

KENYA - Improving the timeliness of administering birth dose vaccines using a digital platform in Nairobi slums., ChanjoBora

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Overview

Identification

ID NUMBER

DDI-KEN-APHRC-GBV-2018-V1.0

Version

VERSION DESCRIPTION

PRODUCTION DATE

2024-09-20

NOTES

N/A

Overview

ABSTRACT

Background: Vaccine preventable diseases still contribute substantially to child mortality in sub-Saharan Africa. Delays in administering vaccines within the recommended age group increase the risk of infection because of a prolonged potential exposure to vaccine-preventable diseases. Birth dose vaccines are administered late, due to fragmented systems of delivery, recording and communication between maternal health and child health services. Understanding these deficiencies presents opportunities for improving timely vaccinations at birth.

Objective: The main aim of this study was to assess the effectiveness of community health volunteers (CHVs) and healthcare workers using an electronic immunization registry consisting of a digital platform, web-based database and health text messages to improve timeliness of administering birth dose vaccines such as Bacille Calmette Guerin (BCG) and Oral Polio Vaccine (OPV) in Nairobi slums.

Methodology: Through a cross-sectional stepped wedge design, the intervention consisting of interaction between CHVs, pregnant women and healthcare workers using a digital platform linked to a central registry was implemented in eight villages in Viwandani (a site for the Nairobi Health and Demographic Surveillance System). CHVs or healthcare workers were to register pregnant women at home or health facility and automatically send tailored text messages from a central server, encouraging timely vaccination uptake. The project tested the feasibility of CHVs or healthcare workers using the platform and the effectiveness including cost-effectiveness of the intervention. Interviews were conducted with women with infants at baseline and the introduction of the intervention into clusters (villages) to measure the effect of the intervention on timeliness of birth dose vaccines.

Duration and budget: The duration of the project was 18 months and the total budget will be USD 100,000.

Conclusion: The expected findings generated from this study included the feasibility and effectiveness of using the digital platform for improving timely vaccinations and these was used to inform the design of a large trial in other settings. Within the larger trial we had hoped to also measure the impact of the intervention on infant survival. The digital platform was customized based on recommendations from this study to include additional features such as health sensitization videos.

UNITS OF ANALYSIS

Community Health volunteers (CHVs), Pregnant Women, Health Workers and women with infants

Scope

NOTES

The scope includes: Sociodemographic Information, Child's Vital Status, Vaccination History, Campaign History, Polio,

Measles,Vitamin A supplementation and Cost of Immunization Services.

Coverage

GEOGRAPHIC COVERAGE

County Coverage (Nairobi County/Informal settlements of Viwandani)

UNIVERSE

The survey covered sampled Community Health volunteers (CHVs),Pregnant Women, Health Workers and women with infants

Producers and Sponsors

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Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
African Population and Health Research Center	APHRC		Documentation of the DDI

DATE OF METADATA PRODUCTION

2024-09-20

DDI DOCUMENT VERSION

Version 1.0 (September 2024)

DDI DOCUMENT ID
DDI-KEN-APHRC-GBV-2018-V1.0

Sampling

Sampling Procedure

Study design

We used a cross-sectional stepped wedge design which involved a sequential roll-out the intervention to clusters (defined as a village with one CHV selected for this study) over a number of time periods. A stepped wedge design allows the intervention to be staggered until all clusters receive the intervention in a determined random order. The two key reasons for choosing this design were: first, the intervention is likely to do more good than harm and would therefore be unethical to withhold the intervention from some participants of the study [35], secondly for logistical reasons, the intervention can only be implemented in stages [36].

Baseline measurements of timely vaccination was taken in all study villages at month 0 followed by introduction of the intervention sequentially in three time points 2 months apart. Initially three villages received the intervention followed by six after four months and finally all eight villages at six months were included in the intervention. Timeliness of vaccination was estimated at each point.

Study site (geographical)

The study was conducted in Viwandani, a Nairobi Urban Health and Demographic Surveillance System (NUHDSS) site [37], which had a population of 49,000 people, birth rate of 16 per 1000 per year, infant mortality rate of 34.7/1000 and timely vaccination coverage of 22% [10]. Viwandani is well characterized as a mobile population, with challenges of health services uptake, therefore suitable for testing this intervention.

Study populations

Pregnant women will be recruited in their second or last trimester, followed to birth and infant-mother pair followed two months after birth.

