

Immunization Completion Rates in a Cottage Hospital in the Niger Delta Area of Nigeria

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Abstract

Background: Weak vaccine delivery systems and poor immunization coverage have been perennial problems in Nigeria. This work was designed to assess the effectiveness of vaccine delivery in a Community Cottage Hospital in the Niger Delta area of Nigeria by determining immunization completion and drop-out rates among infants registered in the facility from January 2014 to January 2015. **Methodology:** Immunization records at the centre were examined for completion of immunization schedule and drop-outs. Mothers whose infants missed immunization were contacted by phone to ascertain the reason(s). **Results:** Three hundred and sixty-two infants were registered in the centre for immunization in the period. Of these 358 (98.80%) infants completed their schedule according to the Nigeria National Programme on Immunization. The BCG to measles drop-out rate was 0.55%, DPT1 to DPT3 0.00%, and DPT1 to measles 0.55%. **Conclusion:** Integration of Primary Health Care Services, community participation, staff motivation through private sector principles and regular power supply may be some of the factors engendering this salutary state. This can serve as a model for similar facilities in the region.

Keywords: Immunization; Completion; Nigeria

Introduction

Immunization is a key modality for reducing childhood mortality globally as well as improving socio-economic circumstances. [1] Nigeria has made quite some progress in recent years in childhood routine immunization. From a low DPT3 coverage of 61%, with a failure to reach 47% of its target population with even the first dose of DPT in 2011, [2] Nigeria immunized 5,622,422 children with DPT3, almost double the 3,238,428 children immunized in 2012, though the drop-out rate remained high at more than 10%. [3] However, recently DPT immunization coverage has been described as poor in a rural community health facility in the east of the country. [4] Recent reviews have described the trend in immunization coverage nationwide as unsatisfactory with weak delivery systems. [5,6] Factors identified as contributing to these high drop-out rates and hindering adequate immunization coverage in the country include vaccine stock outs, challenges at peripheral points, inconsistent power supply, staff shortages and inefficient staff allocation. Others are poor integration of routine immunization services with broader primary health services, unreliable administrative data and lack of feedback to the community. [7] Other impediments identified include Parents' concerns about vaccine safety, long distance walking and long waiting time at the health facility are other identified impediments. [8]

The aim of this work was to document immunization completion and dropout rates in a Community Cottage Hospital with a high patronage in the Niger Delta area of southern Nigeria. It is

hoped that the findings may show how some of the challenges to routine immunization in Nigeria have been managed in the Centre, what more may need to be done and what lessons may be learnt by similar centers in the country.

Materials and Methods

This was a retrospective study of all infants registered for immunization at the Obio Cottage Hospital (OCH), Obio/Akpor Local Government Area (LGA) of Rivers State in the Niger Delta Area of Nigeria. OCH was started in 1978 as a Primary Health Centre providing preventive and curative health care services mainly to the inhabitants of Obio/Akpor LGA, of Rivers State of Nigeria. In 2008 Shell Petroleum Development Company (SPDC) started supporting the facility, rehabilitating and upgrading it from a four bed health Centre operating in a twin bungalow with 13 staff to a 56 bed facility with 156 staff. It has an Obstetrics and Gynecology department with antenatal care (ANC) and delivery services. It also has a small neonatal unit, a children's ward and a general ward. Solar power was introduced into the Centre ensuring regular power supply. A

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community Health Insurance Scheme was also introduced by the SPDC for the catchment communities of the facility, markedly improving access to and utilization of the services of the Centre. This has been described elsewhere.^[9] The immunization unit is staffed by Community Health Extension Workers, Health Records Officers and is equipped with solar refrigerators, cold boxes and vaccine monitors. Annually the SPDC engages an Obstetrician and a Pediatrician on sabbatical appointment to provide technical support to the facility.

The Centre provides focus antenatal care to pregnant women during which period the women are given talks on several aspects of maternal and child health including the Nigerian Programme on immunization (NPI), the need and safety of immunization, and the possible consequences of non-compliance with immunization schedule. During this period the women are also introduced to the immunization hall which is a few steps to and clearly visible from the antenatal hall where the women receive antenatal health education.

Post-delivery, Community Health Officers, in the employ of the Centre immunize the infants in the post-natal wards, issue immunization cards and remind the mothers of the NPI schedule before discharge. Babies admitted into the Neonatal Unit are also immunized and issued cards on discharge. In the event of vaccine stock out, mothers are informed by phone, text messages and social media (Facebook). Text messages are again sent when such vaccines are available.

For this study, the records of all infants registered for immunization in the facility from January 2014 to January 2015 were studied. Information extracted included place of ANC, age and point of commencement of immunization, completion of immunization or drop out. Immunization completion was defined as receipt of all the vaccines in the current National programme on Immunization of Nigeria.

