An Evaluation of the Integrated Disease Surveillance and Response (IDSR) in Enugu State, Nigeria

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Abstract
Background: The Integrated Disease Surveillance and Response (IDSR), adopted in 1988 at the 48th World Health Organization Regional Committee for Africa meeting in Harare, Zimbabwe, is a regional strategy to strengthen the weak national surveillance systems in the region. In Nigeria, and prior 1988, there was no coordinated system of disease reporting and surveillance system in place until after a major yellow fever outbreak in 1986/87 that claimed many lives. The IDSR in Enugu state, as supported by the WHO, has 17 disease surveillance and notification officers across the 17 LGAs and 89 reporting sites covering the 3000 health facilities.
Method: This study is a prospective cross-sectional study using WHO and CDC assessment protocols modified to reflect the local settings. The study samples were selected based on the IDSR performance indicators for AFP, measles core indicators, status of epidemic-prone diseases, and adequacy of feedback and feedforward of surveillance activities. Using desk review of the EPI/IDSR surveillance reports between 2012 and 2017, and also questionnaires between April and July 2017 to eligible participants, data were obtained, cleaned, and analysed using the SPSS version 24.
Results: The Overall average score of IDSR performance indicator for Enugu state from the pooled data was 39% against the expected of >80%. These findings are in disagreement with the globally recommended standard IDSR practice and response.
Conclusion: The outcome of this study highlights that Enugu state surveillance and IDSR practice are short of the standard practice as prescribed by WHO and CDC assessment protocols. Main reasons for this include poor disease reporting, poor documentation of conducted activities, and lack of adequate feedback system. Similarly, there is non-involvement of community and private health facilities that made up more than 95% of surveillance networks in the state. However, global polio eradication initiative and change management approaches identified remain a huge opportunity for the improvement of the system.
Keywords: Enugu State, IDSR, AFP, Measles, Outbreaks, Yellow Fever, Nigeria, WHO, CDC.

1. Background

Surveillance is a process of systematic collection, orderly consolidation and evaluation of pertinent data with the prompt dissemination of the results to those who need to know, particularly those who are in a position to take action [1]. Public health surveillance is a tool to estimate the health status and behaviour of the populations served by ministries of health, ministries of finance, and donors. Because surveillance can directly measure what is going on in the population, it is useful both for measuring the need for interventions and for directly measuring the effects of interventions. Health surveillance, therefore, describes the process of " tracking and forecasting of any health event or health determinant through the continuous collection of high-quality data, integration, analysis and interpretation of data into surveillance products that form policy objectives hence is an essential component of evidence-based decision-making practices.[2] The public health surveillance system operates in a manner that allows effective dissemination of health data so that decision-makers at all levels can readily

understand the implications of the information and use it timely. [7, 16, 17, 18]. The process practice can be implemented actively or passively based on seeking reports or case-based or enhanced based on the collection of specific data or additional data [3, 4]. Active and reliable valid data with prompt response are the cornerstones of good Surveillance systems.

In Nigeria and prior to 1988, there was no coordinated system of disease reporting and surveillance system in place until after a major yellow fever outbreak in 1986/87 that claimed many lives [105]

Nigeria is one of the polio endemic countries globally hence implicated in exporting polio to polio free countries. This is complicated by the high burden of Measles; Yellow fever, Neonatal Tetanus (NNT) and Malaria and lack of concern by policy makers in the country. The burden of these diseases is determined by surveillance systems which if not sensitive and reliable will impact adversely on the certification process especially in this era of eradication of polio and sustained control for malaria and measles [11, 12, and 13]. Nigeria as any other nation depends on her surveillance systems as source of evidence for detection of diseases burden, its incidence rate, prevalence rate, mortality rate, its general trend and outbreaks. This information from Surveillance guides policy makers in implementing public health interventions, strategic objectives with methodology of public health operations and equitable resources distributions in midst of many conflicting programmes especially now that economy is melting down. [1, 2, 3,4,7]. Nigeria IDSR policy monitored 23 diseases before but now monitors 40 diseases [82]' within the national IDSR framework including newly evolving diseases. It has five case-based surveillance frameworks (AFP for polio, Measles case based, Yellow Fever case based, Guinea worms and NNT). It is the framework of AFP case-based surveillance supported by WHO established for global polio eradication initiative that formed the basis for Nigeria surveillance since it is the most effective system with good reporting networks that has helped in developing other networks. [5].

This Surveillance and IDSR network in Nigeria is made of 5,557 focal sites manned by focal persons in health facilities, 825 DSNOs in 774 LGAs with 37 SEs in 36 states of the country including Abuja.

Enugu State has 87 focal sites 2 % (87/5557) of total sites in Nigeria. These focal sites/health facilities are distributed unevenly according to population and density of patient load in 291 wards of the 17 LGAs in the State. These sites are manned by 87 focal persons with 17 (DSNOs) at 17 LGAs.

However, WHO country office observed that the system was not working in Nigeria due to poor attitude of personnel, knowledge gaps, lack of transport and logistics, poor funding, lack of supportive supervision, lack of functional effective public health laboratories and lack of data banks that affects reporting at all levels. All these findings were critical to global Polio eradication initiative hence the need for its assessment. Based on the issues raised above, WHO AFRO region, recruited 48 National Surveillance Officers (NSOs) at least one per state to support them. WHO also funds four laboratories located at Ibadan, Maiduguri, Lagos and Abuja for confirmation of cases (Polio and Measles and virology studies). They also provide logistics support at all levels.

However, no study has ever reviewed or evaluated the efficiency of this system in Enugu state in order to identify gaps and challenges in the surveillance systems and identify opportunities with appropriate recommendations that will improve the system in South East Nigeria.