Inclusion criteria

The following criteria was used to enroll women in the study:

1. Pregnant women living in Viwandani and in their second or third trimester (5-9 months of pregnancy)
2. Pregnant women resident in Viwandani and not intending to leave the study village in the next six months.
3. Pregnant women willing to be enrolled and followed until two months after birth.

Exclusion criteria

1. Pregnant women with complications of pregnancy as documented by health workers.
2. Pregnant women planning to vaccinate their baby outside Viwandani clinics.
3. Women with adverse pregnancy outcome during follow up (abortion, stillbirth, and early neonatal death).
4. Women diagnosed with multiple pregnancies.

Sample size and Sampling

Our sample size estimates were done following Hooper et al. [38]. First, a recent study on vaccination in the slums suggested that the percentage of timely vaccination is 22% [10]. We hypothesized that the intervention will increase that percentage of timely vaccination to 45% (significant difference of 23%), implying an effect size of 0.5. Based on the study by Russo et al. [39] on the vaccine coverage in Cameroon, we assumed an intra-cluster correlation (similarity of outcomes from individuals within a cluster at the same time point) of 0.04. Furthermore, we assumed a cluster autocorrelation (similarity of outcomes from individuals within a cluster taken at different times) of 0.8. We also assumed a cluster size of 12 neonates specified in advance, three steps and four time points (one baseline and three follow-up time points) are expected during recruitment and follow up. We further conjecture a confidence interval of 95%, a margin-of-error of 5% and a power of 80%. Based on these assumptions, the sample size required was 383 neonates and 8 clusters (villages). If we assumed a dropout rate to be 20%, our final sample size was 479 neonates.

Twelve neonates were consecutively selected in each cluster. In other words, during the time of the study CHVs were consecutively enrolled the neonates in each cluster until the targeted number was reached. At each step a new cohort was recruited and followed-up till 2 months after birth. At each step our primary outcomes were measured.

Deviations from Sample Design

N/A

Response Rate

N/A

Weighting

N/A

Questionnaires

Overview

The questionnaires used in this study were developed in English and Swahili, based on standard models for health and vaccination surveys. They include a baseline questionnaire for mothers, a follow-up questionnaire, a mobile-based data entry form for Community Health Volunteers (CHVs), and a vaccination update form for health facilities. These were reviewed by healthcare professionals, CHVs, and mothers during focus groups. After translation into Swahili, a back-translation process ensured accuracy. Pretesting and feedback helped refine the questionnaires for clarity and usability. All documents and feedback from stakeholders was provided as external resources.

Data Collection

Data Collection Dates

Start	End	Cycle
2019-12-06	2019-10-06	N/A

Data Collection Mode

Face-to-face [f2f]

Questionnaires

The questionnaires used in this study were developed in English and Swahili, based on standard models for health and vaccination surveys. They include a baseline questionnaire for mothers, a follow-up questionnaire, a mobile-based data entry form for Community Health Volunteers (CHVs), and a vaccination update form for health facilities. These were reviewed by healthcare professionals, CHVs, and mothers during focus groups. After translation into Swahili, a back-translation process ensured accuracy. Pretesting and feedback helped refine the questionnaires for clarity and usability. All documents and feedback from stakeholders was provided as external resources.

Supervision

Enumerators were organized into teams that included a controller and a supervisor. Each team typically consisted of 3-4 interviewers, one controller, and one supervisor. The supervisor's main role was to manage field data collection activities, oversee the interviewers, ensure proper handling of supplies and equipment, and liaise with local authorities. They were also responsible for assigning work to interviewers, performing spot checks, maintaining field control documents, and sending completed questionnaires and progress reports to the central office. Controllers assisted in overseeing data quality, ensuring consistency, and providing support to interviewers. Field visits were made periodically by senior management to monitor progress and provide additional support, ensuring smooth data collection and addressing any issues as they arose.

