THE FEDERAL REPUBLIC OF NIGERIA
LAGOS STATE OF MINISTRY OF HEALTH

PROJECT COMPLETION REPORT
ON
PROJECT FOR STRENGTHENING PRO-POOR COMMUNITY HEALTH IN LAGOS STATE

THE FEDERAL REPUBLIC OF NIGERIA

MAY 2019

HUMAN DEVELOPMENT DEPARTMENT

JAPAN INTERNATIONAL COOPERATION AGENCY

JICA

HM
JR
19-044

Project Completion Report

Project Title:

Project for Strengthening Pro-Poor Community Health in Lagos State

Country:

Nigeria

Project Directors:

Dr. Jide Idris, Honorable Commissioner for Health, Lagos State Ministry of Health and Dr. Olufemi Oludayo Onanuga, Special Adviser to the Governor on Primary Health, Lagos State Ministry of Health

Chief Advisor:

Nobuhiro Kadoi

Submission Date:

31st of March 2019

CONTENTS

ABBREVIATIONS

ANC	Antenatal Care
AR&DT	Appointment Reminder and Defaulter Tracing
BHCPF	Basic Health Care Provision Fund
CAPI	Computer Assisted Personal Interview
CHEW	Community Health Extension Worker
CHMIS	Community Health Management Information System
CHO	Community Health Officer
CI.	Confidence Interval
CNO	Clinical Nursing Officer
CORPs	Community Resource Persons (Health Volunteers)
DID	Difference-in-Difference
EVD	Ebola Virus Disease
GEE	Generalized Estimating Equation
HTR	Hard-to-Reach
IEC	Information, Education and Communication
IPT	Intermittent Preventive Treatment of Malaria
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
LASCOHET	Lagos State College of Health Technology
LCDA	Local Council Development Area
LGA	Local Government Area
LIO	Local Immunization Officer
LSACA	Lagos State AIDS Control Agency
LSMOH	Lagos State Ministry of Health
LSPHCB	Lagos State Primary Health Care Board
LSTMB	Lagos State Traditional Medicine Board
M&E	Monitoring and Evaluation
M/M	Minutes of Meetings
MCH	Maternal and Child Health
MM	Man-Month
MNCH	Maternal, Neonatal and Child Health
MOH	Medical Officer of Health
NGN	Nigerian Naira
NHP	National Health Policy

NIPD	National Immunization Plus Day
NSHDP	National Strategic Health Development Plan
OR	Odds Ratio
OVI	Objectively Verifiable Indicator
PDM	Project Design Matrix
PHC	Primary Healthcare Center
R/D	Record of Discussion
SBA	Skilled Birth Attendant
TBA	Traditional Birth Attendant
TWG	Technical Working Group
UHC	Universal Health Coverage
WHC	Ward Health Committee
WHO	World Health Organization

1 Project Basic Information

1.1. Title of the Project: Project for Strengthening Pro-Poor Community Health in Lagos State

The project was initially titled "Strengthening Primary Health Care Project" in the Record of Discussion (R/D) signed on 21st of February 2014 between Japan International Cooperation Agency (JICA) and the authorities concerned of the Government of the Federal Republic of Nigeria. The amendment of the project title was discussed and agreed among the parties concerned on the current title. It was recorded and signed in the Minutes of Meetings (M/M) dated 24th of October 2014. The reason for this amendment was to make the title more descriptive of the project intention and target population.

1.2. Duration of the Project

Planned: 20th May 2014 – 20th May 2018

Actual: 20th May 2014 - 31st March 2019

The original agreement on the project duration in the R/D was four (4) years from the first day of a Japanese expert was dispatched, which was 20th of May 2014. The first amendment was made and recorded in the M/M dated 13th of April 2017 to extend the period to 18th of December 2018. The reason for this amendment was to secure ample time for the geographical expansion of the project site from Eti-Osa Local Government Area (LGA) alone to include Lagos Mainland LGA, which was agreed on 10th of November 2016. The second amendment was made during the Sixth Joint Coordinating Committee (JCC) Meeting held on 11th of December 2018 to further extend the period to 31st of March 2019 to test the new Appointment Reminder and Defaulter Tracing System developed by the project and operationalize it at the targeted Primary Healthcare Centers (PHCs).

1.3. Background (Statement in the R/D)

In Lagos State, Nigeria, the rapid growth of the population, which was not matched by the adequate capital investment (including the health sector), has resulted in the increasing number of people living in slum areas that lack essential services, such as sufficient infrastructures, safe drinking water, sanitary environment, and electricity. Therefore, it is noteworthy that disproportionate disease burdens exist among the poor who have limited access to health services due to geographic and financial barriers. Due to the obstacles, the health coverage and utilization of health services is still limited, particularly among the poor. To improve the people's health status in Lagos State, the urban poor should not be ignored.

In Lagos State, the revitalization of Primary Health Centers (PHCs) is one of the policies to improve health at the community level. According to the policy, delivery of health services at the community level is being enhanced by establishing 24-hour opened PHCs, recruiting more doctors, midwives, nurses, and Community Health Extension Workers (CHEWs) and so forth. Given this context, and to support this policy to strengthen primary health care at the community level, a comprehensive approach is crucial.

JICA and the Government of Nigeria has operated a technical cooperation project, "Project for Improving Maternal, Newborn, and Child Health in the Lagos State" from 2009 to 2014. The project has intervened in capacity development of improving skills and knowledge of medical personnel at PHCs in ante-natal care, delivery, and post-natal care, of improving hospital management by 5S method, and of conducting community awareness promotion activities, as well as improvement of monitoring and evaluation capacity by health officers.

In order to improve the overall health of the population in Lagos State, an increasing number of people living in slum areas needs to be addressed, and the improvement of their health status is necessary. With Japan's commitment to expanding the concept of universal health coverage (UHC), this project aims to improve access to health services by the poor.

1.4. Overall Goal and Project Purpose

Overall Goal: Equitable, affordable, and accessible maternal and child health services for the population in urban slum communities in Lagos State are improved.

Project Purpose: Pro-poor health services system is established and strengthened using standardized models.

1.5. Implementing Agency and Modality

Nigerian Implementing Agency is Lagos State Ministry of Health.

(a) Project Directors: The Honorable Commissioner for Health, Lagos State Ministry of Health (LSMOH) and the Special Adviser to the Governor on Public Health, LSMOH

(b) Project Manager: The Permanent Secretary, Lagos State Primary Health Care Board (LSPHCB)

(c) Field Manager: Medical Officers of Health (MOHs) of Eti-Osa LGA, Lagos Mainland LGA and Yaba Local Council Development Area (LCDA)*

*Yaba LCDA is the lower-tire administrative unit of Lagos Mainland LGA.

2 Project Results

2.1. Inputs

2.1.1. Inputs by the Japanese side

(1) Amount of Input by Japanese site

Approximately 460 Million Japanese Yen

(2) Human Resources

Assignment	Person	Duration	MM
Chief Advisor	1) A	20/05/2014 – 19/05/2016	24.00
	2) B	14/06/2016 – 10/06/2017	12.00
	3) C	23/07/2017 – 31/03/2019	20.25
Project Coordinator	1) D	01/06/2014 – 31/12/2016	31.00
	2) E	16/01/2017 – 18/06/2017	5.00
	3) F	29/07/2017 – 11/11/2017	3.53
	4) G	26/10/2017 – 19/12/2018	13.75
Community Health / Operations Research	1) H	04/11/2014 – 11/08/2017	34.25
	2) I	23/07/2017 – 19/12/2018	16.90
Operations Research	1) J	13/02/2018 – 20/02/2018	0.25
	2) J	09/07/2018 – 01/08/2018	0.75
Project Advisory Mission	1) K	04/09/2014 – 05/09/2014	0.07
	2) L	04/09/2014 – 05/09/2014	0.07
	3) B	27/02/2016 – 19/03/2016	0.75
	4) M	13/04/2017 – 14/04/2017	0.10
	5) J	09/04/2017 – 13/04/2017	0.13
Health Promotion	Not dispatched		
Total **Number of Long-term Experts (≥12 MM): 7** **Number of Short-term Experts (<12 MM): 9**			

(3) Counterpart Personnel Dispatched to Japan for Training Courses

Training Course Title	Period	Duration Weeks	Number of Counterpart Personnel
Public Health Planning based on Evidence	16/06/2016 – 21/07/2016	5	**1**
Health Systems Management	26/06/2016 – 23/07/2016	4	**1**
Public Health Activity for Strengthening MCH	28/09/2016 – 12/11/2016	6	**1**
Health Policy Development	15/01/2017 – 27/01/2017	2	**1**
Health Policy Development	12/02/2018 – 24/02/2018	2	**1**
Public Health Activity for Strengthening MCH	29/08/2018 – 06/10/2018	5	**2**
Strengthening Social Health Protection Towards Universal Health Coverage	02/12/2018 – 15/12/2018	2	**1**
Total			**8**

(4) Major Equipment/Items Provided

The total amount of equipment provided by the Project is approximately 84,963,000 Nigerian naira (NGN). The provided equipment is listed as below.

S/N	Item	Specification	JFY	Unit Cost (NGN)	Qty	Total (NGN)	Total (JPY)	Recipient
1	Photocopy Machine	Sharp Copier AR-5731	2014	439,670	1	439,670	700,000	LSPHCB
2	Laptop Computer	HP 15-d009sia	2014	65,951	1	65,951	105,000	LSMOH
3	LCD Projector	LG-BG630 Projector	2014	73,117	1	73,117	110,000	
4	Generator	Tec Thermocool Generator	2014	66,848	1	66,848	98,990	Eti-Osa LGA
5	Laptop Computer	HP 15-R111NIA	2014	54,490	1	54,490	88,000	LSMOH

6	Project Vehicle	Honda CRV (2014)	2014	7,965,000	1	7,965,000	5,081,670	LSMOH
7	Medical Isolation Tent System	For Ebola Viral Disease (EVD) Treatment and Care	2014	17,000,000		17,000,000	10,149,000	LSMOH
8	Project Vehicle	Nissan X-Trail (2015)	2015	7,950,000	1	7,950,000	5,072,100	LSPHCB
12	Generator	Honda EG6500CXS	2015	184,350	1	184,350	300,000	Ilasan PHC
13	Generator	Honda EG6500CXS	2015	184,350	1	184,350	300,000	Eti-Osa LGA
14	Laptop PC	ACER Aspire ES15 ES1-571 30B8	2016	50,276	1	50,276	155,990	LSPHCB
15	Laptop PC	ACER Aspire ES15 ES1-571 30B8	2016	50,276	1	50,276	155,990	LSPHCB
16	Laptop PC	HP 8GB /1TB Core i3	2016	220,000	1	220,000	67,905	LSMOH-HPRS
17	Laptop PC	HP 8GB /1TB Core i3	2016	220,000	1	220,000	67,905	LSMOH-FH&N
18	Laptop PC	HP 8GB /1TB Core i3	2016	220,000	1	220,000	67,905	LSPHCB
19	Laptop PC	HP 8GB /1TB Core i3	2016	220,000	1	220,000	67,905	L/Mainland LGA
20	Laptop PC	HP 8GB /1TB Core i3	2016	220,000	1	220,000	67,905	MOH-Yaba
21	Laptop PC	HP 8GB /1TB Core i3	2016	220,000	1	220,000	67,905	LSTMB
22	LCD Projector & Screen	Optima	2016	142,500	1	142,500	52,554	LSMOH-HPRS
23	LCD Projector & Screen	Optima	2016	142,500	1	142,500	52,554	LSMOH-FH&N
24	LCD Projector & Screen	Optima	2016	142,500	1	142,500	52,554	LSPHCB
25	LCD Projector & Screen	Optima	2016	142,500	1	142,500	52,554	L/Mainland LGA
26	LCD Projector & Screen	Optima	2016	142,500	1	142,500	52,554	MOH-Yaba

27	LCD Projector & Screen	Optima	2016	142,500	1	142,500	52,554	LSTMB
28	Generator	Honda 5KVA	2016	650,000	1	650,000	239,720	Abule-Nla PHC
29	LCD Projector	Optima ds348	2016	159,000	1	159,000	58,639	LSPHCB
30	Laptop PC	HP 250G5	2016	220,000	1	220,000	81,136	LSPHCB
31	Laptop PC	HP 250G5	2016	220,000	1	220,000	81,136	LSMOH
32	Tablet PC	Lenovo TAB A7	2016	40,000	7	280,000	103,264	LSMOH
33	Tablet PC	Lenovo TAB3 7 Essential	2016	40,000	25	8,123,303	2,507,339	LSPHCB
34	Mobile Phone	Alcatel Pixi 4.5	2016	22,000	289	6,358,000	2,460,234	LSPHCB
35	Portacabin	2.5M x 12M x 2ST	2016	10,846,500	1	10,846,500	4,000,189	LSPHCB
36	Generator	Perkins SP-15 13KVA	2016	1,670,000	1	1,670,000	589,159	LSPHCB
37	Server Computer	HP ProLiant ML110 Gen7 Server	2016	330,000	1	330,000	121,704	LSPHCB
38	Solar Power System	Panels (1.5KVAx4) & Inverter (3.5KVA Luminous) & Batteries (200HAx4)	2017	870,000	1	870,000	268,534	LSPHCB
39	Solar Lighting System	Panels (1.5KVAx4) & Battery (200AHx4)	2017	5,607,000		5,607,000	1,703,639	Ikate, Iwaya and Simpson PHCs
40	Server Computer	HP ProLiant DL380 Gen9 Server	2017	1,889,390	1	1,889,390	563,114	LSPHCB
41	Air conditioner	Panasonic	2018	250,000	1	250,000	76,955	Simpson PHC
42	Software Development	Appointment Reminder & Defaulter Tracing System (Portal Site and Mobile Application)	2018	8,123,303	1	8,123,303	2,461,361	LSPHCB
43	Mobile Phone	Huawei Y5	2018	28,500	109	3,106,500	953,696	LSPHCB

(5) Local Expenditure

The total local expenditure of the Project is 390,075,000 NGN.

Japanese Fiscal Year (Apr – Mar)	Expenditure Amount (NGN)	Purpose of Expenditure
2014	95,660,000	IEC Materials for EVD prevention Medical Isolation Tent System for EVD
2015	37,265,000	Needs assessment Baseline survey in Eti-Osa Leadership training WHC training Maruwa drivers training Project review meetings Installation of a generator Installation of a portacabin for the project office
2016	74,451,000	Strategic Outreach Community Health Education TBA research Baseline survey in Lagos Mainland State NIPD and MCH Week Campaign support Hard-to-Reach Outreach CORPs training Community Health Education and performance review Ward Health Committee Training
2017	94,467,000	Appointment Reminder and Defaulter Tracing System (Initial System Development, Training, and Operation) Voice-call Message Development and Delivery TBA Referral and Reporting State NIPD, MCH Week and Measles Campaign support Solar light system installation at 3 PHCs End-line Survey Hard-to-Reach Outreach CORPs refresher training
2018	88,232,000	Community Health Education and performance review Ward Health Committee Action Plan Appointment Reminder and Defaulter Tracing System (New System Development, Testing, and Expansion)

		Voice-call Message Utilization (Radio) TBA Referral and Reporting State NIPD and MCH Week support
Total	390,075,000	

2.1.2. Input by the Nigerian side

(1) Counterpart Assignment

(a) Project Directors: The Honorable Commissioner for Health, Lagos State Ministry of Health (LSMOH) and the Special Adviser to the Governor on Public Health, LSMOH

(b) Project Manager: The Permanent Secretary, Lagos State Primary Health Care Board (LSPHCB)

(c) Intervention Focal Directorates:

- Hard-to-Reach Outreach: Directorates of Medical Services and Community Health, LSPHCB
- Community Health Education and WHC Empowerment: Directorate of Health Education and Community Mobilization, LSPHCB
- Appointment Reminder and Defaulter Tracing System: Directorate of Community Health and Technical Working Group (LSPHCB)
- Voice-call Message delivery: Directorate of Health Education and Community Mobilization (LSPHCB)
- TBA referral and reporting: Directorates of Medical Services, Community Health and Technical Working Group (LSMOH, LSPHCB, and LSTMB)
- Baseline and End-line Surveys: Consultative Stakeholders Group (LSMOH and LSPHCB)

(d) Field Managers: Medical Officers of Health (MOHs) of Eti-Osa LGA, Lagos Mainland LGA and Yaba Local Council Development Area (LCDA)

(2) Provision of offices:

- Provision of a site in the LSPHCB compound for the Project Office Porta Cabin
- Provision of electricity and water to the Project Office

(3) Other items provided by the counterpart government:

