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Health post service readiness and use of preventive and curative services for suspected childhood pneumonia in Ethiopia: a cross-sectional study

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ABSTRACT

Objective: Pneumonia is the single leading cause of infectious disease deaths in children under-five. Despite this challenge, the utilization of preventive and curative child health services remains low in Ethiopia. We investigated the association between health post service readiness and caregivers' awareness of pneumonia services, care-seeking, and utilisation of pneumonia-relevant immunisation in four Ethiopian regions.

Design and setting: This cross-sectional study was conducted from December 2018 to February 2019. The readiness of health posts for sick child care was assessed using the World Health Organization Health Service Availability and Readiness Assessment tool. A multilevel analysis was employed to examine the association between health post readiness and household level awareness and utilisation of services.

Participants: We included 165 health posts, 274 health extension workers (community health workers), and 4,729 caregivers with 5,787 children 2-59 months.

Outcome measures: Awareness of pneumonia treatment, care-seeking behaviour, and pentavalent-3 immunisation.

Results: Only 62.8% of health posts were ready to provide sick child care services. Approximately one-quarter of caregivers were aware of pneumonia services, and 56.8% sought an appropriate care provider for suspected pneumonia. Nearly half (49.3%) of children 12-23 months had received three doses of pentavalent vaccine. General health post readiness was not associated with the caregiver's awareness of pneumonia treatment [AOR= 0.9, 95% CI 0.7 to 1.1] and utilization of pentavalent-3 immunisation [AOR= 1.2, 95% CI 0.8 to 1.6], but negatively associated with care-seeking for childhood illnesses [AOR= 0.6, 95% CI 0.4 to 0.8].

Conclusion: We found no association between facility readiness and awareness or utilisation of child health services. There were significant deficiencies in health post preparedness for services. Caregivers had low awareness and utilisation of preventive and curative pneumonia-related services. The results underline the importance of enhancing facility preparedness, providing high-quality care, and intensifying demand generation efforts to prevent and treat pneumonia.

Keywords: Childhood pneumonia; Health post preparedness; Health care utilisation; Ethiopia

Strengths and limitations of this study

- This is the first study, which assessed the association between first-level healthcare facilities and caregiver's awareness and utilisation of pneumonia relevant preventive and curative services in four of the most populous Ethiopian regions.
- Health post preparedness was assessed using the standard World Health Organization Health Service Availability and Readiness Assessment tool.
- We ascertained information on the utilisation of pneumonia-related preventive and curative services with methods used by Demographic and Health Surveys, despite this assessment of care-seeking behaviour and pentavalent immunisation by caregivers' recall might be influenced by bias.
- The study was conducted in 52 districts of four Ethiopian regions and assessed facility readiness at the health post level. Hence, the findings may not be generalized to other geographic areas and health system levels.

INTRODUCTION

Worldwide, pneumonia is responsible for one-fifth of all under-five deaths ¹. Nearly half (49%) of these deaths occur in four low- and middle-income countries, including Ethiopia ^{2 3}. There are effective preventive measures, including immunisation and antibiotics that can prevent or treat most cases of pneumonia. Despite these resources, children in low-income countries continue to suffer and die from pneumonia due to lack of access to or availability of these services ⁴.

The World Health Organization and UNICEF introduced the integrated Community Case Management (iCCM) strategy in 2004 to increase access and quality of services for childhood pneumonia, diarrhea, and malaria. Effective implementation of this strategy requires uninterrupted stock of drugs and supplies, trained community health workers, and community awareness of these services ^{5 6}. Nevertheless, studies in low-income countries reveal that less than a fifth of sick children were brought to relevant health services for suspected pneumonia ^{7 8}. This low level of care-seeking has, among other things, been attributed to the poor quality of health services ⁹. A majority of the facilities in these settings have reportedly not had essential drugs, supplies and trained community health workers ¹⁰⁻¹³. The general service readiness index for sick child care has varied between 19% and 69% in reports from Sub-Saharan African countries ^{11 13}. The readiness has been lower in rural areas and at the lowest primary healthcare level ¹⁴⁻¹⁷. In Ethiopia, earlier reports have shown a lack of iCCM drugs and supplies at health posts ^{9 18}.

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3 Inadequate preparedness and low service quality at the primary healthcare level reduce parents thrust
4 and utilisation of health services ^{11 19-21}. In Ethiopia, low utilisation of iCCM services was also attributed to
5 absent supervision and refresher training of health extension workers ²²⁻²⁷. We have earlier shown that a
6 substantial proportion of caregivers were not aware of pneumonia-related health services and, therefore,
7 less likely to seek care when their children got sick or get their children immunised ^{28 29}. The low utilisation
8 of iCCM services has also been attributed to the lack of readiness of health posts to care for sick children
9 ^{19 30 31}. Thus, there are reasons to investigate the primary-level health facility preparedness to provide child
10 health services and whether this is associated with the coverage of pneumonia-related preventive and
11 treatment services. In Ethiopia, under-five mortality was reported to be 55/1000 live births in the 2019
12 Demographic and Health Survey. Although reduced in recent decades, the persistently high level and
13 continued pneumonia deaths call for intensified efforts to reduce these preventable deaths ^{28 32}. The
14 Ethiopian Ministry of Health in collaboration with non-governmental organisations implemented the
15 complex community-based intervention labelled Optimizing the Health Extension Program (OHEP)
16 intervention in four of the most populous regions. The OHEP aimed to contribute to reductions in under-
17 five child mortality through enhancing utilisation of iCCM and community-based newborn care (CBNC)
18 services ³³. This study was part of the evaluation of OHEP intervention. We aimed to examine the
19 association between the health post readiness to serve and caregiver's awareness of pneumonia-related
20 services, care seeking for sick children, and whether their 12-23 months old children had got three
21 pentavalent vaccinations.

32 33 34 35 36 **METHODS**

37 38 **Study setting and design**

39
40 The Ethiopian primary healthcare system typically consists of a primary hospital, a health centre and five
41 satellite health posts. A health post is the lowest service delivery point staffed by two health extension
42 workers serving around 5,000 rural residents. Since 2003, Ethiopia has implemented the health extension
43 program to achieve universal health coverage in rural areas. The integrated community case management
44 (iCCM) of childhood illnesses is one of the components of this national programme. As part of this
45 programme, the health extension workers examine, classify, and treat pneumonia. The OHEP
46 encompassed three intervention strategies, i.e., community engagement activities, capacity building of
47 health extension workers and women's development group leaders, and strengthening of the district
48 health services' ownership and accountability of the primary newborn and child health services. The
49 intervention was conducted in 26 intervention districts with 26 comparison districts spread in four regions

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3 of Ethiopia, namely Tigray, Amhara, Oromia and Southern Nations, Nationalities and Peoples Regions. The
4 intervention started in 2016 and was completed in 2018. For the evaluation, baseline and end line surveys
5 were performed. This paper reports a secondary analysis of end line cross-sectional data ³³.
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7

8 9 **Participants**

10
11 This study included all caregivers and children aged 2 to 59 months, who resided in 52 study districts. It
12 also includes all health posts with one or two health extension workers per health post serving these
13 families.
14
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16 17 **Sampling**

18
19 Sample size for the end line survey was estimated to measure changes in care-seeking and appropriate
20 treatment for childhood illnesses following the implementation of the OHEP intervention. Assumptions
21 considered for the sample size calculation for the main OHEP evaluation ³⁴ were 80% power to detect
22 differences of 15 and 20 percentage points, respectively, in the reported level of care seeking (55%) and
23 appropriate treatment for childhood illnesses (47%) at the baseline, design effect of 1.001 and 90%
24 completeness. Accordingly, a sample size of 12,000 households was obtained. With this number of
25 households, 6,532 children below the age of five years were expected to be reached by the survey, of
26 whom 368 were assumed to have any illnesses and 308 to have suspected pneumonia within two weeks
27 before the survey.
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31 The parent study used a sampling frame generated based on the 2007 Ethiopian Central Statistical Agency
32 housing and population survey. Two hundred enumeration areas, i.e., clusters, were selected from 52
33 study districts with probability proportional to size. A two-staged cluster sampling followed by systematic
34 sampling to select 60 representative households from each study cluster. All caregivers of children aged
35 2-59 months living in the selected households were interviewed. Moreover, all health posts and one
36 health extension worker from each health post serving the population of the study clusters were included.
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39 40 **Data collection**

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42 Data were collected using structured and pre-tested interviewer-administered questionnaires through an
43 electronic data collection software (CSpro survey software). The questionnaires were translated into local
44 languages (Amharic, Tigrigna, and Oromiffa) and back-translated into English. They comprised of three
45 main modules; household, healthcare provider and health facility modules. Data collectors and
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3 supervisors, who had bachelor's degree or above, were trained for two weeks on data collection
4 techniques, procedures, quality assurance, and ethical considerations of the study. Further detailed
5 information about data collection and quality control is available in the published study protocol³³.
6
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8 9 **Outcomes**

10
11 The outcomes of this study are caregiver's awareness of pneumonia treatment, care-seeking behaviour
12 and coverage of pentavalent-3 immunisation as defined in the Demographic and Health Surveys²⁸. The
13 awareness of availability of pneumonia treatment was calculated as the proportion of caregivers who had
14 heard messages regarding pneumonia treatment. Suspected pneumonia was ascertained by asking the
15 caregiver if the child had cough combined with either fast or difficult breathing due to chest problems
16 within two weeks before the survey. Care-seeking was defined as children with suspected pneumonia for
17 whom advice or treatment was sought from an appropriate care provider, i.e., either government or
18 private providers. The vaccination status of children aged 12-23 months was primarily assessed by
19 reviewing immunisation cards. When cards were not available at home, the caregivers were requested to
20 report the type of vaccines their children had received. Hence, coverage of pentavalent vaccination was
21 estimated as the proportion of children 12-23 months who had received three doses of pentavalent
22 vaccine.
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32 33 **Health post readiness**

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35 The readiness of health posts for sick child care was assessed using the World Health Organization Service
36 Availability and Readiness Assessment tool³⁵. Using 23 tracer items, the preparedness of facilities was
37 shown in five domains or indices, i.e., basic amenities, basic equipment, standard precaution equipment
38 for infection prevention, diagnostic capacity, and essential medicines. The mean availability of items
39 across the four domains of readiness was estimated by assigning equal weight for each of the items, and
40 was expressed as a proportion. Health post's diagnostic capacity was shown as the proportion of facilities
41 having rapid diagnostic test for malaria. The general service readiness was calculated as the average of
42 percentages depicting mean availability of tracer items in five indices³⁵. The availability of vaccination at
43 the health posts was also estimated. The number of health extension workers working in the health post
44 and the percentage of these workers trained for iCCM and who had received supportive supervision
45 during six months before the survey were also calculated. The health post demand generation activities
46 were recorded as the proportion of health post showing opening days or that used community forums to
47 deliver maternal and child health education.
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Analyses

The household socio-economic status was constructed through principal component analysis of household assets, ownership of house, livestock, agricultural land, and access to utilities and infrastructures. The factor scores were summed and ranked into quintiles from the poorest to the least poor.

The study linked the household, health facility and care provider information. Our analysis was based on linked samples for outcome variables, i.e., caregivers' awareness of pneumonia treatment (n=4,934), care seeking when the child was sick (n=613) and vaccination of 12-23 months old children with third dose of pentavalent immunisation (n=860). Care-seeking was assessed for all childhood illness episodes, including symptoms of suspected pneumonia as reported by caregiver for the two weeks prior to the survey. The effect of clustering on three of the study outcomes was examined by estimating Intra Cluster Correlation Coefficient (ICC). A multilevel binary logistic regression model was fitted to examine the association between health post readiness and household level awareness, care-seeking and utilisation of three doses of pentavalent vaccinations. We checked for potential household-level confounders. The fitness of the model was checked through Likelihood Ratio Test. Data were analysed using Stata version-14.

Patient and public involvement

Patients or the public were not involved in the design or conduct or reporting or dissemination plans of this research.

RESULTS

Characteristics of caregivers and children

A total of 10,785 households from 181 study clusters, 165 health posts and 274 health extension workers were included in the survey. A total of 4,729 eligible caregivers with 5,787 children aged 2-59 months were included in the analyses. A majority of the caregivers had no schooling (59.4%) and were currently married (88.6%). About two-thirds (64.0%) of caregivers were able to access the nearest health facility within 30 minutes of walk from their home (Table 1).

Table 1 Socio-demographic characteristics of caregivers and children aged 2-59 months in four regions of Ethiopia, December 2018 to February 2019

Characteristics	Frequency	Percentage
Caregiver's characteristics (n=4,729)		
Age		
<25	885	18.7
25-29	1,281	27.1
30-34	1,038	22.0
35-39	867	18.3
>=40	658	13.9
Marital status		
Currently married	4,067	88.6
Unmarried	521	11.4
Education		
No schooling	2,810	59.4
Schooling	1,919	40.6
Number of children under five		
1	3,487	73.7
2	1,148	24.3
3+	94	2.0
Socio-economic quintiles		
Q1 (poorest)	1,024	21.7
Q2	982	20.8
Q3	874	18.5
Q4	895	18.9
Q5 (least poor)	954	20.1
Walking distance from household to nearest health facility (n=3,918)		
<=30 minutes	2,507	64.0
>30 minute	1,411	36.0
Child (2-59 months) characteristics (n=5,787)		
Sex		
Male	2,961	51.2
Female	2,826	49.8
Age		
2-11 Months	959	16.6
12-23 Months	992	17.1
24-35 Months	1114	19.3
36-59 Months	2722	47.0

Characteristics of health posts and health extension workers

The median number of households served by the health post was 1,181. The majority (85.1%) of the health posts were functionally open for five days or more per week. More than a tenth (12.7%) of the health posts were served by only one health extension worker. Most (78.8%) of the health extension workers were trained in the integrated community Case Management of childhood illnesses. More than three-fourth (78.8%) had received supportive supervision within six months preceding the survey. Three-

quarters used community forums or meetings to deliver maternal and child health education within three months prior to the survey (Table 2).

Table 2 Characteristics of health post in four regions of Ethiopia, December 2018 to February 2019

Characteristics	Frequency	Percentage
Health posts catchment area population (n=165)		
Number of households, median (Inter-quartile range)	1,181 (841, 1572)	
Number of children under five years, median (Inter-quartile range)	780 (493, 1065)	
Health extension workers' characteristics (274)		
Number of health extension workers per health post		
One	35	12.7
Two	142	51.8
Three and above	97	35.4
Health post opening days per week		
1 to 4 days	41	14.9
5 to 7 days	233	85.1
Posted health post opening days	54	19.7
Trained for integrated community case management of childhood illnesses	216	78.8
Received supportive supervision in the last six months	216	78.8
Participated in Performance Review and Clinical Mentorship meetings	126	46.0
Used community forums to deliver maternal and child health education	205	74.8

Health post preparedness to deliver sick child care services

The general service readiness of health posts (n=165) to deliver sick child health services was estimated at 62.8%. Half of the health posts had Rapid Diagnostic Test for malaria, and the mean availability of essential medicine was 66.9%. Relatively improved mean availability (80.1%) of tracer items was shown for basic equipment, while the lowest (48.7%) was for availability of standard precaution items. Very few health posts had all essential medicines and standard precaution equipment. Most of the health posts (84.2%) had vaccination cards (Figure 1).

Figure 1 Percentage of health posts (n=165) with drugs and supplies to deliver pneumonia-related and other sick child care services in four regions of Ethiopia, December 2018 to February 2019

Awareness of treatment, actual care-seeking and utilisation of preventive immunisation

During the two weeks before the survey 704 (12.3%) of the children had any illnesses. Of these, 44 children had symptoms and signs of suspected pneumonia. Only one in five (23.9%) caregivers were aware of the

availability of pneumonia treatment services. Health care was sought for one-third (36.1%) of children with any illnesses and for 56.8% of children with suspected pneumonia. Almost half (49.3%) of children aged 12-23 months had received three doses of pentavalent vaccinations (Table 3).

Table 3 Childhood illness and care utilisation by child demographic characteristics in four regions of Ethiopia, December 2018 to February 2019

Service utilisation	Frequency	Percentage
Children with any illnesses		
Yes	704	12.3
No	5,021	87.7
Child illnesses by sex (n=704)		
Male	362	51.4
Female	342	48.6
Childhood illnesses by age (n=704)		
2-11 Months	121	17.2
12-23 Months	147	20.9
24-35 Months	152	21.6
36-59 Months	284	40.3
Child with suspected pneumonia		
Yes	44	0.8
No	5,743	99.2
Child with suspected pneumonia treated with antibiotics (n=44)		
Yes	17	38.6
No	27	61.4
Full pentavalent vaccination by sex (n=489)		
Male	258	52.8
Female	231	47.2

Association of health post readiness with awareness and utilisation of pneumonia care

The Intra Cluster Correlation Coefficient (ICC) indicated that the study outcomes, i.e., awareness of pneumonia treatment (ICC=0.29), care-seeking behaviour (ICC=0.16) and pentavalent vaccination (ICC=0.28) significantly varied with level of clusters. While checking for the household-level confounders, we found that none of the household, caregiver and child characteristics were associated with the outcomes and main exposure variables (P-value of <0.2), i.e., the five health post readiness indices. But regardless of the statistical screening criteria (P-value of <0.2), analyses were adjusted for maternal age, education and intervention-comparison variables.

Analyses tested the association of general health post readiness index with study outcomes were adjusted for all independent variables (shown in Table 5) in addition to mother's age, education and intervention-comparison variables. The adjusted multilevel analyses revealed that general health post readiness was not associated with mother's awareness of availability of pneumonia treatment [AOR= 0.9, 95% CI 0.7 to 1.1] and utilisation of pentavalent-3 immunisation [AOR= 1.2, 95% CI 0.8 to 1.6]. The general health post readiness was negatively associated with care-seeking for childhood illnesses [AOR= 0.6, 95% CI 0.4 to 0.8], Table 4.

Table 4 General health post readiness and caregiver's awareness, care-seeking and utilisation of pentavalent-3 immunisation in four regions of Ethiopia, December 2018 to February 2019

Awareness and utilisation	General readiness	
	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Awareness of treatment service (N= 4,934)	0.9 (0.7,1.1)	0.9 (0.7,1.1)
Care seeking (N=613)	0.7 (0.5,0.9)	0.6 (0.4,0.8)
Pentavalent-3 (N=860)	1.2 (0.9,1.6)	1.2 (0.8,1.6)

As illustrated in Table-5, none of the health post readiness indices were associated with mother's awareness of availability of pneumonia treatment and care seeking for childhood illnesses. Only availability of standard precaution equipment for infection prevention was positively associated with utilisation of pentavalent-3 immunisation [AOR= 4.5, 95% CI 1.6 to 12.8]. On the other hand, our analysis revealed that home visiting by the health extension workers was associated with higher odds of [AOR= 2.9, 95% CI 2.3 to 3.6] mother's awareness of availability of pneumonia treatment.

Table 5 Health post preparedness indices associated with caregiver’s awareness, care-seeking and utilisation of three doses of pentavalent vaccines in four regions of Ethiopia, December 2018 to February 2019

Characteristics	Awareness of treatment service (N= 4,934)				Care seeking (N=613)				Pentavalent-3 (N=860)			
	Aware	Unaware	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	Sought care	Didn't seek care	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	Vaccinated	Not vaccinated	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Basic amenities												
All not available	923	2,867	1.0	1.0	161	270	1.0	1.0	325	337	1.0	1.0
All available	256	888	0.9 (0.6,1.5)	0.9 (0.6,1.5)	49	133	0.7 (0.4,1.1)	0.7 (0.4,1.2)	98	100	0.9 (0.6,1.8)	0.9 (0.6,1.8)
Basic equipment												
All not available	590	2,021	1.0	1.0	117	202	1.0	1.0	219	224	1.0	1.0
All available	589	1,734	1.3 (0.9,1.9)	1.2 (0.8,1.9)	93	201	0.8 (0.5,1.3)	0.9 (0.5,1.4)	204	213	0.9 (0.6,1.6)	0.8 (0.5,1.4)
Standard precaution equipment for infection prevention												
All not available	1,091	3,555	1.0	1.0	202	379	1.0	1.0	386	414	1.0	1.0
All available	88	200	1.9 (0.9,3.9)	1.9 (0.9,4.2)	8	24	0.6 (0.2,1.7)	0.8 (0.3,2.1)	37	23	2.3 (0.9,5.6)	4.5 (1.6,12.8)
Rapid diagnostic test for malaria												
No available	597	1,858	1.0	1.0	NA	NA	NA	NA	NA	NA	NA	NA
Available	582	1,897	0.8 (0.5,1.2)	0.7 (0.4,1.1)	NA	NA	NA	NA	NA	NA	NA	NA
Essential medicine												
First tercile	354	1025	1.0	1.0	58	98	1	1	108	126	1.0	1.0
Second tercile	396	1355	0.9 (0.5,1.4)	0.9 (0.5,1.4)	76	142	0.8 (0.4,1.4)	0.8 (0.4,1.5)	129	145	0.9 (0.5,1.8)	0.8 (0.4,1.6)
Third tercile	429	1375	0.8 (0.5,1.3)	0.8 (0.5,1.4)	76	163	0.7 (0.4,1.3)	0.7 (0.4,1.4)	186	166	1.3 (0.7,2.3)	1.1 (0.6,2.1)
Number of health extension workers per health post												
One	226	784	1.0	1.0	47	71	1.0	1.0	73	68	1.0	1.0
Two and above	953	2,971	1.2 (0.7,1.9)	1.2 (0.7,1.9)	163	332	0.8 (0.4,1.4)	0.8 (0.5,1.5)	350	369	0.9 (0.5,1.6)	0.7 (0.4,1.4)
Number of health post opening days												
Less than five days	209	582	1.0	1.0	43	71	1.0	1.0	61	67	1.0	1.0

Five days and above	970	3,173	0.8 (0.5,1.3)	0.7 (0.4,1.2)	167	332	0.9 (0.5,1.5)	0.7 (0.4,1.4)	362	370	1.3 (0.7,2.5)	1.4 (0.7,2.8)
Health extension workers used community forum												
No	297	1,003	1.0	1.0	70	139	1.0	1.0	113	131	1.0	1.0
Yes	882	2,752	1.2 (0.8,1.8)	1.3 (0.8,1.9)	140	264	1.0 (0.6,1.6)	0.9 (0.6,1.5)	310	306	1.3 (0.8,2.2)	1.3 (0.7,2.2)
Health extension workers received supervision												
No	NA	NA	NA	NA	44	105	1.0	1.0	60	68	1.0	1.0
Yes	NA	NA	NA	NA	166	298	1.3 (0.8,2.3)	1.5 (0.8,2.6)	363	369	1.4 (0.7,2.5)	1.1 (0.5,2.2)
Health extension workers received iCCM training												
Did not received training	NA	NA	NA	NA	40	74	1.0	1.0	NA	NA	NA	NA
Received training	NA	NA	NA	NA	170	329	0.9 (0.5,1.6)	0.9 (0.5,1.7)	NA	NA	NA	NA
Health extension workers participated at Performance Review and Clinical Mentorship meeting												
No	NA	NA	NA	NA	123	252	1.0	1.0	232	252	1.0	1.0
Yes	NA	NA	NA	NA	87	151	1.2 (0.8,1.9)	1.2 (0.7,2.0)	191	185	1.2 (0.7,1.9)	0.9 (0.5,1.5)
Home visting												
No	934	3,445	1	1	175	357	1	1	372	386	1.0	1.0
Yes	244	309	2.9 (2.4,3.7)	2.9 (2.3,3.6)	35	46	1.6 (0.9,2.6)	1.5 (0.9,2.5)	51	38	1.6 (0.9,2.7)	1.6 (0.9,2.7)

DISCUSSION

Overall, this study showed insufficient health post service preparedness and low household awareness and utilisation of preventive and curative services for childhood suspected pneumonia. There was no consistent association between facility preparedness and utilisation of preventive and curative services.

Strengths and limitations

With an attempt of narrowing the existing scarcity of evidence, our study examined the association between health post readiness and household level awareness and utilisation of pneumonia relevant health services in a wider geographic area. Readiness of health posts was measured using the standard WHO Health Service Availability and Readiness Assessment tool³⁵. When vaccination cards were not available at home, children's pentavalent immunisation status was assessed through interviewing the caregivers. Likewise, ascertainment of childhood suspected pneumonia and other illnesses was based on the caregiver's two weeks reported symptoms prior to the survey. These ascertainment techniques have been used by the Demographic and Health Surveys, but might be influenced by recall bias²⁸. Furthermore, we assessed health post service readiness and pneumonia service utilisation in selected, but representative, districts of four Ethiopian regions, therefore the findings may not be generalized to other geographic areas and health system levels.

Health post preparedness

This study showed that two-thirds of the health posts were ready to provide sick child care, suggesting that the remaining significant proportion of facilities were not able to deliver such services. More or less similar level of structural preparedness of health posts or primary health care facilities for pneumonia and other sick child care were previously reported in Ethiopia and other low- and middle-income countries¹⁰³⁶³⁷. Furthermore, health posts or health centres of Ethiopia and other low-income countries were found with low readiness to provide quality care to sick children⁹. According to the Ethiopia health system, a health centre is structured to support and strengthen five health posts with their catchment areas, hence insufficient preparedness of the surveyed health posts could be explained by scarcity of supplies at health centres or poor linkages between health posts and health centres or the health system at large²⁹³⁸.

