

---

**PACIFIC JOURNAL OF MEDICAL SCIENCES**  
**{Formerly: Medical Sciences Bulletin}**  
**ISSN: 2072 – 1625**



**Pac. J. Med. Sci. (PJMS); Volume 8, No. 2, May 2011**  
**Special Issue:**

**National Nutrition Survey Papua New Guinea, 2005; (NNS 2005)**

[www.pacjmedsci.com](http://www.pacjmedsci.com). Email: [pacjmedsci@gmail.com](mailto:pacjmedsci@gmail.com).

---

**Department of Health of Papua New Guinea**  
**UNICEF Papua New Guinea**  
**University of Papua New Guinea**  
**Centers for Disease Control and Prevention**

---

**APPENDICES No. 1 – 14** Pages 98 – 154

**APPENDIX 1: SAMPLE SIZE CALCULATIONS AND ASSUMPTIONS**

Target group	Indicator	Estimated prevalence	Stratum-specific half CI	Sample size per stratum if SRS	DEFF	Sample size per stratum if cluster sampling	Sample size needed (all 4 strata)	Individual non-response	No. per HH	Non response for HH	Total number HH incl. non-response per strata	Total number of HH for 4 strata	Specimens if sample size = 1600 HH
HH	Salt HH	0.5	0.12	67	4.5	300	1200	0%	1	10%	333	1,334	1440
Children 6-59 months	Anemia	0.5	0.10	96	2	192	768	20%	0.7	10%	381	1,524	806
	Iron deficiency	0.5	0.10	96	2	192	768	20%	0.7	10%	381	1,524	806
	Malaria	0.5	0.12	67	3	200	800	20%	0.7	10%	397	1,588	806
	Vitamin A deficiency	0.5	0.10	96	2	192	768	20%	0.7	10%	381	1,524	806
	Wasting	0.1	0.05	138	1.5	207	830	10%	0.7	10%	366	1,463	907
	Stunting	0.5	0.10	96	1.5	144	576	10%	0.7	10%	254	1,016	907
Children 24-59 months	Hookworm	0.5	0.15	43	3	128	512	30%	0.5	10%	407	1,626	504
Women 15-49 years	Iron deficiency	0.5	0.10	96	2	192	768	20%	1.37	10%	195	779	789
	Anemia	0.5	0.10	96	2	192	768	20%	1.37	10%	195	779	789
	Malaria	0.5	0.12	67	3	200	800	20%	1.37	10%	203	811	789
	BMI <17	0.1	0.05	138	1.5	207	828	10%	1.37	10%	187	748	888
	BMI >25	0.5	0.10	96	3	288	1152	10%	1.37	10%	260	1,039	888
	Urinary Iodine	0.5	0.10	96	2	192	768	20%	1.37	10%	195	779	789
Men > 18 years	Anemia	0.1	0.05	138	1.5	207	828	25%	1.5	10%	205	820	810
	BMI < 17	0.1	0.05	138	1.5	207	828	10%	1.5	10%	171	683	972
	BMI > 25	0.1	0.05	138	1.5	207	828	10%	1.5	10%	171	683	972

## APPENDIX 2: CONFIDENCE INTERVALS AND DESIGN EFFECTS FOR PRIMARY INDICATORS

Indicator*	Target Group	Sample Size	Prevalence (%) or mean and SD	95% Confidence Interval (%)	DEFF**
<b>Stunting</b> - Height-for-age Z-score (HAZ <-2 SD)	Children (6-59 mos)	892	43.9	38.8-49.2	2.5
<b>Underweight</b> - Weight-for-age Z-score (WAZ <-2 SD)	Children (6-59 mos)	924	18.1	14.9-21.9	1.9
<b>Wasting</b> - Weight-for-height Z-score (WHZ <-2 SD)	Children (6-59 mos)	897	4.5	3.1–6.5	1.5
<b>Overweight</b> – Body mass index for age(BAZ >2 SD)	Children (6-59 mos)	892	4.8	88.5- 93.5	1.8
<b>BMI (mean)</b>	Non-pregnant women (15-49 yrs)	772	22.9	22.4–23.32	2.6
<b>BMI (mean)</b>	Men 18 ≥ yrs	787	23.1	22.76-23.40	2.1
<b>Urinary Iodine</b> (%<100 µg/L)	Non-pregnant women (15-49 yrs)	690	28.9	23.9-34.7	2.3
<b>Anemia</b> (Hb< 11.0 g/dL)	Children (6-59 mos)	910	48.1	42.7-53.5	2.7
<b>Anemia</b> (Hb< 12.0 g/dL)	Non-pregnant women (15-49 yrs)	760	35.7	31.0-40.7	2.0
<b>Anemia</b> (Hb< 13.0 g/dL)	Men 18 ≥ yrs	778	26.3	21.5-31.9	2.7
<b>TfR</b> (> 8.0 µg/L)	Children (6-59 mos)	872	27.8	23.4-32.7	2.4
<b>TfR</b> (> 8.0 µg/L)	Non-pregnant women (15-49 yrs)	753	19.5	15.9-23.5	1.8
<b>IDA</b> (elevated TFR, low Hb)	Children (6-59 mos)	868	22.8	18.8-27.4	2.3
<b>IDA</b> (elevated TFR, low Hb)	Non-pregnant women (15-49 yrs)	742	15.0	11.7-18.8	1.8
<b>RBP</b> (<0.70µmol/l)	Children (6-59 mos)	875	25.6	21.7-30.1	2.1
<b>Helminths</b>	Preschool Children (24-59 mos)	363	4.9	3.5-6.8	1.4
<b>Ever received a Vitamin A</b>	Children (6-59)	933	52.7	46.3-59.0	3.8

<b>Capsule</b>	mos)				
<b>Breastfeed within 24 hours of birth</b>	Children (6-59 mos)	931	83.6	79.7-86.8	2.1

\*Cut-offs for micronutrient deficiencies as described in Chapter 2

\*\* The design effect or DEFF is the ratio of the actual variance to the variance computed under the assumption of simple random sampling, thus calculating the loss of effectiveness by the use of cluster sampling, instead of simple random sampling; the larger the DEFF, the greater the variance

### APPENDIX 3: LIST OF PRIMARY SAMPLING UNITS SELECTED FOR INCLUSION IN THE SURVEY

Clusters select for PNG national Nutrition survey					
Cluster no.	Province	District	Local Level Government	Ward	Census unit
<b>Southern Region</b>					
1	WP	M/Fly	Balimo U	BAL.UR	Bal.Urb 4
2	WP	N/Fly	Nomad	Mougulu	Mog.Miss.
3	WP	N/Fly	Nigerum	Miamrae	Senamrae
4	WP	S/FLY	MoreHead	Wemnevere	Iokwa
5	GP	Kerema	E/Kerema	Sarota	Sarota
6	GP	Kikori	Baimuru	Mariki	Upaia
7	CP	Abau	Amazon.B	Danava/G	Mailiu Is.
8*	CP	Goilala	Tapini	Cent.Ivan	Sene
9	CP	K/Hiri	Hiri	Akuku	Kuriva/On.
10	CP	K/Hiri	Mekeo/K	Rarai	Rarai
11	CP	Rigo	Rigo/C	Alukuni	Alukuni
12	NCD	NCD	POM	Waigani	Mor.1Gu.St
13	NCD	NCD	POM	Tok.Hla	Beech St
14	NCD	NCD	POM	Gord/Sar.	Gord.Rge
15	NCD	NCD	POM	Bor./Kor.	Rag.S'mmt
16	NCD	NCD	POM	Tow./Hbda	Autu.St.
17	NCD	NCD	POM	Bomana	Nine M/S
18	MBP	Alotau	Martna.	E/Cape	E/Cape
19	MBP	Alotau	Alotau.U	Alo./Town	Sewa
20	MBP	Esa'ala	Yale.LLG	Rambuso	E.Point/Ru.
21	MBP	K-Good.	Kiriwina	Lalela	Lalela
22	MBP	Sam/Mur.	W/Fergus.	Fatavi	Fatavi
23	ORO	Ijivitari	Oro Bay	Baberanda	Arugasusu
24	ORO	Ijivitari	Pop/U	Gewoto	Kikonda
25	ORO	Sohe	Higa.Rur.	Duve	Nomota
<b>Highlands Region</b>					
26	SHP	Imbonggu	Imbonggu	Parare1	Opokai
27	SHP	Kom/Mag	Hulia	Dauli 3	Dem Sch.
28	SHP	Kor/Kop.	N/Koroba	Hunjenoma1	Wake
29	SHP	Nipa/Kut.	Mendi Urb.	Mendi Twn.	Cath.Mis.
30	SHP	Nipa/Kut.	Nipa/Rural	Pulim3	Mala
31	Enga	Kandep	Kandep	Lakalap 2	Kitan
32	Enga	Laig/Poge.	Lagaip	Papayuku	Papayuku
33	Enga	Wabag	Wabag Ru.	Kiwi	Lanemanda
34	Enga	Wapnda	Tsak	Imangapos	Arumanda

35	WHP	Ang/SW	S/Wahgi	Tombil 1	Tombil 1
36	WHP	Dei	Dei Rural	Kambuki	Walga
37	WHP	Hagen	Mt.Hagen	Mt,HGN	Coun.S/me
38	WHP	Mul/Bay.	Mul	Minimp	Minimp
39	WHP	N/Wahgi	N/Wahgi	Milep 1	Kapolong
40	WHP	Tamb/Nebi	Nebilyer	Dumakona	Dumakona
41	Chimbu	Gumine	Mt.Digine	Karilmaril	Siminkoli
42	Chimbu	Kerowagi	Kerowagi	Pagau 3	Orua 2
43	Chimbu	Kundiawa	Waiye	Wandi	Guiye
44	EHP	Daulo	Asaro/Wat.	Kanosa	Foindiwei
45	EHP	Goroka	Goroka/U	Goroka/U	Homate St
46	EHP	Heganofi	Heganofi	Krevave	Tingunta
47	EHP	Kainantu	Kainantu	Binakenu	Ikana
48	EHP	Lufa	Lufa	Nupuru	Nupuru 1
49	EHP	Okapa	Okapa	Yagana	Aniaru
50	EHP	Ung.Bena	Ung.Ben	Orupa-Foe	Kurawa
<b>Mamose Region</b>					
51	Morobe	Bulolo	Mumeng	Zenag	Zenag
52	Morobe	Bulolo	Wau	Wandumi	Wandumi
53	Morobe	Huon Gulf	Morobe	Eware	Eware
54	Morobe	Kabum	Deyamos	Birimon	Imom
55	Morobe	Lae	Ahi	Lae City	K/Kum.Se
56	Morobe	Lae	Lae Urban	Lae City	Tent City
57	Morobe	Markam	Umi/Atzera	Atzunas	Tumoa
58*	Morobe	Menyama	Aseki	Mauwini	Korenga
59	Morobe	Nawae	Labuta	Musom/Tate	Tale
60	Morobe	Tewai/Sia.	Siasi	Lablab1	Bezek
61	Madang	Bogia	Yawar	Amber Arep	Arep
62	Madang	Madang	Mad./U	Mad./U	DAL Cres.
63	Madang	M/Ramu	Joe/staal	Ward 7	Arimbugor
64	Madang	R/Coast	R/Coast	Ward 4	Pisangana
65	Madang	Sumkar	Karkar	Ward 27	Kevasop
66	Madang	U/Bundi	Usino	Boko	Boko
67	ESP	Amb./Drek.	Gawanga	Bongos	Bongos
68	ESP	Angoram	Keram	Yanboe	Yanboe
69	ESP	Maprik	Bumb./Mah.	Ilahita 3	Ilahita 7
70	ESP	Wewak	Turubu	Kinyare	Kinyare
71	ESP	W/Gawi	Burui/Kunai	Marap 2	Marap 2
72	ESP	Y/Saussia	E/Yangoru	Simb/Seng	Simb/Seng
73	Sandaun	A/Lumi	E/Aitape	Aitape/U	AirStrip/Set.
74	Sandaun	Nuku	Palmai	Wara	Wara/Sumil
75	Sandaun	V/Green R	Amanap	Iveig	Arump
<b>Islands Region</b>					
76	Manus	Manus	Lele/Bup.	Lapahan	Lapahan
77	Manus	Manus	Rapatona	Hahai	Hahai

78	NIP	Kavieng	Tikana	Panapai	Kaplaman
79	NIP	Kavieng	Kvg.U	Kvg.U	Rawal
80	NIP	Nama.	Cen.N.I	Konos	Pinikidu
81	NIP	Nama.	Nimamar	Londo.	Londo.1,2
82	ENBP	Gazelle	C/Gazelle	Tavilo/Set.	Tavilo Pltn.
83	ENBP	Gazelle	Lasul Bain.	Watmetki	Watmetki
84	ENBP	Gazelle	Vun./Toma	Taulil 1	Taulil 1
85	ENBP	Kokopo	D/York	Maren	Maren
86	ENBP	Kokopo	Raluana	Nguvalian	Nguvalian
87*	ENBP	Pomio	E/Pomio	Sampun	Sampun
88	ENBP	Rabaul	Balanta.	Karavia	Karavia
89	WNBP	Kand/Glou	Gasmata	Akolet	Kalagen
90	WNBP	Kand/Glou	Kand/Inland	Avet	Langarum
91	WNBP	Talasea	Bialla	Wilelo	Wilelo Pltn.
92	WNBP	Talasea	Bali/Witu	Lovanua	Matapupur
93	WNBP	Talasea	Kimbe/U	Kimbe/U	Sct.21/ABC
94	WNBP	Talasea	Mosa	Sarakolog	Togulo Ptn.
95	NSP	N/Boug.	Tinputz	Taonita	Periovi and Hoakop
96	NSP	N/Boug.	Buka	Peit	Kohino
97	NSP	N/Boug.	Nissan	Sigon	Nis.Hi. Sc
98	NSP	C/Boug.	Arawa	Eivo 2	Boira
99	NSP	S/Boug.	Buin	Konnou	Lukauko
100	NSP	S/Boug.	Bana	Lamane/E	Peile

\*The clusters that couldn't be surveyed due to weather conditions and access problems are typed in grey

## APPENDIX 4A: PAPUA NEW GUINEA NUTRITION SURVEY – CONSENT FOR PARTICIPATION (ENGLISH)

### Household consent

- The Department of Health is doing a survey to find out if the people of Papua New Guinea are getting enough vitamin A and iron in the food they eat.
- By you permit the household to participate in the survey, you are helping us to improve the health of the people of Papua New Guinea.
- We are surveying the problem of anemia (low blood) and other nutrition problems among children ages 6-59 months, women (15-49 years) and men (18 years and above) in Papua New Guinea.
- We would like to ask you some questions about the children 6-59 months living in this household. We may also have some questions for the women and men living here.
- We would like to weigh and measure people in the household. We would also like to get a finger prick blood specimen to check for anemia. Testing the blood will also help us to determine if people in Papua New Guinea are receiving sufficient amounts of Vitamin A which is important to maintain good health. We would also like to collect a sample of stool from the children and we may need to collect a urine sample from the women in the household.
- The results of the survey will be returned to the Papua New Guinea health authorities. They will use these results to help create and improve nutrition and health programs in Papua New Guinea.
- Do you agree that your household can participate in this survey?