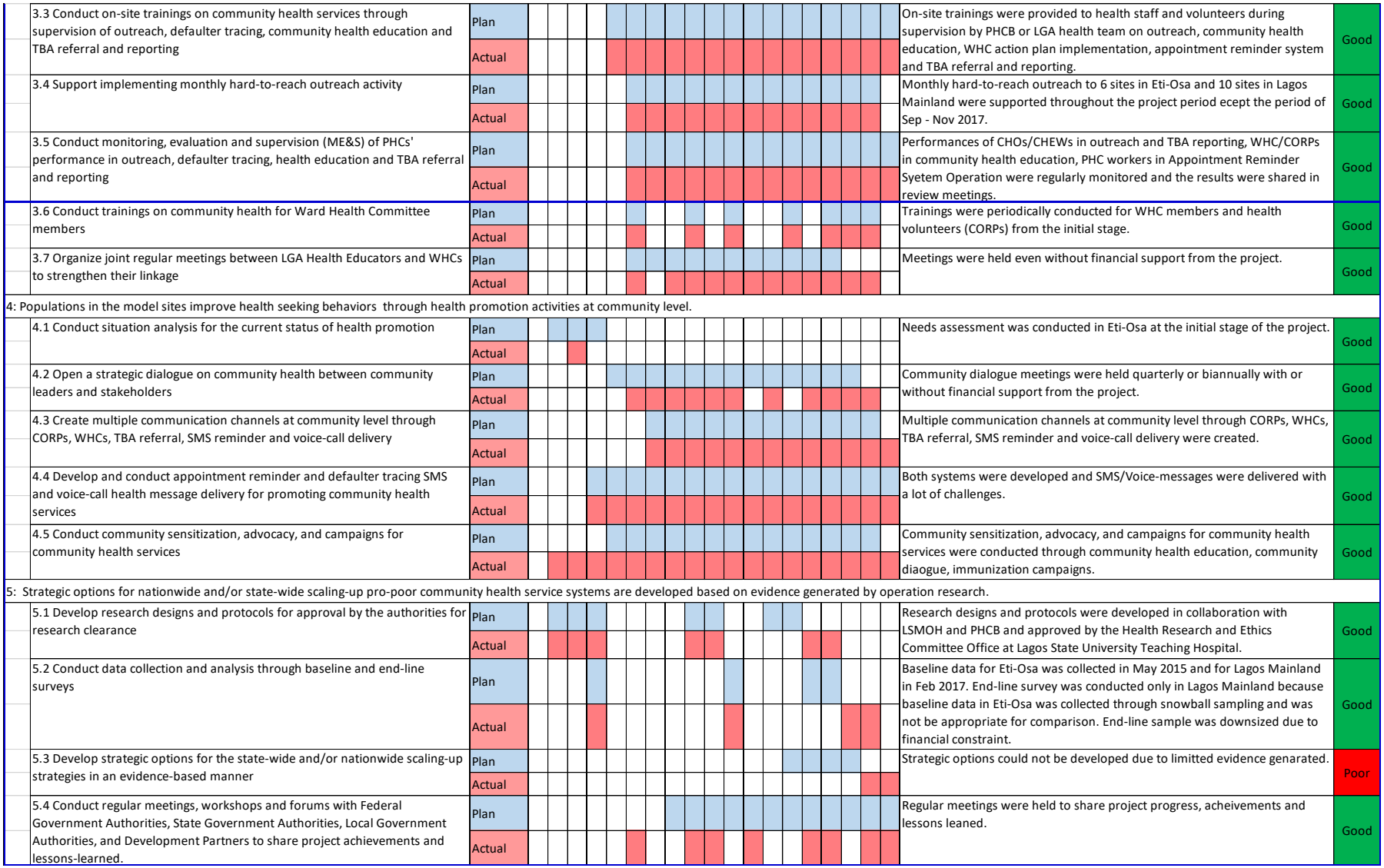
Provision of an LSPHCB Official Vehicle with a driver for on-site training and supervision of the Appointment Reminder and Defaulter Tracing System Operation at PHCs (February – March 2019)

2.2. Activities Undertaken (Planned and Actual)

Good ≥80% accomplished Fair 50-80 % accomplished Poor <50% accomplished

Project Title: Project for Strengthening Pro-Poor Community Health Services in Lagos State

Output	Activity	Plan/ Actual	2014 II	2014 III	2014 IV	2015 I	2015 II	2015 III	2015 IV	2016 I	2016 II	2016 III	2016 IV	2017 I	2017 II	2017 III	2017 IV	2018 I	2018 II	2018 III	2018 IV	Achievements	
	Joint Coordination Committee	Plan																					Good
		Actual																					
1: Pro-poor community health model and its operation guide are developed and submitted for official approval by Lagos State Ministry of Health.																							
	1.1 Conduct, analyze, and share baseline assessment on geographical, demographic, economic, social, and health aspects in target communities	Plan																				Needs assessment in Eti-Osa completed in Dec 2014, Baseline survey in Eti-Osa in May 2015 and in Lagos Mainland in Apr 2017	Good
		Actual																					
	1.2 Integrate pro-poor community health components into the responsibility of the Core Technical Working Group on MNCH	Plan																				Sharing project progress in MNCH CTWG Meetings and Routine Immunization TG Meetings were periodically conducted.	Good
		Actual																					
	1.3 Jointly develop, pro-poor community health model, and operation guide and, if needed, revise them based on field-testing	Plan																				A conceptual model comprised of 6 interventions was developed and the interventions have been implemented. Existing operation guides were fully utilized or adapted. Manuals for Appointment reminder and defaulter tracing system and TBA referral and reporting were newly developed.	Fair
		Actual																					
	1.4 Support PHCB in monitoring and supervision.	Plan																				Supervision by PHCB or LGA health team on outreach, community health education, WHC action plan implementation, appointment reminder system and TBA referral and reporting were regularly supported.	Good
		Actual																					
2: Capacities of PHC Board, Local Government Health Teams and Ward Health Committees (WHCs) are strengthened to support target communities.																							
	2.1 Conduct capacity assessment for implementing project's activities effectively	Plan																				Capacity assessment was done in every training through pre- and post-tests.	Good
		Actual																					
	2.2 Conduct basic training on leadership, management, and governance according to the assessment results	Plan																				Leadership training was conducted in collaboration with Lagos State Public Service Staff Development Center (LSPSSDC).	Good
		Actual																					
	2.3 Regularly conduct consultative stakeholder meetings for pro-poor community health services among relevant organizations	Plan																				Meetings were conducted regularly or as needs arose with LSMOH, PHCB, LGA and partners.	Good
		Actual																					
	2.4 Conduct monitoring and evaluation (M&E) of capacities of Ward Health Committee (WHC)	Plan																				WHC capacities were monitored through community needs identification, action plan development and implementation process.	Good
		Actual																					
3: Primary health centers (PHCs) are functioning enough to provide pro-poor community health services through improvements of performance of community health officers (CHOs), community health extension workers (CHEWs), other PHC workers and Ward Health Committee members.																							
	3.1 Conduct and review performance and quality assessment for CHOs, CHEWs, other PHC workers and WHC members	Plan																				Performances of CHOs/CHEWs in outreach and TBA reporting, WHC/CORPs in community health education, PHC workers in Appointment Reminder Syetem Operation were regularly reviewed through meetings.	Good
		Actual																					
	3.2 Develop pro-poor community health training materials through reviewing and adopting the existing training materials	Plan																				Existing training materials were fully utilized or adapted. Training materials for Appointment reminder and defaulter tracing system and TBA referral and reporting were newly developed.	Good
		Actual																					



3.3 Conduct on-site trainings on community health services through supervision of outreach, defaulter tracing, community health education and TBA referral and reporting	Plan / Actual	On-site trainings were provided to health staff and volunteers during supervision by PHCB or LGA health team on outreach, community health education, WHC action plan implementation, appointment reminder system and TBA referral and reporting.	Good
3.4 Support implementing monthly hard-to-reach outreach activity	Plan / Actual	Monthly hard-to-reach outreach to 6 sites in Eti-Osa and 10 sites in Lagos Mainland were supported throughout the project period ecept the period of Sep - Nov 2017.	Good
3.5 Conduct monitoring, evaluation and supervision (ME&S) of PHCs' performance in outreach, defaulter tracing, health education and TBA referral and reporting	Plan / Actual	Performances of CHOs/CHEWs in outreach and TBA reporting, WHC/CORPs in community health education, PHC workers in Appointment Reminder Syetem Operation were regularly monitored and the results were shared in review meetings.	Good
3.6 Conduct trainings on community health for Ward Health Committee members	Plan / Actual	Trainings were periodically conducted for WHC members and health volunteers (CORPs) from the initial stage.	Good
3.7 Organize joint regular meetings between LGA Health Educators and WHCs to strengthen their linkage	Plan / Actual	Meetings were held even without financial support from the project.	Good
4: Populations in the model sites improve health seeking behaviors through health promotion activities at community level.			
4.1 Conduct situation analysis for the current status of health promotion	Plan / Actual	Needs assessment was conducted in Eti-Osa at the initial stage of the project.	Good
4.2 Open a strategic dialogue on community health between community leaders and stakeholders	Plan / Actual	Community dialogue meetings were held quarterly or biannually with or without financial support from the project.	Good
4.3 Create multiple communication channels at community level through CORPs, WHCs, TBA referral, SMS reminder and voice-call delivery	Plan / Actual	Multiple communication channels at community level through CORPs, WHCs, TBA referral, SMS reminder and voice-call delivery were created.	Good
4.4 Develop and conduct appointment reminder and defaulter tracing SMS and voice-call health message delivery for promoting community health services	Plan / Actual	Both systems were developed and SMS/Voice-messages were delivered with a lot of challenges.	Good
4.5 Conduct community sensitization, advocacy, and campaigns for community health services	Plan / Actual	Community sensitization, advocacy, and campaigns for community health services were conducted through community health education, community diaogue, immunization campaigns.	Good
5: Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are developed based on evidence generated by operation research.			
5.1 Develop research designs and protocols for approval by the authorities for research clearance	Plan / Actual	Research designs and protocols were developed in collaboration with LSMOH and PHCB and approved by the Health Research and Ethics Committee Office at Lagos State University Teaching Hospital.	Good
5.2 Conduct data collection and analysis through baseline and end-line surveys	Plan / Actual	Baseline data for Eti-Osa was collected in May 2015 and for Lagos Mainland in Feb 2017. End-line survey was conducted only in Lagos Mainland because baseline data in Eti-Osa was collected through snowball sampling and was not be appropriate for comparison. End-line sample was downsized due to financial constraint.	Good
5.3 Develop strategic options for the state-wide and/or nationwide scaling-up strategies in an evidence-based manner	Plan / Actual	Strategic options could not be developed due to limitted evidence genarated.	Poor
5.4 Conduct regular meetings, workshops and forums with Federal Government Authorities, State Government Authorities, Local Government Authorities, and Development Partners to share project achievements and lessons-learned.	Plan / Actual	Regular meetings were held to share project progress, acheivements and lessons leaned.	Good

2.3. Evidence Generation

2.3.1. Routine Data Collection

Routine data were monthly collected and analyzed through the following reports:

(a) Monthly outreach reports submitted by Local Immunization Officer (LIO);

(b) Daily registers/reports of community health education sessions monthly submitted by community health volunteers (CORPs);

(c) Monthly clients' record downloadable from the Appointment Reminder and Defaulter Tracing Monitoring Portal Web Site; and

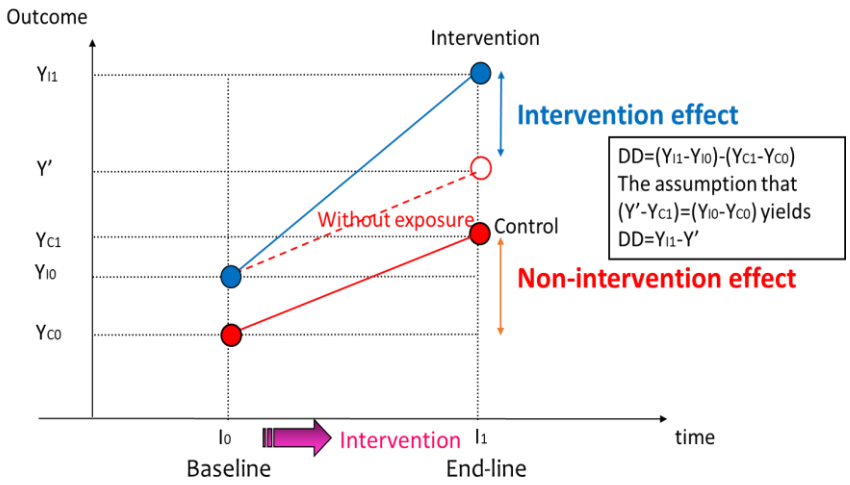
(d) Call-log of the voice-call recipients downloadable from the Voice-call Monitoring Portal Web Site.

2.3.2. Knowledge Test

A knowledge test was conducted without prior announcement in August 2018. The questions were composed in line with the contents of the flipchart that CORPs uses for their community health education, in consultation with the LSPHCB Director of Health Education, Local Government Health Teams of Eti-Osa and Lagos Mainland.

2.3.3. Data Collection through Surveys

Figure 1. Baseline and End-line Study Design



(a) A baseline survey targeting pregnant women conducted in Lagos Mainland in February – March 2017; and

(b) An end-line survey targeting the same women interviewed during the baseline survey conducted in Lagos Mainland in July – August 2018

2.3.4. Baseline and End-line Study Design

The study was designed as a difference-in-difference (DID) study. The same women interviewed in the baseline were traced for another follow-up interview to obtain data to compare the difference in key outcome variables between intervention and control groups (Figure 1).

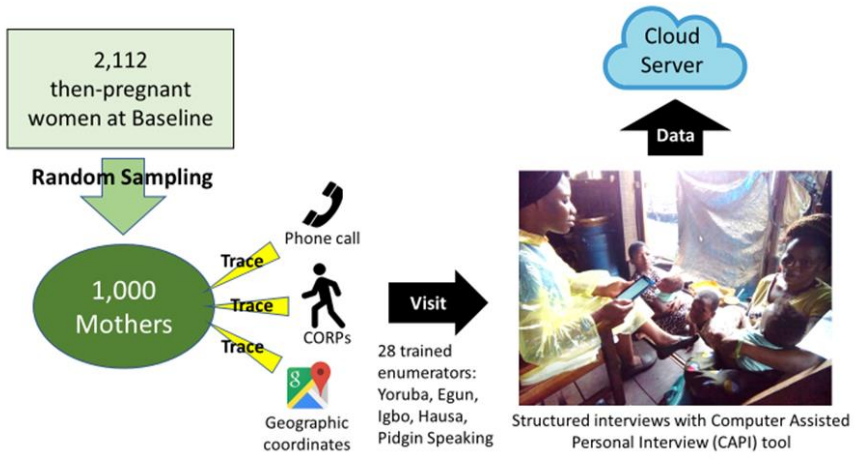
2.3.5. Baseline Data Collection

A baseline survey was conducted during February – March 2017 at the initiation of the project in Lagos Mainland and Yaba to set up baseline data for the project. A structured survey questionnaire was developed to assess pregnant women's knowledge, attitude, and health-seeking behaviors. The questionnaire was transformed into a computer-assisted personal interview (CAPI) tool. Two thousand five hundred two (2,502) then-pregnant women were listed from 861 enumeration areas of Lagos Mainland LGA for the baseline interview. A total number of valid and complete interviews were 2,112.

S/N	Description	Number	Remarks
A	Total pregnant women (PW) identified for the interview	2,502	
B	Total PW interviewed during the survey	2,115	B=A-C
C	Number of PW not interviewed and reasons: 1. Refused 2. Moved 3. Unreachable 4. Deceased 5. Delivered babies before the interview	 54 81 48 1 203	
D	Total number of valid interviews	2,112	Out of 2,115 PW interviewed, 3 were invalid: 2 women who claimed to be pregnant were found not to be during the interview; and 1 duplicate interview was found.

2.3.6. End-line Data Collection

Figure 2. End-line Data Collection Procedure



A follow-up survey was conducted in July – August 2018 in Lagos Mainland and Yaba to evaluate

the impact of the project interventions. Ideally, all women who completed baseline interview should have been traced and interviewed again; however, due to budget constraint, the sample size was reduced to 1,000 that was the minimum level, assuming that sample size ratio between intervention-exposure and non-exposure groups would range from 0.50 (minimum) to 1.5 (maximum). Thus, 1,000 women were randomly sampled through a systematic sampling from 2,112 then-pregnant women who completed the baseline interview. A structured questionnaire was developed through adaptation and modification of the baseline questionnaire.

The following procedure was undertaken to trace the 1,000 women: 1) by telephone calls, 2) through community health volunteers (CORPs) residing in the respective communities and 3) by physical visits using geographic coordinates recorded at the time of the baseline survey. Enumerators were assigned to interviewees in consideration of the interviewees' ethnicity. The selected samples were not replaced in case of missing, absence, rejection, and death cases.

2.3.7. End-line Data Analysis

Generalized estimating equation (GEE) was employed to assess the impacts of the following key interventions of the project that directly deal with the community people; 1) Hard-to-reach outreach, 2) Community health education by CORPs, 3) Appointment reminder SMS delivery and 4) Voice-call message delivery. CORPs' residential information (Wards), CORPs' knowledge level and sex were also factored in the analysis.