Inadequate readiness of health posts in the study setting and other low-income countries indicates a serious challenge to community case management of pneumonia, particularly in the rural or unreached communities, where a majority of preventable deaths occur⁶²⁸. Most importantly, only a few of the

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3 surveyed health posts had all essential medicines and just half had diagnostic equipment, clearly
4 indicating their limitations in providing effective pneumonia or sick child treatment⁵⁶. Scarcity of essential
5 medicines in Ethiopia and other Sub-Saharan African countries results in missed pneumonia treatments
6 at facility level^{13 17 29}. Unavailability of rapid diagnostic tests impairs community health worker's ability to
7 differentiate suspected pneumonia from malaria in case of symptom overlap, a common clinical problem
8 in African children³⁹⁻⁴¹.
9

14 **Awareness and utilisation of pneumonia-related health services**

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16 Our study revealed low health care utilisation for pneumonia-specific preventive and curative services.
17 These levels of service utilisation were lower compared to the reported regional pentavalent-3
18 immunisation coverage (80%) and care seeking behaviour (85%) for childhood suspected pneumonia and
19 other illnesses in Sub-Saharan African Countries^{42 43}. Community awareness of illness and sick child care
20 is a pre-requisite to seek timely health services⁴⁴. We found that less than a fifth of caregivers were aware
21 of the availability of pneumonia treatment services, and this might partly explain the observed poor
22 utilisation of pneumonia-related health services in the study setting^{45 46}. The reported low care utilisation
23 could also be explained by inadequate readiness or service quality of the primary health care facilities for
24 pneumonia-related preventive and treatment services^{36 47}. The OHEP evaluation studies have revealed a
25 low quality of sick child care services provided at the primary health care facilities, and caregivers of
26 children have also mentioned this as a key barrier to seek care at health posts⁴⁸⁻⁵⁰. A study in 22 African
27 countries noted a low level of community trust in public health facilities as an important reason to the low
28 coverage of child vaccination⁵¹.
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39 **Association between health post preparedness and utilisation of preventive immunisation and** 40 **care seeking behaviour**

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42 Earlier studies have shown a positive association between health facility readiness and utilisation of first-
43 level sick child care^{11 21}. We did not find any consistent pattern of relationship between facility readiness
44 indices and utilisation of services. There was a positive association between the availability of standard
45 precaution equipment for infection prevention and utilisation of pentavalent-3 immunisation. However,
46 the general health post readiness had no association with awareness and coverage of pentavalent-3
47 immunisation, but a negative association with care-seeking for childhood suspected pneumonia and other
48 illnesses. Another national study also showed absence of association between readiness of primary health
49 care facilities for sick child care and caregivers' satisfaction to the respective services⁵². The lack of
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3 consistent positive association between service readiness and use of services may be linked to the
4 dominating low level of facility preparedness. In spite of this, equipping health care facilities with relevant
5 equipment is a prerequisite to enhance the quality of iCCM services ⁶. Hence, the reported lack of
6 association of health post readiness with awareness and utilisation of pneumonia treatment services
7 suggests that simply equipping facilities with necessary supplies is not a guarantee to reach the intended
8 level of community awareness and utilisation of health services. Health facility strengthening efforts,
9 therefore, should go along with implementation of awareness creation and demand generation
10 interventions to increase the community awareness, trust and utilisation of pneumonia-related and other
11 child health services ⁴⁴. In line with this notion, our study revealed that home visiting by the health
12 extension workers was positively associated with caregivers' awareness of pneumonia treatment. Home
13 visiting by the community health workers is one of the vital strategies to promote child health and
14 enhance awareness and utilisation of health services ^{44 53}. A sub-study of the same project also showed
15 that awareness creation and delivery of preventive child health interventions (such as immunisations)
16 were the main components of outreach services delivered by the health extension workers ⁴⁸.

27 **Relation of findings with already published OHEP evaluation studies**

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30 This study was part of the end line evaluation of the OHEP intervention. The findings showed sizable gaps
31 in structural readiness of health posts for sick child care. Results of our published baseline study also
32 illustrated the scarcity of essential drugs and other supplies at the health posts ²⁹. Sub-studies of the same
33 project investigated process aspects of quality of sick child care, and results showed low clinical
34 performance of the health extension workers to identify and treat childhood suspected pneumonia and
35 other illnesses ^{49 50}. A qualitative study noted a lack of caregiver's trust in the health extension workers'
36 clinical competency to manage sick children and a low availability of essential drugs, diagnostic and other
37 supplies at health posts. The low quality of sick child care at health posts was a barrier to utilise the
38 services ⁴⁸.

46 **CONCLUSIONS**

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48 This study has shown a low health post readiness for services, and low household awareness and
49 utilisation of pneumonia-relevant preventive and curative services. Parent's awareness and utilisation of
50 pneumonia-specific preventive and curative services were not consistently associated with the health post
51 readiness. These findings underline the pivotal role of strengthening the availability and quality of
52 pneumonia and sick child care services at the health posts. There is a need to simultaneously equip
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3 facilities and intensify the community awareness creation and demand generation efforts to improve
4 utilisation of essential child health services.
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Contributors

AT, LÅP, YB, YO, AW and GAB contributed to the conceptualization of the study. AT analysed and interpreted the data and drafted the manuscript. LÅP, YB, YO, AW and GAB contributed to analysis and writing of the paper. All authors have read and approved the final manuscript.

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Competing interests

The authors declare that they have no conflict of interest.

Patient consent for publication

Not applicable

Ethics approval

The original study was approved by the Ethical Review Boards of the Ethiopian Public Health Institute (protocol number SERO-012-8-2016), the London School of Hygiene & Tropical Medicine (protocol number 11235), and the University of Gondar (V/P/RCS/05/559/2019). A written informed consent was obtained from each household respondent, caregiver of the index child and the health workers.

Provenance and peer review

Not commissioned; externally peer reviewed.

Data availability statement

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3 The data for this manuscript were primarily collected by the Ethiopian Public Health Institute and London
4 School of Hygiene & Tropical Medicine. Interested researchers may contact the focal person, Dr Yemisrach
5 B. Okwaraji through email: Yemisrach.Okwaraji@lshtm.ac.uk. All requests will be reviewed by this
6 committee and if granted, data will be shared without any identifiers.
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10 **Figure legend**

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13 Figure 1 Percentage of health posts (n=165) with drugs and supplies to deliver pneumonia-related and
14 other sick child care services in four regions of Ethiopia, December 2018 to February 2019
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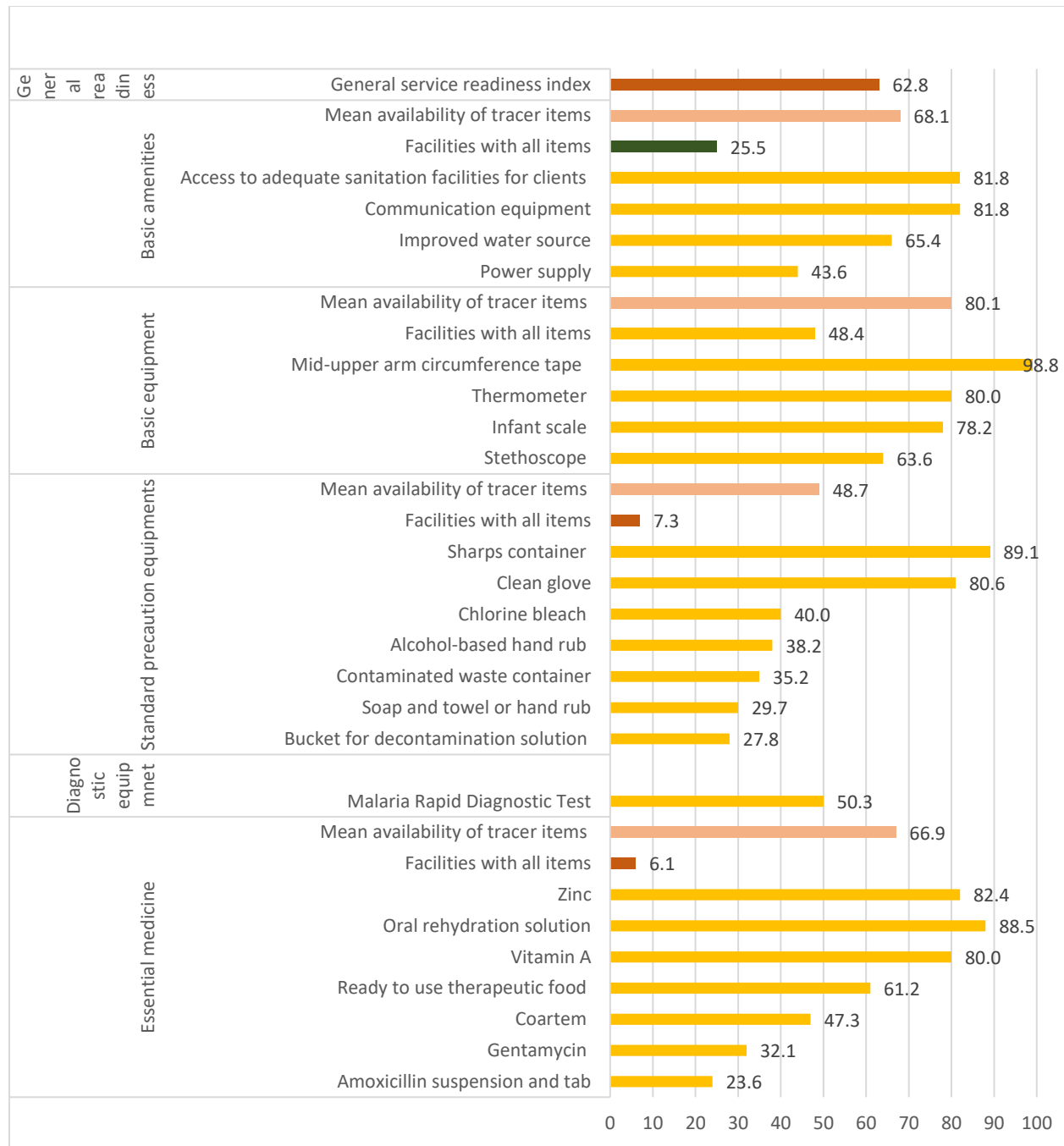


Figure 1 Percentage of health posts (n=165) with drugs and supplies to deliver pneumonia-related and other sick child care services in four regions of Ethiopia, December 2018 to February 2019

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4-5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6-7
Bias	9	Describe any efforts to address potential sources of bias	6-7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-7
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	7
		(b) Describe any methods used to examine subgroups and interactions	7
		(c) Explain how missing data were addressed	7
		(d) If applicable, describe analytical methods taking account of sampling strategy	7
		(e) Describe any sensitivity analyses	-
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	8
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	8-9
		(b) Indicate number of participants with missing data for each variable of interest	8, 11, 13, 14
Outcome data	15*	Report numbers of outcome events or summary measures	11
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13-14
		(b) Report category boundaries when continuous variables were categorized	9
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	12
Discussion			
Key results	18	Summarise key results with reference to study objectives	15
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	15 - 17
Generalisability	21	Discuss the generalisability (external validity) of the study results	15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	18

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Health post service readiness and use of preventive and curative services for suspected childhood pneumonia in Ethiopia: a cross-sectional study

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2
3 30 **ABSTRACT**
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5 31 **Objective:** Pneumonia is the single leading cause of infectious disease deaths in children under-five.
6
7 32 Despite this challenge, the utilization of preventive and curative child health services remains low in
8
9 33 Ethiopia. We investigated the association between health post service readiness and caregivers'
10
11 34 awareness of pneumonia services, care-seeking, and utilisation of pneumonia-relevant immunisation in
12
13 35 four Ethiopian regions.

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15 36 **Design and setting:** This cross-sectional study was conducted in 52 districts of four regions of Ethiopia
16
17 37 from December 2018 to February 2019. The health posts preparedness for sick child care was assessed
18
19 38 using the World Health Organization Health Service Availability and Readiness Assessment tool. Multilevel
20
21 39 analyses were employed to examine the associations between health post readiness and household level
22
23 40 awareness and utilisation of services.

24 41 **Participants:** We included 165 health posts, 274 health extension workers (community health workers),
25
26 42 and 4,729 caregivers with 5,787 children 2-59 months.

27
28 43 **Outcome measures:** Awareness of pneumonia treatment, care-seeking behaviour, and coverage of
29
30 44 pentavalent-3 immunisation.

31
32 45 **Results:** Only 62.8% of health posts were ready to provide sick child care services. One-quarter of
33
34 46 caregivers were aware of pneumonia services, and 56.8% sought an appropriate care provider for
35
36 47 suspected pneumonia. Nearly half (49.3%) of children (12-23 months) had received pentavalent-3
37
38 48 immunisation. General health post readiness was not associated with caregivers' awareness of
39
40 49 pneumonia treatment [AOR= 0.9, 95% CI 0.7 to 1.1] and utilisation of pentavalent-3 immunisation [AOR=
41
42 50 1.2, 95% CI 0.8 to 1.6], but negatively associated with care-seeking for childhood illnesses [AOR= 0.6, 95%
43
44 51 CI 0.4 to 0.8].

45 52 **Conclusion:** We found no association between facility readiness and awareness or utilisation of child
46
47 53 health services. There were significant deficiencies in health post preparedness for services. Caregivers
48
49 54 had low awareness and utilisation of pneumonia-related services. The results underline the importance
50
51 55 of enhancing facility preparedness, providing high-quality care, and intensifying demand generation
52
53 56 efforts to prevent and treat pneumonia.

54 57 **Keywords:** Childhood pneumonia; Health post preparedness; Health care utilisation; Ethiopia
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58 **Strengths and limitations of this study**

- 59 ■ This is the first study, which assessed the association between first-level healthcare facility readiness
60 for services and caregivers' awareness and utilisation of pneumonia-relevant preventive and curative
61 services in four of the most populous Ethiopian regions.
- 62 ■ Facility preparedness was assessed using the World Health Organization Health Service Availability
63 and Readiness Assessment tool to generate objective and reliable information that is comparable
64 across or within countries.
- 65 ■ We ascertained information on the utilisation of pneumonia-related preventive and curative
66 services with Demographic and Health Surveys methods, assumed to reduce recall bias.
- 67 ■ The study covered pneumonia services and service readiness of health posts in 52 districts of four
68 Ethiopian regions and findings may not be representative of other geographic areas and health
69 system levels.

70 **INTRODUCTION**

71 Worldwide, pneumonia is responsible for one-fifth of all under-five deaths ¹. Nearly half (49%) of these
72 deaths occur in four low- and middle-income countries, including Ethiopia ^{2 3}. There are effective
73 preventive measures, including immunisation and antibiotics that can prevent or treat most cases of
74 pneumonia. Despite these resources, children in low-income countries continue to suffer and die from
75 pneumonia due to lack of access to or availability of these services ⁴.

76 The World Health Organization and UNICEF introduced the integrated Community Case Management
77 (iCCM) strategy in 2004 to increase access and quality of services for childhood pneumonia, diarrhea, and
78 malaria. Effective implementation of this strategy requires uninterrupted stock of drugs and supplies,
79 trained community health workers, and community awareness of these services ^{5 6}. Nevertheless, studies
80 in low-income countries reveal that less than a fifth of sick children were brought to relevant health
81 services for suspected pneumonia ^{7 8}. This low level of care-seeking has, among other things, been
82 attributed to the poor quality of health services ⁹. A majority of facilities in these settings have reportedly
83 not had essential drugs, supplies and trained community health workers ¹⁰⁻¹³. The general service
84 readiness index for sick child care has varied between 19% and 69% in reports from Sub-Saharan African
85 countries ^{11 13}. The readiness has been lower in rural areas and at the lowest primary healthcare level ¹⁴⁻
86 ¹⁷. In Ethiopia, earlier reports have shown a lack of iCCM drugs and supplies at health posts ^{9 18}.

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2
3 87 Inadequate preparedness and low service quality at the primary healthcare level reduce parents' trust
4
5 88 and utilisation of health services^{11 19-21}. In Ethiopia, the low utilisation of iCCM services was also attributed
6
7 89 to absent supervision and refresher training of health extension workers²²⁻²⁷. We have earlier shown that
8
9 90 a substantial proportion of caregivers were not aware of pneumonia-related health services and,
10
11 91 therefore, less likely to seek care when their children got sick or get their children immunised^{28 29}. The
12
13 92 low utilisation of iCCM services has also been attributed to the lack of readiness of health posts to care
14
15 93 for sick children^{19 30 31}. Thus, there are reasons to investigate the primary-level health facility preparedness
16
17 94 to provide child health services and whether this is associated with the coverage of pneumonia-related
18
19 95 preventive and treatment services. In Ethiopia, under-five mortality was reported to be 55 per 1000 live
20
21 96 births in the 2019 Demographic and Health Survey. Although reduced in recent decades, the persistently
22
23 97 high level and continued pneumonia deaths call for intensified efforts to prevent these preventable
24
25 98 deaths^{28 32}. The Ethiopian Ministry of Health in collaboration with non-governmental organisations
26
27 99 implemented a complex community-based intervention labelled Optimizing the Health Extension Program
28
29 100 (OHEP) in four of the most populous regions. The OHEP aimed to contribute to reductions in under-five
30
31 101 child mortality through enhancing utilisation of iCCM and community-based newborn care (CBNC)
32
33 102 services³³. This study was part of the evaluation of OHEP intervention. We aimed to examine the
34
35 103 association between the health post readiness to serve and caregivers' awareness of pneumonia-related
36
37 104 services, care-seeking for sick children, and whether their 12-23 months old children had got three
38
39 105 pentavalent vaccinations.

106 **METHODS**

107 **Study setting and design**

108 The Ethiopian primary healthcare system typically consists of a primary hospital, a health centre and five
109
110 satellite health posts. A health post is the lowest service delivery point staffed by two health extension
111
112 workers serving around 5,000 rural residents. Since 2003, Ethiopia has implemented the health extension
113
114 program to achieve universal coverage of primary health care for the rural population. This national
115
116 program is implemented by health extension workers, and they provide basic promotive, preventive and
117
118 curative services through outreach and health post-based approaches. In 2010, after a change in policy
119
120 that allowed the health extension workers to treat child pneumonia, the Ethiopian Ministry of Health and
121
122 partners initiated the implementation of iCCM of childhood illnesses as part of the health extension
123
124 program. Under the iCCM program, the health extension workers examine, classify, and treat
125
126 pneumonia^{34 35}.

118

119 The OHEP intervention had three components, i.e., community engagement activities, capacity building
120 of health extension workers and women's development group leaders, and strengthening of the district
121 health services' ownership and accountability of the primary newborn and child health services. The
122 intervention was conducted in 26 intervention districts with 26 comparison districts spread in four regions
123 of Ethiopia, namely Tigray, Amhara, Oromia and Southern Nations, Nationalities and Peoples Regions. The
124 intervention started in 2016 and was completed in 2018. For the evaluation, baseline and end line surveys
125 were performed. This paper reports a secondary analysis of end line cross-sectional data³³.

126 **Participants**

127 This study included all caregivers and children aged 2 to 59 months, who resided in 52 study districts. It
128 also includes all health posts with one or two health extension workers per health post serving these
129 families.

130 **Sampling**

131 This study was based on secondary analysis of data from the endline survey that was part of the evaluation
132 of the OHEP intervention. Sample size for the end line survey was estimated to measure changes in care-
133 seeking and appropriate treatment for childhood illnesses between intervention and comparison areas at
134 baseline and endline. Assumptions considered for the sample size calculation for the main OHEP
135 evaluation³⁶ were 80% power to detect differences of 15% for the reported level of care-seeking (55%)
136 and 20% for appropriate treatment for childhood illnesses (47%) at the baseline, design effect of 1.001
137 and 90% completeness. Accordingly, a sample size of 12,000 households was obtained. With this number
138 of households, 6,532 children below the age of five years were expected to be reached by the survey, of
139 whom 368 were assumed to have any illnesses and 308 to have suspected pneumonia within two weeks
140 before the survey.

141 The parent study used a sampling frame generated based on the 2007 Ethiopian Central Statistical Agency
142 housing and population survey. Two hundred enumeration areas, i.e., clusters, were selected from 52
143 study districts with probability proportional to size. A two-staged cluster sampling followed by systematic
144 sampling to select 60 representative households from each study cluster. All caregivers of children aged
145 2-59 months living in the selected households were interviewed. Moreover, all health posts and one or

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2
3 146 two health extension workers from each health post serving the population of the study clusters were
4
5 147 included ³⁷.

6 7 148 **Data collection**

8
9
10 149 Data were collected using structured and pre-tested interviewer-administered questionnaires through an
11
12 150 electronic data collection software (CSpro survey software). The questionnaires were translated into local
13
14 151 languages (Amharic, Tigrigna, and Oromiffa) and back-translated into English. They comprised of three
15
16 152 main modules; household, healthcare provider and health facility modules (see supplementary files 1, 2
17
18 153 & 3). Data collectors and supervisors, who had bachelor's degree or above, were trained for two weeks
19
20 154 on data collection techniques, procedures, quality assurance, and ethical considerations of the study.
21
22 155 Further detailed information about data collection and quality control is available in the published study
23
24 156 protocol ³³.

25 26 157 **Outcomes**

27 158 The outcomes of this study are caregivers' awareness of pneumonia treatment, care-seeking behaviour
28
29 159 and coverage of pentavalent-3 immunisation as defined in the Demographic and Health Surveys ²⁸. The
30
31 160 awareness of availability of pneumonia treatment was calculated as the proportion of caregivers who had
32
33 161 heard messages regarding pneumonia treatment. Suspected pneumonia was ascertained by asking the
34
35 162 caregiver if the child had cough combined with either fast or difficult breathing due to chest problems
36
37 163 within two weeks before the survey. Care-seeking was defined as children with suspected pneumonia for
38
39 164 whom advice or treatment was sought from an appropriate care provider, i.e., either government or
40
41 165 private providers. The vaccination status of children aged 12-23 months was primarily assessed by
42
43 166 reviewing immunisation cards. When cards were not available at home, the caregivers were requested to
44
45 167 report the type of vaccines their children had received. Hence, coverage of pentavalent vaccination was
46
47 168 estimated as the proportion of children 12-23 months who had received three doses of pentavalent
48
49 169 vaccine.

50 51 170 **Health post readiness**

52 171 The readiness of health posts for sick child care was assessed using the World Health Organization Service
53
54 172 Availability and Readiness Assessment tool ³⁸. Using 23 tracer items, the preparedness of facilities was
55
56 173 shown in five domains or indices, i.e., basic amenities, basic equipment, standard precaution equipment
57
58 174 for infection prevention, diagnostic capacity, and essential medicines. The mean availability of items

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3 175 across the four domains of readiness was estimated by assigning equal weight to each of the items, and
4
5 176 was expressed as a proportion. Health posts' diagnostic capacity was shown as the proportion of facilities
6
7 177 having rapid diagnostic test for malaria. The general service readiness was calculated as the average of
8
9 178 percentages depicting mean availability of tracer items in five indices³⁸. The availability of vaccination
10
11 179 card at the health posts was also estimated. The number of health extension workers working at the
12
13 180 health post and the percentage of these workers trained in iCCM and who had received supportive
14
15 181 supervision during six months before the survey were also calculated. The health post demand generation
16
17 182 activities were recorded as the proportion of health posts showing opening days or that used community
18
19 183 forums to deliver maternal and child health education.

19 184 **Analyses**

20
21 185 The household socio-economic status was constructed through principal component analysis of
22
23 186 household assets, ownership of house, livestock, agricultural land, and access to utilities and
24
25 187 infrastructures. The factor scores were summed and ranked into quintiles from the poorest to the least
26
27 188 poor.

28
29 189 The study linked the household, health facility and care provider information. Our analysis was based on
30
31 190 linked samples for outcome variables, i.e., caregivers' awareness of pneumonia treatment (n=4,934), care-
32
33 191 seeking when the child was sick (n=613) and vaccination of 12-23 months old children with a third dose
34
35 192 of pentavalent immunisation (n=860). Care-seeking was assessed for all childhood illness episodes,
36
37 193 including symptoms of suspected pneumonia as reported by caregivers for the two weeks prior to the
38
39 194 survey. The effect of clustering on three of the study outcomes was examined by estimating Intra Cluster
40
41 195 Correlation Coefficients (ICC). A multilevel binary logistic regression model was fitted to examine the
42
43 196 association between health post readiness and household level awareness, care-seeking and utilisation of
44
45 197 three doses of pentavalent vaccinations. We checked for potential household-level confounders. The
46
47 198 fitness of the model was checked through Likelihood Ratio Test. Data were analysed using Stata version
48
49 199 14.

48 200 **Patient and public involvement**

50
51 201 Patients or the public were not involved in the design or conduct or reporting or dissemination
52
53 202 plans of this research.

54 203 **RESULTS**

204 Characteristics of caregivers and children

205 A total of 10,785 households from 181 study clusters, 165 health posts and 274 health extension workers
 206 were included in the survey. A total of 4,729 eligible caregivers with 5,787 children aged 2-59 months
 207 were included in the analyses. A majority of the caregivers had no schooling (59.4%) and were currently
 208 married (88.6%). About two-thirds (64.0%) of caregivers were able to access the nearest health facility
 209 within 30 minutes of walk from their home (Table 1).

210 Table 1 Socio-demographic characteristics of caregivers and children aged 2-59 months in four regions
 211 of Ethiopia, December 2018 to February 2019

Characteristics	Frequency	Percentage
Caregivers' characteristics (n=4,729)		
Age		
<25	885	18.7
25-29	1,281	27.1
30-34	1,038	22.0
35-39	867	18.3
>=40	658	13.9
Marital status		
Currently married	4,067	88.6
Unmarried	521	11.4
Education		
No schooling	2,810	59.4
Schooling	1,919	40.6
Number of children under five		
1	3,487	73.7
2	1,148	24.3
3+	94	2.0
Socio-economic quintiles		
Q1 (poorest)	1,024	21.7
Q2	982	20.8
Q3	874	18.5
Q4	895	18.9
Q5 (least poor)	954	20.1
Walking distance from household to nearest health facility (n=3,918)		
<=30 minutes	2,507	64.0
>30 minute	1,411	36.0
Child (2-59 months) characteristics (n=5,787)		
Sex		
Male	2,961	51.2
Female	2,826	48.8
Age		
2-11 Months	959	16.6
12-23 Months	992	17.1
24-35 Months	1114	19.3
36-59 Months	2722	47.0

212

213 **Characteristics of health posts and health extension workers**

214 The median number of households served by the health post was 1,181. The majority (85.1%) of the health
 215 posts were functionally open for five days or more per week. More than a tenth (12.7%) of the health
 216 posts were served by only one health extension worker. Most (78.8%) of the health extension workers
 217 were trained in the iCCM of childhood illnesses. More than three-fourth (78.8%) had received supportive
 218 supervision within six months preceding the survey. Three-quarters used community forums or meetings
 219 to deliver maternal and child health education within three months prior to the survey (Table 2).

220 Table 2 Characteristics of health posts in four regions of Ethiopia, December 2018 to February 2019

Characteristics	Frequency	Percentage
Health posts catchment area population (n=165)		
Number of households, median (Inter-quartile range)	1,181 (841, 1572)	
Number of children under five years, median (Inter-quartile range)	780 (493, 1065)	
Health extension workers' characteristics (274)		
Number of health extension workers per health post		
One	35	12.7
Two	142	51.8
Three and above	97	35.4
Health post opening days per week		
1 to 4 days	41	14.9
5 to 7 days	233	85.1
Posted health post opening days	54	19.7
Trained for iCCM* of childhood illnesses	216	78.8
Received supportive supervision in the last six months	216	78.8
Participated in Performance Review and Clinical Mentorship meetings	126	46.0
Used community forums to deliver maternal and child health education	205	74.8

221 * Integrated community case management

222 **Health post preparedness to deliver sick child care services**

223 The general service readiness of health posts (n=165) to deliver sick child health services was estimated
 224 at 62.8%. Half of the health posts had Rapid Diagnostic Test for malaria, and the mean availability of
 225 essential medicines was 66.9%. Relatively higher mean availability (80.1%) of tracer items was shown for
 226 basic equipment, while the lowest (48.7%) was for availability of standard precaution items. Very few
 227 health posts had all essential medicines and standard precaution equipment. Most of the health posts
 228 (84.2%) had vaccination cards (Figure 1).

229 Figure 1 Percentage of health posts (n=165) with drugs and supplies to deliver pneumonia-related and
 230 other sick child care services in four regions of Ethiopia, December 2018 to February 2019

231 **Awareness of treatment, actual care-seeking and utilisation of preventive immunisation**

232 During the two weeks before the survey 704 (12.3%) of the children had any illnesses. Of these, 44 children
 233 had symptoms and signs of suspected pneumonia. Only one in five (23.9%) caregivers were aware of the
 234 availability of pneumonia treatment services. Health care was sought for one-third (36.1%) of children
 235 with any illnesses and for 56.8% of children with suspected pneumonia. Almost half (49.3%) of children
 236 aged 12-23 months had received three doses of pentavalent vaccinations (Table 3).

