Ghana

Child Verbal Autopsy Study

2008

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Ghana Statistical Service
Ghana Health Service
Accra, Ghana

ICF Macro
Calverton, Maryland, U.S.A.

November 2009 ***TR-11-80***

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MEASURE Evaluation

MEASURE Evaluation is funded by the U.S. Agency for International Development (USAID) through Cooperative Agreement GHA-A-00-08-00003-00 and is implemented by the Carolina Population Center at the University of North Carolina at Chapel Hill, in partnership with Futures Group International, ICF Macro, John Snow, Inc., Management Sciences for Health, and Tulane University. The authors' views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.

This report summarises the findings of the Ghana Child Verbal Autopsy Study from data collected in the 2008 Ghana Demographic and Health Survey (GDHS) carried out by the Ghana Statistical Service and the Ghana Health Service. ICF Macro provided financial and technical assistance for the survey through the USAID-funded MEASURE DHS programme, which is designed to assist developing countries to collect data on fertility, family planning, and maternal and child health. Local costs for the survey were partially funded by the Ghana Ministry of Health, the Ghana Statistical Service (GSS), the Ghana AIDS Commission, UNICEF, UNFPA, and the Danish International Development Agency. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of USAID or donor organisations.

Additional information about the 2008 GDHS may be obtained from the Ghana Statistical Service (GSS), P.O. Box 1098, Accra, Ghana (Telephone: 233-21-671-732; Fax: 233-21-671-731).

Additional information about the MEASURE DHS programme may be obtained from MEASURE DHS, ICF Macro, 11785 Beltsville Drive, Suite 300, Calverton, MD 20705, U.S.A. (Telephone: 1-301-572-0200; Fax: 1-301-572-0999; Email: reports@macrointernational.com).

Suggested citation:

Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF Macro. 2009. *Ghana Child Verbal Autopsy Study 2008*. Accra, Ghana: GSS, GHS, and ICF Macro.

CONTENTS

ACRONYMS

DHS	Demographic and Health Survey
GCVAS	Ghana Child Verbal Autopsy Study
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GSS	Ghana Statistical Services
ICD	International Classification of Diseases
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
ITN	Insecticide Treated Net
MOH	Ministry of Health
SAVVY	Sample Vital Registration with Verbal Autopsy
UNFPA	United Nations Population Fund
USAID	U.S. Agency for International Development
VA	Verbal Autopsy
VAQ	Verbal Autopsy Questionnaire
WHO	World Health Organization

TABLES AND FIGURES

KEY FINDINGS

- The five leading causes of death in children under five years in Ghana are:
  - malaria (29%)
  - perinatal and early neonatal conditions (23%)
  - malnutrition (8%)
  - diarrhoea (5%)
  - pneumonia (3%).

- The majority (68%) of deaths in the first month of life (neonatal deaths) are due to perinatal and early neonatal conditions.

- Among children age 29 days to 5 years, malaria is by far the major killer, accounting for 43% of deaths in this age group; malnutrition (12%) and diarrhoea (8%) are the second and third main causes of death.

- Over half of children under five (54%) die at home, 41% die at health facilities, and the rest die in other places.

- Slightly over 60% of children under five who died received some form of treatment or care for the illness that led to death.

- Most deaths in children under five are caused by diseases that are addressable through prevention programmes, such as use of insecticide-treated bed nets or childhood vaccinations.

INTRODUCTION 1

1.1 OVERVIEW AND OBJECTIVES

The objective of the 2008 Ghana Child Verbal Autopsy Study (GCVAS) is to gather data about the causes of death of children under age five in Ghana. Since many of the children in Ghana do not die in health facilities, information on the causes of death based on death certificates completed by health professionals is rare, and therefore not representative of the country as a whole. This study is based on a reliable sample of deaths among children under five that was collected in the 2008 Ghana Demographic and Health Survey (GDHS). Households who reported the death of a child under five in 2005 or after were revisited during a Demographic and Health Survey (DHS) data collection, and the primary caretaker and/or others in the household were interviewed with a Verbal Autopsy Questionnaire (VAQ) designed to determine the causes of death.

The study was implemented by the Ghana Statistical Services (GSS) and the Ghana Health Service (GHS). Technical assistance was provided by the MEASURE Evaluation and MEASURE DHS projects. Funding for the local costs was provided through MEASURE DHS, which managed a basket of funds from the U.S. Agency for International Development, the Ghana Ministry of Health, GSS, the Ghana AIDS Commission, UNICEF, UNFPA, and the Danish International Development Agency.

1.2 BACKGROUND ON LEAD CAUSES OF UNDER-FIVE MORTALITY IN GHANA

In previous estimates of under-five mortality, the lead causes of death are: malaria (33%), neonatal causes (28%), pneumonia (15%) and diarrhoea (12%).[1]

The lead cause of under-five mortality in the past, malaria, is a public health concern throughout Ghana, and according to the WHO World Malaria Report, there were an estimated 3.9 million malaria cases in children under-five in 2006. Most cases are caused by *P. falciparum* but only 15–20% are confirmed.[2] In 2007, malaria was responsible for 39% of outpatient attendances and was the leading cause of mortality, causing over 18% of deaths reported at health facilities.[3] In Ghanaian children under five, it was estimated that between 21 and 32 thousand deaths occurred due to malaria.[2]

To address the leading cause of under-five mortality in 2006, Ghana is implementing a malaria control strategy to reduce death and illness due to malaria. The strategies for malaria control include prevention through the use of insecticide treated nets (ITNs), early detection, and appropriate prompt treatment. Targets for programme activities by the year 2015 include:

- One hundred percent of households owning at least one ITN
- Eighty percent of the general population sleeping under ITNs
- At least an 85% increase from current levels of the number of children under-five and pregnant
- women sleeping under treated nets
- One hundred percent of pregnant women shall be on appropriate Intermittent Preventive Treatment
- At least 90% of all structures in targeted districts will be covered through indoor residual spraying by 2015[4]

[1] WHO Mortality Country Fact Sheet 2006: http://www.who.int/whosis/mort/profiles/mort_afro_gha_ghana.pdf

[2] WHO World Malaria Report 2008: http://apps.who.int/malaria/wmr2008/malaria2008.pdf

[3] Ghana Health Service Document: Annual Report 2007

[4] National Malaria Control Monitoring and Evaluation Plan 2008-2015: http://www.ghanahealthservice.org/includes/upload/publications/mandePLAN.pdf

In 2006, neonatal causes were the second leading contributor to under-five mortality in Ghana. Interventions in Ghana that target pregnant women and can influence deaths amongst neonates include: antenatal care, deliveries by skilled personnel, access to obstetric care, Caesarian section deliveries, and postnatal care. By 2007:

- Antenatal care uptake increased with 62.9% of registrants making at least 4 visits
- Deliveries conducted by skilled personnel declined to 34.9% from 44.5% in 2006 and may be due to cessation of fee-free delivery
- Caesarian sections accounted for 8% of deliveries and have been above 5% since 2002
- Postnatal coverage was 53.7% and had been above 50% in prior years, but had not reached the general target of 60%[3]

Pneumonia and diarrhoea cause significant mortality and morbidity in Ghana, and both are amongst the top ten causes of disease in children under-five with over 38 and 154 thousand outpatient cases of pneumonia and diarrhoea, respectively. Ghana addresses diarrhoea and pneumonia through the Integrated Management of Childhood Illnesses, which focuses on improving: the case management skills of health staff, the health system, and community and family practices.[3]

Measuring and tracking under-five mortality is important to gauge health program impact and to make decisions regarding health program structure and the allocation of resources. In addition, Ghana has adopted the 2015 Millenium Development Goal, which aims to reduce by two thirds the mortality rate among children under five.

1.3 Background on the 2008 Ghana Demographic and Health Survey

The 2008 Ghana Demographic and Health Survey was conducted by GSS and GHS between September 2008 and November 2008.[5] It was designed to provide information on a wide array of demographic and health indicators in the country. Specifically, the GDHS collected information on characteristics of household dwelling units, fertility and fertility preferences, marriage, sexual activity, awareness and use of family planning methods, breastfeeding practices, vaccinations and childhood illnesses, awareness of diseases such as HIV/AIDS, and domestic violence. In addition, the survey collected anthropometric data and haemoglobin measurements on women age 15 to 49 and children age 6 to 59 months. Specific questions also obtained information on exposure to malaria during pregnancy, episodes of fever in children less than five years old, whether these children received treatment for malaria, and the type of treatment they received.

The GDHS surveyed a nationally representative sample of 12,323 households. This sample provides estimates of many important demographic and health indicators at the national level, and for the 10 regions in Ghana. The sample involved selecting 412 clusters from the master sampling frame that was constructed from the 2000 Ghana Population and Housing Census.

1.4 Organization and Methodology of the Study

1.4.1 Identification of Respondents

The GCVAS survey team was embedded within the 2008 Ghana Demographic Health Survey. Survey teams consisted of a supervisor, a field editor, four interviewers, and a driver. In order to identify deaths of children less than five years of age occurring during the prior three years, interviewers utilized the Household Questionnaire to record all deaths of household members that occurred since January 2003. Based on this information, if the interviewer identified the death of a child under five after January 2005, the field editor visited the household and completed a VAQ. This differs from the methodology in other DHS associated Verbal Autopsy (VA) studies such as in Rwanda and Uganda, which utilized a

[5] Ghana Demographic and Health Survey 2008: http://www.measuredhs.com/pubs/pdf/FR221/FR221.pdf

"follow-on" methodology whereby VA survey teams returned to households with VA eligible deaths identified by the DHS after DHS data collection was completed.

By embedding the GCVAS within the GDHS, both the survey costs and the recall period could be reduced while improving the response rate. To simplify data collection in the field, VAQs were completed on children who died in and after January of 2005, rather than determining the exact cutoff by calculating the date 36 months before the interview date. VAQs with study periods in excess of 36 months could then be excluded during the analysis. All VAQs, however, were analyzed in this report because of the small number of total VAQs completed, and because the maximum recall period would be similar to the maximum recall periods in previous studies that utilized a follow-up method of collecting VA data. As a result, the maximum recall period in this analysis was 47 months (if the earliest death occurred in January 2005 and the DHS and verbal autopsy data collection took place in November 2008, then the maximum recall period is 12 + 12 + 12 + 11 = 47 months). Had the VAQs with recall periods greater than 36 months been excluded, 28 VAQs (15%) would not have been included in this analysis, and the sample size would have been reduced from 199 to 171.

Embedding the GCVAS within the DHS provides the following advantages: the survey would not need to incur the additional costs associated with interviewers returning to specific enumeration areas a second time to complete a verbal autopsy; recall period would not be lengthened by this delay between DHS death identification and Verbal Autopsy teams returning to the household at a later date; and eligible respondents would be immediately identified and interviewed, so loss of respondents due to the possibility of households being absent or moving during the period between identification by DHS and interview for the VA would not occur.

1.4.2 Verbal Autopsy Questionnaires

The 2008 GCVAS adopted the World Health Organization (WHO) questionnaire for neonatal and child deaths that is used to collect information on causes of death for children under five.[6] After obtaining informed consent (see Appendix A), one of two questionnaires was used: one for children who died under 29 days of age (Appendix B) and the second for children who died at 29 days to 59 months of age (Appendix C). During survey preparation, a MEASURE Evaluation verbal autopsy expert worked with DHS staff and made the appropriate modifications to the core verbal autopsy questionnaires and manuals to fit the Ghana situation. These adaptations were then incorporated into the verbal autopsy interviewer training manual. The GCVAS VAQs were then translated into Akan, so that teams in the field could use versions in both this language and English.

1.4.3 Training and Data Collection

Field editors and supervisors in each of the 23 teams trained for the GDHS were also trained for 5 days (1-5 September 2008) on VA in Winneba, Ghana. They learned how to locate the households with child deaths in the reference period, and how to administer the verbal autopsy questionnaires. The training was conducted in the form of lectures and discussions that was augmented by group work and extensive practical exercises. The training also included a session on some common childhood illnesses and their associated symptoms.

A field practice session was held around the town of Winneba with mothers who had lost a child under the age of five within the past three years. After the training and field practice, discussions were held with trainees to review the content of the data collection tools question by question, and to provide feedback to teams.

Data collection for the 2008 GCVAS started on 8 September and was completed on 25 November 2008. As part of the data quality checks, team supervisors reviewed verbal autopsy questionnaires to check for inconsistencies. Teams were also periodically supervised by senior GSS and

[6] WHO document Verbal Autopsy Standards: Ascertaining and attributing causes of death: http://www.who.int/whosis/mort/verbalautopsystandards/en/index.html

ICF Macro staff during data collection. In addition, efforts were made to assign enumeration areas to teams that could speak the local language spoken there.

1.4.4 Cause of Death Certification and Coding

GHS selected doctors to review the verbal autopsies and certify the cause of death. Doctors needed to be available for a sufficient amount of time to undergo training and complete International Classification of Diseases (ICD) training; based on the amount of VAQs completed and on the number of doctors available, this was expected to take 5 to 10 days. A variety of physicians, including general practitioners, pediatricians, and doctors specializing in public health participated. Most doctors selected were from GHS or Komfo Anokye Teaching Hospital. In addition, one of the doctors in attendance was a senior GHS official.

Training of physicians was conducted by the MEASURE Evaluation verbal autopsy experts from 9-13 March. Training consisted of theoretical classes on verbal autopsy, background on the survey, classification of deaths using the WHO International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10), and production of international death certificates according to the WHO/SAVVY manuals and ICD-10 volumes 1, 2, and 3 (2nd edition), which had been provided by MEASURE DHS.[7] Theory was augmented with practical work using verbal autopsy forms collected during the fieldwork. Experience with cause of death coding was not a prerequisite for being recruited, and although most of the doctors selected had experience in writing death certificates, none had prior training on the WHO ICD-10 methodology. The 2008 GCVAS cause-of-death training was thus a capacity-building exercise.

After ICD training, VAQs were divided amongst physicians for coding. Doctors worked in pairs: doctors first reviewed VAQs and assigned ICD codes based on the determined cause of death individually and while being blinded to their partner's cause of death conclusion. In instances where the doctors' cause of death differed, they worked together to arrive at a consensus cause of death. Whether resulting from initial agreement or a final consensus, the resulting underlying and direct causes of death were given ICD-10 codes and the pair of physicians created a final death certificate (Appendix D). In order to ensure consistent, high quality data, verbal autopsy forms, their respective death certificates, and ICD codes were reviewed by the ICD trainer for any errors, and appropriate guidance and instructions were provided to correct mistakes.

