t-test at 5% level of significance. The findings from the study indicate that education through training improved knowledge of acute flaccid paralysis reporting among private medical doctors. Therefore, training and provision of necessary logistic support may translate into improvement of acute flaccid paralysis reporting cases among private medical doctors.

Keywords: Acute flaccid paralysis, Disease notification, Private medical doctors, AFP surveillance

INTRODUCTION

Surveillance for various specific diseases and toxic agents have become an established feature of public health system especially in effective and efficient monitoring and evaluation of communicable diseases and the impact of interventions (Beate, *et al*., 2005; Veenema and Toke, 2006; Sahal *et al*., 2009). Disease surveillance is critically important, especially in developing countries where 90% of the world's disease burden are found and of which communicable diseases contribute the most (Lown and Banerjee, 2006). In 1998, the World Health Organization, Africa Region (WHO AFRO) member countries adopted the Integrated Disease Surveillance and Response (IDSR) as a strategy to improve the availability and use of surveillance and laboratory data for control of priority diseases that are the leading causes of death, disability and illness in the African region.

In 1988, the World Health Assembly (WHA) resolved to eradicate poliomyelitis globally (Parks 2005) and in 15 years of implementing this resolution, the number of polio endemic countries reduced drastically from over 125 countries to only 6. Countries in which polio remained endemic then included: Afghanistan, Egypt, India, Niger, Nigeria and Pakistan (Durrheim, *et al*., 2006; Parks 2005).

The implementation of the World Health Organization strategies on polio eradication recorded huge successes across the globe with phenomenal reduction in the number of paralytic poliomyelitis from 350,000 cases in 1988 to less than 1,000 in year 2001. These 1000 cases were reported only in 15 countries globally and Nigeria accounted for 202 of these paralytic polio cases for that year (Adu *et al*., 2005). In 2003, 217 confirmed cases of

wild polio were reported in Nigeria (Adu *et al*., 2005), thus, making Nigeria accountable for 94% of total wild poliovirus in Africa and 45% global prevalence (WHO 2003). In 2008, Nigeria accounted for 85% of Type 1 wild poliovirus cases, 10% of type 3 and reserves 91 % of Africa Wild poliovirus burden (WHO, 2008). Consequent upon the foregoing, Nigeria automatically became a reservoir for local transmission within Africa and a global exporter of wild polioviruses, especially to hitherto polio free countries, thereby, threatening the attainment of global interruption of wild poliovirus transmission (Durrheim *et al*., 2003; WHO, 2003; Jenkin *et al*., 2008).

The success recorded by the Global Polio Eradication Initiative (GPEI) suffered significant setback in Nigeria in 2003, when one state in the Northwest of Nigeria, temporally suspended immunization, which led to a national epidemic of Poliomyelitis and re-infection of at least 20 previously wild-type poliovirus free countries. Although immunization was recommenced later in the following year, the initial momentum of successes recorded has not yet been regained (Durrheim *et al*., 2006; Jenkins *et al*., 2008,). Till date, Nigeria accounts for 61.9% global burden of wild polioviruses, which are predominantly, the type 1 strain (GPEI, 2012). This strain has been implicated in most of the continuing outbreaks of cases of paralytic Poliomyelitis in Nigeria, specifically in Northern Nigeria (GPEI, 2012).

Reports of continued outbreaks of paralytic poliomyelitis in some parts of Nigeria indicate that the wild poliovirus has not yet been completely subdued. More importantly, that Nigeria is currently leading the pack of three nations of the world that has remained persistently endemic in Wild poliovirus epidemiology (GPEI, 2012). Majority of the states in Nigeria have remained polio free for at least 4years now except the Northwest and North east zone, where even now about one third of children are still being missed for polio vaccination (GPEI, 2012). This poses a great challenge both to the states that have attained polio free status within the country and the border countries, which have commonly, suffered from exportation of the virus from Nigeria.