237 Table 3 Childhood illness and care utilisation by child demographic characteristics in four regions of
 238 Ethiopia, December 2018 to February 2019

Service utilisation	Frequency	Percentage
Children with any illnesses		
Yes	704	12.3
No	5,021	87.7
Childhood illnesses by sex (n=704)		
Male	362	51.4
Female	342	48.6
Childhood illnesses by age (n=704)		
2-11 Months	121	17.2
12-23 Months	147	20.9
24-35 Months	152	21.6
36-59 Months	284	40.3
Child with suspected pneumonia		
Yes	44	0.8
No	5,743	99.2
Child with suspected pneumonia treated with antibiotics (n=44)		
Yes	17	38.6
No	27	61.4
Full pentavalent vaccination by sex (n=489)		
Male	258	52.8
Female	231	47.2

239
 240 **Association between health post readiness and awareness and utilisation of pneumonia care**
 241 The Intra Cluster Correlation Coefficient (ICC) indicated that the study outcomes, i.e., awareness of
 242 pneumonia treatment (ICC=0.29, 95% CI: 0.24, 0.36), care-seeking behaviour (ICC=0.16, 95% CI: 0.10, 0.27)
 243 and pentavalent vaccination (ICC=0.28, 95% CI: 0.20, 0.38) significantly varied with level of clusters. While

checking for the household-level confounders, we found that none of the household, caregiver and child characteristics were associated with the outcomes and main exposure variables, i.e., the five health post readiness indices. But regardless of the statistical screening criteria (P-value <0.2), analyses were adjusted for maternal age, education and area of residence (intervention-comparison area) variables.

Analyses tested the association of general health post readiness index with study outcomes were adjusted for health extension workers' iCCM training, supportive supervision, participation at performance review and clinical mentorship meeting, home visiting, use of community forums, opening days and number of staff at health post, mothers' age, education and area of residence (intervention-comparison area) variables. The adjusted multilevel analyses revealed that general health post readiness was not associated with caregivers' awareness of availability of pneumonia treatment [AOR= 0.9, 95% CI 0.7 to 1.1] or utilisation of pentavalent-3 immunisation [AOR= 1.2, 95% CI 0.8 to 1.6]. The general health post readiness was negatively associated with care-seeking for childhood illnesses [AOR= 0.6, 95% CI 0.4 to 0.8], Table 4.

Table 4 General health post readiness and caregivers' awareness, care-seeking and utilisation of pentavalent-3 immunisation in four regions of Ethiopia, December 2018 to February 2019

Awareness and utilisation	General readiness	
	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Awareness of treatment service (N= 4,934) *	0.9 (0.7,1.1)	0.9 (0.7,1.1)
Care-seeking (N=613) *	0.7 (0.5,0.9)	0.6 (0.4,0.8)
Pentavalent-3 (N=860) *	1.2 (0.9,1.6)	1.2 (0.8,1.6)

* Analyses adjusted for health extension workers' iCCM training, supportive supervision, participation at performance review and clinical mentorship meeting, home visiting, use of community forums, opening days and number of staff at health post, mothers' age, education and area of residence.

As illustrated in Table-5, none of the health post readiness indices were associated with caregivers' awareness of availability of pneumonia treatment and care-seeking for childhood illnesses. Only availability of standard precaution equipment for infection prevention was positively associated with utilisation of pentavalent-3 immunisation [AOR= 4.5, 95% CI 1.6 to 12.8]. Home visiting by the health extension workers was associated with higher odds for caregivers' awareness of availability of pneumonia treatment [AOR= 2.9, 95% CI 2.3 to 3.6].

268 Table 5 Health post preparedness indices associated with caregivers' awareness, care-seeking and utilisation of three doses of pentavalent
 269 vaccines in four regions of Ethiopia, December 2018 to February 2019

Characteristics	Awareness of treatment service (N= 4,934)				Care-seeking (N=613)				Pentavalent-3 (N=860)			
	Aware	Unaware	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	Sought care	Didn't seek care	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)	Vaccinated	Not vaccinated	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Basic amenities												
All not available	923	2,867	1.0	1.0	161	270	1.0	1.0	325	337	1.0	1.0
All available	256	888	0.9 (0.6,1.5)	0.9 (0.6,1.5)	49	133	0.7 (0.4,1.1)	0.7 (0.4,1.2)	98	100	0.9 (0.6,1.8)	0.9 (0.6,1.8)
Basic equipment												
All not available	590	2,021	1.0	1.0	117	202	1.0	1.0	219	224	1.0	1.0
All available	589	1,734	1.3 (0.9,1.9)	1.2 (0.8,1.9)	93	201	0.8 (0.5,1.3)	0.9 (0.5,1.4)	204	213	0.9 (0.6,1.6)	0.8 (0.5,1.4)
Standard precaution equipment for infection prevention												
All not available	1,091	3,555	1.0	1.0	202	379	1.0	1.0	386	414	1.0	1.0
All available	88	200	1.9 (0.9,3.9)	1.9 (0.9,4.2)	8	24	0.6 (0.2,1.7)	0.8 (0.3,2.1)	37	23	2.3 (0.9,5.6)	4.5 (1.6,12.8)
Rapid diagnostic test for malaria												
No available	597	1,858	1.0	1.0	NA	NA	NA	NA	NA	NA	NA	NA
Available	582	1,897	0.8 (0.5,1.2)	0.7 (0.4,1.1)	NA	NA	NA	NA	NA	NA	NA	NA
Essential medicine												
First tercile	354	1025	1.0	1.0	58	98	1	1	108	126	1.0	1.0
Second tercile	396	1355	0.9 (0.5,1.4)	0.9 (0.5,1.4)	76	142	0.8 (0.4,1.4)	0.8 (0.4,1.5)	129	145	0.9 (0.5,1.8)	0.8 (0.4,1.6)
Third tercile	429	1375	0.8 (0.5,1.3)	0.8 (0.5,1.4)	76	163	0.7 (0.4,1.3)	0.7 (0.4,1.4)	186	166	1.3 (0.7,2.3)	1.1 (0.6,2.1)
Number of health extension workers per health post												
One	226	784	1.0	1.0	47	71	1.0	1.0	73	68	1.0	1.0
Two and above	953	2,971	1.2 (0.7,1.9)	1.2 (0.7,1.9)	163	332	0.8 (0.4,1.4)	0.8 (0.5,1.5)	350	369	0.9 (0.5,1.6)	0.7 (0.4,1.4)
Number of health post opening days												
Less than five days	209	582	1.0	1.0	43	71	1.0	1.0	61	67	1.0	1.0

Five days and above	970	3,173	0.8 (0.5,1.3)	0.7 (0.4,1.2)	167	332	0.9 (0.5,1.5)	0.7 (0.4,1.4)	362	370	1.3 (0.7,2.5)	1.4 (0.7,2.8)
Health extension workers used community forum												
No	297	1,003	1.0	1.0	70	139	1.0	1.0	113	131	1.0	1.0
Yes	882	2,752	1.2 (0.8,1.8)	1.3 (0.8,1.9)	140	264	1.0 (0.6,1.6)	0.9 (0.6,1.5)	310	306	1.3 (0.8,2.2)	1.3 (0.7,2.2)
Health extension workers received supervision												
No	NA	NA	NA	NA	44	105	1.0	1.0	60	68	1.0	1.0
Yes	NA	NA	NA	NA	166	298	1.3 (0.8,2.3)	1.5 (0.8,2.6)	363	369	1.4 (0.7,2.5)	1.1 (0.5,2.2)
Health extension workers received iCCM training												
Did not received training	NA	NA	NA	NA	40	74	1.0	1.0	NA	NA	NA	NA
Received training	NA	NA	NA	NA	170	329	0.9 (0.5,1.6)	0.9 (0.5,1.7)	NA	NA	NA	NA
Health extension workers participated at Performance Review and Clinical Mentorship meeting												
No	NA	NA	NA	NA	123	252	1.0	1.0	232	252	1.0	1.0
Yes	NA	NA	NA	NA	87	151	1.2 (0.8,1.9)	1.2 (0.7,2.0)	191	185	1.2 (0.7,1.9)	0.9 (0.5,1.5)
Home visting												
No	934	3,445	1	1	175	357	1	1	372	386	1.0	1.0
Yes	244	309	2.9 (2.4,3.7)	2.9 (2.3,3.6)	35	46	1.6 (0.9,2.6)	1.5 (0.9,2.5)	51	38	1.6 (0.9,2.7)	1.6 (0.9,2.7)

270

271

272

273 **DISCUSSION**

274 Overall, this study showed insufficient health post service preparedness and low household awareness
275 and utilisation of preventive and curative services for childhood suspected pneumonia. There was no
276 consistent association between facility preparedness and utilisation of preventive and curative services.

277 **Strengths and limitations**

278 With an attempt of narrowing the existing scarcity of evidence, our study examined the association
279 between health post readiness and household-level awareness and utilisation of pneumonia relevant
280 health services in a wider geographic area. Readiness of health posts was measured using the standard
281 WHO Health Service Availability and Readiness Assessment tool. This tool is presumed to generate
282 objective and reliable information that is comparable across or within countries. We pretested and
283 adopted the tool to the local context and to level of care provided at health posts³⁸. When vaccination
284 cards were not available at home, children's pentavalent immunisation status was assessed through
285 interviewing the caregivers. Ascertainment of childhood suspected pneumonia and other illnesses was
286 based on the caregivers' two weeks reported symptoms prior to the survey. These ascertainment
287 techniques have been used by the Demographic and Health Surveys, but might anyhow be influenced by
288 recall bias²⁸. Furthermore, we assessed health post service readiness and pneumonia service utilisation
289 in selected districts of four Ethiopian regions. The findings may not be generalizable to other geographic
290 areas and health system levels.

291 **Health post preparedness**

292 This study showed that two-thirds of the health posts were ready to provide sick child care, suggesting
293 that the remaining facilities were not able to deliver such services. More or less similar level of structural
294 preparedness of health posts or primary health care facilities for pneumonia and other sick child care were
295 previously reported in Ethiopia and from other low- and middle-income countries^{10 39 40}. Furthermore,
296 health posts or health centres of Ethiopia and other low-income countries were found with low readiness
297 to provide quality care to sick children⁹. According to the Ethiopia health system, a health centre is
298 structured to support and strengthen five health posts within their catchment areas, hence insufficient
299 preparedness of the surveyed health posts could be explained by scarcity of supplies at health centres²⁹
300⁴¹. The weak linkage and inadequate support from the health centres or the health system could further
301 cause scarcity of drugs and supplies and unpreparedness of staff to serve at health posts^{22 42}. The lack of

1
2
3 302 readiness at health posts could also be related to the donor-dependent nature of supplies and the health
4
5 303 extension workers' lack of accountability and capacity in supply-chain management^{34 43 44}.

6
7 304 Inadequate readiness of health posts in the study setting and other low-income countries indicates a
8
9 305 serious challenge to community case management of pneumonia, particularly in the rural or unreached
10
11 306 communities, where a majority of preventable deaths occur^{6 28}. Most importantly, only a few of the
12
13 307 surveyed health posts had all essential medicines and just half had diagnostic equipment, clearly
14
15 308 indicating their limitations in providing effective pneumonia or sick child treatment⁵⁶. Scarcity of essential
16
17 309 medicines in Ethiopia and other Sub-Saharan African countries results in missed pneumonia treatments
18
19 310 at facility level^{13 17 29}. Unavailability of rapid diagnostic tests impairs community health workers' ability to
20
21 311 differentiate suspected pneumonia from malaria in case of symptom overlap, a common clinical problem
22
23 312 in African children⁴⁵⁻⁴⁷.

23 313 **Awareness and utilisation of pneumonia-related health services**

24
25
26 314 Our study revealed low health care utilisation for pneumonia-specific preventive and curative services.
27
28 315 These levels of service utilisation were lower compared to the reported regional pentavalent-3
29
30 316 immunisation coverage (80%) and care-seeking behaviour (85%) for childhood suspected pneumonia and
31
32 317 other illnesses in Sub-Saharan African Countries^{48 49}. Community awareness of illness and sick child care
33
34 318 is a pre-requisite for timely utilisation of health services⁵⁰. We found that less than a fifth of caregivers
35
36 319 were aware of the availability of pneumonia treatment services, and this might partly explain the observed
37
38 320 poor utilisation of pneumonia-related health services in the study setting^{51 52}. The reported low care
39
40 321 utilisation could also be explained by inadequate readiness or service quality of the primary health care
41
42 322 facilities for pneumonia-related preventive and treatment services^{39 53}. The OHEP evaluation studies have
43
44 323 revealed a low quality of sick child care services provided at the primary health care facilities, and
45
46 324 caregivers of children have also mentioned this as a key barrier to seek care at health posts⁵⁴⁻⁵⁶. A study
47
48 325 in 22 African countries noted a low level of community trust in public health facilities as an important
49
50 326 reason to the low coverage of child vaccination⁵⁷.

48 327 **Association between health post preparedness and utilisation of preventive immunisation and care-** 49 50 328 **seeking behaviour**

51
52
53 329 Earlier studies have shown a positive association between health facility readiness and utilisation of first-
54
55 330 level sick child care^{11 21}. We did not find any consistent pattern of relationship between facility readiness
56
57 331 indices and utilisation of services. There was a positive association between the availability of standard

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2
3 332 precaution equipment for infection prevention and utilisation of pentavalent-3 immunisation. However,
4
5 333 the general health post readiness had no association with awareness and coverage of pentavalent-3
6
7 334 immunisation, but a negative association with care-seeking for childhood suspected pneumonia and other
8
9 335 illnesses. Studies in Haiti and Ethiopia have shown absence of association between readiness of primary
10
11 336 health care facilities for sick child care and caregivers' utilization and satisfaction to the respective services
12
13 337 ^{40 58}. The lack of consistent positive association may be linked to the dominating low level of health post
14
15 338 preparedness. The community's value to quality of healthcare service is a key driver of their decision to
16
17 339 seek care, and this may subserve the lack of consistent association between facility readiness and
18
19 340 utilization of pneumonia services. Irrespective of the readiness of health posts, caregivers' preconceived
20
21 341 lack of trust to quality of primary child health services could motivate the use of other facilities with
22
23 342 perceived higher service quality⁵⁴. Equipping health care facilities with relevant equipment is a
24
25 343 prerequisite to enhance the quality of iCCM services ⁶. Hence, the reported lack of association of health
26
27 344 post readiness with awareness and utilisation of pneumonia treatment services suggests that simply
28
29 345 equipping facilities with necessary supplies is not a guarantee to reach the intended level of community
30
31 346 awareness and utilisation of health services. Health facility strengthening efforts should go along with
32
33 347 implementation of awareness creation and demand generation interventions to increase the community
34
35 348 awareness, trust and utilisation of pneumonia-related and other child health services ⁵⁰. Our previous
36
37 349 study showed higher parents' care-seeking for childhood suspected pneumonia among those with
38
39 350 improved awareness of treatment service⁵⁹. The current study also illustrated that parents' awareness of
40
41 351 pneumonia treatment was higher when health extension workers had visited at home. Home visiting by
42
43 352 the community health workers is a vital strategy to promote child health and enhance awareness and
44
45 353 utilisation of health services ^{50 60}. A sub-study of the same project also showed that awareness creation
46
47 354 and delivery of preventive child health interventions (such as immunisations) were the main components
48
49 355 of outreach services delivered by the health extension workers ⁵⁴.

356 **Relation of findings with already published OHEP evaluation studies**

46
47 357 This study was part of the end line evaluation of the OHEP intervention. The findings showed sizable gaps
48
49 358 in structural readiness of health posts for sick child care. Results of our published baseline study also
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51 359 illustrated the scarcity of essential drugs and other supplies at the health posts ²⁹. Sub-studies of the same
52
53 360 project investigated quality of sick child care, showing low clinical performance of the health extension
54
55 361 workers to identify and treat childhood suspected pneumonia and other illnesses ^{55 56}. A qualitative study
56
57 362 noted lack of caregivers' trust in the health extension workers' clinical competency to manage sick

1
2
3 363 children and a low availability of essential drugs, diagnostics and other supplies at health posts. The low
4
5 364 quality of sick child care at health posts is a barrier to utilise these services⁵⁴.

6 7 365 **CONCLUSIONS**

8
9 366 This study has shown a low health post readiness for services, and low household awareness and
10
11 367 utilisation of pneumonia-relevant preventive and curative services. Parents' awareness and utilisation of
12
13 368 pneumonia-specific preventive and curative services were not consistently associated with the health post
14
15 369 readiness. The results underline the critical importance of intensifying the health extension workers'
16
17 370 awareness creation and demand generation efforts in each kebele (the lowest administrative unit in
18
19 371 Ethiopia). Enhancing the coverage of home visiting and other awareness creation activities are crucial to
20
21 372 boost community awareness and utilization of pneumonia and other sick child care services. Our findings
22
23 373 also underline the pivotal role of improving the availability and quality of pneumonia and other sick child
24
25 374 care services to ensure optimal uptake of the services. It is imperative that the district health offices
26
27 375 strengthen the linkages within the primary healthcare units to increase the availability of essential
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29 376 medicines and readiness of the health posts for sick child care. The office should also optimize the
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31 377 availability of essential medicines and supplies at health centers that are the suppliers to the satellite
32
33 378 health posts. Improving the coverage of regular supportive supervision, performance reviews and clinical
34
35 379 mentorship could also help to timely identify and solve gaps in the availability of drug and other supplies
36
37 380 at health posts. Community awareness creation and demand generation efforts should simultaneously be
38
39 381 accompanied with health facility strengthening strategies.

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540 **Contributors**

541 AT, LÅP, YB, YO, AW and GAB contributed to the conceptualization of the study. AT analysed and
542 interpreted the data and drafted the manuscript. LÅP, YB, YO, AW and GAB contributed to analysis and
543 writing of the paper. All authors have read and approved the final manuscript.

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547 interpretation of results.

548 **Competing interests**

549 The authors declare that they have no conflict of interest.

550 **Patient consent for publication**

551 Not applicable

552 **Ethics approval**

553 The original study was approved by the Ethical Review Boards of the Ethiopian Public Health Institute
554 (protocol number SERO-012-8-2016), the London School of Hygiene & Tropical Medicine (protocol
555 number 11235), and the University of Gondar (V/P/RCS/05/559/2019). A written informed consent was
556 obtained from each household respondent, caregiver of the index child and the health workers.

557 **Provenance and peer review**

558 Not commissioned; externally peer reviewed.

559 **Data availability statement**

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2
3 560 The data for this manuscript were primarily collected by the Ethiopian Public Health Institute and London
4
5 561 School of Hygiene & Tropical Medicine. Interested researchers may contact the focal person, Dr Yemisrach
6
7 562 B. Okwaraji through email: Yemisrach.Okwaraji@lshtm.ac.uk. All requests will be reviewed by this
8
9 563 committee and if granted, data will be shared without any identifiers.

10
11 564 **Figure legend**

12
13 565 Figure 1 Percentage of health posts (n=165) with drugs and supplies to deliver pneumonia-related and
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15 566 other sick child care services in four regions of Ethiopia, December 2018 to February 2019

16
17 567 **Supplementary files**

18
19 568 Supplementary file 1 Household survey questionnaire

20
21 569 Supplementary file 2 Health post survey questionnaire

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23 570 Supplementary file 3 Health extension worker survey questionnaire

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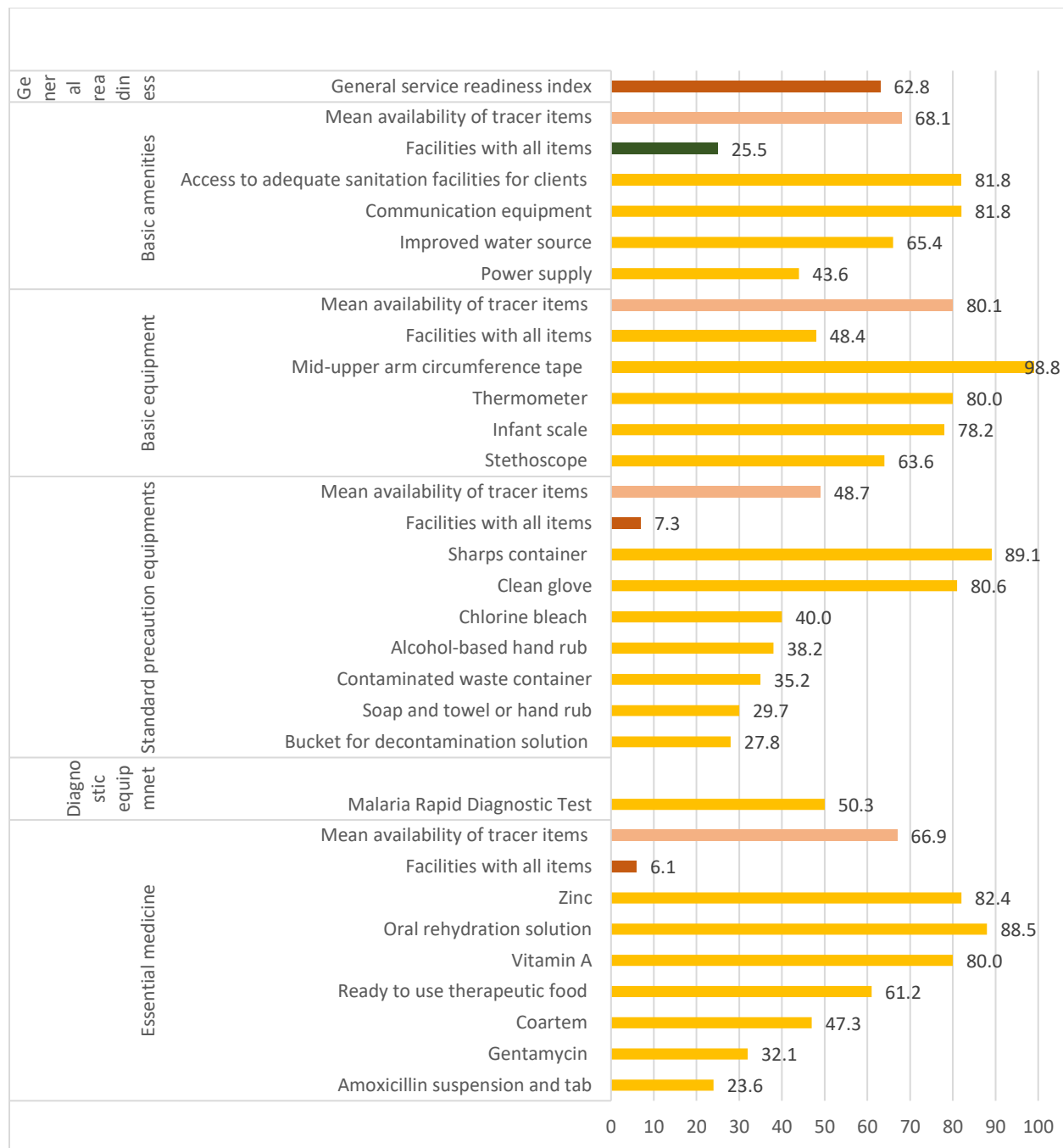


Figure 1 Percentage of health posts (n=165) with drugs and supplies to deliver pneumonia-related and other sick child care services in four regions of Ethiopia, December 2018 to February 2019

Dagu End line Household Survey 2018

Module 1 – Household

Section 1.1: Household identifiers

100h	Date (dd/mm/yyyy)	__/__/__		
101h	Region	_____		
102h	Zone	_____		
103h	Woreda	_____		
105h	Kebele	_____		
106h	Gote	_____		
107h	Cluster Code	_____		
108h	Household Code	---		
109h	Unique household ID (cluster / household code)	_____/____		
110h	GPS Latitude	____ DEG	____ MIN	____ SEC
111h	GPS Longitude	____ DEG	____ MIN	____ SEC
113h	Elevation	_____		
114h	Interviewer initials	---		
115h	Interviewer: Have you read him/her the consent form?	1=Yes 2=No-one is available	If the answer is No, fill the revisit form	
116h	Interviewer: Does the respondent agree?	1=Yes 2=No. END INTERVIEW	If No Why? State the reason.	
112h	Name of household head	_____		
117h	What is the ethnic group of the household head?	01=Agew 02=Amhara 03=Konso 04=Burji 05=Kore 06=Gedeo 08=Derashe 09=Dawuro	11=Konta 12=Ale 13=Oromo 15=Tigray 17=Other, Specify	_____

Household Listing with Household Head: Now I would like to ask you about people who are residents of this house. By resident, I mean everyone who has been present for the last 3 months and who normally eat together. *Start with head of the household and older people, then children from oldest to youngest.*

No. of Family members: **Including yourself how many family members do you have?** _____

118h_1 Unique ID	118h_2 NAME	118h_3 RELATIONSHIP	118h_4 SEX	118h_5 AGE	118h_E Eligible	118h_6 DATE OF BIRTH	118h_7 MARITAL STATUS	118h_8 RELIGION	118h_9 EDUCATION	118h_10-118h_15 ELIGIBILITY		
		What is the relationship of [Name] to the household head? 01=Head 02=Wife or husband 03=Son or daughter 04=In-law 05=Grandchild 06=Parent 08=Brother or sister 09=Niece or nephew 10=Adopted/stepchild 11=Other relative 12=Not related 99=Don't know	Is [Name] male or female? 1=Male 2=Female	How old is [Name]? If less than 1 year write in 0		What is [Name] date of birth? dd/mm/yyyy	For all born after 1966: Is [name] married? 1=Currently married 2= In a union 3=Not married or in a union 4=Divorced 5=Widowed 6=N/A	For all: What religion is [name]? 1=Orthodox 3=Protestant 4=Muslim 8=Other	How many years of formal education have they completed? <i>Enter number of formal years of education completed</i>	CHECK: Is the person a woman 13-49 years? From 1969 to 2005 (Eth: 1961-1997) 1=Yes 2=No	CHECK: Is the person a child under 5 years? 1=Yes 2=No	CHECK: If the household has a child under 5 years, is this person the primary caregiver? 1=Yes 2=No
01	---	---	---	---		--/--/---	---	---	---	---	---	---
02	---	---	---	---		--/--/---	---	---	---	---	---	---
03	---	---	---	---		--/--/---	---	---	---	---	---	---
04	---	---	---	---		--/--/---	---	---	---	---	---	---
05	---	---	---	---		--/--/---	---	---	---	---	---	---
06	---	---	---	---		--/--/---	---	---	---	---	---	---
07	---	---	---	---		--/--/---	---	---	---	---	---	---
08	---	---	---	---		--/--/---	---	---	---	---	---	---
09	---	---	---	---		--/--/---	---	---	---	---	---	---