**RECORD WHETHER OR NOT CONSENT IS PROVIDED ON THE HOUSEHOLD DATA COLLECTION FORM**

### Consent for primary caregivers of children 6-59 months are selected

(Read consent information to the primary caregiver of each child in the household)

- We would like to weight and measure your child
- We would like to take a finger prick blood specimen to check for anemia. Testing the blood will also help us to determine if children in Papua New Guinea are receiving sufficient amounts of Vitamin A which is important to maintaining good health. We would also like to collect a sample of your child's stool so that we can test the stool for worms.
- Do you agree that we can take measurements and a small blood sample and stool sample from your child?

**RECORD WHETHER OR NOT CONSENT IS PROVIDED ON THE CHILD DATA COLLECTION FORM**

### Consent for women 15-49 years

- We would like to weight and measure you
- We would also like to get a finger prick blood specimen to check for anemia. Testing the blood will also help us to determine if women in Papua New Guinea are receiving sufficient amounts of Vitamin A which is important to maintaining good health. We would also like to collect a sample of your urine so that we can check you iodine status.
- Do you agree that we can take measurements and a small blood sample and urine sample from you?

**RECORD WHETHER OR NOT CONSENT IS PROVIDED ON THE WOMEN'S DATA COLLECTION FORM**



**Consent for men 18 years and above**

- We would like to weight and measure you
- We would like to get a finger prick blood specimen to check for anemia.
- Do you agree that we can take measurements and a small blood sample and urine sample from you?  
**RECORD WHETHER OR NOT CONSENT IS PROVIDED ON THE MEN'S DATA COLLECTION FORM**

## APPENDIX 4B: PAPUA NEW GUINEA NUTRITION SURVEY- CONSENT FOR PARTICIPATION (PIGIN)

### Sevei o wok painimaut long Kaikai- Tok orait long go insait long sevei Fom long kisim tok orait long ol lain long haus bilong go insait long sevei

- Helt Dipatmen i wok long karimaut wanpela sevei long painimaut sapos ol pipel bilong Papua Niugini i wok long kisim inap Vaitamin A na Ain long kaikai bilong ol. (Vaitamin na Ain em ol gutpela kaikai long helpim lukautim bodi long paigensim ol binatang i save mekim man i sik.)
- Taim yu givim tok orait long ol hauslain bilong yu i kam insait long dispela sevei, yu helpim mipela long impruvim o kamapim gut helt bilong ol pipel long Papua Niugini.
- Mipela i mekim wok painimaut long hevi we animia (o sot long blut) na ol arapela i kamapim bikos pipel i no kisim ol kaikai we i ken helpim lukautim na kamapim gut helt bilong ol. Mipela i karimaut dispela sevei long ol pikinini krismas bilong ol i stap namel long 6 na 59 mun, ol meri (krismas bilong ol i stap namel long 15 na 49 yias) na ol man ( i gat 18 krismas na I go antap) long Papua Niugini.
- Mipela i laik mekim sampela askim long yu long ol pikinini i stap long dispela haus husat i gat krismas namel long 6 na 59 mun.  
Bai mipela i gat sampela kwesten long ol bikpela man na meri i save stap hia.
- Mipela i laik skelim na kisim mesamen (o mak long tolpela o sotpela) bilong ol lain long haus. Mipela i laik kisim blut long finga bilong sekim long anemia o sot long blut. Kisim tes long blut bai helpim mipela long save sapos ol pipel long Papua Niugini i wok long kisim inap Vaitamin A we i save helpim long kamapim gutpela helt bilong pipel. Mipela i laik kisim sempol o liklik hap pekpek bilong ol pikinini na wankain long pispis bilong ol meri long dispela haus.
- Bai mipela i givim bek risal long ripot bilong dispela sevei i kam bek long ol helt atoriti bilong Papua Niugini. Ol bai yusim ol dispela risal long helpim kamapim ol gutpela nutrisen (kaikai) na helt progrem bilong Papua Niugini.
- Yu wanbel long ol hauslain bilong yu i stap insait long dispela sevei?

### REKOTIM LONG FOM BILONG KISIM RIPOT SAPOS OL HAUSLAIN I GIVIM TOK ORAIT BILONG OL LONG STAP LONG DISPELA SEVEI.

### Ol bai glasim na skelim na kisim ol Konsent o Tok orait long ol praimer keagiva o lain husat i lukautim ol pikinini namel long 6 na 59 mun.

(Ritim ol Konsent Infomesen o tok orait long go insait long sevei i go long ol lain I lukautim ol pikinini long haus)

- Mipela I laik skelim na mesarim sais bilong pikinini
- Mipela i laik sutim pinga na kisim blut sempol long sekap long animia. Kisim tes long blut bai helpim mipela long save sapos ol pikinini insait long PNG i wok long kisim inap Vaitamin A we i helpim long gat gutpela helt. Mipela i laik kisim sempol o liklik hap pekpek na wokim tes sapos i gat ol liklik snek long en.
- Yu wanbel long mipela i ken skelim na mesarim sais na kisim sempol bilong pekpek na blut long dispela pikinini bilong yu?

**REKOTIM O SEKIM SAPOS I GAT TOK ORAIT PINIS LONG FOM BILONG KISIM OL RIPOT BILONG PIKININI**

**Tok orait long ol meri i gat krismas namel long 15 na 49 yias.**

- Mipela I laik skelim na mesarim sais bilong yu
- Mipela i laik isi isi sutim pinga na kisim blut sempol long sekap long animia. Testim blut bai helpim mipela tu long save sapos ol meri long Papua Niugini i wok long kisim inap Vaitamin A long wanem em i helpim long gat gutpela helt. Mipela i laik kisim sempol bilong pispis long sekim mak bilong aidin long bodi.
- Yu wanbel long mipela i ken skelim na mesarim sais na kisim liklik sempol long blut na pispis long yu?

**REKOTIM LONG DATA KOLEKSEN FOM O FOM YU KISIM RIPOT BILONG OL MERI LONG EN SAPOS OL I GIVIM TOK ORAIT BILONG OL.**

**Konsent o tok orait bilong ol man i gat 18 yias na moa**

- Mipela I laik skelim na mesarim sais bilong yu
- Mipela i laik isi isi sutim pinga na kisim blut sempol long sekim long animia.
- Yu wanbel long mipela i ken skelim na mesarim sais na kisim liklik blut na pispis sempol long yu?

**REKOTIM LONG DATA KOLEKSEN FOM BILONG OL MERI O FOM LONG KISIM RIPOT SAPOS OL I GIVIM TOK ORAIT LONG KISIM ASKIM LONG OL.**

**Pinis.....**

## APPENDIX 5: DATA COLLECTION FORMS

Cluster Number

Household Number

# HOUSEHOLD QUESTIONNAIRE

TEAM CODE

“We would like to talk to you about your household, that is all the people who usually sleep and eat here.”

"Mipela i laik toktok long yu long haus bilong yu. Dispela em olgeta pipel husat i save slip na kaikai hia."

Read the survey consent form and ask for verbal consent. If consent is not obtained then move on to the next household. If there are no adult household members present in the household schedule another visit when an adult household member will be present.

VERBAL CONSENT OBTAINED FROM ADULT HOUSEHOLD MEMBER Yes  No

1. Day/Month/Year of interview:		<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
		Day	Month	Year		
2. Census Unit						
3. Ward						
4. LLG						
5. District						
6. Province						
7. Region						
8. HOW MANY PEOPLE NORMALLY LIVE IN THIS HOUSEHOLD? <b>HAMAS PIPEL I SAVE STAP LONG DISPELA HAUS?</b> <i>(People who usually eat and sleep in the household)</i>		<input type="text"/> <input type="text"/>				
9. ARE THERE ANY WOMEN BETWEEN THE AGES OF 15 AND 49 YEARS WHO USUALLY LIVE IN THIS HOUSEHOLD?  <b>I GAT SAMPELA MERI WE KRISMAS BILONG OL I STAP NAMEL LONG 15 NA 49 YIAS I SAVE STAP LONG DISPELA HAUS?</b>		Yes.....		1		
		No .....		2		
		Refused .....		7		
		Don't know .....		9		
				2⇒Q.12		
				9 ⇒Q.12		

<p>10. HOW MANY WOMEN BETWEEN 15 AND 49 YEARS LIVE IN THIS HOUSEHOLD?  <b>HAMAS MERI I GAT KRISMAS NAMEL LONG 15 NA 49 YIAS I SAVE STAP LONG DISPELA HAUS?</b></p>	<div style="text-align: right;"> <input style="width: 50px; height: 30px;" type="text"/> </div>												
<p>11. COULD YOU PLEASE TELL ME THE NAME AND AGE OF EACH WOMAN AGED 15 TO 49 YEARS WHO LIVES IN THIS HOUSEHOLD EVEN IF THEY ARE NOT HERE RIGHT NOW?   <b>PLIS INAP YU TOKIM MI NEM NA KRISMAS BILONG OL WAN WAN MERI I SAVE STAP LONG DISPELA HAUS NA I GAT KRISMAS NAMEL LONG 15 NA 49 YIAS, MASKI OL I NO STAP LONG HAUS NAU?</b></p>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 70%;">Name</th> <th style="text-align: left; width: 30%;">Age (Years)</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>2. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>3. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>4. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>5. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> </tbody> </table>	Name	Age (Years)	1. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	2. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	3. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	4. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	5. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
Name	Age (Years)												
1. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
2. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
3. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
4. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
5. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
<p>12. ARE THERE ANY MEN AGED 18 YEARS AND OLDER WHO USUALLY LIVE IN THIS HOUSEHOLD?   <b>I GAT SAMPELA MAN KRISMAS BILONG OL EM 18 NA MOA I SAVE STAP LONG DISPELA HAUS?</b></p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Yes.....</td> <td style="width: 10%; text-align: right;">1</td> <td style="width: 20%;"></td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> <td>2⇒Q.15</td> </tr> <tr> <td>Refused .....</td> <td style="text-align: right;">7</td> <td></td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> <td>9⇒Q.15</td> </tr> </table>	Yes.....	1		No .....	2	2⇒Q.15	Refused .....	7		Don't know .....	9	9⇒Q.15
Yes.....	1												
No .....	2	2⇒Q.15											
Refused .....	7												
Don't know .....	9	9⇒Q.15											
<p>13. HOW MANY MEN 18 AND OLDER LIVE IN THIS HOUSEHOLD?  <b>HAMAS MAN WANTAIM KRISMAS NAMEL LONG 18 NA MOA I STAP LONG DISPELA HAUS?</b></p>	<div style="text-align: right;"> <input style="width: 50px; height: 30px;" type="text"/> </div>												
<p>14. COULD YOU PLEASE TELL ME THE NAME AND AGE OF EACH MAN AGED 18 YEARS AND OLDER WHO LIVES IN THIS HOUSEHOLD EVEN IF THEY ARE NOT HERE RIGHT NOW?   <b>PLIS INAP YU TOKIM MI NEM NA KRISMAS BILONG WAN WAN MAN I GAT 18 KRISMAS NA MOA, MASKI OL I INO STAP LONG HAUS NAU.</b></p>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 70%;">Name</th> <th style="text-align: left; width: 30%;">Age (Years)</th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>2. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>3. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>4. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> <tr> <td>5. _____</td> <td><input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/></td> </tr> </tbody> </table>	Name	Age (Years)	1. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	2. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	3. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	4. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	5. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
Name	Age (Years)												
1. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
2. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
3. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
4. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
5. _____	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>												
<p>15. ARE THERE ANY CHILDREN AGED 6 MONTHS TO 5 YEARS WHO USUALLY LIVE IN THIS HOUSEHOLD?   <b>I GAT SAMPELA PIKININI I GAT KRISMAS NAMEL LONG 6-PELA MUN NA 5-PELA KRISMAS I STAP LONG DISPELA HAUS?</b></p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Yes.....</td> <td style="width: 10%; text-align: right;">1</td> <td style="width: 20%;"></td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> <td>2⇒Q.18</td> </tr> <tr> <td>Refused .....</td> <td style="text-align: right;">7</td> <td></td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> <td>9⇒Q.18</td> </tr> </table>	Yes.....	1		No .....	2	2⇒Q.18	Refused .....	7		Don't know .....	9	9⇒Q.18
Yes.....	1												
No .....	2	2⇒Q.18											
Refused .....	7												
Don't know .....	9	9⇒Q.18											
<p>16. HOW MANY CHILDREN BETWEEN 6 MONTHS TO 5 YEARS LIVE IN THIS HOUSEHOLD?   <b>HAMAS PIKININI I GAT KRISMAS NAMEL LONG 5-</b></p>	<div style="text-align: right;"> <input style="width: 50px; height: 30px;" type="text"/> </div>												

