Antimicrobial Resistance Module for Population-Based Surveys

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Antimicrobial Resistance Module for Population-based Surveys

The Antimicrobial Resistance (AMR) Module for the Demographic and Health Survey (DHS) and other population-based surveys will generate household-level information on knowledge and behavior regarding antimicrobial medicines and awareness regarding antimicrobial resistance among the general community. This information is crucial for spearheading advocacy, establishing policy, developing interventions, and evaluating efforts for AMR containment among the general community.

Background

The World Health Organization (WHO) in 2001 developed the "Global Strategy for the Containment of Antimicrobial Resistance," which contained recommendations for a variety of interventions. Among those interventions, the Global Strategy identified antimicrobial consumers (patients and the general community) as a priority intervention group for education regarding appropriate use of antimicrobials in order to minimize the development of resistance. This is especially relevant in most low- and middle-income countries where antimicrobials are often unregulated and freely available without a prescription and used inappropriately in an informal healthcare system. Designing and evaluating the effectiveness of consumer-focused interventions requires quantifying the knowledge and behaviors associated with antimicrobial drug use in the general community.

Purpose

The purpose of the AMR Module is to quantify the general community's knowledge and behavior regarding antimicrobial drugs and the prevalence of antimicrobial use in the community. The survey items in the AMR Module are divided into three main topics that provide quantitative information on ten related indicators:

Correct Antimicrobial Medicine Knowledge and Behavior

1. Percentage of adults who report that they know what an antimicrobial medicine is
2. Percentage of adults who can name at least one antimicrobial medicine (spontaneously or prompted)
3. Among adults who have heard of antimicrobial medicines, percentage who have correct knowledge about antimicrobial medicines [3 components]
    - % of adults who have heard of antimicrobial medicines who name only infectious diseases that can be treated with antimicrobial medicines[1]
    - % of adults who have heard of antimicrobial medicines who do not believe antimicrobial medicines are useful in treating colds
    - % of adults who have heard of antimicrobial medicines who do not believe antimicrobial medicines are useful in treating watery diarrhea
4. Among adults who have visited a health professional when sick, percentage who have not asked a health professional for an antimicrobial medicine

[1] Listing a non-infectious disease or an inappropriate infectious disease will be a wrong answer

5. Among adults who have taken an antimicrobial medicine in the past, percentage who have not stopped taking an antimicrobial before he/she was supposed to[2]

Correct Antimicrobial Resistance Knowledge

6. Percentage of adults who report that they have heard of antimicrobial resistance[3]
7. Percentage of adults who report that they have heard of antimicrobial resistance who have correct knowledge about antimicrobial resistance

Current Use of Medicines

8. Percentage of adults who report that they have taken medication the day of the interview or the previous day
9. Percentage of adults who are taking an antimicrobial medicine
10. Percentage of regulated (not over-the-counter) medications for which the packages were examined that were recommended and obtained appropriately [2 components]
    - % of medicines recommended by a health professional
    - % of medicines obtained from a regulated source

In addition to these 10 indicators the core DHS questionnaire already contains some questions related to antimicrobial resistance initiatives. These specific questions relate to the educational recommendations for intervention among patients and the general community as cited in the WHO Global Strategy.

- Infection prevention (e.g. water, sanitation and immunization)
- Infection treatment (e.g. antibiotics for acute respiratory infections & diarrhea treatment)

Use of the AMR module

Countries (governments, donors, and other stakeholders) that include an AMR Module in a population-based survey such as the DHS can use the information for a variety of purposes:

- Promote the awareness of issues related to antimicrobial resistance
- Advocate for antimicrobial resistance policies
- Develop interventions that reduce antimicrobial resistance
- Evaluate the effectiveness of interventions – especially if the AMR Module is included in consecutive DHS.

Limitations

Due to the limitations of a population-based survey, the AMR Module cannot provide information on:

- Dispensing practices in health facilities or by vendors;
- Appropriateness of a medicine to treat the presumed diagnosis.

Depending on antimicrobial and medication use rates, the sample size may not provide accurate estimates of actual antimicrobial and medication use practices.

[2] There is a question that explores reasons for stopping.
[3] There is a question that explores the source of this knowledge.

Specifications

The AMR module contains 24 questions and takes about 15 minutes to administer. Adaptations to the local situation require identifying local terminology for "antimicrobials" and common infections such as upper respiratory tract infections and names for antimicrobial drugs. An additional training on the module needs to be incorporated into the training schedule for the interviewers and should be conducted by medical personnel familiar with antimicrobial concepts.

Antimicrobial Resistance
TABULATION PLAN

Table 1.1. Knowledge of antimicrobial medicines and their use

Percentage of adults who recognize antimicrobial medicines, and among them, the percentage who have correct knowledge of antimicrobial medicines by background characteristics [country, year]

	Antimicrobial medicine recognition			Knowledge of antimicrobial use				
Background characteristic	**Percentage of adults who spontaneously name at least one antimicrobial medicine**	**Percentage of adults who have heard of antimicrobial medicines[1]**	Number of adults interviewed	Percentage of adults who name only infectious diseases that can be treated with antimicrobial medicines	Percentage of adults who do not believe antimicrobial medicines are useful in treating colds	Percentage of adults who do not believe antimicrobial medicines are useful in treating watery diarrhea	**Percentage of adults who have correct knowledge about antimicrobial medicines[2]**	Number of adults who have heard of antimicrobial medicines
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residence								
Urban								
Rural								
Region								
Region 1								
Region 2								
Region 3								
Education								
None								
Primary								
Secondary								
Higher								
Wealth index								
Lowest								
Second								
Middle								
Fourth								
Highest								
Total								

[1]Respondent can name at least one antimicrobial medicine spontaneously or can respond that he or she has heard of at least one antimicrobial medicine when probed.

[2]Respondent has heard of at least one antimicrobial medicine, names only infectious diseases that can be treated with antimicrobial medicines, and does not believe antimicrobial medicines are useful in treating colds or watery diarrhea.

Numerators
1: Q1102A: at least one antimicrobial medicine mentioned spontaneously (responses with codes "1")
2: Q1102A/1102B: responses with codes "1" or "2"
4: Q1103A: at least one appropriate infectious diseases (codes A through F) and no inappropriate infections
5: Q1105 = NO
6: Q1107 = NO
7: Column 4 AND Column 5 AND Column 6

Denominator for Column 1
3: all interviewed

Denominator for Columns 4–7
8: respondents with codes "1" or "2" in Q1102A/1102

Tabulation Plan

Table 1.2. Antimicrobial medicines and respondent behavior

Among adults who have visited a health professional when sick, the percentage who did not ask for antimicrobials, and among those who have ever taken an antimicrobial, the percentage who have stopped taking the antimicrobial before completing the full course by background characteristics [country, year]

	Among adults who have visited a health professional when sick:		Among adults who have ever taken an antimicrobial medicine:	
Background characteristic	**Percentage of adults who have not asked for an antimicrobial medicine**	Number of adults who have visited a health professional when sick	**Percentage of adults who have not stopped taking the antimicrobial before completing the full course**	Number of adults who have ever taken an antimicrobial medicine
	(1)	(2)	(3)	(4)
Residence				
Urban				
Rural				
Region				
Region 1				
Region 2				
Region 3				
Education				
None				
Primary				
Secondary				
Higher				
Wealth index				
Lowest				
Second				
Middle				
Fourth				
Highest				
Total				