Section 1.2: Characteristics of house and assets			
119h	What is the main material of the roof? <i>Select one</i>	1 = Thatch/grass or leaves 2 = Iron sheets 8 = Other...specify	—
120h	What is the main material of the walls? <i>Select one</i>	2 = Natural materials cane, wood, mud 4 = Stone with mud 5 = Stone with cement/bricks 8 = Other	—
121h	What is the main floor material? <i>Select one</i>	1 = Natural floor (earth/sand/dung) 2 = Rudimentary floor (wood/palm/bamboo) 3 = Finished floor (polished wood, cement, carpet) 8 = Other	—
122h	What kind of toilet facilities does your household have?	1= No facility/bush/field 2= Pit toilet/latrine 3= Ventilated improved pit latrine 8=Other	—
123h	What is the main source of drinking water for members of your household? <i>Do Not read list</i>	1=Piped water into dwelling 2=Piped water into compound 3=Public tap 4=Borehole in compound 6=Water from protected spring 8=Surface water (river/dam/lake etc) 9=Hand pump 10=Unprotected spring 88=Other	—
124h	Do you do anything to the water to make it safer to drink?	1 = Yes 2 = No (SKIP TO 126) 3 = Don't know (SKIP TO 126)	—
125h	If Yes, what is the main thing you do? <i>Do Not read list</i>	1 = Let it stand and settle 2 = Strain through a cloth 3 = Use water filter (ceramic/sand/composite/etc) 4 = Boil 5 = Solar disinfection 6 = Add bleach/chlorine 8 = Other	—
126h	What type of fuel does your household mainly use for cooking? <i>Select one</i>	1=Electricity 4=Charcoal 5=Firewood/straw 6=Dung 8=Other	—
127h	Is the house connected to electricity?	1=Yes 2=No	—
In total, how many the following items owned by residents of this household? Enter number of items (zero if None)			
128h	How many Wrist watch ?		—
129h	How many Gold (in grams) ?		—
130h	How many kerosene lamp/pressure lamps ?		—

131h	How many Solar lamp ?		___
132h	How many beds ?		___
134h	How many Mobile phone ?		___
137h	How many Radio ?		___
138h	How many TV ?		___
142h	Do you own this house?	1 = Yes 2 = No	___
143h	Does any member of the household own any agricultural land?	1 = Yes 2 = No	SKIP TO 145
144h	How many hectares of agricultural land do members of this household own?	<i>Enter total number of hectares (If less than 1, Enter in decimals (example 0.5) Enter 9999 if hectares are Not known</i>	
145h	Does this household own any livestock, herds, other farm animals, or poultry?	1 = Yes 2 = No	SKIP TO 155
<i>For each: Enter number. If None, enter 000</i>			
How many of the following animals does this household own?			
146h	How many chickens ?		___
147h	How many goats ?		___
148h	How many sheep ?		___
149h	How many donkeys ?		___
150h	How many horses ?		___
153h	How many milk cows ?		___
154h	How many ox (bulls) ?		___
155h	At any time in the past 12 months, has anyone come into your house to spray the interior walls of your dwelling against mosquitoes?	1=Yes 2=No 9=Don't know	SKIP TO 158 ___
156h	What type of residual spray was done? (<i>Probe if indoor residual spraying (IRS)</i>)	1=IRS 8=Other 9=Don't know	___
157h	How many months ago was the house last sprayed?	If less than one month write 00. If don't know write 99	___
158h	How many mosquito nets does your household have?	Write total number Count those in use plus those Not in use. If don't know write 9 If "0" SKIP TO MODULE 2	___

Section 1.3: Household protection from malaria					
<i>Write total number of count those in use plus those Not in use (If don't know write 9)</i>					
			Net #1	Net #2	Net #3
159h	<i>Interviewer:</i> Is the Net 1 observed?	1=Yes 2=No	—	—	—
160h	How many months ago did your household obtain the mosquito Net1?	Estimate the number of months ago each net was obtained. If don't know 99	—	—	—
161h	Where did your household get the mosquito Net1 from?	1=Gov. hospital or health centre 2=Private hospital or health centre 3=HEW/HDA 5=Bought from shop/open market 7=Mass campaign 8=Other 9=Don't know	—	—	—
162h	What kind of Net 1 is it?	1= Long-lasting net SKIP TO 166 2=Factory net 8=Other 9=Don't know	—	—	—
163h	When you got Net 1 was it already treated with an insecticide to kill or repel mosquitos?	1=Yes 2=No 9=Don't know	—	—	—
164h	Did anyone sleep under the mosquito Net 1 last night?	1=Yes 2=No If 2 or 9 then, SKIP TO 166 9=Don't know	—	—	—
165h	Who slept under any of the nets last night?	<i>(record the Person ID from household listing)</i>	<i>Enter Person ID</i>		
			—	—	—
			—	—	—
			—	—	—
159h 2	<i>Interviewer:</i> Is the Net 2 observed?	1=Yes 2=No	—	—	—
160h 2	How many months ago did your household obtain the mosquito Net2	<i>Estimate the number of months ago each net was obtained. If don't know 99</i>	—	—	—
161h 2	Where did your household get the mosquito Net2 from?	1=Gov. hospital or health centre 2=Private hospital or health centre 3=HEW/HDA 5=Bought from shop/open market 7=Mass campaign 8=Other 9=Don't know	—	—	—
162 h2	What kind of Net 2 is it?	1= Long-lasting net SKIP TO 166 2=Factory net 8=Other 9=Don't know	—	—	—
163h 2	When you got Net 2 was it already treated with an insecticide to kill or repel mosquitos?	1=Yes 2=No 9=Don't know	—	—	—
164h 2	Did anyone sleep	1=Yes	—	—	—

	under the mosquito Net 2 last night?	2=No If 2 or 9 then, SKIP TO 166 9=Don't know			
165h 2	Who slept under any of nets	(Record the Person ID from household listing)	Enter Person ID		
			___	___	___
			___	___	___
			___	___	___
159h 3	Interviewer: Is the Net 3 observed	1=Yes 2=No	—	—	—
160h 3	How many months ago did your household obtain the mosquito Net3?	Estimate the number of months ago each net was obtained. If don't know 99	—	—	—
161h 3	Where did your household get the mosquito Net3 from?	1=Gov. hospital or health centre 2=Private hospital or health centre 3=HEW/HDA 5=Bought from shop/open market 7=Mass campaign 8=Other 9=Don't know	—	—	—
162h 3	What kind of Net 3 is it?	1= Long-lasting net (SKIP TO 166) 2=Factory net 8=Other 9=Don't know	—	—	—
163h 3	When you got Net 3 was it already treated with an insecticide to kill or repel mosquitos?	1=Yes 2=No 9=Don't know	—	—	—
164h 3	Did anyone sleep under the mosquito Net 3 last night?	1=Yes 2=No If 2 or 9 then, SKIP TO 166 9=Don't know	—	—	—
165h 3	Who slept under this mosquito Net 3 last night	(record the Person ID from household listing)	Enter Person ID		
			___	___	___
			___	___	___
			___	___	___

Module 2 – Woman aged 13-49 years

Section 2.1: Identification and consent of eligible women

166h	Name of women		_____
167h	Woman ID		_____
168h	Is it possible to interview the woman?	1=Yes SKIP TO 170 2=No	—
169h	If No, why Not possible to interview the woman?	1=Travelled away 2=Sick 3=Other 4=Currently Not present	—
170h	Interviewer: Have you read her the consent form?	1=Yes 2= No	—
171h	Does she give her consent to be interviewed?	1=Yes 2=No SKIP TO 179	—
<i>Thank you for agreeing to participate in this interview. I would like to first ask you about your involvement in the women development army (WDA)</i>			
172h	Do you participate in WDA?	1=Yes 2=No SKIP TO 175	—
173h	Are you a 1 to 5 WDA leader?	1=Yes 2=No	—
174h	Are you a 1 to 30 WDA team leader?	1=Yes 2=No	—

Section 2.2: Pregnancy history

175h	Are you pregnant Now?	1=Yes 2=No 8=Unsure	—
176h	Have you ever been pregnant before?	1 = Yes 2 = No (End Interview)	—
177h	Have you ever given birth to a child?	1 = Yes 2 = No	—
178h	How many children have you given birth to in total?	Enter number	—
<i>I understand that it is not easy to talk about children who have died, or pregnancies that did not end up not in live birth, but it is important that you tell us about all of them, so that the government can develop programs to improve children's health.</i>			
179h	Have you ever had a pregnancy that's lost before full term?	1=Yes 2=No SKIP TO 181	—
180h	How many pregnancies have you had that did Not end in a live birth?	Enter number	—
<i>Now would like to ask about the information regarding pregnancies beginning of 2009 (Ethiopian calendar).</i>			
181h	Were you pregnant at the time of 2009 or any time afterwards?	1 = Yes 2 = No (End interview)	—

Now I would like to record your births since 2009 (Ethiopian Calendar), whether still alive or not, starting with THE MOST RECENT ONE. *Record twins and triplets on separate lines.*

No_of_Preg. How many times were you pregnant at the time of 2009 or any time afterwards?

Is your younger child 2 or under 2 years of age?

167h Woman ID	181h_a Pregnancy ID	181h_b Outcome of pregnancy	181h_c Baby's name	181h_d Date of birth/ Pregnancy ended	181h_e Born as a twin?	181h_f Sex	181h_g Still alive?	181h_h If still alive, how old in months?	181h_i If the child died, when did s/he die?
		1=Live birth 2=Baby born dead, Skip to 181 3=Lost before full- term Skip to 181	<i>Enter "Not given" if Not given a name</i>	<i>Enter 01 for day if Not known. Probe for months/ years if Not known</i>	1 = Yes 2 = No 3=Don't know	1=Male 2=Female 3=Don't know	1=Yes 2=No	<i>If less than 28 days enter number of days</i>	<i>Enter 01 for day if Not known. Probe for months/years if Not known</i>
	1	—	—	DD/MM/ YYYY	—	—	—	DD/MM	DD/MM/ YYYY
	2	—	—	DD/MM/ YYYY	—	—	—	DD/MM	DD/MM/ YYYY
	3	—	—	DD/MM/ YYYY	—	—	—	DD/MM	DD/MM/ YYYY
	4	—	—	DD/MM/ YYYY	—	—	—	DD/MM	DD/MM/ YYYY
	5	—	—	DD/MM/ YYYY	—	—	—	DD/MM	DD/MM/ YYYY
	6	—	—	DD/MM/ YYYY	—	—	—	DD/MM	DD/MM/ YYYY

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Section 2.3: Pregnancy care for last birth (in the last two years.			
<i>Now I want to talk to you about the last birth you had that ended in [DATE], with the birth of [NAME]</i>			
182h	Do you have a family health card with information about that pregnancy and birth?	1=Yes 2=No	SKIP TO 184
183h	May I see your family health card?	1=Yes 2=No because it isn't at home 3=No, refused permission	—
184h	When pregnant with [NAME], did you receive any care during pregnancy? (<i>Probe: by care I mean any care from HEW, HW, nurses, midwives or doctors, clinics</i>)	1=Yes 2=No	SKIP TO 236
185h_a	Where did you go for pregnancy care? At home	1=Yes 2=No	—
185h_b	Where did you go for pregnancy care? At Health Post	1=Yes 2=No	—
185h_c	Where did you go for pregnancy care? At Health Centre	1=Yes 2=No	—
185h_d	Where did you go for pregnancy care? At Hospital	1=Yes 2=No	—
185h_e	Where did you go for pregnancy care? Other	1=Yes 2=No	—
<i>For women who received pregnancy care at a hospital, health center or health post</i>			
186h	How many times did you attend the hospital for pregnancy (antenatal) care for that pregnancy?	Enter the number of times If the answer is "0" Skip to 190	—
188h	How old was your pregnancy at the first visit?	<i>Record No. of weeks. If don't know 99. Record from FHC/ANC appointment card if available</i>	—
190h	How many times did you attend the health center for pregnancy (antenatal) care for that pregnancy?	Enter the number of times If the answer is "0" Skip to 194	—
192h	How old was your pregnancy at the first visit?	<i>Record No. of weeks. If don't know 99. Record from FHC/ANC appointment card if available</i>	—
194h	How many times did you attend the health post for pregnancy (antenatal) care for that pregnancy?	Enter the number of times If the answer is "0" Skip to 199	—
196h	How old was your pregnancy at the first visit?	<i>Record No. of weeks. If don't know 99. Record from FHC/ANC appointment card if available</i>	—
<i>For women who receive pregnancy care at home</i>			
199h	How many times did the HEW visit you at home for pregnancy care that pregnancy?	Enter number of times If answer is "0" Skip to 201	—
200h	How old was your pregnancy at the first HEW visit?	<i>Record No. of weeks. If don't know 99. Record from FHC/ANC appointment card if available</i>	—
<i>Now I want to ask you about the pregnancy care you received (Verify with family health card if available)</i>			
201h	Was your weight measured?	1=Yes 2=No	SKIP TO 203
202h	In which location was this service first provided?	1=Home by HEW 2=Health Post 3=Health Centre 4=Hospital 8=Other	—
203h	Was your height measured?	1=Yes 2=No	SKIP TO 205
204h	In which location was this service first provided?	1=Home by HEW 2=Health Post 3=Health Centre	—

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		4=Hospital 8=Other	
205h	Did you receive information about breastfeeding?	1=Yes 2=No	SKIP TO 207 —
206h	In which location was this service first provided?	1=Home by WDA 2=Home by HEW 3=Health post 4=Health center 5=Hospital 8=Other	—
207h	Was your blood pressure measured? <i>(Probe: when a strap was put around your upper arm and a measure taken).</i>	1=Yes 2=No	SKIP TO 209 —
208h	In which location was this service first provided?	1=Home by HEW 2=Health post 3=Health center 4=hospital 8=other	—
209h	Did you give a urine sample for a test?	1=Yes 2=No	SKIP TO 211 —
210h	In which location was this service provided?	1=Home by HEW 2=Health post 3=Health center 4=Hospital 8=other	—
211h	Did you give blood for any test for syphilis?	1=Yes 2=No	SKIP TO 213 —
212h	In which location was this service provided?	1=Home by HEW 2=Health Post 3=Health Centre 4=Hospital 8=Other	—
213h	Did you receive iron folate tablets or iron syrup?	1=Yes 2=No	SKIP TO 216 —
214h	In which location was this service provided?	1=Home by HEW 2=Health post 3=Health Centre 4=Hospital 8=other	—
215h	For how many days did you take the tablets or syrup?	Enter number of days Enter 999 if Not known	—
216h	Were you given an injection in the arm to prevent the baby from getting tetanus, that is, convulsions after birth?	1=Yes 2=No	SKIP TO 222 —
217h	If Yes: How many times did you get a tetanus injection?	Write number of times	—
218h	If less than 2 times: At any time before this pregnancy did you receive any tetanus injections?	1=Yes 2=No	SKIP TO 221 —
221h	In which health facility was tetanus injection given?	1=Home by HEW 2=Health post 3=Health Centre 4=Hospital 8=Other	—
222h	Did you receive HIV information?	1=Yes 2=No	SKIP TO 224 —

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3 4 5 6 7 8 9	223h	In which location was this service first provided?	1=Home by WDA 2=Home by HEW 3=Health post 4=Health Centre 5=Hospital 8=other	—
10	224h	Did you receive STI testing?	1=Yes 2=No	SKIP TO 226 —
11 12 13 14	225h	In which location was this service provided?	1=Health Centre 2=Hospital 8=Other	—
15 16	226h	Did you receive any STI treatment?	1=Yes 2=No	SKIP TO 228 —
17 18 19	227h	In which location was this service provided?	1=Health center 2=Hospital 8=Other	—
20 21	228h	Did you receive information on nutrition?	1=Yes 2=No	SKIP TO 230 —
22 23 24 25 26 27 28	229h	In which location was this service first provided?	1=Home by WDA 2=Home by HEW 3=Health post 4=Health Centre 5=Hospital 8=Other	—
29 30	230h	Did you receive information on pregnancy danger signs?	1=Yes 2=No	SKIP TO 232 —
31 32 33 34 35 36	231h	In which location was this service first provided?	1=Home by WDA 2=Home by HEW 3=Health post 4=Health Centre 5=Hospital 8=Other	—
37 38 39	232h	Were you advised on birth preparedness and complication readiness? <i>Probe: for finances, for help during delivery, for transport, for emergencies?</i>	1=Yes 2=No	SKIP TO 236 —
40 41 42 43 44 45 46	233h	In which location was this service first provided?	1=Home by WDA 2=Home by HEW 3=Health post 4=Health Centre 5=Hospital 8=Other	—
47 48	234h	Was your birth preparedness and complication readiness plan recorded?	1=Yes 2=No	SKIP TO 236 —
49 50 51 52 53 54	235h	In which location was this service provided?	1=Home by WDA 2=Home by HEW 3=Health post 4=Health Centre 5=Hospital 8=Other	—
55	Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply			
56 57 58	236h	Can you tell me what are problems in pregnancy might need medical treatment? Severe headache	1=Yes 2= No	—
59 60	237h	Can you tell me what are problems in pregnancy might need	1=Yes	—

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	medical treatment? Blurry vision	2= No	
238h	Can you tell me what are problems in pregnancy might need medical treatment? Reduced or absent fetal movement	1=Yes 2= No	—
239h	Can you tell me what are problems in pregnancy might need medical treatment? High blood pressure	1=Yes 2= No	—
240h	Can you tell me what are problems in pregnancy might need medical treatment? Edema of the face/hands (i.e. swelling)	1=Yes 2= No	—
241h	Can you tell me what are problems in pregnancy might need medical treatment? Convulsions	1=Yes 2= No	—
242h	Can you tell me what are problems in pregnancy might need medical treatment? Excessive vaginal bleeding	1=Yes 2= No	—
243h	Can you tell me what are problems in pregnancy might need medical treatment? Severe lower abdominal pain	1=Yes 2= No	—
244h	Can you tell me what are problems in pregnancy might need medical treatment? Fever	1=Yes 2= No	—
245h	Can you tell me what are problems in pregnancy might need medical treatment? Anemia	1=Yes 2= No	—
246h	Can you tell me what are problems in pregnancy might need medical treatment? Other	Specify	—
247h	Were you told where to go if you had any complications?	1=Yes 2= No	—
		SKIP TO 249	
248h	If Yes, where were you told to go?	1= Health post 2= Health Centre 3= Hospital 8=Other (specify) 9=Don't know	—
249h	During your last pregnancy did you make any preparations for your delivery? <i>Probe: for finances, for help during delivery, transport, emergencies?</i>	1=Yes 2= No	—
	Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply		
250h	What preparations did you make for the delivery? Financial	1=Yes 2= No	—
251h	What preparations did you make for the delivery? Transport	1=Yes 2= No	—
252h	What preparations did you make for the delivery? Food	1=Yes 2= No	—
253h	What preparations did you make for the delivery? Identification of birth attendant	1=Yes 2= No	—
254h	What preparations did you make for the delivery? Identification of facility	1=Yes 2= No	—
255h	What preparations did you make for the delivery? Clean clothes	1=Yes 2= No	—
256h	What preparations did you make for the delivery?	1=Yes 2= No	—

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	Cover to deliver on		
257h	What preparations did you make for the delivery? Gloves	1=Yes 2= No	—
258h	What preparations did you make for the delivery? Cotton gauze	1=Yes 2= No	—
259h	What preparations did you make for the delivery? Other	Specify	—

Section 2.4 Delivery for last birth

260h	Who assisted with the delivery?	1=Doctor 2=Nurse/Midwife 3=Health Extension Worker 4=Traditional Birth Attendant 5=Relative/friend 6=No-one 8= Other (specify)	SKIP TO 263	—
261h	When you gave birth, did the person assisting you wear gloves during delivery?	1=Yes 2= No 9=Don't know		—
262h	When you gave birth, did the person assisting you wash her hands before the delivery?	1=Yes 2= No 9=Don't know		—
263h	Where did you give birth?	1=Home 2=Health post 3=Health Centre 4=Hospital 8=Other	SKIP TO 266	—
264h	If health post/health centre/hospital: After giving birth, for how many days did you stay at the health post/health Centre/hospital in total?	Enter number of days, enter 0 if she left on the same day as delivery		—
265h	Was [NAME] delivered by caesarean, that is, did they cut your belly open to take the baby out?	1=Yes 2= No		—
Read out the list				
266h	During the delivery of [NAME] did you experience any of the following? Heavy bleeding	1=Yes 2= No		—
267h	During the delivery of [NAME] did you experience any of the following? Labour more than 12 hours	1=Yes 2= No		—
268h	During the delivery of [NAME] did you experience any of the following? Loss of consciousness	1=Yes 2= No		—
269h	During the delivery of [NAME] did you experience any of the following? Premature labour	1=Yes 2= No		—
270h	During the delivery of [NAME] did you experience any of the following? Foul discharge	1=Yes 2= No		—
271h	During the delivery of [NAME] did you experience any of the following? Baby in abnormal position	1=Yes 2= No		—
272h	During delivery were you advised to go to a different facility for specialist care (if home birth to a health post/health center/hospital, if health post/facility to a hospital/different	1=Yes 2= No	SKIP TO 275	—

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	facility)?		
273h	If Yes: Did you go to that different facility to get the specialist care (referral)?	1=Yes 2= No	— SKIP TO 275
274h	If Yes: What transport did you take to get there?	1=Own transport 2=Public transport 3=Hired transport 4=District/ambulance 5=Traditional ambulance (Qareza/cart) 6=Motor Bike/Bajaj 7=Walked 8=Other (specify)	—
275h	Did anyone check on your health after the delivery?	1=Yes 2= No	— SKIP TO 288
276h	How many times did anyone check on your health in the first month after delivery?	Write number. If don't know 99.	—
277h	How long after delivery did the first check take place?	Record number of days if same day as delivery enter 0. If don't know 99.	—
278h	Who checked on your health for the first time after you gave birth to [NAME]? (<i>Probe for most qualified person</i>)	1=Doctor/Health Officer 2=Nurse/Midwife/Health Officer 3=Health Extension Worker 4=Traditional birth attendant 8=Other (specify)	—
279h	Where did this check take place?	1=Home 2=Health post 3=Health center 4=Hospital 8=Other (specify)	—
280h	<i>If her health was checked at least twice (see Q above):</i> How long after delivery did the second check take place?	Record number of days. If don't know 99.	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
281h	During any of the health checks what was done to check on your health? Examined body	1=Yes 2= No	—
282h	During any of the health checks what was done to check on your health? Checked breasts	1=Yes 2= No	—
283h	During any of the health checks what was done to check on your health? Checked for heavy bleeding	1=Yes 2= No	—
284h	During any of the health checks what was done to check on your health? Counselled on danger signs	1=Yes 2= No	—
285h	During any of the health checks what was done to check on your health? Counselled on family planning	1=Yes 2= No	—
286h	During any of the health checks what was done to check on your health? Counselled on nutrition	1=Yes 2= No	—
287h	During any of the health checks what was done to check on your health? Referred to a health facility	1=Yes 2= No	—
287h_n	During any of the health checks what was done to check on your health? None from the list	1=Yes 2= No	—

Section 2.5: Newborn Care			
<i>Now I have some questions about what happened to [NAME] at the birth and immediately after.</i>			
288h	Can I see a card recording information about the birth? <i>(use the card to verify all information if possible)</i>	1=Yes 2=No	—
289h	Was [NAME] weighed at birth?	1=Yes 2=No SKIP TO 291	—
290h	If Yes, how much did [NAME] weigh at birth? <i>(use the weight recorded on the card if possible)</i>	<i>Weight in grams e.g. if the weight was 1.9 kilograms enter 1900, If don't know 9999.</i>	—
291h	Did [NAME] have any difficulty breathing/crying at birth?	1=Yes 2=No SKIP TO 293	
292h_a	Did anyone do Rubbing to [NAME] immediately after birth?	1= Yes 2= No 9 = Don't know	—
292h_b	Did anyone do Stimulating to [NAME] immediately after birth?	1= Yes 2= No 9 = Don't know	—
292h_c	Did anyone do Mouth-to-mouth to [NAME] immediately after birth?	1= Yes 2= No 9= Don't know	—
292h_d	Did anyone do Resuscitation to [NAME] immediately after birth?	1= Yes 2= No 99 = Don't know	—
292h_e	Did anyone do None of these to [NAME] immediately at birth?	1= Yes 2= No 9= Don't know	—
293h	Where was [NAME] placed immediately after delivery?	1=Alone/on the floor 2=On the mother's belly/chest 3=Beside the mother 4=With someone else 8=Other (specify) 9= Don't know	—
294h	When [NAME] was born, was she/he dried/wiped?	1=Yes 2=No If 2 or 9 Skip to 296 9=Don't know	—
295h	How long after [NAME] was born was she/he dried/wiped?	<i>Enter in minutes, check for time after the baby was born (Not time after the placenta came out). If don't know 99</i>	—
296h	When [NAME] was born, was she/he wrapped with a cloth?	1=Yes 2= No If 2 or 9 SKIP TO 298 9=Don't know	—
297h	How long after [NAME] was born was she/he wrapped with a cloth?	<i>Enter in minutes, check for time after the baby was born (Not time after the placenta came out). If don't know 99</i>	—
298h	What was used to tie the cord?	1=New string/thread 2=Boiled string/thread 3=Any string/thread 4=Nothing 8=Other (specify) 9=Don't know	—
299h	What was used to cut the cord?	1=New razor blade 2=Any razor blade 3=Scissors 8=Other (specify) 9=Don't know	—
300h	Was anything applied to the cord after cutting and tying?	1=Yes 2= No SKIP TO 308	—

		9=Don't know SKIP TO 308	
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
301h	What was applied to the cord just after cutting the cord? Butter	1= Yes 2= No	—
302h	What was applied to the cord just after cutting the cord? Ash	1= Yes 2= No	—
303h	What was applied to the cord just after cutting the cord? Ointment	1= Yes 2= No	—
304h	What was applied to the cord just after cutting the cord? Animal dung	1= Yes 2= No	—
305h	What was applied to the cord just after cutting the cord? Oil	2= No 1= Yes	—
306h	What was applied to the cord just after cutting the cord? Cold water	1= Yes 2= No	—
307h	What was applied to the cord just after cutting the cord? Other	Specify _____	—
308h	When [NAME] was born, how soon was [NAME] bathed?	1=In the first hour 2=After one-hour SKIP TO 310 3=After one day SKIP TO 311	—
309h	If in the first hour: After how many minutes would you say?	Write number of minutes. SKIP TO 310	—
310h	If after one hour: After how many hours would you say?	<i>Write number of hours. If response is 'after one hour' enter 1. If response is 'after one and a half hours' enter 1.</i> SKIP TO 312	—
311h	If after one day: After how many days would you say?	<i>Write number of days. If response is 'after one day' enter 1. If response is 'after one and a half days' enter 1.</i>	—
312h	In the first week of life, did you hold [NAME] skin to skin against your breasts during the daytime and night time?	1=Yes always 2=Yes very often 3=Yes sometime 4=Never 9=Don't know	—
313h	In the first week of life, did you sleep with [NAME] against you at night, or did you lay him/her alone on the bed or elsewhere?	1=Slept with mother 2=Baby slept alone 3=Baby slept with another person	—
314h	Did you ever breastfeed [NAME]?	1=Yes 2= No SKIP TO 319	—
315h	How long after birth did you first put [NAME] to the breast?	1=In the first hour 2=After one-hour SKIP TO 317 3=After one day SKIP TO 318	—
316h	If in the first hour: After how many minutes would you say?	Write number of minutes. SKIP TO 319	—
317h	If after one hour: After how many hours would you say?	<i>Write number of hours. If response is 'after one hour' enter 1. If response is 'after one and a half hours' enter 1.</i> SKIP TO 319	—
318h	How soon after the baby born did you bath him/ her?	<i>Write number of days. If response is 'after one day' enter 1. If response is 'after one and a half days' enter 1.</i>	—
319h	Did [NAME] receive vitamin K injection after delivery?	1= Yes 2= No 9= Don't know	—

