

Manual to monitor and assess the impact of vaccinations and other childhood interventions on morbidity and mortality in Navrongo HDSS

The study uses the Navrongo Health and Demographic Surveillance System (HDSS) as a platform to monitor the real life effects of current child health programmes with the aim to assess the overall effect of the interventions on mortality and morbidity, including the specific and non-specific and sex-differential effects of the interventions and their potential interactions

Navrongo Health and Demographic Surveillance System (NHDSS)

The Navrongo Health and Demographic Surveillance System was established in 1993 with the aim of monitoring the demographic dynamics of the Kassena-Nankana East and West Districts (KNDs) to provide the platform for health research that will inform policy decisions of health interventions. The NHDSS is in the Kasena-Nankana District¹ (KND) of the Upper East region in the northern part of Ghana and covers a land area of 1675km² with an estimated population of 155,000 under continuous demographic surveillance. KND is the operational area of the Navrongo Health Research Centre (NHRC), which has been conducting health research over the past two decades. Over the years, NHRC has built an elaborate infrastructure for health research in the two operational districts and beyond.

Operations of the NHDSS

The field operations of the NHDSS involve visits to all households to collect and update health and demographic information of every individual resident in the area. Updates on health and demographic information are done every four months. For ease of allocation of work to fieldworkers and for supervision purposes, the study area is divided into 5 zones, namely the North, South, East, West and Central. The zones are further divided into subzones, while the subzones further divided into clusters. There are about 247 clusters in the entire study area, with a cluster having an average of 70 compounds. The entire study area has about 17,500 active compounds and 30,000 households, with each household having an average of five members.

Whenever a household is visited, the household head, or in his/her absence, any adult member of the household provides the needed information. The main instrument for data collection is the Compound/Household Registration Book (CRB or HRB). The CRB is a book which contains the names and the basic demographic characteristics of each individual in a compound/household in each cluster. The CRB has several columns, one of which is used to indicate the status (presence or absence) of each individual. If an individual is absent (AB), it is further indicated whether it is a migration, death or just temporary absent. When an event is recorded in the CRB, a form is filled with detail information about that particular event. Data is collected on the following events

¹ In 2008 the Kassena-Nankana District was split into two districts – Kassena-Nankana East and Kassena-Nankana West districts. In this SOP we use the original name of the district to refer to the two districts.

1. Births
2. Pregnancies
3. Deaths
4. In-migrations
5. Out-migrations
6. Marriages
7. Educational status
8. Household socio-economic characteristics
9. Vaccination status
10. Verbal autopsies

Community Key Informants (CKIs), who are selected members of the community and trained by the Navrongo Health Research Centre, complement the efforts of field workers by registering all new births, pregnancies and deaths that occur in their catchment area to ensure that vital demographic events are not missed.

The field team is made up of field workers and supervisors, a Research Assistant, a Research Officer and a Demographer. All field operations are being coordinated by the Field Headquarters' Team headed by the Demographer.

HDSS Data management

The Data management unit has four categories of personnel; the filing clerks, data entry clerks, data assistant managers and data managers. The filing clerks have the responsibility of logging out as well as receiving all registers and event forms from the field. Registers and forms received are sorted out and passed onto the data entry clerks for data entry. During the course of data entry, if any difficulty is encountered, data assistants are contacted to resolve them and if the problem is beyond the data assistants, the manager is called on to resolve them. If the problem requires that the forms are sent back to the field for correction, they are accordingly logged back to the field through the filing clerks for correction.

Routine Vaccination

The routine vaccination data collection is being carried out by the HDSS field team with support from funding from DANIDA and the European Union. Data on vaccination status, hospitalization, campaigns, breastfeeding practices, morbidity, insurance status, mid-upper arm circumference and bednet use on all children aged 3 years or below and resident in the Demographic Surveillance Area (DSA) at the start of the round are collected and updated every four months.

Inclusion criteria

All children who have been registered into the HDSS database and are aged three years or below at the start of the round are qualified to be interviewed in that round. All new births being registered for the first time and children who have migrated into HDSS and are aged three years or below at the start of the round are included in the study. There are three rounds in a year with the first round starting from January to April, the second round from May to August and the third round from September to December. Previous vaccination and breastfeeding information, if available, are printed for the information to be updated during household visits.