Data Processing

Data Editing

The data management process involved uploading interview data from tablets into an interim database, with regular quality control checks performed by the Data Manager and Research Officer. The cleaned data was then uploaded into a secure master study database, which was regularly backed up in a secure location, with a password-protected copy maintained by the Data Manager. A detailed data dictionary was created for curation. For the electronic pregnancy and immunization registry, data was submitted directly from smart devices to a secure database with stringent privacy and security measures. Data was backed up, and validation rules ensured accuracy. Data sharing followed a pre-approved role-based access control system, with anonymized data shared with APHRC by VAL partners for analysis and reporting. In terms of data analysis, vaccination timeliness and effectiveness of interventions were assessed, using linked data to identify missing vaccinations and generate summaries for health

Other Processing

N/A

Data Appraisal

Estimates of Sampling Error

N/A

File Description

Variable List

birth_dose_analytical_data_set_po

Content	N/A
Cases	574
Variable(s)	57
Structure	Type: Keys: ()
Version	Version 1.0 (September 2024)
Producer	African Population and Health Research Center
Missing Data	N/A

Variables

ID	NAME	LABEL	TYPE	FORMAT	QUESTION
V63	mid	Household id	discrete	character	Household ID
V64	mname	mothers name	discrete	character	Mother's Name
V65	childid	child id	discrete	character	Child's ID
V67	locid	Location ID (DSS No.) of the mother	discrete	character	N/A
V68	locid2	Structure No	discrete	character	N/A
V69	sua	Sub Unit Area	discrete	numeric	N/A
V70	site2	Study site	discrete	numeric	N/A
V71	ea	Enumeration area	discrete	character	N/A
V72	village	Village	discrete	numeric	
V73	chv	CHV name	discrete	numeric	N/A
V75	status	Member status	discrete	numeric	N/A
V76	idate	Delivery update date	discrete	character	N/A
V77	dob	Actual Delivery date	discrete	character	N/A
V78	year	year of birth	discrete	numeric	Child's date of birth
V79	month	month of birth	discrete	numeric	Child's date of birth
V80	day	day of birth	contin	numeric	Child's date of birth
V81	datebirth	mothers dob	discrete	character	What is your date of birth?
V82	hf_pref	Preferred Health facility	discrete	numeric	N/A
V83	hf_actual	Actual Delivery Health Facility	discrete	numeric	N/A
V84	sms1	1st SMS date	discrete	character	N/A
V85	sms2	2nd SMS date	discrete	character	N/A
V86	sms3	3rd SMS date	discrete	character	N/A
V87	bcgdate	BCG Vacc date	discrete	character	BCG
V88	opvdate	OPV Vacc date	discrete	character	Oral Polio Birthdose Oral polio 1st Dose Oral Polio 2nd Dose Oral Polio 3rd Dose
V89	treat	intervention	discrete	numeric	N/A
V90	card	vac card	discrete	numeric	Does/ Did (NAME) have a vaccination card that looks like this?

V91	relation	mother	discrete	numeric	Are you (NAME OF CHILD)'s mother?
V92	died	alive	discrete	numeric	Where is (NAME)?
V93	sex	sex	discrete	numeric	CHILD'S SEX (1=MALE; 2=FEMALE)
V94	dateintodsa	date born/enumerated/inmigrated into DSA (%td format)	discrete	character	date born/enumerated/inmigrated into DSA (%td format)
V95	firstevent	type of first event (born/enumerated/inmigrated)	discrete	numeric	type of first event (born/enumerated/inmigrated)
V96	dateoutofdsa	date died/outmigrated/still resident in DSA (%td format)	discrete	character	N/A
V97	lastevent	type of last event (died/outmigrated/still resident)	discrete	numeric	type of last event (died/outmigrated/still resident)
V98	durstay_years	complete years of residence in DSA	discrete	numeric	complete years of residence in DSA
V99	ethnic	ethnic	discrete	numeric	Ethnic
V100	comm_unit	Community unit	discrete	numeric	Community Unit
V101	block	blocks	discrete	numeric	Blocks
V102	datee	date of intervention	discrete	character	Date of intervention
V103	period	period of enrollment	discrete	numeric	The period that the mother was enrolled
V104	bcgt7	timely bcg	discrete	numeric	BCG
V105	opvt7	timely opv	discrete	numeric	Oral Polio Birth Dose Oral Polio 1st Dose Oral Polio 2nd Dose Oral Polio 3rd Dose
V106	id		discrete	character	ID
V107	hhid	ID of NUHDSS household at start event	discrete	character	HOUSEHOLD ID
V108	calendar	calendar year of event	discrete	numeric	calendar year of event
V109	event	residency event	discrete	numeric	residency event
V110	locationid	ID of NUHDSS location	discrete	character	ID of NUHDSS location
V111	slumarea	slum area in NUHDSS	discrete	numeric	slum area in NUHDSS
V112	name	full name of NUHDSS individual	discrete	character	full name of NUHDSS individual
V113	wealthtertile	wealth tertile	discrete	numeric	wealth tertile
V114	wealthquintile	wealth quintile	discrete	numeric	wealth quintile
V115	edulevel	highest level of school ever attended	discrete	numeric	What is your highest level of education?
V116	maritalstatus	current marital status	discrete	numeric	What is your marital status?
V117	delivplace	place of delivery/pregnancy termination	discrete	numeric	N/A
V120	m_agecat	mothers age	discrete	numeric	How old are you?
V121	edulevel2	RECODE of edulevel (highest level of school ever attended)	discrete	numeric	What is your highest level of education?
V122	marital2	RECODE of maritalstatus (current marital status)	discrete	numeric	What is your marital status?
V123	wi3	RECODE of wealthtertile (wealth tertile)	discrete	numeric	RECODE of wealthtertile (wealth tertile)