2. Method

This study is cross-sectional assessment report. In this field/practical epidemiological surveillance assessment study, questionnaire was administered and complemented by interview, review of records and visit to traditional/herbal homes/TBAs/Bone setters at all levels. The design of this research study took into consideration the specific purpose of this evaluation, stakeholders who should use the data, what will be done with information and specific questions that will be answered by the evaluation and assessments of the performance of the systems using standard [8]. This framework therefore was organized around three assessment phases: scientific basis and relevance, analytic soundness, and feasibility, interpretation and utility in line with standardized frameworks [18]. It also considered surveillance responsiveness to outbreaks and data utilization [19]

This overall evaluation methodology was in line with Klaucke statement of facts that, "The strength of an evaluation depends on the evaluator's ability to assess a system's characteristics with respect to its objectives since *surveillance systems vary widely in their methods, scope, and objectives, characteristics that are important to one system may be less important to another Thus, the success of an individual surveillance system depends on the proper balance of characteristics, and the strength of an evaluation depends on the ability of the evaluator to assess these characteristics with respect to the system's objectives. In an effort to accommodate these objectives, any approach to evaluation must be flexible. [6]*

The site selection criteria were based on the population (rural and urban) they serve. (Those serving larger population to receive higher priority), Surveillance performance and sensitivity (a good performance in AFP/Measles surveillance and samples of areas with surveillance gaps e.g.; those with low level of indicators and those with orphan viruses, silent sites,), accessibility and representativeness of the state.

2.1 Surveillance Core Performance Indicators used for determination of performance status

AFP (Acute Flaccid paralysis) and measles core performance indicators were used. (Annualized Non-polio AFP rate of 2/100,000 and stool adequacy of >80%) Measles core indicators -LGA that reported and investigated with blood specimen at least one case of measles per year and non-febrile measles rash of 2/100000 [10, 14, 15], LGAs with reported outbreaks of diseases and LGAs with >70% silent wards over three year periods and status of epidemic prone diseases were considered.

2.2 Practical /Applied epidemiological variations

For practical purposes a balance was struck between urban and rural locations as well as well functioning and poorly functioning LGAs in the state as outlined characteristics. [6]. Focal sites visited for survey of the documented epidemic prone diseases/outbreaks /RI coverage were selected by stratified randomization. However, in the state, 47% (8/17) LGAs were selected and visited. Within each LGA 4 private and public health facilities were visited totalling 74% (64/87) sites with at least 8 herbal homes, 8 traditional birth attendants, 8 bone setters where applicable. Involvement of private hospital was to determine the extent the networks involved private sector that are neglected most of the time in African surveillance systems. [17].

Table 1.0: 8 LGAs selected constitute about 47% (8/17) LGAs in the state which were used for Survey

SS/N	Good performing LGAs	Poor performing LGAs	Remarks
11	Igbo- Etiti	Nkanu East	4x2 sites
22	Nkanu West	Enugu North	4x2 sites
33	Awgu	Enugu East	4x2 sites
44	Nsukka	Udenu	4x2 sites

Annexed are the Focal sites and private hospitals sampled in LGAs selected.

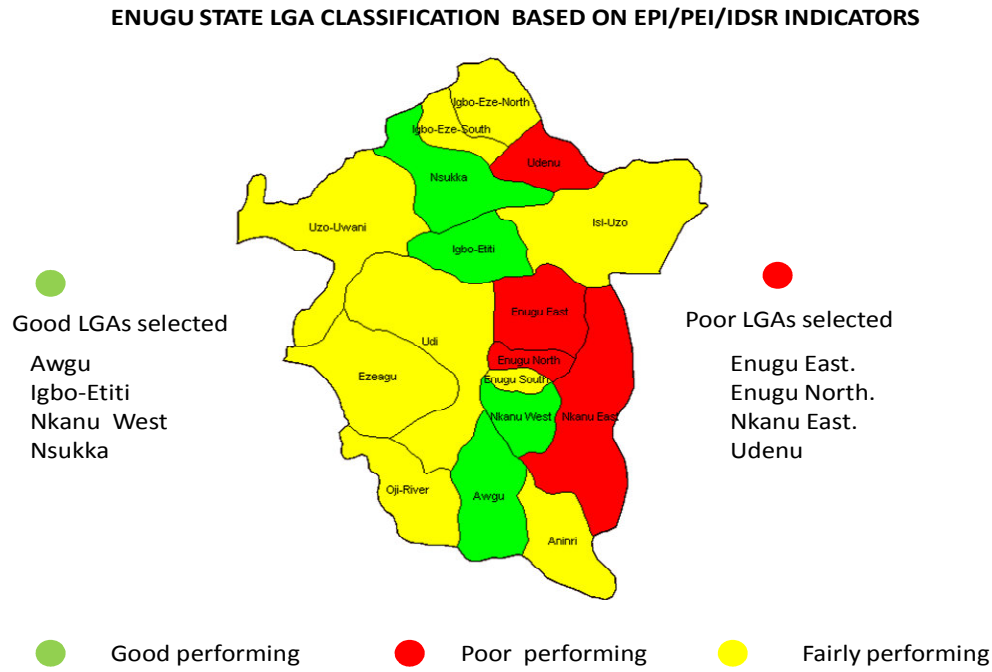

Figure 1: Enugu state LGA classifications based on Surveillance and IDSR performance indicators used for LGAs selection of study areas.