<p><b>PELA MUN NA 5-PELA YIA I STAP LONG DISPELA HAUS?</b></p>	
<p>17. COULD YOU PLEASE TELL ME THE NAME AND AGE OF EACH CHILD AGED 6 MONTHS TO 5 YEARS WHO LIVES HERE EVEN IF THEY ARE NOT HERE NOW?  <b>PLIS NINAP YU TOKIM MI LONG NEM NA KRISMAS BILONG WAN WAN PIKININI I GAT KRISMAS NAMEL LONG 5-PELA MUN NA 5-PELA KRISMAS I SAVE STAP LONG DISPELA HAUS. M ASKI OL I NO STAP LONG HAUS NAU, BAI YU GIVIM NEM NA KRISMAS BILONG OL.</b></p> <p><i>(Check the clinic book or other document for confirmation of names and ages)</i></p>	<p>Name <span style="float: right;">Age in: Years Months</span></p> <p>1. _____ <input type="text"/> <input type="text"/> <input type="text"/></p> <p>2. _____ <input type="text"/> <input type="text"/> <input type="text"/></p> <p>3. _____ <input type="text"/> <input type="text"/> <input type="text"/></p> <p>4. _____ <input type="text"/> <input type="text"/> <input type="text"/></p> <p>5. _____ <input type="text"/> <input type="text"/> <input type="text"/></p>
<p>18. <i>What type of house is this?</i></p> <p><i>(Observation: Use your own judgment. Do not ask the respondent the answer to this question)</i></p>	<p>High cost house ..... 1                  Low cost house ..... 2                  Flat ..... 3                  Duplex ..... 4                  Domestic quarters ..... 5                  Dormitory ..... 6                  Makeshift ..... 10                  Traditional ..... 11                  Self-help high cost ..... 12                  Self-help low cost ..... 13                  Other (specify) ..... 8                  Don't know ..... 9</p>
<p>19. WHAT IS THE MAIN SOURCE OF DRINKING WATER FOR MEMBERS OF YOUR HOUSEHOLD?  <b>YUPELA LONG HAUS I SAVE KISIM WARA BILONG DRING WE?</b></p> <p><i>(If necessary confirm this visually)</i></p>	<p>Piped into yard or plot ..... 1                  Piped into neighborhood (communal) ..... 2                  Public well ..... 3                  Well in yard ..... 4                  Spring ..... 5                  River/stream ..... 6                  Pond/lake/dam ..... 10                  Communal tank ..... 11                  Rainwater ..... 12                  Tanker-truck, vendor ..... 13                  Refused ..... 7                  Other (specify) ..... 8                  Don't know ..... 9</p>
<p>20. WHAT KIND OF TOILET FACILITY DOES YOUR HOUSEHOLD USE?  <b>WANEM KAIN TOILET YUPELA I YUSIM?</b></p>	<p>Flush to sewage system or septic tank ..... 1                  Pour flush latrine (water seal type) ..... 2                  Improved pit latrine (e.g., VIP) ..... 3                  Traditional pit latrine ..... 4                  Open pit ..... 5                  Bucket ..... 6                  No facilities or bush/field/beach ..... 10                  Overhang latrine ..... 11                  Refused ..... 7</p>

	Other (specify) ..... 8
	Don't know ..... 9
21. HOW OFTEN DO YOU LISTEN TO THE RADIO?  <b>HAMAS TAIM YU SAVE HARIM REDIO?</b>	I never listen to the radio ..... 1 Every day ..... 2 Every week ..... 3 Occasionally ..... 4 Other (specify) ..... 8

*This next section should be completed by the female head of the household or another person in the household familiar with the salt, flour, oil, sugar and rice used in the household.*

"WE ARE INTERESTED IN THE TYPES OF FOOD THAT PEOPLE EAT IN PAPUA NEW GUINEA. I WILL BE ASKING TO SEE THE SALT, FLOUR, OIL, SUGAR AND RICE, AND THEIR PACKAGES, THAT YOU HAVE IN THE HOUSE TODAY. YOU MIGHT WANT TO COLLECT THESE ITEMS BEFORE WE BEGIN THIS PART OF THE INTERVIEW."

**"MIPELA I GAT INTRES LONG OL KAIN KAIKAI WE OL PIPEL BILONG PNG I SAVE KAIKAIM. BAI MI ASKIM LONG LUKIM SOL, FLAUA, OIL, SUGA, RAIS, NA OL PEKET BILONG OL BIPO YUMI STATIM DISPELA HAP BILONG ASKIM."**

<b>SALT MODULE</b>	
<i>If two or more types of salt are available in the household record information on the two main types of salt used in the household.</i>	
22. DO YOU HAVE ANY SALT CURRENTLY IN YOUR HOUSEHOLD NOW? <b>YU GAT SAMPELA SOL LONG HAUS BILONG YU NAU?</b>	Yes..... 1 No ..... 2 Don't know ..... 9

2 ⇨ Q. 40

23. <i>If Yes ASK "MAY I SEE A SAMPLE OF EACH TYPE OF SALT YOU HAVE IN THE HOUSEHOLD"</i> <b>"INAP MI LUKIM SEMPOL LONG OL KAIN SOL YU GAT LONG HAUS BILONG YU"</b> <i>(If there is more than one type of salt record the information for just one type of salt here. Record the information for another type of salt in the Type 2 salt module beginning with question 31.)</i>  <i>(Observe the type of salt used and circle the appropriate answer)</i>	Fine Table salt ..... 1 Cooking salt ..... 2 Traditional salt ..... 3 Sea water used for cooking ..... 4 Refused ..... 7 Other (specify) ..... 8 Don't know ..... 9
24. <i>If you DO NOT see the original salt bag or package ask</i>  <i>"COULD I PLEASE SEE THE ORIGINAL SALT BAG OR PACKAGE?"</i> <b>"PLIS INAP MI LUKIM SOL BEK O PEKET SOL I BIN STAP LONG EN?"</b>	Yes, original salt bag or package observed ..... 1 No, original salt bag or package not observed .. 2
25. <i>Write the name of the brand of salt written on the package</i>	Brand name _____
26. <i>Observe the country where the salt is produced</i>	Papua New Guinea ..... 1 Australia ..... 2 India ..... 3 China ..... 4 Thailand ..... 5 Other (specify) ..... 8 Don't know ..... 9

4 ⇨ Q.31

2 ⇨ Q. 29



27. <u>Observe</u> the country where the salt is packaged	Papua New Guinea ..... 1 Australia..... 2 India ..... 3 China..... 4 Thailand..... 5 Other (specify) ..... 8 Don't know ..... 9
28. <u>Observe</u> – Is the salt iodized?	Yes..... 1 No or not stated on label ..... 2 Don't know ..... 9
29. MAY I ASK WHERE YOU GOT THE SALT FROM?  <b>INAP MI ASKIM YU WE YU BIN KISIM DISPELA SOL?</b>	Purchased from a shop ..... 1 Purchased from a vendor ..... 2 Mined/collected from the rock ..... 3 Other (specify) ..... 8 Don't know ..... 9
30. MAY I TAKE A SAMPLE OF THIS SALT TO THE LABORATORY TO TEST FOR IODINE CONTENT?  <b>INAP MI KISIM SEMPOL LONG DISPELA SOL I GO LONG LEBORETORI LONG TESTIM SAPOS EM MI GAT AIDIN LONG EN?</b>  <i>(Collect the required amount of salt and replace the salt you have taken with 1 packet of iodized salt)</i>	Salt sample collected..... 1 Salt sample not collected ..... 2  <div style="border: 1px solid black; width: 150px; height: 100px; margin: 0 auto; text-align: center; padding: 10px;">             Salt Type 1 Label           </div>
<b>TYPE 2 SALT</b> <i>If there is a second type of salt used in the household record the information here</i>	
31. DO YOU HAVE ANY OTHER TYPE OF SALT CURRENTLY IN YOUR HOUSEHOLD NOW? <b>YU GAT OL SAMPEAL NARAPELA SOL LONG HAUS BILONG YU NAU?</b>	Yes..... 1 No ..... 2 Don't know ..... 9
32. <i>If Yes ask "MAY I SEE THIS SALT"</i>  <b>"INAP MI LUKIM DISPELA SOL?"</b>  <i>(Observe the type of salt used and circle the appropriate answer)</i>	Fine Table salt ..... 1 Cooking salt ..... 2 Traditional salt ..... 3 Sea water used for cooking ..... 4 Refused ..... 7 Other (specify) ..... 8 Don't know ..... 9
33. <i>If you DO NOT see the original salt bag or package ask</i>  "COULD I PLEASE SEE THE ORIGINAL SALT BAG OR PACKAGE?" <b>"PLIS INAP MI LUKIM SOL BEK O PEKET SOL I BIN STAP LONG EN?"</b>	Yes, original salt bag or package observed ..... 1 No, original salt bag or package not observed .. 2
34. <u>Write</u> the name of the brand of salt written on the package	Brand.....

2 ⇒ Q. 40

2 ⇒ Q. 38

<p>35. <i>Observe the COUNTRY where the salt is produced</i></p>	<p>Papua New Guinea ..... 1                  Australia..... 2                  India..... 3                  China..... 4                  Thailand.... 5                  Other (specify) ..... 8                  Don't know..... 9</p>
<p>36. <i>Observe the country where the salt is packaged</i></p>	<p>Papua New Guinea ..... 1                  Australia..... 2                  India..... 3                  China..... 4                  Thailand.... 5                  Other (specify) ..... 8                  Don't know..... 9</p>
<p>37. <i>Observe – Is the salt iodized?</i></p>	<p>Yes..... 1                  No or not stated on label ..... 2                  Don't know..... 9</p>
<p>38. MAY I ASK WHERE YOU GOT THE SALT FROM?   <b>INAP MI ASKIM YU WE YU BIN KISIM DISPELA SOL?</b></p>	<p>Purchased from a shop ..... 1                  Purchased from a vendor ..... 2                  Mined/collected from the rock ..... 3                  Other (specify) ..... 8                  Don't know ..... 9</p>
<p>39. MAY I TAKE A SAMPLE OF THIS SALT TO THE LABORATORY TO TEST FOR IODINE CONTENT?   <b>INAP MI KISIM SEMPOL LONG DISPELA SOL I GO LONG LEBORETORI LONG TESTIM SAPOS EM MI GAT AIDIN LONG EN?</b>   <i>(Collect the required amount of salt and replace the salt you have taken with 1 packet of iodized salt)</i></p>	<p>Salt sample collected..... 1                  Salt sample not collected ..... 2</p> <div data-bbox="1073 1129 1317 1360" style="border: 1px solid black; padding: 10px; text-align: center; width: fit-content; margin: 0 auto;"> <p>Salt Type 2 Label</p> </div>
<p><b>FLOUR MODULE</b></p> <p><i>If two or more types of flour are available in the household record information on the flour most frequently consumed in the household.</i></p>	
<p>40. DID YOU HAVE FLOUR IN THE HOUSEHOLD TODAY? <b>YU GAT WIT FLAUA LONG HAUS TEDE?</b></p>	<p>Yes ..... 1                  No ..... 2                  Don't know..... 9</p>
<p>41. WHERE DID YOU GET THIS FLOUR? <b>YU BIN KISIM FLAUA WE?</b></p>	<p>Shop ..... 1                  Other (specify) ..... 8                  Don't know..... 9</p>
<p>42. PLEASE SHOW US SAMPLES OF THE FLOUR YOU BOUGHT IN THE SHOP? <b>PLIS SOIM MIPELA SEMPOL BILONG OLGETA WIT</b></p>	<p>Whole meal flour..... 1                  White flour (Plain) ..... 2</p>

2 ⇒ Q. 49

8 ⇒ Q. 49

FLAUJA YU BAIM LONG STOA <i>(Observe and circle the type of flour used)</i>	White (Self Raising) ..... 3 Don't know ..... 9	
43. <i>If you DO NOT see the original bag or package the flour came in</i>  ASK "COULD I PLEASE SEE THE ORIGINAL BAG OR PACKAGE THE FLOUR CAME IN?" "PLIS INAP MI LUKIM PEKET FLAUJA I BIN STAP INSAIT LONG EM NA YU BAIM?"	Yes, bag observed..... 1 No, bag not observed..... 2	2 ⇨ Q. 48
44. <i>Observe the brand written on the flour package and circle appropriate answer</i>	No label..... 1 Mothers Choice ..... 2 3 Roses..... 3 Flame..... 4 Other (specify) ..... 8 Don't know ..... 9	
45. <i>Observe the country where the flour is produced</i>	Papua New Guinea ..... 1 Australia..... 2 India ..... 3 Other (specify) ..... 8 Don't know ..... 9	
46. <i>Observe the country where the flour is packaged</i>	Papua New Guinea ..... 1 Australia..... 2 India ..... 3 Other (specify) ..... 8 Don't know ..... 9	
47. <i>Observe- Is the flour fortified with vitamins or minerals?</i>	Not fortified or not stated on label ..... 1 Fortified with iron ..... 2 Fortified with folic acid ..... 3 Fortified with iron and folic acid ..... 4 Fortified with other vitamins/minerals (specify) . 5 Enriched with vitamins and minerals ..... 6 Don't know ..... 9	
48. DO YOU OR OTHERS FROM THIS HOUSEHOLD BUY BREAD THAT IS ALREADY MADE (NOT FROM YOUR OWN DOUGH)? YU O OL NARAPELA LONG DISPELA HAUS I SAVE BAIM BRET WE OL I BEKIM PINIS (I NO DISPELA YU YET I MEKIM)	Yes..... 1 No ..... 2 Don't know ..... 9	
<b>OIL MODULE</b>		
<i>If two or more types of oil are available in the household record information on the cooking oil most frequently consumed in the household.</i>		
49. DO YOU HAVE ANY OIL IN THE HOUSEHOLD NOW?  YU GAT OIL LONG HAUS NAU?	Yes..... 1 No ..... 2 Don't know..... 9	2 ⇨ Q. 57
50. WHERE DID YOU GET THIS OIL?  YU BIN KISIM WE?	Shop ..... 1 Other (please specify) ..... 8 Don't know ..... 9	8 ⇨ Q.57