Household id (mid)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 15

Valid cases: 574

Invalid: 0

Description

A household ID for mothers with newborn infants up to 6 months old.

Universe

Infants upto 6 months old.

Source of information

Mothers of infants upto 6 months old..

Pre question

Background

Literal question

Household ID

Post question

N/A

Interviewer instructions

N/A

mothers name (mname)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 49

Valid cases: 574

Invalid: 0

Description

Name of a mother with an infant upto 6 months old.

Universe

Infants upto 6 months old..

Source of information

Mothers of infants upto 6 months old.

Pre question

Background

Literal question

Mother's Name

Post question

N/A

Interviewer instructions

N/A

child id (childid)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 15

Valid cases: 154

Invalid: 0

Description

Identification number of the infant upto 6 months old.

Universe

The infant upto 6 months old.

Source of information

The mother of the infant aged up to 6 months.

Pre question

Background

Literal question

Child's ID

Post question

N/A

Interviewer instructions

N/A

Location ID (DSS No.) of the mother (locid)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 574

Invalid: 0

Description

Location of the infant upto 6 months

Universe

Infant upto to age of 6 months

Source of information

Mother of the infant up to 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Structure No (locid2)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 420

Invalid: 0

Description

Structure number where the infant upto 6 months is located.

Universe

Infants upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Sub Unit Area (sua)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 18

Decimals: 0

Range: 1-16

Valid cases: 420

Invalid: 154

Description

The sub unit where the mother and Infant upto 6 months are located.

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months.

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Study site (site2)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 12

Decimals: 0

Range: 1-2

Valid cases: 574

Invalid: 0

Description

The study site for mothers with infants up to 6 months.

Universe

Infants upto the age of 6 months

Source of information

Mothers of infants upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Enumeration area (ea)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 4

Valid cases: 574

Invalid: 0

Description

The Enumeration area for mothers with infants up to 6 months.

Universe

Infants upto the age of 6 months

Source of information

Mother of infants upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Village (village)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 21

Decimals: 0

Range: 1-14

Valid cases: 574

Invalid: 0

Description

The village for mothers with infants up to 6 months

Universe

Infants upto the age of 6 months

Source of information

Mother of infants upto the age of 6 months

Pre question

N/A

Post question

N/A

Interviewer instructions

N/A

CHV name (chv)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 15
 Decimals: 0
 Range: 1-16

Valid cases: 420
 Invalid: 154

Description

Name of Community Health Volunteer who collected data from mother with infants upto the age of 6 months.

Universe

Infant upto the age of 6 months.

Source of information

Community Health Volunteer

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Member status (status)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 9
 Decimals: 0
 Range: 1-1

Valid cases: 420
 Invalid: 154

Description

N/A

Universe

N/A

Source of information

N/A

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Delivery update date (idate)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: character
 Width: 11

Valid cases: 574
 Minimum: NaN
 Maximum: NaN

Description

Updated delivery date for the pregnant woman

Universe

Pregnant woman

Source of information

The pregrant woman

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Actual Delivery date (dob)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 574

Minimum: NaN

Maximum: NaN

Description

Actual delivery date for the pregnant woman

Universe

Pregnant woman

Source of information

The pregrant woman

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

year of birth (year)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 2018-2019

Valid cases: 574

Invalid: 0

Description

Year of birth of infant upto the age of 6 months.

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

Child's Vital Status

Literal question

Child's date of birth

Post question

Where is (Name)?

Interviewer instructions

Circle the appropriate response

month of birth (month)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Valid cases: 574

Format: numeric

Invalid: 0

Width: 9

Decimals: 0

Range: 1-12

Description

The specific month that the infant was born

Universe

Infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Child's vital status:

Literal question

Child's date of birth

Post question

Where is (Name)?