2.3 Description of study areas

Enugu state is located within the South-eastern part of the Nigeria with estimated total population of about 3.6 million (2006 Census). It is bound in the north by Kogi and Benue States, in east, west and south by Ebonyi State and Anambra and Abia states respectively. It is divided into three senatorial zones with 17 LGAs and 260 political wards. It has 87 focal sites/health facilities manned by 87 focal persons with 17 Disease Surveillance and Notification Officers (DSNOs) in 17 LGAs of the State. The focal persons and LGA DSNOs are supported and supervised by one state DSNO and State Epidemiologist. It has 1056 public health facilities and 989 private facilities. In the state, only 32 %(406/1056) of public health facilities and 7% (66/989) of the private hospitals offer routine Immunizations services. In the entire state only 4.3%(87/2045) are reporting sites for surveillance which is grossly inadequate.

Below Enugu State Pictorial, health, geographic, demographic *and political information.*

ENUGU STATE POLITICAL, DEMOGRAPHIC , GEOGRAPHIC AND HEALTH BACKGROUND INFORMATION

Enugu State is located in the SE geopolitical zone of Nigeria. Bounded in the North by Kogi and Benue States, in the East by Ebonyi State, in the South by Abia and West by Anambra State.

No. of Political Wards	**= 291**
•No. of LGAs	**= 17**
•Urban/Rural	**= 5/12**
•Total Population for 2009	**= 3,559,337**
•Population Under 1 Year (5%)	**= 142,373**
•Population Under 15Year .(46.7%)	**= 1,694,245**
•Population of WCBA (22%)	**= 783,054**
•Pregnant Women (5%)	**= 177,967**
•Total No Health Facilities	**= 1056**
•No of AFP /IDSR Focal Sites	**= 87**
•No % Heard to Reach 31.2%	**= 24/77**
•No. of HF conducting R.I	**= 472**
•Public/Private HF conducting R.I	**=406/66**
• Private Health Facilities:	**= 989**
•POPULATION GROWTH RATE -	**= 3%**

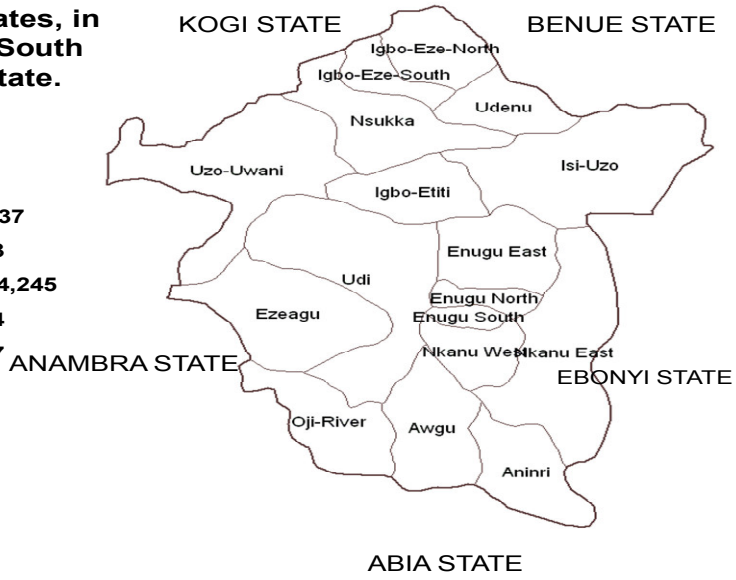

Figure 2: Enugu state background information

2.4 Data Collection

Basic questions of descriptive epidemiology: time, place, and person were put into consideration in designing the questionnaire for this study

2.5 Document review/Observation and Interviews with key informants

Key documents regarding surveillance at all levels were reviewed ranging from surveillance work-plans, surveillance databases, records and documentation, supervisory checklists, reports available at WHO and Enugu State Ministry of Health.

Key informants at State, LGA, health facility level and community informants (including traditional healers…etc) were interviewed. Some cases of AFP reported within three months of the review period were seen wherever this is possible as confirmation and verification of reported cases in context of "Standard Case Definitions" since a public health surveillance system is dependent on a clear case definition for the health-related event under surveillance [7].

2.6 Data Analysis

The Questionnaire was generated with the aid of EPI Info. This questionnaire put into consideration the checklists for evaluating surveillance annexed in CDC guidelines [8].

3. Results

3.1 Descriptions of Surveillance Organization

Eighty-five percent (85%) of DSNOs visited had the list of focal sites and work plans for active surveillance, only 40% of these DSNOs implemented the work plans and made visits as scheduled. Supervisory plans were available in 56%, where available did not indicate the 1st priority health facilities that need to be visited weekly, the 2nd priority that need to be visited fortnightly and the 3rd priority sites that need to be visited monthly. There was no written surveillance work plan at the state and focal sites.

The monthly surveillance meetings were organized jointly by SMOH and WHO and attended by all DSNOS from the LGAs. This forum is used to get monthly data from DSNOs, share information, train and give feedback to them. No review meetings between DSNOs and focal persons took place.

3.2 Surveillance Organization

Eighty-eight percent (88%) had poor monitoring of timeliness and completeness against 5% reported. Only 30% of DSNOs had adequate geographic/population distribution of reporting sites. Spot maps were seen in only two LGAs. (Igbo Etiti and Nsukka). Only 50% of DSNOs made 2 visits on the average to reporting sites per month, because majority of the focal sites were hard-to-reach, and funds provided by WHO was inadequate. Sixty percent (60%) of DSNOs had poor data documentation and file storage, this made data retrieval very difficult. Seventy percent (70%) DSNOs maintained updated AFP and Measles line list, they also used resources provided for AFP to support IDS implementation. Feedback from state WHO office was seen in DSNOs files but none at focal sites/health facilities.

Table.2.0: Summary of the Organization with average score of yes.