Four outcome indicators were set to measure the impact of the interventions: 1) Number of antenatal care (ANC) visits during their pregnancy, 2) Delivery assisted by skilled birth attendants (SBA), 3) Immunization status of the children of the mothers, and 4) Their children's recent incidences of diarrhea or cough or fever.

2.4. Achievements

Evaluation criteria and color code used for achievements are as follows:

Good	Activity results have led to effect achievement, and the target has almost been achieved (≥80%).
Fair	Activity results have led to effect some level of achievement but were limited (≥50% and <80%).
Poor	Activity results have led to effect some level of achievement but were insufficient (< 50%) or have not led to effect any achievement.

2.4.1. Outputs and Indicators

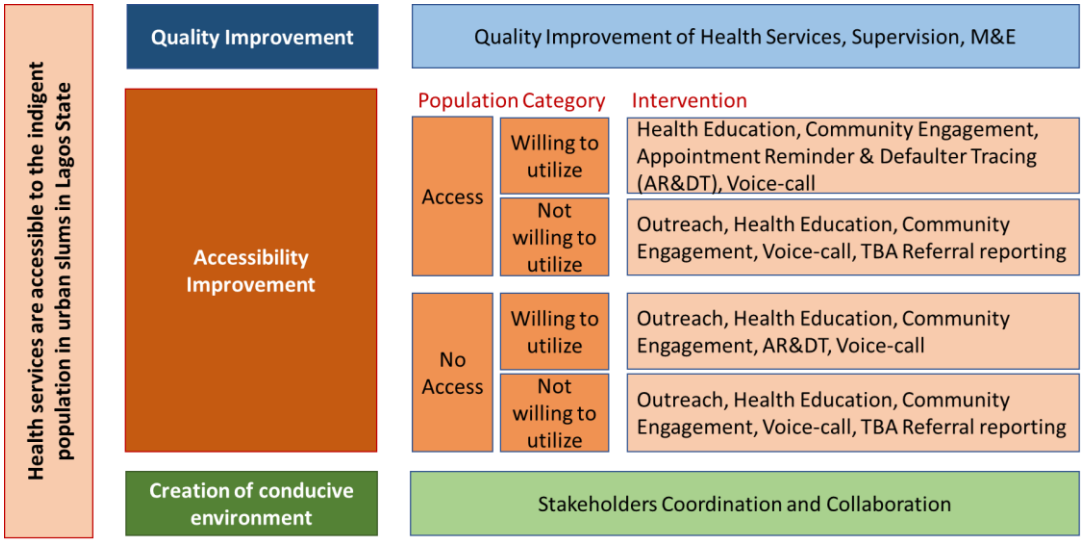
Output 1	Objectively Verifiable Indicator	Achievement
Pro-poor community health model and its operation guide are developed and submitted for official approval by Lagos State Ministry of Health.	1-1 Pro-poor community health model and its operation guides are readily available.	Fair
	1-2 75% of semi-annual monitoring reports are submitted to JICA (Oct 2014- Dec 2018)	Good 89% (8/9)

1) Pro-Poor Community Health Model (1-1)

Based on the results from a needs assessment conducted in Eti-Osa LGA at the initial stage of the project, a conceptual framework, namely "Pro-poor Community Health Model," was developed as shown in Figure 3. The model is for making health services accessible to the indignant population in urban slum communities in Lagos State. It is comprised of three pillars: 1) Accessibility Improvement, 2) Quality Improvement, and 3) Creation of Conducive Environment. Most of the project interventions fall under Pillar #1 that sets the target population into four categories, as follows:

a. "Willing to utilize with access to health services": People who have easy access to a health facility and willingness to utilize the health services at the facility;
b. "Not willing to utilize with access to health services": People who have easy access to a health facility but no willingness to utilize the services at the facility;
c. "Willing to utilize with no access to health services": People who have difficult access to a health facility but willingness to utilize the health services at the facility; and
d. "Not willing to utilize with no access to health services": People who have difficult access to a health facility and no willingness to utilize the services at the facility.

Figure 3. Pro-poor Community Health Conceptual Model

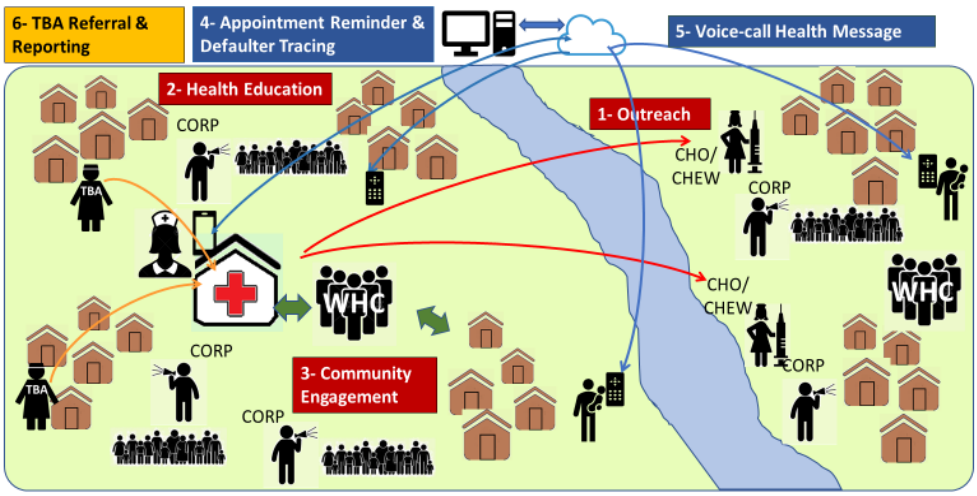


Based on the the three pillars described above, six key interventions are employed for this model:

i. Strategic Outreach (Hard-to-Reach Outreach) by health care providers
ii. Health Education by Community Resource Persons (CORPs) in Communities
iii. Community Engagement through Empowerment of Ward Health Committee (WHC)
iv. Automatic Appointment Reminder and Defaulter Tracing (AR&DT) System
v. Automatic Voice-call Message Delivery
vi. TBA Referral & Reporting

These six interventions are combined to fit for each target category as depicted in Figures 3 and 4.

Figure 4. Pro-poor Community Health Model Pictorial



2) Intervention Operation Guides (Indicator 1-1)

Existing operation guides/protocols were fully utilized as it is or adapted. New materials were developed in case there was none if necessary. The deliverables in detail are as follows:

No.	Intervention	Deliverables
1)	Strategic Outreach	・ Standard operating procedures (SOP): Existing and fully utilized. ・ Supervision checklist: Newly created
2)	Community Health Education	・ Flipchart: Existing and fully utilized ・ Training manual: Existing and fully utilized ・ Reporting formats: Existing materials adapted ・ Referral format: Existing material adapted ・ Supervision checklist: Newly created ・ Refresher training contents and slides: Newly created
3)	WHC Empowerment	・ Training manual: Existing and fully utilized and some contents added ・ Training slides: Newly created ・ Action plan format: Newly created ・ Action Plan Evaluation Criteria: Newly created ・ Procurement Guide: Newly created
4)	AR&DT	Version 1: ・ Mobile Application: Newly created ・ Web Dashboard: Newly created ・ SOP Poster: Newly created ・ Operating Manual: Newly created ・ Appointment Register: Newly created

		Version 2: ・ Mobile Application: Newly created ・ Web Portal Site for Admin: Newly created ・ Operating Manual for PHCs: Newly created ・ Operating Manual for System Admin: Newly created ・ Costing for expansion: Newly created
5)	Voice-call Message	・ Educational message text (English): Newly created ・ Translation in 5 local languages: Newly created ・ Audio recording files: Newly created ・ Automatic message delivery program: Newly developed
6)	TBA Referral and Reporting	・ Manual for TBA Reporting and Referral System: Newly created ・ Guidelines for TBA Referral and Reporting: Newly Created ・ Two-way referral slip: Adapted ・ Referral register: Adapted ・ Community-based Health Service Provider Tally Sheets (Pregnant Women and Delivery, Childhood Illnesses, HIV, Maternal and Child Mortality): Adapted ・ Community data aggregated register: Adapted ・ Community Monthly Summary Form: Adapted ・ Community Health Management Information System (CHMIS) database: Newly created

3) Semi-annual Monitoring Reports (Indicator 1-2)

The project encountered significant challenges at the initial stage. The original project site was Apapa that had to be changed due to security reason. Moreover, in July 2014, an EVD case was reported and the patient died in Lagos. Immediately, emergency operations were intensively undertaken, involving the major counterparts. This event compelled all project activities to be suspended for four months. Meanwhile, the project decided to repurpose some budget to support the emergency operations by developing and distributing IEC materials including flyers, posters and radio jingles. Considering the fact, October 2014 could be recognized as the actual initiation of the project. The project submitted eight reports, including this report and the total number of reports the project was supposed to submit was 9.

Output 2	Objectively Verifiable Indicator	Achievement
Capacities of PHC Board, Local Government Health Teams and Ward Health Committees (WHCs) are strengthened to support target communities.	2-1 Score of capacity assessment of WHC increases.	Good (28% increase)
	2-2 75% of TWG meetings specifically formed for the project implementation are conducted.	Good (100%)

1) WHC Capacity (Indicator 2-1)

WHC members, including its support members, were originally trained by Partnership for Transforming Health Systems 2 (PATHS2) Project and reoriented by JICA Pro-poor Community Health Project. The project provided practical opportunities to exercise their roles and responsibilities, i.e., community health needs identification, problem analysis, action plan development, action plan presentation (advocacy) and implementation. WHCs practiced two cycles of the process, and all the WHCs implemented their plans at least once. Their action plans implemented in the 1st round and the 2nd round are as described in Tables 1 and 2.

The quality of the action plans was assessed with 15 criteria in three dimensions as described in Table 3. The score of the second round was 28% higher than that of the first round. The quality significantly improved, as illustrated in Figure 5. The scores of the second round in orange triangle excel the 1st round in blue in all three dimensions.

Table 1. WHC Action Plan Implementation 1st Round (Amount shown in Nigerian Naira)

S/N	LGA	WARD	ACTION PLAN IMPLEMENTATION	Amount
1	Eti-Osa	Ajiran	Construction of Carport and Purchase of Plastic Chairs for PHC	250,000
2	Eti-Osa	Ikota	Renovation of Laboratory of PHC	250,000
3	L/Mainland	Aloba Desalu	Purchase of 5 Set of Air Port Chairs for PHC	250,000
4	L/Mainland	Araromi	Purchase of 4 Mattresses, 4 Bed Sheets, 4 Pillows, 4 Pillow Cases, 4 Plastic Tables and 1 Dozen of Plastic Chairs for PHC	250,000
5	L/Mainland	Botanical	Purchase of 3 OX Standing Fans for PHC	250,000
6	L/Mainland	Freeman Glover	Printing of 1000 Out-patient Cards, 1000 Patient Files, 1000 Appointment Cards and purchase of 1 Cabinet for PHC	250,000
7	L/Mainland	Iponri Olaleye	Construction of Borehole and Purchase of 1 Water Tank for PHC	250,000
8	Yaba	Abule-Ijesha	Installation of Water Tank and Reconstruction of Waterpipes for PHC	250,000
9	Yaba	Adekunle	Purchase of Airport Chair for PHC	250,000
10	Yaba	Aderupoko	Purchase of a Photocopy Machine, Printing of Patient Cards, Appointment Cards and Patient Files.	250,000
11	Yaba	Alagomeji	1000 Patient Files, 1000 Appointment Cards, File Tags and Continuation Sheets for PHC	250,000
12	Yaba	Salami/ Bayewunmi	Construction of Water Stand and Installation of 3000 liters Water Tank for PHC	250,000
Total				3,000,000

Table 2. WHC Action Plan Implementation 2nd Round (Amount shown in Nigerian Naira)

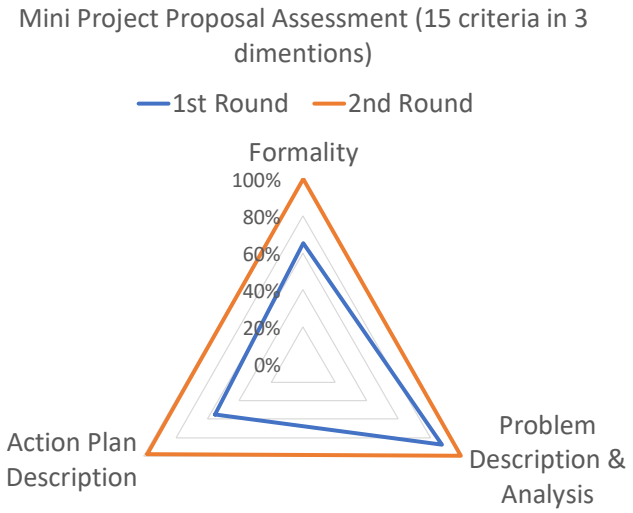
S/N	LGA	WARD	ACTION PLAN IMPLEMENTATION	Amount
1	Eti-Osa	Igbo Efon	Installation of a Generator and Purchase of a dozen of Chairs for each In Igbo PHC and Gbara HP	250,000
2	Eti-Osa	Ikate	Construction of a Water Tank Stand and a Roof for Generator for PHC	250,000
3	Eti-Osa	Orie Ilasan	Purchase and installation of fans and 3-phase prepaid NEPA meter	250,000
4	L/Mainland	Ojo-Oniyun	5 Sets of Airport Chairs for Ondo-West Phc	250,000
5	L/Mainland	Oko-Baba	Installation of 1 Air-Conditioner, 1 Stabilizer for The Air-Conditioner and 2 Standing Fans for PHC	250,000
6	L/Mainland	Otto	Installation of 1 Generator and Construction of a Generator House for PHC	360,000
7	L/Mainland	Oyingbo	Purchase of 5 sets of Airport Chairs for PHC.	245,000
8	Yaba	Abule-Oja	Purchase of Bed, Bed Sheets, Mackintosh, Table and Chair for PHC	250,000
9	Yaba	Aloba Desalu	Erection of a Sign Post for Abule-Nla PHC (3rd Runner Rup For The Second Presentation)	80,000
10	Yaba	Harvey	Erection of a Sign Post at three different places and Drawing on the PHC Wall.	250,000
11	Yaba	Makoko	Purchase of Cabinet, Printing of Patient Cards and Appointment Cards	250,000
12	Yaba	Onike/Oyadiran	Construction of Car Port at PHC for Caregivers and Patients	250,000
13	Yaba	Salami/ Bayewunmi	Installation of a Washing Machine and Wirings.(2nd Runner Up For The Second Presentation)	100,000
Total				3,035,000

Note: The wards highlighted in blue were the best three wards in the second round selected for an additional award.

Table 3. Evaluation criteria and improvements in scores

Dimension	S/N	Evaluation Criteria	1st Round Ave. Score	2nd Round Ave. Score	T-test
Formality	1	The cover letter is attached.	1.95	3.00	p<0.01
	2	The project name is stated.			
	3	The project name is expressing the purpose of the project.			
Problem Analysis	4	The problem is stated.	5.23	5.95	p<0.01
	5	Who are affected by the problem is described.			
	6	How the problem identified is described.			
	7	Root causes of the problem are described.			
	8	The interventions proposed are relevant to the problem.			
	9	Potencial beneficiaries of the project are described.			
Action Plan	10	Action points described in the action plan are clear to substantiate the proposed intervention.	3.32	5.86	p<0.01
	11	Responsible person for each action point is described.			
	12	Timeline is set for each action point.			
	13	Expected outputs are stated.			
	14	How the output(s) can be maintained is stated.			
	15	Eestimated cost for the proposed intervention is stated with breakdown.			
Total Average Score			10.50	14.80	p<0.01

Figure 5. Score improvements in three dimensions



2) Technical Working Group (TWG) Meetings (Indicator 2-2)

The following TWGs were formed and had regular meetings to oversee the activities and provide technical guidance in the process.