Statistical analysis

Data was entered into a spreadsheet and checked for completeness and accuracy, then transferred to state 12 software (STATAcorp, Texas, USA) for analysis. Immunization completion rates were calculated. The DPT1 to DPT3, DPTI to measles, and the BCG to measles dropout rates were calculated.

Ethical issues

Ethical clearance was obtained from the Research Ethics Committee of the University of Uyo Teaching Hospital, Uyo, Akwa-Ibom State of Nigeria.

Results

Three hundred and sixty-two infants were registered in the Centre for immunization during the period. One hundred and seventy nine (49.45%) were male and 183 (50.55%) female infants. Among the mothers 296 (81.77%) had formal Antenatal care (ANC) while 66(18.23) did not have formal ANC.

Two hundred and ninety one (80.39%) infants were delivered in

formal birth facilities while 71(19.61%) were either delivered in informal facilities or had no information. All but four of the infants completed their schedule giving immunization completion rate of 98.80%. Reason for non-completion given for the four infants were: took infant elsewhere for immunization, travelled, baby was sick and no reason (one or 25%) each.

Three hundred and fifty three (97.51%) of the infants had vitamin A supplement while nine (2.49%) did not have at nine months. Reasons for not having the vitamin among the nine were not given.

The following drop-out rates were recorded: BGG to Measles - two out of 362 (0.55%), DPTI to DPT3 – zero (0.00%), DPTI to Measles-two out of 362 (0.55%) [Table 1].

Table 1: Drop-out rates.

Vaccines	No. of Children Registered	No. Completed	Drop-out Rate (%)
BCG to Measles	362	360	0.55
DPT1 to DPT 3	362	362	0.20
DPT1 to Measles	362	360	0.55

Discussion

The purpose of this work was to assess the effectiveness of vaccine delivery at this public (Rivers State of Nigeria Government)-private (Shell Producing and Development Company) partnership facility. It was also aimed at identifying the factors that may influence immunization completion and drop-out rates among users of the facility. With near hundred percent schedule completion rate and zero or less than one percent drop-out rates, these factors could not be explored.

Immunization program in Nigeria is generally characterized by low completion and high drop-out rates.^[1-4,6-8] A facility based analysis of immunization in Benin, Nigeria in 2005 showed that only 44.3% of 512 children registered completes their schedule, with DPTI to DPT3 drop-out rate of 19.3% and OPVO(as a surrogate for BCG) to measles drop-out rate of 38.7%. These rates are a lot higher than the rates in the current study.^[10] A similar facility based study in the same city of Benin among 174 children in 2003 showed that only 126 (72.40%) of the children completed the schedule.^[11] Main reasons given by mothers for non-completion were child ill health, mother travelled or forgot, was ill or bereaved. Perceived contraindications by health workers was also an important reason.^[11]

The near zero default rates in the present study undertaken in an area of southern Nigeria with similar socio-cultural circumstances warrant examination of the factors that may be working favorably in the Obio Cottage Hospital Immunization Clinic. The OCH has a veritable community Health Insurance Schemes which not only boosts patronage but also ensures community participation in the facility.^[9] Low community engagement has been identified as a barrier to immunization service delivery in Nigeria.^[6] The Centre offers a number of integrated services including ante-natal care, delivery services, newborn care and general children out-patient and

in-patient services. The problem of poor integration of routine immunization with broader primary health services^[6] thus does not exist.

The International Vaccine Access Centre (IVAC) also identified vaccine stock outs, inconsistent power supply, poor performance management, poor conditions at health facilities and lack of basic data collection tools as some of the other barriers to routine immunization in Nigeria.^[7] The facilities of this centre are maintained by the Shell Producing and Development Company, with regular/uninterrupted electric power supply facilitated by use alternative energy source.^[12] The application of private sector business principles including performance based remuneration in the facility also ensures appropriate staff education and motivation, and accurate data collection. Close liaison with the Rivers State Primary Health Care Board ensures regular vaccine supply. When vaccines are not available clients are informed before the immunization day and made aware when vaccine would be available. The use of private sector principle of aggressive marketing ensures caregivers are contacted through social media if scheduled immunization is missed.

Conclusion

The immunization Centre of Obio Cottage Hospital in Niger Delta area of Nigeria has unusually high immunization completion rates and minimal or zero drop-out rates. Community participation, well maintained infrastructure, uninterrupted power supply and the application of public sector principles of staff motivation, aggressive marketing and record keeping may be some of the reasons for this salutary situation.

This work has obvious limitations. It is a record based evaluation of vaccine delivery effectiveness in a Community Cottage Hospital and may not necessarily imply good immunization coverage in the larger community. A cluster sampling technique or lot quality assurance method would better evaluate that.^[13] The relatively small sample size is also acknowledged. However, it demonstrates the effectiveness of immunization activities in a well maintained and run community health facility and could

serve as a model for similar facilities in the region.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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