Interviewer instructions

Circle the appropriate response

day of birth (day)

File: birth_dose_analytical_data_set_po

Overview

Type: Continuous

Valid cases: 420

Format: numeric

Invalid: 154

Width: 9

Minimum: 1

Decimals: 0

Maximum: 31

Range: 1-31

Mean: 16.2

Standard deviation: 8.6

Description

The specific day that the infant was born

Universe

Infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Child's vital status

Literal question

Child's date of birth

Post question

Where is (Name)?

Interviewer instructions

Circle the appropriate response

mothers dob (datebirth)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 503

Minimum: NaN

Maximum: NaN

Description

The date of birth of the mother of an infant up to 6 months old

Universe

The mother of the infant is upto the age of 6 months.

Source of information

The mother of the infant is upto the age of 6 months

Pre question

Sociodemographic Information

Literal question

What is your date of birth?

Post question

N/A

Interviewer instructions

N/A

Preferred Health facility (hf_pref)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 1-1

Valid cases: 420

Invalid: 154

Description

The preferred health facility by the mother

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

Actual Delivery Health Facility (hf_actual)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
Format: numeric
Width: 34
Decimals: 0
Range: 1-86

Valid cases: 420
Invalid: 154

Description

Actual Delivery Health Facility where the mother had the infant.

Universe

Infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months.

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

1st SMS date (sms1)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
Format: character
Width: 11

Valid cases: 419
Minimum: NaN
Maximum: NaN

Description

The first date in which an sms was sent to pregnant mothers encouraging timely vaccinations.

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

2nd SMS date (sms2)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete	Valid cases: 419
Format: character	Minimum: NaN
Width: 11	Maximum: NaN

Description

The second date in which an sms was sent to pregnant mothers encouraging timely vaccinations.

Universe

Infants upto the age of 6 months

Source of information

Mothers of infants upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

3rd SMS date (sms3)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete	Valid cases: 419
Format: character	Minimum: NaN
Width: 11	Maximum: NaN

Description

The third date in which an sms was sent to pregnant mothers encouraging timely vaccinations.

Universe

Infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

BCG Vacc date (bcgdate)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete	Valid cases: 567
Format: character	Minimum: NaN
Width: 11	Maximum: NaN

Description

The exact date when the BCG vaccine was administered.

Universe

Infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Vaccination History

Literal question

BCG

Interviewer instructions

FW: FOR QUESTION 4.3 COPY VACCINATION DATE FOR EACH VACCINE FROM THE CARD.

WRITE '44' IN 'DAY' COLUMN IF CARD SHOWS A VACCINATION WAS GIVEN, BUT NO DATE IS RECORDED

If the vaccine/dose that should have been given by the date of interview was not given, write '77' in 'day' column, and Ask: What was the main Reason why (name of Vaccine/Dose) was not given to the Child? (Record the reason and the code (CODE SHEET A9) for the reason in the space provided

WRITE 66 IN 'DAY' COLUMN IF CARD SHOWS A VACCINATION WAS GIVEN, BUT DATE IS NOT LEGIBLE

OPV Vacc date (opvdate)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 564

Minimum: NaN

Maximum: NaN

Description

The exact date when the OPV vaccine was administered

Universe

Infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Vaccination History

Literal question

Oral Polio Birthdose

Oral polio 1st Dose

Oral Polio 2nd Dose

Oral Polio 3rd Dose

Interviewer instructions

FW: FOR QUESTION 4.3 COPY VACCINATION DATE FOR EACH VACCINE FROM THE CARD.

WRITE '44' IN 'DAY' COLUMN IF CARD SHOWS A VACCINATION WAS GIVEN, BUT NO DATE IS RECORDED

If the vaccine/dose that should have been given by the date of interview was not given, write '77' in 'day' column, and Ask: What was the main Reason why (name of Vaccine/Dose) was not given to the Child? (Record the reason and the code (CODE SHEET A9) for the reason in the space provided

WRITE 66 IN 'DAY' COLUMN IF CARD SHOWS A VACCINATION WAS GIVEN, BUT DATE IS NOT LEGIBLE

intervention (treat)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 0-1

Valid cases: 574

Invalid: 0

Description

N/A

Universe

N/A

Source of information

N/A

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

vac card (card)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 9
 Decimals: 0
 Range: 0-3

Valid cases: 574
 Invalid: 0

Description

Vaccination card for infant upto the age of 6 months.