No.	Intervention	Group Title	Frequency of activity	Members
1)	Strategic Outreach	Outreach Consultative Group	Monthly	LSPHCB (Medical Service, Community Service), Lagos Mainland and Eti-Osa LGA Health Teams (Medical Officers of Health, Local Immunization Officers, Apex CHOs and Apex CNOs)
2)	Community Health Education	Technical Working Group	Monthly	LSPHCB (Health Education), Lagos Mainland and Eti-Osa LGA Health Teams (Medical Officers of Health, Health Educators, Apex CHOs, Apex CNOs, and LIOs)
3)	WHC Empowerment	Technical Working Group		LSPHCB (Health Education), Lagos Mainland and Eti-Osa LGA Health Teams (Medical Officers of Health, Health Educators, Apex CHOs and Apex CNOs)
4)	AR&DT	Technical Working Group		LSPHCB (Planning Research and Statistics, Medical Services, Community Health, Medical Record, Nursing Services and Information Technology) and LSMOH (SA Liaison Officer, IT Head)
5)	Voice-call Message	Technical Working Group		LSPHCB (Health Education, Medical Services and Nursing Services)
6)	TBA Referral and Reporting	Technical Working Group		LSPHCB (M&E, Medical Services and Community Health), LSMOH (Planning Research and Statistics, Family Health), Lagos State Traditional Medicine Board (LSTMB), Lagos State College of Health Technology (LASCOHET), Lagos State AIDS Control Agency (LSACA), Lagos Mainland and Eti-Osa LGA Health Teams (Medical Officers of Health, Apex CHOs and M&E) and TBA Association Chairmen
7)	End-line Survey	Consultative Stakeholders Group		LSPHCB (Medical Services Community Health, Health Education, M&E), LSMOH (Planning Research and Statistics, Family Health, SA Liaison), Lagos Mainland and Eti-Osa LGA Medical Officers

Output 3	Objectively Verifiable Indicator	Achievement
Primary health centers (PHCs) are functioning enough to provide pro-poor community health services through improvements of the performance of community health officers (CHOs), community health extension workers (CHEWs), other PHC workers and Ward Health Committee members.	3-1 75% of Hard-to-Reach outreach sites are visited monthly.	Eti - Osa: 89% Lagos Mainland: 95%
	3-2 At 75% of PHCs, the number of defaulters decreases after SMS and phone-call tracing.	To be assessed one year after the completion of the Project*
	3-3 75% of monthly Ward CHMIS reports submitted to LSPHCB for the past three months (Jul – Sep 2018)	100%

*The assessment will be conducted one year after the Project completion as no data is available in the end of the Project.

1) Hard-to-Reach (HTR) Outreach (Indicator 3-1)

Outreach services have been provided as part of the standard routine immunization services in Lagos by Community Health Officers (CHOs), and Community Health Extension Workers (CHEWs) attached to Primary Healthcare Centers (PHCs) with or without support from partners. Every PHC is supposed to set up four outreach sites for monthly outreach services. The outreach workers then visit one site for the provision of routine immunization on every Wednesday. The project started to support two additional outreach visits per PHC in Eti-Osa in May 2015. The additional outreach took integrated approach including immunization for children and women, treatment of minor ailment, antenatal and postnatal care including IPT provision for pregnant women and BP check. The outreach workers in Eti-Osa were trained for the integrated service provision. The project provided some equipment for the integrated outreach service such as thermometer, stethoscope, BP machine and weighing machine to each PHC in Eti-Osa in 2016. The same approach was introduced to Lagos Mainland, and the integrated outreach started in August 2017. Since the approach is different from the routine immunization outreach, it was commonly called “JICA Outreach.” However, when the project reported the progress to the Director of Medical Services of LSPHCB at the end of August 2017, she pointed out that JICA should not create a parallel system and abide by the current state policy. A meeting was convened to create a common understanding among the implementors in September 2017 and agreed on the following points:

i. Monthly routine immunization outreach should be stringently conducted at four fixed sites by each health facility (Routine-4 Outreach), which is the current State standard, regardless of support from partners. There is no ‘JICA outreach.’ All outreaches are ‘State Outreach,’ and no parallel system shall be created;

ii. The standard operation based on the current policy on the routine immunization outreach shall be observed. In other words, outreach shall focus on the reduction of unimmunized children and the promotion of utilization of health facilities by referring clients;

iii. If any partners want to support integrated outreach services, special permission shall be obtained from the national level since it transcends the current national protocols/SOPs. Currently, nobody is allowed to take any commodities out of public health facilities except vaccines and cold chain equipment;

iv. Outreach sites should be scientifically determined with evidence. The sites should be monthly visited rigidly to avoid creating partially-immunized children. It is the mobilizers that move around and mobilize the mothers to make sure that their children fully immunized;

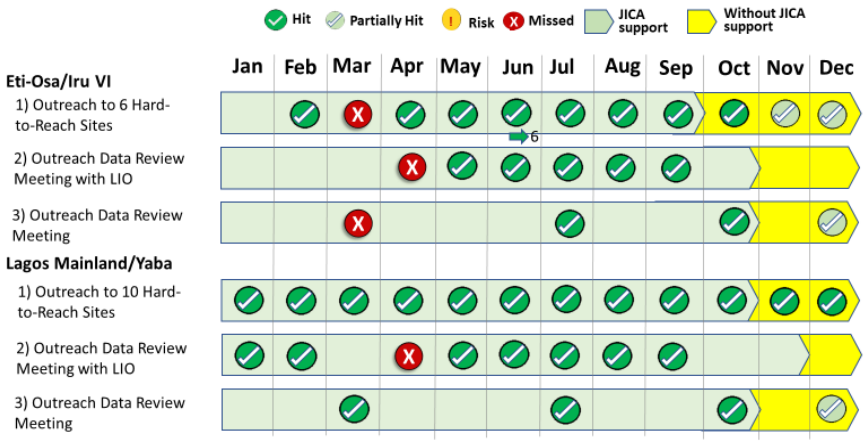
v. All immunizations administered must be adequately documented in the immunization register so that defaulters can be identified and traced; and

vi. If outreaches to hard-to-reach (HTR) settlements require extra support, LGAs shall address such needs to partners for their support through PHCB.

With the above agreement, Eti-Osa and Lagos Mainland were asked to submit a list of extra outreach sites requiring special transport arrangements with rationale (evidence). Therefore, the support for the outreach was suspended until the list was submitted to the project. Lagos Mainland submitted the list in November 2017 and Eti-Osa in Feb 2018. The project switched its intention from testing effectiveness of integrated outreach approach to demonstrating the cost-effectiveness of hard-to-reach outreach and resumed the support in Lagos Mainland from December 2017 and Eti-Osa from February 2018. The list of Lagos Mainland contained 10 HTR sites and Eti-Osa 5 sites. Eti-Osa added another site in June 2018.

Figure 6 illustrates the monthly performance. Eti-Osa Conducted HTR outreach to 39 site visits

Figure 6. Hard-to-Reach Outreach Performance



out of 44 expected (89%) for the period of February – October 2018. Lagos Mainland conducted 105 site visits out of 110 expected (95%).

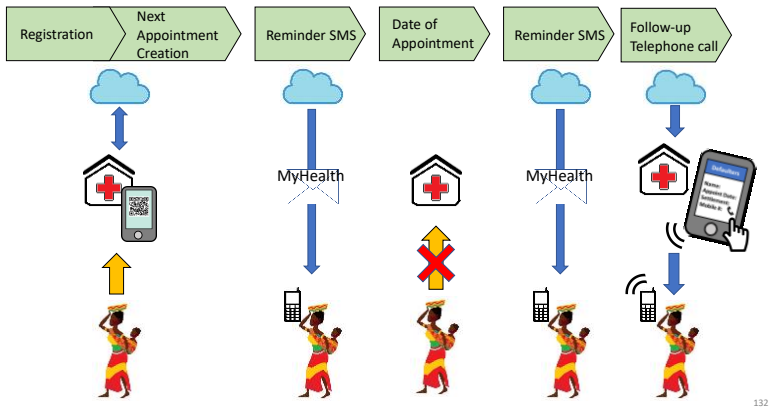
2) Appointment Reminder and Defaulter Tracing (Indicator 3-2)

Experience in Eti-Osa LGA revealed that defaulter tracing by phone calls was an effective intervention to have defaulters back for health services. The defaulters' return rate in the intervention group who received phone-calls from the health facility was 25 % higher than the control group. Based on this experience, the project took one step further to examine the effectiveness of appointment reminder SMS on clients' return for health services in Lagos State. A mobile application was developed for pilot testing to automatically send SMS messages to remind clients of their appointments and tracing defaulters. A Web dashboard and database was also created to monitor the progress and accumulate data for further analysis. One hundred (100) PHCs were selected across the state as a pilot phase, and their staffs were trained on the operating procedures. One smartphone with the mobile application and SIM cards preinstalled and appointment registers were distributed to each of the 100 PHCs.

The operation started in July 2017. Follow-up supervision visits were conducted to all 100 PHCs for their smooth initiation. Monitoring their performance also started on the WEB dashboard, and biweekly monitoring reports were issued and shared with LSPHCB and key stakeholders.

The major issue that the project encountered was low performances of majority of the PHCs because the operation at the PHC level required a lot of manual work. This resulted in defiance with the operating procedures due to lack of motivation, complicated operating procedures, additional workload, and lack of competency to deal with errors. Despite the project's efforts, the performance of PHCs did not improve. Appointments were created and uploaded to the server, but clients' and defaulters' returns were not confirmed in compliance with the operating procedures. Almost half of the appointments were not confirmed, and therefore, whether those clients returned or not remained unknown. The situation of confirmation of defaulters' return was seriously bad. The project could not have confidence in the available data at the server amenable enough to scientific analysis.

Figure 7. Renewed AR&DT System Operation Flow



Another issue revealed through the end-line survey was that clients were not aware of the reminder SMS and did not read it. Reminder SMSs were sent in the title of 'PHC Board,' which is not familiar to clients. Given the above, the project proposed a scrap-and-build of the system to JICA, LSMOH, and LSPHCB, and the proposal was accepted. The renewed system uses a QR code as a unique identifier of a client. Upon scanning a QR code, the client's return can be confirmed. There would be little chance of data loss at the mobile operation level. Prior announcement to clients on sending reminder SMSs at the time of appointment creation also was underscored. The sender title has been altered to 'MyHealth.' The system has been tested in January and February 2019 and introduced to 32 PHCs as of 20th March 2019. It is expected to accumulate data on clients' service utilization, return history and SMS delivery log, which can be further analyzed on the effectiveness of the appointment reminder SMS on reducing defaulters by the TWG of the Lagos State Ministry of Health.

3) Community Health Management Information System (CHMIS) Reporting (Indicator 3-3)

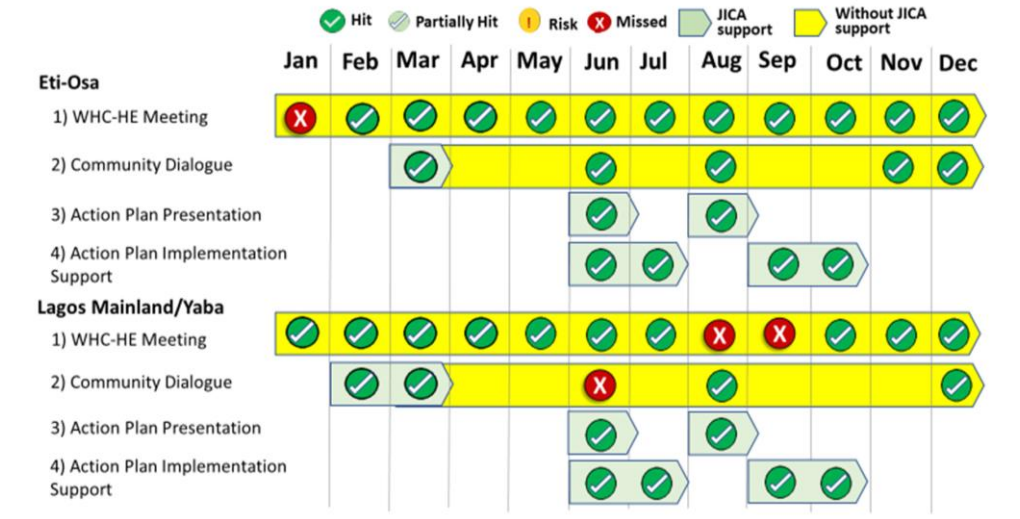
TBA reporting tools was once developed with the support from PATHS2 Project; however, not all relevant stakeholders were involved in the process, and thus official reporting path was not established. Therefore, the Project was requested to establish a standard referral and reporting system from TBA to LSPHCB. A technical working group (TWG) was formed to coordinate and oversee the development process and provide technical inputs at each stage of the development. TBA referral land reporting tools were drafted by adapting National CHMIS Tools that are being pretested in 2 states. These draft CHMIS tools were pre-tested in Eti-Osa and Lagos Mainland. Training of Trainers (TOT) and step-down training were held in May 2018 prior to the pre-testing exercise. Supervision and data validation meetings were monthly held from June to October 2018 to assess the usage of the draft reporting and referral tools and data quality. CHMIS Database software was also developed and installed at the M&E office of LSPHCB and M&E staff were trained on the database. During the period of July – September 2018, the submission rate of Monthly Ward CHMIS reports was 100%.

Output 4	Objectively Verifiable Indicator	Achievement
Populations in the model sites improve health-seeking behaviors through health promotion activities at the community level.	4-1 60% of WHC-LGA monthly meetings are conducted in the past 12 months (Jan - Dec 2018).	EO: 92% (11/12) LM: 83% (10/12)
	4-2 60% of community health volunteers (CORPs) submit monthly activity reports in the past 12 months.	100%
	4-3 75 % of quarterly community dialogue meetings are conducted. (Sep 2017- Aug 2018)	Eti - Osa: 40% (8/20) Lagos Mainland/YaBa:63% (45/72)
	4-4 Incidences of diarrhea, cough, and fever among the children of mothers in the intervention group are lower than the control group in the project area	The difference was detected in the incidence of cough.

1) WHC-LGA Monthly Meetings (Indicator 4-1)

Monthly meetings have been held between WHCs represented by WHC Chairmen and the Local Government Health Team represented by the Health educator (HE) even without support from the project as Figure 8 illustrates. During the period of 12 months from January to December

Figure 8. Implementation of WHC-LGA Meetings and Community Dialogue



2018, 11 (92%) were conducted in Eti-Osa, and 10 (83%) in Lagos Mainland.

2) CORPs' Monthly Activity Report Submission (4-2)

The actual implementation of CORPs' community health education activities started in January 2016 in Eti-Osa and in June 2017 in Lagos Mainland (including Yaba) and was supported by the project with the provision of transportation fee to CORPs until September 2018. They were encouraged to reach out at least ten caregivers in one health education session and conduct ten health education sessions in a month. Their transport fees were calculated based on the number of verifiable session reports. During the period of 12 months from September 2017 to August 2018, all (100%) CORPs submitted their monthly activity reports, although 3% of the reports submitted were not verifiable.

3) Community Dialogue Meetings (Indicator 4-3)

Conducting quarterly community dialogue meetings inviting community leaders and members is part of WHC's responsibility that should be carried out with or without support from external financial support. Community dialogue meetings serve as one of the critical opportunities for WHC members to identify and understand health needs in their community, which is the first step toward improvement. There are five wards in Eti-Osa and 18 in Lagos Mainland (including Yaba). The project supported 23 WHCs to provide small incentives to the participants until March 2018; however, the support was ceased in consideration of sustainability. The project kept on encouraging WHCs to continue the practice. During the period of 12 months from September 2017 to August 2018, eight meetings were held in Eti-Osa and 45 in Lagos Mainland. The expected number of meetings in 12 months were 20 and 72 in Eti-Osa and Lagos Mainland respectively if organized quarterly. Therefore, the achievements were 40% and 63% in Eti-Osa and Lagos Mainland respectively.

4) Incidences of Diarrhea, Cough, and Fever (Indicator 4-4)

In the End-line Survey, women were asked if their last child had any episodes of diarrhea or cough or fever in the past two weeks preceding the interview. Their responses were treated as binary data (Yes or No). 'Frequency of participation in Community Health Education conducted by health volunteers (CORPs) in their communities for the period of March – June 2018' is categorized into three: 1) No participation (0 times), 2) One to two times (1-2) and 3) Three and more (≥3). 'Frequency of participation in outreach during the period of April – June 2018' was also treated the same way. Although the Project intervention was hard-to-reach (HTR) outreach, the question was made to ask women about their participation in 'outreach' in general since they cannot differentiate outreaches. Therefore, their responses could refer to 'Routine-4 outreach' or 'Campaign outreach' as well that were not supported by the Project. 'Receipt of

voice messages' is binary data (Yes or No).

Odds of children having any episodes of diarrhea or cough or fever was calculated for each parameter category of the respective interventions. Then Odds Ratio (OR) was calculated for each exposure group (1-2 or ≥3 or Yes) over the non-exposure group (either 0 or No). Generalized Estimating Equation (GEE) analysis was applied to investigate if each odds ratio is statistically significant, controlling confounding factors such as women's age, wealth quintile, education, ethnic group, religion, marital status, number of under-five children at the time of baseline survey. Table 4 summarizes the analysis results.

All but one Odds Ratio (OR) do not indicate statistical significance with wide 95% confidence intervals. The OR of participation in community health education sessions more than three times indicates 0.39 with statistical significance (<0.05) and 95% confidence interval less than 1. It suggests that the probability of cough incidence during the reporting period is much lower than the group who participated in community health education less than three times.