S/N	Surveillance Organizations	% Score of average yes
1	Igbo Etiti	80%
2	Awgu	75%
3	Nkanu West	82%
4	Nsukka	62%
5	Enugu East	70%
6	Enugu North	23%
7	Nkanu East	72%
8	Udenu	52%
9	State	65%

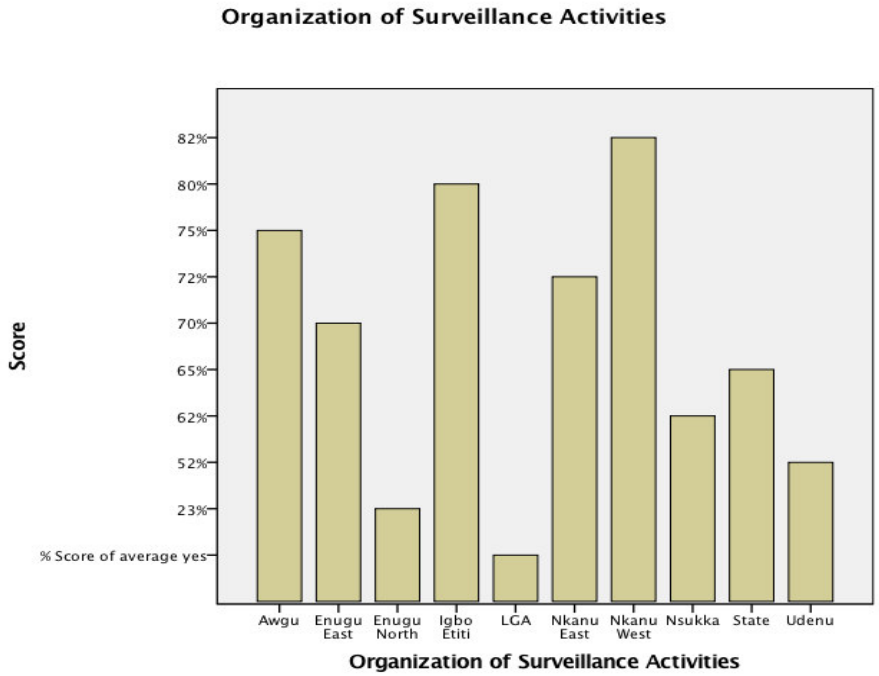

Figure 3: Organization of Surveillance Activities

The data (fig 3) showed that only 25% (2/8) LGAs (Igboetiti and Nkanu West) had good surveillance organization in the state. The State had 65% surveillance organization score as against standard. (>80%)

Table 3.0: Score of timelines and completeness by LGAs

Data reporting from Focal sites to LGAs and State	Timeliness	Completeness
Igbo- Etiti	80%	88%
Awgu	93%	97%
Nkanu West	67%	87%
Nsukka	81%	91%
Enugu East	78%	92%
Enugu North	91%	81%
Nkanu East	58%	83%
Udenu	77%	83%
State	78%	88%

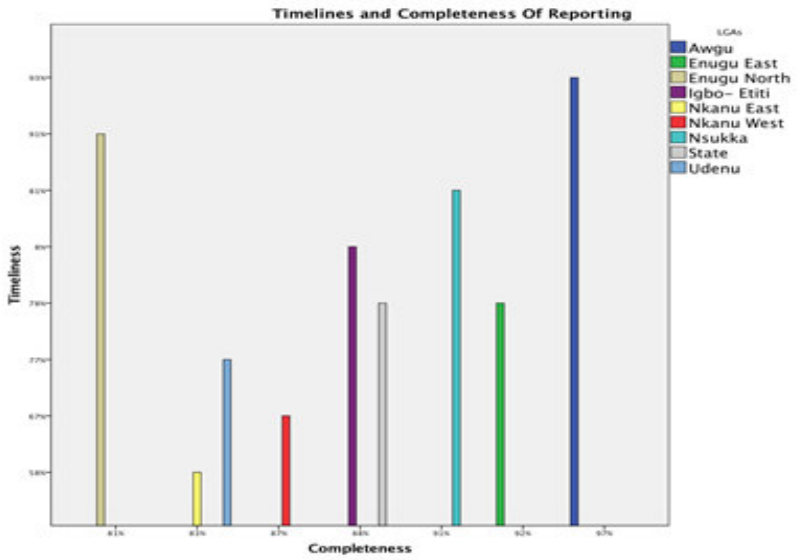

Figure 4: Timeliness and Completeness of Reporting

Timeliness and Completeness of data reporting in Enugu State was fair. Using 80% and 90% standard benchmarks for the Timeliness and completeness, The state was performing well since it had scores of 78% and 88% respectively.

Table 4.0: Average scoring for data archiving or filling/ analysis/use/feedback in LGAs

LGAs	Data Archiving	Data analysis	Data use	Degree of Feedbacks
Igboe Etiti	6%	3%	2%	12%
Awgu	12%	2%	0%	0%
Nkanu West	7%	3%	3%	0%
Nsukka	11%	9%	6%	5%
Enugu East	15%	4%	2%	0%
Enugu North	7%	7%	0%	3%
Nkanu East	9%	4%	1%	6%
Udenu	6%	2%	1%	2%
State	9%	4%	2%	4%