Universe

Infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Vaccination History

Literal question

Does/ Did (NAME) have a vaccination card that looks like this?

Post question

IF YES: May I see it please?

Interviewer instructions

FW: PROBE TO KNOW IF THE RESPONDENT HAS ANY OTHER TYPE OF CARD AND ASK TO SEE IT CIRCLE THE APPROPRIATE RESPONSE

mother (relation)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 9
 Decimals: 0
 Range: 0-1

Valid cases: 574
 Invalid: 0

Description

Relation of the mother to the infant upto the age of 6 months.

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months.

Pre question

Background

Literal question

Are you (NAME OF CHILD)'s mother?

Post question

REASONS FOR NOT INTERVIEWING THE MOTHER

Interviewer instructions

N/A

alive (died)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 0-1

Valid cases: 574

Invalid: 0

Description

Whether the infant upto the age of 6 months is alive or dead

Universe

Infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Child's Vital status

Literal question

Where is (NAME)?

Post question

IF CHILD IS DEAD OFFER YOUR CONDOLENCES, Then ask:When did (NAME) die?

Interviewer instructions

FW: IF CHILD IS DEAD OFFER YOUR CONDOLENCES,

COMPUTE THE AGE OF THE CHILD AT DEATH

FW: CALCULATE THE AGE OF THE CHILD BY SUBTRACTING

DATE WHEN CHILD WAS BORN FROM WHEN IT DIED.

IF BABY DIED THE SAME DAY IT WAS BORN RECORD

00' DAYS. RECORD ONLY IN ONE UNIT

sex (sex)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 1-2

Valid cases: 154

Invalid: 420

Description

The sex of the infant upto the age of 6 months

Universe

Infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Background

Literal question

CHILD'S SEX (1=MALE; 2=FEMALE)

Post question

N/A

Interviewer instructions

N/A

date born/enumerated/inmigrated into DSA (%td format) (dateintodsa)
File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 495

Minimum: NaN

Maximum: NaN

Description

The date born, enumerated and inmigrated into the DSA

Universe

The child upto the age of 6 months

Source of information

Mother of the child upto the age of 6 months

Pre question

N/A

Literal question

date born/enumerated/inmigrated into DSA (%td format)

Post question

N/A

Interviewer instructions

N/A

type of first event (born/enumerated/inmigrated) (firstevent)
File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 26

Decimals: 0

Range: -6-9999995

Valid cases: 495

Invalid: 79

Description

The type of first event (born/enumerated/inmigrated)

Universe

Infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

N/A

Literal question

type of first event (born/enumerated/inmigrated)

Post question

N/A

Interviewer instructions

N/A

date died/outmigrated/still resident in DSA (%td format)

(dateoutofdsa)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 495

Minimum: NaN

Maximum: NaN

Description

N/A

Universe

N/A

Source of information

N/A

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

type of last event (died/outmigrated/still resident) (lastevent)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 26

Decimals: 0

Range: -6-9999995

Valid cases: 495

Invalid: 79

Description

The type of last event (died/outmigrated/still resident)

Universe

The infant upto 6 months

Source of information

The mother upto the age of 6 months

Pre question

N/A

Literal question

type of last event (died/outmigrated/still resident)

Post question

N/A

Interviewer instructions

N/A

complete years of residence in DSA (durstay_years)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 25
 Decimals: 0
 Range: -10-9999995

Valid cases: 495
 Invalid: 79

Description

The complete number of years of residence in DSA

Universe

The infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

complete years of residence in DSA

Post question

N/A

Interviewer instructions

N/A

ethnic (ethnic)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 9
 Decimals: 0
 Range: 1-95

Valid cases: 574
 Invalid: 0

Description

Ethnical Background of the mother and infant

Universe

Mother and infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

Ethnic

Post question

N/A

Interviewer instructions

N/A

Community unit (comm_unit)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 9
 Decimals: 0
 Range: 1-6

Valid cases: 574
 Invalid: 0

Description

The community unit where the mother and the infant upto the the age of 6 months stay.

Universe

The infant upto the age of 6 months

Source of information

Motjher of the infant upto the age of 6 months

Pre question

N/A

Literal question

Community Unit

Post question

N/A

Interviewer instructions

N/A

blocks (block)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 18

Decimals: 0

Range: 1-4

Valid cases: 574

Invalid: 0

Description

The block where the mother and the infant upto the age of 6 months stay

Universe

The infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months.