<p>51. PLEASE SHOW US SAMPLE OF THE OIL YOU BOUGHT FROM THE SHOP?</p> <p><b>PLIS, SOIM MIPELA SEMPOL LONG OLGETA OIL YU BAIM LONG STOA.</b></p> <p><i>(Observe and circle the type of oil used)</i></p>	<p>Observation not possible..... 1</p> <p>VegeTable oil..... 2</p> <p>Sunflower oil..... 3</p> <p>Cooking oil..... 4</p> <p>Coconut oil..... 5</p> <p>Palm oil..... 6</p> <p>Peanut oil..... 10</p> <p>Canola oil..... 11</p> <p>Olive oil..... 12</p> <p>Soy bean..... 13</p> <p>Other (specify) ..... 8</p> <p>Don't know..... 9</p>	
<p>52. <i>If you DO NOT see the original container the oil came in or package ask "COULD I PLEASE SEE THE ORIGINAL CONTAINER OR PACKAGE THE OIL CAME IN?"</i></p> <p><b>"PLIS INAP MI LUKIM ORIJINEL KONTENA O PEKET OIL I KAM LONG EN?"</b></p>	<p>Yes, original container observed ..... 1</p> <p>No, original container not observed..... 2</p>	2 ⇒ Q. 57
<p>53. <i>Write the name of the brand of oil written on the package</i></p>	<p>No label or no brand ..... 9</p> <p>Brand _____</p>	9 ⇒ Q. 57
<p>54. <i>Observe the country where the oil is produced</i></p>	<p>Papua New Guinea ..... 1</p> <p>Australia..... 2</p> <p>Other (specify) ..... 8</p> <p>Don't know ..... 9</p>	
<p>55. <i>Observe the country where the oil is packaged</i></p>	<p>Papua New Guinea ..... 1</p> <p>Australia..... 2</p> <p>Other (specify) ..... 8</p> <p>Don't know..... 9</p>	
<p>56. <i>Observe— Is the oil fortified with with vitamin A?</i></p>	<p>Yes..... 1</p> <p>No or not stated on label ..... 2</p> <p>Don't know ..... 9</p>	
<p><b>SUGAR MODULE</b></p> <p><i>If two or more types of sugar are available in the household record information on the sugar most frequently consumed in the household.</i></p>		
<p>57. DO YOU HAVE SUGAR IN THE HOUSEHOLD NOW?</p> <p><b>YU GAT SUGA LONG HAUS NAU?</b></p>	<p>Yes ..... 1</p> <p>No ..... 2</p> <p>Don't know ..... 9</p>	2 ⇒ Q. 65
<p>58. WHERE DID YOU GET THIS SUGAR?</p> <p><b>YU BIN KISIM DISPELA SUGA WE?</b></p>	<p>Shop ..... 1</p> <p>Other (please specify) ..... 8</p> <p>Don't know ..... 9</p>	8 ⇒ Q. 65
<p>59. PLEASE SHOW US SAMPLE OF THE SUGAR YOU BOUGHT IN THE SHOP?</p> <p><b>PLIS, SOIM SEMPOL LONG OLGETA SUGA YU BIN BAIM LONG STOA.</b></p> <p><i>(Observe and circle type of sugar used)</i></p>	<p>Observation not possible..... 1</p> <p>White sugar..... 2</p> <p>Brown sugar..... 3</p> <p>Dont know..... 9</p>	
<p>60. <i>If you DO NOT see the original bag or package the sugar came in</i></p> <p><b>ASK "COULD I PLEASE SEE THE ORIGINAL BAG</b></p>	<p>Yes, bag observed..... 1</p> <p>No, bag not observed ..... 2</p>	2 ⇒ Q.

OR PACKAGE THE SUGAR CAME IN?" "PLIS INAP INAP MI LUKIM ORIJINEL BEK O PEKET SUGA I KAM LONG EN?"		65
61. <i>Observe</i> the brand written on the sugar package and circle appropriate answer	No label..... 1 4 Roses..... 2 Ramu..... 3 CSR..... 4 Other (specify) ..... 8 Don't know..... 9	
62. <i>Observe</i> the country where the sugar is produced	Papua New Guinea ..... 1 Australia..... 2 Other (specify) ..... 8 Don't know..... 9	
63. <i>Observe</i> the country where the sugar is packaged	Papua New Guinea ..... 1 Australia..... 2 Other (specify) ..... 8 Don't know..... 9	
64. <i>Observe</i> - Is the sugar fortified with vitamins or minerals?	Not fortified or not stated on label ..... 1 Fortified with vitamin A ..... 2 Fortified with other vitamins/minerals (specify) . 5 Don't know..... 9	
<b>RICE MODULE</b>		
<i>IF TWO OR MORE TYPES OF RICE ARE AVAILABLE IN THE HOUSEHOLD RECORD INFORMATION ON THE RICE MOST FREQUENTLY CONSUMED IN THE HOUSEHOLD.</i>		
65. DO YOU HAVE RICE IN THE HOUSEHOLD NOW?  YU GAT RAIS NAU LONG HAUS BILONG YU?	Yes ..... 1 No ..... 2 Don't know..... 9	2 ⇨ END
66. WHERE DID YOU GET THIS RICE?  YU BIN KISIM DISPELA RAIS WE?	Shop ..... 1 Self grown..... 3 Other (specify) ..... 8 Don't know..... 9	3 ⇨ END 8 ⇨ END
67. PLEASE SHOW US A SAMPLE OF THE RICE YOU BOUGHT IN THE SHOP? PLIS, SOIM MIPELA OL SEMPOL LONG OL RAIS YU BAIM LONG STOA. ( <i>Observe and circle type of rice used</i> )	Observation not possible..... 1 White rice..... 2 Brown rice..... 3 Don't know..... 9	
68. If you DO NOT see the original bag or package the rice came in ASK "COULD I PLEASE SEE THE ORIGINAL S BAG OR PACKAGE THE RICE CAME IN?" "INAP MI LUKIM ORIJINEL BEK O PEKET RAIS I KAM LONG EN"?	Yes, bag observed..... 1 No, bag not observed ..... 2	2 ⇨ END
69. <i>Write</i> the brand written on the rice package	No label or no brand ..... 9 Brand _____	9 ⇨ END
70. <i>Observe</i> the country where the rice is produced	Papua New Guinea ..... 1 Australia..... 2 India ..... 3 China ..... 4 Thailand..... 5	

	Other (specify) .....8 Don't know.....9
71. <u>Observe</u> the country where the rice is packaged	Papua New Guinea .....1 Australia.....2 India .....3 China .....4 Thailand .....5 Other (specify) .....8 Don't know.....9
72. <u>Observe</u> - Is the rice fortified with vitamins or minerals?	Not fortified or not stated on the label ..... 1 Fortified with iron ..... 2 Fortified with riboflavin ..... 3 Fortified with niacin ..... 4 Fortified with iron, riboflavin and niacin ..... 5 Fortified with various vitamins and minerals ..... 6 Enriched with vitamins and minerals ..... 10 Don't know ..... 9

*CHILD ONLY HH – Proceed to child (primary care taker data collection form) if there are eligible children (6 months to 5 years of age). If there are no eligible children in the household thank the respondent for his or her time and move on to the next house.*

*CHILD, MEN AND WOMEN HH – Proceed to the women, children and men data collection forms where applicable. If there are no eligible women, children or men in the household then thank the respondent and move on to the next house.*

### Data Entry Information Panel

(To be completed by the data entry clerks)

First Data entry clerk ID number	Second Data entry clerk ID number
-------------------------------------	--------------------------------------

Cluster  HH  Child's Line Number  Mother's Line Number

**CHILDREN (6 MONTHS TO 5 YEARS)**

**TEAM CODE**

Label

VERBAL CONSENT OBTAINED FROM PRIMARY CARETAKER

Yes

No

*If the eligible primary caretaker is not present schedule another visit to the household*

1. <i>Child's name:</i>	
2. <i>Child's age (see Q. 17 of HH listing)</i>	<input type="text"/> Years <input type="text"/> <input type="text"/> Months
3. WHAT IS HIS/HER BIRTHDAY?  <b>WANEM BONDE BILONG EM?</b>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Day                      Month                      Year
4. <i>Write the source of birthdate</i>  <i>(Even if the mother knows the exact birth date, check date and circle the source of information.)</i>	Clinic book ..... 1 Baptismal card ..... 2 Birth certificate ..... 3 Recall ..... 4 Refused ..... 7 Other (specify below) ..... 8
5. Is ( <i>name</i> ) A BOY OR GIRL?  <b>EM (NEM BILONG EM) PIKININI MAN O MERI?</b>	Boy ..... 1 Girl ..... 2 Refused ..... 7 Don't know ..... 9
6. WHAT IS YOUR RELATIONSHIP TO ( <i>name</i> )? <b>YU WANEM BILONG PIKININI (NEM)?</b>  <i>(Make sure that the person you are interviewing is the primary caretakers before continuing on with the questionnaire. If they are not then schedule another visit when the primary caretaker is at home)</i>	Biological Mother ..... 1 Female caretaker ..... 2 Adoptive mother ..... 3 Refused ..... 7 Other (specify) ..... 8 Don't know ..... 9
7. HAS ( <i>name</i> ) EVER RECEIVED A VITAMIN A CAPSULE (SUPPLEMENT)?  <b>EM (NEM BILONG EM) I BIN KISIM VAITAMIN</b>	Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9

2⇒Q11

9⇒Q11

<p><b>KEPSUL A SAPLIMEN?</b> <i>(show an example of the vitamin A capsule)</i></p>																					
<p>8. WHEN WAS THE LAST TIME (NAME) RECEIVED VITAMIN A CAPSULE? <b>WANEM TAIM EM BIN KISIM LASPELA VAITAMIN A KEPSUL?</b> <i>(Check the clinic book if it is available)</i></p>	<table style="width: 100%; text-align: center;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> <tr> <td colspan="2">Day</td> <td colspan="2">Month</td> <td colspan="6">Year</td> </tr> </table>											Day		Month		Year					
Day		Month		Year																	
<p>9. Write the source of the date of the last vitamin A capsule dose</p>	<table style="width: 100%;"> <tr> <td>Clinic book .....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Recall .....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Refused.....</td> <td style="text-align: right;">7</td> </tr> <tr> <td>Other (specify) .....</td> <td style="text-align: right;">8</td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> </tr> </table>	Clinic book .....	1	Recall .....	2	Refused.....	7	Other (specify) .....	8	Don't know .....	9										
Clinic book .....	1																				
Recall .....	2																				
Refused.....	7																				
Other (specify) .....	8																				
Don't know .....	9																				
<p>10. WHERE DID (name) GET THIS LAST VITAMIN A CAPSULE? <b>(NEM) I BIN KISIM LASPELA VAITAMIN A KEPSUL LONG WE?</b></p>	<table style="width: 100%;"> <tr> <td>Routine health centre visit .....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Sick child visit to health centre.....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Supplementary Immunization Activity (SIA) .....</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Refused .....</td> <td style="text-align: right;">7</td> </tr> <tr> <td>Other (specify) .....</td> <td style="text-align: right;">8</td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> </tr> </table>	Routine health centre visit .....	1	Sick child visit to health centre.....	2	Supplementary Immunization Activity (SIA) .....	3	Refused .....	7	Other (specify) .....	8	Don't know .....	9								
Routine health centre visit .....	1																				
Sick child visit to health centre.....	2																				
Supplementary Immunization Activity (SIA) .....	3																				
Refused .....	7																				
Other (specify) .....	8																				
Don't know .....	9																				
<p>11. WAS (name) BREASTFEED ON THE SAME DAY THAT HE/SHE WAS BORN? <b>MAMA I BIN GIVIM SUSU LONG (NEM) LONG DE EM BIN KARIM EM?</b></p>	<table style="width: 100%;"> <tr> <td>Yes .....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Refused .....</td> <td style="text-align: right;">7</td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> </tr> </table>	Yes .....	1	No .....	2	Refused .....	7	Don't know .....	9												
Yes .....	1																				
No .....	2																				
Refused .....	7																				
Don't know .....	9																				
<p>12. HOW OLD WAS (name) WHEN YOU STARTED TO GIVE OTHER FOODS? <b>EM (NEM) BIN GAT HAMAS KRIMAS TAIM YU STAT LONG GIVIM LONG GIVIM OL ARAPELA KA I LONG EN?</b></p>	<table style="width: 100%; text-align: center;"> <tr> <td style="border: 1px solid black; width: 40px; height: 40px;"></td> <td style="border: 1px solid black; width: 40px; height: 40px;"></td> <td style="border: 1px solid black; width: 40px; height: 40px;"></td> <td style="border: 1px solid black; width: 40px; height: 40px;"></td> </tr> <tr> <td colspan="2">Years</td> <td colspan="2">Months</td> </tr> </table>					Years		Months													
Years		Months																			
<p>13. DID (name) RECEIVE BREAST MILK YESTERDAY? <b>(NEM) I BIN DRINGIM SUSU BILONG MAMA ASTE?</b></p>	<table style="width: 100%;"> <tr> <td>Yes .....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Refused .....</td> <td style="text-align: right;">7</td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> </tr> </table>	Yes .....	1	No .....	2	Refused .....	7	Don't know .....	9												
Yes .....	1																				
No .....	2																				
Refused .....	7																				
Don't know .....	9																				
<p>14. DID (name) SLEEP UNDER A MOSQUITO NET LAST NIGHT? <b>(NEM) I BIN SLIP ANINIT LONG TAUNAM LONG LAS NAIT?</b></p>	<table style="width: 100%;"> <tr> <td>Yes .....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>No .....</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Refused .....</td> <td style="text-align: right;">7</td> </tr> <tr> <td>Don't know .....</td> <td style="text-align: right;">9</td> </tr> </table>	Yes .....	1	No .....	2	Refused .....	7	Don't know .....	9												
Yes .....	1																				
No .....	2																				
Refused .....	7																				
Don't know .....	9																				

*Weigh and measure each child after all questionnaires have been completed. **DO NOT** measure any children with casts, heavy bandages or disabilities that prevent them being measured.*

**ANTHROPOMETRY MODULE**



15. Child's weight	<input type="text"/> <input type="text"/> . <input type="text"/> kg
16. Child's height (Check age again: Less than 24 months: measure lying down 24 months or more: measure standing up)	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> cm
17. Circle result for height measurement	Measured ..... 1 Refused ..... 7 Other (specify) ..... 8 Unable ..... 9
<b>CHECK</b> Are there any other children in the household who are eligible for measurement? Pass the data collection form on to the laboratory technician	