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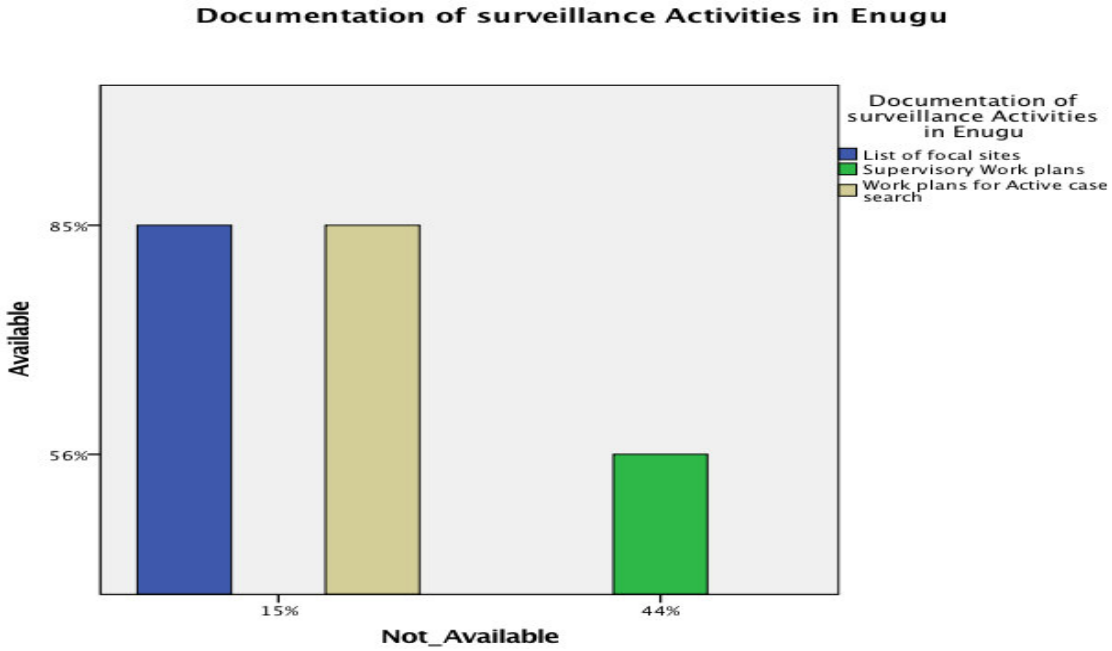

Figure 5: Documentation of Surveillance Activities in Enugu

The chart in fig 5 was quite revealing since most important aspect of Surveillance was not practised in the

State. All the LGAs and State fell below 10% as opposed to 80%, hence the State did not practise the real essence of Surveillance necessitating the need to change this situation: However, it is worthy of note that 85% focal persons and DSNOs visited had linelisted their focal sites and had well developed work plans for active case searching, while only44% of them had supervisory work plans. Although they were displayed as required for standard practice, they were never used since review of their reports was to the contrary.

Table 5: Analysis of IDSR core indicators in the selected sites

S/N	Indicator	Numerator	Denominator	Actual outcome	Expected Outcome
1	Proportion of health facilities submitting weekly or monthly surveillance reports on time to the LGA level.	9	4	14.3%	80%
2	Proportion of LGAs submitting weekly or monthly surveillance reports on time to the State level.	7	8	87.5%	80%
3	Proportion of cases of diseases targeted for elimination, eradication and any other diseases selected for case-based surveillance which were reported to the LGA using case-based or line listing forms (measles & AFP)	3	5	60%	80%
4	Proportion of suspected outbreaks of epidemic-prone diseases notified to the next higher level within two days of surpassing the epidemic threshold.	1	4	25%	80%
5	Proportion of LGAs with current trend analysis (line graphs) for selected diseases.	2	8	5%	80%
6	Proportion of reports of investigated outbreaks that include analyzed case-based data.	1	4	5%	80%
7	Proportion of investigated outbreaks with laboratory results	0	4	0%	80%
8	Proportion of confirmed outbreaks with a nationally recommended public health response.	0	4	0%	80%
9	Case fatality rates for outbreaks of priority diseases (at least one disease)				
	Measles	7	27	26%	0%
	* Meningococcal meningitis	4	18	22%	0%
	*Other (specify) gastroenteritis	5	4	21%	0%

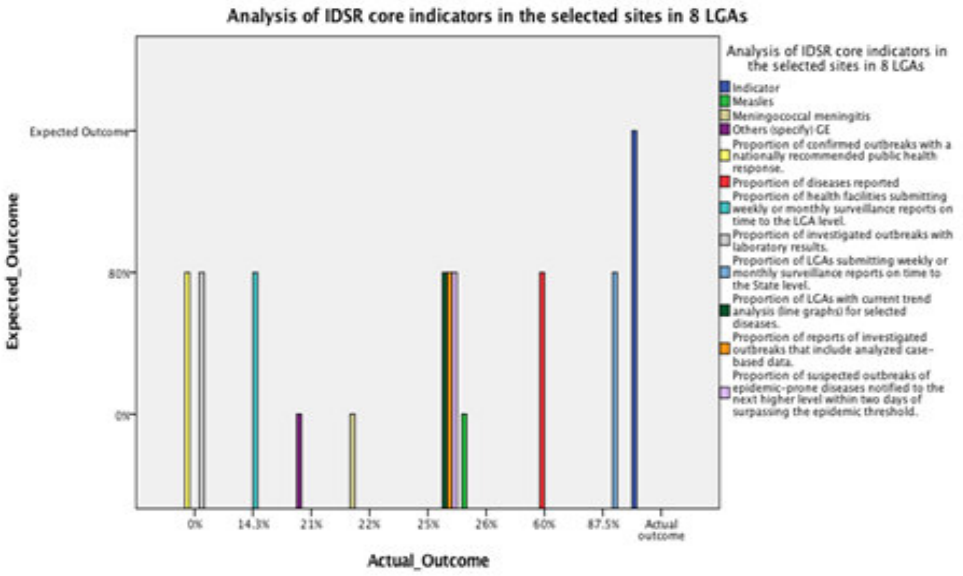

Figure 6: Analysis of IDSR Core Indicators in selected sites in 8 LGAs

Analysis of the core IDSR indicators (fig 6) showed that the implementation in the State was sub-optimal

since only LGAs submit data on time to the State levels (87.5%). Other indicators were not effective or efficient. This was worsened by unreported observed high mortality rates of Measles, CSM and Cholera at the sites sampled. Only Enugu East (80%) met the Surveillance requirement for efficient implementation of IDSR, hence epidemic prone diseases and outbreak were not picked by systems on time at other LGAs and the State) that scored <80%. Both the state (54%) and all LGAs except Enugu East (80%) were poor in IDSR/AI implementation.