Vaccination Data Collection form

The data collection form has the following sections

1. Demographic characteristics of child
2. Health card status
3. Vaccination status
4. Health facility visits for weighing of child
5. Birth weight, BCG scar, World food Programme support and health insurance status
6. Campaigns
7. Hospitalisation
8. Breastfeeding practices
9. Morbidity
10. Bednet use and MUAC

1. Demographic Characteristics

If data on the child's characteristics already exists in the HDSS database, it is pre-printed on the listing for confirmation and updating of vaccine information; otherwise the field worker provides the information. The following variables are collected under this section.

- i) Name of child
- ii) ID of child
- iii) Compound Name
- iv) Location ID
- v) Sex M – Male, F- Female
- vi) Respondent 1-Mother 2 other
- vii) Date of Interview
- viii) Field worker's code

2. Health Card Status

- i) Yes, seen
- ii) Yes, not seen
- iii) No, Never had a card
- iv) No, had a card but lost
- v) Never had a card but vaccinated
- vi) No information

Reasons for child not vaccinated for BCG, Penta and Measles

If a child is one month old and has not received BCG vaccine, or is three months old and has not received penta1 or 11 months old and has not received measles vaccine, the field worker is expected to ask for reasons why the child is not vaccinated.

Below are the reasons for not being vaccinated

- (i) Was at the health center to get vaccinated but did not succeed
- (ii) Mother does not know of vaccination schedule
- (iii) Mother considers the child too small / sick for vaccination
- (iv) Religious/Cultural reasons
- (v) Distance to health facility

- (vi) Received but not indicated on card
- (vii) Other

3. Vaccination status information

If the health card is seen, the dates of the vaccines indicated on the health card are copied into the vaccination data collection form. Data is collected on the following vaccines: BCG, OPV0 (Polio at birth), OPV1-3, Penta 1-3, pneumococcal vaccine 1-3, rotavirus 1-2, Measles at 9 months, Yellow Fever, IPTi 1-3 and second dose measles at 18 months. In case of Vitamin A, space has been created for three doses with the most recent dose printed in the first column so that newly received Vitamin A doses after the most recent dose can be captured. If a child has a health card but no date to indicate when a child receives a vaccine, the field worker writes 07/07/1907 for missing vaccines.

4. Health facility visits for weighing of child

This section assesses the contact the child has with the health system by counting the number of visits that the child had with the health facility. The field worker counts the number of visits for weighing from the health card. These have grouped into 0-5, 6-11, 12-17 and 18-23 visits.

5. Birth weight, BCG scar, World food Programme support and Health Insurance status

Information on the child's birth weight is recorded from the health card if indicated. This does not change and is therefore pre-printed if it is already known so that the field worker does not collect the information again.

The fieldworker also indicates whether the child has a BCG scar by examining the child. 1 indicates child has a BCG scar and 2 no BCG scar. If data on BCG scar status has already been collected, it will be pre-printed on the form and the field worker does not need to collect that information again. However, if a child is less than 3 months at the time of examination for the BCG scar and it is not seen, the child will be examined again in the subsequent visit for the BCG scar. This is to ensure that BCG scars that develop later are captured.

World Food Programme (WFP) also gives supplementary food to children considered to be malnourished in the study area and the project documents this information. 1 indicates the child has received food from WFP and 2 indicate no food received.

Ghana has a National health insurance policy and the project documents the insurance status of all the children interviewed. The mother/guardian is asked whether the child is insured and the field worker is expected to inspect the card if available and choose one of the following options:

- 1) Yes, active – indicating that health insurance card is valid
- 2) Yes, expired – indicating insurance card is expired and requires renewal
- 3) No - meaning child is not insured
- 4) Card not seen

6. Campaigns

As part of the routine vaccination data collection, all campaigns must be documented with dates and the specific vaccines and/or micronutrients given during those campaigns. All campaigns period/dates are indicated on the form and the field worker is expected to find out whether the child took part in that particular campaign describing the activities that took place during that particular campaign with specific dates. If a campaign takes place within a data collection round, data on that particular campaign will be captured in the subsequent round. For example, if a three day campaign takes place in March, data collection on that campaign will be in the May to August round. A documentation of vaccines and/or micronutrients given during campaigns, specific dates during which these campaigns took place as well as the round in which the campaign data has been collected is being kept by the research team. Find below an example