320h	Did [NAME] receive TTC eye ointment after delivery?	1 = Yes 2 = No 9= Don't know	—
321h	Did [NAME] receive oral polio vaccine-after delivery?	1 = Yes 2 = No 9= Don't know	—
322h	Did you squeeze out and throw away the first milk?	1=Yes 2= No	—
323h	In the first three days after delivery, was [NAME] given anything to drink other than breast milk?	1=Yes 2= No	—
<i>Now about care for [name] in the first month of his/her life</i>			
324h	In the month after [NAME] was born, did any health care provider or a traditional birth attendant check on his/her health? <i>Probe for checks done at the place of birth on the same day as birth, and checks after</i>	1=Yes 2= No SKIP TO 340	—
325h	If Yes: In the month after [NAME] was born, how many times did a health care provider or a traditional birth attendant check on his/her health?	Write number of times.	—
326h	If Yes: How long after delivery did the first check take place?	<i>Record number of days if same day as delivery enter 0</i>	—
327h	If more than one time: How long after delivery did the second check take place?	<i>Record number of days</i>	—
328h	Who checked on [NAME] health the first time? (Probe for most qualified person)	1=Doctor/Health Officer 2=Nurse/Midwife 3=Health Extension Worker 4=Traditional birth attendant 8=Other (specify)	—
329h	Where did the first check on [NAME] take place?	1=Home 2=Health post 3=Health centre 4=Hospital 8=Other (specify)	—
330h	At any of the health checks in the first month, what was done to check the health of baby? Generally examined/ looked at baby's body	1=Yes 2= No	—
331h	At any of the health checks in the first month, what was done to check the health of baby? Weighed baby	1=Yes 2= No	—
332h	At any of the health checks in the first month, what was done to check the health of baby? Checked cord	1=Yes 2= No	—
333h	At any of the health checks in the first month, what was done to check the health of baby? Counselled on breastfeeding	1=Yes 2= No	—
334h	At any of the health checks in the first month, what was done to check the health of baby? Observed breastfeeding	1=Yes 2= No	—
335h	At any of the health checks in the first month, what was done to check the health of baby? Counselled on skin-to-skin contact/warmth	1=Yes 2= No	—
336h	At any of the health checks in the first month, what was done to check the health of baby?	1=Yes 2= No	—

	Checked baby for danger signs		
337h	At any of the health checks in the first month, what was done to check the health of baby? Counselled on danger signs	1=Yes 2= No	—
338h	At any of the health checks in the first month, what was done to check the health of baby? Referred to a health facility	1=Yes 2= No	—
339h	At any of the health checks in the first month, what was done to check the health of baby? Nothing	1=Yes 2= No	—
<i>Now I want to talk to you about any sickness your child experienced in the first month of life.</i>			
341h	Was [NAME] sick in the first month?	1=Yes 2= No SKIP TO 396	—
342h	Can I just check, did [NAME] have any of the following symptoms? Stopped feeding well	1=Yes 2= No	—
343h	Can I just check, did [NAME] have any of the following symptoms? Difficult or fast breathing	1=Yes 2= No	—
344h	Can I just check, did [NAME] have any of the following symptoms? Chest in-drawing	1=Yes 2= No	—
345h	Can I just check, did [NAME] have any of the following symptoms? Unusually hot or cold	1=Yes 2= No	—
346h	Can I just check, did [NAME] have any of the following symptoms? Baby less active than usual	1=Yes 2= No	—
347h	Can I just check, did [NAME] have any of the following symptoms? Body became yellow	1=Yes 2= No	—
348h	Can I just check, did [NAME] have any of the following symptoms? Other	Specify	—
349h	If any sickness/symptom reported: How old was [NAME] when sick for the first time?	<i>Record number of days of age when [NAME] was first sick if on first day of life enter 0</i>	—
Check all the following symptoms: (Read all)			
350h	When [NAME] was sick that first time what was the problem? Fever	1=Yes 2= No	—
351h	When [NAME] was sick that first time what was the problem? Unable to suckle/feed	1=Yes 2= No	—
352h	When [NAME] was sick that first time what was the problem? Difficult/fast breathing	1=Yes 2= No	—
353h	When [NAME] was sick that first time what was the problem? Severe chest in-drawing	1=Yes 2= No	—
354h	When [NAME] was sick that first time what was the problem? Diarrhea	1=Yes 2= No	—
355h	When [NAME] was sick that first time what was the problem? Convulsions	1=Yes 2= No	—
356h	When [NAME] was sick that first time what was the problem? Persistent vomiting	1=Yes 2= No	—
357h	When [NAME] was sick that first time what was the problem? Yellow palms/soles/eyes	1=Yes 2= No	—

358h	When [NAME] was sick that first time what was the problem? Lethargy	1=Yes 2= No	—
359h	When [NAME] was sick that first time what was the problem? Unconscious	1=Yes 2= No	—
360h	When [NAME] was sick that first time what was the problem? Red/discharge eyes	1=Yes 2=No	—
361h	When [NAME] was sick that first time what was the problem? Skin pustules	1=Yes 2=No	—
362h	When [NAME] was sick that first time what was the problem? Skin around cord was red	1=Yes 2=No	—
363h	When [NAME] was sick that first time what was the problem? Pus from cord	1=Yes 2=No	—
364h	When [NAME] was sick that first time what was the problem? Other	Specify	_____
<i>Select all that apply for the time before the baby was taken for extra care (do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>			
365h	How was [NAME] treated for this illness at home? Giving drugs	1=Yes 2=No	—
366h	How was [NAME] treated for this illness at home? Giving herbs	1=Yes 2=No	—
367h	How was [NAME] treated for this illness at home? Contacting a provider for advice	1=Yes 2=No	—
368h	How was [NAME] treated for this illness at home? Contacting someone else for advice	1=Yes 2=No	—
369h	How was [NAME] treated for this illness at home? No treatment given at home	1=Yes 2=No	—
370h	How was [NAME] treated for this illness at home? Don't remember	1=Yes 2=No	—
371h	Did you seek care for [NAME] outside the home at that time?	1=Yes SKIP TO 373 2= No	—
372h_a	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Expected him/her to get better	1=Yes 2=No	—
372h_b	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Health facility too far	1=Yes 2=No	—
372h_c	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Cost of treatment too expensive	1=Yes 2=No	—
372h_d	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Don't trust the facility	1=Yes 2=No	—
372h_e	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Family member didn't allow	1=Yes 2=No	—
372h_f	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Community advisor/TBA advised against it	1=Yes 2=No	—
372h_g	If No care sought at that time: Why didn't you seek care for [NAME] outside the home during that first illness? Other	Specify	—

373h	If sought care: How many times did you seek care for that illness?	Write number of times	—
374h	Where outside the home did you seek care from the first time?	1=Health post 2=Health centre 3=Hospital 4=Pharmacy/shop 8=Other (specify)	—
375h	Do you have any medical record from when you went for health care outside the home the first time?	1=Yes 2= No SKIP TO 377	—
376h	If Yes, can I see it?	1=Yes 2= No	—
377h	After how many days did you seek care the first time?	Write number of days from the onset of illness, if first day of illness write 0. If possible use the medical record to confirm	—
378h	If Yes to any of the symptoms (342-348): At any time during the illness, did [NAME] take any drugs for the illness?	If the information is available from the card use it 1=Yes 2= No (END OF MODULE)	—
<i>Select all mentioned (do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>			
379h	What drugs did [NAME] take? Antimalarial tablet	1=Yes 2= No	—
382h	What drugs did [NAME] take? Antibiotic: Gentamicin injection	1=Yes 2= No	—
383h	What drugs did [NAME] take? Antibiotic: Amoxicillin syrup or tablet	1=Yes 2= No	—
384h	What drugs did [NAME] take? Antibiotic: Cotrimoxazole syrup	1=Yes 2= No	—
385h	What drugs did [NAME] take? Antibiotic: Other /Not known	1=Yes 2= No	—
386h	What drugs did [NAME] take? Tetracycline eye ointment	1=Yes 2= No	—
387h	What drugs did [NAME] take? Zinc	1=Yes 2= No	—
388h	What drugs did [NAME] take? ORS	1=Yes 2= No	—
389h	What drugs did [NAME] take? Combined Zinc-ORS	1=Yes 2= No	—
390h	What drugs did [NAME] take? Vitamin A	1=Yes 2= No	—
391h	What drugs did [NAME] take? Paracetamol	1=Yes 2= No	—
392h	What drugs did [NAME] take? Traditional remedies herbs/local remedy	1=Yes 2= No	—
393h	What drugs did [NAME] take? Other	Specify	_____
394h	If Yes to gentamicin injection: Did [NAME] receive 7 consecutive days of gentamycin injection?	1=Yes 2= No 9 = Don't know	—
395h	If Yes to amoxicillin: Did [NAME] receive 7 consecutive days of amoxicillin?	1=Yes 2= No 9= Don't know	—

End – thank the participant. Check to see if the participant needs to answer the child module. If so, continue to Module 3. Otherwise check whether there is another woman aged 13-49 in the house.

Module 3 – Child Health

Section 3.1: Identification of and consent from caregivers

396h	Interviewer: How many children under 5 years of age live in this household? Check household listing.	_____
397h	Interviewer: select name of caregiver from household listing	_____
398h	Interviewer: select ID of the caregiver from household listing	_____
399h	Is it possible to interview the caregiver?	1=Yes SKIP TO 401 2=No
400h	If No, why Not possible to interview the caregiver?	1=Travelled away 2=Sick 3=Currently Not present 8=Other reason
401h	Interviewer: Have you read her the consent form?	1=Yes 2= No-one is available (add reason)
402h	Interviewer: Does he/she give her consent to be interviewed??	1=Yes 2=No END INTERVIEW.

Section 3.2: Knowledge of malaria, diarrhea & pneumonia

Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply

403h	Why do you sleep under a mosquito net? Protects from malaria	1=Yes 2=No
404h	Why do you sleep under a mosquito net? Protects from mosquitoes	1=Yes 2=No
405h	Why do you sleep under a mosquito net? Given free	1=Yes 2=No
406h	Why do you sleep under a mosquito net? Bought cheaply	1=Yes 2=No
407h	Why do you sleep under a mosquito net? Look attractive	1=Yes 2=No
408h	Why do you sleep under a mosquito net? Health worker said to use	1=Yes 2=No
409h	Why do you sleep under a mosquito net? Someone told me to use it	1=Yes 2=No
410h	Why do you sleep under a mosquito net? Neighbor uses it	1=Yes 2=No
411h	Why do you sleep under a mosquito net? Other	Specify
412h	Why do you sleep under a mosquito net? Don't know	1=Yes 2=No

Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply		
413h	If you don't want to get sick from malaria, how can you protect yourself? Use a Bednet	1=Yes 2=No
414h	If you don't want to get sick from malaria, how can you protect yourself? Use repellent or spray	1=Yes 2=No
415h	If you don't want to get sick from malaria, how can you protect yourself? Avoid mosquitoes/bites	1=Yes 2=No
416h	If you don't want to get sick from malaria, how can you protect yourself? Take medication for	1=Yes 2=No
417h	If you don't want to get sick from malaria, how can you protect yourself? prevention Keep surroundings clean	1=Yes 2=No
418h	If you don't want to get sick from malaria, how can you protect yourself? Eat well	1=Yes 2=No
419h	If you don't want to get sick from malaria, how can you protect yourself? Drink boiled water	1=Yes 2=No
420h	If you don't want to get sick from malaria, how can you protect yourself? Avoid getting wet from rain	1=Yes 2=No
421h	If you don't want to get sick from malaria, how can you protect yourself? Other	Specify
422h	If you don't want to get sick from malaria, how can you protect yourself? Don't know	1=Yes 2=No
423h	Have you seen or hear any messages on: Bed nets	1=Yes 2=No
	<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>	
423h_1	Where did you hear the message about Bed nets from? Friend	1=Yes 2=No
423h_2	Where did you hear the message about Bed nets from? At Health Centre	1=Yes 2=No
423h_3	Where did you hear the message about Bed nets from? HEW	1=Yes 2=No
423h_4	Where did you hear the message about Bed nets from? WDA	1=Yes 2=No
423h_5	Where did you hear the message about Bed nets from? Newspaper	1=Yes 2=No
423h_6	Where did you hear the message about Bed nets from? TV	1=Yes 2=No
423h_7	Where did you hear the message about Bed nets from? Radio	1=Yes 2=No
423h_8	Where did you hear the message about Bed nets from? Government official	1=Yes 2=No
423h_9	Where did you hear the message about Bed nets from? Church/Mosque	1=Yes 2=No
423h_10	Where did you hear the message about Bed nets from? School	1=Yes 2=No
423h_11	Where did you hear the message about Bed nets from? Poster/flier	1=Yes 2=No

423h_12	Where did you hear the message about Bed nets from? Meeting	1=Yes 2=No
423h_13	Where did you hear the message about Bed nets from? Street announcement	1=Yes 2=No
423h_14	Where did you hear the message about Bed nets from? Other	Specify
424h	Have you seen or hear any messages on: Malaria treatment using ACT	1=Yes 2=No
<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' for all that apply)</i>		
424h_1	Where did you hear the message about ACT from? Friend	1=Yes 2=No
424h_2	Where did you hear the message about ACT from? At Health Centre	1=Yes 2=No
424h_3	Where did you hear the message about ACT from? HEW	1=Yes 2=No
424h_4	Where did you hear the message about ACT from? WDA	1=Yes 2=No
424h_5	Where did you hear the message about ACT from? Newspaper	1=Yes 2=No
424h_6	Where did you hear the message about ACT from? TV	1=Yes 2=No
424h_7	Where did you hear the message about ACT from? Radio	1=Yes 2=No
424h_8	Where did you hear the message about ACT from? Government official	1=Yes 2=No
424h_9	Where did you hear the message about ACT from? Church/Mosque	1=Yes 2=No
424h_10	Where did you hear the message about ACT from? School	1=Yes 2=No
424h_11	Where did you hear the message about ACT from? Poster/flier	1=Yes 2=No
424h_12	Where did you hear the message about ACT from? Meeting	1=Yes 2=No
424h_13	Where did you hear the message about ACT from? Street announcement	1=Yes 2=No
424h_14	Where did you hear the message about ACT from? Other	Specify
425h	Have you seen or hear any messages on: Rapid diagnostic tests (RDT) for malaria	1=Yes 2=No
<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' for all that apply)</i>		
425h_1	Where did you hear the message about RDT from? Friend	1=Yes 2=No
425h_2	Where did you hear the message about RDT from? At Health Centre	1=Yes 2=No
425h_3	Where did you hear the message about RDT from? HEW	1=Yes 2=No

425h_4	Where did you hear the message about RDT from? WDA	1=Yes 2=No
425h_5	Where did you hear the message about RDT from? Newspaper	1=Yes 2=No
425h_6	Where did you hear the message about RDT from? TV	1=Yes 2=No
425h_7	Where did you hear the message about RDT from? Radio	1=Yes 2=No
425h_8	Where did you hear the message about RDT from? Government official	1=Yes 2=No
425h_9	Where did you hear the message about RDT from? Church/Mosque	1=Yes 2=No
425h_10	Where did you hear the message about RDT from? School	1=Yes 2=No
425h_11	Where did you hear the message about RDT from? Poster/flier	1=Yes 2=No
425h_12	Where did you hear the message about RDT from? Meeting	1=Yes 2=No
425h_13	Where did you hear the message about RDT from? Street announcement	1=Yes 2=No
425h_14	Where did you hear the message about RDT from? Other	Specify
426h	Have you seen or hear any messages on: Rectal artesunate	1=Yes 2=No
<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' for all that apply)</i>		
426h_1	Where did you hear the message about Rectal artesunate from? Friend	1=Yes 2=No
426h_2	Where did you hear the message about Rectal artesunate from? At Health Centre	1=Yes 2=No
426h_3	Where did you hear the message about Rectal artesunate from? HEW	1=Yes 2=No
426h_4	Where did you hear the message about Rectal artesunate from? WDA	1=Yes 2=No
426h_5	Where did you hear the message about Rectal artesunate from? Newspaper	1=Yes 2=No
426h_6	Where did you hear the message about Rectal artesunate from? TV	1=Yes 2=No
426h_7	Where did you hear the message about Rectal artesunate from? Radio	1=Yes 2=No
426h_8	Where did you hear the message about Rectal artesunate from? Government official	1=Yes 2=No
426h_9	Where did you hear the message about Rectal artesunate from? Church/Mosque	1=Yes 2=No
426h_10	Where did you hear the message about Rectal artesunate from? School	1=Yes 2=No
426h_11	Where did you hear the message about Rectal artesunate from? Poster/flier	1=Yes 2=No

426h_12	Where did you hear the message about Rectal artesunate from? Meeting	1=Yes 2=No
426h_13	Where did you hear the message about Rectal artesunate from? Street announcement	1=Yes 2=No
426h_14	Where did you hear the message about Rectal artesunate from? Other	Specify
427h	Have you seen or hear any messages on: Diarrhea treatment	1=Yes 2=No
<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' for all that apply)</i>		
427h_1	Where did you hear the message about Diarrhea treatment from? Friend	1=Yes 2=No
427h_2	Where did you hear the message about Diarrhea treatment from? At Health Centre	1=Yes 2=No
427h_3	Where did you hear the message about Diarrhea treatment from? HEW	1=Yes 2=No
427h_4	Where did you hear the message about Diarrhea treatment from? WDA	1=Yes 2=No
427h_5	Where did you hear the message about Diarrhea treatment from? Newspaper	1=Yes 2=No
427h_6	Where did you hear the message about Diarrhea treatment from? TV	1=Yes 2=No
427h_7	Where did you hear the message about Diarrhea treatment from? Radio	1=Yes 2=No
427h_8	Where did you hear the message about Diarrhea treatment from? Government official	1=Yes 2=No
427h_9	Where did you hear the message about Diarrhea treatment from? Church/Mosque	1=Yes 2=No
427h_10	Where did you hear the message about Diarrhea treatment from? School	1=Yes 2=No
427h_11	Where did you hear the message about Diarrhea treatment from? Poster/flier	1=Yes 2=No
427h_12	Where did you hear the message about Diarrhea treatment from? Meeting	1=Yes 2=No
427h_13	Where did you hear the message about Diarrhea treatment from? Street announcement	1=Yes 2=No
427h_14	Where did you hear the message about Diarrhea treatment from? Other	Specify
428h	Have you seen or hear any messages on: Pneumonia treatment	1=Yes 2=No
<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' for all that apply)</i>		
428h_1	Where did you hear the message about Pneumonia treatment from? Friend	1=Yes 2=No
428h_2	Where did you hear the message about Pneumonia treatment from? At Health Centre	1=Yes 2=No
428h_3	Where did you hear the message about Pneumonia treatment from? HEW	1=Yes 2=No

428h_4	Where did you hear the message about Pneumonia treatment from? WDA	1=Yes 2=No
428h_5	Where did you hear the message about Pneumonia treatment from? Newspaper	1=Yes 2=No
428h_6	Where did you hear the message about Pneumonia treatment from? TV	1=Yes 2=No
428h_7	Where did you hear the message about Pneumonia treatment from? Radio	1=Yes 2=No
428h_8	Where did you hear the message about Pneumonia treatment from? Government official	1=Yes 2=No
428h_9	Where did you hear the message about Pneumonia treatment from? Church/Mosque	1=Yes 2=No
428h_10	Where did you hear the message about Pneumonia treatment from? School	1=Yes 2=No
428h_11	Where did you hear the message about Pneumonia treatment from? Poster/flier	1=Yes 2=No
428h_12	Where did you hear the message about Pneumonia treatment from? Meeting	1=Yes 2=No
428h_13	Where did you hear the message about Pneumonia treatment from? Street announcement	1=Yes 2=No
428h_14	Where did you hear the message about Pneumonia treatment from? Other	Specify
429h	Have you seen or hear any messages on: Treatment for sick newborns	1=Yes 2=No
429h_1	Where did you hear the message about Pneumonia treatment from? Friend	1=Yes 2=No
<i>Multiple options are possible. (do Not read out list, prompt, 'anything else' for all that apply)</i>		
429h_2	Where did you hear the message Treatment for sick newborns from? At Health Centre	1=Yes 2=No
429h_3	Where did you hear the message about Treatment for sick newborns from? HEW	1=Yes 2=No
429h_4	Where did you hear the message about Treatment for sick newborns from? WDA	1=Yes 2=No
429h_5	Where did you hear the message about Treatment for sick newborns from? Newspaper	1=Yes 2=No
429h_6	Where did you hear the message about Treatment for sick newborns from? TV	1=Yes 2=No
429h_7	Where did you hear the message about Treatment for sick newborns from? Radio	1=Yes 2=No
429h_8	Where did you hear the message about Treatment for sick newborns from? Government official	1=Yes 2=No
429h_9	Where did you hear the message about Treatment for sick newborns from? Church/Mosque	1=Yes 2=No
429h_10	Where did you hear the message about Treatment for sick newborns from? School	1=Yes 2=No
429h_11	Where did you hear the message about Treatment for sick newborns from? Poster/flier	1=Yes 2=No

429h_12	Where did you hear the message about Treatment for sick newborns from? Meeting	1=Yes 2=No
429h_13	Where did you hear the message about Treatment for sick newborns from? Street announcement	1=Yes 2=No
429h_14	Where did you hear the message about Treatment for sick newborns from? Other	Specify

<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>			
444h	If your child is sick with a fever what should you do? Ignore it will go away	1=Yes 2=No	—
445h	If your child is sick with a fever what should you do? Go to health centre	1=Yes 2=No	—
446h	If your child is sick with a fever what should you do? Go to HEW	1=Yes 2=No	—
447h	If your child is sick with a fever what should you do? Go to WDA	1=Yes 2=No	—
448h	If your child is sick with a fever what should you do? Go to traditional healer	1=Yes 2=No	—
449h	If your child is sick with a fever what should you do? Ask to be tested for malaria	1=Yes 2=No	—
450h	If your child is sick with a fever what should you do? Treat with antimalarial / ACT	1=Yes 2=No	—
451h	If your child is sick with a fever what should you do? Treat with paracetamol	1=Yes 2=No	—
452h	If your child is sick with a fever what should you do? Treat with antibiotic	1=Yes 2=No	—
453h	If your child is sick with a fever what should you do? Treat with other medicine	1=Yes 2=No	—
454h	If your child is sick with a fever what should you do? Other	Specify	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>			
455h	If your child is sick with a diarrhea what should you do? Ignore it will go away	1=Yes 2=No	—
456h	If your child is sick with a diarrhea what should you do? Go to health centre	1=Yes 2=No	—
457h	If your child is sick with a diarrhea what should you do? Go to HEW	1=Yes 2=No	—
458h	If your child is sick with a diarrhea what should you do? Go to WDA	1=Yes 2=No	—
459h	If your child is sick with a diarrhea what should you do? Go to traditional healer	1=Yes 2=No	—
460h	If your child is sick with a diarrhea what should you do? Fluid made from a special	1=Yes 2=No	—

	packet / ordinary rehydration salts (ORS)		
461h	If your child is sick with a diarrhea what should you do? A gov-recommended home-made fluid for diarrhoea	1=Yes 2=No	—
462h	If your child is sick with a diarrhea what should you do? Treat with paracetamol	1=Yes 2=No	—
463h	If your child is sick with a diarrhea what should you do? Treat with antibiotic	1=Yes 2=No	—
464h	If your child is sick with a diarrhea what should you do? Treat with other medicine	1=Yes 2=No	—
465h	If your child is sick with a diarrhea what should you do? Other	Specify	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>			
466h	If your child is sick with a cough/ respiratory infection what should you do? Ignore it will go away	1=Yes 2=No	—
467h	If your child is sick with a cough/ respiratory infection what should you do? Go to health centre	1=Yes 2=No	—
468h	If your child is sick with a cough/ respiratory infection what should you do? Go to HEW	1=Yes 2=No	—
469h	If your child is sick with a cough/ respiratory infection what should you do? Go to WDA	1=Yes 2=No	—
470h	If your child is sick with a cough/ respiratory infection what should you do? Go to traditional healer	1=Yes 2=No	—
471h	If your child is sick with a cough/ respiratory infection what should you do? Treat with antibiotic	1=Yes 2=No	—
472h	If your child is sick with a cough/ respiratory infection what should you do? Treat with paracetamol	1=Yes 2=No	—
473h	If your child is sick with a cough/ respiratory infection what should you do? Treat with other medicine	1=Yes 2=No	—
474h	If your child is sick with a cough/ respiratory infection what should you do? Other action	Specify	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply)</i>			
475h	What are the signs of illness for a newborn baby? Reduced feeding	1=Yes 2=No	—
476h	What are the signs of illness for a newborn baby? Difficult or fast breathing	1=Yes 2=No	—
477h	What are the signs of illness for a newborn baby? Movement only when stimulated or No movement even when stimulated	1=Yes 2=No	—

478h	What are the signs of illness for a newborn baby? Unusually hot or cold	1=Yes 2=No	—
479h	What are the signs of illness for a newborn baby? Convulsions	1=Yes 2=No	—
480h	What are the signs of illness for a newborn baby? Severe chest in-drawing	1=Yes 2=No	—
481h	What are the signs of illness for a newborn baby? Yellow palms/soles/eyes	1=Yes 2=No	—
482h	What are the signs of illness for a newborn baby? Diarrhea	1=Yes 2=No	—
483h	What are the signs of illness for a newborn baby? Skin pustules	1=Yes 2=No	—
484h	What are the signs of illness for a newborn baby? Cord red or draining puss	1=Yes 2=No	—
485h	What are the signs of illness for a newborn baby? Small infant (weight <2000 grams)	1=Yes 2=No	—
<i>Symptoms are: reduced feeding, difficult or fast breathing, Movement only when stimulated or No movement even when stimulated, unusually hot or cold, convulsions, severe chest in-drawing</i>			
486h	If your newborn child has symptoms of neonatal sepsis what should you do? Ignore it will go away	1=Yes 2=No	—
487h	If your newborn child has symptoms of neonatal sepsis what should you do? Go to health centre	1=Yes 2=No	—
488h	If your newborn child has symptoms of neonatal sepsis what should you do? Go to HEW	1=Yes 2=No	—
489h	If your newborn child has symptoms of neonatal sepsis what should you do? Go to WDA	1=Yes 2=No	—
490h	If your newborn child has symptoms of neonatal sepsis what should you do? Go to traditional healer	1=Yes 2=No	—
491h	If your newborn child has symptoms of neonatal sepsis what should you do? Treat with antibiotic	1=Yes 2=No	—
492h	If your newborn child has symptoms of neonatal sepsis what should you do? Treat with paracetamol	1=Yes 2=No	—
493h	If your newborn child has symptoms of neonatal sepsis what should you do? Treat with other medicine	1=Yes 2=No	—
494h	If your newborn child has symptoms of neonatal sepsis what should you do? Other action	Specify	—