Ondo State is a critical gateway to both the north and south of Nigeria. A lot of commerce that aggregates people of different age group especially from the North makes the state a rendezvous for possible transmission of wild poliovirus, especially in places like, Akure, Ikare, Ogbese and at Ore town. The great disparity in acute flaccid paralysis and other infectious disease reporting between the public and private health facilities in Ondo State called for concern and may affect the validity and sensitivity of our disease surveillance and notification system. The volume of patronage of private hospitals by the populace further underscores their importance to attaining the goal of polio eradication in Nigeria. Anecdotal evidence shows that they may be the second line reference point for most rural patients after the traditional health providers. However, only one private health facility in Ondo State gets actively involved in surveillance and reporting of diseases (ODSMOH, 2008). One of the criteria for declaring a country free of poliomyelitis is a surveillance performance that provides 1 case of AFP per year per 100,000 populations aged less than 15years. Active involvement of private medical doctors in surveillance may help to accelerate the eradication of poliomyelitis from the country. Therefore, this study assesses the effect of education on knowledge of acute flaccid paralysis reporting among private medical doctors in Ondo State, Nigeria.

METHODOLOGY

Study Design

This study was conducted in two stages. Stage one was a cross sectional survey, which involved the use of a semi-structured questionnaire. The stage two was an intervention design conducted as training.

Description of Study Area

Ondo State was created in 1976, when it was carved out of the defunct Western Region. Ondo State has about 80 km coastline in its southern part along the Atlantic Ocean. The state has a land mass 14,606km^2 and lies within latitudes 50 45' and 80 15' North and longitudes 40 45' and 6' East. It is bounded in the North by Ekiti and Kogi States in the East by Edo and Delta States and in the West by Osun and Ogun States. The State has a population of 4,124,724 and accounts for 2.5 percent of Nigeria's population (NBS 2010). Males constitute 51.18%, while females are 48.82%. Women of reproductive age constitute 24% and under-5 children are 13.5% of the population. About 40% of the population is urban dwellers while the remaining 60% are rural residents. The state has 798 health facilities 452 of (56.0%) are public health facilities while 346 (44%) are private health facilities. The doctor to population ratio is 1: 6057. 57.0% of the state population lives in relative poverty (NBS 2010). There are 133 surveillance and reporting sites in Ondo State and all the sites are located in government health facilities. The records showed that out of all the 346 private health facility in the state only one private health facility send report to the State Ministry of Health (SMOH) frequently (Ondo State MOH, 2008).

Sampling Procedure

Total sampling technique was used because of the small size of the study group. There were 129 registered private medical practitioners in the state. One medical

doctor was randomly selected per private medical facility. All medical doctors who work in public health facilities and also maintain registered premises for the purpose of private practice were excluded. Out of the 112 private medical doctors left, only 82 consented to participate in the study. Therefore, 82 participants were administered with questionnaires during the first stage of the study and underwent the second stage of the study.

Method of Data Collection

A cross sectional survey was conducted with the use of a semi-structured questionnaire to determine the baseline knowledge of the private medical doctors on integrated disease surveillance and reporting and acute flaccid paralysis reporting. The questionnaires were administered on respondents at their respective place of practice by trained research assistants. The questionnaire contained sections on socio-demographic background, Knowledge of Integrated Disease Surveillance and Reporting (IDSR), Knowledge of Acute Flaccid Paralysis (AFP) surveillance and Reporting, WHO standard criteria for acute flaccid paralysis surveillance, perceived constraints to acute flaccid paralysis surveillance and reporting and their willingness to participate if all constraints are removed. The study was conducted between March to September, 2012.

Training on Acute Flaccid Paralysis as an Intervention Strategy

The second stage is the acute flaccid paralysis surveillance and reporting training intervention. The respondents were purposively divided into four groups based on the centrality of the training venues to majority of the doctors' place of practice. The locations chosen were Akure, Ondo, Ore and Owo. This training was sequel to the outcome of the baseline survey of the knowledge of acute flaccid paralysis surveillance and reporting among private medical doctors in Ondo State being poor. The essence of the training was to impart their knowledge on it.

One-day training intervention was conducted on AFP surveillance and reporting, using WHO reference standard. Some adult learning techniques, which included brainstorming, experience sharing, de-monstration and group work were used. The training had three component namely: Disease process of poliomyelitis, which focused on poliomyelitis epidemiology, clinical features, complications and management; secondly, the search for poliomyelitis vis-à-vis WHO case definition criteria and the responsibility to report the disease at the appropriate time to the appropriate place in the appropriate manner. Thirdly, the eradication goal, explained the four strategies being used by the Global Polio Eradication Initiative (GPEI).