Numerators:
1: Q1109 = NO
3: Q1111 = NO

Denominator for Column 1
2: Q1108 = YES

Denominator for Column 3
4: Q1110 = YES

Table 2. Knowledge of antimicrobial resistance

Percentage of adults who have heard of antimicrobial resistance, and among them, percentage with correct knowledge about antimicrobial resistance by background characteristics [country, year]

	Antimicrobial resistance recognition		Correct knowledge of medicine resistance				
Background characteristic	**Percentage of adults who have heard of antimicrobial resistance**	Number of adults interviewed	Percentage of adults who can name an antimicrobial medicine to which an infectious disease has become resistant	Percentage of adults who can name an infectious disease susceptible to antimicrobial resistance	Percentage of adults who can identify a factor that results in antimicrobial resistance[1]	**Percentage of adults who have correct knowledge about antimicrobial resistance[2]**	Number of adults who have heard of antimicrobial resistance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Residence							
Urban							
Rural							
Region							
Region 1							
Region 2							
Region 3							
Education							
None							
Primary							
Secondary							
Higher							
Wealth index							
Lowest							
Second							
Middle							
Fourth							
Highest							
Total							

[1]Factors that result in antimicrobial resistance include poor quality antimicrobials, when one stops taking antimicrobials before completing the full course, insufficient amount of antimicrobial, when one uses antimicrobials that are prescribed for someone else, and when one uses the wrong antimicrobial.

[2]Respondent can name at least one antimicrobial medicine to which an infectious disease has become resistant, can name an infectious disease susceptible to antimicrobial resistance, and can identify a factor that results in antimicrobial resistance.

Numerators
1: Q1113 = YES
3: Q1115: ONLY country-specific antimicrobial medicines to which infectious diseases have become resistant
4: Q1116: ONLY country-specific infectious diseases susceptible to antimicrobial resistance
5: Q1117: at least one correct factor and no wrong ones
6: Column 3 AND Column 4 AND Column 5

Denominator for Column 1
2: all interviewed

Denominator for Column 3-6
7: Q1113 = YES

Tabulation Plan

Table 3. Current use of medicines

Percentage of adults currently taking any medicine and percentage taking an antimicrobial medicine, and among these medicines, percentage of which were recommended and obtained appropriately by background characteristics [country, year]

	Adults taking medicines			Medicines recommended and obtained appropriately			
Background characteristics	**Percentage of adults taking any medicine**	**Percentage of adults taking an antimicrobial medicine**	Number of adults interviewed	Percentage of medicines recommended by a health professional[1]	Percentage of medicines obtained from a regulated source[2]	**Percentage of medicines recommended and obtained appropriately[3]**	Number of medicine packages examined
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Residence							
Urban							
Rural							
Region							
Region 1							
Region 2							
Region 3							
Education							
None							
Primary							
Secondary							
Higher							
Wealth index							
Lowest							
Second							
Middle							
Fourth							
Highest							
Total							

[1]Health professional includes doctor, nurse, or pharmacist (country-specific)
[2]Regulated source includes health professional/health facility/mobile outreach unit, community health worker, and pharmacy/chemist (country-specific).
[3]Recommended and obtained appropriately medication: recommended by a health professional and obtained from a regulated source

Numerators
1: Q1118 = YES
2: Q1120: at least one antimicrobial medicine is listed
4: Q1121: recommended by a health professional
5: Q1122: obtained from a regulated source
6: Q1121: recommended by a health professional AND Q1122: obtained from a regulated source

Denominator for Columns 1–2
3: total number interviewed

Denominator for Columns 4–6
7: Q1120: number of medication packages recorded

ANTIMICROBIAL RESISTANCE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1101	Have you ever heard of a type of medicine called an antimicrobial medicine? [1]	YES 1 NO 2	→ 1102B
1102A	**Which antimicrobial (medicines) do you know?** [2] **PROBE: Do you know any others?** CIRCLE "1" FOR ALL MENTIONED SPONTANEOUSLY. FOR ANTIMICROBIALS NOT MENTIONED SPONTANEOUSLY, CONTINUE WITH THE FOLLOWING:		
1102B	**I am going to mention some antimicrobial(s) (medicines) and I want you to let me know if you have heard of them.** CIRCLE "2" FOR ALL MENTIONED AFTER PROBING. CIRCLE "8" FOR DON'T KNOW (DK).	SPONTANEOUS / ASK FOR EACH NOT MENTIONED / DK	
		ANTIBACTERIALS	
a	Have you ever heard of Penicillin?	PENICILLIN 1 2 8	
b	Have you ever heard of Tetracycline?	TETRACYCLINE 1 2 8	
c	Have you ever heard of Amoxicillin?	AMOXICILLIN 1 2 8	
		ANTIMALARIALS	
d	Have you ever heard of Chloroquine?	CHLOROQUINE 1 2 8	
e	Have you ever heard of Sulfadoxine-Pyrimethamine or SP?	SULFADOXINE- PYRIMETHAMINE/SP 1 2 8	
f	Have you heard of Artemisinin Combination Therapy or ACT?	ARTEMISININ COMB.THERAPY/ACT 1 2 8	
		ANTIVIRALS	
g	Have you heard of AZT or ARVs?	AZT/ARVs 1 2 8	
		ANTIFUNGALS	
h	Have you ever heard of Fluconazole?	FLUCONAZOLE 1 2 8	
i	Have you ever heard of Ketoconazole?	KETOCONAZOLE 1 2 8	
		ANTIPROTOZOALS	
j	Have you ever heard of Mertonidazole?	METRONIDAZOLE 1 2 8	
		OTHER MEDICINES	
k	Have you ever heard of any other such antimicrobials (medicines)? PROBE: Which ones?	MEDICINE 1 _____ (SPECIFY) 1 2 8 MEDICINE 2 _____ (SPECIFY) 1 2 8	
1103	CHECK **1102A and 1102B**: AT LEAST ONE '1' OR '2' IS CIRCLED	CODE '8' IS CIRCLED FOR EACH ANTIMICROBIAL	→ 1118
1103A	What diseases (illnesses) are these antimicrobials (medicines), which we just discussed, used to treat? [3] PROBE: Are there any other diseases? RECORD ALL MENTIONED. IF 'INFECTION' IS GIVEN AS AN ANSWER, PROBE TO OBTAIN THE NAME OF A SPECIFIC DISEASE IF 'DIARRHEA' IS GIVEN AS AN ANSWER, PROBE: Do you mean bloody diarrhea or watery diarrhea?	**APPROPRIATE INFECTIONS** STI/STD A PNEUMONIA B BLOODY DIARRHEA OR DYSENTERY C HIV/AIDS D TB E MALARIA F **INAPPROPRIATE INFECTIONS** COLD G WATERY DIARRHEA H OTHER _____ (SPECIFY) X OTHER _____ (SPECIFY) Y DON'T KNOW Z	
1104	CHECK **1103A** FOR CODE '**G**': "COLD" **NOT** GIVEN AS A RESPONSE	"COLD" GIVEN AS A RESPONSE	→ 1106
1105	Do you believe that some of these antimicrobials (medicines) we discussed are useful in treating a cold? [4]	YES 1 NO 2 DON'T KNOW 8	
1106	CHECK **1103A** FOR CODE '**H**': "WATERY DIARRHEA" **NOT** GIVEN AS A RESPONSE	"WATERY DIARRHEA" GIVEN AS A RESPONSE	→ 1108
1107	Do you believe that some of these antimicrobials (medicines) we discussed are useful in treating watery diarrhea? [5]	YES 1 NO 2 DON'T KNOW 8	
1108	Have you ever been sick and had to visit a health professional such as a doctor, nurse, or pharmacist?	YES 1 NO 2 DON'T KNOW 8	→ 1110