1.4.5 Data Management

Data entry and management was done by MEASURE and GSS staff using Microsoft Excel and CSPro. Due to the limited number of VAQs, MEASURE staff were able to use Excel to track VAQ distribution and ICD coding by physicians. After all cause of death coding was completed, GSS staff entered the death certificate data into CSPro. Double data entry was utilized to reduce key stroke errors introduced through transcription. These files were then given to MEASURE Evaluation and were linked to the data collected by MEASURE DHS during the 2008 GDHS. Considerable effort was expended by MEASURE Evaluation and MEASURE DHS staff to match the death certificate files to the verbal autopsy questionnaire files, and in turn to the 2008 GDHS dataset. Weights based upon the DHS household weights were then added to the file and staff at MEASURE Evaluation produced tabulations and figures. Causes of death were collapsed into broad categories using the WHO condensed infant and child mortality tabulation list (see Appendix E). This tabulation list does not count neonatal deaths caused by gestational malaria as a malaria death, so for Section 3 which analyzes malaria versus non-malaria deaths, the one neonatal death coded as due to gestational malaria was moved from the maternal and labour factors causing death category to malaria.

[7] WHO ICD-10: http://apps.who.int/classifications/apps/icd/icd10online/

1.5 LIMITATIONS OF THE DATA

Retrospective birth histories such as those included in the 2008 GDHS are susceptible to data collection errors. A possible error in data collection is associated with incorrectly placing events (births and deaths) within the study period, which can lead to errors in calculating childhood mortality. Underreporting could result from early infant deaths not being included because they occur further back in time from the date of the survey, while over reporting can result from incorrectly including deaths that fall outside of the study period.

Verbal autopsy data are affected by recall effects. Presumably, difficulty in recalling the circumstances leading to the death of a child increases with the length of time since the child's death. This study is based on deaths that occurred during the 47-month period preceding the 2008 GDHS and GCVAS interview.

Another issue with verbal autopsy data is the ability to identify and code the correct cause of death based on signs and symptoms reported by family members. The verbal autopsy respondent may not have been with the child prior to death and thus may not be aware of the child's symptoms. For these reasons, readers of this report should interpret the study results with appropriate caution.

The GCVAS also coded only 199 deaths. This is fewer than originally anticipated, and is attributed to a sharper decline in Ghanaian child mortality than initially predicted. This small sample size limits the GCVAS accuracy of cause specific child mortality estimates.

1.6 RESPONSE RATES

Through this process described above, the GDHS identified 226 possible VAQ eligible deaths using the household questionnaire (Table 1). When the editor visited these households, VAQs for 27 of these deaths could not be completed. Most of these were due to respondents not being home, refusing to participate, or being incapacitated and unable to participate in a VAQ interview.

Table 1. Results of verbal autopsy

Percent distribution of eligible deaths by outcome of the verbal autopsy interview (Unweighted), Ghana 2008

Outcome	Number	Percent
VA Completed	199	88.1
VA not Completed	27	11.9
Not at home	5	2.2
Refused	7	3.1
Partially completed	1	0.4
Respondent incapacitated	8	3.5
Other	5	2.2
Age at death 5 years or more (VA304)	1	0.4
Total	226	100.0

STUDY RESULTS 2

2.1 DISTRIBUTION OF DEATHS BY CHARACTERISTICS

Table 2 shows the weighted distribution of the deaths analyzed. Just over one-third (36%) of the under-five deaths were among children who died in the first four weeks of life. Of these neonatal deaths, over 65% were male and over 60% occurred in rural settings. There is no discernable pattern in neonatal deaths by wealth quintile.

Post neonatal deaths accounted for 64% of under five deaths. The rural/urban breakdown was similar to neonatal deaths with greater than 60% of deaths in rural settings. Male children also accounted for a greater proportion of deaths recorded by the GCVAS. For post-neonatal deaths, the percentage of deaths appears inversely related to wealth quintile: the greatest proportion of deaths is from the poorest quintile, while the wealthiest quintile has the smallest contribution.

When analyzing all child deaths under five, deaths were relatively evenly distributed by wealth quintile except for the poorest and richest quintiles which, respectively, had the highest and lowest percentage of deaths recorded. The percentage of deaths also decreased with increasing age with almost 65% of recorded deaths occurring in the first year of life.

A disaggregation by maternal factors such as mother's education and mother's age at the time of birth of the child whose death was recorded is presented in Table 2 as well. Mothers' education level does not have a consistent effect except at levels higher than secondary education, but the low number of deaths observed within these mothers may be reflective of fewer women with the higher levels of education being included in the study sample. Similarly, the greatest proportion of under-five deaths in the study was to mothers between 20 and 29 years, but this may just reflect a natural peak in fertility.

The breakdown of malaria deaths differed from all under five deaths in the following manner: almost 40% of malaria deaths occurred in the poorest wealth quintile, disaggregation by sex was more even, and 65% of deaths occurred during the first two years of life.

Table 2. Distribution of deaths by background

Percent distribution of neonatal deaths, post-neonatal deaths, deaths from all causes and malaria-specific deaths for the three-year period preceding the GDHS, by background characteristics, Ghana 2008

	Neonatal deaths (0-28 days)	Post-neonatal deaths (29 days-4 years)	All deaths (<5 years)	Malaria deaths
Place of residence	100.0	100.0	100.0	100.0
Urban	38.4	36.1	36.9	33.8
Rural	61.6	63.9	63.1	66.2
Mother's education	100.0	100.0	100.0	100.0
No education, preschool	23.5	32.5	29.5	37.0
Primary	30.7	31.3	31.1	29.7
Secondary	44.1	36.2	38.8	33.3
Higher	1.6	.	0.5	.
Wealth quintile	100.0	100.0	100.0	100.0
Lowest	14.2	32.3	26.2	39.5
Second	24.4	19.9	21.4	18.7
Third	28.1	20.2	22.9	15.8
Fourth	17.3	17.4	17.4	14.7
Highest	15.9	10.1	12.0	11.5
Mother's age at birth (years)	100.0	100.0	100.0	100.0
<20	12.2	5.2	7.6	3.3
20-29	47.1	42.7	44.2	40.1
30-39	29.5	40.2	36.5	45.6
40-49	9.0	6.4	7.3	8.3
Don't know, missing	2.1	5.5	4.3	2.6
Sex of deceased	100.0	100.0	100.0	100.0
Male	66.2	56.0	59.5	54.6
Female	33.8	44.0	40.5	45.4
Child's age at death (months)	100.0	100.0	100.0	100.0
0 to 11	100.0	45.2	64.8	46.5
12 to 23	.	24.2	15.5	19.3
24 to 35	.	19.0	12.2	18.1
36 to 47	.	6.7	4.3	9.4
48 to 59	.	4.9	3.1	6.7
Total	71 (36%)	128 (64%)	199	60*

* For the malaria versus non-malaria death analysis, one cause of death that was coded as malaria in pregnancy was included as a malaria death for the malaria-specific analysis, but for the general analysis it was coded as "Fetus and newborn affected by maternal factors and by complications of pregnancy labour and delivery" according to the WHO 67 condensed infant and child mortality cause of death tabulation list.

2.2 CAUSES OF DEATH AMONG CHILDREN UNDER FIVE

Table 3 shows the causes of death determined by VA for all children under five according to the WHO standardized cause of death categorization table for children (Appendix E). It is apparent that malaria is the most common cause of death among children under five in Ghana, accounting for almost one-third of the under-five deaths. The next most common cause of death is factors affecting fetus and newborn around labor and delivery (23%), followed by malnutrition (8%), diarrhoea (5%), and pneumonia (3%).

Table 3. Causes of death among children under five

Distribution of deaths among children under five years by cause of death (weighted), Ghana 2008

Causes of death	Number	Percentage	95% lower confidence limit, percent	95% upper confidence limit, percent
Malaria	59	29.1	22.0	36.1
Fetus and newborn affected by maternal factors and by complications of pregnancy labour and delivery	46	23.1	16.5	29.7
Malnutrition and other nutritional deficiencies	12	7.8	3.2	12.4
Diarrhoea and gastroenteritis of presumed infectious origin	8	5.3	1.4	9.2
Pneumonia	6	2.9	0.4	5.4
Anaemias	3	2.6	0.0	5.5
Other intestinal infectious diseases	4	2.5	0.0	5.2
Haemorrhagic and haematological disorders of fetus and newborn	6	2.5	0.4	4.7
Disorders relating to length of gestation and fetal growth	3	1.9	0.0	4.1
All other external causes	4	1.9	0.0	3.9
Remainder of perinatal conditions	4	1.9	0.0	3.9
Meningitis	6	1.8	0.2	3.5
Other congenital malformations	5	1.7	0.1	3.4
Tetanus	4	1.6	0.0	3.5
Measles	4	1.4	0.0	2.9
Congenital malformations of the heart	2	1.4	0.0	3.4
Accidental poisoning by and exposure to noxious substances	2	1.3	0.0	3.4
Other symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified	2	1.1	0.0	2.6
Bacterial sepsis of newborn	2	1.1	0.0	2.6
Intrauterine hypoxia and birth asphyxia	2	0.8	0.0	2.2
Respiratory distress of newborn	1	0.7	0.0	2.2
Birth trauma	2	0.7	0.0	1.8
Septicaemia	2	0.7	0.0	1.7
Other acute respiratory infections	1	0.6	0.0	1.9
Remainder of diseases of the nervous system	1	0.5	0.0	1.5
Diseases of the digestive system	1	0.5	0.0	1.5
Diseases of the genitourinary system	1	0.5	0.0	1.5
Sudden infant death syndrome	1	0.4	0.0	1.3
Other accidental threats to breathing	1	0.4	0.0	1.2
Other respiratory conditions of newborn	1	0.4	0.0	1.1
Omphalitis of newborn with or without mild haemorrhage	1	0.3	0.0	1.0
Other congenital malformations of the nervous system	1	0.2	0.0	0.7
Undetermined	1	0.1	0.0	0.3
Total	199	100.0	.	.

2.3 CAUSES OF DEATH AMONG NEONATES

In the GCVAS, over one-third of all deaths to children under five occurred in the first month of life. Survey teams utilized a VAQ designed to identify causes of neonatal death (i.e., during the first 28 days of life) in order to assign a cause of death for each of these deaths (see Appendix B). As shown in Table 4, factors affecting labor and delivery were the primary cause of death, accounting for almost 70% of deaths. This was followed by hemorrhagic and haematological disorders (6%), and disorders related to length of gestation and fetal growth (6%). VA determined malaria was responsible for only one (1%) recorded neonatal death.

Table 4. Causes of death among neonates

Distribution of deaths among children under 28 days by cause of death (weighted), Ghana 2008

Causes of death	Number	Percentage	95% lower confidence limit, percent	95% upper confidence limit, percent
Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery	46	68.2	56.2	80.2
Haemorrhagic and haematological disorders of fetus and newborn	5	6.4	0.3	12.4
Disorders relating to length of gestation and fetal growth	3	5.7	0.0	12.2
Tetanus	4	4.7	0.0	10.4
Other congenital malformations	4	4.2	0.0	8.7
Bacterial sepsis of newborn	2	3.2	0.0	7.8
Intrauterine hypoxia and birth asphyxia	2	2.4	0.0	6.4
Birth trauma	2	2.1	0.0	5.2
Malaria	1	1.4	0.0	4.3
Omphalitis of newborn with or without mild haemorrhage	1	1.0	0.0	3.1
Other congenital malformations of the nervous system	1	0.7	0.0	2.1
Total	71	100.0	.	.

2.4 CAUSES OF DEATH AMONG CHILDREN AGE ONE MONTH TO UNDER FIVE YEARS

A second verbal autopsy questionnaire (Appendix C) was used to gather information on symptoms and conditions leading to the death of children age 29 days to under five years. The causes of deaths among these children are presented in Table 5.

For this age group of children in Ghana, malaria is by far the leading cause of death, accounting for 43% of deaths. This was followed by malnutrition (12%), diarrhoea (8%), and pneumonia (4%).

Table 5. Causes of post neonatal and child deaths

Distribution of deaths among children 29 days to under five years by cause (weighted), Ghana 2008

Causes of death	Number	Percentage	95% lower confidence limit, percent	95% upper confidence limit, percent
Malaria	58	43.2	33.6	52.9
Malnutrition and other nutritional deficiencies	12	11.8	5.0	18.6
Diarrhoea and gastroenteritis of presumed infectious origin	8	8.0	2.2	13.8
Pneumonia	6	4.4	0.5	8.2
Anaemias	3	3.9	0.0	8.3
Other intestinal infectious diseases	4	3.8	0.0	7.9
All other external causes	4	2.9	0.0	5.9
Remainder of perinatal conditions	4	2.8	0.0	5.9
Meningitis	6	2.8	0.3	5.2
Measles	4	2.2	0.0	4.4
Congenital malformations of the heart	2	2.1	0.0	5.1
Accidental poisoning by and exposure to noxious substances	2	2.0	0.0	5.1
Other symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified	2	1.6	0.0	4.0
Respiratory distress of newborn	1	1.1	0.0	3.3
Septicaemia	2	1.1	0.0	2.6
Other acute respiratory infections	1	0.9	0.0	2.8
Remainder of diseases of the nervous system	1	0.8	0.0	2.3
Diseases of the digestive system	1	0.8	0.0	2.3
Diseases of the genitourinary system	1	0.8	0.0	2.3
Sudden infant death syndrome	1	0.7	0.0	2.0
Other accidental threats to breathing	1	0.6	0.0	1.8
Other respiratory conditions of newborn	1	0.6	0.0	1.7
Haemorrhagic and haematological disorders of fetus and newborn	1	0.5	0.0	1.6
Other congenital malformations	1	0.5	0.0	1.5
Undetermined	1	0.1	0.0	0.4
Total	128	100.0	.	.

2.5 PLACE OF DEATH

Figure 1 shows the percent distribution of deaths among children under five by the place of death. Table 6 shows the same data by background characteristics, including urban-rural residence, mother's education, household wealth, mother's age at birth, sex of the child, and age at death of a child.

Figure 1. Percent distribution of deaths among children under five by the place of death

Table 6. Place of death

Percent distribution of deaths by place of death according to background characteristics, Ghana 2008

	Home	Health facility	Other places	Don't know	Total	Frequency
Place of residence	_	_	_	_	_	199
Urban	42.7	48.3	9.0	.	100.0	70
Rural	61.2	36.7	1.8	0.3	100.0	129
Mother's education	_	_	_	_	_	177
No education, preschool	72.3	20.6	6.4	0.7	100.0	60
Primary	51.4	43.1	5.6	.	100.0	53
Secondary	43.2	55.1	1.6	.	100.0	61
Higher	.	100.0	.	.	100.0	3
Wealth quintile	_	_	_	_	_	199
Lowest	72.4	22.6	4.3	0.7	100.0	62
Second	57.6	42.4	.	.	100.0	43
Third	54.1	42.9	3.1	.	100.0	40
Fourth	36.5	57.6	5.9	.	100.0	32
Highest	36.1	50.7	13.2	.	100.0	22
Mother's age at birth (years)	_	_	_	_	_	183
<20	52.5	42.8	4.7	.	100.0	17
20-29	53.0	38.8	8.2	.	100.0	79
30-39	55.3	41.8	2.4	0.6	100.0	66
40-49	52.0	48.0	.	.	100.0	14
Don't know	82.6	17.4	.	.	100.0	7
Sex	_	_	_	_	-	199
Male	48.9	45.8	5.2	.	100.0	118
Female	62.5	33.8	3.3	0.5	100.0	81
Age at death (months)	_	_	_	_	-	185
0 to 11	50.8	41.9	7.2	.	100.0	122
12 to 23	54.4	44.5	1.1	.	100.0	28
24 to 35	57.2	42.8	.	.	100.0	20
36 to 47	88.3	11.7	.	.	100.0	9
48 to 59	16.8	76.4	.	6.8	100.0	6

In general, the majority of deaths took place at home. When disaggregating the data, it is interesting to note that a higher proportion of deaths occurred at home within rural households (61%) versus urban households (43%), similarly female child deaths were more likely to occur at home than male child deaths (63% versus 49%). Child death occurring at home (72%) was especially high within the poorest wealth quintile.