<b>SPECIMEN COLLECTION MODULE</b>	
18. Ask "WE WOULD LIKE TO TAKE A LITTLE BLOOD FROM YOUR CHILD'S FINGER, FOR TESTING. IS THIS OK? "MPELA I LAIK KISIM LIKLIK HAP BLUT LONG PINGA BILONG PIKININI BILONG YU LONG TESTIM. YU TOK ORAIT LONG DISPELA?"	Yes ..... 1 No ..... 2 Refused ..... 7 Other (specify) ..... 8
19. Write down the hemoglobin level (If the Hb is 7 or less then write the result in the space provided and also on a referral sheet and on a referral slip for the health center)	<input type="text"/> <input type="text"/> . <input type="text"/> g/dl
20. Was a finger stick blood sample collected from this child?	Yes ..... 1 No ..... 2 Refused ..... 7 Other (specify) ..... 8
21. Approximately how many microlitres of blood were collected from this child	<input type="text"/> <input type="text"/> microl
22. Was a stool sample collected from this child? (Only collect stool from children 24-59 months of age)	Yes ..... 1 No ..... 2 Refused ..... 7 Other (specify) ..... 8

**THANK** the participant for their cooperation

**CHECK** that all the data collection form has been completed correctly

**CHECK** that the identification numbers are at the top of each page.

<b>FOR NCD CLUSTERS ONLY</b>	
23. <i>Was a venous blood sample collected from this child?</i>	Yes ..... 1 No ..... 2 Refused ..... 7 Other (specify) ..... 8
24. <i>Approximately how many millilitres of venous blood were collected from this child</i>	ml

**THANK** *the participant for their cooperation*

**CHECK** *that all the data collection form has been completed correctly*

**CHECK** *that the cluster and household identification numbers are at the top of each page.*

### **Data Entry Information Panel**

(To be complete by the data entry clerks)

First data entry clerk ID number		Second data entry clerk ID number	
-------------------------------------	--	--------------------------------------	--

Cluster Number  Household Number  Woman's Line Number

**WOMEN (15-49 YEARS)**

**TEAM CODE**

Label

VERBAL CONSENT OBTAINED FROM ELIGIBLE WOMAN

Yes  No

1. Woman's name:	
2. Woman's age	<input type="text"/> <input type="text"/> years
3. WHAT IS YOUR HIGHEST GRADE OF EDUCATION COMPLETED?  <b>YU PINISIM WANEM GRET LONG SKUL?</b>  <i>(0= No school completed 1-3=Elementary School 4-8= Primary School 9-12=Secondary school)</i>	Highest grade completed <input type="text"/> <input type="text"/>  Refused .....7 Other (specify) .....8 Don't know .....9
4. DID YOU SLEEP UNDER A MOSQUITO NET LAST NIGHT?  <b>YU BIN SLIP ANINIT LONG MOSKITO NET O TAUNAM LONG LAS NAIT?</b>	Yes .....1 No .....2 Refused .....7 Don't know .....9
5. HOW MANY MOSQUITO NETS DOES YOUR HOUSEHOLD HAVE?  <b>HAUS BILONG YU I GAT HAMAS TAUNAM?</b>	Number of nets <input type="text"/> <input type="text"/>
6. DO YOU SMOKE?  <b>YU SAVE SMOK TU?</b>	Yes .....1 No .....2 Refused .....7 Don't know .....9
7. HOW MANY STICKS DO YOU SMOKE PER DAY? <b>HAMASPELA STIK SIMUK YU SAVE SMOKIM INSAIT LONG WANPELA DE?</b>	Number per day <input type="text"/> <input type="text"/>
8. HAVE YOU EVER BEEN PREGNANT? <b>YU BIN GAT BEL TU?</b> <i>(Should be asked by female or with female present.)</i>	Yes .....1 No .....2 Refused .....7 Don't know .....9

2⇒Q.8

9⇒Q.8

2⇒Q.17

9⇒Q.17

<p>9. HAVE YOU GIVEN BIRTH TO A CHILD IN THE LAST 3 YEARS? <b>INSAIT LONG LASPELA TRIPELA YIA, YU BIN KARIM WANPELA PIKININI TU?</b></p> <p><i>(This includes both live births and still births BUT NOT miscarriages) (Ask for meri book if available)</i></p>	<p>Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9</p>	<p>2⇒Q.17 9⇒Q.17</p>				
<p>10. WHEN YOU WERE PREGNANT WITH YOUR LAST CHILD, DID YOU RECEIVE IRON TABLETS? <b>TAIM YU BIN BEL LONG LASPELA PIKININI BILONG YU, YU SAVE KISIM AIN TABLET?</b></p> <p><i>(Show an example of the iron Tablet)</i></p>	<p>Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9</p>	<p>2⇒Q.12 9⇒Q.12</p>				
<p>11. WHO DID YOU RECEIVE THE IRON TABLETS FROM? <b>YU BIN KISIM OL AIN TABLET LONG HUSAT?</b></p>	<p>Health centre ..... 1 Health workers on patrol ..... 2 VBA ..... 3 VHV ..... 4 Refused ..... 7 Other (specify ) ..... 8 Don't know ..... 9</p>					
<p>12. WAS YOUR LAST BORN CHILD WEIGHED AT BIRTH? <b>OL BIN SKELIM LASPELA PIKININI BILONG YU TAIM YU KARIM?</b></p>	<p>Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9</p>	<p>2⇒Q.15 9⇒Q.15</p>				
<p>13. WHAT WAS THIS CHILD'S WEIGHT <b>WANEM MAK LONG WEIT O HEVI BILONG EM?</b> <i>(Record weight from baby book/health card, if available.)</i></p>	<p style="text-align: center;"> <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>           grams         </p>					
<p>14. Write down where information on the birth weight was obtained from.</p>	<p>From recall ..... 1 From clinic book ..... 2 Other (specify) ..... 8</p>					
<p>15. WHEN YOU WERE PREGNANT WITH YOUR LAST CHILD, DID YOU HAVE DIFFICULTY SEEING DURING THE DAY? <b>TAIM YU BIN BEL WANTAIM LASPELA PIKININI BILONG YU, YU BIN GAT HEVI LONG LUKLUK LONG SAN?</b></p>	<p>Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9</p>					
<p>16. WHEN YOU WERE PREGNANT WITH YOUR LAST CHILD DID YOU HAVE ANY DIFFICULTY SEEING AT DUSK? <b>TAIM YU BIN BEL WANTAIM LASPELA PIKININI BILONG YU, YU BIN GAT HEVI LONG LUKLUK TAIM EM I LAIK TUDAK?</b></p>	<p>Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9</p>					
<p>17. ARE YOU CURRENTLY PREGNANT? <b>YU GAGT BEL NAU?</b> <i>(If YES end the interview. DO NOT take anthropometric measurements or urine or blood samples)</i></p>	<p>Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9</p>	<p>1⇒END</p>				

Weigh and measure each woman after all questionnaires have been completed. **DO NOT** measure any woman with casts, heavy bandages or disabilities that prevent them being measured. **DO NOT** measure women who are pregnant.

ANTHROPOMETRY MODULE	
18. Woman's weight	kg
19. Woman's height	cm
20. Circle result for height measurement	Measured .....1 Refused .....7 Other (specify) .....8 Unable .....9
<p><u>CHECK</u> Are there any other women in the household who are eligible for measurement?                      If not, pass the data collection form on to the laboratory technician.</p>	

SPECIMEN COLLECTION MODULE	
Do NOT take urine or blood samples from pregnant women	
21. Was urine sample collected from this woman?	Yes .....1 No .....2 Refused .....7 Other (specify).....8
22. Ask "WE WOULD LIKE TO TAKE SOME OF YOUR BLOOD FROM YOUR FINGER, FOR TESTING. IS THIS OK? "MPELA I LAIK KISIM SAMPELA BLUT LONG PINGA BILONG YU LONG KARIMAUT TES. EM I ORAIT WANTAIM YU?"	Yes .....1 No .....2 Refused .....7 Other (specify) .....8
23. Write down the hemoglobin level  (If the Hb is 7 or less then write the result in the space provided and also on a referral sheet and on a referral slip for the health center)	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <div style="margin: 0 10px;">•</div> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <span style="margin-left: 5px;">g/dl</span> </div>
24. Was finger stick blood sample collected from this woman?	Yes .....1 Not available .....2 Refused .....7 Other (specify).....8
25. Approximately how many microlitres of finger stick blood were collected from this woman.	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px; margin-right: 5px;"></div> <span style="margin-left: 5px;">microl</span> </div>

<b>FOR NCD CLUSTERS ONLY</b>				
<p>26. Was a venous blood sample collected from this woman?</p>	<p>Yes .....1                  Not available .....2                  Refused .....7                  Other (specify) .....8</p>			
<p>27. Approximately how many milliliters of venous blood were collected from this woman</p>	<table border="1" style="margin-left: auto; margin-right: 0;"> <tr> <td style="width: 30px; height: 20px;"></td> <td style="width: 30px; height: 20px;"></td> <td style="padding-left: 5px;">ml</td> </tr> </table>			ml
		ml		

**THANK** the participant for their cooperation  
**CHECK** that all the data collection form has been completed correctly  
**CHECK** that the identification numbers are at the top of each page.

**Data Entry Information Panel**

(To be completed by the data entry clerks)

First data entry clerk ID number	Second data entry clerk ID number
----------------------------------	-----------------------------------

Cluster Number    Household Number   Man's Line Number

**MEN (18 YEARS AND ABOVE)**

**TEAM CODE**

VERBAL CONSENT OBTAINED FROM ELIGIBLE MAN Yes  No

1. Man's name:	
2. Man's age. <input type="text"/> <input type="text"/> years	
3. WHAT IS YOUR HIGHEST GRADE OF EDUCATION COMPLETED? <b>WANEM GRET LONG SKUL YU PINISIM?</b>  (0= No school completed 1-3=Elementary School 4-8= Primary School 9-12=Secondary school)	Highest grade completed <input type="text"/> <input type="text"/>
	Refused ..... 7 Other (specify) ..... 8 Don't know ..... 9
4. DID YOU SLEEP UNDER A MOSQUITO NET LAST NIGHT?  <b>YU BIN SLIP ANINIT LONG TAUNAM LAS NAIT?</b>	Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9
5. DO YOU SMOKE?  <b>YU SAVE SMOK TU?</b>	Yes ..... 1 No ..... 2 Refused ..... 7 Don't know ..... 9
6. HOW MANY STICKS DO YOU SMOKE PER DAY?  <b>YU SAVE SMOKIM HAMAS STIK SIMUK LONG WANPELA DE?</b>	Number per day <input type="text"/> <input type="text"/>
Weigh and measure each man after all questionnaires have been completed. <b>DO NOT</b> measure any men with casts, heavy bandages or disabilities that prevent them being measured.	

2⇒ Q. 7

ANTHROPOMETRY MODULE	
7. <i>Man's weight</i>	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> • <input style="width: 20px; height: 20px;" type="text"/> kg
8. <i>Man's height</i>	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> • <input style="width: 20px; height: 20px;" type="text"/> cm
9. <i>Circle result for height measurement</i>	Measured ..... 1 Refused ..... 7 Other (specify) ..... 8 Unable ..... 9
<b>CHECK</b> <i>Are there any other men in the household who are eligible for measurement?                  Pass the data collection form on to the laboratory technician</i>	
SPECIMEN COLLECTION MODULE	
10. Ask "WE WOULD LIKE TO TAKE SOME OF YOUR BLOOD FROM YOUR FINGER, FOR TESTING. IS THIS OK?"  <b>ASIM "MIPELA I LAIK KISIM SAMPELA BLUT LONG PINGA BILONG YU LONG TESTIM. DISPELA EM I ORAIT WANTAIM YU?"</b>	Yes ..... 1 No ..... 2 Refused ..... 7 Other (specify) ..... 8
11. <i>Write down the hemoglobin level (If the Hb is 7 or less then write the result in the space provided and also on a referral sheet and on a referral slip for the health center)</i>	<input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> • <input style="width: 20px; height: 20px;" type="text"/> g/dl
12. <i>Was finger stick blood sample collected from this man?</i>	Yes ..... 1 Not available ..... 2 Refused ..... 7 Other (specify) ..... 8

**THANK** *the participant for their cooperation*  
**CHECK** *that all the data collection form has been completed correctly*  
**CHECK** *that the identification numbers are at the top of each page.*

### Data Entry Information Panel

(To be completed by the data entry clerks)

First data entry clerk ID number	Second data entry clerk ID number
-------------------------------------	--------------------------------------



Cluster Number    Household Number

**HOUSEHOLD CHECK LIST**

TEAM CODE  Date of first interview:        
 Day Month Year

	Number of eligible persons	Number of persons who refused	Number of persons not available	Number of interviews incomplete	Number of interviews completed
Number of Children 6-59 months in the HH					
Number of women 15-49 years in the HH					
Number of men 18 years and above in the HH					
Result of HH interview: (circle one)	Completed .....				1
	Incomplete .....				2
	Refused .....				3
	Not at home .....				4
	HH not found/destroyed .....				5
	No eligible women, children or men .....				6
	Other (specify) .....				8
Language of interview (circle one)	English .....				1
	Pidgin .....				2
	Local language without translator .....				3
	Local language using translator .....				4
	No interview .....				5
Other (specify) .....				8	

**TEAM LEADER'S CHECK**

Sign only if you have checked the **ALL** forms to be completed correctly. Also make sure that all necessary information is recorded on the cluster collection form.

TEAM LEADER \_\_\_\_\_ Date:     
 DAY MONTH YEAR

## APPENDIX 6: LABELLING BIOLOGICAL SPECIMENS AND DATA COLLECTION FORMS

Proper and accurate labeling of all specimens collected in the field is one of the most important aspects of this survey. The label ID number will be used to match the questionnaire data on each survey subject with the results of laboratory testing of the specimens from that survey subject. Therefore, the ID number for each survey participant must be unique, that is, different from the ID number for all other participants. If the questionnaire ID number does not match the laboratory result ID number, then the laboratory result is unusable, and we have wasted the time, money, and participant discomfort involved in collecting that laboratory specimen.