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1109	When you have visited a health professional, such as a doctor, nurse, or pharmacist, have you ever asked for any of these antimicrobials (medicines)?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
1110	Have you ever taken any of these medicines that we have been discussing. I am referring to the antibiotics, antimalarials, or antivirals (antimicrobials), which are used to fight infections?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	→ 1113
1111	Did you ever stop taking these antimicrobials (medicines) before completing the full course?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	→ 1113
1112	Why did you stop taking the antimicrobial (medicine)? PROBE: Did you have any other reasons? RECORD ALL MENTIONED.	DIDN'T HAVE ENOUGH MONEY TO BUY THE ENTIRE COURSE . . . A WASN'T GIVEN ENOUGH . . . B RAN OUT . . . C WAS TOLD TO STOP BY A HEALTH PROFESSIONAL . . . D CONDITION DID NOT IMPROVE . . . E CONDITION IMPROVED . . . F THERE WERE SIDE EFFECTS/ MEDICINE MADE HIM/HER SICK . . . G DON'T LIKE TO TAKE MEDICINES . . . H DIDN'T THINK IT WAS WORKING . . . I OTHER _____ (SPECIFY) X OTHER _____ (SPECIFY) Y DON'T KNOW . . . Z	
1113	Some of these medicines that used to work in the past for fighting infections are no longer working. This problem is called drug resistance (antimicrobial resistance). Have you ever heard of this problem where medicines no longer work?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	→ 1118
1114	Where did you hear about this problem of medicines no longer working (antimicrobial resistance)? PROBE: From any other place or person? RECORD ALL MENTIONED.	HEALTH WORKER/CLINIC . . . A ON THE RADIO . . . B ON THE TV . . . C IN A NEWSPAPER OR MAGAZINE . . . D COMMUNITY/FRIEND/RELATIVE . . . E OTHER _____ (SPECIFY) . . . X OTHER _____ (SPECIFY) . . . Y DON'T REMEMBER . . . Z	
1115	Can you name some of these antimicrobials (medicines) that used to work in the past for fighting infections that are no longer working? (medicines for which antimicrobial resistance or drug resistance has occurred?)[2] PROBE: Do you know any others? RECORD ALL MENTIONED.	**ANTIMICROBIALS** **ANTIBACTERIALS** PENICILLIN . . . A TETRACYCLINE . . . B AMOXICILLIN . . . C **ANTIMALARIALS** CHLOROQUINE . . . D SULFADOXIME-PYRIMETHAMINE/SP . . . E ARTEMISININ COMB. THERAPY/ACT . . . F **ANTIVIRALS** ZIDOVUDINE/AZT/ARVs . . . G **ANTIFUNGALS** FLUCONAZOLE . . . H KETOCONAZOLE . . . I **ANTIPROTOZOALS** METRONIDAZOLE . . . J **OTHER MEDICINES** IBUPROFEN . . . K PARACETAMOL . . . L OTHER _____ (SPECIFY) . . . X OTHER _____ (SPECIFY) . . . Y DON'T KNOW . . . Z	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1116	Can you name some diseases or infections for which some of these antimicrobials (medicines) no longer work? In other words, antimicrobial resistance or drug resistance has occurred?[6] PROBE: Do you know any other diseases? RECORD ALL MENTIONED. IF 'DIARRHEA' IS GIVEN AS AN ANSWER, PROBE: Do you mean bloody diarrhea or watery diarrhea?	STI/STD ..... A PNEUMONIA ..... B BLOODY DIARRHEA OR DYSENTERY ..... C HIV/AIDS ..... D TB ..... E MALARIA ..... F WATERY DIARRHEA ..... G OTHER _____ ..... X (SPECIFY) OTHER _____ ..... Y (SPECIFY) DON'T KNOW ..... Z	
1117	What can cause some of these medicines [ANTIMICROBIALS] that used to work in the past to stop working? [IN OTHER WORDS, FOR ANTIMICROBIAL RESISTANCE OR DRUG RESISTANCE TO OCCUR?][7] PROBE: Are there any other causes? RECORD ALL MENTIONED.	POOR QUALITY ANTIMICROBIAL ..... A WHEN ONE STOPS TAKING IT BEFORE COMPLETING THE FULL COURSE ..... B INSUFFICIENT AMOUNT OF ANTIMICROBIAL ..... C WHEN ONE USES ANTIMICROBIALS THAT ARE PRESCRIBED FOR SOMEONE ELSE ..... D WHEN ONE USES THE WRONG ANTIMICROBIAL ..... E OTHER _____ W (SPECIFY) OTHER _____ X (SPECIFY) OTHER _____ Y (SPECIFY) DON'T KNOW ..... Z	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1118	Today or yesterday, during the day or night, did you take any medicines? [8] MAKE IT CLEAR TO RESPONDENT THAT YOU ARE SPEAKING OF PRESCRIPTION OR OVER-THE-COUNTER MEDICINES, **NOT** HERBAL OR TRADITIONAL MEDICINES.	YES . . . . 1 NO 2	 → 1124
1119	Can you show me the medicines themselves, the packaging, or bottles for the medicines that you are taking?' TRANSCRIBE IN THE TABLE BELOW THE NAME OF EACH MEDICATION (EITHER BRAND OR GENERIC), AND RECORD IF THE MEDICINE WAS SEEN AND LEGIBLE, SEEN AND NOT LEGIBLE, RECALLED BY THE RESPONDENT, OR NOT AVAILABLE. IF PACKAGES OR BOTTLES NOT AVAILABLE FOR A MEDICINE, ASK FOR THE NAME. COMPLETE QUESTION 1121 FOR ALL MEDICINES SHOWN. AFTER ALL MEDICINES HAVE BEEN RECORDED IN 1120, ASK QUESTIONS 1121-1122 FOR EACH MEDICATION UNTIL ALL MEDICINES HAVE BEEN EXHAUSTED. USE ADDITIONAL QUESTIONNAIRES IF NECESSARY.		