2.6 CAUSE-SPECIFIC MORTALITY RATES

One way to analyze cause of death data is to calculate cause-specific mortality rates. The simplest way to do this is to multiply the percentages of children under five who die of each of the major causes (see Table 3) by the under-five mortality rate in Ghana: 80 deaths per 1,000 live births according to the 2008 GDHS. The cause of death data, however, was gathered for deaths that occurred in the 0 to 47 months before the survey, rather than the 0 to 59 months covered by the 2008 GDHS, so the calculated cause specific mortality rates are an estimate (Table 8). The breakdown is the same as Table 3, and once again, malaria is the most frequent cause of death, responsible for approximately 24 deaths for every 1,000 live births.

Table 7. Cause-specific under-five mortality rates

Causes of death	Number of deaths per 1,000 live births
Malaria	23.7
Fetus and newborn affected by maternal factors and by complications of pregnancy labour and delivery	18.5
Malnutrition and other nutritional deficiencies	4.8
Diarrhoea and gastroenteritis of presumed infectious origin	3.2
Pneumonia	2.4
Anaemias	1.2
Other intestinal infectious diseases	1.6
Haemorrhagic and haematological disorders of fetus and newborn	2.4
Disorders relating to length of gestation and fetal growth	1.2
All other external causes	1.6
Remainder of perinatal conditions	1.6
Meningitis	2.4
Other congenital malformations	2.0
Tetanus	1.6
Measles	1.6
Congenital malformations of the heart	0.8
Accidental poisoning by and exposure to noxious substances	0.8
Other symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified	0.8
Bacterial sepsis of newborn	0.8
Intrauterine hypoxia and birth asphyxia	0.8
Respiratory distress of newborn	0.4
Birth trauma	0.8
Septicaemia	0.8
Other acute respiratory infections	0.4
Remainder of diseases of the nervous system	0.4
Diseases of the digestive system	0.4
Diseases of the genitourinary system	0.4
Sudden infant death syndrome	0.4
Other accidental threats to breathing	0.4
Other respiratory conditions of newborn	0.4
Omphalitis of newborn with or without mild haemorrhage	0.4
Other congenital malformations of the nervous system	0.4
Undetermined	0.4

2.7 HEALTH SERVICE USE IN THE PERIOD LEADING TO DEATH

This section summarizes findings in Ghana on the use of health services and facilities by children in the immediate period leading to death. During the verbal autopsy interviews with the mother or other family members of the child who died, in addition to questions on symptoms and signs of terminal illness, questions were also asked about treatment and medical care sought prior to death of the child. It is important to note that this section deals only with treatment behaviour for children who died and does not reflect the health services utilization of all children who were ill during the study period. Figure 2 shows that about 60% of children who died under age five received some type of treatment for the illness that led to death.

Figure 2. Percentage of under-five deaths who sought care prior to death

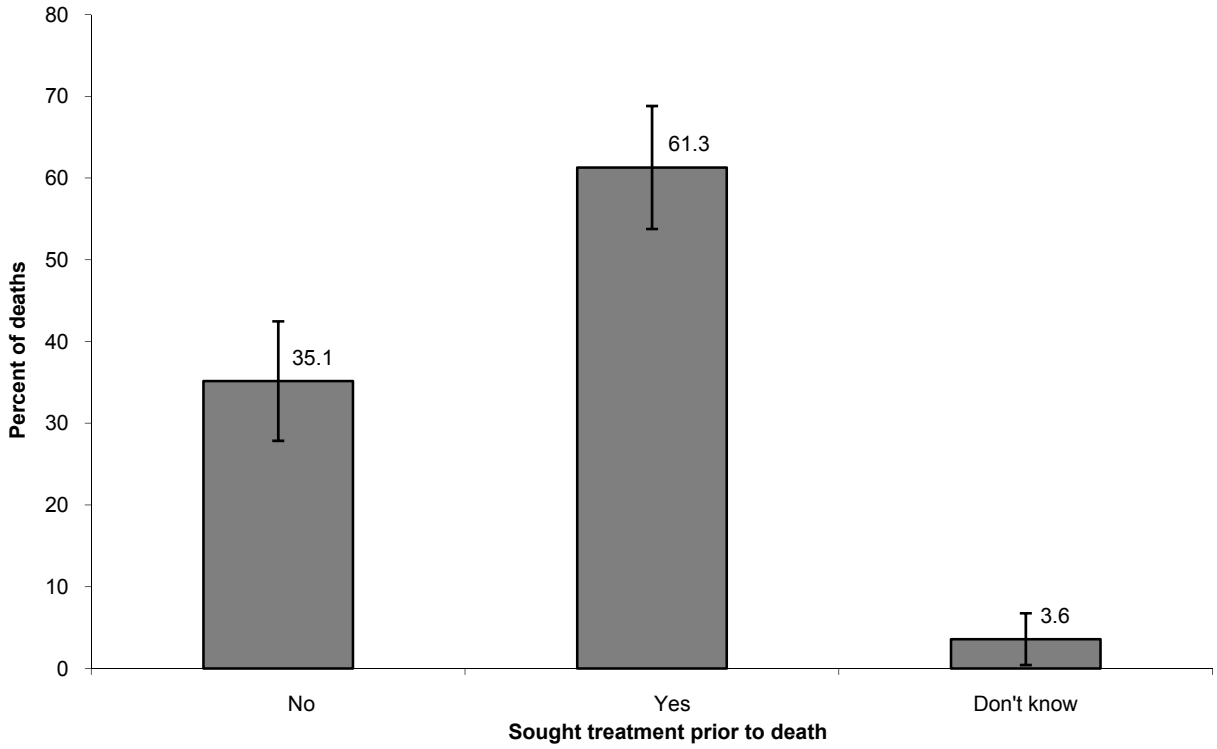
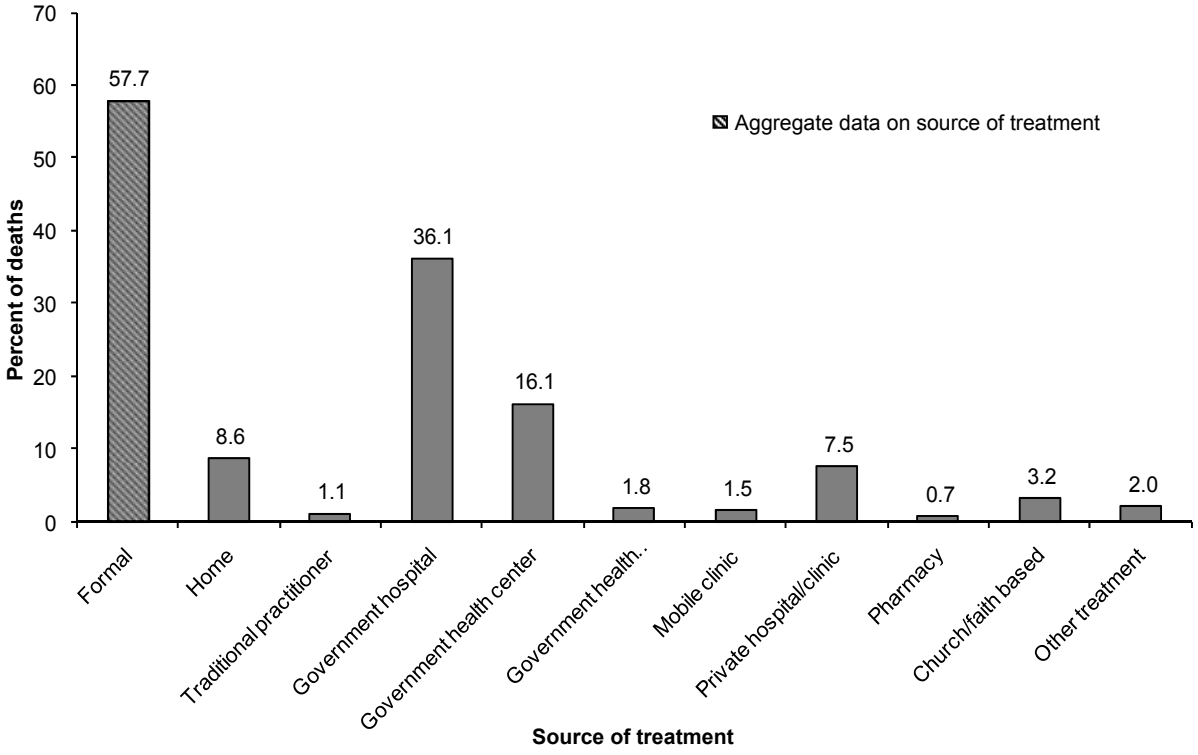


Figure 3 shows the types of places or facilities where treatment was sought for children whose parents/caregivers said they received some form of treatment during the illness leading to death. The results show that almost 60% of children who died were taken to a formal health facility (hospital, health centre, or health clinic) at some point during the illness leading to death. This data is aggregate and it is possible for individuals to report receiving care from multiple healthcare delivery points during the illness that caused death. Within the formal health sector, most individuals sought care at a government hospital. Only 1% of children were taken to traditional healers or herbalists at some point during their illness, 9% were given home remedies, and 1% was given medications purchased from local pharmacies or drug stores.

Figure 3. Source of treatment before death for children under five who died

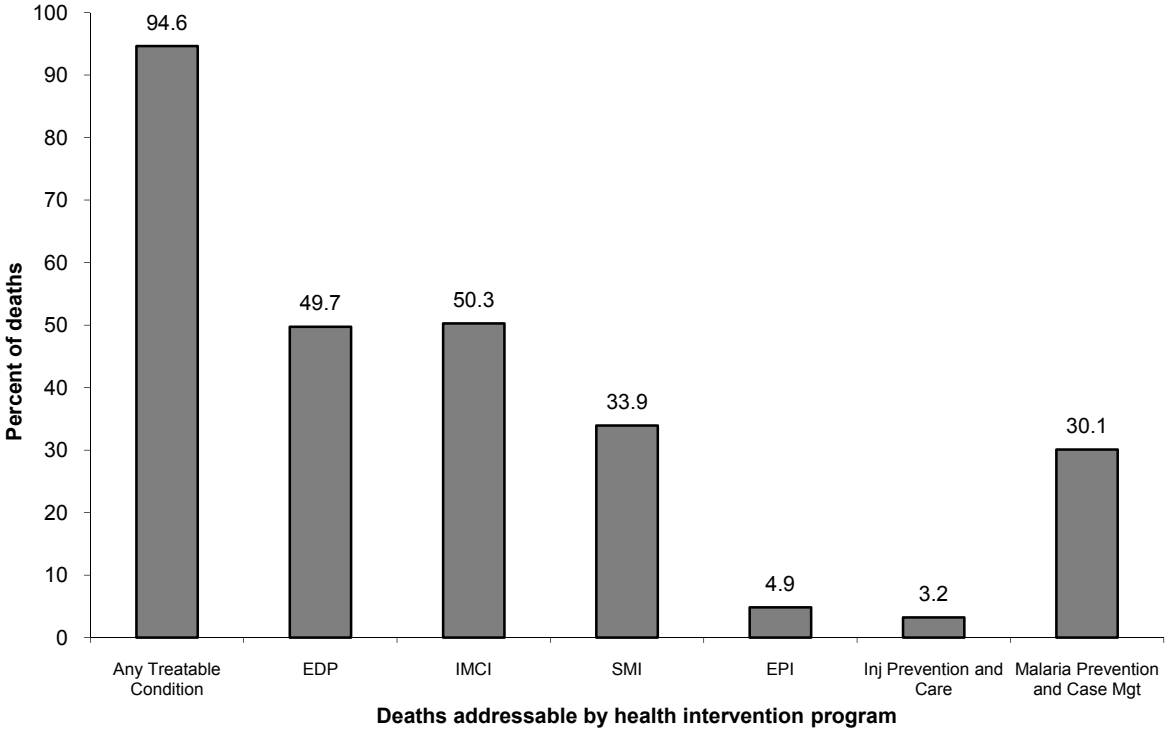


2.8 INTERVENTION-ADDRESSABLE MORTALITY BURDEN IN CHILDREN UNDER FIVE

This section summarizes the proportion of mortality burden in Ghana that is addressable by various existing health intervention programmes. The proportion of under-five deaths that is addressable and perhaps preventable are shown for the following programmes: the Essential Drugs Programme (EDP) kits, Integrated Management of Childhood Illnesses (IMCI), Safe Motherhood Initiative (SMI), the Expanded Programme on Immunization (EPI), injury prevention and care programmes, and malaria prevention and case management, which includes provision of ITNs, IPTp, and prompt diagnosis and treatment. Figure 4 shows the proportion of the under-five mortality burden that could potentially be addressed by various health intervention packages. Here, the mortality burden is measured in terms of the proportion of deaths. The grouping of causes of deaths to various intervention addressable programmes is based on the assumption that these intervention programmes are available in Ghana, or could be made available at national and/or district level. Over 90% of all deaths among children under five could potentially be addressed by various health intervention packages.

Additional programs with cross-cutting health effects such as family planning and nutritional or growth monitoring can affect under-five mortality, but its affects could not be separately analyzed here.

Figure 4. Percentage of under-five deaths addressable by various health interventions



BURDEN OF MALARIA MORTALITY AMONG CHILDREN 3

3.1 MALARIA MORTALITY

Malaria is the leading cause of illness and deaths in Ghana, especially among children under five years. Figure 5 shows the distribution of under-five deaths by age at death in months, and the relative contribution of malaria and all other causes to mortality at each age. Although malaria is the single leading cause of death, and accounts for 29% of deaths in the GCVAS, deaths due to all other causes accounts for a greater proportion of deaths from 0 to 3 years of age. The proportion of deaths caused by malaria compared to deaths from non-malaria deaths, however, steadily increases over these years as illustrated in Figure 6. However, because of the higher overall mortality level at less than one year of age, infants should continue to be a target of malaria prevention and treatment programs.