Pre question

N/A

Literal question

Blocks

Interviewer instructions

N/A

date of intervention (datee)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 11

Valid cases: 574

Minimum: NaN

Maximum: NaN

Description

The exact date when the intervention happned

Universe

The infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

Date of intervention

Post question

N/A

Interviewer instructions

N/A

period of enrollment (period)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 0-3

Valid cases: 574

Invalid: 0

Description

The time when the pregnant woman was enrolled

Universe

The pregnant woman

Source of information

The pregnant woman

Pre question

N/A

Literal question

The period that the mother was enrolled

Post question

N/A

Interviewer instructions

N/A

timely bcg (bcgt7)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 0-1

Valid cases: 574

Invalid: 0

Description

The timeliness of the administration of the BCG vaccine

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

Vaccination History

Literal question

BCG

Post question

BCG Scar

Interviewer instructions

FW: COPY DATE CHECKED FROM THE CARD. CIRCLE 1 IF SCAR WAS PRESENT AND 2 IF SCAR WAS ABSENT. IF NO INFORMATION, CIRCLE 3

timely opv (opvt7)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
Format: numeric
Width: 9
Decimals: 0
Range: 0-1

Valid cases: 574
Invalid: 0

Description

The timeiness of administration of OPV vaccination

Universe

The infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Vaccination History

Literal question

Oral Polio Birth Dose
Oral Polio 1st Dose
Oral Polio 2nd Dose
Oral Polio 3rd Dose

Post question

N/A

Interviewer instructions

N/A

(id)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
Format: character
Width: 15

Valid cases: 574
Invalid: 0

Description

The identification of the mother

Universe

The identification number of the mother of the infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

ID

Post question

N/A

Interviewer instructions

N/A

ID of NUHDSS household at start event (hhid)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 12

Valid cases: 503

Invalid: 0

Description

Identification number of household of the mother with the infant upto the age of 6 months.

Universe

Infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Background

Literal question

HOUSEHOLD ID

Post question

N/A

Interviewer instructions

N/A

calendar year of event (calendar)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 2002-2019

Valid cases: 503

Invalid: 71

Description

The calendar year of the events that happened

Universe

The infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

calendar year of event

Post question

N/A

Interviewer instructions

N/A

residency event (event)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 22
 Decimals: 0
 Range: -6-9999995

Valid cases: 503
 Invalid: 71

Description

The residency event that occurred

Universe

The infant of up to the age of 6 months

Source of information

Mother of the infant up to the age of 6 months

Pre question

N/A

Literal question

residency event

Post question

N/A

Interviewer instructions

N/A

ID of NUHDSS location (locationid)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: character
 Width: 10

Valid cases: 503
 Invalid: 0

Description

Identification number of the Location of the mother and infant up to the age of 6 months

Universe

The infant up to the age of 6 months

Source of information

The mother of the infant up to the age of 6 months

Pre question

N/A

Literal question

ID of NUHDSS location

Post question

N/A

Interviewer instructions

N/A

slum area in NUHDSS (slumarea)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 14
 Decimals: 0
 Range: 1-9999995

Valid cases: 503
 Invalid: 71

Description

The slum area where the mother and the infant of up to the age of 6 months reside.

Universe

Infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

slum area in NUHDSS

Post question

N/A

Interviewer instructions

N/A

full name of NUHDSS individual (name)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: character

Width: 36

Valid cases: 503

Invalid: 0

Description

The full name of the individual of NUHDSS individual

Universe

The mother of the infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6

Pre question

N/A

Literal question

full name of NUHDSS individual

Post question

N/A

Interviewer instructions

N/A

wealth tertile (wealthtertile)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 21

Decimals: 0

Range: 1-9999995

Valid cases: 435

Invalid: 139

Description

The Wealth tertile of the mother of infant upto the age of 6 months

Universe

The infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Literal question

wealth tertile

Interviewer instructions

N/A

wealth quintile (wealthquintile)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 21

Decimals: 0

Range: 1-9999995

Valid cases: 435

Invalid: 139

Description

The wealth quantile of the mother of infant upto the age

Universe

The infant upto age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Literal question

wealth quintile

Interviewer instructions

N/A

highest level of school ever attended (edulevel)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 21

Decimals: 0

Range: 0-9999995

Valid cases: 503

Invalid: 71

Description

Highest Level of school ever attended by the mother of the infant

Universe

Mother of infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Sociodemographic Information

Literal question

What is your highest level of education?