Table 4. Effects of interventions on Child Illnesses (Diarrhea, Cough, and Fever)

Intervention			Outcome: Incidence of **Diarrhea**					Outcome: Incidence of **Cough**					Outcome: Incidence of **Fever**				
Category	Parameter		Odds Ratio	Std. Err.	z	P>|z|	95% C.I.	Odds Ratio	Std. Err.	z	P>|z|	95% C.I.	Odds Ratio	Std. Err.	z	P>|z|	95% C.I.
Community Health Education	Frequency of participation since March 2018	0	1.000					1.000					1.000				
		1-2	0.998	0.308	-0.07	0.942	0.527-1.814	1.202	0.279	0.79	0.429	0.762-1.895	1.052	0.328	0.16	0.872	0.570-1.940
		≥ 3	0.582	0.380	-0.83	0.407	0.162-2.094	0.393	0.184	-1.99	0.046	0.157-0.984	0.780	0.404	-0.48	0.632	0.283-2.155
		DK	1.394	0.643	0.72	0.471	0.565-3.440	0.740	0.295	-0.76	0.450	0.339-1.615	0.617	0.342	-0.87	0.383	0.208-1.826
Outreach	Frequency of participation in the last 3 months	0	1.000					1.000					1.000				
		1-2	1.320	0.538	0.68	0.495	0.594-2.935	0.894	0.289	-0.35	0.730	0.475-1.685	1.002	0.399	0.01	0.996	0.459-2.185
		≥ 3	0.683	0.321	-0.81	0.418	0.273-1.715	0.804	0.280	-0.63	0.531	0.406-1.591	1.377	0.580	0.76	0.446	0.603-3.144
		DK	0.855	0.339	-0.39	0.693	0.393-1.861	0.821	0.254	-0.64	0.525	0.448-1.506	0.644	0.248	-1.14	0.252	0.3031.369
Voice-call Message	Receipt of voice messages	No	1.000					1.000					1.000				
		Yes	1.522	0.456	1.40	0.160	0.847-2.237	1.079	0.257	0.32	0.748	0.677-1.721	1.552	0.471	1.45	0.147	0.856-2.811
		DK	1.068	0.427	0.16	0.870	0.487-2.339	1.438	0.411	1.27	0.203	0.822-2.517	0.908	0.391	-0.22	0.823	0.391-2.111

Output 5	Objectively Verifiable Indicator	Achievement
Strategic options*1 for nationwide and/or state-wide scaling-up pro-poor community health service systems are developed based on evidence generated by operation research.	5-1 Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are readily available.	Fair
	5-2 Dissemination meetings with federal and state governments and development partners are held at least twice a year.	Good

1) Availability of Strategic Options for Scaling-up (Indicator 5-1)

The indicator 5-1 is evaluated as FAIR as all of the six strategic options are available. The model is composed of 6 interventions, which were expected to demonstrate their effectiveness in providing "strategic options" to increase antenatal care frequency or number of deliveries conducted by skilled birth attendants (doctors or midwives or nurses) or fully vaccinated children with evidence to health planners to meet particular situations or needs of a local government or target populations. Table 5 summarizes the interventions, their level of effect on outcome indicators with the availability of evidence and the sustainability/scale-up status.

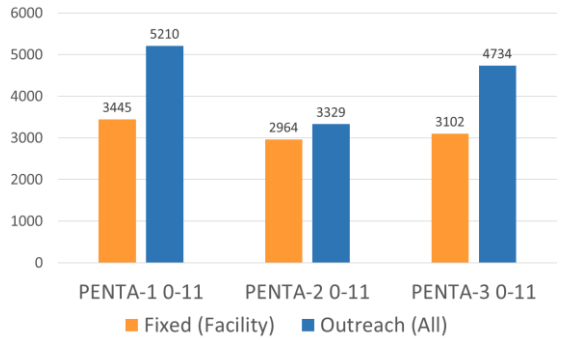
Table 5. Interventions, Level of Effect on Outcome Indicators, Availability of Evidence and Sustainability/Scale-up status

S/N	Intervention	Possible Beneficiaries	Outcome Indicator	Direct or Indirect Effect	Level of Effect Detected	Evidence for the effect	Sustainability/ State-wide Scale-up
1	Hard-to-Reach Outreach	Urban Slum (especially Riverine) Habitants	Fully vaccinated children TT vaccination for women	Direct	Good*1	Monthly Routine Immunization Reports	Sustained / Part of State Plan
2	Community Health Education by CORPs	Urban Slum / Rural Habitants	Facility-based ANC SBA Delivery Fully vaccinated children (Child Nutrition)	Direct	Poor Poor Fair*2	End-line and CORPs' Knowledge Test Records of Good Practice	Sustained by Project "Alive and Thrive"

			(Breastfeeding)				
3	WHC Empowerment	Urban/Rural Habitants	Facility-based ANC SBA Delivery Fully vaccinated children	Indirect	Unknown	None	Sustained and state-wide scale-up for Riverine Wards by UNICEF
4	Appointment Reminder and Defaulter Tracing	Urban/Rural Habitants	Facility-based ANC Fully vaccinated children Family Planning	Direct	To be detected	AR&DT Web Portal Database	On-going Efforts to sustain / Part of State Plan Scale-up
5	Voice-call Message	Urban/Rural Habitants	Facility-based ANC SBA Delivery Fully vaccinated children (Child Nutrition) (Breastfeeding)	Direct	Poor	End-line survey Voice-call Web Monitoring Dashboard	Voice messages for Radio Broadcasting could be repeatedly utilized state-wide
6	TBA Referral and Reporting	Urban/Rural Habitants	Fully vaccinated children Maternal Child morbidity and mortality	Indirect	Unknown	None	Sustained / Part of State Plan

*1- Effectiveness of Hard-to-Reach Outreach was demonstrated by the project. Evidence was generated from the monthly outreach reports submitted by Lagos Mainland for the period of 6 months from January to June 2018. Figure 9 shows that outreach services, including both Routine-4 and HTR, captured a higher number of children for PENTA 1 to 3 than facility-based vaccination service. Routine-4 outreach is the state-standard outreach whereby every PHC has to set up four fixed outreach sites, pay a visit to each site to conduct outreach vaccination services. HTR sites are extra outreach sites that are not included in Routine-4 because of special

Figure 9. Facility-based versus outreach vaccination services



transport arrangements required. Figures 10 and 11 show the comparison between Routine-4 and HTR outreaches. HTR outweighed Routine-4 outreaches in capturing children for PENTA 1 to 3. HTR outreach is, in fact, far more efficient in capturing under-1 children and women for tetanus vaccination than Routine-4 in an outreach session.

Table 6 shows how cost-effective the

Figure 10. HTR versus Routine-4 outreach vaccination services

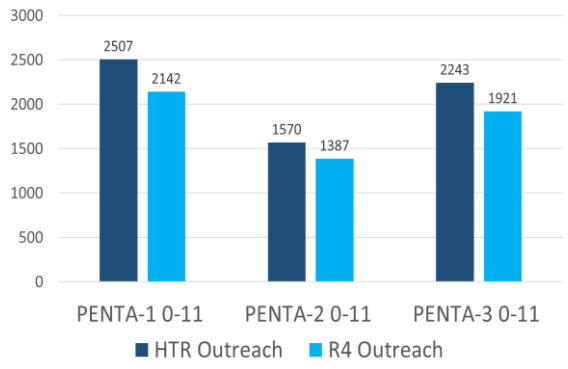


Figure 11. Performance of HTR outreach and Routine-4 outreach

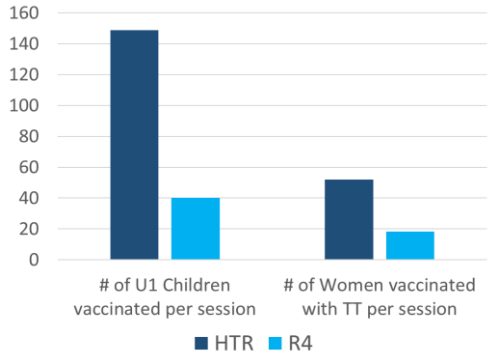


Table 6. Cost per child vaccinated through HTR outreach by sites

HTR Settlement	OPV-0	OPV-1	OPV-2	OPV-3	Measles	Cumulative # of children vaccinated	Transport support provided (NGN)	Cost Incurred per Child (NGN)
22 Oloto Street	0	55	47	70	44	216	24,000	111.11
Better Life Market	73	146	103	124	102	548	24,000	43.8
Destitute Home Okobaba	2	29	31	34	28	124	20,000	161.29
Makoko Water Front	380	644	451	591	370	2436	84,000	34.48
Mininga Clinic	106	323	204	239	96	968	84,000	86.78
Odo-Ogbe	3	49	46	53	25	176	24,000	136.36
Oko-Agbon Water Front	201	429	246	388	200	1464	84,000	57.38
Otumara Illaje	2	51	35	42	34	164	24,000	146.34
Pedro1/2	162	367	188	325	139	1181	84,000	71.13
Sogunro1/2 Cele Church	275	414	219	377	226	1511	84,000	55.59

Riverine sites

outreach to riverine sites is in capturing under1 children for vaccination. Unfortunately, the model could not offer strategic options of interventions due to lack of evidence.

2) Dissemination meetings with federal and state governments and development partners (Indicator 5-2)

The indicator 5-1 is evaluated as good. Joint Coordinating Committee (JCC) meetings were held at least twice a year as scheduled for the past three years. Several additional meetings with the federal government were also occasionally held to share the project progress and achievements.

2.3.2. Project Purpose and Indicators

Project Purpose: Pro-poor health services system is established and strengthened using standardized models.

Indicators described in the PDM	Remarks(Specifications of indicators)*	Status
1. Pro-poor community health model and its operation guide are in the official approval process for their state-wide scale-up.	Availability of Pro-poor Community Health Model and its Operation Guide for state-wide scale-up	Fair
2. Full vaccination coverage among children under one-year increases.	Difference between the intervention-exposed and the non-exposed groups on the percentage of women age 15-49 who had a live birth in the past one year and whose child immunized in accordance with the routine immunization schedule	Fair
3. The proportion of pregnant women who utilize ANC and SBA increases.	Difference between the intervention-exposed and the non-exposed groups on the percentage of women age 15-49 who had a live birth in the past one year and attended antenatal care more than four times during her recent pregnancy	No difference demonstrated
	Difference between the intervention-exposed and the non-exposed groups on the percentage of women age 15-49 who had a live birth attended by a skilled birth attendant in the past one year	No difference demonstrated

**The indicator is measured using the specifications as described.*

1) Pro-poor Community Health Model and its Operation Guide for state-wide scale-up (Indicator 1)

As already described, the model was developed, and its operation guides are available, some existing and others newly developed. The indicator 1 is evaluated as FAIR and achievements could be summarized as follows:

i. The existing outreach protocol was utilized. Cost-effectiveness of Hard-to-Reach outreach, especially to riverine highly populated areas was demonstrated with evidence. The state is trying to allocate funds for special transport arrangements as part of the routine immunization activities.
ii. Community health education by CORPs was promoted with the existing operation manual. The activity has been taken up and sustained in Lagos Mainland by another project called “Alive and Thrive” supported by FHI360, Save the Children and Bill & Melinda Gates Foundation after the JICA project ended.
iii. WHC training slides were developed by adding practical components on problem identification and analysis, action plan development and advocacy to the existing manual created by PATHS2 Project. The slides are being used for WHC refresher training for riverine wards in Lagos supported by UNICEF since January 2019.
iv. Two operating manuals for Appointment Reminder and Defaulter Tracing System have been developed and approved by LSPHCB with the signature of the Permanent Secretary. LSPHCB has taken up the intervention as a state-owned project, although the budget for sustaining it has not been allocated yet.
v. An operating manual for TBA Referral and Reporting system have been developed and approved by the state for state-wide expansion.

2) Full vaccination coverage among children under one-year children (Indicator 2)

The indicator 2 is evaluated as FAIR. The evaluation was done based on the three analysis and results described below:

i. Percentage difference in the routine immunization between the intervention and control groups of children who were born to 15-49 aged women
ii. Relationship between the CORP’s knowledge and the probability of immunization status among the children living in the same settlement
iii. Transition of number of unvaccinated children in Lagos Mainland between January 2016 to September 2018

i. Percentage Difference in the routine immunization between the intervention and control groups of children who were born to 15-49 aged women

The difference between the intervention and the control groups was investigated on the

Table 7. Effects of interventions on Child Vaccination

Frame work	Intervention			Outcome: Vaccination				
	Category	Parameter		Odds Ratio	Std. Err.	z	P>|z|	95% CI
F	Community Health Education	Frequency of participation since March 2018	0	1.000				
			1-2	0.804	0.237	-0.74	0.460	0.452-1.433
			≥ 3	0.936	0.457	-0.14	0.829	0.359-2.439
			DK	0.738	0.386	-0.58	0.561	0.064-2.059
G	Appointment Reminder	Receipt of reminder SMS	No	1.000				
			Yes	2.584	2.072	1.18	0.236	0.537-12.445
			DK	0.609	0.159	-1.90	0.058	0.365-1.017
H	Outreach	Frequency of participation in the last 3 months	0	1.000				
			1-2	1.505	0.610	1.01	0.312	0.681-3.329
			≥ 3	1.606	0.687	1.11	0.268	0.694-3.715
			DK	1.678	0.646	1.34	0.179	0.789-3.568
I	Voice-call Message	Receipt of voice messages	No	1.000				
			Yes	1.087	0.340	0.27	0.791	0.588-2.006
			DK	0.772	0.292	-0.69	0.493	0.368-1.618

percentage of routine immunization among children born to women aged 15-49 and who had a live birth in the past one year. In the end-line survey, women were asked if they have immunization record of the child delivered after Feb 2017. The date of each vaccination was transcribed if the record is available. If not, the vaccination record is assessed based on women recall. 'Fully vaccinated children' is defined as children who received all necessary vaccinations at their age. The information was treated as binary data. Of 698 children alive at the time of the interview, 656 children's immunization data were obtained. Of those, 529 (81%) were fully vaccinated. Odds ratio (OR) of children fully vaccinated was calculated for each parameter. Generalized Estimating Equation (GEE) analysis was applied to estimate statistical significance and 95% confidence Interval, controlling confounding factors such as women's age, wealth quintile, education, ethnic group, religion, marital status, number of under-five children at the time of baseline survey. Table 7 summarizes the analysis results.

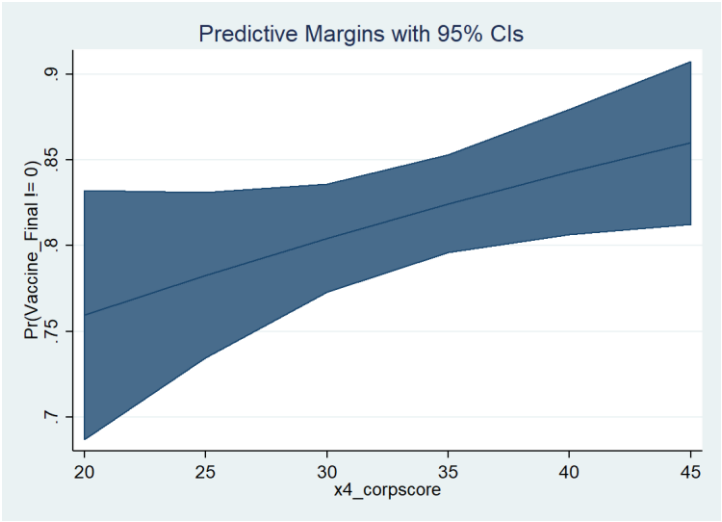
Both ORs of 1-2 and ≥3 times participation in Community Health Education indicate less than 1.0; however, they are not significant, and 95% confidence intervals are too wide to indicate any influence on child vaccination.

The OR of appointment-reminder-SMS recipients indicates 2.6 times higher outcome than non-recipients, which is, however, not statistically significant, and the 95% confidence interval is too wide to indicate any influence on child vaccination. Both ORs of 1-2 and ≥3 times participation in Outreach indicate more than 1.5; however, its significance and 95% confidence interval does not suggest any influence on child vaccination. The OR of Voice-call message recipients indicates 1.1 with no significance and wide 95% confidence interval.

ii. Relationship between the CORP's knowledge and the probability of immunization status among the children living in the same settlement

Effects of the CORPs' knowledge level on the children's immunization status were investigated. Figure 12 illustrates the relationship between the probability of children fully vaccinated and test scores of CORPs who reside in the same settlement of the mothers of the children. The result suggests that children of the mothers who reside in the same settlement of a CORP whose knowledge test score is high are likely to be fully immunized than children of mothers who reside in the same settlement of another CORP whose score is low. The following potential confounding factors were controlled in the analysis: i) mothers' age, ii) household wealth level, iii) education level, iv) ethnic group, v) religion, vi) marital status, vii) possession of health insurance, viii) number of children under five in the household at the time of baseline and ix) sex of CORPs. Note that other factors such as specific events, influential community leaders in a particular ward were not taken into consideration, which could be possible other confounding factors.

Figure 12. Relationship between probability of children fully vaccinated and test scores of CORPs who reside in the same settlement of the children (mothers of the children)



iii. Transition of number of unvaccinated children in Lagos Mainland between January 2016 to September 2018

The number of unvaccinated children was investigated with the data derived from the routine immunization reports submitted by Lagos Mainland to LAPHCB from January 2016 to September 2018.