Figure 5. Percentage of deaths due to malaria and non-malaria causes by age at death in months

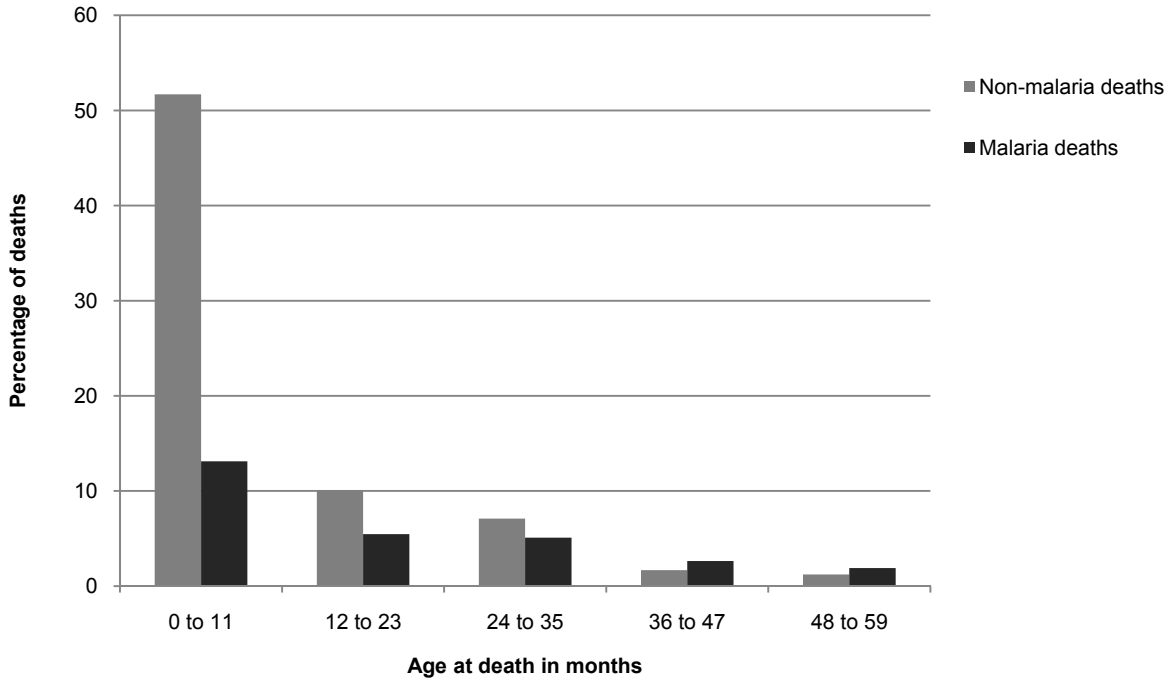
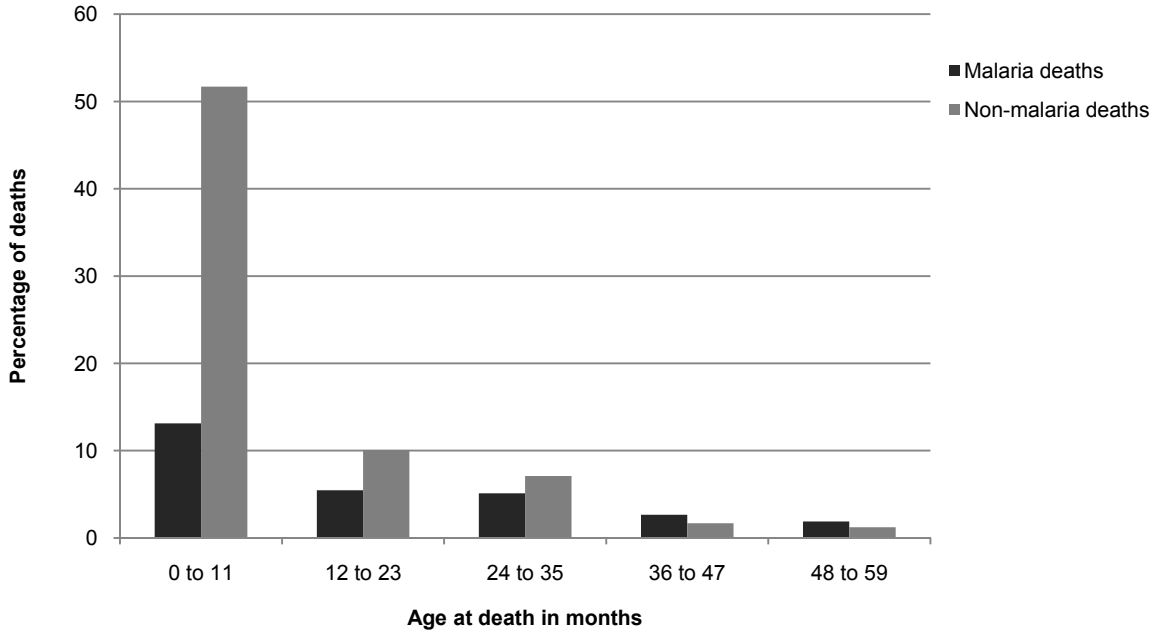


Figure 6. Proportion of deaths due to malaria and non-malaria causes for each age at death in months



To examine differences in malaria mortality by wealth status in the GCVAS data, deaths were categorized into wealth quintiles. Table 8 and Figures 7 and 8 show the proportion of deaths due to malaria versus the proportion of deaths due to all other causes across wealth quintiles. Figure 7 illustrates the percentage of deaths that fall into each quintile. It should be noted that the same proportion of deaths do not fall into each quintile, because quintiles are determined by all households in the 2008 GDHS, and not just by those households with deaths. As is apparent in Figure 7 the poorest quintile has the largest proportion of malaria deaths as a percentage of all deaths. Figure 8 illustrates the proportion of malaria versus non malaria deaths within each wealth quintile. The poorest quintile also has the greatest proportion of deaths due to malaria. In other quintiles, the malaria mortality burden stays relatively constant.

Table 8. Malaria versus non-malaria deaths by wealth quintile

Distribution of malaria and non-malaria deaths among children under five, according to wealth quintiles, Ghana 2008

Wealth quintile	# Non-malaria deaths	% Non-malaria deaths	# Malaria deaths	% Malaria deaths	# Total deaths	% Total deaths
Lowest	37	20.5	25	39.5	62	26.2
Second	31	22.6	12	18.7	43	21.4
Third	33	26.0	7	15.8	40	22.9
Fourth	23	18.6	9	14.7	32	17.4
Highest	15	12.3	7	11.5	22	12.0
Total	139	100.0	60	100.0	199	100.0

Figure 7. Percentage of malaria and non-malaria deaths by wealth quintile

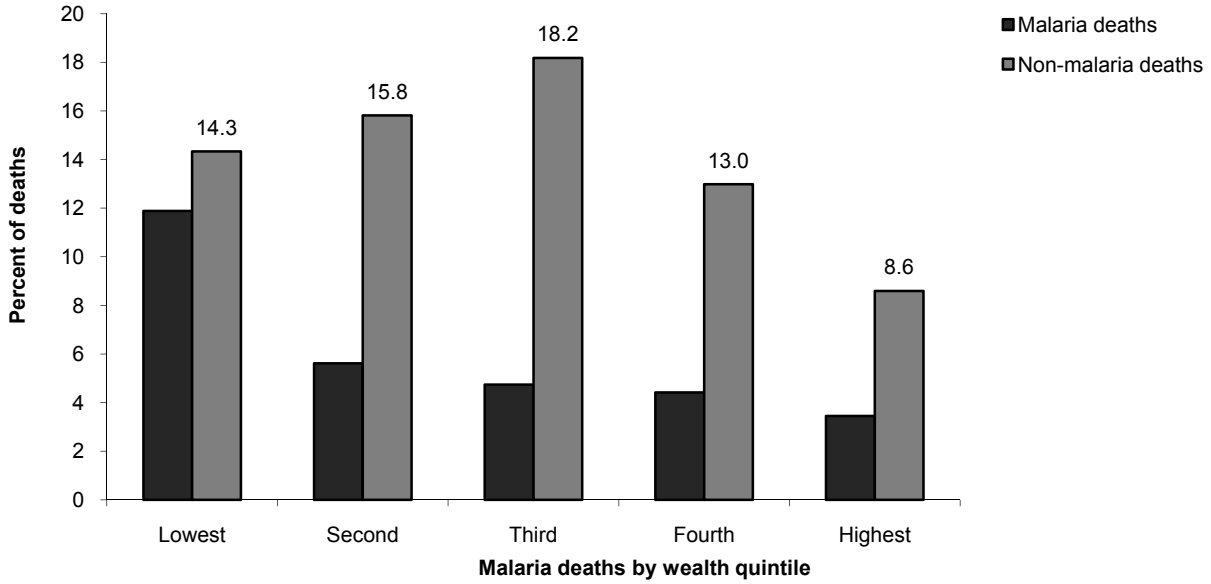


Figure 8. Proportion of malaria and non-malaria deaths by wealth quintile

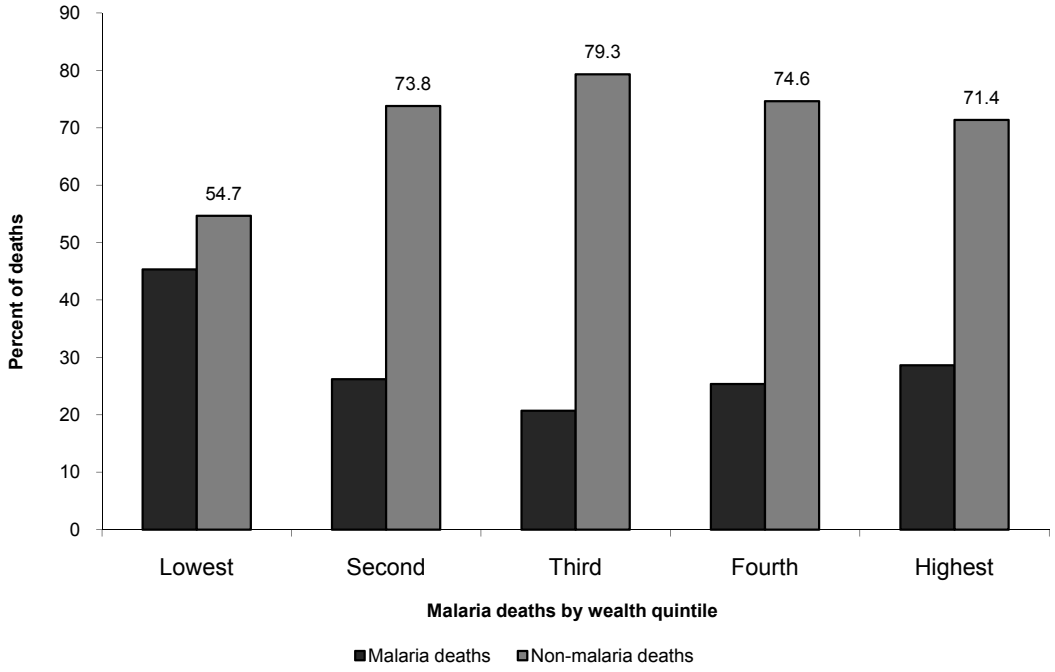
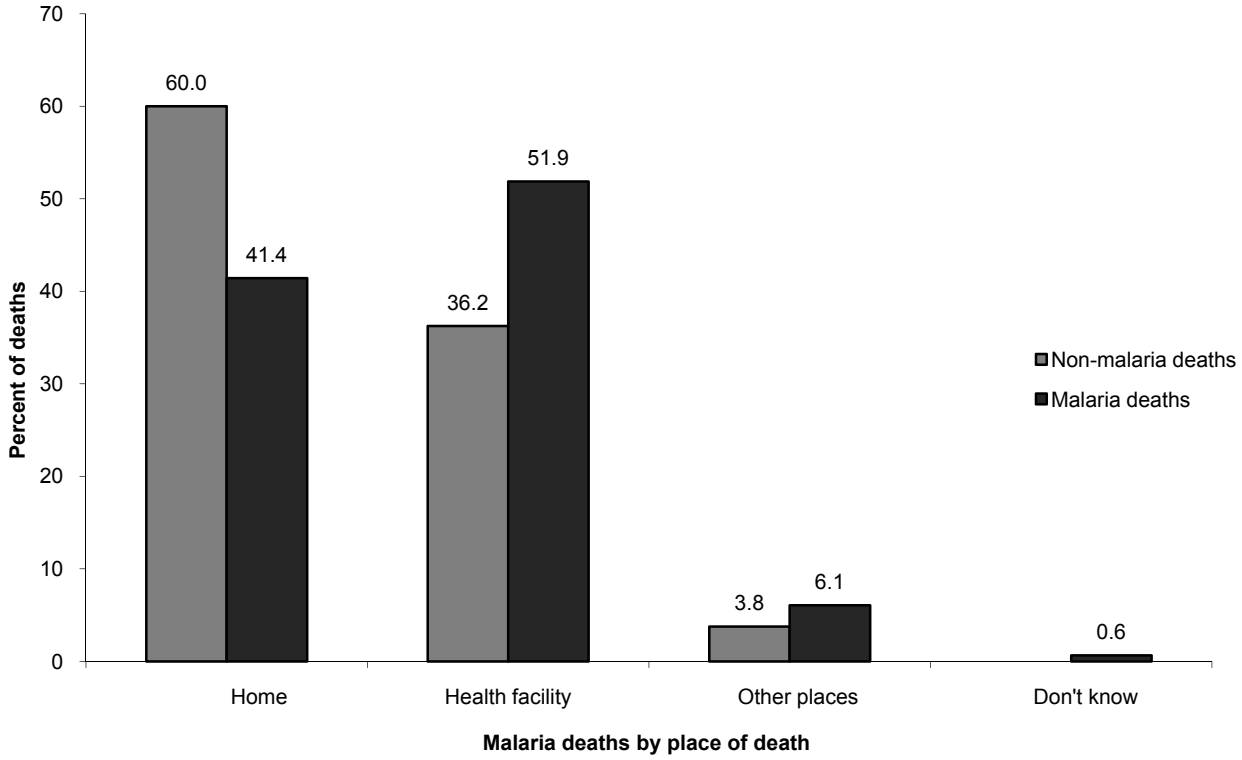


Figure 9 shows a comparison of deaths due to malaria versus deaths from all other causes (non-malaria deaths) by place of death. It shows that non-malaria deaths are more likely to occur at home, while deaths from malaria are more likely to take place at a health facility.

Figure 9. Percentage of malaria and non-malaria deaths by place of death



3.2 HEALTH SERVICE USE IN THE PERIOD LEADING TO DEATH DUE TO MALARIA

Deaths due to malaria can be prevented by prompt treatment with the appropriate medicine. Figure 10 shows the proportion of children who received treatment at some point during the illness that preceded their death. Almost 75% of children who died from malaria received some form of treatment, be it formal or informal, during the illness that preceded their death. The formal data is aggregate and it is possible for individuals to report receiving care from multiple healthcare delivery points during the illness that led to death. In comparison, only 56% of children who died from causes other than malaria received treatment during their illness.