Table 6.0: Sources of Surveillance Information.

Sources of surveillance data in the State	% Average yes
Public Health Facilities designated Focal sites	77%
Other Public Health Facilities	5%
Private Hospitals.	3%
Herbal Homes	2%
TBAs	1%
Bone setters.	2%
Community information.	6%
Others.	4%

Average distribution of sources: 13% against the expected of 80% in all the facilities

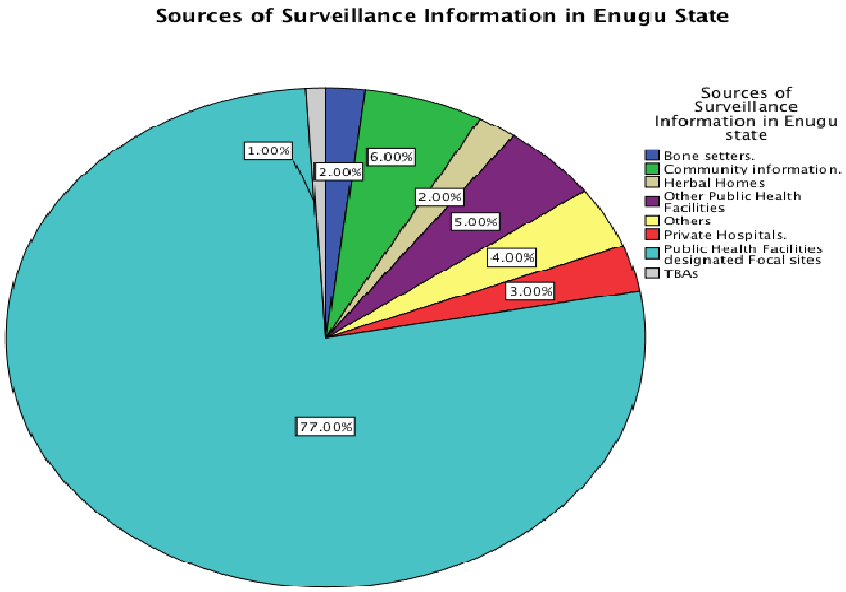

Figure 7: Sources of Surveillance Information in Enugu State

The chart in fig 7 has shown that almost 80% Surveillance information came from focal sites only hence other service delivery outlet were neglected. On this note, the information sources was quite narrow to determine the disease burden.

Table 7.0: Summary table of actual review results compared with the standard

Surveillance aspect/system reviewed.	Actual from Field review	Surveillance standard indicator
Organization of Surveillance	65%	80%
Implementation of IDSR and A1	54%	80%
AFP/Measles/NNT/YF Implementations	83%	80%
Timeliness of data reporting	78%	80%
Completeness of reporting	88%	90%
Data Archiving/documentations	9%	80%
Data analysis	4%	80%
Data use by all stakeholders and policy makers	2%	80%
Feedback using data	4%	80%
Average involvement of private hospitals	3%	60%
State average performance	39%	80%

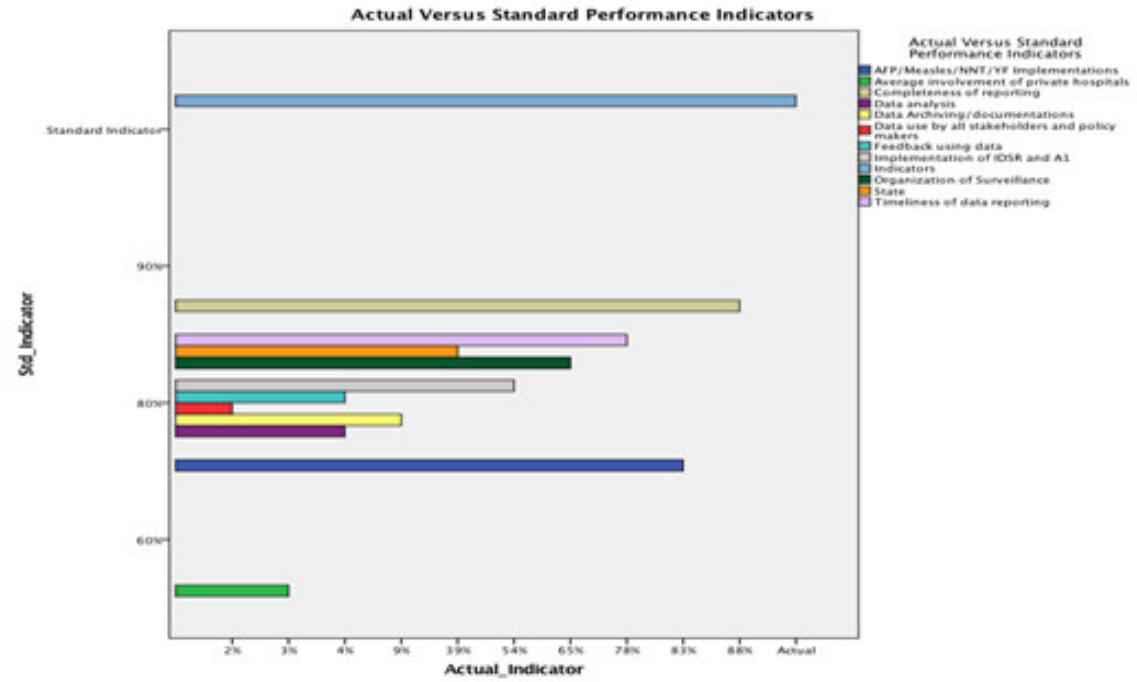

Figure 8.0: Actual Versus Standard Performance Indicators

AFP/Measles/NNT and YF and complete reporting from the focal sites designated accounted for the small observed surveillance performance in the State. Very sadly, the core aspect of surveillance which is data analysis and utilization was not taken seriously.