NO.		MEDICINE 1	MEDICINE 2	MEDICINE 3
1120	NAME OF MEDICINE	______ (NAME)	______ (NAME)	______ (NAME)
	MEDICINE/PACKAGE/ BOTTLE SEEN?			
	IF SEEN AND LEGIBLE, RECORD "1"	MEDICATION SEEN, LEGIBLE 1	MEDICATION SEEN, LEGIBLE 1	MEDICATION SEEN, LEGIBLE 1
	IF SEEN AND NOT LEGIBLE, RECORD "2"	MEDICATION SEEN, NOT LEGIBLE 2	MEDICATION SEEN, NOT LEGIBLE 2	MEDICATION SEEN, NOT LEGIBLE 2
	IF RECALLED, RECORD "3"	MEDICATION RECALLED. 3	MEDICATION RECALLED. 3	MEDICATION RECALLED. 3
	IF NAME NOT AVAILABLE, RECORD "4"	NOT AVAILABLE 4	NOT AVAILABLE 4	NOT AVAILABLE 4
1121	Who recommended or prescribed that you take that medicine/[NAME OF MEDICINE]?	HEALTH PROFESSIONAL AT HEALTH FACILITY/MOBILE OUTREACH UNIT[9] . . . . . 01 COMMUNITY HEALTH WORKER . . . . . 02 PHARMACIST/CHEMIST . . . . . 03 GENERAL STORE WORKER . 04 DRUG STORE WORKER . . . . . 05 MARKET STALL WORKER . . . 06 TRAD. HEALER . . . . . 07 FRIEND/NEIGHBOR . . . . . 08 RELATIVE . . . . . 09 NO ONE/RESPONDENT HERSELF/HIMSELF . . . . . 95 OTHER ______ 96 (SPECIFY)(SPECIFY) DON'T KNOW 98	HEALTH PROFESSIONAL AT HEALTH FACILITY/MOBILE OUTREACH UNIT[9] . . . . . 01 COMMUNITY HEALTH WORKER . . . . . 02 PHARMACIST/CHEMIST . . . . . 03 GENERAL STORE WORKER . 04 DRUG STORE WORKER . . . . . 05 MARKET STALL WORKER . . . 06 TRAD. HEALER . . . . . 07 FRIEND/NEIGHBOR . . . . . 08 RELATIVE . . . . . 09 NO ONE/RESPONDENT HERSELF/HIMSELF . . . . . 95 OTHER ______ 96 (SPECIFY)(SPECIFY) DON'T KNOW 98	HEALTH PROFESSIONAL AT HEALTH FACILITY/MOBILE OUTREACH UNIT[9] . . . . . 01 COMMUNITY HEALTH WORKER . . . . . 02 PHARMACIST/CHEMIST . . . . . 03 GENERAL STORE WORKER . 04 DRUG STORE WORKER . . . . . 05 MARKET STALL WORKER . . . 06 TRAD. HEALER . . . . . 07 FRIEND/NEIGHBOR . . . . . 08 RELATIVE . . . . . 09 NO ONE/RESPONDENT HERSELF/HIMSELF . . . . . 95 OTHER ______ 96 (SPECIFY)(SPECIFY) DON'T KNOW 98

1122	Where did you get that medicine/[NAME OF MEDICINE]?	HEALTH PROFESSIONAL/ HEALTH FACILITY/MOBILE OUTREACH UNIT[9] . . . . 01 COMMUNITY HEALTH WORKER . . . . 02 PHARMACY/CHEMIST . . . . . . 03 GENERAL STORE . . . . 04 DRUG STORE . . . . 05 MARKET STALL . . . . 06 TRAD. HEALER . . . . 07 FRIEND/NEIGHBOR . . . . 08 RELATIVE . . . . 09 NO ONE/RESPONDENT HERSELF/HIMSELF . . . . . . 95 OTHER ____________ 96 (SPECIFY)(SPECIFY) DON'T KNOW 98	HEALTH PROFESSIONAL/ HEALTH FACILITY/MOBILE OUTREACH UNIT[9] . . . . 01 COMMUNITY HEALTH WORKER . . . . 02 PHARMACY/CHEMIST . . . . . . 03 GENERAL STORE . . . . 04 DRUG STORE . . . . 05 MARKET STALL . . . . 06 TRAD. HEALER . . . . 07 FRIEND/NEIGHBOR . . . . 08 RELATIVE . . . . 09 NO ONE/RESPONDENT HERSELF/HIMSELF . . . . . . 95 OTHER ____________ 96 (SPECIFY)(SPECIFY) DON'T KNOW 98	HEALTH PROFESSIONAL/ HEALTH FACILITY/MOBILE OUTREACH UNIT[9] . . . . 01 COMMUNITY HEALTH WORKER . . . . 02 PHARMACY/CHEMIST . . . . . . 03 GENERAL STORE . . . . 04 DRUG STORE . . . . 05 MARKET STALL . . . . 06 TRAD. HEALER . . . . 07 FRIEND/NEIGHBOR . . . . 08 RELATIVE . . . . 09 NO ONE/RESPONDENT HERSELF/HIMSELF . . . . . . 95 OTHER ____________ 96 (SPECIFY)(SPECIFY) DON'T KNOW 98
1123		GO BACK TO 1121 IN NEXT COLUMN; OR IF NO MORE MEDICINES, GO TO 1124.	GO BACK TO 1121 IN NEXT COLUMN; OR IF NO MORE MEDICINES, GO TO 1124.	GO BACK TO 1121 IN FIRST COLUMN OF A NEW QUESTIONNAIRE; OR IF NO MORE MEDICINES, GO TO 1124.
1124	RECORD THE TIME.		HOUR . . . . [ ][ ] MINUTES . . . . [ ][ ]	

FOOTNOTES

[1] The term 'antimicrobial' includes antibacterials, antivirals, antifungals, anthelmintics, and antiprotozoals (including antimalarials). The locally appropriate and publicized word should be used and substituted when any reference to antimicrobials is made in this questionnaire. In countries where there is no equivalent term, the following wording is recommended:

Now I would like to ask you some questions about different medicines.

Antibiotics, antimalarials, antivirals are a group of medicines that are known as antimicrobials. These medicines are used to fight infections caused by germs, such as bacteria, viruses, and fungi.
Have you ever heard of these types of medicines?

[2] Coding categories for drugs to be developed locally and revised based on the pretest. It may include brand and/or generic names that are commonly known in the community. However, the broad categories must be maintained.

[3] Coding categories for infections to be developed locally and revised based on the pretest. However, the broad categories (APPROPRIATE INFECTIONS AND INAPPROPRIATE INFECTIONS) must be maintained. If locally relevant inappropriate infections are added to the coding categories, for each infection add a pair of questions similar to 1104/1105 and 1106/1107after 1107.

[4] Use country-specific word for viral upper respiratory tract infection

[5] Use country-specific word for non-bloody diarrhea of short duration

[6] Coding categories to be developed locally and revised based on the pretest

[7] Coding categories to be developed locally and revised based on the pretest. The final coding categories should reflect country-specific communication messages.

[8] Use country appropriate word that distinguishes regulated medicines (prescription or over-the-counter) from herbal or 'bush' medicine

[9] Each country to come up with a list of health professionals who are authorized and those who are not authorized to prescribe or recommend antimicrobials in that country.

[10] Each country to come up with a list of sources that are authorized and not authorized to sell antimicrobials in that country.

Antimicrobial Resistance Module

Data Collector's Guide

December 2007

The Antimicrobial Resistance (AMR) Module for the Demographic and Health Survey (DHS) is designed to:

- Generate nationally representative, household-level information on antimicrobial medicine use among the general community.
- Provide information for spearheading advocacy, establishing policy, developing interventions, and evaluating efforts for AMR containment among the general community.