Figure 10. Proportion of children receiving treatment prior to death for malaria and non-malaria deaths

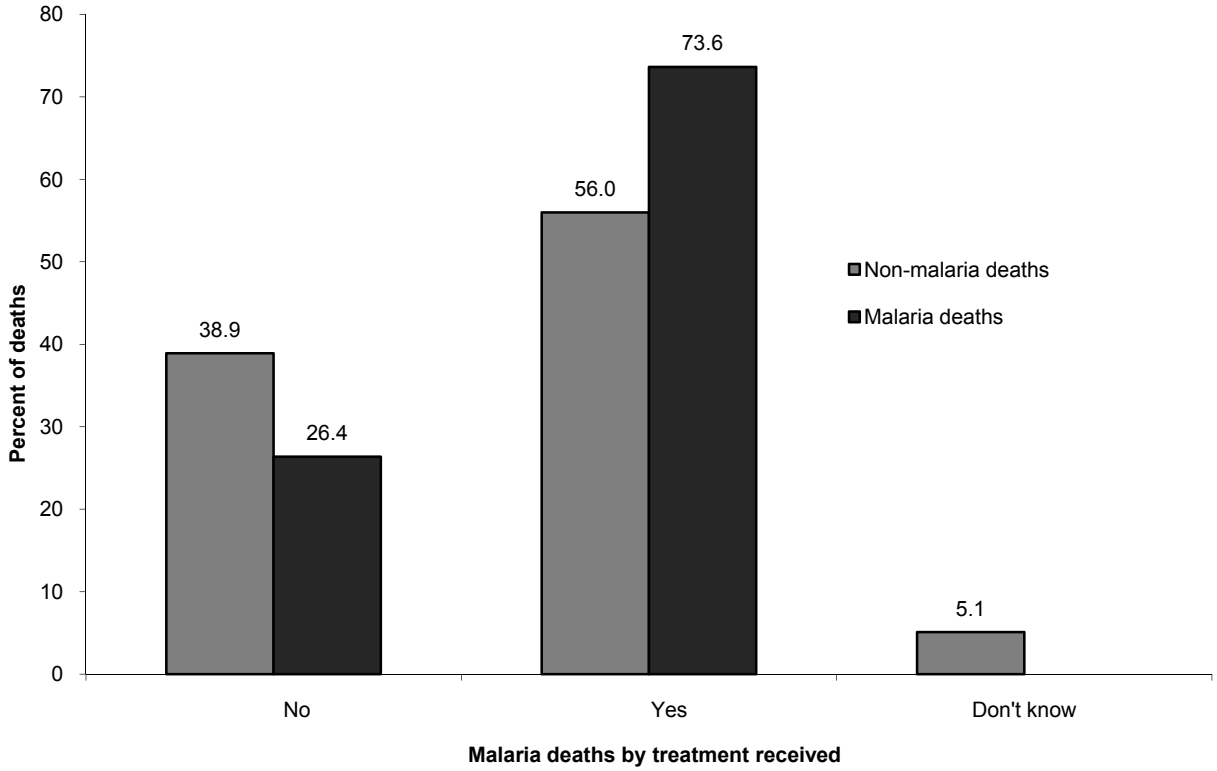
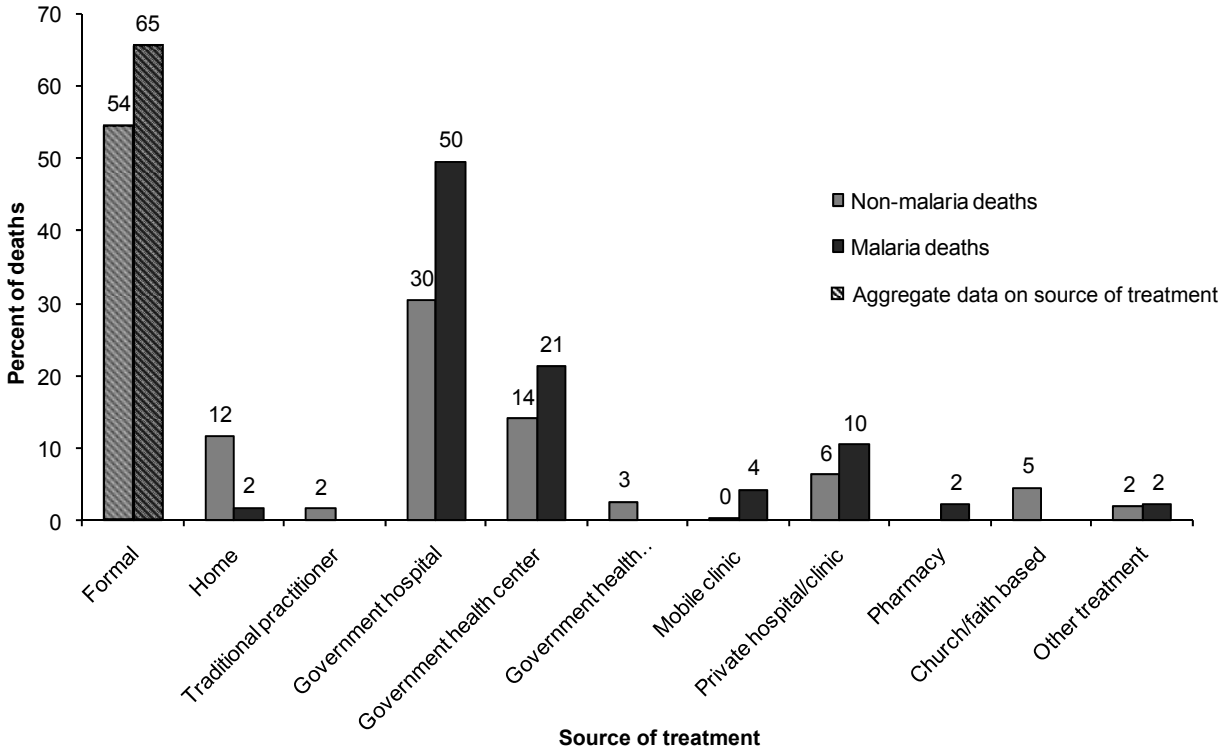


Figure 11 shows the types of places or facilities where children received treatment; individuals were asked to indicate all the places where the ill child received care prior to death. In some cases multiple places or facilities provided treatment.

The graph shows comparison between children who died from malaria and those who died from causes other than malaria. Among children who died from malaria and who received treatment prior to death, 65% were taken to formal health facilities—government, private, and faith-based hospitals, clinics, and/or health centres. It is notable that the children who died from malaria were almost twice as likely to be taken to a hospital as children who died of non-malarial causes, while a much higher proportion of non-malaria deaths were treated only at home.

This data suggests that households with seriously ill children are more likely to recognize the need for formal care if the child has malaria-like symptoms, but increased usership of these services is still necessary, as a third of malaria deaths under five still do not receive formal care. The situation is even worse for non-malaria deaths, as 45% of these children do not receive formal care prior to death. These point out the importance of recognition of symptoms and signs of childhood illness by care givers and the need to strengthen community IMCI (C-IMCI).

Figure 11. Proportion of children receiving treatment prior to death for malaria and non-malaria deaths by treatment center



CONCLUSIONS

Malaria remains the leading cause of death in children under-five years old; the top five causes of under-five mortality in Ghana are:

1. malaria (29%)
2. perinatal and early neonatal conditions (23%)
3. malnutrition (8%)
4. diarrhoea (5%)
5. pneumonia (3%)

This differs from WHO's under-five mortality estimates in 2006 which rated malaria as the leading cause of death at 33%, followed by neonatal causes (28%), pneumonia (15%) and diarrhoea (12%).[8] The rates observed for under-five mortality of malaria, perinatal and early neonatal conditions, diarrhoea, and pneumonia in the GCVAS, however, are not statistically different from the WHO estimates (based on comparison with the 95% confidence interval for GCVAS mortality estimates). The rate of deaths due to malnutrition in the GCVAS does differ from the WHO estimates.

Dividing under-five mortality into neonatal deaths and deaths in children 29 days to 5 years, the majority of deaths in the first month of life (neonatal deaths) are due to perinatal and early neonatal conditions (68%), while among children age 29 days to 5 years, malaria is by far the major killer, accounting for 43% of deaths.

In the GCVAS, both under-five mortality and malaria specific mortality were concentrated in poor and rural populations, and a majority of deaths occurred at home. Prompt recognition and timely receipt of care in households remains an issue, as over one third of child deaths received no form of treatment or care during the illness that led to death. Based on the causes of death observed in the GCVAS, most deaths to children under five could be addressed through prevention programmes such as insecticide-treated bed net distribution or childhood vaccinations.

The GCVAS coded only 199 deaths, fewer than originally anticipated. This may be due to a sharper decline in Ghanaian child mortality than initially predicted; this small sample size limits the accuracy of GCVAS cause specific child mortality estimates.

[8] WHO Mortality Country Fact Sheet 2006: http://www.who.int/whosis/mort/profiles/mort_afro_gha_ghana.pdf

REFERENCES

Ghana Health Service. 2007. *Annual Report. Accra.* Ghana: Ghana Health Service.

Ghana Statistical Service, Ghana Health Service, and ICF Macro. 2009. *Ghana Demographic and Health Survey 2008*. Calverton, Maryland, USA: GSS, GHS, and ICF Macro.

National Malaria Control Program. 2009. *National Malaria Control Monitoring and Evaluation Plan 2008-2015.* Ghana: National Malaria Control Program, Ministry of Health.

World Health Organization (WHO). 2005. *International Statistical Classification of Diseases and Related Health Problems*, *tenth revision, 2nd edition.* Geneva: WHO.

World Health Organization (WHO). 2006. *Mortality Country Fact Sheet 2006 (Ghana)*. Geneva: WHO.

World Health Organization (WHO). 2007. *Verbal Autopsy Standards: Ascertaining and Attributing Cause of Death*. Geneva: WHO.

World Health Organization (WHO). 2008. *World Malaria Report 2008*. Geneva: WHO.

CONSENT FORM

APPENDIX A

INFORMED CONSENT STATEMENT

Hello. My name is _____ and I am working with Ghana MOH / GSS.
We are collecting information on the causes of death in the community. We would very much appreciate your participation in this effort. We want to ask you about the circumstances leading to the death of the deceased. Some of these questions may be painful and you can choose not to answer them.
Whatever information you provide will be kept strictly confidential. No information identifying you or the deceased will ever be released to anyone outside of this information-collection activity.
Participation in this survey is voluntary and you can choose not to answer some or all of the questions. You may also stop the interview completely at any time without any consequences. However, we hope that you will participate in this survey since the results will help the government improve services for people.

At this time, do you want to ask me anything about the purpose or content of this interview?

May I begin the interview now?

Signature of interviewer: _____ Date: _____

RESPONDENT AGREES TO BE INTERVIEWED . . . 1 ↓ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED . . . 2 → END

QUESTIONNAIRE 1

APPENDIX B

7 AUGUST 2008

GHANA DEMOGRAPHIC AND HEALTH SURVEY

VERBAL AUTOPSY FORM 1

DEATH OF A CHILD AGED UNDER 4 WEEKS (28 DAYS)

MINISTRY OF HEALTH OF GHANA — GHANA STATISTICAL SERVICES

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

EA NUMBER . . . . . [ ][ ][ ]

STRUCTURE NUMBER . . . . . [ ][ ][ ]

HOUSEHOLD NUMBER . . . . . [ ][ ][ ]

REGION . . . . . [ ][ ]

DISTRICT . . . . . [ ][ ]

URBAN/RURAL (URBAN = 1; RURAL = 2) . . . . . [ ]

CITY/LARGE TOWN/SMALL TOWN/VILLAGE (CITY=1, LARGE TOWN=2, SMALL TOWN=3, VILLAGE=4) [ ]

NAME AND LINE NUMBER OF THE RESPONDENT _____ [ ][ ]

NAME AND LINE NUMBER OF THE DECEASED CHILD _____ [ ][ ]

INTERVIEWING VISITS

	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY [ ][ ]
				MONTH [ ][ ]
				YEAR 2 0 0 8
FIELD EDITOR'S NAME	_____	_____	_____	F.EDITOR [ ][ ][ ]
RESULT*	_____	_____	_____	RESULT [ ]
NEXT VISIT: DATE	_____	_____		TOTAL NUMBER OF VISITS [ ]
TIME	_____	_____		

*RESULT CODES:

1 COMPLETED 2 NOT AT HOME 3 POSTPONED 4 REFUSED

5 PARTLY COMPLETED 6 NO APPROPRIATE RESPONDENT FOUND 7 OTHER _____ (SPECIFY)

LANGUAGE OF QUESTIONNAIRE: [1] LANGUAGE OF INTERVIEW: [ ] LANGUAGE OF RESPONDENT [ ]

LANGUAGE CODES: ENGLISH = 1, AKAN = 2, GA = 3, EWE = 4, NZEMA = 5, DAGBANI = 6, OTHER = 7

TRANSLATOR USED: (YES = 1, NO = 2) [ ]

SUPERVISOR: NAME _____ [ ][ ][ ] DATE _____

OFFICE EDITOR [ ][ ][ ]

KEYED BY [ ][ ][ ]

DEATH OF A CHILD AGED UNDER 4 WEEKS (28 DAYS)