The target number of under 1-year children for Lagos Mainland is given on a yearly base, and the monthly target is calculated simply by dividing the annual target by 12: The monthly target for the year 2016 was 1451, 1498 for 2017 and 1546 for 2018. The annual targets were federally

projected based on the Census 2006 Data and given to each local government at the beginning of a year. Figure 13 illustrates the transition of the number of unvaccinated children.

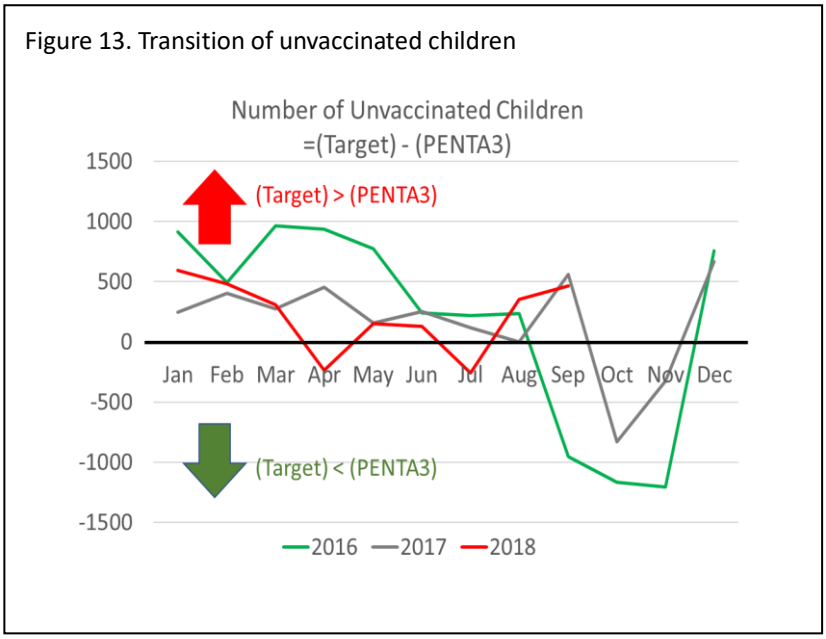
The number of unvaccinated children is likely to have decreased as those of 2017 (gray) and 2018 (red) are close to zero comparing that of 2016 (green).

The following formula is usually used to calculate a proxy for the number of unvaccinated children:

(Number of unvaccinated children) = (Monthly target) – (Number of children vaccinated for PENTA3 in a month)

If a positive number comes up, it merely means that PENTA3 targets were not met in the month while a negative number means that the vaccinated children outnumbered the target in the month. When it is zero, the target is precisely met. Ideally, the monthly target should be nearly met, and the number of unvaccinated children should not deviate too far from zero.

Figure 13. Transition of unvaccinated children



3) Pregnant women who utilize ANC (Indicator 3)

'Frequency of participation in Community Health Education conducted by health volunteers in their communities for the period of March – June 2018' was categorized into three: 1) No participation (0 times), 2) One to two times (1-2) and 3) Three and more (≥3). 'Receipt of appointment reminder SMS' is a binary data (Yes or No). 'Frequency of participation in Outreach' during the period of April – June 2018 is categorized into three: 1) None (0 times), 2) One to two (1-2) and 3) Three and above. 'Frequency of ANC that women received' is categorized into two: 1) less than four times (ANC<4) and 2) four and above (ANC≥4).

Women who delivered before the initiation of the Community Health Education intervention in June 2017 were counted as 'No participation (0)' regardless of their response. Pearson Chi-square test result suggests that there is no difference in ANC outcome among the groups of

participation frequency.

Likewise, women delivered before the initiation of the Appointment Reminder in July 2017 were counted as 'No SMS receipt.' As a result, the number of women who received reminder SMSs turned out to be very small. Pearson Chi-square test suggests that there is no difference in ANC outcome among the groups of appointment reminder receipt.

Table 8. Effects of interventions on ANC frequency

	Intervention			ANC Frequency		Total	Pearson Chi2 Test P
	Category	Parameter		ANC<4	ANC ≥4		
A	Community Health Education	Frequency of participation since March 2018	0	49	306	355	0.778
			1-2	6	30	36	
			≥ 3	2	8	10	
		Total		57	344	401	
B	Appointment Reminder	Receipt of reminder SMS	Yes	1	3	4	0.490
			No	41	270	311	
		Total		42	273	315	
C	Outreach	Frequency of participation in the last 3 months	0	40	231	271	0.502
			1-2	2	14	16	
			≥ 3	3	8	11	
		Total		45	253	298	

Participation in outreach services was also treated in the same way. Women delivered before the initiation of Outreach supported by the Project in August 2017 were counted as 'No participation (0)'. Pearson Chi-square test suggests that there is no difference in ANC outcome among the groups of outreach participation frequency.

4) Pregnant women who delivered with the assistance of SBA (Indicator 3)

Deliveries attended by a doctor or a nurse or a midwife with or without other health cadres were considered as 'SBA Delivery' while other deliveries were considered as 'Non-SBA delivery.' Thereafter, the information was treated as binary data (SBA = Yes or No). Women who delivered before the initiation of the Community Health Education intervention in June 2017 were counted as 'No participation (0)' in the Community Health Education regardless of their response. As a result, the numbers in the participation groups became very small.

Table 9. Effects of interventions on SBA delivery

Frame work	Intervention			SBA Delivery		Total	Pearson Chi2 Test P
	Category	Parameter		Yes	No		
D	Community Health Education	Frequency of participation since March 2018	0	430	115	545	0.879
			1-2	39	12	51	
			≥ 3	9	3	12	
		Total		478	130	608	
E	Outreach	Frequency of participation in the last 3 months	0	287	84	371	0.097
			1-2	21	4	25	
			≥ 3	7	6	13	
		Total		315	94		

Pearson Chi-square test was applied to investigate the effects of two interventions on SBA delivery: Community Health Education and Outreach. However, due to the small numbers in the participation groups, the test result could not suggest any difference in SBA delivery outcome among the groups of health education participation. Participation in outreach services also was treated in the same way. Women

delivered before the initiation of 'Outreach' supported by the Project in August 2017 were counted as 'No participation (0)'. Pearson Chi-square test could not suggest that there is any difference in SBA Delivery outcome among the groups the outreach participation frequency.

2.5. History of PDM Modification

The modified PDM was presented at the 6th JCC meeting held in December 2018 and confirmed by the JCC members. Major reasons for the modifications were:

1) The original PDM had obscure expressions that posed difficulties in the measurement of the project purpose and outputs with available data;
2) The amendment, which had been agreed previously on the M/D for the amendment of R/D such as the expansion of the project in November 2016, had not been reflected in the PDM.
3) The resolutions made on the overall goal and project purpose during the 3rd JCC meeting held in May 2017 had not been incorporated in the PDM;
4) The planned activities listed at the initial stage of the project in 2014 did not reflect the dynamic changes of the project.

Level	Category	PDM 1 (Original)	PDM 2 (Modified and Confirmed on 11th Dec 2018)	Reasons
Project Period		2014/05/20 ~ 2018/05/19	2014/05/20 ~ 2019/3/31	The project period was extended twice: first in May 2017 and second in Dec 2018
Project Site		Eti-Osa LG	Eti-Osa, Lagos Mainland	The project area was expanded to Lagos Mainland in Dec 2016
Overall Goal	Narrative Description	Equitable, affordable, accessible, and essential health services*1 for indigent population in target communities*2 are improved. *1-Essential health services refer to maternal and child health services. *2-Target communities	Equitable, affordable, and accessible maternal and child health services for the population in urban slum communities in Lagos State are improved.	To make the statement concise and clear

		are defined as urban slum communities in Nigeria.		
	Objectively Verifiable Indicator (OVI)	・ Full vaccination coverage among children increases in urban slum communities in Nigeria. ・ The proportion of delivery assisted by SBAs and trained TBAs increases in urban slum communities in Nigeria.	Coverage of maternal and child health services (ANC, PNC, Immunizations, and SBA) among the population in urban slums are increased.	Exclusion of trained TBAs from the statement was discussed based on the evidence generated by the project, and the modification was agreed in the 3rd JCC Meeting.
Level	**Category**	**PDM 1 (Original)**	**PDM 2 (Modified and Confirmed on 11th Dec 2018)**	**Reasons**
Purpose	Narrative Description	Pro-poor health service systems are established and strengthened for sustenance using standardized models.	Pro-poor health services system is established and strengthened using standardized models.	To clarify the statement
	OVIs	Pro-poor community health package and its operation guide are in the official approval process for their statewide scale-up.	Pro-poor community health model and its operation guide are in the official approval process for their state-wide scale-up.	To consistently use “Pro-poor community health model” throughout the PDM
		Full vaccination coverage among children increases.	Full vaccination coverage among children under one-year increases.	To specify the target
		The proportion of delivery assisted by SBAs and trained TBAs increases.	The proportion of pregnant women who utilize ANC and SBA increases.	To reflect the agreement on TBAs
Output 1	Narrative Description	Pro-poor community health package and its operation guide are developed, endorsed	Pro-poor community health model and its operation guide are developed and	To consistently use “Pro-poor community health model” throughout

		and utilized by Lagos State Ministry of Health.	submitted for official approval by Lagos State Ministry of Health.	the PDM To make the indicator more realistic
	OVIs	Pro-poor community health package and its operation guide are readily available.	Pro-poor community health model and its operation guide are readily available.	To consistently use "Pro-poor community health model" throughout the PDM
		75% of quarterly (quarterly) monitoring reports are submitted to PHCB.	75% of semi-annual monitoring reports are submitted to JICA (Jan 2015 - Dec 2018)	To make the indicator more realistic
Output 2	Narrative Description	Capacities of PHC Board, PHC Department, and Ward Health Committee (WHC) are strengthened to support target communities.	Capacities of PHC Board, Local Government Health Teams and Ward Health Committees (WHCs) are strengthened to support target communities.	To make the statement with correct expression
	OVIs	Scores of capacity assessment*[3] increase. *3- Score of capacity assessment is measured by 1) Leadership capacity among LSMOH, PHCB and LGA health authorities (Pre, Post and after training), 2) Motivation (Willingness) and health knowledge among WHC and support group and 3) Community dialogue meeting initiated by WHC is	A score of capacity assessment of WHC increases.	Leadership capacity seems measured for individual participants of the leadership and management training held in June 2015 through pre- and post-tests. However, records are not available, and the project did not conduct any follow-up assessment after

		organized quarterly.		the training.
		75% of regular stakeholder meetings are conducted.	75% of TWG meetings specifically formed for the project implementation are conducted.	To specify the statement
Output 3	Narrative Description	Primary health centers (PHCs) are functioning enough to provide pro-poor community health services through improvements of the performance of community health officers (CHOs), community health extension workers (CHEWs), other PHC workers and Ward Health Committee members.	Primary health centers (PHCs) are functioning enough to provide pro-poor community health services through improvements of the performance of community health officers (CHOs), community health extension workers (CHEWs), other PHC workers and Ward Health Committee members.	No change
	OVIs	75% of PHCs conduct outreach activities at least twice a month.	75% of Hard-to-Reach outreach sites are visited monthly.	The project had to abide by the state policy and changed its outreach approach as described on page 23.
		At 75% of PHCs, the number of defaulters after phone-call tracing decreases.	At 75% of PHCs, the number of defaulters after SMS and phone-call tracing decreases.	No change
		The number of enrolled clients for ANC, PNC and child welfare care increase.	75% of monthly Ward CHMIS reports submitted to LSPHCB for the past three months	To include TBA referral and reporting in the PDM

Output 4	Narrative Description	Populations in the model sites improve health-seeking behaviors through health promotion activities at the community level.	Populations in the model sites improve health-seeking behaviors through health promotion activities at the community level.	No change
	OVIs	60% of WHC / support group members (CORPS) submit report monthly.	60% of WHC-LGA monthly meetings are conducted in the past 12 months 60% of community health volunteers (CORPs) submit monthly activity reports in the past 12 months	To split the indicator into two since WHC members are not equal to CORPs.
		75 % of communities conduct quarterly dialogue meetings.	75 % of quarterly community dialogue meetings are conducted.	To make the indicator more precise
		The proportion of households with appropriate health-seeking behaviors on childhood diarrhea increases.	Incidences of diarrhea, cough, and fever among the children of mothers in the intervention group are lower than the control group in the project area.	To make the indicator easily measurable through individual interviews
Output 5	Narrative Description	Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are developed based on evidence generated by operation research.	Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service system are developed based on evidence generated by operation research.	's' was removed.

	OVIs	Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are readily available.	Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are readily available.	No change
		Dissemination meetings with federal and state governments and development partners are held at least twice a year.	Dissemination meetings with federal and state governments and development partners are held at least twice a year.	No change

2.6. Others

2.5.1. Results of Environmental and Social Considerations

Not applicable

2.5.2. Results of Considerations on Gender/Peace Building/Poverty Reduction

The project focused on improving the accessibility of primary health care services for urban slum populations. Accessibility means not only physical but also psychological accessibility. Inclusive and participatory approaches that the project has taken at the community level were to ensure equitable access to primary health care. It is expected to lead to the improvement of health systems, which will bring about the improvement of the health status of community people. Ultimately, it will contribute to poverty reduction.

3 Results of Joint Review

3.1. Results of Review based on DAC Evaluation Criteria

Development Assistance Committee (DAC) under OECD uses five criteria to evaluate projects: 1) Relevance, 2) Effectiveness, 3) Efficiency, 4) Impact and 5) Sustainability. The definition of each criterion is as follows:

1)	Relevance	A criterion for considering the validity and necessity of a project by examining the extent to which the project is appropriate to implement. It is referred to the validity of the project purpose and

		overall goal in compliance with development policies of the government of the partner country, Japanese policies as well as the needs of the target group.
2)	Effectiveness	A criterion for considering whether the implementation of the project has benefited (or will benefit) the intended target group. It is referred to if the expected benefits of the project have been achieved as planned and if the benefit is brought about as a result of the project (not of the external factors).
3)	Efficiency	A criterion for considering how economic resources/inputs are converted to results. It is referred to as the productivity of the implementation process and examined if the inputs of the project were efficiently converted into the outputs.
4)	Impact	A criterion for considering the effects of the project on the longer-term effects including direct or indirect, positive or negative, intended or unintended effects caused by implementing the project.
5)	Sustainability	A criterion for considering whether produced effects continue after the termination of the assistance. In other words, it is referred to the extent that the project can be further developed by the recipient country and the benefits generated by the project can be sustained under the recipient country's policies, technology, systems, and financial status.

The project has been reviewed based on the above criteria.

3.1.1. Relevance

Overall relevance is **GOOD** due to the following reasons:

(1) Consistency with the national and the state development policies

In Nigeria, health improvement, especially in the area of maternal and child health (MCH), is positioned as the most critical area in the National Economic and Empowerment Strategy. Revitalization of Primary Health Centers (PHCs) is a key policy included in legal and policy frameworks: the National Health Act 2014; National Health Policy (NHP) 2016 and Health Financing Policy and Strategy 2017. The 1st and 2nd National Strategic Health Development Plans (NSHDP 2010-2015 and NSHDP II 2017-2019) are to operationalize the legal and policy frameworks. Moreover, the government established the Basic Healthcare Provision Fund (BHCPF) to finance and manage the implementation of PHC revitalization as a means for achieving Universal Health Coverage (UHC).

In Lagos State, the revitalization of Primary Health Centers (PHCs) is one of the policies to

improve the health status at the community level. According to the policy, delivery of health services at the community level is being enhanced by establishing comprehensive PHCs that operate 24/7, recruiting additional doctors, midwives, nurses, Community Health Officers (CHOs) and Community Health Extension Workers (CHEWs) and so forth.

(2) Consistency with the development needs

Due to the rapid increase of the population in Lagos, capital investments for public services including health sector have not kept up with the demand. As a result, the number of people living in slum areas has been increasing, where basic services including health and education, adequate infrastructures, safe drinking water, sanitary environment, and electricity are lacking. With an estimated population of 21 million, only about 300 PHCs are responsible for providing primary health care services at the community level. Even though Lagos State Government has been taking the strong initiative to revitalize primary health care at the community level, the burden of challenges, such as shortage of health professionals and limited budget, have heavily weighed on appropriate service coverage and delivery.

Besides strengthening supply-side, demands from communities to utilize primary health care services are essential to increase the health care coverage. The coverage at the community level is still limited due to geographical, psychological, financial, social, religious and traditional factors, particularly among the indigent population living in urban slum areas. Therefore, it is noteworthy that disproportionate disease burdens exist among the poor who have limited access to health services

Given the context above and to support the policy to revitalize primary health care, a comprehensive approach was crucial.

(3) Consistency with the Japanese policy

Based on the fundamental principle of human security, Japan has been providing assistance to realize poverty reduction and inclusive growth.

Promotion of universal health coverage (UHC) based on the Strategy for Global Health Diplomacy has been one of the critical pillars of the health sector under the Japanese ODA. Under the “Basic Design for Peace and Health” (approved by the Headquarters for Healthcare Policy in September 2015) and the “G7 Ise-Shima Vision for Global Health” (May 2016), Japan has committed to providing support to realize UHC through the human resource development, the establishment of the health systems and others.