The international Monitoring and Evaluation to Assess and Use Results DHS program is designed to:

- Assist countries in conducting household sample surveys to periodically monitor changes in population, health, and nutrition.
- Provide an international database that can be used by researchers investigating topics related to population, health, and nutrition.

As part of the international DHS program, surveys are being conducted in countries in Africa, Latin America and the Caribbean, Asia, Eastern Europe, and the Middle East. Data from these surveys are used to better understand the population, health, and nutrition situation in the countries surveyed.

The following section should be used with the standard DHS Interviewers Manual.

Antimicrobial Resistance (Qs 1101-1124)

The purpose of the AMR Module is to quantify the general community's knowledge regarding antimicrobial medications and the prevalence of antimicrobial use in the community. The survey items in the AMR Module are divided into three main topics and provide quantitative information on:

- Correct antimicrobial knowledge and behavior
- Correct AMR knowledge
- Current medicine use

This section asks respondents about antimicrobial medicines. Overall, the section assesses knowledge about antimicrobial medicines, knowledge of AMR, and use of antimicrobials.

Q. 1101: KNOWLEDGE OF THE TERM "ANTIMICROBIAL MEDICINES"

This question is to find out if the respondent has ever heard of the term "antimicrobial medicines." A country-specific term may be used instead of "antimicrobials." This term may be more familiar to respondents and should be consistent with terms used by the national Ministry of Health. The definition of the word antimicrobials is given in the question. Read it slowly and give the respondent time to absorb what you have said. If necessary, repeat the statement.

Q. 1102A, 1102B: KNOWLEDGE OF ANTIMICROBIAL MEDICINES

Although there are various types of antimicrobials, many examples are well known by their medical names. In this question, the survey is obtaining knowledge of these specific antimicrobial medicines that are commonly known. The questionnaire records both

spontaneous and probed answers to gather as much information as possible. The data from this question is useful to gauge how well known specific antimicrobials are and how well known certain classes of antimicrobials are. While the responses include many common antimicrobials, extra spaces exist for respondents to add locally known antimicrobials, which are not captured in the questionnaire.

Respondents with knowledge in Q1101 are asked Q1102A. You will ask the respondent, "Which antimicrobial medicines do you know?" Allow the respondent to spontaneously provide names of different medicines. For all medicines mentioned spontaneously, circle code "1" next to the appropriate medicine in the response categories. Probe the respondent to ask if he or she knows any other medicines.

Once you have probed the respondent and exhausted all spontaneous responses, proceed with Q1102B: "I am going to mention some antimicrobial(s) (medicines) and I want you to let me know if you have heard of them. Have you ever heard of [NAME OF ANTIMICROBIAL]?" Ask this question for each medicine the respondent did **NOT** mention spontaneously. Circle code "2" if the respondent knows the medicine and code "3" if the respondent does not know the medicine.

All respondents are asked Q1102B. The rationale for this question is to give examples of different types of antimicrobials. In this way, a respondent who may not be familiar with the term "antimicrobial" or another country-specific term may be able to recognize certain antimicrobial medicines.

> *Example:* The respondent did not spontaneously mention Amoxil and Nizoral, so you will ask, "Have you ever heard of Amoxil?" If the respondent says "yes," circle "2" for probed. If the respondent says he or she has never heard of it, circle "3" for "don't know." You will continue asking, "Have you ever heard of Nizoral?" Record the response appropriately and continue to ask the respondent if he or she has ever heard of each of the medicines not mentioned spontaneously.

Q. 1103A: DISEASES TREATED BY ANTIMICROBIAL MEDICINES

This question aims to find out how well informed respondents are about antimicrobial uses. Antimicrobials are used to treat many types of infections and fight various diseases. Although respondents may know of antimicrobials, they may not know the correct uses of antimicrobials. The question asks for names of specific diseases that may be treated by antimicrobial medicines. Similar to the previous question, you will probe the respondent by asking question such as, "Are there any other diseases?" Record all that are mentioned.

If the respondent says antimicrobials can treat "infections," probe for the name of a specific disease.

The response categories are divided into infections that are appropriate and inappropriate for treating with antimicrobials. The list does not encompass all infections; rather, it provides examples of common infections/diseases/illnesses. Any sexually transmitted infection (STI), such as syphilis, gonorrhea, Chlamydia, etc., should be recorded under cold "A" for STIs.

For responses not listed in the coding category, clearly write the respondents reply under "OTHER" and circle code "X."

In the event that the respondent says that “diarrhea” can be treated with antimicrobials, you must probe by asking “Was it bloody diarrhea or watery diarrhea?” to determine if the respondent is speaking of bloody diarrhea or watery diarrhea. The information is necessary because antimicrobials should be used to treat bloody diarrhea or dysentery. Using antimicrobials to treat watery diarrhea is inappropriate, and we want to get an indication of whether people are aware of the differences in treatment of these two types of diarrhea. Likewise, using antimicrobials to treat a cold is also inappropriate. However, antivirals are used for treating certain types of flus, such as influenza and Avian flu.

All responses to the question must be recorded.

Q. 1104 TO Q. 1107: INAPPROPRIATE USE OF ANTIMICROBIALS

There are several misconceptions about antimicrobial medicine use, including that antimicrobials can be used to treat colds and watery diarrhea. It is important to find out how common these misconceptions really are. All respondents must be given an opportunity to say if colds and watery diarrhea can be treated with antimicrobials. In Q1103, respondents may have already stated that colds and watery diarrhea are treatable with antimicrobials. Those who did not say so are filtered using Q1104 and Q1106. In Q1105 and Q1107, they are asked about these misconceptions.

Q. 1108: VISITS TO A HEALTH PROFESSIONAL

Generally, one expects that respondents may come in contact with antimicrobials through health professionals. Given that not all respondents will have ever been to a health professional, before more questions are asked, it is necessary to ask respondents if they have ever visited a health professional.

Q. 1109: ANTIMICROBIAL DEMAND

A key element of this module is to ascertain the level of demand for antimicrobial medicines. This question is aimed at finding out if respondents are the ones who are asking for these medicines.

Q. 1110: PAST USE OF ANTIMICROBIALS

This question determines if respondents have ever used antimicrobials. If the respondent has never used an antimicrobial medicine, then he or she is skipped past several questions related to antimicrobial adherence.

Q. 1111 AND Q1112: ANTIMICROBIAL ADHERENCE

Q. 1111 inquires if a patient has ever stopped taking antimicrobials. Adherence to antimicrobial medicines is a crucial issue. When patients do not take the correct antimicrobials or the recommended dosage of antimicrobial medications, there are negative consequences for patients and the disease they are trying to treat. Patients who discontinue treatment or take incorrect treatment are at risk of becoming even more ill as the disease itself may become resistant to the medicine. The medicine could then pose a threat to the patient.

Because nonadherence to medicines is a major factor contributing to AMR, it is important to know why respondents stop taking antimicrobials. Q. 1112 addresses this concern by providing reasons for nonadherence. For Q. 1112, be sure to probe the respondent after he or she has initially responded by asking, “Did you have any other reason?” or “Do you remember another reason why you stopped taking the medicine?” All responses to this question should be recorded.