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 2. BASIC INFORMATION ABOUT RESPONDENT			
201	RECORD THE TIME AT START OF INTERVIEW	HOUR ..... [ ][ ] MINUTES ..... [ ][ ]	
202	NAME AND LINE NUMBER OF THE RESPONDENT IF S/HE IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'.	LINE NUMBER _____ [ ][ ] (NAME)	
203	What is your relationship to the deceased?	FATHER ..... 1 MOTHER ..... 2 SIBLING ..... 3 OTHER RELATIVE _____ 6 (SPECIFY) NO RELATION 8	
204	Did you live with the deceased in the period leading to her/his death?	YES ..... 1 NO 2	
SECTION 3. INFORMATION ON THE DECEASED AND DATE/PLACE OF DEATH			
301	What was the name of the deceased?	_____ (NAME)	
302	Was (NAME) male or female?	MALE ..... 1 FEMALE 2	
303	When was (NAME) born? RECORD '98' IF DON'T KNOW DAY OR MONTH RECORD '9998' IF DON'T KNOW YEAR	DAY ..... [ ][ ] MONTH ..... [ ][ ] YEAR ..... [ ][ ][ ][ ]	
304	How old was (NAME) when s/he died?	DAYS ..... [ ][ ]	
305	When did s/he die? RECORD '98' IF DON'T KNOW DAY OR MONTH RECORD '9998' IF DON'T KNOW YEAR COMPARE AND CORRECT 303, 304 AND/OR 305 IF INCONSISTENT	DAY ..... [ ][ ] MONTH ..... [ ][ ] YEAR ..... [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
305A	CHECK VAQ 305 AND HHQ32F: DIED IN 2005 OR LATER ☐ DIED BEFORE 2005 ☐ →		END
305B	CHECK VAQ 304 AND HHQ32G: AGE AT DEATH 0-28 DAYS ☐ AGE AT DEATH 29 DAYS-UNDER 5 YEARS (29 DAYS-59 MONTHS) ☐ →		USE VAQ FORM2
	AGE AT DEATH 5 YEARS OR MORE ☐ →		END
306	Where did s/he die? PROBE TO IDENTIFY THE TYPE OF HEALTH FACILITY AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF A HEALTH FACILITY IS PUBLIC OR PRIVATE , WRITE THE NAME OF THE PLACE _____ (NAME OF PLACE)	HOME THIS HOUSE ..... 11 OTHER HOUSE ..... 12 PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC ..... 21 GOVT. HEALTH CENTER ..... 22 GOVT. HEALTH POST/CHPS ..... 23 OTHER PUBLIC _____ 26 (SPECIFY) PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC ..... 31 FP/PPAG CLINIC ..... 32 MATERNITY HOME ..... 33 OTHER PRIVATE MEDICAL _____ 36 (SPECIFY) OTHER _____ 96 (SPECIFY) DON'T KNOW 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 4. RESPONDENT'S ACCOUNT OF ILLNESS/EVENTS LEADING TO DEATH			
401	Could you tell me about the illness/events that led to her his/death?		
402	CAUSE OF DEATH 1 ACCORDING TO RESPONDENT		
403	CAUSE OF DEATH 2 ACCORDING TO RESPONDENT		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 5. PREGNANCY HISTORY			
501	I would like to ask you some questions concerning the mother and symptoms that the deceased had/showed at birth and shortly after. Some of these questions may not appear to be directly related to the baby's death. Please bear with me and answer all the questions. They will help us to get a clear picture of all possible symptoms that the deceased had.		
502	How many births, including stillbirths, did the mother have before this baby?	NUMBER OF BIRTHS/ STILLBIRTHS ..... [ ][ ] DON'T KNOW 98	
503	How many months was the pregnancy when the baby was born?	MONTHS ..... [ ][ ] DON'T KNOW 98	
504	Did the pregnancy end earlier than expected?	YES ..... 1 NO ..... 2 DON'T KNOW 98	→ 506 → 506
505	How many weeks before the expected date of delivery?	WEEKS ..... [ ][ ] DON'T KNOW 98	
506	During the pregnancy did the mother suffer from any of the following known illnesses:	YES NO DK	
	1 High blood pressure?	HIGH BLOOD PRESSURE 1 2 8	
	2 Heart disease?	HEART DISEASE 1 2 8	
	3 Diabetes?	DIABETES 1 2 8	
	4 Epilepsy/convulsion?	EPILEPSY/CONVULSION 1 2 8	
	5 Did she suffer from any other medically diagnosed illness?	OTHER ..... 1 2 8 _____ (SPECIFY)	
507	During the last 3 months of pregnancy did the mother suffer from any of the following illnesses:	YES NO DK	
	01 Vaginal bleeding?	VAGINAL BLEEDING 1 2 8	
	02 Smelly vaginal discharge?	SMELLY VAGINAL DISCHARGE 1 2 8	
	03 Puffy face?	PUFFY FACE 1 2 8	
	04 Headache?	HEADACHE 1 2 8	
	05 Blurred vision?	BLURRED VISION 1 2 8	
	06 Convulsion?	CONVULSION 1 2 8	
	07 Febrile illness?	FEBRILE ILLNESS 1 2 8	
	08 Severe abdominal pain that was not labor pain?	SEVERE ABDOMINAL PAIN (NOT LABOR PAIN) 1 2 8	
	09 Pallor and shortness of breath (both present)?	PALLOR/SHORTNESS OF BREATH (BOTH) 1 2 8	
	10 Did she suffer from any other illness?	OTHER ILLNESS ..... 1 2 8 _____ (SPECIFY)	
508	Was the child a single or multiple birth?	SINGLETON ..... 1 TWIN ..... 2 TRIPLET OR MORE ..... 3 DON'T KNOW 8	→ 601 → 601
509	What was the birth order of the child that died?	FIRST ..... 1 SECOND ..... 2 THIRD OR HIGHER ..... 3 DON'T KNOW 8	
SECTION 6. DELIVERY HISTORY			
601	Where was the child born?	HOME MOTHER'S HOME ..... 11 TBA'S HOME ..... 12 OTHER HOME _____ (SPECIFY) 13 PUBLIC SECTOR GOVT. HOSPITAL ..... 21 GOVT. HEALTH CENTER ..... 22 GOVT. HEALTH POST/CHPS ..... 23 OTHER PUBLIC _____ (SPECIFY) 26 PRIVATE MED. SECTOR PVT. HOSPITAL/CLINIC ..... 31 FP/PPAG CLINIC ..... 32 MATERNITY HOME ..... 33 OTHER PRIVATE MEDICAL _____ (SPECIFY) 36 OTHER _____ (SPECIFY) 96	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
602	**Who assisted with the delivery?** Anyone else? PROBE FOR THE TYPE(S) OF PERSON(S) AND RECORD ALL MENTIONED. IF RESPONDENT SAYS NO ONE ASSISTED, PROBE TO DETERMINE WHETHER ANY ADULTS WERE PRESENT DURING THE DELIVERY.	HEALTH PERSONNEL DOCTOR ..... A NURSE/MIDWIFE ..... B AUXILIARY MIDWIFE ..... C COMMUNITY HEALTH OFFICER/NURSE ..... D OTHER PERSON TRAINED TRADITIONAL BIRTH ATTENDANT ... E UNTRAINED TRADITIONAL BIRTH ATTENDANT F COMMUNITY/VILLAGE HEALTH VOLUNTEER . G TRADITIONAL PRACTICIONER... ..... H OTHER _____ X (SPECIFY) NO ONE ..... Y DON'T KNOW ..... Z	
603	When did the water break?	BEFORE LABOR STARTED ..... 1 DURING LABOR ..... 2 DON'T KNOW 8	
604	How many hours after the water broke was the baby born?	LESS THAN 24 HOURS ..... 1 24 HOURS OR MORE ..... 2 DON'T KNOW 8	
605	Was the water foul smelling?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
606	Did the baby stop moving in the womb?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 608 → 608
607	When did the baby stop moving in the womb?	BEFORE LABOR STARTED ..... 1 DURING LABOR ..... 2 DON'T KNOW 8	
608	Did a birth attendant listen for fetal heart sounds during labor?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 610 → 610
609	Were fetal heart sounds present?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
610	Was there excess bleeding on the day labor started?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
611	Did the mother have a fever on the day labor started?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
612	How long did the labor pains last?	LESS THAN 12 HOURS ..... 1 12-23 HOURS ..... 2 24 HOURS OR MORE ..... 3 DON'T KNOW 8	
613	Was it a normal vaginal delivery?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 615 → 615
614	What type of delivery was it?	FORCEPS/VACUUM ..... 1 CAESAREAN SECTION ..... 2 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
615	Which part of the baby came first?	HEAD ..... 1 BOTTOM ..... 2 FEET ..... 3 ARM/HAND ..... 4 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
616	Did the umbilical cord come out before the baby was born?	YES ..... 1 NO ..... 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 7. CONDITION OF THE BABY SOON AFTER BIRTH			
701	At birth what was the size of the baby?	SMALLER THAN NORMAL ..... 1 NORMAL ..... 2 LARGER THAN NORMAL ..... 3 DON'T KNOW 8	
702	Was the baby premature?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 704 → 704
703	How many months or weeks long was the pregnancy? INDICATE DURATION OF PREGNANCY	MONTHS ..... 1 ☐☐ WEEKS ..... 2 ☐☐ DON'T KNOW 9 9 8	
704	What was the birth weight of the baby?	KILOGRAMS ..... ☐.☐ DON'T KNOW 9 8	
705	Was anything applied to the umbilical cord stump after birth?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 707 → 707
706	What was it?	_____ _____ (SPECIFY)	
707	Were there any signs of injury or broken bones?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 709 → 709
708	Where were marks or signs of injury?	_____ _____ (SPECIFY)	
709	Was there any sign of paralysis?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
710	Did the baby have any malformation?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 712 → 712
711	What kind of malformation did the baby have?	SWELLING/DEFECT ON THE BACK ..... 1 VERY LARGE HEAD ..... 2 VERY SMALL HEAD ..... 3 DEFECT OF LIP AND/OR PALATE ..... 4 OTHER MALFORMATION _____ 6 (SPECIFY) DON'T KNOW 8	
712	What was the color of the baby at birth?	NORMAL ..... 1 PALE ..... 2 BLUE ..... 3 DON'T KNOW 8	
713	Did the baby breathe after birth, even a little?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
714	Was the baby given assistance to breathe?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
715	Did the baby ever cry after birth, even a little?	YES ..... 1 NO ..... 2 DON'T KNOW 0	
716	Did the baby ever move, even a little?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
717	CHECK 713, 715, AND 716 FOR CODES 'NO': ALL THREE CODES 'NO': THE BABY DIDN'T BREATH, THE BABY DIDN'T CRY, THE BABY DIDN'T MOVE	OTHER: ☐	→801

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
718	If the baby did not cry, breathe or move, was it born dead?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 801 → 801
719	Was the baby macerated, that is, showed signs of decay?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 1001 → 1001 → 1001
SECTION 8. HISTORY OF INJURIES/ACCIDENTS			
801	Did the baby suffer from any injury or accident that led to her/his death?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 804 → 804
802	What kind of injury or accident did the baby suffer?	ROAD TRAFFIC ACCIDENT ..... 01 FALL ..... 02 DROWNING ..... 03 POISONING ..... 04 BURNS ..... 05 VIOLENCE/ASSAULT ..... 06 OTHER _____ 96 (SPECIFY) DON'T KNOW 98	
803	Was the injury or accident intentionally inflicted by someone else?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
804	Did the baby suffer from any animal/insect bite that led to her/his death?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 901 → 901
805	What type of animal/insect?	DOG ..... 1 SNAKE ..... 2 INSECT ..... 3 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
SECTION 9. NEONATAL ILLNESS HISTORY			
901	Was the baby ever able to suckle or bottle-feed?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 906 → 906
902	How soon after birth did the baby suckle or bottle-feed?	HOURS ..... 1 ☐☐ DAYS ..... 2 ☐☐ DON'T KNOW 9 9 8	
903	Did the baby stop suckling or bottle-feeding?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 905 → 905
904	How many days after birth did the baby stop suckling or bottle-feeding?	DAYS ..... ☐☐ DON'T KNOW 9 8	
905	Was the breastfeeding exclusive?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
906	Did the baby have convulsions?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 908 → 908
907	How soon after birth did the convulsions start?	DAYS ..... ☐☐ DON'T KNOW 9 8	
908	Did the baby become stiff and arched backwards?	YES ..... 1 NO ..... 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
909	Did the child have bulging of the fontanelle?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 911 → 911
910	How many days after birth did the baby have the bulging?	DAYS ..... ☐☐ DON'T KNOW 9 8	
911	Did the baby become unresponsive or unconscious?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 913 → 913
912	How many days after birth did the baby become unresponsive or unconscious?'	DAYS ..... ☐☐ DON'T KNOW 9 8	
913	Did the baby have a fever?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 915 → 915
914	How many days after birth did the baby have a fever?	DAYS ..... ☐☐ DON'T KNOW 9 8	
915	Did the baby become cold to the touch?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 917 → 917
916	How many days after birth did the baby become cold to the touch?	DAYS ..... ☐☐ DON'T KNOW 9 8	
917	Did the baby have a cough?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 919 → 919
918	How many days after birth did the baby start to cough?	DAYS ..... ☐☐ DON'T KNOW 9 8	
919	Did the baby have fast breathing?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 921 → 921
920	How many days after birth did the baby start breathing fast?	DAYS ..... ☐☐ DON'T KNOW 9 8	
921	Did the baby have difficulty breathing?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 926 → 926
922	How many days after birth did the baby start having difficulty in breathing?	DAYS ..... ☐☐ DON'T KNOW 9 8	
923	Did the baby have chest indrawing?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
924	Did the baby have grunting? DEMONSTRATE	YES ..... 1 NO ..... 2 DON'T KNOW 8	
925	Did the baby have flaring of the nostrils?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
926	Did the baby have diarrhea?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 930 → 930
927	How many days after birth did the baby have diarrhea?	DAYS ..... ☐☐ DON'T KNOW 9 8	
928	When the diarrhea was most severe, how many times did the baby pass stools in a day?	NUMBER ..... ☐☐ DON'T KNOW 9 8	
929	Was there blood in the stools?	YES ..... 1 NO ..... 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
930	Did the baby have vomiting?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 933 → 933
931	How many days after birth did vomiting start?	DAYS ..... ☐☐ DON'T KNOW 9 8	
932	When the vomiting was most severe, how many times did the baby vomit in a day?	NUMBER OF TIMES A DAY ..... ☐☐ DON'T KNOW 9 8	
933	Did the baby have abdominal distension?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 935 → 935
934	How many days after birth did the baby have abdominal distension?	DAYS ..... ☐☐ DON'T KNOW 9 8	
935	Did the baby have redness or discharge from the umbilical cord stump?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
936	Did the baby have a pustular skin rash?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
937	Did the baby have yellow palms or soles?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 1001 → 1001
938	How many days after birth did the yellow palms or soles begin?	DAYS ..... ☐☐ DON'T KNOW 9 8	
939	For how many days did the baby have yellow palms or soles?	DAYS ..... ☐☐ DON'T KNOW 9 8	

SECTION 10. MOTHER'S HEALTH AND CONTEXTUAL FACTORS

1001	What was the age of the mother at the time the baby died?	YEARS ..... ☐☐ DON'T KNOW 9 8	
1002	Did the mother receive antenatal care?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
1003	Did the mother receive tetanus toxoid (TT) vaccine?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 1005 → 1005
1004	How many doses?	NUMBER OF DOSES ..... ☐☐ DON'T KNOW 9 8	
1005	How is the mother's health now?	HEALTHY ..... 1 ILL ..... 2 NOT ALIVE ..... 3 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 11 TREATMENT AND HEALTH SERVICE USE FOR THE FINAL ILLNESS			
1101	Did the baby receive any treatment for the illness that led to death?	YES ..... 1 NO ..... 2 → 1201 DON'T KNOW ..... 8 → 1201	
1102	Can you please list the treatments the baby was given for the illness that led to death? COPY FROM PRESCRIPTION/DISCHARGE NOTES IF AVAILABLE	a) _____ b) _____ c) _____	
1103	Please tell me in which places or facilities did the baby receive treatment during the illness that led to death: PROBE TO IDENTIFY THE PLACES/FACILITIES AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF THE PLACES/FACILITIES WERE PUBLIC OR PRIVATE , WRITE THE NAMES. _____ (NAME OF PLACE)	HOME ..... A PUBLIC SECTOR GOVT. HOSPITAL ..... B GOVT. HEALTH CENTER ..... C GOVT. HEALTH POST/CHPS ..... D MOBILE CLINIC ..... E OTHER PUBLIC _____ F (SPECIFY) PRIVATE MED. SECTOR PVT. HOSPITAL/CLINIC ..... G PRIVATE DOCTOR ..... H PHARMACY ..... I MOBILE CLINIC ..... J FP/PPAG CLINIC ..... K MATERNITY HOME ..... L OTHER PRIVATE MEDICAL _____ M (SPECIFY) OTHER SOURCE CHURCH/FAITH BASED ..... N SHOP/MARKET ..... O TRADITIONAL PRACTITIONER ..... P DRUG PEDDLER ..... Q OTHER _____ X (SPECIFY)	
1104	In the month before death, how many contacts with formal health services did the baby have?	NUMBER OF CONTACTS ..... ☐☐ DON'T KNOW 9 8	
1105	Did a health care worker tell you the cause of death?	YES ..... 1 NO ..... 2 → 1201 DON'T KNOW ..... 8 → 1201	
1106	What did the health care worker say?	_____ _____ _____	
SECTION 12 DATA ABSTRACTED FROM DEATH CERTIFICATE			
1201	Do you have a death certifcate for the baby?	YES ..... 1 NO ..... 2 → 1301 DON'T KNOW ..... 8 → 1301	
1202	Can I see the death certificate? COPY DAY, MONTH AND YEAR OF DEATH FROM THE DEATH CERTIFICATE.	DAY ☐☐ MONTH ☐☐ YEAR ☐☐☐☐	
1203	COPY DAY, MONTH AND YEAR OF ISSUE OF DEATH CERTIFICATE.	DAY ☐☐ MONTH ☐☐ YEAR ☐☐☐☐	
1204	RECORD THE CAUSE OF DEATH FROM THE FIRST (TOP) LINE OF THE DEATH CERTIFICATE: _____		
1205	RECORD THE CAUSE OF DEATH FROM THE SECOND LINE OF THE DEATH CERTIFICATE (IF ANY): _____		
1206	RECORD THE CAUSE OF DEATH FROM THE THIRD LINE OF THE DEATH CERTIFICATE (IF ANY): _____		
1207	RECORD THE CAUSE OF DEATH FROM THE FOURTH LINE OF THE DEATH CERTIFICATE (IF ANY): _____		