Section 3.3: Health care available in kebele and recent interactions			
495h	Is there a health post in your kebele?	1= Yes 2=No SKIP TO 506	—
496h	How long does it take you to walk to the nearest health post?	<i>Record the distance in minutes. If don't know, record 99</i>	—
497h	How many times have you visited the health post in the last six months?	<i>Record the number of times If any visits last 6 months, SKIP TO 504</i>	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply then SKIP TO 504</i>			
498h	If never in the last 6 months: What are the reasons why you have Not visited the health post in the last six months? No illness in the family/No births	1=Yes 2=No	—
499h	If never in the last 6 months: What are the reasons why you have Not visited the health post in the last six months? Health post is too far away	1=Yes 2=No	—
500h	If never in the last 6 months: What are the reasons why you have Not visited the health post in the last six months? health post Costs too much to go to	1=Yes 2=No	—
501h	If never in the last 6 months: What are the reasons why you have Not visited the health post in the last six months? Not enough time to visit	1=Yes 2=No	—
502h	If never in the last 6 months: What are the reasons why you have Not visited the health post in the last six months? Poor services available at the health post	1=Yes 2=No	—
503h	If never in the last 6 months: What are the reasons why you have Not visited the health post in the last six months? Other	Specify	_____
504h	When was the last time you visited that health post?	<i>Record DD/MM. If don't know 99/99. If know month but Not day record 99/MM</i>	___/___
505h	The last time you visited the health post, what was the primary reason?	01=Family planning 02=Child immunisation 03=Antenatal care 04=Delivery care 05=Postnatal care 06=Neonatal care 07=Health education 08=Growth monitoring 09=Referral of sick child 10=Diarrhea treatment 11=Malaria treatment 13=Pneumonia treatment 14=other treatment of sickness 15=receive mosquito nets 88=other (specify)	—
506h	Is there another health facility in your kebele?	1= Yes 2=No SKIP TO 518	—
507h	What kind of a health facility	1=Health Centre 2=Hospital	—

		3=Private clinic 8=Other	
508h	How long does it take you to walk to the nearest health facility?	<i>Record the distance in minutes. If don't know, record 99</i>	_____
509h	How many times have you visited the health facility in the last 6 months?	<i>Record the number of times If any visits last 6 months, SKIP TO 516</i>	___
Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply Then SKIP TO 516			
510h	If never in the last 6 months: What are the reasons why you have Not visited the health facility in the last six months? No illness in the family/No births	1=Yes 2=No	___
511h	If never in the last 6 months: What are the reasons why you have Not visited the health facility in the last six months? Health facility is too far away	1=Yes 2=No	___
512h	If never in the last 6 months: What are the reasons why you have Not visited the health facility in the last six months? Costs too much to go to health post	1=Yes 2=No	___
513h	If never in the last 6 months: What are the reasons why you have Not visited the health facility in the last six months? Not enough time to visit	1=Yes 2=No	___
514h	If never in the last 6 months: What are the reasons why you have Not visited the health facility in the last six months? Poor services available at the health facility	1=Yes 2=No	___
515h	If never in the last 6 months: What are the reasons why you have Not visited the health facility in the last six months? Other	Specify	_____
516h	When was the last time you visited that health facility?	<i>Record DD/MM. If don't know 99/99. If know month but Not day record 99/MM</i>	___/___
517h	The last time you visited the health facility, what was the primary reason?	01=Family planning 02=Child immunisation 03=Antenatal care 04=Delivery care 05=Postnatal care 06=Neonatal care 07=Health education 08=Growth monitoring 09=Referral of sick child 10=Diarrhoea treatment 11=Malaria treatment 13=Pneumonia treatment 14=Other treatment of sickness 15=Receive mosquito nets 88=Other (specify)	_____
518h	Have you been visited at home during the past 6 months by a Health Extension Worker to talk about health related issues?	1= Yes 2=No SKIP TO 537	___
519h	When was the last time the HEW visited you at home?	<i>Record DD/MM. If don't know 99/99. If know month but Not day record 99/MM</i>	___/___
Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply			

520h	Who did the HEW talk to the last time she visited you at home? Myself	1=Yes 2=No	—
521h	Who did the HEW talk to the last time she visited you at home? Other adult woman	1=Yes 2=No	—
522h	Who did the HEW talk to the last time she visited you at home? Head of household	1=Yes 2=No	—
523h	Who did the HEW talk to the last time she visited you at home? Other adult male	1=Yes 2=No	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
524h	What was discussed the last time the HEW visited you at home? Immunisation	1= Yes 2=No	—
525h	What was discussed the last time the HEW visited you at home? Child nutrition	1=Yes 2=No	—
526h	What was discussed the last time the HEW visited you at home? Family planning	1=Yes 2=No	—
527h	What was discussed the last time the HEW visited you at home? Pregnancy care	1=Yes 2=No	—
528h	What was discussed the last time the HEW visited you at home? Delivery care	1=Yes 2=No	—
529h	What was discussed the last time the HEW visited you at home? Newborn care / postnatal care	1=Yes 2=No	—
530h	What was discussed the last time the HEW visited you at home? Information about HIV/AIDS	1=Yes 2=No	—
531h	What was discussed the last time the HEW visited you at home? Information on hygiene	1=Yes 2=No	—
532h	What was discussed the last time the HEW visited you at home? Diarrhea treatment	1=Yes 2=No	—
533h	What was discussed the last time the HEW visited you at home? Malaria treatment	1=Yes 2=No	—
534h	What was discussed the last time the HEW visited you at home? Pneumonia treatment	1=Yes 2=No	—
535h	What was discussed the last time the HEW visited you at home? Promotion of latrine use	1=Yes 2=No	—
536h	What was discussed the last time the HEW visited you at home? Promotion of safe water use	1=Yes 2=No	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
537h	Are you aware of women development army who visit people at home to talk about health issues?	1= Yes 2=No	—
538h	If Yes When was the last time the WDA visited you at home?	SKIP TO 556 <i>Record DD/MM. If don't know 99/99. If know month but Not day record 99/MM</i>	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
539h	Who did the WDA talk to at that last visited to your home? Myself	1=Yes 2=No	—
540h	Who did the WDA talk to at that last visited to your home? Other adult woman	1=Yes 2=No	—
541h	Who did the WDA talk to at that last visited to your home? Head of household	1=Yes 2=No	—
542h	Who did the WDA talk to at that last visited to your home? Other adult male	1=Yes 2=No	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
543h	What was discussed the last time the WDA visited you at home? Immunisation	1=Yes 2=No	—
544h	What was discussed the last time the WDA visited you at home? Child nutrition	1=Yes 2=No	—

545h	What was discussed the last time the WDA visited you at home? Family planning	1=Yes 2=No	—
546h	What was discussed the last time the WDA visited you at home? Pregnancy care	1=Yes 2=No	—
547h	What was discussed the last time the WDA visited you at home? Delivery care	1=Yes 2=No	—
548h	What was discussed the last time the WDA visited you at home? Newborn care / postnatal care	1=Yes 2=No	—
549h	What was discussed the last time the WDA visited you at home? Information about HIV/AIDS	1=Yes 2=No	—
550h	What was discussed the last time the WDA visited you at home? Information on hygiene	1=Yes 2=No	—
551h	What was discussed the last time the WDA visited you at home? Diarrhoea treatment	1=Yes 2=No	—
552h	What was discussed the last time the WDA visited you at home? Malaria treatment	1=Yes 2=No	—
553h	What was discussed the last time the WDA visited you at home? Pneumonia treatment	1=Yes 2=No	—
554h	What was discussed the last time the WDA visited you at home? Promotion of latrine use	1=Yes 2=No	—
555h	What was discussed the last time the WDA visited you at home? Promotion of safe water use	1=Yes 2=No	—
556h	Have you participated in developing local community-based action plan addressing maternal newborn and child health issues about health issues in the past 12 months?	1= Yes 2=No	SKIP TO 559 —
557h	If Yes: When did you last participate in a community-based action plan?	<i>Record DD/MM. If don't know 99/99. If know month but Not day record 99/MM</i>	___/___
558h	Who organized the community-based action plan?	1=Kebele health team 2=Health extension worker 3=Community health worker 8=other (specify) 9=don't know	—
559h	Have you attended any meetings in your community (outside your home) about health issues in the past 12 months?	1= Yes 2=No	SKIP TO 575 —
560h	If Yes: When was the last meeting you attended outside your home?	<i>Record DD/MM. If don't know 99/99. If know month but Not day record 99/MM</i>	___/___
561h	Who organised the last meeting?	1=Kebele health team 2=Health extension worker 3=Community health worker 8=other (specify) 9=don't know	—
<i>Do Not read out list, prompt, 'anything else' record 1=Yes for all that apply</i>			
562h	What was discussed at the last community meeting you attended outside your home? Immunisation	1= Yes 2=No	—
563h	What was discussed at the last community meeting you attended outside your home? Child nutrition	1= Yes 2=No	—
564h	What was discussed at the last community meeting you attended outside your home? Family planning	1= Yes 2=No	—
565h	What was discussed at the last community meeting you attended outside your home?	1= Yes 2=No	—

	Pregnancy care		
566h	What was discussed at the last community meeting you attended outside your home? Delivery care	1= Yes 2=No	—
567h	What was discussed at the last community meeting you attended outside your home? Newborn care / postnatal care	1= Yes 2=No	—
568h	What was discussed at the last community meeting you attended outside your home? Information about HIV/AIDS	1= Yes 2=No	—
569h	What was discussed at the last community meeting you attended outside your home? Information on hygiene	1= Yes 2=No	—
570h	What was discussed at the last community meeting you attended outside your home? Diarrhea treatment	1= Yes 2=No	—
571h	What was discussed at the last community meeting you attended outside your home? Malaria treatment	1= Yes 2=No	—
572h	What was discussed at the last community meeting you attended outside your home? Pneumonia treatment	1= Yes 2=No	—
573h	What was discussed at the last community meeting you attended outside your home? Promotion of latrine use	1= Yes 2=No	—
574h	What was discussed at the last community meeting you attended outside your home? Promotion of safe water use	1= Yes 2=No	—

Section 3.4: Identification of child & general questions

The following questions are to be asked for all under 5 years old. Start with the youngest

575h	Interviewer: What is the name of the youngest child?	Check household listing	_____
576h	Interviewer: select ID of the child from household listing		_____
577h	Did you ever breastfeed [name]? OR Was [name] breastfed?	1=Yes 2=No 9=Don't know	—
578h	Are you still breastfeeding [name]? OR Is [name] still being breastfed?	1=Yes 2=No 9=Don't know	—
579h	For how many months did you breastfeed? OR For how many months was [name] breastfed?	Record number of months. If don't know record 98	—
580h	Did [name] receive a vitamin A dose (like this) during the last 6 months?	Show ampule/capsule/syrup 1=Yes 2=No 9=Don't know	—

Section 3.5: Immunizations

581h	Do you have a card where [name's] vaccinations are written down? If Yes, may I see it?	1=Yes seen SKIP TO 583 2=Yes Not seen SKIP TO 599 3=No 9=Don't know	—
582h	If No card, did you ever have a vaccination card?	1=Yes 2=No 9=Don't know	— If ALL answered SKIP TO 599
<i>Record 44 in the DAY column if card shows that a vaccination was given but No date is recorded.) Record DD/MM/YYYY.</i>			
583h	Copy vaccination date for BCG from the card	___/___/_____	
584h	Copy vaccination date for Polio 0 (Polio given at birth) from the card	___/___/_____	
585h	Copy vaccination date for Polio 1 from the card	___/___/_____	
586h	Copy vaccination date for Polio 2 from the card	___/___/_____	
587h	Copy vaccination date for Polio 3 from the card	___/___/_____	
588h	Copy vaccination date for Pentavalent (DPT, HIV, Hep B) from the card	___/___/_____	
589h	Copy vaccination date for Pentavalent 2 from the card	___/___/_____	
590h	Copy vaccination date for Pentavalent 3 from the card	___/___/_____	
591h	Copy vaccination date for PCV 1 from the card	___/___/_____	

592h	Copy vaccination date for PCV 2 from the card	___/___/_____	
593	Copy vaccination date for Rota 1 from the card	___/___/_____	
594	Copy vaccination date for Rota 2 from the card	___/___/_____	
595	Copy vaccination date for Rota 3 from the card	___/___/_____	
596	Copy vaccination date for Measles from the card	___/___/_____	
597	Copy vaccination date for Vitamin A from the card	___/___/_____	
598	Copy vaccination date for Deworming from the card	___/___/_____	
<i>Ask and fill this question, only if the vaccination status in the card is empty (583-598)</i>			
599h	Did [name] receive any vaccinations that are not on this card, including vaccinations received in a national immunization campaign?	1=Yes 2=No 9=Don't know	<i>Record Yes only if respondent mentions BCG, Polio 0-3, Pentavalent, and/or measles vaccine(s)</i>
600h	Did [name] receive BCG ?	1=Yes 2=No 9=Don't know	—
601h	Did [name] receive Polio 0 (Polio given at birth) ?	1=Yes 2=No 9=Don't know	—
602h	Did [name] receive Polio 1 ?	1=Yes 2=No 9=Don't know	—
603h	Did [name] receive Polio 2 ?	1=Yes 2=No 9=Don't know	—
604h	Did [name] receive Polio 3 ?	1=Yes 2=No 9=Don't know	—
605h	Did [name] receive Pentavalent (DPT, HIV, Hep B) ?	1=Yes 2=No 9=Don't know	—
606h	Did [name] receive Pentavalent 2 ?	1=Yes 2=No 9=Don't know	—
607h	Did [name] receive Pentavalent 3 ?	1=Yes 2=No 9=Don't know	—
608h	Did [name] receive PCV 1 ?	1=Yes 2=No 9=Don't know	—
609h	Did [name] receive PCV 2 ?	1=Yes 2=No 9=Don't know	—
610h	Did [name] receive Rota 1 ?	1=Yes 2=No 9=Don't know	—

611h	Copy vaccination date for Rota 2 ?	1=Yes 2=No 9=Don't know	—
612h	Did [name] receive Rota 3 ?	1=Yes 2=No 9=Don't know	—
613h	Did [name] receive Measles ?	1=Yes 2=No 9=Don't know	—
614h	Did [name] receive Vitamin A ?	1=Yes 2=No 9=Don't know	—
615h	Did [name] receive Deworming ?	1=Yes 2=No 9=Don't know	—
616h	Did [name] ever receive any vaccinations to prevent him/her getting diseases, including vaccinations received in a national immunization day campaign?	1=Yes 2=No 9=Don't know	—
Please tell me if [name] received any of the following vaccinations:			
617h	A BCG vaccination against tuberculosis, that is an injection in the arm or shoulder that usually causes a scar?	1=Yes 2=No 9=Don't know	—
618h	A POLIO vaccination, that is drops in the mouth?	1=Yes 2=No 9=Don't know	—
619h	When was the first polio vaccine received, just after birth or later?	1=just after birth 2=later	—
620h	How many times was the polio vaccine received?	Record number. 9=don't know	—
621h	A PENTAVALENT vaccination, which is an injection given in the thigh or buttocks, sometimes at the same time as the polio drops?	1=Yes 2=No 9=Don't know	—
622h	How many times was pentavalent received?	<i>Record number.</i> <i>9=don't know</i>	—
623h	An injection to prevent MEASLES, usually in the upper left arm?	1=Yes 2=No 9=Don't know	—
624h	Has [name] had any illness at any time in the last 2 weeks?	1=Yes 2=No Go to 718 9=Don't know Go to 718	—

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Section 3.6: Two-Week Morbidity Module (symptoms, care seeking and drugs)			
FILL IN THE MODULE BELOW IF THE CHILD WAS ILL IN THE PREVIOUS TWO WEEKS. IF THE CHILD HAD MORE THAN ONE EPISODE, CONSIDER ONLY THE MOST RECENT ONE.			
625h	For how many days was [name] ill?	<i>If less than one day record 00 99 if don't know</i>	—
626h	Is [name] ill Now?	1=Yes 2=No	—
Symptoms			
627h	Did [name] have any of the following at any time in the last 2 weeks? Convulsions	1=Yes 2=No	—
628h	Did [name] have any of the following at any time in the last 2 weeks? Very sleepy	1=Yes 2=No	—
629h	Did [name] have any of the following at any time in the last 2 weeks? Vomiting everything	1=Yes 2=No	—
630h	Did [name] have any of the following at any time in the last 2 weeks? Drinking poorly/Not able to drink or breastfeed	1=Yes 2=No	—
631h	Did [name] have any of the following at any time in the last 2 weeks? Fever	1=Yes 2=No	—
632h	Did [name] have any of the following at any time in the last 2 weeks? Cough	1=Yes 2=No	—
633h	Did [name] have any of the following at any time in the last 2 weeks? Difficult breathing	1=Yes 2=No	—
634h	Did [name] have any of the following at any time in the last 2 weeks? Diarrhea	1=Yes 2=No	—
635h	Did [name] have any of the following at any time in the last 2 weeks? Ear pain	1=Yes 2=No	—
636h	Did [name] have any of the following at any time in the last 2 weeks? Loss of appetite	1=Yes 2=No	—
637h	Did [name] have any of the following at any time in the last 2 weeks? Blocked or runny Nose	1=Yes 2=No	—
638h	Did [name] have any of the following at any time in the last 2 weeks? Fast breathing	1=Yes 2=No	—
639h	Did [name] have any of the following at any time in the last 2 weeks? Eye problems	1=Yes 2=No	—
640h	Did [name] have any of the following at any time in the last 2 weeks? Generalized rash	1=Yes 2=No	—
641h	Did [name] have any of the following at any time in the last 2 weeks? Other signs/symptoms	1=Yes 2=No	—
642h	How many days ago did this start	<i>If less than one day record 00 99 if don't know</i>	—
<i>If symptoms Fast Breathing or Difficult Breathing were selected ask the following question:</i>			
643h	Were symptoms of fast or difficult breathing due to problem in the chest or to a blocked Nose?	1=Chest 2=Nose 3=Both	—

		8= Other 9=Don't know	
<i>If Diarrhea was selected ask the following questions:</i>			
644h	When [name] was sick with diarrhea, how many watery stools did [name] have?	If less than one day record 00 99 if don't know	—
645h	During the diarrhea, did [name] have? Repeated vomiting	1=Yes 2=No	—
646h	During the diarrhea, did [name] have? Marked thirst	1=Yes 2=No	—
647h	During the diarrhea, did [name] have? Not eating/drinking well	1=Yes 2=No	—
648h	During the diarrhea, did [name] have? Blood in the stool	1=Yes 2=No	—
649h	During the diarrhea, did [name] have? Not getting better/getting sicker	1=Yes 2=No	—
650h	Now I would like to know how much [name] was offered to drink during the diarrhoea. Was he/she given less to drink than usual, more than usual, or about the same amount? If less, probe: was he/she given <i>much less than usual to drink or somewhat less.</i>	1=Much less 2=Somewhat less 3=About the same 4=More 5=Nothing to drink 9=Don't know	—
651h	When [name] had diarrhea, was he/she given less to eat than usual, more than usual, or about the same amount? If less, probe: was he/she given <i>much less than usual to eat or somewhat less.</i>	1=Much less 2=Somewhat less 3=About the same 4=More 5=Nothing to drink 9=Don't know	—
Care seeking			
652h	Did you seek advice or treatment for [name]'s illness from any source?	1= Yes 2= No 9=Don't know	SKIP TO 660 SKIP TO 664
653h	Why did you Not seek advice or treatment from any source? Health facility too far	1= Yes 2= No	SKIP TO 718
654h	Why did you Not seek advice or treatment from any source? Had no time	1= Yes 2= No	SKIP TO 718
655h	Why did you Not seek advice or treatment from any source? Had no money	1= Yes 2= No	SKIP TO 718
656h	Why did you Not seek advice or treatment from any source? Did Not want to attend a health facility	1= Yes 2= No	SKIP TO 718
657h	Why did you Not seek advice or treatment from any source? Could manage at home	1= Yes 2= No	SKIP TO 718
658h	Why did you Not seek advice or treatment from any source? Spouse did Not allow	1= Yes 2= No	SKIP TO 718
659h	Why did you Not seek advice or treatment from any source? Other	1= Yes 2= No	SKIP TO 718
660h	Where did you seek advice or treatment? Anywhere else? Health Post	1= Yes 2= No	—
661h	Where did you seek advice or treatment? Anywhere else? Health Centre	1= Yes 2= No	—

662h	Where did you seek advice or treatment? Anywhere else? Hospital	1= Yes 2= No	—
663h	Where did you seek advice or treatment? Anywhere else? Other	Specify	_____
664h	Interviewer: Check was treatment sought at two or more places?	1=Yes 2=No SKIP TO 665	—
665h	Where did you first seek treatment?	1=Health Post 2=Health Centre 3=Hospital 8=Other	—
666h	How many days after the illness began did you first seek treatment for [name]?	<i>If same day record 00. If don't know record 99.</i>	_____
667h	Did the health worker ask you to bring [name] back to be seen again?	1=Yes 2=No 9=Don't know SKIP TO 670	—
668h	When did he/she say that [name] should be brought back?	1=Before today's date 2=After today's date SKIP TO 670 9=Don't know SKIP TO 670	—
669h	Did you take [name] back?	1=Yes 2=No 9=Don't know	—
670h	Has [name] been hospitalized for this illness?	1=Yes 2=No SKIP TO 672 9=Don't know SKIP TO 672	—
671h	How many nights has [name] been hospitalized during this illness?	<i>Record number of nights. If don't know record 99.</i>	_____
672h	Has [name] been hospitalized at any time in the last 3 months?	1=Yes 2=No 9=Don't know	—
673h	How many nights has [name] been hospitalized in the last three months?	<i>Record number of nights. If don't know record 99.</i>	_____
674h	At any time during this illness, did [name] have blood taken from his/her finger or heel for testing?	1=Yes 2=No SKIP TO 678 9=Don't know SKIP TO 678	—
675h	Which test was done?	1=Microscopy 2=RDT 9=Don't know	—
676h	Where was the test done?	1=Health Post 2=Health Centre 3=Hospital 8=Other	—
677h	Was the test positive for malaria?	1=Yes 2=No 9=Don't know	—
678h	In addition, did you seek advice from any of the following? Traditional birth attendants	1=Yes 2=No	—
679h	In addition, did you seek advice from any of the following? Religious leader	1=Yes 2=No	—
680h	In addition, did you seek advice from any of the following? Pharmacy	1=Yes 2=No	—
681h	In addition, did you seek advice from any of	1=Yes 2=No	—

	the following? Traditional drug seller		
682h	In addition, did you seek advice from any of the following? Relative or friend	1=Yes 2=No	—
683h	In addition, did you seek advice from any of the following? Other	Specify	_____

Drugs			
684h	At any time during the illness, was [name] prescribed any drugs for the illness?	1=Yes 2=No 9=Don't know	SKIP TO 718 SKIP TO 718 —
685h_a	What drugs did [name] take? Antimalarial tablet (Co-artem, Chloroquine, etc)	1= Yes 2 = No	—
685h_b	How long after the illness started did [name] first take Antimalarial tablet ?	Write number of days. If child did Not take drug write 0 If 7 days or more write 7. If don't know write 9	—
685h_c	Did [name] complete taking the Antimalarial tablet?	1= Yes 2 = No	—
685h_d	Did you have [Antimalarial tablet] at home or did you get it from somewhere else. <i>If somewhere else, probe for the source.</i>	1=Home 2=Public health facility 3=Private health facility 4=HEW 5=Shop 8=Other Specify _____ 9=Don't know	—
694h_a	What drugs did [name] take? Amoxicillin	1= Yes 2 = No	—
694h_b	How long after the illness started did [name] first take Amoxicillin ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
694h_c	Did [name] complete taking the Amoxicillin?	1= Yes 2 = No	—
694h_d	Did you have Amoxicillin at home or did you get it from somewhere else. <i>If somewhere else, probe for the source.</i>	1=Home 2=Public health facility 3=Private health facility 4=HEW 5=Shop 8=Other Specify _____ 9=Don't know	—
695h_a	What drugs did [name] take? Erythromycin	1= Yes 2 = No	—
695h_b	How long after the illness started did [name] first take Erythromycin ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
695h_c	Did [name] complete taking the Erythromycin?	1= Yes 2 = No	—
695h_d	Did you have Erythromycin at home or did you get it from somewhere else? <i>If somewhere else, probe for the source.</i>	1=Home 2=Public health facility 3=Private health facility 4=HEW 5=Shop 8=Other Specify _____	—

		9=Don't know	
696h_a	What drugs did [name] take? Azithromycin	1= Yes 2 = No	—
696h_b	How long after the illness started did [name] first take Azithromycin ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
696h_c	Did [name] complete taking the Azithromycin ?	1= Yes 2 = No	—
696h_d	Did you have Azithromycin at home or did you get it from somewhere else. <i>If somewhere else, probe for the source.</i>	1=Home 2=Public health facility 3=Private health facility 4=HEW 5=Shop 8=Other Specify _____ 9=Don't know	—
697h_a	What drugs did [name] take? Cotrimoxazole	1= Yes 2 = No	—
697h_b	How long after the illness started did [name] first take Cotrimoxazole ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
697h_c	Did [name] complete taking the Cotrimoxazole?	1= Yes 2 = No	—
697h_d	Did you have Cotrimoxazole at home or did you get it from somewhere else. <i>If somewhere else, probe for the source.</i>	1=Home 2=Public health facility 3=Private health facility 4=HEW 5=Shop 8=Other Specify _____ 9=Don't know	—
698h_a	What drugs did [name] take? Other antibiotic (pill or syrup)	1= Yes 2 = No	—
698h_b	How long after the illness started did [name] first take other antibiotic (pill or syrup) ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
698h_c	Did [name] complete taking other antibiotic (pill or syrup) ?	1= Yes 2 = No	—
698h_d	Did you have other antibiotic (pill or syrup) at home or did you get it from somewhere else. <i>If somewhere else, probe for the source.</i>	1=Home 2=Public health facility 3=Private health facility 4=HEW 5=Shop 8=Other Specify _____ 9=Don't know	—
699h_a	What drugs did [name] take? Antibiotic injection	1= Yes 2 = No	—
699h_b	How long after the illness started did [name] first take antibiotic injection ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
699h_c	Did [name] complete taking antibiotic injection ?	1= Yes 2 = No	—
699h_d	Did you have antibiotic injection at home or did you get it from somewhere else.	1=Home 2=Public health facility 3=Private health facility	