Each biologic specimen from the same survey subject will have the same ID number. Therefore, since survey subjects will have multiple specimens obtained from them, there will be many labels with the same ID number. The laboratory technician must be careful to use labels with the same ID number on the same survey subject.

Each label has the following information:

- An ID number – This is the number which must be different for each survey subject
- A barcode - This barcode must be readable in the laboratory where testing will be done. Therefore, do not place anything over this barcode or rub it off.
- A specimen type – This indicates what type of biologic specimen is contained in the container marked with the label. Labels may say "Patient Quest.", "Capillary DBS," "Urine," "Stool", etc.

Labels used in this survey will use the following sequences of numbers:

Women and Children in Research Study	Numbers 001-299
Women and Children in Nutrition Survey	Numbers 300-2999
Salt in Validation Study and Nutrition Survey	Numbers 7000-9999

For each ID number, labels will be used for the following biologic specimens:

Use of the label	Number of labels	Type of specimen
Field use:		
Data collection form	1	Data collection form
Microtainer	1	Blood
Malaria slide	1	Blood
DBS card	4	Blood
Urine cup*	1	Urine
Urine cryovials*	2	Urine
Stool cup <sup>⊥</sup>	1	Stool
Stool tube <sup>⊥</sup>	1	Stool
<b>TOTAL COPIES OF ID NUMBER</b>	<b>12</b>	

\* For women only

<sup>⊥</sup> For children only

Because survey subjects in the six Port Moresby clusters will participate in the validation study, additional labels will be needed for subjects in these clusters. In addition to the labels above, the following labels are also needed:

Use of the label	Number of labels	Type of specimen
Field use:		
Red top vacutainer tube	1	Blood
Purple top vacutainer tube	1	Blood
Serum cryovials	5	Blood
Venous DBS card	4	Blood
TOTAL COPIES OF ID NUMBER	9	

Different survey subjects will have different biologic specimens collected from them. For example, children will not have urine collected from them; therefore, the labels for urine will not be used for children. Women of child-bearing age and children less than 24 months of age will not have stool collected; therefore, the labels for stool specimens will not be used for these survey subjects. The laboratory technician must be careful to use the appropriate labels for the data collection forms and for each biologic specimen according to the age and sex of the survey subject.

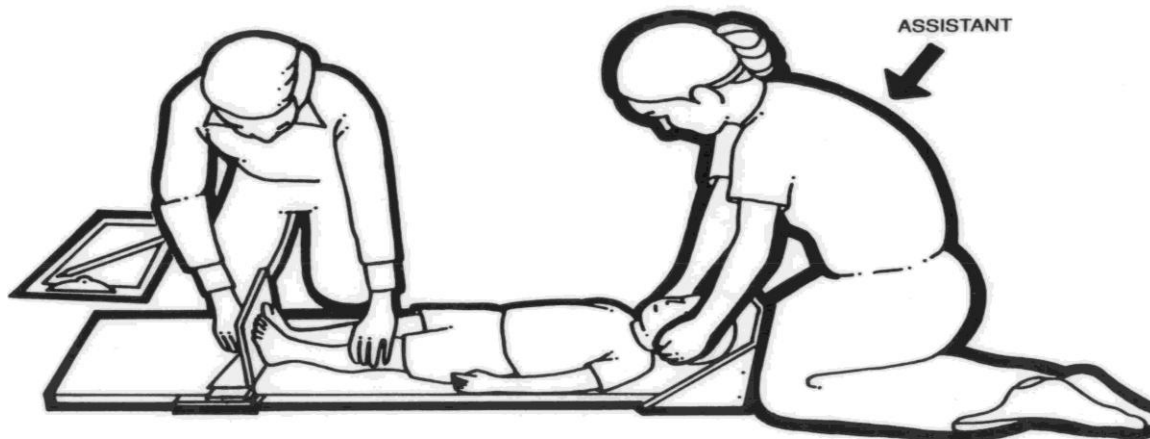
Men participating in the survey will not require labels because no laboratory specimen will be collected from them for testing outside the household. The only laboratory testing they will undergo is testing by HemoCue for hemoglobin concentration; this testing will be done in the household and the results recorded directly on the data collection form.

Laboratory technicians should follow these labeling procedures at each household:

- Once the interviewer has completed interviews for all eligible survey subjects in a household, the data collection forms for these subjects will be passed on to the anthropometrist. Once the anthropometry is complete, the anthropometrist will pass the forms to the laboratory technician. The laboratory technician will ask the participants name or ask the mother to identify the child before proceeding with the collection of biologic specimens to be sure that the data collection form matches the survey subject.
- Labels for blood collection should be attached to the appropriate item (Microtainer, malaria slide, DBS card, urine cup and cryovials, stool cup and tube, red top tube, and purple top tube) before the fingerstick or phlebotomy is begun.
- Labels need to be attached to the specimen tubes so that they can be read left to right with the cap end on the left.
- Always leave a transparent part of the tube free of a label. This means that the label should be placed over an existing label on the container; if there are graduated numbers on the container, the label should not cover these.
- When pipetting from one source to another, for example, from the microtainer to the DBS card, be absolutely sure that the labels on both containers have the same ID numbers. For example, if the ID number on the microtainer is 327 make sure that the labels on the DBS card also has an ID number of 327.

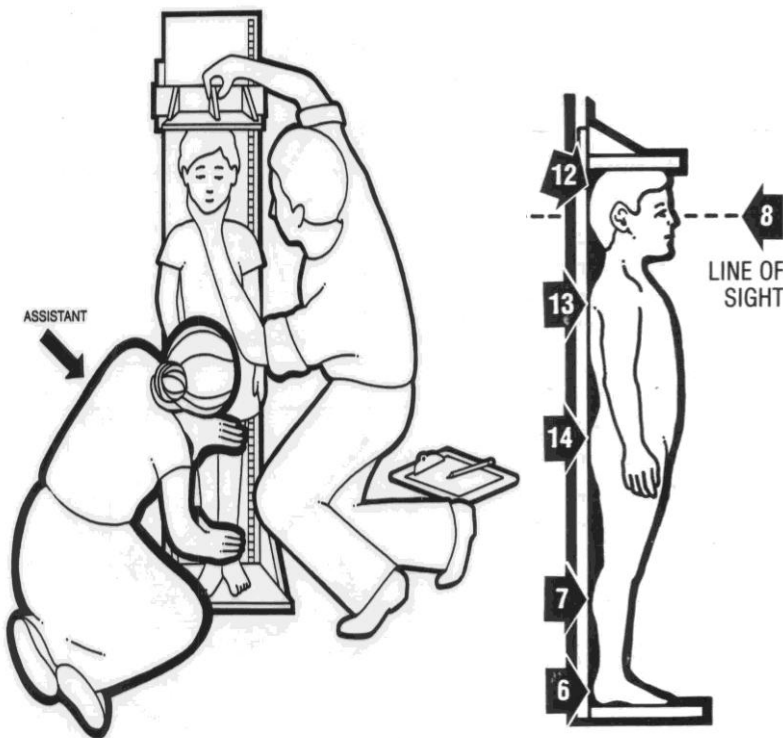
**APPENDIX 7: ANTHROPOMETRY PROCEDURES****MEASURING CHILDREN****MEASURING THE CHILD'S LENGTH (IF UNDER 24 MONTHS OF AGE OR 85 CM):**

1. Place the measuring board on a hard, flat surface, usually the floor. If you place the measuring board on a Table or other elevated surface, be sure you watch the child carefully so that he does not fall off.
2. Ask the child's caregiver to remove child's shoes and head / hair articles.
3. The assistant should kneel at the head end of the board in order to stabilize the head.
4. The measurer should kneel with both knees on the child's right side so that he can hold the head piece with his right hand.
5. With the assistance of the mother, the child should be placed on his back on the board so that the head is against the fixed foot board and the feet are at the open end of the board. The child's body should be straight and centered on the board.
6. The mother should be on the child's left side to comfort and reassure the child.
7. The measurer places the child's feet flat together against the foot board, while making sure the child's legs are straight and the heels and calves are against the board.
8. The assistant ensures that the top of the child's head is in contact with the foot piece and that the child's face is looking straight upward (perpendicular to the ground).
9. The measurer gently pushes the head piece against the feet and calls out the measurement to the nearest .1 cm.
10. The child should be released immediately after the measurement is called out. The measurer and the assistant can help the child rise or hand the child to the mother.

**MEASURING THE CHILD'S HEIGHT:**

1. Place the measuring board on a hard flat surface against a wall, Table, tree, staircase, or other immovable vertical surface.
2. Ask the child's caregiver to remove child's shoes and head / hair articles and then bring the child to the measuring board.
3. The assistant kneels on the child's right side.
4. The measurer kneels on one knee on child's left side.

5. Place the child's feet flat together against the center of the base board. Make sure the child's legs are straight and the heels and calves are against the board. The child's body should be in the center of the board. The assistant can place his right hand on the child's shins and the left hand on the child's knees.
6. Make sure that the child's face is looking straightforward (parallel to the ground). Make sure that the child's shoulders are level, hands are at the side, and head, shoulders, buttocks and heels are against the board.
7. The measurer can now place the headpiece against the board and lower it to the top of the child's head (flatten hair to head) using her right hand.
8. The measurer calls out the measurement to the nearest 0.1 cm to whomever is the recorder.
11. The child should be released immediately after the measurement is called out. The measurer and the assistant can help the child step off the height board.



#### MEASURING THE CHILD'S WEIGHT (DIGITAL SCALES)

1. Place the digital scale on the ground in as flat and horizontal a spot as possible. Check to see if the scale is placed flat by trying to jiggle it, it should be firmly placed with all four feet in contact with the ground.
2. Switch the scale on by passing one's hand an inch over the surface of the solar detector.
3. Wait for the appearance of the zero.
4. Test the weight of the standard – if it is correct, then the scale is placed flat and is reading correctly. If not, move it and go through steps 1, 2 and 3.

5. After standardising the scale to the weight, weight the child by one of the two following methods:
  - a. If the child is older and can stand quietly on the scale, place the child standing on the scale. Ensure that the child is balanced and is not being pressed down or held up by another adult. The child should not be touching anything during the weighing, or:
  - b. If the child cannot stand or will not hold still while on the scale, place the mother on the scale. Wait until a weight reading appears, then while instructing the mother not to move, pass your hand over the solar detector. The scale should read "0." The mother must remain quietly on the scale throughout the procedure. Hand the child to the mother. Be sure neither the child nor the mother are touching anything. Wait until another reading appears on the scale; this will be the child's weight.
6. Record the weight as shown on the scale on the child's data collection form.

### **MEASURING ADULTS**

#### **MEASURING AN ADULT'S WEIGHT (DIGITAL SCALES)**

1. Place the digital scale on the ground in as flat and horizontal a spot as possible. Check to see if the scale is placed flat by trying to jiggle it, it should be firmly placed.
2. Switch the scale on by passing one's hand an inch over the surface of the solar detector.
3. Wait for the appearance of the zero.
4. Test the weight of the standard – if it is correct, then the scale is placed flat and is reading correctly. If not, move it and go through steps 1, 2 and 3.
5. After standardising the scale to the weight, ask the adult to stand on the scale. Ensure that they are standing quietly and not touching anything. Wait for the weight reading to appear. Record the weight on the data collection form.

#### **MEASURING AN ADULT'S HEIGHT:**

1. Place the measuring board on the ground against a wall, Table, tree, staircase, or other immovable vertical surface. Make sure it is sTable.
2. Ask the person to remove their shoes and head / hair articles.
3. Ask the person to place their feet together and against the center of the base board with their back to the board.
4. Make sure the person's legs are straight and the heels and calves are against the board.
5. Make sure that the person's face is looking straightforward (parallel to the ground). Make sure that the shoulders are level, hands are at the side, and head, shoulders, buttocks and heels are against the board.
6. Lower the headpiece to the top of the head (flatten hair to head),
7. Record the measurement to the nearest .1 cm.

**APPENDIX 8: SPECIMEN COLLECTION PROCEDURES FOR THE SURVEY****MEN**

All men in every second selected household will be asked to undergo testing for hemoglobin concentration. See annex 4.3 for the specific procedures for using the Hemocue photometer to measure hemoglobin.

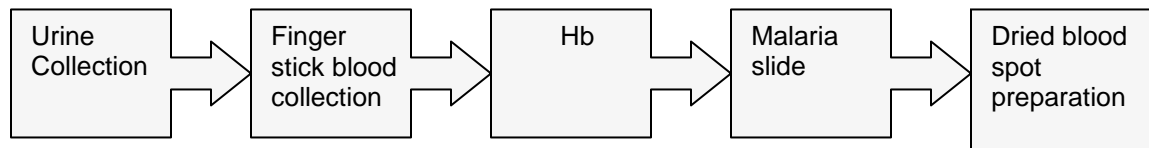
1. The materials needed prior to testing each subject should be assembled. The materials include: a lancet, a Hemocue cuvette (remember to reseal the cuvette container immediately after taking out a cuvette for use), the Hemocue machine, an alcohol wipe, a gauze pad, and a bandage.
2. The patient's hand should be warm so that blood circulates freely before performing the finger stick. Rubbing or wrapping it in a warm towel will help warm the hand.
3. The patient's fingers should be relaxed but not fully bent; this allows for maximum blood flow. Use only the middle finger or ring finger for sampling, and remove rings from the finger before testing.
4. Put on your powder free gloves. Turn participant's hand upward. Massage participant's hand and lower part of the finger to increase blood flow.
5. Clean the puncture site with an alcohol wipe and dry it completely using a gauze pad.
6. Using a rolling movement of your thumb, lightly press the finger from the top knuckle towards the tip. This stimulates the flow of blood towards the puncture site.
7. When the thumb has reached the fingertip, maintain gentle pressure and puncture the side of the fingertip with a lancet, utilizing a quick press and release motion. Using the side of the finger causes less pain and produces the best flow of blood. Dispose of the lancet immediately into a sharps container.
8. Using a dry gauze pad, wipe away the first drop of blood to stimulate spontaneous blood flow. If necessary, gently press the finger until another drop of blood appears. Avoid "milking" the finger.
9. Collect at least three drops of blood in the microtainer. When this is completed, gently invert it 10 times to prevent clots from forming. Put the microtainer aside for a moment.
10. If less than 3 drops of blood are collected cap the microtainer and gently invert it 10 times to prevent clots from forming. Make a second finger stick and using a fresh microtainer attempt to collect the 3 drops of blood. [ It is extremely unlikely that for such a small amount of blood that a second finger stick is necessary]
11. Place the gauze pad on the puncture site and ask the survey subject to apply pressure with another finger on the same had or the other hand.
12. Fill the Hemocue cuvette by holding the Microtainer in a horizontal position and carefully tilt the blood forward to the edge of the tube. Place the pointed tip of the Hemocue

cuvette into the blood drop with the cuvette's groove facing upward. The cuvette will fill automatically by capillary action.