SECTION 13. DATA ABSTRACTED FROM OTHER HEALTH RECORDS

1301	OTHER HEALTH RECORDS AVAILABLE	YES ..... 1 NO 2	→ 1311
1302	FOR EACH TYPE OF HEALTH RECORD SUMMARIZE DETAILS FOR LAST 2 VISITS (IF MORE THAN 2) AND RECORD DATE OF ISSUE. (RECORD INFORMATION ABOUT MOTHER AND STILLBORN DECEASED CHILD)		
1303	BURIAL PERMIT (CAUSE OF DEATH) _____		
1304	POST MORTEM RESULTS (CAUSE OF DEATH) _____		
1305	VACCINATION/MCH/ANC CARD (RELEVANT INFORMATION) _____		
1306	HOSPITAL PRESCRIPTION (RELEVANT INFORMATION) _____		
1307	TREATMENT CARDS (RELEVANT INFORMATION) _____		
1308	HOSPITAL DISCHARGE (RELEVANT INFORMATION) _____		
1309	LABORATORY RESULTS (RELEVANT INFORMATION) _____		
1310	OTHER HOSPITAL DOCUMENTS SPECIFY: _____		
1311	RECORD THE TIME AT THE END OF INTERVIEW	HOURS ..... ☐☐ MINUTES ..... ☐☐	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

NAME OF THE SUPERVISOR: _____ DATE: _____

7 August 2008

GHANA DEMOGRAPHIC AND HEALTH SURVEY

VERBAL AUTOPSY FORM 2

DEATH OF A CHILD AGED FROM 4 WEEKS (28 DAYS) TO UNDER 5 YEARS

MINISTRY OF HEALTH OF GHANA — GHANA STATISTICAL SERVICES

IDENTIFICATION

LOCALITY NAME _____

NAME OF HOUSEHOLD HEAD _____

EA NUMBER . . . . . [ ][ ][ ]

STRUCTURE NUMBER . . . . . [ ][ ][ ]

HOUSEHOLD NUMBER . . . . . [ ][ ][ ]

REGION . . . . . [ ][ ]

DISTRICT . . . . . [ ][ ]

URBAN/RURAL (URBAN = 1; RURAL = 2) . . . . . [ ]

CITY/LARGE TOWN/SMALL TOWN/VILLAGE (CITY=1, LARGE TOWN=2, SMALL TOWN=3, VILLAGE=4) [ ]

NAME AND LINE NUMBER OF THE RESPONDENT _____ [ ][ ]

NAME AND LINE NUMBER OF THE DECEASED CHILD _____ [ ][ ]

INTERVIEWING VISITS

	1	2	3	FINAL VISIT
DATE				DAY [ ][ ]
				MONTH [ ][ ]
				YEAR 2 0 0 8
FIELD EDITOR'S NAME				F.EDITOR [ ][ ]
RESULT*				RESULT [ ]
NEXT VISIT: DATE				TOTAL NUMBER OF VISITS [ ]
TIME				

*RESULT CODES:
1 COMPLETED 2 NOT AT HOME 3 POSTPONED 4 REFUSED
5 PARTLY COMPLETED 6 NO APPROPRIATE RESPONDENT FOUND 7 OTHER _____ (SPECIFY)

LANGUAGE OF QUESTIONNAIRE: [1] LANGUAGE OF INTERVIEW: [ ] LANGUAGE OF RESPONDENT [ ]

LANGUAGE CODES: ENGLISH = 1, AKAN = 2, GA = 3, EWE = 4, NZEMA = 5, DAGBANI = 6, OTHER = 7

TRANSLATOR USED: (YES = 1, NO = 2) [ ]

SUPERVISOR: NAME _____ [ ][ ][ ] DATE _____	OFFICE EDITOR [ ][ ][ ]	KEYED BY [ ][ ][ ]

FOR CHILD AGED FROM 4 WEEKS (28 DAYS) TO 5 YEARS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 2. BASIC INFORMATION ABOUT RESPONDENT			
201	RECORD THE TIME AT THE START OF THE INTERVIEW	HOUR ..... MINUTES	
202	NAME AND LINE NUMBER OF THE RESPONDENT IF S/HE IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'.	LINE NUMBER _____ (NAME)	
203	What is your relationship to the deceased?	FATHER ..... 1 MOTHER ..... 2 SIBLING ..... 3 OTHER RELATIVE _____ (SPECIFY) 6 NO RELATION 8	
204	Did you live with the deceased in the period leading to her/his death?	YES ..... 1 NO 2	
SECTION 3. INFORMATION ON THE DECEASED AND DATE/PLACE OF DEATH			
301	What was the name of the deceased?	_____ (NAME)	
302	Was (NAME) male or female?	MALE ..... 1 FEMALE 2	
303	When was (NAME) born? RECORD '98' IF DON'T KNOW DAY OR MONTH RECORD '9998' IF DON'T KNOW YEAR	DAY ..... MONTH ..... YEAR	
304	How old was (NAME) when s/he died? IF '1 YR', PROBE: How many months old was (NAME)? RECORD DAYS IF LESS THAN 1 MONTH; MONTHS IF LESS THAN TWO YEARS; OR YEARS	DAYS . . . . 1 MONTHS . ..... 2 YEARS 3	
308	When did s/he die? RECORD '98' IF DON'T KNOW DAY OR MONTH RECORD '9998' IF DON'T KNOW YEAR COMPARE AND CORRECT 303, 304AND/OR 305 IF INCONSISTENT	DAY ..... MONTH ..... YEAR	
308A	CHECK VAQ 308 AND HHQ32F: DIED IN 2005 OR LATER ☐ → DIED BEFORE 2005 ☐ →		END
308B	CHECK VAQ 304 AND HHQ32G: AGE AT DEATH: 29 DAYS-UNDER 5 YEARS (29 DAYS-59 MONTHS) ☐ → AGE AT DEATH 0-28 DAYS ☐ → AGE AT DEATH 5 YEARS OR MORE (60 MONTHS OR MORE) ☐ →		USE VAQ FORM1 END
309	Where did s/he die? PROBE TO IDENTIFY THE TYPE OF HEALTH FACILITY AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF A HEALTH FACILITY IS PUBLIC OR PRIVATE , WRITE THE NAME OF THE PLACE _____ (NAME OF PLACE)	HOME THIS HOUSE ..... 11 OTHER HOUSE ..... 12 PUBLIC SECTOR GOVT. HOSPITAL/POLYCLINIC ..... 21 GOVT. HEALTH CENTER ..... 22 GOVT. HEALTH POST/CHPS ..... 23 OTHER PUBLIC _____ (SPECIFY) 26 PRIVATE MEDICAL SECTOR PRIVATE HOSPITAL/CLINIC ..... 31 FP/PPAG CLINIC ..... 32 MATERNITY HOME ..... 33 OTHER PRIVATE MEDICAL _____ (SPECIFY) 36 OTHER _____ (SPECIFY) 96 DON'T KNOW 98	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 4. RESPONDENT'S ACCOUNT OF ILLNESS/EVENTS LEADING TO DEATH			
401	Could you tell me about the illness/events that led to her his/death?		
402	CAUSE OF DEATH 1 ACCORDING TO RESPONDENT		
403	CAUSE OF DEATH 2 ACCORDING TO RESPONDENT		
SECTION 5. HISTORY OF PREVIOUSLY KNOWN MEDICAL CONDITIONS			
501	I would like to ask you some questions concerning previously known medical conditions that the deceased had; injuries and accidents that the deceased suffered; and signs and symptoms that the deceased had/showed when s/he was ill. Some of these questions may not appear to be directly related to his/her death. Please bear with me and answer all the questions. They will help us to get a clear picture of all possible symptoms that the deceased had. Please tell me if the deceased suffer from any of the following illnesses:		
502	Heart disease?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
503	Diabetes?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
504	Asthma?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
505	Epilepsy?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
506	Malnutrition?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
507	Cancer?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 509 → 509
508	Can you specify the type or site of cancer?	TYPE/SITE _____	
509	Tuberculosis?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
510	HIV/AIDS?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
511	Did s/he suffer from any other medically diagnosed illness?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 601 → 601
512	Can you specify the illness?	ILLNESS _____	

FOR CHILD AGED FROM 4 WEEKS (28 DAYS) TO 5 YEARS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 6 HISTORY OF INJURIES/ACCIDENTS			
601	Did s/he suffer from any injury or accident that led to her/his death?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 →606 →606
602	What kind of injury or accident did (NAME) suffer?	ROAD TRAFFIC ACCIDENT ..... 01 FALL ..... 02 DROWNING ..... 03 POISONING ..... 04 BURNS ..... 05 VIOLENCE/ASSAULT ..... 06 OTHER _____ 96 (SPECIFY)	
603	Was the injury or accident intentionally inflicted by someone else?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
606	Did s/he suffer from any animal/insect bite that led to her/his death?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 →608 →608
607	What type of animal/insect?	DOG ..... 1 SNAKE ..... 2 INSECT ..... 3 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	
608	CHECK QUESTION 304 FOR AGE AT DEATH: UNDER ONE YEAR ☐ ONE YEAR OR OLDER ☐ →		801
SECTION 7. SYMPTOMS AND SIGNS NOTED DURING THE FINAL ILLNESS OF INFANTS			
701	Was the child small at birth?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
702	Was the child born prematurely?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 →704 →704
703	How many months or weeks premature? INDICATE DURATION OF PREGNANCY	WEEKS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
704	Was the child growing normally?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
705	Did the child have bulging of the fontanelle?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 →801 →801
706	For how many days before death did s/he have the bulging?	DAYS ..... ☐☐ DON'T KNOW 9 8	

FOR CHILD AGED FROM 4 WEEKS (28 DAYS) TO 5 YEARS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 8. STATUS OF MOTHER AND SYMPTOMS NOTED DURING THE FINAL ILLNESS FOR ALL CHILDREN			
801	How is the mother's health now?	HEALTHY ..... 1 ILL ..... 2 NOT ALIVE ..... 3 DON'T KNOW 8	
802	For how long was the child ill before s/he died?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
803	Did s/he have a fever?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 808 → 808
804	For how long did s/he have a fever?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
805	Was the fever severe?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
806	Was the fever continuous or on and off?	CONTINUOUS ..... 1 ON AND OFF ..... 2 DON'T KNOW 8	
807	Did s/he have chills/rigor?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
808	Did s/he have a cough?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 812 → 812
809	For how long did s/he have a cough?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
810	Was the cough severe?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
811	Did the child vomit after he/she coughed?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
812	Did s/he have fast breathing?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 818 → 818
813	For how long did s/he have fast breathing?	DAYS ..... ☐☐ DON'T KNOW 9 8	
814	Did s/he have difficulty in breathing?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 820 → 820
815	For how long did s/he have difficulty in breathing?	DAYS ..... ☐☐ DON'T KNOW 9 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
816	Did s/he have chest indrawing?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 818 → 818
817	For how long did s/he have chest indrawing?	DAYS ..... ☐☐ DON'T KNOW 9 8	
818	Did s/he have noisy breathing (grunting or wheezing)? DEMONSTRATE	YES ..... 1 NO ..... 2 DON'T KNOW 8	
819	Did s/he have flaring of the nostrils?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
820	Did s/he have diarrhea?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 824 → 824
821	For how long did s/he have diarrhea?	DAYS ..... ☐☐ DON'T KNOW 9 8	
822	When the diarrhea was most severe, how many times did s/he pass stool in a day?	NUMBER ..... ☐☐ DON'T KNOW 9 8	
823	At any time during the final illness was there blood in the stool?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
824	Did s/he vomit?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 827 → 827
825	For how long did s/he vomit?	DAYS ..... ☐☐ DON'T KNOW 9 8	
826	When the vomiting was most severe, how many times did s/he vomit in a day?	NUMBER ..... ☐☐ DON'T KNOW 9 8	
827	Did s/he have abdominal pain?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 830 → 830
828	For how long did s/he have abdominal pain?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
829	Was the abdominal pain severe?	YES ..... 1 NO ..... 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
830	Did s/he have abdominal distension?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 834 → 834
831	For how long did s/he have abdominal distension?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
832	Did the distension develop rapidly within days or gradually over months?	RAPIDLY WITHIN DAYS ..... 1 GRADUALLY OVER MONTHS ..... 2 DON'T KNOW 8	
833	Was there a period of a day or longer during which s/he did not pass any stool?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
834	Did s/he have any mass in the abdomen?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 836 → 836
835	For how long did s/he have the mass in the abdomen?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
836	Did s/he have headache?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 839 → 839
837	For how long did s/he have headache?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
838	Was the headache severe?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
839	Did s/he have a stiff or painful neck?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 841 → 841
840	For how long did s/he have a stiff or painful neck?	DAYS ..... ☐☐ DON'T KNOW 9 8	
841	Did s/he become unconscious?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 844 → 844
842	For how long was s/he unconscious?	DAYS ..... ☐☐ DON'T KNOW 9 8	
843	Did the unconsciousness start suddenly, quickly within a single day, or slowly over many days?	SUDDENLY ..... 1 FAST (IN A DAY) ..... 2 SLOWLY (MANY DAYS) ..... 3 DON'T KNOW 8	
844	Did s/he have convulsions?	YES ..... 1 NO ..... 2 DON'T KNOW 8	→ 846 → 846
845	For how long did s/he have convulsions?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 998	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
846	Did s/he have paralysis of the lower limbs?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 849 → 849
847	How long did s/he have paralysis of the lower limbs?	DAYS ..... 1 [ ][ ] MONTHS ..... 2 [ ][ ] DON'T KNOW 9 9 8	
848	Did the paralysis of the lower limbs start suddenly, quickly within a single day, or slowly over many days?	SUDDENLY ..... 1 FAST (IN A DAY) ..... 2 SLOWLY (MANY DAYS) ..... 3 DON'T KNOW 8	
849	Was there any change in the amount of urine s/he passed daily?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 852 → 852
850	For how long did s/he have the change in the amount of urine s/he passed daily?	DAYS ..... 1 [ ][ ] MONTHS ..... 2 [ ][ ] DON'T KNOW 9 9 8	
851	How much urine did s/he pass?	TOO MUCH ..... 1 TOO LITTLE ..... 2 NO URINE AT ALL ..... 3 DON'T KNOW 8	
852	During the illness that led to death, did s/he have any skin rash?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 856 → 856
853	For how long did s/he have the skin rash?	DAYS ..... [ ][ ] DON'T KNOW 9 8	
854	Was the rash located on: 1 The face? 2 The trunk? 3 On the arms and legs?	YES NO DK FACE ..... 1 2 8 TRUNK ..... 1 2 8 ARMS AND LEGS 1 2 8	
855	What did the rash look like?	MEASLES RASH ..... 1 RASH WITH CLEAR FLUID ..... 2 RASH WITH PUS ..... 3 DON'T KNOW 8	
856	Did s/he have red eyes?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
857	Did s/he have bleeding from the nose, mouth, or anus?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
858	Did s/he have weight loss?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 861 → 861
859	For how long before death did s/he have the weight loss?	DAYS ..... 1 [ ][ ] MONTHS ..... 2 [ ][ ] DON'T KNOW 9 9 8	
860	Did s/he look very thin and wasted?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
861	Did s/he have mouth sores or white patches in the mouth or on the tongue?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 863 → 863
862	For how long did s/he have mouth sores or white patches in the mouth or on the tongue?	DAYS ..... [ ][ ] DON'T KNOW 9 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
863	Did s/he have any swelling?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 866 → 866
864	For how long did s/he have the swelling?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
865	Was the swelling on: 1 The face? 2 The joints? 3 The ankles? 4 The whole body? 5 Any other place?	YES NO DK FACE ..... 1 2 8 JOINTS ..... 1 2 8 ANKLES ..... 1 2 8 WHOLE BODY ..... 1 2 8 OTHER PLACE ..... 1 2 8 SPECIFY: _____ ↵	
866	Did s/he have any lumps?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 869 → 869
867	For how long did s/he have the lumps?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
868	Were the lumps on: 1 The neck? 2 The armpit? 3 The groin? 4 Any other place?	YES NO DK NECK ..... 1 2 8 ARMPIT ..... 1 2 8 GROIN ..... 1 2 8 OTHER PLACE ..... 1 2 8 SPECIFY: _____ ↵	
869	Did s/he have yellow discoloration of the eyes?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 871 → 871
870	For how long did s/he have the yellow discoloration of the eyes?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
871	Did her/his hair color change to reddish or yellowish?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 873 → 873
872	For how long did s/he have reddish/yellowish hair?	DAYS ..... 1 ☐☐ MONTHS ..... 2 ☐☐ DON'T KNOW 9 9 8	
873	Did s/he look pale (thinning/lack of blood) or have pale palms, eyes or nail beds?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 875 → 875
874	For how long did s/he look pale (thinning/lack of blood) or have pale palms, eyes, or nail beds?	DAYS .... ☐☐ DON'T KNOW 9 8	
875	Did s/he have sunken eyes?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 → 901 → 901
876	For how long did s/he have sunken eyes?	DAYS .... ☐☐ DON'T KNOW 9 8	