The WHO reference standards in which the participants were trained include:

- The case definition age bracket of under 15years;
- The type of specimen to be collected and how it should be collected;
- The standard time frame for specimen collections;
- The mode of storage of specimens from the patient;
- The mode of transportation of specimen back to the National polio laboratory.

The baseline instrument, which assessed the participants on the WHO reference standards for AFP surveillance as indicated above, were also used at the post intervention test, which was conducted three months after the training at their respective place of practices.

Ethical Considerations

Ethical clearance for the conduct of this study was gotten from the Ondo State Ministry of Health Ethical Review Committee. Permission was also sought from the Association of General Practice Medical Practitioners of Nigeria (AGPMPN) Ondo State branch. Informed Consent was obtained from each respondent before commencement of the administration of the questionnaires.

Data management and analysis

The instruments used at pre-intervention were administered 3 months later as the post intervention instrument. The WHO standard acute flaccid paralysis surveillance criteria were used to assess knowledge gained on a 10 point knowledge scale from the training. There were five questions on the WHO standard AFP surveillance criteria, which were used for the knowledge score. Each question carried a score of 2 points if gotten correctly. A good knowledge score was categorized to be score of $\geq$ 5. Data were entered into SPSS 20. The data were analysed using descriptive statistics and student's t-test at 5% level of significance.

RESULTS

Background Information on Participants and their Medical Practice

Table 1 showed that majority 74 (90.25%) of the private health facilities were located within the urban centre of the local government areas and only few 8 (9.75%) were located in semi urban areas. The age of respondents ranged from 26- 87years old. The mean age was 43 $\pm$6.3

Table 1: Background characteristics of Private Medical Practitioners in Ondo State

Variables	Frequency	Percentage (%)
Gender		
Male	68	82.9
Female	14	17.1
Age		
20-29	24	29.3
30-39	25	30.5
40 and above	33	40.2
Designation		
Medical Officer	52	63.4
Medical Director	30	36.6
Qualification		
MBBS only	60	73.2
MBBS with Additional degree	6	7.3
MBBS with Fellowship	16	19.5
Specialization		
Medicine	10	12.2
Surgery	6	7.3
General Practice	66	80.5
Status of Employment		
Temporary	45	54.9
Partners	9	11.0
Owner	28	34.1

years. The respondents were predominantly male (82.9%) with majority having MB;BS qualification (73.2%); about 20% had fellowship of postgraduate medical colleges in addition while 7.3% had other postgraduate qualifications.

Those respondents who were medical director of facilities were 36.6% out of which 93.3% were sole proprietors. Other respondents were medical officers (63.4%) either working on temporary basis or were in some form of partnership with the owners. The specialization of the respondents were broadly classified into three, with those in general practice being predominant (80.5%), medicine as specialty distantly followed with 12.2% and surgery was 7.3%.

Baseline Knowledge of IDSR and AFP among Private Medical Doctors in Ondo State

From the table 2, there exist substantial knowledge gap among the private medical doctors. Less than 5% of them knew all the reportable diseases while only 29.3% have knowledge of the differentials of AFP. It was also alarming that majority of respondents are neither familiar with the IDSR forms (48.8%) nor knew AFP reporting forms (37.8%). Majority of the respondents (86.5%) identified stool as the specimen to be collected but only 15.9% could correctly identify the age range stipulated in the AFP case definition.

Baseline Knowledge of correct reporting time frame

Almost three-quarter of the respondents (74.4%) had correct knowledge of poliomyelitis as an IDSR disease for immediate notification and reporting; however, the knowledge of measles or rubeolla as IDSR disease for immediate reporting was poor likewise that of chicken pox. The knowledge of Yellow fever and rabies as immediate reportable diseases were also good among the respondents (Table 2).