Post question

N/A

Interviewer instructions

N/A

current marital status (maritalstatus)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 21
 Decimals: 0
 Range: 0-9999995

Valid cases: 503
 Invalid: 71

Description

The marital status of mother with infant upto the age of 6 months.

Universe

Woman with infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Sociodemographic Information

Literal question

What is your marital status?

Post question

N/A

Interviewer instructions

N/A

place of delivery/pregnancy termination (delivplace)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 27
 Decimals: 0
 Range: 1-9999995

Valid cases: 503
 Invalid: 71

Description

Place where the the woman delivered or where the pregnancy was terminated

Universe

The infant upto the age of 6 months

Source of information

Mother of the infant upto the age of 6 months

Pre question

N/A

Literal question

N/A

Post question

N/A

Interviewer instructions

N/A

mothers age (m_agecat)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete
 Format: numeric
 Width: 9
 Decimals: 0
 Range: 1-95

Valid cases: 574
 Invalid: 0

Description

Age of the mother

Universe

Mother of infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Sociodemographic Information

Literal question

How old are you?

Post question

N/A

Interviewer instructions

N/A

RECODE of edulevel (highest level of school ever attended)
(edulevel2)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 17

Decimals: 0

Range: 0-95

Valid cases: 574

Invalid: 0

Description

Level of education that the mother with infant upto the age of 6 months.

Universe

Mother of infant upto the age of 6 months

Source of information

Mother of infant upto the age of 6 months

Pre question

Sociodemographic Information

Literal question

What is your highest level of education?

Post question

N/A

Interviewer instructions

N/A

RECODE of maritalstatus (current marital status) (marital2)
File: birth_dose_analytical_data_set_po**Overview**

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 0-95

Valid cases: 574

Invalid: 0

Description

The marital status of mother with infant upto the age of 6 months

Universe

Woman with infant upto the age of 6 months

Source of information

The mother of the infant upto the age of 6 months

Pre question

Sociodemographic Information

Literal question

What is your marital status?

Post question

N/A

Interviewer instructions

N/A

RECODE of wealthtertile (wealth tertile) (wi3)

File: birth_dose_analytical_data_set_po

Overview

Type: Discrete

Format: numeric

Width: 9

Decimals: 0

Range: 1-95

Valid cases: 574

Invalid: 0

Description

The RECODE of wealthtertile (wealth tertile)of the mother of infant upto of 6 months

Universe

N/A

Source of information

N/A

Pre question

N/A

Literal question

RECODE of wealthtertile (wealth tertile)

Post question

N/A

Interviewer instructions

N/A

Documentation

Questionnaires

Appendix2A_questionnaire.xls

Title Appendix2A_questionnaire.xls
Author(s) African Population and Health Research Center
Date 30/01/2026
Country Kenya
Language ENGLISH
Contributor(s) Gershim Asiki, Ph.D.
Publisher(s) African Population and Health Research Center (APHRC)
Filename Appendix2A_questionnaire.xls

Reports

Technical report_vaccines study.docx_revised_FINAL.doc_GA_PM.pdf

Title Technical report_vaccines study.docx_revised_FINAL.doc_GA_PM.pdf
Author(s) African Population and Health Research Center
Date 30/01/2026
Country Kenya
Language ENGLISH
Contributor(s) Gershim Asiki, Ph.D.
Publisher(s) African Population and Health Research Center (APHRC)
Filename Technical report_vaccines study.docx_revised_FINAL.doc_GA_PM.pdf

Technical documents

Protocol_GCE_revised_for submission-1-2.docx

Title Protocol_GCE_revised_for submission-1-2.docx
Author(s) African Population and Health Research Center
Date 30/01/2026
Country Kenya
Language ENGLISH
Contributor(s) Gershim Asiki, Ph.D.
Publisher(s) African Population and Health Research Center (APHRC)
Filename Protocol_GCE_revised_for submission-1-2.docx

Other materials

BirthdoseTables.xlsx

Title	BirthdoseTables.xlsx
Author(s)	African Population and Health Research Center
Date	30/01/2026
Country	Kenya
Language	ENGLISH
Contributor(s)	Gershim Asiki, Ph.D.
Publisher(s)	African Population and Health Research Center (APHRC)
Filename	BirthdoseTables.xlsx