FOR CHILD AGED FROM 4 WEEKS (28 DAYS) TO 5 YEARS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 9. TREATMENT AND HEALTH SERVICE USE FOR THE FINAL ILLNESS			
901	Was s/he vaccinated for measles?	YES ..... 1 NO ..... 2 DON'T KNOW 8	
902	Did s/he receive any treatment for the illness that led to death?	YES ..... 1 NO ..... 2 →909 DON'T KNOW ..... 8 →909	
903	Can you please list the drugs s/he was given for the illness that led to death? COPY FROM PRESCRIPTION/DISCHARGE NOTES IF AVAILABLE	a) _____ b) _____ c) _____	
904	What type of treatment did s/he receive: 1 Oral rehydration salts and/or intravenous fluids (drip) treatment? 2 Blood transfusion? 3 Treatment/food through a tube passed through the nose? 4 Any other treatment?	YES NO DK ORS/DRIP TREATMENT ..... 1 2 8 BLOOD TRANSFUSION ..... 1 2 8 THROUGH THE NOSE ..... 1 2 8 OTHER _____ 1 2 8 (SPECIFY)	
905	Please tell me in which places/facilities did s/he receive treatment during the illness that led to death: PROBE TO IDENTIFY THE TYPE OF PLACE/FACILITY AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF A PLACE OR FACILITY IS PUBLIC OR PRIVATE, WRITE THE NAME OF THE PLACE _____ (NAME OF PLACE)	HOME ..... A PUBLIC SECTOR GOVT. HOSPITAL ..... B GOVT. HEALTH CENTER ..... C GOVT. HEALTH POST/CHPS ..... D MOBILE CLINIC ..... E OTHER PUBLIC _____ F (SPECIFY) PRIVATE MED. SECTOR PVT. HOSPITAL/CLINIC ..... G PRIVATE DOCTOR ..... H PHARMACY ..... I MOBILE CLINIC ..... J FP/PPAG CLINIC ..... K MATERNITY HOME ..... L OTHER PRIVATE MEDICAL _____ M (SPECIFY) OTHER SOURCE CHURCH/FAITH BASED ..... N SHOP/MARKET ..... O TRADITIONAL PRACTITIONER ..... P DRUG PEDDLER ..... Q OTHER _____ X (SPECIFY)	
906	In the month before death, how many contacts with formal health services did s/he have?	NUMBER OF CONTACTS ..... [ ][ ] DON'T KNOW 9 8	
907	Did a health care worker tell you the cause of death?	YES ..... 1 NO ..... 2 →909 DON'T KNOW ..... 8 →909	
908	What did the health care worker say?	_____ _____ _____	
909	Did s/he have any operation for the illness?	YES ..... 1 NO ..... 2 →1001 DON'T KNOW ..... 8 →1001	
910	How long before death did s/he have the operation?	DAYS .. .. 1 [ ][ ] MONTHS ..... 2 [ ][ ] YEARS ... . 3 [ ][ ] DON'T KNOW 990	
911	On what part of the body was the operation?	ABDOMEN ..... 1 CHEST ..... 2 HEAD ..... 3 OTHER _____ 6 (SPECIFY) DON'T KNOW 8	

FOR CHILD AGED FROM 4 WEEKS (28 DAYS) TO 5 YEARS

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
SECTION 10. DATA ABSTRACTED FROM DEATH CERTIFICATE			
1001	Do you have a death certifcate for the deceased?	YES ..... 1 NO ..... 2 DON'T KNOW 8	 1101 1101
1002	Can I see the death certificate? COPY DAY, MONTH AND YEAR OF DEATH FROM THE DEATH CERTIFICATE.	**DAY** **MONTH** **YEAR** ☐☐ ☐☐ ☐☐☐☐	
1003	COPY DAY, MONTH AND YEAR OF ISSUE OF DEATH CERTIFICATE.	**DAY** **MONTH** **YEAR** ☐☐ ☐☐ ☐☐☐☐	
1004	RECORD THE CAUSE OF DEATH FROM THE FIRST (TOP) LINE OF THE DEATH CERTIFICATE: _____		
1005	RECORD THE CAUSE OF DEATH FROM THE SECOND LINE OF THE DEATH CERTIFICATE (IF ANY): _____		
1006	RECORD THE CAUSE OF DEATH FROM THE THIRD LINE OF THE DEATH CERTIFICATE (IF ANY): _____		
1007	RECORD THE CAUSE OF DEATH FROM THE FOURTH LINE OF THE DEATH CERTIFICATE (IF ANY): _____		

SECTION 11. DATA ABSTRACTED FROM OTHER HEALTH RECORDS			
1101	OTHER HEALTH RECORDS AVAILABLE	YES ..... 1 NO 2	→ 1111
1102	FOR EACH TYPE OF HEALTH RECORD SUMMARIZE DETAILS FOR LAST 2 VISITS (IF MORE THAN 2) AND RECORD DATE OF ISSUE		
1103	BURIAL PERMIT (CAUSE OF DEATH) _____		
1104	POST MORTEM RESULTS (CAUSE OF DEATH) _____		
1105	MCH/ANC CARD (RELEVANT INFORMATION) _____		
1106	HOSPITAL PRESCRIPTION (RELEVANT INFORMATION) _____		
1107	TREATMENT CARDS (RELEVANT INFORMATION) _____		
1108	HOSPITAL DISCHARGE (RELEVANT INFORMATION) _____		
1109	LABORATORY RESULTS (RELEVANT INFORMATION) _____		
1110	OTHER HOSPITAL DOCUMENTS SPECIFY: _____		
1111	RECORD THE TIME AT THE END OF INTERVIEW	HOURS ..... ☐☐ MINUTES ..... ☐☐	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

NAME OF THE SUPERVISOR: _____ DATE: _____

DEATH CERTIFICATE 2008 APPENDIX D

7 AUGUST 2008

GHANA DEMOGRAPHIC AND HEALTH SURVEY
DEATH CERTIFICATE

MINISTRY OF HEALTH OF GHANA GHANA STATISTICAL SERVICES

IDENTIFICATION

NAME OF HOUSEHOLD HEAD _____

EA NUMBER .....

STRUCTURE NUMBER .....

HOUSEHOLD NUMBER .....

REGION .....

DISTRICT .....

URBAN/RURAL (URBAN=1;RURAL=2) .....

CITY/LARGE TOWN/SMALLTOWN/VILLAGE (CITY=1; LARGE TOWN=2; SMALL TOWN=3, VILLAGE = 4) ...

NAME AND LINE NUMBER OF THE MAIN RESPONDENT TO VA QUESTIONNAIRE _____

NAME AND LINE NUMBER OF THE DECEASED CHILD _____

ASSIGNMENT OF CAUSE OF DEATH

	CAUSE OF DEATH	APPROX. INTERVAL BETWEEN ONSET AND DEATH		ICD CODE
		UNIT*	NUMBER	
PART I Disease or condition directly leading to death	(a) _____			
	(b) _____			
	(c) _____			
	(d) _____			
PART II Other significant condition contributing to the death	_____			
FINAL CAUSE OF DEATH	_____ →			

*UNIT CODE: HOURS = 1, DAYS = 2, WEEKS = 3, MONTHS = 4, YEARS = 5
IF LESS THAN ONE, CODE '00' FOR NUMBER

PHYSICIAN NAME _____ PHYSICIAN CODE NUMBER _____

	DAY	MONTH	YEAR
DATE DEATH CERTIFICATE ISSUED _____			

HH 1

ICD 10 TABULATIONS LIST APPENDIX E

WHO MORTALITY TABULATION LIST 3, INFANT AND CHILD MORTALITY, CONDENSED LIST

Number	Cause of Death	ICD-CODES
3-001	Certain infectious and parasitic diseases	A00-B99
3-002	Diarrhoea and gastroenteritis of presumed infectious origin	A09
3-003	Other intestinal infectious diseases	A00-A08
3-004	Tuberculosis	A15-A19
3-005	Tetanus	A33, A35
3-006	Diphtheria	A36
3-007	Whooping cough	A37
3-008	Meningococcal infection	A39
3-009	Septicemia	A40-A41
3-010	Acute poliomyelitis	A80
3-011	Measles	B05
3-012	Human immunodeficiency virus (HIV) disease	B20-B24
3-013	Other viral diseases	A81-B04, B06-B19, B25-B34
3-014	Malaria	B50-B54
3-015	Remainder of certain infectious and parasitic diseases	A20-A32, A38, A52-A79, B35-B49, B55-B94, B99
3-016	Neoplasms	C00-D48
3-017	Leukaemia	C91-C95
3-018	Remainder of malignant neoplasms	C00-C90, C96-C97
3-019	Remainder of neoplasms	D00-D48
3-020	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50-D89
3-021	Anaemias	D50-D64
3-022	Remainder of diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D65-D89
3-023	Endocrine, nutritional and metabolic diseases	E00-E88
3-024	Malnutrition and other nutritional deficiencies	E40-E64
3-025	Remainder of endocrine, nutritional and metabolic diseases	E00-E34, E65-E88
3-026	Diseases of the nervous system	G00-G98
3-027	Meningitis	G00, G03
3-028	Remainder of diseases of the nervous system	G04-G98
3-029	Diseases of the ear and mastoid process	H60-H93
3-030	Diseases of the circulatory system	I00-I99
3-031	Diseases of the respiratory system	J00-J98
3-032	Pneumonia	J12-J18
3-033	Other acute respiratory infections	J00-J11, J20-J22
3-034	Remainder of diseases of the respiratory system	J30-J98
3-035	Diseases of the digestive system	K00-K92
3-036	Diseases of the genitourinary system	N00-N98

WHO MORTALITY TABULATION LIST 3, INFANT AND CHILD MORTALITY, CONDENSED LIST – cont.

Number	Cause of Death	ICD-CODES
3-037	Certain conditions originating in the perinatal period	P00-P96
3-038	Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery	P00-P04
3-039	Disorders relating to length of gestation and fetal growth	P05-P08
3-040	Birth trauma	P10-P15
3-041	Intrauterine hypoxia and birth asphyxia	P20-P21
3-042	Respiratory distress of newborn	P22
3-043	Congenital pneumonia	P23
3-044	Other respiratory conditions of newborn	P24-P28
3-045	Bacterial sepsis of newborn	P36
3-046	Omphalitis of newborn with or without mild haemorrhage	P38
3-047	Haemorrhagic and haematological disorders of fetus and newborn	P50-P61
3-048	Remainder of perinatal conditions	P29, P35, P37, P39, P70-P96
3-049	Congenital malformations, deformations and chromosomal abnormalities	Q00-Q99
3-050	Congenital hydrocephalus and spina bifida	Q03, Q05
3-051	Other congenital malformations of the nervous system	Q00-Q02, Q04, Q06-Q07
3-052	Congenital malformations of the heart	Q20-Q24
3-053	Other congenital malformations of the circulatory system	Q25-Q28
3-054	Down's syndrome and other chromosomal abnormalities	Q90-Q99
3-055	Other congenital malformations	Q10-Q18, Q30-Q89
3-056	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R99
3-057	Sudden infant death syndrome	R95
3-058	Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00-R94, R96-R99
3-059	All other diseases	F01-F99, H00-H59, L00-L98, M00-M99
3-060	External causes of morbidity and mortality	V01-Y89
3-061	Transport accidents	V01-V99
3-062	Accidental drowning and submersion	W65-W74
3-063	Other accidental threats to breathing	W75-W84
3-406	Exposure to smoke, fire and flames	X00-X09
3-065	Accidental poisoning by and exposure to noxious substances	X40-X49
3-066	Assault	X85-Y09
3-067	All other external causes	W00-W64, W85-W99, X10-X39, X50-X84, Y10-Y89

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