13. Never try to "top off" the cuvette after the initial filling. If the cuvette is not filled with the attempt, discard it in the sharps container and use a second cuvette.
14. Wipe off any excess blood from the sides of the cuvette with a Kim wipe, being careful not to touch the outer curved edge. Ensure that no blood is "sucked out" of the cuvette when wiping it.
15. Place the cuvette in the holder of the Hemocue and gently push the holder into the machine. The results will be displayed in approximately 15-45 seconds and will remain displayed for 4 minutes or until the slide arm is pulled out for removal of the cuvette.
16. Record your results, dispose of the cuvette in the sharps container, and dispose of all other materials in the biohazard bag.
17. Have the man hold a gauze pad on the finger until bleeding stops. Put a band-aid on the spot where the prick was made, and ask the person to take it off the following day.
18. Tell the man whether his haemoglobin level is normal or low. If the Hemoglobin is <7 fill in a referral slip and write the man's name and haemoglobin on the Anemia referral sheet (see annex 4.4).

## WOMEN

All women in every second household will be asked to consent to collection of finger stick blood and urine. The blood will be collected in a microtainer and used to fill the Hemocue cuvette, to make a thick malaria smear, and pipetted onto a DBS card. Below you will find the procedures for the collection of urine, the finger stick, Hemocue, malaria smear and DBS preparation.



### Urine Collection

1. Give the woman a sterile, pre-labelled urine cup and the following instructions:
  - Wash hands with soap and water.
  - Do not open the collection cup until just before urinating.
  - Turn the cap upward while urinating, and then immediately place it back onto the cup after urination. Tighten the cap well.
  - Do not touch the inside of the cup nor allow it to come into contact with any parts of the body, clothing, or external surfaces. Minimize exposure to air.
2. Open the patient pack and place all specimen collection materials on top of disposable pad. Remove the two cryovials. Attach the patient's labels to the cryovials.



3. After the cup is returned, pipette equal volumes (at least 1.5 mL) into two labelled cryovials. Make sure they are not filled above the line indicating 1.8 ml. Overfilling will cause breakage when the specimen is frozen and the specimen will be lost. It is much better to have a smaller specimen available than to collect a larger specimen which then breaks the cryovial and is lost. Screw the caps tightly on the vials. Discard the pipette into the biohazard bag.
4. Place the cryovials into the tube box (in numerical order) and place a rubber band around the box before it goes back into the backpack.
5. Ask the woman to dispose of the remaining urine and place the cup into the biohazard bag.

### ***Finger Stick procedure***

1. Organise the contents of the patient pack and place all specimen collection materials on top of disposable pad. Open the alcohol swabs, gauze, and bandage. Have all items ready for blood collection. Attach the patient's labels to the malaria slide and DBS card.
2. The patient's hand should be warm so that blood circulates freely before performing the finger stick. Rubbing or wrapping it in a warm towel will help warm the hand.
3. The patient's fingers should be relaxed but not fully bent; this allows for maximum blood flow. Use only the middle finger or ring finger for sampling, and remove rings from the finger before testing.
4. Put on your powder free gloves. Turn participant's hand upward. Massage participant's hand and lower part of the finger to increase blood flow.
5. Clean the puncture site with an alcohol wipe and dry it completely using a gauze pad.
6. Using a rolling movement of your thumb, lightly press the finger from the top knuckle towards the tip. This stimulates the flow of blood towards the puncture site.
7. When the thumb has reached the fingertip, maintain gentle pressure and puncture the side of the fingertip with a lancet, utilizing a quick press and release motion. Using the side of the finger causes less pain and produces the best flow of blood. Dispose the lancet immediately into a sharps container.
8. Using a dry gauze pad, wipe away the first drop of blood to stimulate spontaneous blood flow. If necessary, gently press the finger until another drop of blood appears. Avoid "milking" the finger.
9. Keep the finger in a downward position and gently massage it to maintain blood flow. Hold the Microtainer<sup>®</sup> at an angle of 30 degrees below the collection site and use the scoop on the Microtainer<sup>®</sup> to guide the drop into the vial. Do not scrape the skin. Fill the Microtainer<sup>®</sup> to 350 - 500  $\mu$ L level.
10. If less than 350  $\mu$  L of blood are collected cap the microtainer and gently invert it 10 times to prevent clots from forming. Make a second finger stick and using a fresh microtainer attempt to collect the 350  $\mu$  L of blood.

11. When sufficient blood is collected, cap the Microtainer® and gently invert it 10 times to prevent clots from forming. Place it aside for now.
12. Have the woman hold a gauze pad on the finger until bleeding stops. Put a band-aid on the spot where the prick was made, and ask the person to take it off the following day.
13. Place the label on the microtainer. If the label contains a barcode, the barcode needs to be vertical like a ladder when placed on the vial. If the barcode is not vertical, the laboratory will not be able to read the label. Place the label from left to right starting from the cap end and leave the graduated numbers on the tube visible. If you need to use a second microtainer than use the spare label for that patient.
14. Properly discard all used materials.

### ***Hemoglobin testing procedure from a microtainer***

1. Assemble all the materials needed prior to testing each subject; these materials will include: microtainer containing the blood from the survey subject, a Hemocue cuvette, Kim wipes, and the Hemocue machine turned on and ready to operate. Reseal the Hemocue cuvette container immediately after taking out a cuvette for use.
2. Remove the cap from the well-mixed microtainer
3. Fill the Hemocue cuvette by holding the Microtainer in a horizontal position and carefully tilt the blood forward to the edge of the tube. Place the pointed tip of the Hemocue cuvette into the blood drop with the cuvette's groove facing upward. The cuvette will fill automatically by capillary action.
4. Never try to "top off" the cuvette after the initial filling. If the cuvette is not filled with the attempt, discard it in the sharps container and use a second cuvette.
5. Wipe off any excess blood from the sides of the cuvette with a Kim wipe, being careful not to touch the outer curved edge. Ensure that no blood is "sucked out" of the cuvette when wiping it.
6. Place the cuvette in the holder of the Hemocue and gently push the holder into the machine. The results will be displayed in approximately 15-45 seconds and will remain displayed for 4 minutes or until the slide arm is pulled out for removal of the cuvette.
7. Record your results, dispose of the cuvette in the sharps container, and dispose of all other materials (except the Microtainer, you will need the remaining blood for the dry blood spots and malaria slide) in the biohazard bag.

### **Making a malaria thick smear from a microtainer**

1. Place the correct label on the rough frosted end of the microscope slide, with the barcode fully visible on one side of the slide.

2. Using the 25 mL pipette, place a drop of blood from the Microtainer onto the slide (only use a little over half of the blood in the pipette tip – do not pipette out the full 25 mL. *Make sure that blood drop is placed on same side of the slide that the label's barcode is on.*
3. Spread the drop of blood with the end of the pipette tip to make an area about 1 cm in diameter.
4. Correct thickness is attained when newsprint is barely legible through the smear.
5. Stand the slide box on end and place slide into the slide box. Make sure slide is horizontal and level, as it would be if placed on the Table.
6. Do not lay slide box down (such that the slide is vertical) until the smear is mostly dry. This may take approximately 25 minutes.
7. When all the slides from that household are dry, put lid on slide box and secure it with a rubber band.

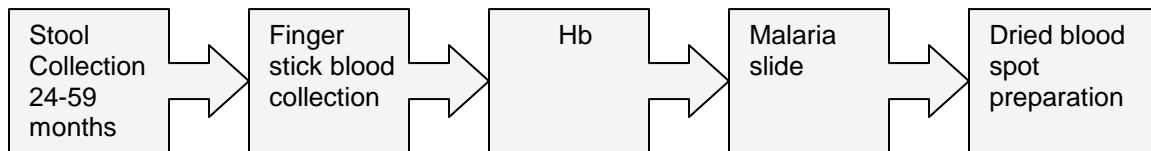
### **Preparing DBS cards from a Microtainer for PNG**

1. After the malaria slide is prepared, place the cap back on the Microtainer and invert 10 times. Pipette 25 :L of whole blood from the Microtainer onto each circle on the dried blood spot (DBS) card. If blood is left in the Microtainer after all spots have been filled, use the spaces between the circles to pipette the rest of the blood. Be sure not to let any of the spots overlap each other or the straight lines on the card.
2. Open the DBS box and set it on end, so that the DBS cards are lying horizontally when inserted. Place the card into the DBS box such that it does not touch any of the other cards. Set the fan up about 20 cm from the open box and allow the breeze to blow across the cards. Allow the blood spots to dry for approximately 10 minutes before closing and transporting the DBS box.
3. Avoid touching the blood spot. Drying time may be longer if the humidity is high. Avoid exposing spots to high temperatures. If working in sunlight, construct a “tent” with aluminium foil to place around the DBS box and drying cards so that they are in the shade. If this is not done, direct sunlight can degrade the vitamin A in the blood spots.
4. Each evening the DBS cards need to be stored correctly. Please follow these steps very carefully:
  - Each evening, stack the DBS cards with a piece of weighing paper in between the cards. This will keep the samples from contaminating one another. The blood spots should be completely dry before packing.
  - Place the stack of DBS cards into a low gas-permeable plastic bag. Add 5 desiccant packs and a humidity indicator card (cut open the vacuum-sealed bags to retrieve these cards; do not place the sealed bag into the low gas-permeable bag). Check the humidity indicator (or Humonitor) card each evening to make sure none of its

spots are pink. If even one is pink, replace the desiccant packs and the humidity indicator card with fresh ones.

### CHILDREN 6-59 MONTHS OF AGE

The procedures for children are the same as for the women (see above). The only differences are that urine will NOT be collected for children and children 24-59 months will have a stool sample collected where possible.



1. After completing all of the blood collection at that household, give the mother or the child's caretaker a stool cup for each child involved in the survey and have her collect a stool sample from each child into that child's labelled cup.
2. Using the wooden stick, transfer enough stool to the tube containing fixative to bring it to the mark. This amount of stool is usually the size of a small bean.
3. Place the cap onto the tube and tighten. Wrap parafilm tightly around the cap
4. Shake the tube vigorously until the stool pellet is broken up. Then place the tube into a ziploc bag with the other tubes.

### Notifying participants of their results

Participants will be given the result of their haemoglobin test before the survey team leaves the household. If the Hb result is 7 g/dl or lower, that survey subject will be referred to the nearest health facility. The name of the person referred will be entered onto the Anemia referral sheet (see annex 4.4). Due to logistical constraints resulting from the need to send all samples to laboratories in the United States, Indonesia, and Port Moresby and the difficulties in communication and transport within PNG, it would be extremely difficult to provide other tests results to survey participants.



## **APPENDIX 9B: HEMOCUE TESTING PROCEDURES**

Anemia, as determined by low hemoglobin (Hb), is often used as a proxy indicator for iron deficiency. One instrument used in testing for anemia is a photometer called Hemocue which tests the Hb concentration using a single drop of blood. This is a robust instrument that can give accurate readings in a field setting. However, errors in Hb assessment occur if appropriate procedures and techniques are not followed. Use of inappropriate procedures or techniques may lead to wide variations in Hb values. This then leads to incorrect estimates of anemia prevalence in the population.

The following steps are recommended to help ensure reliable testing of Hb using the Hemocue photometer.

### **Using the Hemocue for hemoglobin testing**

#### **Instrument calibration:**

1. At the beginning and end of each day of data collection, check the instrument's accuracy using the control cuvette. The control cuvette is specific for that instrument, so you must check that the serial numbers on the Hemocue machine itself and the control cuvette match exactly.
2. Test the control cuvette as you would a cuvette containing blood from a survey subject. Write down the result on the Hemocue quality control record sheet (see annex 4.1).
3. If the reading does not fall within the range marked on the control cuvette box, clean the cuvette holder and the control cuvette with a dry Kim wipe.
4. If the reading continues to be outside the correct range or reads ERROR, do not use the instrument. It needs to be serviced or replaced.
5. If the control cuvette reads within the specified range listed on the box, write this result on the Hemocue quality control record sheet, making a note that the holder was cleaned, and perform quality control (QC) on the instrument.

#### **Quality control:**

1. Perform QC in the morning and evening of each day of data collection by measuring and recording the results for each of the low, normal, and high control vials.
2. Report results on the Hemocue hemoglobin quality control form.

#### **Testing procedure from a Microtainer:**

1. Assemble all the materials needed prior to testing each subject. Reseal the cuvette container immediately after taking out a cuvette for use.
2. Remove the cap from the well-mixed Microtainer tube.
3. Fill the HemoCue cuvette by holding the Microtainer tube in a horizontal position and carefully tilt the blood forward to the edge of the tube. Place the pointed tip (with the cuvette's groove facing upward) of the HemoCue cuvette into the blood drop. The cuvette will fill automatically by capillary action.

4. Never try to “top off” the cuvette after the initial filling. If the cuvette is not filled with the attempt, discard it in the sharps container and use a second cuvette.
5. Wipe off any excess blood from the cuvette with a Kim wipe, being careful not to touch the outer curved edge. This may be done by wiping the edges as you would a butter knife. Ensure that no blood is “sucked out” of the cuvette when wiping it.
6. Place the cuvette in its holder and gently push the holder into the photometer. The results will be displayed in approximately 15-45 seconds and will remain displayed for 4 minutes or until the slide arm is pulled out for removal of the cuvette.
7. Record your results directly from the HemoCue digital reading before removing the cuvette. Dispose of the cuvette in the sharps container, and dispose of all other materials in the biohazard bag.