Q. 1113: KNOWLEDGE OF ANTIMICROBIAL RESISTANCE

This question assesses whether respondents are familiar with the term “antimicrobial resistance” or “drug resistance.”

Q. 1114: SOURCE OF KNOWLEDGE OF ANTIMICROBIAL RESISTANCE

This question is particularly useful in countries where there are programs designed to raise awareness about AMR. The objective of the question is to determine which source of information has been most successful in informing the public about AMR.

Q. 1115 to Q. 1117: SPECIFIC KNOWLEDGE OF ANTIMICROBIAL RESISTANCE

In these three questions, the objective is to evaluate the respondent’s level of knowledge about AMR. These questions can be used to inform programs of how well they have been able to educate the public about the AMR problem and what areas of knowledge need to be strengthened. Q. 1115 asks respondents if they know of specific medicines for which AMR has occurred. Q. 1116 examines if respondents know that certain diseases can no longer be treated with certain antimicrobials. Although respondents may know of antimicrobials, a key way to fight AMR is to inform the public of the reasons for resistance. The purpose of Q. 1117 is to assess whether respondents know why antimicrobial resistance occurs. In all three questions, use probing for additional responses. For example, in Q. 1115, you may ask, “Do you know any others?” or “Do you remember the names of others?”
For Q. 1115 to Q. 1117, record all responses that are mentioned.

Q. 1118 to Q. 1122: MEDICINE USE

This is used to determine if respondents are currently using any medications. Only respondents who used a medicine the day of the interview or the day prior to the interview, either during the day or night, are asked questions 1120 to 1122. Q. 1118 skips respondents who are not using any medications to the end of the questionnaire.

As the interviewer, you must make it clear to the respondent that you are speaking of prescription or over-the-counter medicines, **NOT** herbal or traditional medicines.

Q. 1120: MEDICATION NAMES

For each medicine the respondent took the day of the interview or the day prior to the interview, either during the day or night, ask to see all bottles or packages. The question instructs you to observe all packages to ensure that you record the correct name of the medicines. If the package for the medicine is available, the interviewer first records the name of the medicine in the space provided, taking care to correctly transcribe the name as it is written on the package. If the respondent does not have the packages or bottles of medicines,

the survey will have to rely on the respondent's memory. In this case, kindly ask the respondents to recall the names of their medicine(s) and enter the name(s) in the space.

Note that you will have to record information about each medicine that the respondent has taken the day of the interview or the day prior to the interview, either during the day or night. Therefore, if a respondent took more than three medicines the day of the interview or the day prior to the interview, either during the day or night, you will have to use an additional sheet to fill in the responses.

Q. 1120: MEDICAL PACKAGE SEEN

If the respondent has supplied the package/bottle with the medication, mark "1" for "medication seen." If not legible, mark "2."

If the respondent did not have the package and had to remember the name of the medicine, then mark "3" to mean, "medicine remembered."

There may be instances where the name of the medicine is unknown. This may occur when the respondent is taking a medicine, but does not have the medicine's package and does not remember the name of the medicine. The medicine will also be unknown if the respondent does not know the name of the medicine, has the package, but the writing on the package is not clear. In both of these cases, record "4," meaning the name of the medicine was "not available."

Perform this procedure for each medication and continue to the next question.

Q. 1121: MEDICATION PRESCRIBER

This question is trying to find out the circumstances around medication use, how respondents gain access to medications, and whose decision it is to use medications. For "MEDICINE 1," record who recommended or prescribed the medication and then continue to Q. 1122. Note that only one person or team would normally prescribe a medication. Therefore, only one response is allowed in this question.

Q. 1122: MEDICATION SOURCE

The objective of this question is to record information on where respondents obtain their medicines. This is a useful measure of medication access and can show which sources are most likely to provide medications to respondents. For MEDICATION 1, record the place where the respondent obtained the medication. A respondent may initially obtain the medication from one source and later get the same medication from another source. Therefore, record the name of the source from where the respondent got the medication the last time. Note that there is only one source for the medicine, and the source is the last place that the respondent obtained the medicine.

After gathering information on "MEDICATION 1" (using Q. 1121 and Q. 1122), return to Q. 1121 in the next column and start recording information on "MEDICATION 2," following until Q. 1122. When you have finished recording information on all medications, proceed to Q. 1124.

Q. 1124: RECORD THE TIME

Record the time of day you end the interview using the 24-hour system. If the hour or minutes are less than 10, put a zero in the first box.

Be sure to thank the respondent for his or her cooperation. At this point, check your questionnaire carefully. Before leaving the house, ensure you have followed the skip patterns correctly and that your marks are legible.

ANTIMICROBIAL RESISTANCE MODULE PRETEST REPORT

Lusaka, Zambia

October 29–November 8, 2007

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Population and Demography Branch
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Lusaka, Zambia

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1. Introduction

The Antimicrobial Resistance (AMR) Module is designed to quantify the general community's knowledge regarding antimicrobial medicines and the prevalence of antimicrobial use in the community through a nationally representative, population-based survey. This information is crucial for spearheading advocacy, establishing policy, developing interventions, and evaluating efforts for AMR containment among the general community. The AMR Module includes three main topics that provide quantitative information on ten related indicators, which are included in appendix 1.

The AMR Module was initially drafted by Management Sciences for Health (MSH)/Rational Pharmaceutical Management (RPM) Plus and Macro International Inc. The draft was revised based on feedback obtained from various AMR and rational medicines use experts from different countries. The revised version was subsequently pretested in Zambia and was further refined and finalized.

The Central Statistical Office (CSO) of Zambia implemented the pretest for the module in collaboration with MSH/RPM Plus and Macro. During the local adaptation of the English version of the AMR Module in the Zambian context, input was obtained from a variety of organizations that are expected to be end users of the data.

The Zambia pretest was designed to provide information on the use of a new module that could be considered for incorporation into the Demographic and Health Surveys (DHS) in countries needing this information. The DHS involves interviewing a randomly selected sample of women who are 15–49 years of age and, in many cases, a sample of men, usually 15–59 years of age. Therefore, the AMR Module pretest also interviewed respondents in the corresponding age range for women and men. In a DHS, respondents are asked questions about their background, the children they have given birth to, their knowledge and use of family planning methods, the health of their children, awareness of AIDS and sexually transmissible diseases, and other information that will be helpful to policy makers and administrators in health and family planning fields. For the purposes of the AMR Module pretest in Zambia, demographic information at the household level and information on antimicrobial resistance only was collected.

The following data collection instruments and technical documents were developed for the AMR Module pretest:

- Household Schedule
- AMR Module
- Interviewer's Manual/Data Collector's Guide
- Interviewer Observation/Feedback Form

2. Purpose of AMR Module Pretest

The purpose of the AMR Module pretest was to test the wording and sequencing of the questions, the skip patterns, and the filters in the module and to test the translation accuracy if the pretest is conducted in a language other than English.

3. Recruitment of Pretest Staff

The AMR Module pretest was more in-depth than a standard DHS pretest in that it required structured feedback from interviewers throughout the pretest period to improve the AMR data collection tools. Therefore, the educational requirement was that interviewers hold at least a certificate or diploma. It was desirable for interviewers to have a nursing degree or other health science background, such as pharmacy. Because the topic is medically-based, having some of the interviewers possess an understanding of the subject matter is valuable in the pretest training and discussions.