(4) Comparative advantage of technical cooperation provided by the Japanese side

JICA already implemented a technical cooperation project entitled "Project for Improving Maternal, Newborn, and Child Health in the Lagos State" from 2009 to 2014. The project

intervened in capacity development of improving skills and knowledge of health personnel at PHCs in maternal care, as well as hospital management by introducing the 5S approach for quality improvement and strengthening M&E. It also conducted community awareness promotion activities. This project was initiated based on the experience of the preceding project.

3.1.2. Effectiveness

The overall effectiveness of the project was **FAIR** according to the following reasons:

3.1.2.1 Achievements of the project outputs

Output	OVI	Achievement
1. Pro-poor community health model and its operation guide are developed and submitted for official approval by Lagos State Ministry of Health.	1-1 Pro-poor community health model and its operation guides are readily available.	**Fair**
	1-2 75% of semi-annual monitoring reports are submitted to JICA (Oct 2014- Dec 2018)	**Good 89% (8/9)**
2. Capacities of PHC Board, Local Government Health Teams and Ward Health Committees (WHCs) are strengthened to support target communities.	2-1 Score of capacity assessment of WHC increases.	**Good (28% increase)**
	2-2 75% of TWG meetings specifically formed for the project implementation are conducted.	**Good (100%)**
3. Primary health centers (PHCs) are functioning enough to provide pro-poor community health services through improvements of the performance of community health officers (CHOs), community health extension workers (CHEWs), other PHC workers and Ward Health Committee members.	3-1 75% of Hard-to-Reach outreach sites are visited monthly.	**EO: 89% LM: 95%**
	3-2 At 75% of PHCs, the number of defaulters decreases after SMS and phone-call tracing.	To be confirmed (Data is being accumulated)
	3-3 75% of monthly Ward CHMIS reports submitted to LSPHCB for the past three months (Jul – Sep 2018)	**100%**
4. Populations in the model sites improve health-seeking behaviors through health promotion activities at the community level.	4-1 60% of WHC-LGA monthly meetings are conducted in the past 12 months (Jan - Dec 2018).	**EO: 92% (11/12) LM: 83% (10/12)**
	4-2 60% of community health volunteers (CORPs) submit monthly activity reports in the past 12 months.	**100%**
	4-3 75 % of quarterly community dialogue meetings are conducted. (Sep 2017- Aug 2018)	**EO: 40% (8/20) LM/YB:63% (45/72)**
	4-4 Incidences of diarrhea, cough, and fever among the children of mothers in the	**The difference was detected in**

	intervention group are lower than the control group in the project area	**the incidence of cough**
5. Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are developed based on evidence generated by operation research.	5-1 Strategic options for nationwide and/or state-wide scaling-up pro-poor community health service systems are readily available.	**Fair**
	5-2 Dissemination meetings with federal and state governments and development partners are held at least twice a year.	**Good**

3.1.2.2. Achievement of the Project Purpose

(1) Pro-poor community health model and its operation guide **(Fair)**

The model was developed, and its operation guides are available: some were existing and others newly developed. The achievements could be summarized as follows:

i. The existing outreach protocol was utilized. Cost-effectiveness of Hard-to-Reach outreach, especially to riverine highly populated areas, has been demonstrated with evidence. The state is trying to allocate funds for special transport arrangements as part of the routine immunization activities.
ii. Community health education by CORPs was promoted with the existing operation manual. The activity has been taken up and sustained in Lagos Mainland by another project called “Alive and Thrive” supported by FHI360, Save the Children and Bill & Melinda Gates Foundation after the JICA project ended.
iii. WHC training slides were developed by adding practical components on problem identification and analysis, action plan development and advocacy to the existing manual created by PATHS2 Project. The slides are being used for WHC refresher training for riverine wards in Lagos supported by UNICEF since January 2019.
iv. Two operating manuals for Appointment Reminder and Defaulter Tracing System have been developed and approved by LSPHCB with the signature of the Permanent Secretary. LSPHCB has taken up the intervention as a state-owned project, although the budget for sustaining it has not been allocated yet.
v. An operating manual for TBA Referral and Reporting system have been developed and approved by the state for state-wide expansion.

(2) Full vaccination coverage among children under one-year-old children **(Fair)**

The indicator was looked at from the following three different angles: 1) Difference between the intervention-exposed and the non-exposed groups was investigated on the percentage of women age 15-49 who had a live birth in the past one year and whose child immunized in accordance with the routine immunization schedule; 2) Relationship between the probability of children fully vaccinated and the test score of CORPs who reside in the same settlement of the

mothers of the children was investigated; and 3) Transition of the number of unvaccinated children in Lagos Mainland was investigated for the period of January 2016 to September 2018. The first investigation could not detect any significant effects of the project interventions on fully vaccinated children. The second investigation suggests that children of the mothers who reside in the same settlement of a CORP whose knowledge test score is high are likely to be fully immunized than children of mothers who reside in the same settlement of another CORP whose score is low. The third revealed that the number of unvaccinated children, which is calculated by subtracting the number of children vaccinated for PENTA3 of a month from monthly target given by the state, has gradually decreased from 2016 to 2018.

(3) Proportion of pregnant women who utilize ANC and SBA **(Poor)**

The statistical tests could not detect any effects of the project interventions on either ANC frequency or SBA delivery.

3.1.3. Efficiency

Overall efficiency is **FAIR** according to the following reasons:

The inputs are appropriately provided from both Japanese and Lagos State sides as planned, and all inputs are fully utilized to conduct planned activities and generate the intended Outputs. The quality and quantity of inputs are appropriate; however, the initiation of the planned activities delayed, which affected seriously on the outcomes. The actual initiation of the activities in Lagos Mainland was June 2017 that was almost four months after the baseline survey data collection. During the period of the four months, nearly two-thirds of the women who were interviewed for the baseline had given births. It means the project interventions could not make any influences on those women's ANC and SBA delivery.

Voice-call message delivery started at the end of December 2017. Since the message targeted the women who participated in the baseline survey, the messages on ANC and post-natal care were no more relevant to them by December 2017.

Development of Appointment Reminder and Defaulter Tracing System took unexpectedly long time, and its operation encountered so many challenges that it ended up in scrap-and-build. Creating a new system from scratch again took so long that it could not complete by December 2018, the closure of the project. The project period had to be extended to March 2019.

On the contrary, the project activities were well received and appreciated by the counterpart organization. The level of participation in and ownership of the activities was quite high. Technical working groups were formed for the respective interventions to involve relevant personnel of the counterpart organizations. Their dedication to the project activities led to the achievements: Hard-to-reach outreach generated good evidence on the cost-effectiveness of riverine outreach within a short period of time; Some CORPs have become knowledgeable and

trustworthy human resources in their communities and saved some malnourished children; WHC members have been empowered with their skills and knowledge for action plan development; Appointment Reminder and Defaulter Tracing System has been renewed, simplified and become more manageable with expectation of good data accumulation on service utilization; Voice messages were transformed into a series of 14 episodes for a radio program that was aired in December 2018, and the messages can be repeatedly used in the future; TBA referral and reporting operation manual and tools were developed and printed for one year usage. All these achievements were recognized and highly appreciated. Moreover, quite a number of middle- to senior-level health staff went to Japan for training courses. The project was awarded by the National Association of Medical Officers of Health in recognition of its contribution to maternal and child health promotion.

3.1.4. Impact

3.1.4.1. Measurable indicators for Overall Goal

Overall Goal (PDM)	**OVI (PDM)**	**Specific Indicators (Suggested)**
Equitable, affordable, and accessible maternal and child health services for the population in urban slum communities in Lagos State are improved.	Coverage of maternal and child health services (ANC, PNC, Immunizations, and SBA) among the population in urban slums are increased.	1) % of women aged 15-49 with a live birth in the past one year who attended antenatal care (ANC) four or more than four times during their most recent pregnancy 2) % of mothers and babies who received postnatal care within two days of childbirth 3) % of unvaccinated children in the past one year 4) % of births attended by SBAs in the past one year

All the specific indicators suggested above could be calculated with data that could be derived from the DHIS2 system. However, it could be very difficult to segregate the data only for the urban slum population because all the data in the DHIS2 system is aggregated data. Considering that urban slum areas are located everywhere and even expanding in Lagos State and that rich people tend to patronize private health facilities, the public PHC utilization could be perceived as a proxy for the service utilization by the habitants in slum areas. Therefore, the above specific indicators suggested could be calculated with the data retrieved only for public PHCs from DHIS2 database.

3.1.4.2. Prospects to achieve the expected improvements and causal relationship

Increase in all indicators could be achieved

1) Indicator 1

Indicator 1: Increase in % of women aged 15-49 with a live birth in the past one year who attended antenatal care (ANC) four or more than four times during their most recent pregnancy

Prospect: Achievable (Strong)

Reason: The national policy has recently recommended eight times of ANC during pregnancy. In response to this recommendation, the promotion of ANC services will be reinforced through biannual MNCH Weeks (Campaign), MNCH promotional message delivery through radio, ANC appointment reminder, and other community-based health promotion activities.

Casual Relationship: Empowerment of WHCs through refresher training in riverine slum areas has been taken up by UNICEF for state-wide. WHCs are supposed to take intermediate roles between PHCs and communities. Therefore, empowerment of WHCs as the project has demonstrated is critical for community-based health promotion. Community health education by CORPs has not widely replicated yet, however, some MOHs have recognized the usefulness of CORPs in identifying and referring cases of childhood illnesses and malnutrition in the community and trying to mobilize other financers to maintain their community-based activities. With their active negotiation, some of the active CORPs in Lagos Mainland have been taken up by a new project called "Alive and Thrive."

Appointment Reminder and Defaulter Tracing System that is adopted as a state project can also contribute to the increase of continuous return for ANC services.

The radio program developed by the project can be repeatedly utilised since the audio data without mentioning JICA's support was created and handed over to LSPHCB.

2) Indicator 2

Indicator 2: Increase in % of mothers and babies who received postnatal care within two days of childbirth

Prospect: Achievable(Weak)

Reason: Facility-based delivery needs to be vigorously promoted to achieve the increase. According to the project end-line survey results, 76% of deliveries were assisted by SBAs. If the mothers are assisted by SBAs in their deliveries, they definitely come back to the health facilities for post-natal care. There are still 1 out of 4 women who do not deliver at health facilities. LSPHCB has recently recruited qualified medical personnel including doctors and deployed them to PHCs, which will contribute to the increase of SBA deliveries. There are some other key factors to achieve the increase apart from

community-based health promotion: 1) Quality improvement of MNCH services at PHCs, 2) Increase in number of PHCs that are ready for obstetric care 24 hours 7 days (24/7) with availability of basic emergency obstetric and neonatal services fully equipped, 3) Enhancement in referral network and transport to secondary health facilities, 4) Enhancement in drug supply and 5) Enhancement in infrastructure of PHCs such as electricity and safe water supply.

Casual Relationship: Community-based health promotion and MCH message delivery through radio have limited impact on the achievement since there are so many other factors that should be materialized as described in the left column. LSPHCB has the intention to expand TBA referral and reporting system to other local governments, which will help the state to capture the magnitude of TBA services. The statistics will further help to refine strategies toward TBA services.The installation of a solar lighting system at PHCs operating 24/7 has demonstrated the effective and uninterrupted maternal service provision even at night. It has set a standard model for replication.

3) Indicator 3

Indicator 3: Decrease in % of unvaccinated children in the past one year

Prospect: Achievable (Strong)

Reason: The state has introduced a program called "Intensification of Routine Immunization" to increase the coverage of routine immunization and decrease the defaulters in addition to the seasonal campaigns such as National Immunization Plus Day (NIPD), MNCH Week and Measles Vaccination Campaign. The state has a high commitment to achieving the target.

Casual Relationship: The project has demonstrated the cost-effectiveness of outreach to highly populated riverine areas, and Lagos Mainland has decided to maintain the outreach sites as part of their routine sites. The state is trying to expand the good practice to other areas as well. Appointment Reminder and Defaulter Tracing system is in line with the Intensification of Routine Immunization and will contribute to reducing defaulters. The system could be applied to outreach services as well in the future.

WHCs' and CORPs' community-based health promotion activities can also contribute to achievement.The radio program developed by the project can be repeatedly utilised for the promotion of MNCH services.

4) Indicator 4

Indicator 4: Increase in % of births attended by SBAs in the past one year

Prospect: Achievable (Weak)

Reason: The reason for indicator 4 is same as that of the indicator 2.

Casual Relationship: The casual relationship for indicator 4 is same as that of the indicator 2.

3.1.5. Sustainability

(1) Policy Aspects

The revitalization of Primary Health Centers (PHCs) and strengthening Reproductive, Maternal, Neonatal, Child and Adolescent Health plus Nutrition (RMNCAH+N) services remain as a key policy included in legal and policy frameworks: the National Health Act 2014; National Health Policy (NHP) 2016 and Health Financing Policy and Strategy 2017. The 2nd National Strategic Health Development Plan (NSHDP II) 2018 – 2022 is to operationalize the legal and policy frameworks. Moreover, the government established the Basic Healthcare Provision Fund (BHCPF) to finance and manage the implementation of PHC revitalization as a means for achieving Universal Health Coverage (UHC).

In Lagos State, the revitalization of Primary Health Centers (PHCs) is one of the policies to improve the health status at the community level. According to the policy, delivery of health services at the community level is being enhanced by establishing comprehensive PHCs that operate 24/7, recruiting additional doctors, midwives, nurses, Community Health Officers (CHOs) and Community Health Extension Workers (CHEWs) and so forth.

In 2018, Lagos State has recruited qualified medical personnel including doctors, nurses, CHOs, CHEWs and Medical Record Officers and deployed them to PHCs. It is an indication of the state government's commitment to enforcing the policy.

All the project interventions were developed in line with the policy and in response to the development needs with a special focus on urban slum population. They have been implemented, and their replicability has been demonstrated.

(2) Organizational Aspects

In the implementation of every project intervention, a TWG or consultative group was formed in line with the government operational structure.

(3) Technical Aspects

Local trainers selected in consultation with LSPHCB were trained before every training of each intervention. All the training were facilitated by the local trained trainers who were equipped with necessary technical knowledge and skills.

(4) Financial Aspects

This is the most challenging aspect. Some interventions were taken up by the state or other partners with some funding, and others were not although the state recognizes the importance of sustaining the interventions.

3.2. Key Factors Affecting Implementation and Outcomes

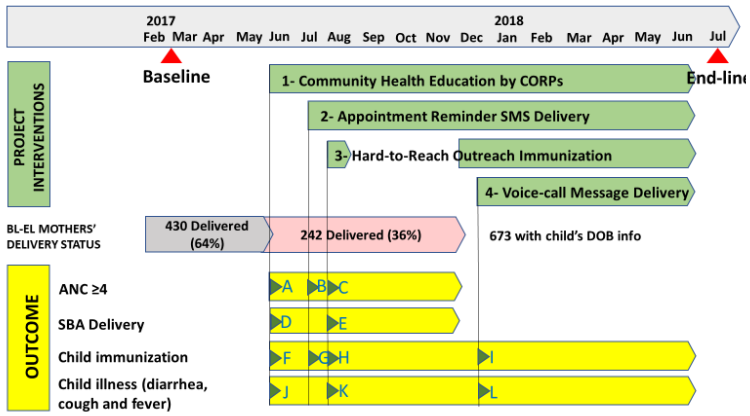
3.2.1. Security Challenge and Ebola Outbreak

The start of the project was delayed due to the two major challenges: 1) Change of the project site due to security reasons at the initiation stage and 2) Ebola cases reported in Lagos in July 2014. The R/D stipulated Apapa LGA as the project site. Security could not be ensured in Apapa at the time of project initiation in May 2014, and it took some time to finalize the project site. Then, Ebola Virus Disease broke out in Lagos in July 2014. Most of the counterpart personnel were engaged in the emergency operation.

3.2.2. Belated initiation of the activities in Lagos Mainland

Figure 14 illustrates the activity timeline in Lagos Mainland. The initiation of the activities was belated, which seriously affected the outcomes. There were four project interventions that had direct contact with the community people: 1) Community Health Education 2) Appointment Reminder and Defaulter Tracing, 3) Hard-to-Reach Outreach and 4) Voice-call Message Delivery in chronological order. The first intervention was community health education by CORPs that started in June 2017. It was almost four months after the baseline survey data collection. During the period of the four months, nearly two-thirds of the women who were interviewed for the baseline gave births. It means the project interventions could not make any influences on those women's ANC and SBA delivery choices.

Figure 14. Timing of initiation of interventions in relation to outcome indicators



3.2.3. Change of the integrated outreach approach

The project took an integrated approach for outreach services in Eti-Osa including immunization for children and women, treatment of minor ailment, antenatal and postnatal care including IPT provision for pregnant women and BP check. The outreach workers in Eti-Osa were trained, and some equipment for the integrated outreach service such as thermometer, stethoscope, BP machine and weighing machine was provided for the integrated service provision in 2016. The

same approach was introduced to Lagos Mainland, and the integrated outreach started in August 2017. Since the approach is different from the routine immunization outreach, it was commonly called "JICA Outreach." However, when the project reported the progress to the Director of Medical Services of LSPHCB at the end of August 2017, she pointed out that JICA should not create a parallel system and abide by the current state policy.