	<i>If somewhere else, probe for the source.</i>	4=HEW 5=Shop 8=Other Specify _____ 9=Don't know	—
700h_a	What drugs did [name] take? Zinc	1= Yes 2 = No	—
700h_b	How long after the illness started did [name] first take Zinc ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
700h_c	Did [name] complete taking the Zinc ?	1= Yes 2 = No	—
700h_d	Did you have Zinc at home or did you get it from somewhere else. <i>If somewhere else, probe for the source.</i>	Write number of days. If child did Not take drug write 0 If 7 days or more write 7. If don't know write 9	—
701h_a	What drugs did [name] take? Fluid made from special packet called ORS	1= Yes 2 = No	—
701h_b	How long after the illness started did [name] first take fluid made from special packet called ORS ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
702h_a	What drugs did [name] take? ORS-Zinc combined	1= Yes 2 = No	—
702h_b	How long after the illness started did [name] first take ORS-Zinc combined ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
704h_a	What drugs did [name] take? Gov. recommended home mad fluid	1= Yes 2 = No	—
704h_b	How long after the illness started did [name] first take Gov. recommended home mad fluid ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
705h_a	What drugs did [name] take? Pill or Syrup	1= Yes 2 = No	—
705h_b	How long after the illness started did [name] first take Pill or Syrup ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
706h_a	What drugs did [name] take? Injection	1= Yes 2 = No	—
706h_b	How long after the illness started did [name] first take Injection ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
707h_a	What drugs did [name] take? IV intravenous	1= Yes 2 = No	—
707h_b	How long after the illness started did [name] first take IV intravenous ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
708h_a	What drugs did [name] take? Home remedies/herbal medicine	1= Yes 2 = No	—
708h_b	How long after the illness started did [name] first take home remedies/herbal medicine ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
709h_a	What drugs did [name] take? Paracetamol	1= Yes 2 = No	—
709h_b	How long after the illness started did [name]	Write number of days. If child did Not take drug	—

	first take Paracetamol ?	write 0. If 7 days or more write 7. If don't know write 9	
710h_a	What drugs did [name] take? Panadol	1= Yes 2 = No	—
710h_b	How long after the illness started did [name] first take Panadol ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
711h_a	What drugs did [name] take? Aspirin	1= Yes 2 = No	—
711h_b	How long after the illness started did [name] first take Aspirin ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
712h_a	What drugs did [name] take? Ibuprofen	1= Yes 2 = No	—
712h_b	How long after the illness started did [name] first take Ibuprofen ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
713h_a	What other drugs did [name] take? Other	Specify	—
713h_b	How long after the illness started did [name] first take other drug ?	Write number of days. If child did Not take drug write 0. If 7 days or more write 7. If don't know write 9	—
714h	What other drugs did [name] take? Don't know	1= Yes 2 = No	—
Section 3.7: MUAC			
718h	Mid-upper arm circumference	<i>In centimeters</i> <i>9994=If Not present</i> <i>9995=Refused</i> <i>9996=Other</i>	— .—

ANNEX C: INSTRUMENTS FOR HEALTH PROVIDER SURVEY

Dagu Baseline Facility Questionnaire: Health Post

MODULE 1: BACKGROUND INFORMATION OF THE HEALTH POST

100	Date (Gregorian Calendar)	_ _ _ / _ _ _ / _ _ _ dd / mm / yy
101	Region Code	_ _ _ _ _ _ _ _ _
102	Zone Code	_ _ _ _ _ _ _ _ _
103	Woreda Name	_ _ _ _ _ _ _ _ _
104	Woreda code	_ _ _ _ _ _ _ _ _
105	PHCU/Health Centre name	_ _ _ _ _ _ _ _ _
106	Kebele name	_ _ _ _ _ _ _ _ _
107	Gote name	_ _ _ _ _ _ _ _ _
108	Cluster code	_ _ _
109	GPS Latitude Take coordinates of health post	_ _ _ : _ _ _ _ _ _ _ _ _
110	GPS Longitude Take coordinates of health post	_ _ _ : _ _ _ _ _ _ _ _ _
111	Interviewer Initials	_ _ _
112	Did you read the HEW the consent form?	1 = Yes 2 = No _ _
113	Did the HEW agree to be interviewed?	1= Yes – GO TO MODULE 2 2 = No _ _
114	If not, why not?	_ _ _ _ _ _ _ _ _

MODULE 2: FACILITY, EQUIPMENT, MEDICINE AND JOB AIDS

INTERVIEWER: *I would now like to ask you questions about the facility, equipment, medicine and job aids at this health post.*

WALK AROUND THE FACILITY WITH THE HEW AND PERSONALLY CHECK THE AVAILABILITY OF EQUIPMENT, AND MEDICINE IN STOCK.

Does the facility have the following essential support services?

115	What is the main source of drinking water?	1 = Piped connection into health post 2 = Piped connection into yard 3 = Public standpipes 4 = Boreholes 5 = Protected dug wells 6 = Protected springs 7 = Rainwater collection 8 = Surface water 9 = Open dug wells 10 = Unprotected springs 11 = Vendor provided water 12 = Bottled water 13 = Tanker	_ _
116	Water supply available on day of survey	1 = Yes 2 = No	_ _
117	Electricity connection or other power	1 = Yes	_ _

	sources (example, gas/solar generator)	2 = No-SKIP 119		
118	Electricity supply on day of survey?	1 = Yes 2 = No	__	
119	Functional sterilizer that works on the day of the survey?	1 = Yes 2 = No	__	
120	Functional fridge that works on the day of the survey?	1 = Yes 2 = No	__	
121	Toilets accessible to facility users?	1 = Yes 2 = No	__	
122	Generally is there a cell phone signal at this health post?	1 = Yes 2 = No	__	
123	Is it all functional today? <i>INTERVIEWER -check your phone if there is signal on day of survey</i>	1 = Yes 2 = No	__	
	Which means of communication do you have to speak to the health facility? Check all that apply	For each:1 = Yes 2 = No		
		124	Facility landline/mobile phone	__
		125	Staff member mobile phone	__
		126	Phone outside the facility	__
		127	In person communication	__
128	During the last sick newborn referral from the health post to health center, did you speak to the health facility directly?	1 = Yes 2 = No – GO TO 130 3 =Don't know - GO TO 130	__	
129	IF YES, Which means of communication did you use?	1 = Facility landline/mobile phone 2 = Staff member mobile phone; 3 = Phone outside the facility 4 = Radio 5 = In person communication;	__	
130	When referring from this health post to the health center for further care, do you use referral forms?	1 = Yes (NOTE: check to see if an official referral form) 2 = No	__	
131	Do you receive any back referral forms on cases you have referred?	1 = Yes 2 = No	__	

Walk around the facility with the respondent and personally check the availability of medicine					
	Does the facility have the following medicines today?			If not available or expired, what was the duration of stock out /expiry for?	
	<i>For each: 1 = Yes 2 = Not available 3= Expired 4 = Never available</i>			<i>Check for the last three months and what was the longest number of consecutive days without that item (in days)</i>	
132	Vitamin k 1 mg	__	133	Vitamin k 1 mg	__ __ __
132A	Vitamin k 10 mg	__	132B	Vitamin k 10 mg	__ __ __
134	Vitamin A 200,000 IU	__	135	Vitamin A 200,000 IU	__ __ __
136	Vitamin A 100,000 IU	__	137	Vitamin A 100,000 IU	__ __ __
138	TTC eye ointment	__	139	TTC eye ointment	__ __ __
140	Chlorohexidine	__	141	Chlorohexidine	__ __ __

142	Gentamycin 20 mg/2ml, box of 50 amp	__	143	Gentamycin 20 mg/2ml, box of 50 amp	__ __
144	Gentamycin 80mg/2ml		145	Gentamycin 80mg/2ml	__ __
146	Amoxicillin suspension (125 mg/5 ml)	__	147	Amoxicillin suspension (125 mg/5 ml)	__ __
148	Amoxicillin tab 250 (dispersible)	__	149	Amoxicillin tab 250 (dispersible)	__ __
150	Amoxicillin tab 125 mg (dispersible)	__	151	Amoxicillin tab 125 mg (dispersible)	__ __
152	Ampicillin powder for inj, 500 mg	__	153	Ampicillin powder for inj, 500 mg	__ __
154	Paracetamol	__	155	Paracetamol	__ __
156	Iron	__	157	Iron	__ __
158	Folate	__	159	Folate	__ __
160	BCG	__	161	BCG	__ __
162	Polio vaccine	__	163	Polio vaccine	__ __
164	ORS	__	165	ORS	__ __
166	Zinc	__	167	Zinc	__ __
168	Zinc-ORS combined	__	169	Zinc-ORS combined	__ __
170	Malaria RDT	__	171	Malaria RDT	__ __
172	Coartem (Artemether/lumefantrine)	__	173	Coartem (Artemether/lumefantrine)	__ __
174	Chloroquine syrup	__	175	Chloroquine syrup	__ __
176	Artesunate suppository	__	177	Artesunate suppository	__ __
178	HIV diagnostic tests	__	179	HIV diagnostic tests	__ __
180	Cotrimoazole	__	181	Cotrimoazole	__ __
182	Plumpy nut	__	183	Plumpy nut	__ __
184	BP100	__	185	BP100	__ __

	Does the facility have the following functional equipment today?	For each 1=yes, 2=no	
			__
	186	Ambu bag / face mask (full size 0 and 1)	__
	187	Any Thermometer	__
	188	Infant scale	__
	189	Weighing sling	__
	190	Blood pressure cuff	__
	191	Stethoscope	__
	192	Watch or clock	__
	193	Tape measure	__
	194	Examination couch	__
	195	Drape	__
	196	Washable mackintosh	__
	197	Dustbin	__

		198	Cups/drinking water	__
		199	Sharps container	__
		200	Chlorine bleach	__
		201	Bucket for decontamination solution	__
		202	Contaminated waste container	__
		203	Soap and towel or handrub	__
		204	Alcohol-based hand rub	__
		205	Clean glove	__
		206	Syringe with needle for Gentamycin injection	__
		207	MUAC tape measure	__
	Does the facility have the following job aids and forms today?		<i>For each 1=yes, 2=no</i>	
		208	Pregnant woman registration book	__
		209	ANC Register	__
		210	Delivery Register	__
		211	PNC Register	__
		212	ICCM registration book for 0- under 2 months	__
		213	ICCM registration book 2 -59 months	__
		214	Family health cards	__
		215	Vaccination cards	__
		216	Family folder	__
		217	Stock card/bin card	__
		218	HMIS forms (monthly and quarterly reporting)	__
	219	Request and re-supply form	__	
	220	Chart booklet	__	

MODULE 3: HEALTH POST REGISTER REVIEW BY THE DATA COLLECTOR

PLEASE LOOK AT THE SPECIFIED HEW REGISTERS DETAILED BELOW FOR THE DIFFERENT DATA ELEMENTS. WRITE 9999, 999 OR 99 IF NOT AVAILABLE.

I would now like to take a look at your registers to abstract information about the community in this kebele and the services provided them. I will ask about the population profile for the last 12 months and services provided by you for the last three months from _____ to _____.

	Obtain data on population FOR THE YEAR from the day of survey from Health Post wall records	
221	Number of people in the kebele	_ _ _ _
222	Number of households in the kebele	_ _ _ _
223	Total number of women of reproductive age	_ _ _ _
224	Total number of under 5 children in the kebele	_ _ _ _
	Obtain data on expected number of pregnancies and births from the PAST QUARTER from Health Post wall records	
225	Expected number pregnancies	_ _ _ _
226	Expected number of births	_ _ _ _

227	Expected number of facility births	_ _ _
	Obtain data from ANC registers for the PAST QUARTER	
228	Number of women receiving 1 visit	_ _
229	Number of women receiving 2 visits	_ _
230	Number of women receiving 3 visits	_ _
231	Number of women receiving 4 visits	_ _
	Obtain data from delivery registers for the PAST QUARTER	
232	Number of births attended by the HEW	_ _
233	Number of total births (home, health post, health center, hospital)	_ _ _
234	Number of live births	_ _
235	Number of newborn deaths (28 days or less)	_ _
	PNC data	
236	Is there a Post Natal Care register (standard or otherwise) in this health post 1= Yes, 2=No	_
	If Post Natal Care register is not available but family folder is available, obtain the information from the family folder given for the PAST QUARTER. Ask the HEWs to separate those.	
237	Number receiving 1 visit	_ _
238	Number receiving 2 visits	_ _
239	Number receiving 3 visits	_ _
	If information is not available from register books on the following, enquire from the HEW where to obtain the following information for the PAST QUARTER	
240	Number of newborns treated for asphyxia, initial stimulation, or resuscitation by the HEW	_ _
241	Number of newborns given chlorohexidine cord care by the HEW	_ _
	Obtain data from the ICCM 2-59 month register for the PAST QUARTER	
242	Number of initial consultations with children	_ _ _
243	Number of sick children who were referred	_ _ _
244	Number of children classified as having pneumonia	_ _ _
245	Number of children classified as having diarrhea	_ _ _
246	Number of children classified as having malaria	_ _ _
247	Number of children who received antibiotic for pneumonia	_ _ _
248	Number of children who received ORS for diarrhea	_ _ _
249	Number of children who received zinc for diarrhea	_ _ _
250	Number of children who received zinc-ORS combined for diarrhea	_ _ _
251	Number of children who received RDT for malaria	_ _ _
252	Number of children who received ACT for malaria	_ _ _

Obtain data from iCCM 0-2 month registration book for information below for the PAST QUARTER
For each of the newborn less than 2 months old seen at the health center (recorded above) complete a separate record review.

Record 1

253A	How many 0-2 months were seen in the last quarter?		_ _ _	
253	Name of child	_____ First name		
		_____ Last name		
254	Address of child	_____ Gote name		
		_____ Keble name		
255	Date Seen	<i>Gregorian calendar (DD/MM/YY)</i>	_ _ / _ _ / _ _	
256	Age of baby at the time of consultation in weeks	<i>Record age of baby in weeks ranging from 1-8 weeks. If unknown 9</i>	_ weeks	
257	Gender of baby	1 = Male 2 = Female	_	
258	Weight on the day of consultation in grams	<i>If weight is given in KGs record in grams e.g 3.5 KG = 3500 grams. If unknown 9999</i>	_ _ _ _ grams	
259	Birth Weight (Written for those less than 7 days)	1= < 1,500 grams 2= 1,500 - < 2,500 grams 3= >= 2,500 grams 9= Unknown	_	
260	Gestational Age (in weeks)	1= < 32 weeks 2= 32 – 36 weeks 3= >= 37 weeks 9= Unknown	_	
261	Temperature on the day of consultation in degree Celsius	<i>Record temperature to one decimal place (e.g. 34.3 °C) If unknown 99.9</i>	_ _ _ . _ °C	
262	Respiratory Rate per minute on the day of consultation	<i>If unknown 999</i>	_ _ _	
	Signs and symptoms of the newborn at the time of consultation? Record all that apply	For each: 1 = Yes 2 = No		
		263	Reduced feeding/unable to feed	_
		264	Convulsion	_
		265	Severe Chest in-drawing	_
		266	Vomiting	_
		267	Fever	_
		268	Diarrhea	_
		269	Fast breathing	_
		270	Coughing	_
		271	Grunting	_
		272	Skin pustules	_
		273	Yellow palms and soles	_
		274	Yellow eyes and skin	_
		275	Red umbilicus or draining pus	_
		276	Movement only when stimulated or no movement even when stimulated	_
	277	Movement only when stimulated or no movement even when stimulated	_	

1		278	Bulging fontanelle	__
2		279	Restless/Irritable	__
3		280	Sunken eyes	__
4		281	Skin pinch goes back slowly	__
5		282	Skin pinch goes back very slowly	__
6		283	Diarrhea lasting 14 days or more	__
7		284	Blood in the stool	__
8		285	Not suckling well	__
9		286	Less than 8 breast feeds in 24 hours	__
10		287	Switching to another breast before one is emptied	__
11		288	Not breast feeding more frequently and longer during sickness	__
12		289	Poor positioning during breast feeding	__
13		290	Not well attached during breast feeding	__
14		291	Receives other foods or drinks (even water)	__
15		292	Low weight for age	__
16		293	Thrush (ulcers or white patches in mouth)	__
17		294	Signs and symptoms not given	__
18		295	Other – GO TO 297	__
19		296	Specify _____	
20				
21				
22				
23				
24				
25				
26	Disease classification of the newborn Record all that apply		For each:1 = Yes 2 = No	
27		297	Very Preterm and/or very low birth weight	__
28		298	Preterm and/or low birth weight	__
29		299	VSD	__
30		300	Local bacterial infection	__
31		301	Severe Dehydration	__
32		302	Some Dehydration	__
33		303	No Dehydration	__
34		304	Severe Persistent Diarrhea	__
35		305	Dysentery	__
36		306	Jaundice	__
37		307	Severe Jaundice	__
38		308	Malaria	__
39		309	Feeding problem or low weight	__
40	310	Classification not given	__	
41	311	Other Go to 313	__	
42	312	Specify _____		
43				
44	Treatment given to the newborn Record all that apply		For each:1 = Yes 2 = No	
45		313	Gentamycin IM first dose	__
46		314	Gentamycin IM for seven days	__
47		315	Amoxicillin suspension/dispersible first dose	__
48		316	Amoxicillin suspension/dispersible for 7 days	__
49		317	Amoxicillin suspension/dispersible for 5 days	__
50		318	ORS (Plan B) – Facility treatment	__
51		319	ORS (Plan A) – Home treatment	__
52		320	Zinc for 10 days	__
53		321	Zinc-ORS combined	__
54		322	Oral chloroquine (Anti-malarial)	__
55		323	Oral quinine (Anti-malarial)	__
56		324	Oral coartem (Anti-malarial)	__
57		325	Rectal Artesunate (Anti-malarial)	__
58	326	IV Quinine (Anti-malarial)	__	
59	327	Other Antimalarial (specify)	__	
60				

		328	TTC (Tetracycline) eye ointment	__
		329	GV paint (Gentian Violet)	__
		330	Nutritional Counseling	__
		331	Exposing to sunshine 20– 30 minutes everyday	__
		332	Other treatment GO TO 334	__
		333	Specify _____	
334	Was newborn referred to a higher facility?		1 = Yes – GO TO 337 2 = No	__
335	If newborn had VSD and was treated at health post was gentamycin treatment completed?		1 = Yes 2 = No 3 = Not VSD case	__
	Outcome of the newborn treatment		For each: 1 = Yes 2 = No	
		336	Health improved/healed	__
		337	Died	__
		338	Worsened	__
		339	Same	__
		340	Unknown	__

Obtain data from iCCM 2-59 registration book for information below for the PAST QUARTER
For the past 10 children seen at the health post (recorded above) complete a separate record review.

Record 1

341A	How many 2-59 months were seen in the last quarter?		_ _ _
341	Name of child	_____ First name _____ Last name	
342	Address of child	_____ Gote name _____ Keble name	
343	Date Seen	Gregorian calendar (DD/MM/YY)	_ _ / _ _ / _ _
344	Age of child at the time of consultation	Record age of child in months. If unknown 99	_ _ months
345	Gender	1 = Male 2 = Female	_
346	Weight on the day of consultation in grams	If weight is given in KGs record in grams e.g 3.5 KG = 3500 grams. If unknown 9999	_ _ _ _ grams
347	Temperature on the day of consultation in degree Celsius	Record temperature to one decimal place (e.g. 34.3 °C) If unknown 99.9	_ _ . _ °C
348	Respiratory Rate per minute on the day of consultation	If unknown 999	_ _ _
	Signs and symptoms of the child at the time of consultation? Record all that apply	For each: 1 = Yes 2 = No	
349		Reduced feeding/unable to feed	_
350		Vomiting	_
351		Convulsion	_
352		Movement only when stimulated or no movement even when stimulated	_
353		Movement only when stimulated or no movement even when stimulated	_
354		Restless/Irritable	_
355		Difficult breathing	_
356		Fast breathing	_
357		Coughing	_
358		Severe Chest in-drawing	_
359		Stridor	_
360		Diarrhea	_
361		Diarrhea lasting 14 days or more	_
362		Blood in the stool	_
363		Skin pinch goes back slowly	_
364		Skin pinch goes back very slowly	_
365		Fever	_
366	Bulging fontanelle	_	
367	Rash	_	
368	Mouth ulcers	_	
369	Pus or clouding of cornea	_	
370	Perform malaria RDT	_	
371	Discharge / pus in the ear	_	
372	Swelling	_	
373	Visible severe wasting	_	

		374	Palmar pallor	__
		375	Signs and symptoms not given	__
		376	Other – GO TO 377	__
		377	Specify _____	
	Disease classification of the child Record all that apply		For each:1 = Yes 2 = No	
		378	One or more danger signs (unable to drink or breastfeed, vomits everything, convulsions, movement only when stimulated or no movement even when stimulated)	__
		379	Severe pneumonia/very severe disease	__
		380	Pneumonia	__
		381	Severe dehydration	__
		382	Some dehydration	__
		383	Severe persistent diarrhoea	__
		384	Persistent diarrhoea	__
		385	Dysentery	__
		386	Very severe febrile disease	__
		387	Malaria	__
		388	Fever, malaria unlikely	__
		389	Fever, no malaria	__
		390	Severe complicated measles	__
		391	Measles with eye/mouth complications	__
		392	Measles	__
		393	Acute ear infection	__
		394	Chronic ear infection	__
		395	Severe malnutrition	__
		396	Moderate malnutrition	__
		397	Severe anaemia	__
		398	Anaemia	__
		399	Vaccination status not up-to-date	__
		400	Vaccine(s) needed (specify)	__
	401	Vitamin A status not up-to-date	__	
	402	Classification not given	__	
	403	Other Go to 404	__	
	404	Specify _____		
	Treatment given to the child Record all that apply		For each:1 = Yes 2 = No	
		405	ORS (Plan A) – Home treatment	__
		406	ORS (Plan B) – Facility treatment	__
		407	Zinc for ten days	__
		408	Oral coartem (Anti-malarial)	__
		409	Oral chloroquine (Anti-malarial)	__
		410	Oral quinine (Anti-malarial)	__
		411	Rectal Artesunate (Anti-malarial)	__
		412	IV Quinine (Anti-malarial)	__
		413	Other Antimalarial (specify)	__
		414	Cotrimoxazole	__
		415	Vitamin A	__
		416	Paracetamol	__
		417	Gentamycin IM first dose	__
		418	Gentamycin IM for seven days	__
		419	Amoxicillin suspension/dispersible first dose	__
		420	Amoxicillin suspension/dispersible for seven days	__
	421	Amoxicillin suspension/dispersible for five days	__	

		422	TTC (Tetracycline) eye ointment	__
		423	Plumpy nut	__
		424	BP100	__
		425	Nutritional Counseling	__
		426	Other treatment GO TO 427	__
		427	Specify _____	
428	Was the child referred to a higher facility?		1 = Yes 2 = No	__
	Outcome of the child treatment		For each:1 = Yes 2 = No	
		429	Health improved/healed	__
		430	Died	__
		431	Worsened	__
		432	Same	__
		433	Unknown	__

OHEP HEW Questionnaire

Unique ID-----

100	Date (dd/mm/yyyy) Gregorian Calendar	_ _ _ / _ _ _ / _ _ _ dd / mm / yy
101	Region Name	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
102	Zone Name	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
103	Woreda Name	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
104	PHCU/Health Center Name	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
104A	Health post code	_
104B	HEW code	_
105	Kebele	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
106	Gote	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
107	Cluster Code	_ _ _
108	GPS Latitude	_ _ _ : _ _ _ _ _ _ _ _ _ _ _
109	GPS Longitude	_ _ _ : _ _ _ _ _ _ _ _ _ _ _
ELEVATION	Elevation	
110	Interviewer Initials	_ _ _
111	Did you read the HEW the consent form?	1 = Yes 2 = No _
112	Did the HEW agree to be interviewed?	1= Yes – GO TO MODULE 2 2 = No _
113	If not, why not?	_____ END

Module: 2

114	What is your name?		
115 Y	What is your date of birth?	yyyy __ __ __ __ Ethiopian Calendar	
115 M	What is your date of birth?	mm __ __ Ethiopian Calendar	
115 D	What is your date of birth?	dd __ __ Ethiopian Calendar	
116	What is the number of years you attended school?	Write number of years	__ __ Years
117	As an HEW, what is your level?	1 = Level 1 2 = Level 2 3 = Level 3 4 = Level 4	__
118	Do you have any specific qualification in addition to HEW training?	1 = Yes 2 = No – GO TO 120	__
119	If yes, specify	_____	
120 YY	For how long have you worked as an HEW (including work at other kebeles)?	Write number of years.	__ __ Years
120MM	If less than one year, enter number of months only.		__ __ Months
121YY	For how long have you worked as an HEW in this Health post?	Write number of years and months.	__ __ Years __ __ Months
121MM	If less than one year, enter 00 years and number of months		
122	Do you reside in this kebele?	1 = Yes 2 = No Skip to 124	__
123	Was a home provided to you by the kebele?	1 = Yes 2 = No	__
124	How many HEWs work in this health post?	Enter number, including the person being interviewed	__
125	In this health post who is the HEW in charge (senior HEW)?	1 = Myself 2 = Other HEW 3 = Neither of us	__

126	How many days a week is the health post facility functionally open by at least 1 HEW?	Enter number of days	__	
127	Do you post the health post functional days for clients to see?	1 = Yes 2 = No	__	
128	Do you post the health posts hours of operation for clients to see?	1 = Yes 2 = No	__	
During the weekend and public holidays- where do the residents of the kebele seek medical care? Select all that apply		For each: 1 = Yes 2 = No		
		129	Health center	__
		130	Health Post	__
		131	With HEW (at her house or elsewhere)	__
		132	Pharmacy	__
		133	Traditional Healers	
		134	Other –	__
	135	Specify _____		

Instruction: From Question HEW_132-HEW_207
 Don't prompt. Select all mentioned

What are the main components of immediate newborn care? Do not prompt Select all mentioned.	For each: 1 = Yes 2 = No		
	136	Deliver baby onto mother's abdomen	__
	137	Dry and wrap baby	__
	138	Assess breathing	__
	139	Delay cord clamping for three minutes	__
	140	Tie and cut cord appropriately	__
	141	Skin to skin contact	__
	142	Initiate breastfeeding	__
	143	Apply TTC eye ointment	__
	144	Apply chlorohexidine on cord	__
	145	Give Vitamin K	__
	146	Weight baby	__
	999	None mentioned from the list	
What are the main components of the first PNC visit for newborn?	For each: 1 = Yes 2 = No		
	147	Advice washing hands before touching baby	__