CSO and MSH recruited 18 interviewers for the AMR Module pretest. A number of factors were considered in the recruitment of field staff. Factors included proficiency in English and one of the three major local languages (Bemba, Nyanja, and Tonga) and experience in field work. From the same group, CSO selected two staff members with expertise in household surveys to be supervisors during the pretest field work. In particular, MSH recruited 4 nurses and 4 pharmacists and CSO provided 10 experienced interviewers. The pretest field staff was drawn from Lusaka. The list of participants by institution is in appendix 2.

4. Training

The trainers/resource people included professionals from CSO, MSH, and Macro International, Inc. (Measure DHS). The four-day training included AMR lectures, instruction on how to fill in the questionnaires correctly, and practice interviews with other trainees in the form of demonstration interviews and work in pairs. Interviewers conducted fieldwork in three enumeration areas (EAs) in Lusaka (Kaunda Square, Jack Compound Extension, and Shimabala). A mini-pretest was conducted in Kaunda Square on October 31 and amendments to the AMR module were effected. The pretest fieldwork was conducted November 2, 5, and 6.

Following the pretest fieldwork, a two-day focus group discussion with the interviewers and trainers was conducted to solicit feedback on the pretest experience and recommendations from improving the AMR Module. The data collection instruments were revised according to recommendations.

4.1 Classroom Training Sessions

Each participant was given an interviewer's data collection manual and a set of English questionnaires (i.e., AMR Household Schedule and the AMR Module). During the training, interviewers were also given sets of local language questionnaires based on their language of specialization.

Allocation of the topics to each resource person was based on their area of specialization and interest. Presentations were based on the materials contained in the manuals and the questionnaires. The training workshop program is provided in appendix 3.

A number of approaches were used in training pretest field staff. This was important for assessing how well the participants grasped the topics covered, interviewing skills, and especially how instructions were being followed.

Initially, class interviews were conducted using the English questionnaires. This was because participants were still learning how to conduct an interview and record responses correctly. This helped the participants gain a uniform understanding of the concepts and instructions.

As the training progressed, interviewers became more familiar with the questionnaires. This resulted in marked improvements in interviewing skills among participants. Later in the training session, interviews in each of the three local languages were conducted. There were as many class interviews as time allowed.

4.1.1. Front-of-Classroom Mock Interviews

Front-of-class mock interviews were conducted. Participants took turns as interviewers and interviewees while the rest of the class observed and took notes on how the interview was being conducted. The class then shared comments and observations after the demonstration.

4.1.2. One-to-One Role Play

In addition to front-of-class mock interviews, participants were paired and took turns interviewing each other outside the classroom. Resource persons went round observing the interviews. The participants also took note of the length, content, and the flow of the questionnaires. The various experiences from the role plays were shared during group meetings.

5. Questionnaire Translation

Prior to the pretest, CSO translated the English AMR Module into the three local languages selected for the pretest—Nyanja, Bemba, and Tonga. The same versions were also back-translated into English by various language experts whom CSO identified prior to the pretest. Once the pretest training commenced, the translated questionnaires needed minor adjustments, such as rephrasing some questions without altering the original information presented in the English questionnaire. During the pretest training, these changes were implemented on the local language questionnaires by participants, who were grouped according to their language of competency. This assisted in making necessary adjustments to the local language questionnaires.

6. Pretest Sampling Clusters

Zambia is divided into nine provinces. In turn, each province is subdivided into districts, each district into constituencies, and each constituency into wards. In addition to these administrative units, during the last Census of Population and Housing in 2000, each ward was subdivided into convenient areas called census supervisory areas (CSA) and, in turn, each CSA into standard enumeration areas (SEA). In total, Zambia has 72 districts, 150 constituencies, 1,289 wards, 4,400 CSAs, and 16,716 SEAs. The list of SEAs has census information on households and population counts, and also with the census cartographic materials. This list of SEAs was used as the sampling frame of the Zambia DHS 2007 and the ZDHS 2001–02. This same list was also used to select two clusters for the AMR Module pretest.

The AMR Module was planned to be pretested in 200–250 households among the urban and rural areas of Lusaka. Two clusters from the list of SEAs, which are outside of the ZDHS 2007 sample, were selected by CSO and Macro. The purpose of the pretest is to evaluate the data collection instrument. Therefore, it was acceptable to interview households conveniently found

in the two clusters for the pretest. In an actual DHS survey, the households in each cluster are randomly selected from the household listing.

The mini-pretest/field practical was conducted on October 31, 2007 among about 20 households in Kaunda Square. The areas visited for the pretest were Jack Compound Extension and Shimabala. Kaunda Square represented the urban setting and Shimabala represented the rural setting. Overall, the response in terms of questionnaire interviews was high.

7. Pretest Field Work

Eighteen participants worked as one team for the fieldwork. There were 11 female interviewers and 7 male interviewers. Supervisors and editors were also drawn from the trainers and CSO staff that were pretest participants. Senior CSO staff and consultants from MSH and Macro accompanied the pretest team during the fieldwork. In addition, the interviewers, supervisors, and trainers edited questionnaires for completeness of information.

Teamwork and coordination were emphasized throughout the field process. Individual performance was assessed by considering consistency in question asking, how well interview instructions were followed, how well responses were entered in the questionnaires, and neatness in the way questionnaires were handled. In addition, the supervisors and trainers made observations during the face-to-face interviews, which later were discussed with that interviewer. The observations were further discussed during the review meetings for the whole pretest field team.

A total target of between 200 and 250 households was initially planned, with a maximum of two eligible adults interviewed in each household. Ultimately, 242 households were successfully covered. This yielded 236 individual women and 116 individual men interviewed for the AMR Module.

Overall, the interviews went well in all the selected sites. This was augmented by prior publicity and awareness campaigns on the survey. There were very few instances of suspicion and skepticism (e.g., some people associate collection of personal information with “Satanism”). In each EA, CSO staff personally contacted the community leaders and police prior to the team’s arrival.

Generally, the team worked very well, with each team member diligently doing his or her part. The supervisors and trainers team checked questionnaires for possible mistakes and advised interviewers to make corrections where necessary.

7.1. Questionnaire Administration

7.1.1. English Questionnaire

The training and resource team conducted a preparation meeting on October 28 and made amendments to the AMR Module. The content and context of each question in the English questionnaire were maintained. The amended version of the questionnaire used for the pretest field work appears in appendix 6. A few questions had to be rephrased for clarification. These were corrected and no problems were encountered during the pretest fieldwork. The coding categories were also standardized and corrected in instances where they were incorrect. Minor changes were made to the AMR questionnaire throughout the pretest.

7.1.2. Local Language Questionnaire

Administration of local language questionnaires in the field had a few problems. Questionnaires were revised to ensure the meaning of questions in all the local language questionnaires retained the same meaning as in the English versions. After the mini-pretest, some participants with competent knowledge in all the local languages used in the pretest were requested to help adjust and amend the local language questionnaires. This exercise was successfully completed.

7.1.3. Length of Interview

The household schedule took 8 minutes on average to complete. The AMR Module took 15 minutes on average to complete. The length of time spent to complete a household schedule, including the AMR Module interviews, took about 25 minutes per household. Each interviewer completed 5 households on average per day.