3.2.4. Belated initiation of voice-call message delivery and very few listeners

Voice-call message delivery started at the end of December 2017. Since the message targeted the women who participated in the baseline survey, the messages on ANC and post-natal care were no more relevant to them by December 2017. At the beginning of January 2018, the project was notified by the program developer that most of the mothers just hung up the initial voice-call because they perceived the call as a strange call. They completely forgot that they would receive voice-call messages regarding maternal and child health from the project due to the long and dormant period after the baseline survey. Urgent action was taken to make a reminder call to every targeted mother one by one, encouraging them to accept the voice-calls and listen to the messages. In January, 1,738 calls were initiated to the mothers. Of those, the majority of the mothers still hung up the phones. At the initial call, they were required to respond to some questions about their child delivery date in order for the server to determine the most appropriate message to start with according to the month-age of the child. This process was not well accepted by most of the women. Although the cloud server continued delivering the messages, the number of mothers who responded to the question at the initial call did not increase.

3.2.5. Difficulties in the operation of the initial Appointment Reminder and Defaulter Tracing System

The operating procedures of the initial system at the PHC level was too complicated and cumbersome for PHC staff to comply. Despite training, encouragement, and telephone mentoring, only 10 – 20 % of 100 PHCs were following the procedure. Especially confirmation of returned defaulters did not improve at all. The system was programmed to allow the uploaded appointments whose returns were not confirmed to fall into the 'Pending' category. These appointments were created, but their return statuses are unknown up to date. To confirm their return statuses, PHC staff must check the various service registers, which poses a difficulty to PHC staff. The 'Pending' statuses account for half of the appointments created. The system should not allow this 'Pending' situation. Moreover, the end-line survey results revealed that most of the recipients of the reminder SMSs were not aware of such SMSs. It implies that the recipients did not read the reminder SMSs. The SMSs were sent in the sender title of 'PHC Board,' which was not familiar to the recipients. All the clients need to be notified about the reminder

SMSs at the service provision points. The sender title should also be something that attracts clients to open and read. All the above issues hindered the accumulation of reliable data to judge the effectiveness of the intervention.

3.3. Evaluation of the results of the Project Risk Management

3.3.1. Security Challenge and Ebola Outbreak

The project repurposed some budget to support emergency operations such as the development of IEC material and radio jingle. The project resumed its implementation in November 2014 as soon as the emergency operation was settled down.

3.3.2. Belated initiation of the activities in Lagos Mainland

The project period was extended, and all of the Japanese experts were replaced in July 2017 to accelerate the project implementation.

3.3.3. Change of the integrated outreach approach

A meeting was convened to create a common understanding among the implementors in September 2017 and agreed on the following points:

i. Monthly routine immunization outreach should be stringently conducted at four fixed sites by each health facility (Routine-4 Outreach), which is the current State standard, regardless of support from partners. There is no 'JICA outreach.' All outreaches are 'State Outreach,' and no parallel system shall be created;
ii. Standard operation based on the current policy on the routine immunization outreach shall be observed. It means that outreach shall focus on the reduction of unimmunized children and the promotion of utilization of health facilities by referring clients;
iii. If any partners want to support integrated outreach services, special permission shall be obtained from the national level since it transcends the current national protocols/SOPs. Currently, nobody is allowed to take any commodities out of public health facilities except vaccines and cold chain equipment;
iv. Outreach sites should be scientifically determined with evidence and fixed and monthly visited rigidly to avoid creating partially immunized children. It is the mobilizers that move around and mobilize the mothers to make sure that their children fully immunized;
v. All immunizations administered must be adequately documented in the immunization register so that defaulters can be identified and traced; and
vi. If outreaches to hard-to-reach (HTR) settlements require extra support, LGAs shall address such needs to partners for their support through PHCB.

With the above agreement, Eti-Osa and Lagos Mainland were asked to submit a list of extra outreach sites requiring special transport arrangements with rationale (evidence). Therefore, the support for outreach was suspended until the list was submitted to the project. Lagos Mainland submitted the list in November 2017 and Eti-Osa in Feb 2018. The project switched its intention from testing effectiveness of integrated outreach approach to demonstrating the cost-effectiveness of hard-to-reach outreach and resumed the support in Lagos Mainland from December 2017 and Eti-Osa from February 2018.

3.3.4. Belated initiation of voice-call message delivery and very few listeners

Alternative ways of delivering the voice messages were sought in collaboration with LSPHCB since the voice messages did not reach out to the target audience widely enough. The utilization of the audio data through radio broadcasting was recommended by LSPHCB. An LSPHCB Directors' meeting was convened in October 2018 to review the voice messages, and some recommendations were made for the improvement of the messages including 1) To make each episode shorter and more focused by removing redundant messages, 2) To make the messages more attractive to listeners with entertainment aspect. In response to the recommendations, the text data was reviewed, simplified and reorganized into 14 episodes with different topics focusing on antenatal care, post-natal care, newborn care, exclusive breastfeeding, child illnesses, immunization, complementary feeding, and growth monitoring. An audio file developer was introduced to the project, and the first draft of the audio files in Pidgin English was produced at the beginning of November 2018. A Radio Program Development Review Committee was formed at LSPHCB, and four meetings were held to finalize the audio files in 5 local languages. Three local radio stations were selected to broadcast the program: Radio Lagos, Traffic FM, and EKO FM. The radio program was entitled "Better Mama and Correct Pikin" and broadcasted for 14 days from 8 to 21 Dec 2018 through the three radio stations every day.

3.3.5. Difficulties in the operation of the initial Appointment Reminder and Defaulter Tracing System

A concept of scrap-and-build of the system was presented to LSMOH and LSPHCB in August 2018, and the new system has been developed from scratch with the introduction of a QR code as a unique identifier of a client. The new system does not require additional register or manual writing. Individual biodata entry is only once at the initial registration. Operation is simple and easy. Confirmation of clients' returns is automatically done by scanning a QR code. The system is manageable at the Portal Administrators appointed by LSPHCB. The development of the system took longer time than expected. Therefore, the project had to be extended three more months until March 2019 with a specific focus on this intervention alone. The system has been tested during January and February 2019 at 2 PHCs and introduced to 32 PHCs by the end of

March 2019. Effectiveness of the intervention should be investigated with the data accumulated through the new system.

3.4. Lessons Learned

3.4.1. Utilization of Project Design Matrix (PDM)

The PDM was not fully utilized in the project. The original PDM should have been elaborated by checking the logical flow and some obscure expressions in the initial year of the project with the counterpart organizations. SMART (specific, measurable, achievable, relevant and time-bound) indicators should have been set up in the early stage of the project for the measurement of the project performance and achievements. The indicators should have been regularly monitored/tracked and shared in visual presentation among the stakeholders. The PDM should have been modified by reflecting reality and dynamism of the project in the course of the project on time if such needs arose.

3.4.2. Deliberate and Elaborate Planning to Avoid Belated Initiation of Interventions

The project could not generate evidence for demonstrating the effectiveness of the interventions on ANC frequency and SBA delivery due to the delated initiation of the interventions. By the time of the first initiation, two-thirds of the targeted women had already given births, and the project interventions could not make any influence on their ANC practice or SBA delivery choice. The timelines of irreversible events such as baseline survey should have been deliberately and elaborately planned.

3.4.3. Formation of Technical Working Group in Consideration of Organizational and Political Operation Structure

Active participation of counterpart organizations is the key to ownership, sustainability, and success of the project. Formation of a technical working group (TWG) for each intervention is one of the key strategies to expedite active participation. Selection of members for TWG, however, needs to be carefully consulted with the counterpart organizations in consideration of organizational and political operation structure. Otherwise, exclusion rather than inclusion would unintentionally occur that will cause unnecessary conflicts later on. The project also needs to be sensitive to senior staff movement (new assignment or transfer-in or out) and make an immediate follow-up with the senior official newly assigned or transferred in to keep the person updated and involved.

3.4.4. Documentation and Management of Documents

Documentation is vital to share the same information with stakeholders. A project needs to maintain two types of documentation: activity/operation related documentation and accounting related documentation. Both are equally important for accountability. Activity-related documentation is often neglected in daily operation, unlike accounting documentation. However, neglect of such documentation can create misunderstanding or loss of important information/data or loss of resources or even conflicts. The documentation includes meeting agenda, meeting minutes, list of participants, minutes of understanding (MOU), concept note for an event/activity, activity reports, event records, contract agreement, terms of reference for TWG, terms of reference for local consultant, specifications for development of a product, standard operating procedures, implementation guidelines/manuals, training slides, training manual, pre- and post-test and score results, presentation slides, supervision checklists, press release, web site article, survey instruments, etc. Rules for documentation should be developed within the team to create common understandings and procedures. All of these documents should be maintained well and always kept accessible and retrievable. All the documents should be handed over to successors.

3.4.5. Set-up of a Project Office in the premise of the Counterpart Organization

It was a precondition that counterpart organizations should provide appropriate office space for the project. However, this requirement may not be practical, while the staffs of the organizations do not have enough office space. The project was given three office spaces that were physically scattered. The situation posed a challenge in teamwork and communication. In 2017, a two-story portacabin was constructed in the premise of LSPHCB with the financial support of JICA. The first floor was used for the project office and the second for meetings. It was a bold decision that JICA made for the project. The office in the premise of LSPHCB made communication smooth and easy not only within the project team members but also with the staffs of the counterpart organization. Utility including water, electricity and sewerage was covered by LSPHCB.

4 For the Achievement of Overall Goals after the Project Completion

4.1. Prospects to achieve Overall Goal

Please refer to Section 3.1.4.

4.2. Recommendations for the Nigerian side

	Intervention	Recommendations
1	Hard-to-Reach Outreach	1) Outreach to highly populated riverine areas may produce cost-effective outputs according to the experience in Lagos Mainland. Cost of boat transport is worth spending to vaccinate a large number of under-one children in a day. This type of outreach shall be one of the strategies for intensification of routine immunization. 2) Monthly data review meetings should be maintained at each local government level and quarterly meetings at the state level to review the achievement and discuss emerging issues and countermeasures.
2	Community Health Education by CORPs	1) A more target-focused approach could be taken for the future similar activity. For example, home-visits targeting pregnant women and caregivers with under-one children could be the focus of the CORPs' work and the number of caregivers reached out through the home visits should be reported for monitoring and evaluation purpose. 2) CORPs can be categorized into four categories: 1) High knowledge level and active, 2) High knowledge level but less active, 3) Low knowledge level but active, and 4) Low knowledge level and less active. Knowledge test could be administered from time to time to assess their knowledge level. Based on their test scores and activeness, different refresher training menu could be developed to meet their needs. 3) Sixty-three percent (63%) of CORPs continued their activity even after transport allowance ceased. There is no significant difference in their continuity among the four categories. When the monetary incentive is limited, those who are willing and knowledgeable could be utilized. 4) CORPs can also be useful in identifying malnourished children and referring them to health facilities. Since they are residents in the community, monitoring those children would be easier than outsiders. Collaboration between health facilities and CORPs is inevitable to produce a better result

		when malnourished cases are referred to the health facilities. 5) Moral support from LGA by conducting monthly meeting might be a good motivation for keeping some CORPs active.
3	WHC Empowerment	1) Provision of practical opportunities to WHCs for needs identification, problem analysis, action plan development, advocacy (action plan presentation), implementation of action plan and submission of all accounting documents for accountability could make WHCs more active and functional in performing their roles and responsibilities. 2) Competitions among WHCs have strengthened their team spirit and provided them with opportunities for horizontal learning. 3) Community dialogue by WHCs should regularly take place to identify health needs of the community people. The identified needs then should be transformed into an action plan with a problem statement, proposed action required to solve the problem, timeline, expected output, beneficiaries, maintenance and cost implications. 4) The action plan will serve as an advocacy tool to higher authorities, local government, non-governmental and private sectors to solicit support from them for substantiating the plans. 5) Organizing community dialogue meetings without such concrete follow-up actions has little meaning. Such superficial meetings are self-complacency and end up not only disappointing community people but also hampering voluntary community participation without demanding incentives.
4	Appointment Reminder and Defaulter Tracing	1) The PHCs' performance and the progress should be monitored daily at the Web Dashboard. 2) Appointment reports should be downloaded from the Web Portal site, and the data should be analyzed at least once every other week. 3) The analysis results shall be shared in the TWG meeting every other week. 4) Necessary resources need to be allocated by the state for the maintenance and expansion of the project. Possible support

		from any partners needs to be tapped as well for the maintenance and expansion. 5) Issues and needs raised by PHCs through WhatsApp or telephone calls need to be carefully attended to keep their enthusiasm on the operation. 6) PHCs need to be encouraged and recognized by sharing performance analysis results through WhatsApp platform or telephone mentoring or physical visits for supportive supervision.
5	Radio Program "Better Mama and Correct Pikin"	1) It was found out through the project experience that message delivery through mass media could be more acceptable to the target audience with broader coverage, although its effectiveness should be investigated. 2) The audio files developed by the project and handed over to LSPHCB Director of Health Education could be repeatedly utilized since the sentence regarding JICA's support was removed from the recordings. Any partner can support for broadcasting the program.
6	TBA Referral and Reporting	1) The Technical Working Group (TWG) that was established for this project should be maintained with redefined terms of reference (TOR). TWG meetings should be regularly conducted to review the accumulated data and discuss issues and technical needs revealed from the data analysis. The TWG will be the driving force for the developed system to go on and further expand to other local governments. 2) The collaboration among TBAs, LSMOH, LSMEP, LSPHCB, LSTMB, LSACA, LASCOHET, LSHSC, LGA and Partners (WHO, UNICEF, UNFPA, NUHRI, CHAI, ARCTIC Infrastructure) should be maintained as well. 3) The system cannot be functional without the reliable and regular data feed from TBAs. CHOs/CHEWs have a critical role in regular supervision of TBAs and data collection. 4) The two-way referral system and documentation will also enable the state to trace the records if the referred clients receive proper medical services in a timely manner at the health facilities. Good rapport should be built between the TBAs and health workers in order to maintain the system

		functional.

ANNEX 1: List of Products (Report, Manuals, Handbooks, etc.) Produced by the Project

S/N	Title	Category	Month / Year
1	Baseline Survey Report (in Eti-Osa)	Report	October 2015
2	Preliminary Results on Baseline Survey in Lagos Mainland LGA	Report	April 2017
3	End-line Survey Report for Lagos Mainland 2018	Report	January 2019
4	TBA Referral and Reporting Manual	Manual	July 2018
5	TBA Referral and Reporting Guidelines	Guidelines	July 2018
6	TBA Referral and Reporting Tools (Tally Sheets, Register, Reporting Forms, Referral Slip, Data Quality Checklist)	Format	July 2018
7	Appointment Reminder and Defaulter Tracing Mobile Application	Mobile Application	March 2019
8	Appointment Reminder and Defaulter Tracing Web Portal	Application and Cloud Database	March 2019
9	Operating Manual for Appointment Reminder and Defaulter Tracing Mobile Application	Manual	March 2019
10	Operating Manual for Appointment Reminder and Defaulter Tracing Mobile System Administrators	Manual	March 2019

ANNEX 2: PDM (All versions of PDM)

S/N	Title	Version	Month / Year
1	PDM (attached to R/D)	1	February 2014
2	PDM	2	December 2018

ANNEX 3: R/D, M/M, Minutes of JCC (copy) (*)

S/N	Title	Category	Month / Year
1	Record of Discussion	R/D	February 2014
2	Minutes of Meeting	Minutes	October 2014
3	Minutes of Meeting	Minutes	November 2016
4	Minutes of Meeting	Minutes	December 2018
5	Minutes of 2nd Joint Coordinating	Minutes	September 2016

	Committee Meeting		
6	Minutes of 3rd Joint Coordinating Committee Meeting	Minutes	May 2017
7	Minutes of 4th Joint Coordinating Committee Meeting	Minutes	January 2018
8	Minutes of 5th Joint Coordinating Committee Meeting	Minutes	May 2018
9	Minutes of 6th Joint Coordinating Committee Meeting	Minutes	December 2018

ANNEX 4: Monitoring Sheet (copy) (*)

(Remarks: ANNEX 4 is an internal reference only.)

S/N	Title	Category	Month / Year
1	Monitoring Sheet for May 2014 – May 2015	Report	June 2015
2	Monitoring Sheet for June 2015 – December 2015	Report	February 2016
3	Monitoring Sheet for January 2016 – June 2016	Report	September 2016
4	Monitoring Sheet for July 2016 – January 2017	Report	February 2017
5	Monitoring Sheet for June 2017 – December 2017	Report	January 2018
6	Monitoring Sheet for January 2018 – June 2018	Report	July 2018
7	Monitoring Sheet for January 2018 – December 2018	Report	January 2019