Table 2: Baseline Knowledge of IDSR and AFP among Private Medical Doctors in Ondo

Variables	Baseline (%)	After training (%)
Ever seen IDSR form	40 (48.8%)	82 (100.0%)
Ever seen AFP investigation form	31 (37.8%)	82 (100.0%)
Knew all the reportable diseases under IDSR	2 (2.4%)	40 (47.5%)
Correctly interpret all the IDSR form codes	44 (53.7%)	77 (93.8%)
Have knowledge of causes of AFP	24 (29.3%)	72 (87.5%)
Have the knowledge of the right place to report to	60 (73.2%)	75 (91.7%)
Correct knowledge on AFP investigation form	43 (52.4%)	80 (97.5%)
Who identified stool as the specimen for AFP investigation	71 (86.5%)	79 (96.3%)
Who knew the age criteria for which AFP is reportable	13 (15.9%)	78 (95.0%)
Who knew that specimen must be collected within 14 days of onset of AFP	79 (96.3%)	82 (100.0%)
Knowledge of ice pack as the medium of storage and Transport for AFP specimen	58 (70.7%)	81 (98.8%)
Aware of reverse cold chain	54 (65.9%)	80 (97.5%)
Define reverse cold chain correctly	65 (79.3%)	82 (100.0%)

Table 3: Knowledge of correct reporting time frame before and after the training

Variables	Baseline (%)	After training (%)
Poliomyelitis	63 (74.4%)	77 (93.8%)
Yellow fever	58 (68.3%)	77 (93.8%)
Chicken pox	44 (51.2%)	77 (93.8%)
Rubeolla	40 (46.3%)	77 (93.8%)
Rabies	58 (68.3%)	78 (95%)

Knowledge of IDSR and AFP among Private Medical Doctors in Ondo State after the training

The effect of knowledge among the private medical doctors improved significantly after the training with 100% now having knowledge of both the IDSR and AFP forms. There was also noticeable improvement in the proportion of those who knew all the reportable disease (from 2.4% to 47.5%). There was uniform improvement in the knowledge of correct reporting time frame for poliomyelitis, yellow fever, chicken pox, rubeolla (93.8%) and rabies which had 95% as IDSR immediate reportable disease from table 3. There was obvious significant improvement in the knowledge of respondents with respect to the differentials of acute flaccid paralysis except for poliomyelitis, which remained at the optimum of 100% both at baseline and post-test (Table 4).

There was a statistical significant improvement in the knowledge of reporting time frame for important IDSR reportable disease for immediate reporting in table 5. The proportion of private practicing physicians who knew the right time frame for reporting poliomyelitis increased from the baseline of 74.4% to 93.8% after the training. In the same manner the proportion of respondents who knew the correct time frame for yellow fever showed statistical improvement from 68.3% to 93.8% (X^2= 16.96 , P= 0.00003) Similarly, the knowledge of respondents about chicken pox as an immediate reportable IDSR disease significantly increased from 51.2% to 93.8 %.

Table 6 showed that the proportion of respondents who knew Coxsackie virus infection, transverse myelitis, trauma (injection neuritis) and polyneuropathies as differentials for AFP were statistically significant compared to their knowledge before the training. Although the change in proportion of those who had the knowledge of Guillain barre as differentials for AFP was not statistically significant but there was marginal improvement while the knowledge about poliomyelitis remained unchanged as all respondent knew at pre-test that poliomyelitis was a differential for AFP.

The mean knowledge score of respondents who identified stool as the correct specimen for AFP investigation was high at pre intervention (1.73 $\pm$0.02) and increased to 1.93 $\pm$ 0.02 at post intervention. There

Table 4: Proportion of respondents having knowledge of differentials of AFP

Variables	Pre-test	Post-test
Poliomyelitis	82 (100%)	82 (100%)
Gullian Barre	71 (84.1%)	82 (100%)
Coxsackie Virus	48 (56.1%)	73 (88.8%)
Transverse Myelitis	64 (75.6%)	80 (96.5%)
Trauma	65 (76.8%)	79 (96.5%)
Polyneuropathies	59 (69.5%)	81 (98.8%)

Table 5: Comparison of changes in proportions of private medical doctors with knowledge of correct reporting time frame at baseline and after training

Variables	Before training	After training	Chi- square
Poliomyelitis	63 (74.4%)	77 (93.8%)	11.26**
Yellow fever	58 (68.3%)	77 (93.8%)	16.96**
Chicken pox	44 (51.2%)	77 (93.8%)	36.51**
Rubeolla	40 (46.3%)	77 (93.8%)	43.14**
Rabies	58 (68.3%)	78 (95%)	17.41**