1	Do not prompt Select all mentioned	148	Check for danger sings	<input type="checkbox"/>
2		149	Check for congenital abnormalities	<input type="checkbox"/>
3		150	Measure temp	<input type="checkbox"/>
4		151	Measure weight	<input type="checkbox"/>
5		152	Apply TTC eye ointment	<input type="checkbox"/>
6		153	Encourage exclusive breast feeding for baby	<input type="checkbox"/>
7		154	Advice to delay bathing of baby for 24 hrs	<input type="checkbox"/>
8		155	Encourage skin to skin contact	<input type="checkbox"/>
9		156	Provide cord care (Chlorohexidine)	<input type="checkbox"/>
10		157	Education on appropriate cord care (Chlorohexidine)	<input type="checkbox"/>
11		158	Vaccinate for polio and BCG	<input type="checkbox"/>
12		159	Teach mother on how to recognize newborn danger signs using family health card.	<input type="checkbox"/>
13		999	None mentioned from the list	
14		What are the main components of subsequent (3rd and 7th day and 6th week) PNC visits for newborn? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No	
15	160		Check for newborn danger signs	<input type="checkbox"/>
16	161		Advice to keep cord clean	<input type="checkbox"/>
17	162		Assess breastfeeding	<input type="checkbox"/>
18	163		Advise on breastfeeding	<input type="checkbox"/>
19	164		Ensure baby is kept warm	<input type="checkbox"/>
20	165		Check baby's weight	<input type="checkbox"/>
21	166		Vaccination	<input type="checkbox"/>
22	999	None mentioned from the list		
23	When a newborn weighs less than 1.5 kgs or has a gestational age of less than 32 weeks, what special care do you provide? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
24		167	Continue feeding with expressed breast milk	<input type="checkbox"/>
25		168	Monitor ability to breastfeed	<input type="checkbox"/>
26		169	Cover baby well including head	<input type="checkbox"/>
27		170	Hold close to mother	<input type="checkbox"/>
28		171	Refer urgently with mother to health center or hospital	<input type="checkbox"/>
29	999	None mentioned from the list		
30	When a newborn weighs between 1.5 - 2.5 kgs or has a gestational age of 32-37 weeks, what special care do you provide? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
31		172	Make sure the baby is warm	<input type="checkbox"/>
32		173	Educate on optimal breastfeeding	<input type="checkbox"/>
33		174	Monitor ability to breastfeed	<input type="checkbox"/>
34		175	Monitor baby for the first 24 hours	<input type="checkbox"/>
35		176	Educate on infection prevention	<input type="checkbox"/>
36	999	None mentioned from the list		
37	What are the main signs for good attachment	For each: 1 = Yes 2 = No		

during breast feeding? Do not prompt Select all mentioned	177	Chin touching breast	__
	178	Mouth open wide	__
	179	Lower lip turned out	__
	180	More areola showing above	__
	999	None mentioned from the list	
How do you determine feeding problems in a newborn? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	181	Not well-attached to breast	__
	182	Not suckling effectively	__
	183	Less than 8 breastfeeds in 24 hours	__
	184	Switching to another breast before one is emptied	__
	185	Receives other foods or drinks (even water)	__
	186	Underweight for age	__
	187	Thrush (ulcers or white patches in mouth)	__
	999	None mentioned from the list	
When a newborn shows signs of feeding problems or is underweight, what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	188	Advise mother to breastfeed as often and as long as infant wants in 24 hours	__
	189	Teach mother correct positioning and attachment	__
	190	Educate on exclusive breastfeeding	__
	191	Teach the mother to treat thrush at home	__
	192	Follow-up any feeding problem	__
	193	Follow-up any thrush in two days	__
	194	Follow-up underweight for age in 14 days	__
	999	None mentioned from the list	
What are the main signs for very severe disease in newborns? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	195	Convulsions	__
	196	Stopped feeding or significantly reduced feeding	__
	197	Severe chest in drawing	__
	198	Fast breathing	__
	199	Temperature with 37.5 or more (warm) <i>(Note: if high temperature only mentioned ask for clarification to what extent)</i>	__
200	Temperature less than 35.5 (cold) <i>(Note: if low temperature only mentioned ask for clarification to what extent)</i>	__	
201	No or very limited movement on stimulation	__	

		999	None mentioned from the list	
When the newborn presents sign of very severe disease, what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No			
		202	Continue to breastfeed or if unable to suck give breast milk that has been expressed	__
		203	Begin a dose of amoxicillin (pre-referral)	__
		204	Begin a dose of gentamycin antibiotics (pre-referral)	__
		205	Refer URGENTLY	__
		206	When referral is not possible treat with/prescribe amoxicillin for 7 days	__
		207	When referral is not possible treat with gentamycin daily for 7 days	__
		999	None mentioned from the list	
What are the main signs for local bacterial infection in newborns? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No			
		208	Umbilicus red	__
		209	Umbilicus draining pus	__
		210	Skin pustules	__
		999	None mentioned from the list	
When the newborn presents signs of local bacterial infection, what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No			
		211	Give amoxicillin syrup for 5 days	__
		212	Follow up care on 2 nd day from initial visit	__
		213	Advise mother when to return	__
		214	Breastfeed more frequently	__
		215	Advise mother to give breast milk more frequently	__
		216	Advise mother to keep baby warm	__
		999	None mentioned from the list	
217	Are there any possible side effects of using injectable gentamicin for neonatal illness?		1= Yes – 2 = No – Skip to 228	__
For each: 1 = Yes 2 = No				
218	What are the possible side effects of using injectable gentamicin for neonatal illness?			
What are the possible side effects of using injectable gentamicin for neonatal illness?		218	Kidney damage (nephropathy)	__
		219	Nerve damage (neuropathy especially hearing or visual damage)	__
		220	Hearing loss	__
		221	Lethargy	__
		222	Nausea/vomiting	__

		223	General anaphylactic reaction	__
		224	Fever	__
		225	Poor appetite	__
		226	Weight loss	__
		227	Skin rash	__
228	Is there any contraindication of using injectable gentamicin for the neonatal illness?	1= Yes 2 = No – 232		
What are those possible contraindications of using injectable gentamicin for the neonatal illness?		For each: 1 = Yes 2 = No		
		229	History of general body reaction or shock to injectable gentamicin (Anaphylactic reaction)	__
		230	History of kidney/urine problem	__
		231	History of skin reaction to gentamicin	__
232	Are there any possible side effects of using amoxicillin for the neonatal illness?	1= Yes 2 = No – 234		__
		For each: 1 = Yes 2 = No		
233	What are the possible side effects of using amoxicillin for the neonatal illness?	1 = General anaphylactic reaction (penicillin hypersensitivity) 9. Not mentioned		__
234	Is there any contraindication of using amoxicillin for the neonatal illness?	1= Yes 2 = No – GO TO 236		__
		For each: 1 = Yes 2 = No		
235	What are those possible contraindications of using amoxicillin for the neonatal illness	1 = History of General body reaction or shock to amoxicillin (penicillin hypersensitivity) 9. Not mentioned		__
236	Are there any possible additional side effects of using antibiotics (injectable gentamicin or amoxicillin) for non-severe neonatal illness?	1= Yes 2 = No – 238		__
		For each: 1 = Yes 2 = No		
237	What are those additional side effects of using antibiotics (injectable gentamicin or amoxicillin) for non-severe neonatal illness?	1 = Drug resistance 9. Not mentioned		__
What are the main signs for jaundice in newborns?		For each: 1 = Yes 2 = No		
Do not prompt Select all mentioned		238	Yellow skin	__
		239	Yellow eyes	__
		999	Not mentioned	
When the newborn presents signs of jaundice, what initial steps do you take?		For each: 1 = Yes 2 = No		
Do not prompt Select all mentioned		240	Breastfeed more frequently	__
		241	Advise mother to keep young infant warm	__
		242	Expose to sunshine 20 to 30 minutes every day	__

	243	Advise mother to return immediately if sign & symptoms of jaundice aggravates	__
	244	Follow-up in 2 days	__
What are the main symptoms/signs for severe jaundice in newborns? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	245	Jaundice in newborns of Age 14 days or more	__
	246	Jaundice in newborns of Age less than 24 hours	__
	247	Palms yellow	__
	248	Soles yellow	__
	999	Not mentioned from the list	
When the newborn presents symptoms /signs of severe jaundice what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	249	Breastfeed more frequently	__
	250	Refer URGENTLY to health center /hospital	__
	251	Keep the baby warm	__
What are the main signs for some dehydration caused by diarrhea in newborns? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	252	Restless and irritable	__
	253	Sunken eyes	__
	254	Skin pinch goes back slowly	__
	999	None mentioned from the list	
When the newborn presents signs of some dehydration caused by diarrhea what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	255	Give ORS fluids	__
	256	Give zinc treatment for 10 days	__
	257	Advise mother to breastfeed more frequently and longer	__
	258	Keep the infant warm	__
	259	Advise mother when to return	__
	260	Follow up in 2 days	__
	999	None mentioned from the list	
What are the main symptoms/signs for severe dehydration caused by diarrhea in newborns? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	261	Limited or No movement even when stimulated	__
	262	Sunken eyes	__
	263	Skin pinch goes back VERY slowly	__
	999	None mentioned from the list	
When the newborn presents signs of severe dehydration caused by diarrhea what initial steps do you take? Do not prompt Select all mentioned	264	Give first dose of amoxicillin syrup	__
	265	Give first dose of IM Gentamycin	__
	266	Refer URGENTLY to health center/hospital	__
	267	Ensure mother gives child ORS on the way to health center/hospital	__
	268	Advise mother to breastfeed more	__

		frequently and longer	
	269	Advise mother to keep young infant warm	__
What are the main signs and symptoms of pneumonia in a child aged 2-59 months? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	270	Cough	__
	271	Difficult or fast breathing	__
	272	Chest indrawing	__
	273	Stridor	__
	999		
When the child presents signs and symptoms of pneumonia what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	274	Give antibiotics	__
	275	Advise on when/how to administer	__
	276	Keep the child warm	__
	277	Advise mother when to return	__
	999	None mentioned from the list	
What are the main signs and symptoms of diarrhea in a child aged 2-59 months? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	278	Diarrhea	
	279	Blood in stool	
	280	Restless or irritable	
	281	Sunken eyes	__
	282	Skin pinch goes back slowly	__
	999	None mentioned from the list	
When the child presents signs and symptoms of diarrhea what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	283	Give ORS fluids	__
	284	Give zinc treatment for 10 days	__
	285	Advise on when/how to administer	
	286	Advise mother to breastfeed / feed more frequently and longer	__
	287	Keep the child warm	__
	288	Advise mother when to return	__
	289	Follow up in 2 days	
	999	None mentioned from the list	
What are the main signs and symptoms of malaria in a child aged 2-59 months? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	290	Fever	__
	291	Chillis	__
When the child presents signs and symptoms of malaria what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	292	Use RDT to test for malaria	__
	293	Treat malaria with Coartem / ACT	__
	294	Advise on when/how to administer Coartem	
	295	Advise mother when to return	__
	999	None mentioned from the list	

What are the main signs and symptoms of acute malnutrition in a child aged 2-59 months? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	296	Pitting edema of both feet	__
	297	Visible severe wasting	__
	298	MUAC measurement <11cm (if 6 months or older)	__
	999	None mentioned from the list	
When the child presents signs and symptoms of acute malnutrition what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	299	Appetite test if 6 months or older	__
	300	Give with RUTF (Plumpy nut or BP 100)	__
	301	Advise on when/how to take RUTF	__
	302	Advise mother when to return	__
	999	None mentioned from the list	
What are general danger signs in child aged 2-59 months? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	303	Unable to drink or breastfeed	__
	304	Convulsions	__
	305	Movement only when stimulated or no movement even when stimulated	__
	999	None mentioned from the list	
When the child presents with general danger signs and symptoms what initial steps do you take? Do not prompt Select all mentioned	For each: 1 = Yes 2 = No		
	306	Refer to health centre	__
	307	Give pre-referral dose and refer to health center	__
	308	Give ORS	__
	999	None mentioned from the list	

MODULE 4: TRAINING OF THE HEW

Interviewer: *I would now like to ask you some questions on your training.*

INTERVIEWER: PLEASE STATE THE START AND END MONTHS THAT CAPTURE THE PAST 12 MONTHS FROM THE DATE OF THE INTERVIEW AND INSERT IT INTO THE QUESTION BELOW.

Have you received training or training update from HC, Woreda health office or NGO in the last 12 months between _____ (start month) and _____ (end month) in?

[READ TOPIC]

FOR EACH QUESTION IF NO ASK THE FOLLOWING: *Did you receive a training or training update more than 12 months ago?*

REPEAT BOTH QUESTIONS FOR EACH TOPIC

		Yes, within past 12 months	Yes, over past 12 months ago	No in-service training or update	
309	CBNC	1	2	3	__

310	Providing antenatal services	1	2	3	<input type="checkbox"/>	
311	PMTCT	1	2	3	<input type="checkbox"/>	
312	Misoprostol use	1	2	3	<input type="checkbox"/>	
313	Providing post-natal care to mother	1	2	3	<input type="checkbox"/>	
314	Providing postnatal care to newborn	1	2	3	<input type="checkbox"/>	
315	Clean cord care	1	2	3	<input type="checkbox"/>	
316	Managing newborns with very severe disease	1	2	3	<input type="checkbox"/>	
317	Managing newborn with local bacterial infection	1	2	3	<input type="checkbox"/>	
318	Managing newborn neonates with jaundice/severe jaundice	1	2	3	<input type="checkbox"/>	
319	Managing neonates with diarrhea	1	2	3	<input type="checkbox"/>	
320	Managing neonates with feeding problem or who are underweight	1	2	3	<input type="checkbox"/>	
321	iCCM	1	2	3	<input type="checkbox"/>	
322	Using referral forms for VSD	1	2	3	<input type="checkbox"/>	
323	Using/filling family folder	1	2	3	<input type="checkbox"/>	
324	Integrated Refresher training on MNCH services	1	2	3	<input type="checkbox"/>	
325	EPI	1	2	3	<input type="checkbox"/>	
326	Can you tell us whether or not you were satisfied with the quality of training received for managing sick neonate? Do not give options to the respondent	1 = Yes was satisfied 2 = No was not satisfied – GO TO 328 3 = Neither satisfied nor dissatisfied – GO TO 329 4= No training in the last 12 months –GO TO 335			<input type="checkbox"/>	
327	IF YES , then what was the level of satisfaction Give both options to the respondent	1. Fully satisfied – GO TO 329 2. Somewhat satisfied – GO TO 329			<input type="checkbox"/>	
328	IF NO , then what was the level of dissatisfaction Give both options to the respondent	1. Fully dissatisfied 2. Somewhat dissatisfied			<input type="checkbox"/>	
How can the quality of the training be further improved Read list. Select all that apply.		For each: 1 = Yes 2 = No				
		329	More training			<input type="checkbox"/>
		330	More practice sessions			<input type="checkbox"/>
		331	More training aids			<input type="checkbox"/>
		332	More post training supervision			<input type="checkbox"/>
		333	Other – GO TO 334			<input type="checkbox"/>
		334	Specify _____			

MODULE 5: SUPPORTIVE SUPERVISION

INTERVIEWER:

I would now like to ask some questions about supportive supervision you have received. By supportive supervision I mean being visited by individuals from the region, zone, woreda and/or health center to discuss, review and give feedback on your TECHNICAL or PROFESSIONAL work.

INTERVIEWER: PLEASE STATE THE START AND END MONTHS THAT CAPTURE THE PAST 6 MONTHS FROM THE DATE OF THE INTERVIEW AND INSERT IT INTO THE QUESTION BELOW.

LAST 6 MONTHS: STATE THE START & END MONTHS

START MONTH _____

END MONTH _____

335	Have you received a supportive supervisory visit in the last 6 months?	1 = Yes 2 = No – GO TO 366	_ _
IF YES: Who from?		For each: 1 = Yes 2 = No	
Select all that apply		336	Woreda health office _ _
		337	PHCU/health centre _ _
		338	NGO _ _
339	IF YES: How many times did you receive this visit in the last 6 months?	Enter total number of times IF 0 skip to 342	_ _
340	How many of these visits were in last 3 months?	Enter total number of times IF 0 skip to 342	_ _
341	How many of these visits were in last 1 month?	Enter total number of times	_ _
342	Who provided the most recent supervisory visit? Select one	1 = Woreda Health Office 2 = Health Centre 3 = NGO 4 = Woreda Health Office and Health center 5 = Woreda Health Office and NGO 6 = Health Center and NGO 7 = All three together (Woreda, Health Center, NGO)	_ _
IF YES to 335: Did that visit include any of the following?		For each: 1 = Yes 2 = No	
Read all the following		343	Discussing early identification of pregnancy _ _
		344	Discussing provision focused ANC _ _
		345	Discussing promotion of institutional delivery _ _
		346	Discussing safe and clean delivery _ _
		347	Discussing immediate newborn care including cord care (chlorohexidine) _ _
		348	Discussing recognition of asphyxia, initial stimulation, and resuscitation of newborn babies _ _
		349	Discussing prevention and management of hypothermia _ _
		350	Discussing management of pre-term and/or low _ _

		birth weight neonates	
	351	Discussing management of very severe disease in newborns	__
	352	Discussing diagnosis or treatment of suspected pneumonia	__
	353	Discussing diagnosis or treatment of diarrhea	__
	354	Discussing diagnosis or treatment of malaria	__
	355	Discussing diagnosis or treatment of acute malnutrition	__
	356	Discussing HEW activities with WDA	__
	357	Observing record keeping	__
	358	Checking the register for consistency and completeness	__
	359	Checking supplies including training manuals, job aides, request forms	__
	360	Delivering supplies including /training manuals, job aides, request forms	__
	361	<u>Observing client Consultation with HEW</u>	__
	362	Conducted postnatal household visits together to observe HEWs skill on checking general danger signs	__
	363	Checking if they visited a sick neonate under treatment or that has been treated,	__
	364	Providing <u>WRITTEN</u> feedback to you on your work	__
	365	<u>WRITTEN</u> feedback: copy of the last visit available and checked by the interviewer	__
366	Did you receive a follow up visit within 6 weeks of CBNC training to assess and support your CBNC work ?	1 = Yes 2 = No – GO TO 371 3 = No CBNC training –GO TO 371	__
		For each: 1 = Yes 2 = No	
	If received CBNC post-training visit who conducted 6 weeks follow up visit?	367 Zone	__
	Select all that apply	368 Woreda	__
		369 Health Center	__
		370 NGO	__

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371	Can you tell us whether or not you were satisfied with the QUALITY of supportive supervision received in last six months? Do not read options	1 = Yes was satisfied 2 = No was not satisfied – GO TO 373 3 = Neither satisfied nor dissatisfied – GO TO 374 4 = no supportive supervision in the last 6 months GO TO 379 <input type="checkbox"/>		
372	IF YES, then what was the level of satisfaction? Read options	1. Fully satisfied -GO TO 379 2. Somewhat satisfied -GO TO 374 <input type="checkbox"/>		
373	IF NO, then what was the level of dissatisfaction? Read options	1. Fully dissatisfied 2. Somewhat dissatisfied <input type="checkbox"/>		
How can the quality of the supervision be further improved: Read list Select all that apply		For each: 1 = Yes 2 = No		
		374	More visits	<input type="checkbox"/>
		375	More crash trainings during supervision	<input type="checkbox"/>
		376	More technical supervision	<input type="checkbox"/>
		377	Other can the quality of the supervision be further improved	<input type="checkbox"/>
378	Specify _____	<input type="checkbox"/>		

For peer review only

Interviewer:
I would now like to ask you some questions about Performance Review and Clinical Mentoring Meeting (PRCMM) By this I mean when NGO, health center and health post staff meet together to review records, discuss performance, and ways to improve your TECHNICAL skills and achieve targets for CBNC/ICCM?

INTERVIEWER: PLEASE STATE THE START AND END MONTHS THAT CAPTURE THE PAST 6 MONTHS FROM THE DATE OF THE INTERVIEW AND INSERT IT INTO THE QUESTION BELOW.

LAST 6 MONTHS: STATE THE START & END MONTHS

START MONTH _____

END MONTH _____

379	In the past 6 months, did you participate in a PRCMM meeting, where the health center, health post and/or NGO staff met together to discuss performance, targets, and ways to improve HEWs' skills and achieve targets for CBNC and/or ICCM?	1 = Yes 2 = No 3 = No CBNC and/or ICCM training	_	
380	Since training of CBNC and/or ICCM, have you participated in any PRCM meeting conducted in your Health center catchment area?	1 = Yes 2 = No – GO TO MODULE 6	_	
381	Did the meeting extract data from the HEW's 0-2 month (newborn) registers?	1 = Yes 2 = No	_	
382	At that meeting, did your health center staff get a chance to offer mentoring on how to improve your newborn illness management skills?	1 = Yes 2 = No	_	
Did that meeting cover discussions on performance and targets on the following? Read all the following		For each: 1 = Yes 2 = No		
		383	Early identification of pregnancy	_
		384	Focused ANC	_
		385	Promotion of institutional delivery	_
		386	Safe and clean delivery	_
		387	Immediate newborn care including cord care (chlorohexidine)	_
		388	Recognition of asphyxia, initial stimulation and resuscitation of newborn babies	_
		389	Management of diarrhea among neonate	_
		390	Breast feeding among neonate	_
		391	Immunization among neonate	_
		392	Management of hypothermia	_
		393	Management of pre-term and/or low birth weight neonates	_
394	Management of neonatal/very severe disease	_		
395	Register review	_		
396	Community level observation	_		

MODULE 6: HEWS SERVICES PROVIDED IN THE LAST 3 MONTHS

Interviewer: *I would now like to ask you about the services you provided in the last 3 months.*

REFER TO HEW'S RECORD BOOKS (AT THE HEALTH POST REGISTERS) TO COMPLETE THE FOLLOWING; ONLY COUNT EVENTS ATTENDED BY THE SPECIFIC HEW BEING INTERVIEWED:

INTERVIEWER: PLEASE STATE THE START AND END MONTHS THAT CAPTURE THE PAST 3 MONTHS FROM THE DATE OF THE INTERVIEW AND INSERT IT INTO THE QUESTION BELOW.

LAST 3 MONTHS: STATE THE START & END MONTHS

START MONTH _____

END MONTH _____

397	In the last three months did you use community forums and meeting to deliver maternal newborn and child health education?	1 = Yes 2 = No – GO TO 406	__
<p>In the last three months did you meet any of the following to deliver maternal newborn and child health education?</p> <p>Read list. Choose all that apply.</p>			
For each: 1 = Yes 2 = No			
398	Religious leaders		__
399	Edir (Traditional community organization whose members assist each other during the mourning process)		__
400	Women's savings group		__
401	Command post		__
402	Traditional birth attendants		__
403	Other		__
404	Other Specify _____		
405	When was the last time you used community forum and meeting to deliver maternal newborn and child health education?	__ _ _ / __ _ _ / __ _ _ dd / mm / yy	
406	Did you conduct pregnant women conference in the community in the last 3 months?	1 = Yes 2 = No – GO TO 411	__
407	When was the last time you conducted a pregnant women's conference?	__ _ _ / __ _ _ / __ _ _ dd / mm / yy	
408	How regularly do you conduct the pregnant women's conference?	1 = Once a week 2 = Every two weeks 3 = Once a month 4 = Every other month 5 = Once every three months	__

409	In the last pregnant women conference, how many women in your catchment area were pregnant?	Enter number Enter 999 if don't know	_ _ _
410	Among them, how many of them attended the pregnant women's conference? (The number should be \leq numbers inserted in Q 408)	Enter number	_ _ _
411	Did you provide ANC to any women in the last three months?	1 = Yes 2 = No – GO TO 412	_
412	IF YES: how many?	Enter number	_ _
413	Did you refer any pregnant women from this health post to a health center or hospital in the last three months?	1 = Yes 2 = No – GO TO 414	_
414	IF YES: how many?	Enter number	_ _
415	Did you see any women to provide postpartum care in the last three months?	1 = Yes 2 = No – GO TO 416	_
416	IF YES: How many women did you see for postpartum care in the last three months?	Enter number	_ _
417	Did you refer any post-partum women from this health post to a health center or hospital in the past three months?	1 = Yes 2 = No – GO TO 418	_
418	IF YES: How many?	Enter number	_ _
419	Did you see any newborns to provide a postnatal check for in the last three months?	1 = Yes 2 = No – GO TO 420	_
420	IF YES: How many newborns did you provide a postnatal check for in the last three months?	Enter number	_ _
421	Did you refer any newborns from this health post to a health center or hospital in the past three months?	1 = Yes 2 = No – GO TO 422	_
422	IF YES: How many?	Enter number	_ _
423	Did you give care for prevention of hypothermia in the last three months?	1 = Yes 2 = No – GO TO 424	_
424	IF YES: How many?	Enter number	_ _
425	Did you give care for management of hypothermia in the last three months?	1 = Yes 2 = No – GO TO 426	_
426	IF YES: How many?	Enter number	_ _
427	Did you provide care for pre-term and/or low birth weight neonates in the last three months?	1 = Yes 2 = No – GO TO 428	_
428	IF YES: How many?	Enter number	_
429	Did you identify newborns with suspected very severe disease in the	1 = Yes 2 = No – GO TO 430	_

	last three months?		
430	IF YES: How many?	Enter number	__
431	Did you treat newborns with suspected very severe disease in the last three months?	1 = Yes 2 = No – GO TO 433 3 = Antibiotics not available – GO TO 433	__
432	IF YES: how many?	Enter number	__
433	IF YES: how many completed the treatment at the health post?	Enter number	__
434	Did you refer any newborns from this health post to a health center or hospital for very severe disease in the past three months?	1 = Yes 2 = No – GO TO 435	__
435	IF YES: How many?	Enter number	__
436	Did you see any newborns with diarrhea in the last three months?	1 = Yes 2 = No – GO TO 437	__
437	IF YES, how many?	Enter number	__ __
438	Did you see any newborns with jaundice in the last three months?	1 = Yes 2 = No – GO TO 439	__
439	IF YES, how many?	Enter number	__ __
440	Are the maternity record books completely up to date until the day before survey?(observe)	1 = Yes 2 = No GO TO 442	__
441	What is number of maternity cases maintained in the last three months in the maternity register?	Enter number	__ __
442	Did you see any children (2-59 months) for suspected pneumonia in the last three months?	1 = Yes 2 = No – GO TO 443	__
443	IF YES, how many?	Enter number	__ __
444	Did you see any children (2-59 months) for diarrhea in the last three months?	1 = Yes 2 = No – GO TO 445	__
445	IF YES, how many?	Enter number	__ __
446	Did you see any children (2-59 months) for malaria in the last three months?	1 = Yes 2 = No – GO TO 447	__
447	IF YES, how many?	Enter number	__ __
448	Did you see any children (2-59 months) for acute malnutrition in the last three months?	1 = Yes 2 = No – GO TO 449	__
449	IF YES, how many?	Enter number	__ __
450	Did you refer any children (2-59 months) from this health post to a health center or hospital for very severe disease in the past three months?	1 = Yes 2 = No – Exit interview	__
451	IF YES: How many?	Enter number	__ __

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4-5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	6-7
Bias	9	Describe any efforts to address potential sources of bias	6-7
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6-7
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	7
		(b) Describe any methods used to examine subgroups and interactions	7
		(c) Explain how missing data were addressed	7
		(d) If applicable, describe analytical methods taking account of sampling strategy	7
		(e) Describe any sensitivity analyses	-
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	8
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	8-9
		(b) Indicate number of participants with missing data for each variable of interest	8, 11, 13, 14
Outcome data	15*	Report numbers of outcome events or summary measures	11
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13-14
		(b) Report category boundaries when continuous variables were categorized	9
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	12
Discussion			
Key results	18	Summarise key results with reference to study objectives	15
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	15 - 17
Generalisability	21	Discuss the generalisability (external validity) of the study results	15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	18

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.