**Evening quality control:**

1. Measure and record the results for each of the low and normal range control vials.
2. Report results on the HemoCue Hemoglobin Quality Control Form.

**Common Problems to Avoid:**

The following are some important points related to the use of the Hemocue machine and finger stick sampling procedures:

- 1) Keep the instrument clean, especially the cuvette holder.

A swab dabbed with alcohol can be used to clean away any dirt or dried blood. This should be done at least once a day or when there is a visible build-up of dirt or blood. Be sure the cuvette holder is dry before re-inserting it in the machine.

- 2) Ensure instrument accuracy

Check the accuracy of the instrument twice each day or when performance is questioned using the control cuvette which comes with each Hemocue instrument. Keep a log of all calibration and QC readings. If the readings are outside the range of the control cuvette or liquid controls and the Hemocue is clean, the instrument needs to be replaced.

- 3) Keep cuvettes clean, dry and away from heat

Cuvettes are good for 3 months after opening the bottle in which they are stored. Keep the container lid completely closed unless you getting out another cuvette to avoid unnecessary exposure of the cuvettes to air, especially in humid conditions. Heat and moisture will destroy the chemicals in the cuvette which can lead to inaccurate Hb measurements.

- 4) Make sure the finger stick is adequate

Wide variations can occur in Hb measurements if the finger stick is inadequate. Inadequate finger sticks may occur because the lancet did not penetrate deep enough to allow adequate flow of blood and a representative concentration of red blood cells. In most cases if the finger stick is

done poorly, Hb values will be underestimated and the prevalence of Anemia will be overestimated.

5) Avoid poor technique, such as:

- Milking the finger to stimulate proper blood flow which will underestimate Hgb readings. This is often done when an inadequate finger stick has been done leading to poor blood flow.
- Mixing alcohol with the blood - The patient's finger should be totally dry before the finger stick is done. Use alcohol to clean the finger before the stick and then wipe away each drop of blood with a dry wipe to avoid any mixing of blood with alcohol. Wiping away the first drop of blood also will minimize the mixing of sweat with blood in hot, humid climates. This error usually underestimates the Hb reading. Also, avoid removing a cuvette from the bottle when your fingers are wet with alcohol. Besides diluting the blood in the cuvette, alcohol can destroy the chemicals in the cuvette.
- Obstructing blood flow to the puncture site. Do not hold the subject's hand so tightly as to obstruct blood flow to the fingers.

6) Adequately fill the cuvette

The cuvette needs to be filled with a drop of blood during one touch of the cuvette to the blood drop. If the flow of blood is interrupted for any reason and the cuvette is not filled, discard it and fill another cuvette. Do not "top off" the cuvette that is not completely filled by touching it a second time to the blood drop. This results in erroneous Hb readings...usually too high.

Any sign of air-bubbles within the circle means that the cuvette has not been filled adequately and should be discarded and a new cuvette used. The presence of bubbles will usually underestimate the Hb reading.

7) Do not "slam" the cuvette holder into position for reading.

Pushing the cuvette holder into the Hemocue machine suddenly or too rapidly will spray the blood in the cuvette into the Hemocue machine. This will not only invalidate the reading for that cuvette, but it will also dirty the inside of the Hemocue machine making future readings inaccurate.





**APPENDIX 11: REFERRAL SLIP FOR ANEMIA**

**PNG NATIONAL NUTRITION SURVEY 2005 – REFERRAL FORM**

Date patient seen in survey: \_\_\_\_\_ / \_\_\_\_\_ / 2005

Name of patient: \_\_\_\_\_ Age: \_\_\_\_\_

Reason for referral: \_\_\_\_\_

Name of referring person: \_\_\_\_\_

---

---

**APPENDIX12: LENGTH/HEIGHT-FOR-AGE, WEIGHT-FOR-LENGTH/HEIGHT AND WEIGHT-FOR-AGE USING THE NATIONAL CENTER FOR HEALTH STATISTICS (NCHS/WHO/CDC 1978) GROWTH REFERENCE**

**Table 12.1 Length/Height-for-age Z-score (HAZ) summary statistics among children, PNG National Nutrition Survey 2005. NCHS/CDC/WHO reference population**

---

N	Mean HAZ ±	Prevalence of low HAZ (%)
---	------------	---------------------------

---

Demographic Characteristic		SD				
			<-2 SD	95% CI	<-3 SD	95% CI
<b>National</b>	<b>895</b>	<b>-1.58 ± 1.30</b>	<b>36.3</b>	<b>31.5, 41.4</b>	<b>13.5</b>	<b>19.6, 26.4</b>
<b>Region</b>						
Southern	215	-1.24 ± 1.34	23.7	13.9, 37.4	15.3	9.3, 24.3
Highlands	203	-1.66 ± 1.35	41.4	32.9, 50.4	29.1	21.9, 37.4
Mamose	244	-1.83 ± 1.33*	45.9	35.4, 56.7	25.0	19.6, 31.3
Islands	233	-1.55 ± 1.35	33.5	25.8, 42.1	21.9	16.2, 28.9
<b>Residence</b>						
Urban	174	-1.21 ± 1.07	20.1	11.9, 31.8	15.5	9.4, 24.6
Rural	721	-1.67 ± 1.39*	40.2	34.9, 45.8	24.5	21.0, 28.5
<b>Sex</b>						
Male	485	-1.71 ± 1.36	39.6	33.8, 45.7	22.9	18.8, 27.6
Female	407	-1.42 ± 1.32	32.7	27.2, 38.6	22.9	18.8, 27.4
<b>Age groups (months)</b>						
6-11	101	-0.1 ± 1.43	17.8	11.5, 26.6	13.9	8.4, 21.9
12-23	224	-1.75 ± 1.37	39.3	31.9, 47.1	22.3	16.4, 29.6
24-35	216	-1.47 ± 1.31	34.7	27.9, 42.2	25.0	19.4, 31.6
36-47	194	-1.71 ± 1.24	39.2	31.9, 47.0	23.2	17.7, 29.8
48-59	160	-1.75 ± 1.34	42.5	34.2, 51.3	25.6	19.2, 33.3

Means and standard deviations (SD) are weighted and are calculated assuming simple random sampling; prevalence estimates and 95% CI are calculated using statistical weights to account for the complex sample design.

**Table 12.2 Weight-for-age Z-score (WAZ) summary statistics among children, PNG National Nutrition Survey 2005. NCHS/CDC/WHO reference population**

Demographic Characteristic	N	Mean WAZ ± SD	Prevalence of low WAZ (%)			
			<-2 SD	95% CI	<-3 SD	95% CI
<b>National</b>	<b>927</b>	<b>-1.34 ± 1.13</b>	<b>26.4</b>	<b>22.8, 30.4</b>	<b>5.4</b>	<b>3.9, 7.4</b>
<b>Region</b>						
Southern	219	-1.31 ± 1.09	24.2	15.9, 35.0	5.0	2.2, 10.8
Highlands	208	-0.90 ± 1.04	11.5	7.5, 17.4	1.9	0.6, 5.7
Mamose	254	-1.72 ± 1.07*	40.2	31.8, 49.1	9.8	6.3, 15.1
Islands	246	-1.35 ± 1.20	26.8	22.4, 31.8	4.1	2.0, 8.0
<b>Residence</b>						
Urban	179	-1.09 ± 0.97	18.4	9.2, 33.6	2.8	1.2, 6.4
Rural	748	-1.40 ± 1.16	28.3	24.7, 32.3	6.0	4.3, 8.4
<b>Sex</b>						
Male	500	-1.41 ± 1.06	27.8	23.5, 32.6	6.2	4.2, 9.1
Female	424	-1.26 ± 1.22	24.8	20.3, 29.9	4.2	2.7, 6.6
<b>Age groups (months)</b>						
6-11	104	-1.07 ± 1.46	24.0	16.9, 33.1	2.9	0.9, 8.7
12-23	227	-1.59 ± 1.13	34.4	28.4, 40.8	9.3	5.8, 14.3
24-35	233	-1.39 ± 1.12	28.3	22.4, 35.2	5.6	3.2, 9.5
36-47	198	-1.29 ± 0.99	20.2	15.5, 25.9	3.5	1.8, .9
48-59	165	-1.17 ± 1.02	21.8	15.9, 29.2	3.6	1.4, 8.9

Means and standard deviations (SD) are weighted and are calculated assuming simple random sampling; prevalence estimates and 95% CI are calculated using statistical weights to account for the complex sample design.

**Table 12.3 Weight-for-Height Z-score (WHZ) summary statistics among children, PNG National Nutrition Survey 2005. NCHS/CDC/WHO reference population**

Demographic Characteristic	N	Mean WHZ ± SD	Prevalence of low WHZ (%)			
			<-2 SD	95% CI	<-3 SD	95% CI
<b>National</b>	<b>898</b>	<b>-0.46 ± 0.91</b>	<b>4.2</b>	<b>2.9, 6.2</b>	<b>0.1</b>	<b>0.0, 0.8</b>
<b>Region</b>						
Southern	214	-0.66 ± 0.91	2.8	1.3, 5.8	0.0	0.0
Highlands	203	-0.16 ± 0.88	2.0	0.6, 6.0	0.0	0.0
Mamose	243	-0.76 ± 0.86	7.4	4.0, 13.4	0.4	0.1, 2.9
Islands	238	-0.48 ± 0.89	4.2	2.2, 7.8	0.0	0.0
<b>Residence</b>						
Urban	174	-0.44 ± 0.96	3.4	1.0, 11.5	0.0	0.0
Rural	724	-0.46 ± 0.95	4.4	2.9, 6.6	0.1	0.0, 1.0
<b>Sex</b>						
Male	485	-0.47 ± 0.96	4.3	2.6, 7.1	0.2	0.2, 0.2
Female	410	-0.44 ± 0.95	3.9	2.3, 6.6	0.0	0.0
<b>Age groups (months)</b>						
6-11	103	-0.54 ± 0.94	2.9	0.9, 8.6	0.0	0.0
12-23	224	-0.77 ± 1.03	10.3	6.6, 15.5	0.4	0.1, 3.1
24-35	215	-0.45 ± 0.91	3.7	1.9, 7.2	0.0	0.0
36-47	194	-0.27 ± 0.85	1.0	0.3, 4.1	0.0	0.0
48-59	160	-0.18 ± 0.85	0.6	0.1, 4.4	0.0	0.0

Means and standard deviations (SD) are weighted and are calculated assuming simple random sampling; prevalence estimates and 95% CI are calculated using statistical weights to account for the complex sample design.

**APPENDIX 13: VISIT TO PAPUA NEW GUINEA BY MR. QUENTIN JOHNSON,  
TECHNICAL ADVISOR, MICRONUTRIENT INITIATIVE, CANADA.**

25 June – 6th July 2006

**EXECUTIVE SUMMARY****Selection of Food Vehicles for Fortification**

Rice, wheat flour, and vegetable oil can be considered as vehicles for staple food fortification in PNG based on the coverage data (67% of population covered), the central processing of these staple foods in PNG, and the per capita consumption (grams per day) of each of the target foods is sufficient. Rice and salt are already being fortified

**Sugar**

In the case of sugar the coverage data (supplied by Ramu Sugar management) is less than 50% for table sugar directly consumed by the population. Sugar fortification should be considered to be a secondary food vehicle for fortification compared to rice, wheat and vegetable oil.

**Private Sector**

The private sector industries in PNG all have a strong sense of social responsibility and they are in favor of staple food fortification for PNG provided that it is made mandatory for both nationally produced and imported staple foods.

**Public Sector**

- The Food Sanitation Council is well placed to direct the review of the food regulations and standards. The main weaknesses within the public sector are the ability to routinely inspect and monitor both national food production and imports; the ability to analyze foods for vitamins and minerals within the country; and sufficient funding.
- The Sanitation Food Regulations should be amended, to include Electrolytic Iron and Sodium Iron EDTA as a permitted form of Iron, and Reduced Iron should be removed as a permitted form of Iron
- Staple food fortification needs to be included in any revised Nutrition Policy and Strategy of the Department of Health.
- Provided that the government commitment and political will is evident through the policy and strategic commitment the Government of Papua New Guinea could prepare and submit proposal to GAIN for the implementation of vegetable oil and wheat flour fortification. UNICEF Papua New Guinea has expressed willingness to support the Department of Health in the development of a proposal for submission to funding agencies

**Proposed Fortification levels of staple foods**

Collaboration with other Pacific Countries is necessary to allow for uniform fortification standards in the region.

Staple Food	Current Fortification	Proposed Fortification	Additional cost Fortification Cost \$/MT of staple food (micronutrients only)
Salt	70 ppm Iodine production 30 ppm Iodine marketplace		
Rice	6 ppm Thiamine 60 ppm Niacin 30 ppm Iron	6 ppm Thiamine 60 ppm Niacin 30 ppm Iron 15 ppm Zinc 1.5 ppm Folic Acid	\$0.50 per MT (for including Zinc and Folic Acid to existing) of rice
Wheat Flour	None	6 ppm Thiamine 2 ppm Riboflavin 55 ppm Niacin 1.5 ppm Folic Acid 60 ppm Iron 30 ppm Zinc	\$1.50 per MT of wheat flour
VegeTable oil	None	80 IU Vitamin A per gram	\$4.80 per MT of oil
Sugar <sup>1</sup>	None	50 IU per gram	\$19.20 per MT of sugar

Sources: The Micronutrient Initiative Consultants Training course Dubai September 2003

The MI/CDC Iron workshop Cuernavaca Mexico December 2004

<sup>1</sup> Sugar is considered to be a secondary food vehicle for PNG. Data provided for information purposes



**APPENDIX 14: LIST OF CLUSTERS WHERE NO SALT WAS AVAILABLE IN ANY OF THE HOUSEHOLDS IN THE ENTIRE CLUSTER**

Cluster number	Cluster name
6	Upaia (Kikori – Gulf Province)
7	Mailiu Island (Abau, Central Province)
22	Fatavi (Milne Bay Province)
26	Opokai (Imbongga, Southern Highlands Province)
30	Mala (Nipa, Southern Highlands Province)
54	Imon (Kabum, Morobe)
63	Arimbugor (Ramu, Madang)
89	Kalagen (Akolet, West New Britain Province)