Time Period	Name of Campaign	Vaccines and Nutrients Given	Round data was collected	Comment
24-26 th March 2011	NID-National Immunization Days	Polio	Round 66 May to Aug 2011	Team-Lets Kick Polio out of Ghana
12 to 14 th May 2011	NID	Polio, Vitamin A and dewormers	Round 66 May to Aug 2011	
18 th to 20 th Aug 2011	NID	Polio	Round 67 Sept to Dec 2011	
27 th to 29 th Oct 2011	NID	Polio and Vitamin A	Round 68	

7. Hospitalisation

Mothers/Guardians are asked whether the child has been hospitalized since the last visit (4 months). If yes, questions are asked about the date of hospitalization, duration of admission and reason for hospitalization. The following options are given as reasons for hospitalization

- 1) Respiratory infection
- 2) Fever
- 3) Diarrhoea
- 4) Accident
- 5) Other

Space has been created for two episodes of hospitalization. If a child has more than two episodes of admissions since the last visit, a separate form will be filled.

8. Breastfeeding practices

The following questions on breastfeeding practices of children aged three years or below are being asked.

HL: How long after birth did you start breastfeeding?

- 1) Immediately
- 2) Later same day
- 3) Day 2
- 4) 3 or more days
- 5) Never breastfed

HO: How old was NAME when you started giving him/her water or food?

[] Days

[] months

Record 88 for exclusive breastfeeding

SB: Are you still breastfeeding

- 1) Yes
- 2) No
- 8) NA

SF: How old was NAME when you stopped breastfeeding?

[] Months

[] Years

Record 88 for Not Applicable (NA)

On all the questions on breastfeeding practices, previous answers, if available, are pre-printed for the field workers to update.

9. Morbidity

On morbidity, questions are asked about the experience or occurrence of specific illnesses in the last two weeks and whether the child sought care for such illnesses. Questions are asked about the experience of fever, diarrhoea and acute respiratory infection in the last two weeks and whether the child sought care for such illnesses.

10. Bednet use and MUAC measurement

Mothers are asked whether their children slept under a bednet last night.

1. Yes
2. No

How often does NAME sleep under the bednet?

1. Always
2. Sometimes
3. Only in Rainy season
4. In the dry season
5. Never

How many children sleep under the same bed with NAME?.....

At the end, the mid-upper arm circumferences (MUAC) of all children are measured.

Blank Vaccination Forms

Blank vaccination forms are printed for field workers to use in registering new births and children who are qualified to be interviewed but did not appear in the vaccination form listing.

Vaccination forms for dead children

Vaccination information on all children aged 5 years or below who died in 2011 or later are to be collected. If a child dies before age 5, a field worker is expected to ask for the vaccination card and if available document vaccination information for the dead child. A data manager prints a list of dead children without vaccination information for the field workers to ask for the health card and if it seen document the information in their next visit to the household.

Vaccination Data Entry

Data on vaccination is double entered and verified. All inconsistencies identified during the verification process are corrected by the data entry clerks and in some cases sent back to the field for correction. Data entry screens are developed using Visual FoxPro 6.0

APPENDIX I

VACCINATION DATA COLLECTION FORM - NHRC Round 70

Cluster: CZA FW

Name	Individ	Birth Date	HC	B	Polio	Penta	M	Y	Pneumo-coccal	Rotavirus	M	Vita A	IPTI	Visits	BW	GMP	HL	STm	Admission	
Compound Name	Compid	Sex	BC	C	0	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Int date	Res: M=1, Oth=2	MV	PE	G	0	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3

CHARITY THOMAS															0.0					
CZA12006		03/07/11													0					
NAB KING																				
CZA12		F																		

Fever Ftreat Diarrhea Dtreat ARTI Atreat No. of children who sleep in one bed MUAC