4. Discussions

Surveillance organization assesses the overall components of surveillance system and determines to what extent it collects accurate and complete data. It is said to be adequate and efficient when it is more than eighty percent (>80%). Data from this study shows that only 2/8 LGAs (Igboetiti and Nkanu West) had good surveillance organization. (> 80%). The state scored 65% as against 80% as observed by similar work done in South Africa [84]. This means that data from this surveillance/ IDSR organization were inaccurate and not complete enough to track trends of diseases. However, it may be possible that outcome of organization was affected by poor documentation which affects completeness and accuracy of reported data due to poorly maintained health system /structure of Nigeria. Inaccuracy of data from the state surveillance organization therefore reflects and determines the magnitude of the data reporting failures which could guide site-specific improvements in data managements as highlighted in work done in Kenya. [85]

This study also reviewed the implementation of IDSR which is responsible for the determination of disease burden especially the epidemic prone status. Only Nkanu East met the surveillance requirements by having > 80% score. The state pooled data was 54% against >80%, hence epidemic prone diseases and outbreak will not be picked by this system on time. Report of outbreaks to higher levels summed to 25% which is very small to assist in response. Critical study of the outcome of IDSR performance indicators show that the implementation in the state was sub-optimal since only LGAs submits data on time to state levels (87.5%). Other indicators were not effective or efficient as evidenced by all the indicators performing lesser than expected 80%. This was compounded by unreported high mortality rates of 26%, 22% and 21% for Measles, CSM and Gastroenteritis respectively missed at the sites by the systems. Similar studies identified challenges with IDSR implementation to be largely ‘systemic ’which will best benefit from skill-based training of personnel and strengthening of the support surveillance functions alongside health care infrastructures at the district level[86]. The differences observed in implementations between AFP and IDSR were reflections of funding, trainings and logistic support therein since IDSR implementations were not supported by the government as the AFP was supported by WHO. Training for AFP was done severally as opposed to IDSR that was done once despite the importance of training in surveillance as observed in study done in Yobe State Nigeria [86-87].

In this review, critical study of case-based surveillance systems of AFP/Measles/NNT/YF has shown that the state had 83% efficiency of this systems and 2/8 of LGAs (Nkanu East and Udenu) studied failed to meet up this efficient indicator. The reason for this success can be explained by the fact that they were riding on AFP systems being supported in logistics and capacity by WHO for polio eradication. The efficiency of this system is with reservations since data falsification/discrepancies was observed between data from HFs, LGAs and states.

Review of the timeliness and completeness of data reporting using 80% and 90% as indictors of promptness of surveillance data for use, showed that only Awgu LGA had good data reporting. The state performed better in this regard since both indicators were 78% and 88% respectively. Data reporting from health facilities to LGAs was 28.5% against 80% while report of outbreaks to higher level was 25%. All these showed that incomplete data from the systems were not reported on time to higher levels. This was in line with studies done in Southern Africa which revealed that Data collected and reported in the public health system across three large, high HIV-prevalence Districts was neither complete nor accurate enough to track process performance or outcomes for PMTCT care. Systematic data evaluation can determine the magnitude of the data reporting failure and guide site-specific improvements in data management [88]. The failure to report timely and completely may be from lack of good knowledge of case definitions.

The cornerstone of surveillance systems is the evidence of good management of properly documented retrievable data which made easy data analysis, archiving, data use and feedback to all levels for appropriate response. The problem of poor and inadequate documentation which continues to be reported in African settings like Uganda prompted an investigative research that unravelled the major barriers and challenges to proper documentations in nursing. The researcher found similar challenges but concluded that improvement of documentation in Africa settings, required not only one aspect like training but also broader changes to get it right [89-90]. All the LGAs and state fell below 10% as opposed to 80% hence the state did not practise the real essence of surveillance. Data analysis was <4% while its use was less than 2% as opposed to 80%. A system that uses only 2% of its data to make decision as opposed to 80% expected is bound to fail. Feedback was only observed from state and nation to LGAs (4%) while LGAs did not give feedback to the HFs. Failure for the utilization of surveillance information may not be unconnected with its accuracy, reliability and method of collection of such data that is worsened by falsification.

Sources of surveillance information were reviewed. It showed that 77% of the reports came from focal sites. These focal sites were quite few accounting for 2 %(87/22055) of total health systems. Private hospitals that contributed about 60% of health care delivery in Nigeria contributed only 3% to this regard [91]. Community surveillance which measures to what extent community participates and reports cases was neglected as only 6% of surveillance information came from this source.. This network was quite narrow to determine the disease burden and trends especially now that community participation and herbal homes in African surveillance were being advocated for [92-93]. However, this finding could be due to inability of the DSNOs and focal persons not being able to separate and disaggregate data from other sources or absence of active surveillance to other sites

A matter of concern from the study was poor supportive supervision by the national, states and LGAs staff to health facility workers where the data are generated since is very important aspect of surveillance system as shown in lesson learnt in works done in Kenya [85]. This could be due to lack of logistic support by various levels of governments or available logistic not put in good use by workers.