Table 6: Comparison of changes in Proportion of respondents having knowledge of differentials of AFP baseline and after the training

Variables	Before the training	After the training	P- value
Poliomyelitis	82 (100%)	82 (100%)	0.990
Gullian Barre	71 (84.1%)	82 (100%)	0.208
Coxsackie Virus	48 (56.1%)	73 (88.8%)	< 0.001
Transverse Myelitis	64 (75.6%)	80 (96.5%)	< 0.001
Trauma	65 (76.8%)	79 (96.5%)	< 0.001
Polyneuropathies	59 (69.5%)	81 (98.8%)	< 0.001

Table 7: Bivariate analysis of the knowledge score of WHO standard AFP surveillance and reporting criteria among medical doctors in Ondo State

Variable	Pre-intervention		Post intervention		P value
	Cum. Score	MK Score	Cum. Score	MK Score	
Identified stool as correct specimen for AFP investigation	142	1.73±0.02	158	1.93±0.02	0.0537
Knew the correct age at which AFP is reportable	26	0.32±0.02	156	1.90±0.07	<0.001
Knew that specimen must be collected within 14days of onset of AFP	158	1.93±0.02	164	2.00±0.00	0.0830
Knowledge of ice pack as the medium of storage and transport for AFP specimen	116	1.4±0.03	162	1.98±0.02	<0.001
Could define cold chain correctly	130	1.59±0.01	164	2.00±0.01	<0.001

Cum. Score means cumulative score, MK Score= Mean knowledge score

was statistically significant improvement in the mean knowledge score of respondents, who knew the correct age at which AFP is reported from pre intervention score of 0.32 $\pm$ 0.02 to 1.90 $\pm$ 0.07 at post intervention. The mean knowledge score of respondent who knew ice pack as the medium of storage and transport for AFP specimen improved from 1.4 $\pm$0.03 at pre intervention to 1.98 $\pm$0.002. Similar improvement occurred at post intervention for respondents who could define cold chain correctly with a mean score of 2.00 from a pre intervention mean knowledge score of 1.59 $\pm$ 0.01 (Table 7).

DISCUSSION

Private medical doctors rarely contribute to disease surveillance and reporting in developing countries

Table 8: Constraint to reporting of AFP among private medical doctors

Constraints	Frequency (%)
Poor supervision by local government health authority	82 (100%)
Inadequate Logistic support for AFP reporting	74 (90.2%)
Lack of involvement of Private Medical Doctors in surveillance training and activities	70 (85.4%)
Lack of feedback from the government	75 (91.5%)

because they are often excluded from the routine health information system (Thirsch, 2004). This is reflected in the level of involvement of private medical doctors in AFP surveillance and reporting as shown in this study, which is abysmally low (0.01%) . It is comparable to findings in the international review of AFP surveillance in Myamnar, where no private medical doctor was involved in AFP reporting (WHO, 2002). Although in Ilorin, 29.7% of private medical doctors were involved through provision of logistics by the Kwara State ministry of health in reporting but only 0.1% made returns in 6 months (Akande, 2004). The situation appears to be fair in the study conducted in Malta to determine the general practitioners role in notification of communicable diseases where all the general practitioners were involved in the reporting system but only 54% get to report (Gauci, *et al*., 2007). The State of Karnataka, India had a very strong National Polio surveillance system because the private sector were involved at the start of the program and became a best practice that was recommended for scale up in the country of India, this level of integration may have contributed immensely to the eradication of polio in the country (Sathyaranayana, 2005).

The need to expand coverage in order to capture more AFP cases and improve on surveillance sensitivity is critical to eradicating the polio disease from Nigeria. Therefore motivating private medical doctors to participate effectively in AFP surveillance may help to achieve this goal. Although Ondo State has been without polio for 4years now, but the lesson learnt from this study may be of interest to the Northern part of the country, especially, the seven local government areas that are still endemic for the wild polio viruses reported in the country (WHO, 2012). One of the critical findings in this study is the fact that substantial knowledge gap exist among private medical practitioners in Ondo state as evident by the fact that only 2.4% knew all the IDSR reportable diseases. Only 15.9% had the correct knowledge of the age criteria for AFP reporting. Few (29.3%) of them had knowledge of the differentials of acute flaccid paralysis. Previous studies in other centres have corroborated the finding of this study with respect to knowledge gap on disease surveillance and notification among physicians and health workers.