SAM YOO					28	17	01	06	05	01	06	06	05	05						
SCZA1609		17/01/10													9.9					
CYNTHIA KOO					01	01	03	04	05	03	04	04	11	11						
CZA15		M			10	10	10	10	10	10	10	10	10	10						

Fever Ftreat Diarrhea Dtreat ARTI Atreat No. of children who sleep in one bed MUAC

GREGORY MORE					29	29	10	08	17	10	08	17			3.3					
CZA23449		29/09/11													1					
LARRY WORMS					09	09	11	12	01	11	12	01								
CZA23		M			11	11	11	11	12	11	11	12								

Fever Ftreat Diarrhea Dtreat ARTI Atreat No. of children who sleep in one bed MUAC

HC (H card):
 1. Yes seen
 2. Yes, not seen
 3. No, never had a card
 4. No, had a card but lost
 5. No information

Reason not vaccinated for BCG, Polio, Penta and MV:
 1. Was at health centre to get vaccine but did not succeed
 2. Mother does not know of vaccination schedule
 3. Mother considers child too small/old for vaccination
 4. Religious/Cultural reasons
 5. Distance to health facility
 6. Received but not indicated on card
 7. other

ONet: How often does NAME sleep under the bednet?
 1. Always
 2. Sometimes
 3. rainy season
 4. Dry season
 5. Never

Rea: Reason for admission
 1. Respiratory infection
 2. fever
 3. Diarrhoea
 4. Accident
 5. Other

HL: How long after birth did you start BF
 1. Immediate 2. Later same day
 3. Day 2 4. 3/more days 5. Never

HOd: How old (in days) was NAME when you started giving NAME food or drinks?
 HOm: How old (in months) was NAME when you started giving NAME food or drinks?

SBF: Still breastfeeding 1. Yes 2. no 3. NA
 STm: How old (in months) was NAME when you stopped breastfeeding?
 STy: How old (in years) was NAME when you stopped breastfeeding?
 NHIS: 1. Yes, active 2. Yes, expired 3. No 4. card not seen

APPENDIX II

BLANK VACCINATION DATA COLLECTION FORM - NHRC Round 70

Cluster: FW

Name	Birth Date	[HC]	[BC]	[B]	[M]	[Y]	[Pneumo- coccal]	[Rotavirus]	[M]	[Vita A]	[IPTi]	[Visits 0-5]	[BW]	[CMP 10-12]	[HL]	[STm]	[Admission]		
Compound Name	Sex	[PO]	[C]	[0]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Int date	Res: M=1, Oth=2	[MV]	[G]	[0]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]

Fever Ftreat Diarrhea Dtreat ARTI Atreat No. of children who sleep in one bed MUAC

Fever Ftreat Diarrhea Dtreat ARTI Atreat No. of children who sleep in one bed MUAC

Fever Ftreat Diarrhea Dtreat ARTI Atreat No. of children who sleep in one bed MUAC

HC (Hcard): 1. Yes seen 2. Yes, not seen 3. No, never had a card 4. No, had a card but lost 5. No information	Reason not vaccinated for BCG, Polio, Penta and MV: 1. Was at health centre to get vaccine but did not succeed 2. Mother does not know of vaccination schedule 3. Mother considers child too small/sick for vaccination 4. Religious/Cultural reasons 5. Distance to health facility 6. Received but not indicated on card 7. other	ONet: How often does NAME sleep under the bednet? 1. Always 2. Sometimes 3. rainy season 4. Dry season 5. Never	Rea: Reason for admission 1. Respiratory infection 2. fever 3. Diarrhoea 4. Accident 5. Other	HL: How long after birth did you start BF 1. Immediate 2. Later same day 3. Day 2 4. 3/more days 5. Never HOd: How old (in days) was NAME when you started giving NAME food or drinks? HOm: How old (in months) was NAME when you started giving NAME food or drinks?
SBF: Still breastfeeding 1. Yes 2. no 8. NA		STm: How old (in months) was NAME when you stopped breastfeeding?		STy: How old (in years) was NAME when you stopped breastfeeding?

NHIS: 1. Yes, active 2. Yes, expired 3. No 4. card not seen

IPTI 3.....

VITAMIN A1.....

VITAMIN A2.....

VITAMIN A3.....

MEASLES (18)