This study is at variance with findings in assessment done by Klaucke on the review of Canadian systems [6]. This is because the two settings are different in terms of personnel, health systems, networks and reporting hence more accurate and reliable data are ensured in Canadian systems (developed compared to developing) where syndromic surveillance is very evident.

The study outcomes and findings revealed the extent of IDSR practiced in Enugu state as such will contribute in enhancement of surveillance system performance in the state if the critical issues and recommendations highlighted are applied. The findings of this study will improve the overall documentations and archiving systems in the state since many data are missing. This study will trigger development of generic work plans for all surveillance and public health workers. It also will catalyse the development and modification of data tools to capture information from other health services. The outcomes of this study provided useful information to the health practitioners, policy-makers and international partners on the strengths and weaknesses of the surveillance systems provided for comprehensive surveillance practice in the state.

However, no study is without limitations, absence of complete data at HFs affected this review. The high attrition rates of the trained surveillance personnel coupled with lack of quality data limited this study. It is worthy of note that many documents were not available to verify the outbreaks reported. Most importantly was presence of data falsification by the health personnel in the bid to cover-up since the study was wrongly perceived as punitive fact-finding missions. A further research looking at the validity and reliability of surveillance and EPI data will be commendable. It will be important to study how information and IDSR policy frameworks are being reviewed in Nigeria to determine the extent of utilization of surveillance information by Policy makers. Above all quality data audit and data verification and self-assessments study looking at different levels of data generation will be commendable [94-97].

SWOT analysis

Strength	*Weakness*	*Opportunity*	*Threats*
Presence of Surveillance focal points at all levels	*Poor logistics for the Office of the State Epidemiologist*	*Presence of committed leadership of State Ministry of Health*	*Poor funding of surveillance activities by the state and LGA levels Government*
Presence of focal reporting sites in the LGA giving regular data on surveillance	*Too few focal reporting sites therefore data not representative of the disease trend in the LGA and states*	*Presence and support of Partners working on Surveillance in the state*	*Disruption of surveillance activities due to re-assignment and high attrition rates of trained personnel.*
Provision of regular stipend by WHO to fund surveillance. activities	*Poor supportive supervision by the SMOH*	*Presence of AFP surveillance structure already on ground on which IDS and AI is riding gains from Ebola containments.*	*Lack of integration of private hospital, TBA, herbal homes and other service delivery networks in reporting.*
Periodic capacity building for DSNO s and state surveillance. team	*Inadequate data tools particularly case-based forms*	*Presence of community participation in the surveillance networks in the State.*	*Neighbouring states with possible importation of diseases in site of lack of cross border surveillance networks.*
Conduct of regular monthly review meetings	*Poor data analysis, monitoring and interpretation. In addition, data is not been used to make decisions.*	*The various IPDs campaigns provide a unique forum to increase community active case search and to sensitize the community on surveillance*	*Data falsification during IPDs campaign put quality and reliability of data generated in questions.*
Entrance of some Partners in production of surveillance tools like HSDP 11 in the State.	*Absence of log book to record rumors or disease outbreaks at state and LGA level*	*Presence of various community-based groups that can be sensitized on surveillance*	*Poor co-ordination among existing community-based groups with limited knowledge.*
Presence of the avenue of sharing data in monthly review meetings funded by WHO.	*Poor participation of the state in monthly review meetings*	*Presence of WHO Surveillance Officers in the State with enough capacity to improve the monthly meetings.*	*Funding gaps experienced by donors coupled with misappropriation and poor utilization of funds*

20% were not able to clearly state the case definition for two priority diseases.

5. Conclusion

In summary, as a change management approach to increase the people's confidence and give them a sense of ownership of surveillance, the state should intensify advocacy, communication and sensitization visits to all stakeholders especially Policy makers, private hospitals practitioners, traditional healers and other community based service providers using BCC, IPC and EIC tools to change KAP and conduct yearly health workers re-orientation and training workshops and recruitments. Involve all registered private hospitals and community in review of surveillance strategic plans, conduct surveillance peer review yearly and share the reports and recommendations to all stakeholders in the state. Promote the use of bottom- top approach of planning for surveillance (community village health development committee-private health-public health facilities-wards-LGAs-state and national). The state MOH should constitute Epidemic Preparedness and Response Committee (EPRC). The committee should meet at least on quarterly bases to review surveillance and laboratory data, to monitor trends of diseases of public health importance and advice SMOH on required interventions. The EPRC should also guide SMOH on appropriate outbreak response interventions.

In conclusion IDSR/surveillance performance systems in Enugu state were more than 50% reliable and sensitive enough to detect and respond appropriately to outbreak and disease of public health importance. This was because despite its inefficiencies when compared to standards of 80%, there still exists structures and opportunities on ground which when modified will enhance accuracy as noted in study of limitations of DOTs practice in Nigeria.

However, AFP and case-based surveillance is practised well with timeline and completeness of reporting of

data hence polio eradication initiative remains huge opportunity for Enugu state surveillance. It is worthy of note that, the system can detect life threatening diseases and outbreaks within the IDSR frameworks the surveillance system was more inclined to response than detection.

The framework for disease surveillance in Enugu state is currently supported by the AFP Surveillance structure on which IDSR was also riding. AFP/ Surveillance was found to be performing reasonably well in the areas visited for AFP and is capable of early detection of WPV and other case-based diseases hence certification of the country based on AFP surveillance is reliable.

However, support of this system by LGAs and State was poor and there was a need to widen the surveillance network to give a better picture of the disease trend in the state. Private hospitals and other service delivery outlets were not significantly involved in the reporting of cases well enough; hence Private public partnership policy in Surveillance is required as matter of urgency.

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