A study conducted in Benin City, Southern part of Nigeria to determine the knowledge of disease notification among doctors in government hospitals showed that only 11.9% of the respondents had good knowledge of disease notification (Ofili *et al.*, 2003). Similar study done among health workers in Yobe State (North of Nigeria) showed 38.2% of respondents having knowledge of the national disease surveillance system (Bawa *et al.*, 2005). Also, a rapid assessment study on AFP surveillance in Plateau State, Nigeria reported that only 13% of clinicians have the correct knowledge of the age criteria for AFP reporting. The foregoing underscores a potential danger of underreporting from inadequate knowledge of the reporting requirement and method not just among private medical practitioners but among all health workers critical to AFP surveillance. The sensitivity of our surveillance system may be affected by this constraint.

Knowledge is a critical factor in disease surveillance and notification, particularly for polio eradication in Nigeria. This study has revealed that training has significant effect on the knowledge of AFP among private medical practitioners. There was significant improvement in knowledge score from 6.8$\pm$ 0.5 at baseline to 9.8$\pm$ 0.1 at post training test. Similar effect was also recorded among health workers in a quasi-experimental study that showed increased proportion of respondents among the experimental group from 35.6% to 91.9% who were aware of the national surveillance system and had knowledge score improvement from 0.85$\pm$ 1.38 at baseline to 6.15$\pm$ 2.64 post training (Bawa and Olumide, 2005). The integrated nature of the services offered by private medical doctors makes their participation very important in the active surveillance and notification of acute flaccid paralysis. Therefore, effective knowledge transfer of acute flaccid paralysis reporting modalities/ guidelines will help them to know what to look for, why they should look for it and how to manage and report cases of AFP encountered.

Obviously, knowledge alone does not automatically translate to improve AFP reporting among private medical doctors. This study has been able to identify other factors that are constraint to reporting of acute flaccid paralysis among private medical doctors. Inadequate logistics support (90.2%) was identified as

one of the constraints to reporting AFP, the primary logistic concern was the AFP reporting forms. A study conducted in two south western states to determine logistic challenges in disease surveillance and reporting identified inadequate reporting forms and poor funding as key logistic constraints (Dairo *et al.,* 2010). Other logistic challenges are communication facilities to reach the DSN officer, specimen bottles for collecting stool samples and transport means. All the respondents were unanimous in identifying that Disease Surveillance and Notification (DSN) officers from the Local government do not visit to request for data nor do they provide any information about AFP except during local immunization days when they come around to immunize children (Table 8). Thus, resulting in lack of involvement of private doctors in surveillance trainings and activities. It is common knowledge that government health department commonly exclude the private sector from major training events and information (Kirsch and Harvey, 1994). This was evident from this study with only 37.8% acknowledging to have seen the AFP investigating form at baseline. Lack of request for feedback from government agency was also found to be the outcome of non-reporting on the part of the private medical doctors.

CONCLUSION AND RECOMMENDATIONS

This study has shown that education through training improved knowledge of Acute Flaccid Paralysis surveillance among private medical doctors. Therefore, training and provision of necessary logistic support may translate into improvement of acute flaccid paralysis reporting among private medical doctors and also the Disease Surveillance and Notification (DSN) system. Furthermore, an investigation into the knowledge translation effect of training on AFP surveillance practice among private medical doctors may need to be explored in future research work since a sizable proportion of the population visit the private medical doctors hence they are key to sustaining the disease surveillance and notification system

It is thereby recommended from the findings from this study that:

- Private medical doctors should be integrated into the routine health management information system, so that reporting of AFP can be easily undertaken by them.
- Logistics for reporting should be made available to the private medical doctors along with the necessary trainings and incentives for reporting.
- Local government DSN officers should provide supportive supervision to private medical doctors on AFP surveillance and reporting.
- Private medical doctors need to be given top up training on acute flaccid paralysis (AFP) surveillance guideline.

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