7.2. Completed Questionnaires

Table 1: Antimicrobial Module Pretest Interviews

Characteristics	Men	Women	Total
Number of households	N/A	N/A	242
Number interviewed	116	236	352
Languages of AMR Module			
English	50	83	133
Nyanja	28	85	113
Bemba	15	37	52
Tonga	23	31	54

A total of 242 household schedules were successfully administered during the AMR Module pre-test. Overall, 116 men and 236 women were successfully interviewed for a total of 236 individuals.

8. Pretest Focus Group Feedback

A session on how to document the pretest observations was conducted with the interviewers. Each interviewer was provided with a checklist of key items to note in each component of the AMR Module (appendix 4).

On November 7 and 8, the interviewers and trainers systematically reviewed each question in the AMR Module and shared observations from the pretest and recommendations for improvement (appendix 5).

9. Recommendations

The following are the recommendations from the pretest exercise:

- The word “antimicrobial” was not commonly recognized in the Zambian context. In Zambia, and other countries, it is useful to use a word or group of words known in the local context. In the case of Zambia, the word antimicrobial was defined and then substituted with “these medicines we have been discussing.”

- It was a valuable experience to select interviewers from various backgrounds. The Zambia AMR Module pretest included interviewers who were nurses, pharmacists, and CSO survey and senior research staff.

- After the local adaptation of the AMR Module, the questions were well understood by the respondents.

- The AMR module is designed to be used in a DHS in whole or in part by choosing specific questions. The AMR Module is also designed to be used as a stand-alone data collection instrument for programs or initiatives that desire to obtain information on AMR indicators.

APPENDIX 1

Antimicrobial Resistance Module for Individual Questionnaires

INDICATORS[1]

Indicators from AMR Module

Correct Antimicrobial Medicine Knowledge and Behavior

1. Percentage of adults who report they know what an antimicrobial medicine is
2. Percentage of adults who can name at least one antimicrobial medicine (spontaneously or prompted)
3. Percentage of adults who know of antimicrobial medicines and have correct knowledge about antimicrobial medicines [3 components]
   - Percentage of adults who know of antimicrobial medicines and can list at least one infectious disease for which antimicrobials are used[2]
   - Percentage of adults who know antimicrobial medicines and do not believe antimicrobial medicines are useful in treating colds
   - Percentage of adults who know antimicrobial medicines and do not believe antimicrobial medicines are useful in treating watery diarrhea
4. Percentage of adults who have visited a health professional when sick and not asked a health professional for an antimicrobial medicine
5. Percentage of adults who have taken an antimicrobial medicine in the past and never stopped taking an antimicrobial before they was supposed to[3]

Correct Antimicrobial Resistance Knowledge

6. Percentage of adults who report they have heard of AMR[4]
7. Percentage of adults who report they have heard of AMR and have correct knowledge of AMR[3 components]
   - Percentage of adults who report they have heard of AMR and can name an antimicrobial medicine for which a germ (pathogen) that causes infectious disease has developed resistance
   - Percentage of adults who report they have heard of AMR and can name an infectious disease susceptible to AMR
   - Percentage of adults who report they have heard of AMR and can identify a factor that results in AMR

Current Use of Medicines

8. Percentage of adults who report they have taken medication on the day of the interview or the previous day
9. Percentage of adults who are taking an antimicrobial medicine
10. Percentage of regulated (not over-the-counter) medications with examined packages that were recommended and obtained appropriately [2 components]
    - Percentage of medications recommended by a health professional
    - Percentage of medications obtained from a regulated source

[1] Based on the pretest, these indicators have been slightly revised.
[2] Listing a noninfectious disease or an inappropriate infectious disease will be a wrong answer.
[3] There is a question that explores reasons for stopping.
[4] There is a question that explores the source of this knowledge.

Existing Indicators from Core DHS Questionnaire (related to AMR initiatives)

Infection Prevention

Percent distribution of households by source of drinking water, according to residence; the percent distribution of the de jure population by source of drinking water; the percentage of households by treatment of drinking water, according to residence; and the percentage of the de jure population by treatment of drinking water [country and year][5]

Percent distribution of households by type of toilet/latrine facilities, according to residence; the percent distribution of the de jure population by sanitation status of toilet facilities [country and year]

Percent distribution of mothers whose youngest child under age five is living with her by the manner of disposing of the child's last fecal matter, according to background characteristics [country and year]

Percentage of children age 12–23 [18–29] months vaccinated (all basic: bacille Calmette-Guérin [BCG]; measles; and three doses each of the diphtheria, pertussis, and tetanus (DPT) and polio vaccine, excluding polio vaccine given at birth) by 12 [18] months of age

Infection Treatment

Among children under age five, the percentage who had symptoms of acute respiratory infection (ARI) in the two weeks preceding the survey and the percentage with symptoms of ARI who received antibiotics, according to background characteristics [country and year]

Among children under age five, the percentage who had a fever in the two weeks preceding the survey and the percentage of children with fever for whom treatment was sought from a health facility or provider, who took antimalarial medicines, and who took antibiotic medicines, according to background characteristics [country and year]

Among children under age five who had fever in the two weeks preceding the survey, the percentage who took specific antimalarial medicines and, among children who took specific medicines, the percentage for whom the medicine was at home when the child became ill with fever [country and year]

Percentage of children under age five who had diarrhea (all diarrhea and bloody diarrhea) in the two weeks preceding the survey, according to background characteristics [country and year]

Among children under age five who had diarrhea in the two weeks preceding the survey, the percentage who were taken for treatment to a health provider, the percentage who received oral rehydration therapy, and the percentage who were given other treatments, according to background characteristics [country and year][6]

[5] There is also a question on source of nondrinking water.

[6] This is the standard indicator. To quantify the percentage of nonbloody diarrhea treated with antibiotics or bloody diarrhea treated with antibiotics, additional analysis needs to be done.

APPENDIX 2—Pretest Participants

LIST OF PRETEST FIELD STAFF

Name	Designation	Institution
Interviewers		
Webster Chileshe	Senior Statistical Officer	Central Statistical Office (Headquarters)
Miyano Mukata	Former Student	Evelyn Hone
Simukoko James	Pharmacist	University Teaching Hospital
Morgan Phiri	Pharmacist Technologist	Lusaka District Health Management Team (DHMT)
Richard Chomba	Pharmacist Technologist	Lusaka DHMT
Boyd Mwanashimbala	Pharmacist	University Teaching Hospital
Mildred Tolosi	Intern	Central Statistical Office
Caroline Z Maoka	Nurse	Lusaka DHMT
Jessie P. Nakubaya	Nurse	University Teaching Hospital
Agness N. Mweemba	Secretary, Integrated Management Information System	Contract With Central Statistical Office
Mercy K Chanda	Statistical Officer	Central Statistical Office (Lusaka)
Daniel Muyabi	Statistical Officer	Central Statistical Office (Lusaka)
Catherine Kasungami	Former Student	Contract With Central Statistical Office
Nosiah K Hichilema	Nurse Lecturer	Lusaka Health Institute
Judith Chipili	Nurse Lecturer	Lusaka School of Nursing
Inutu Muzingo Mbangweta	Nurse Lecturer	Lusaka DHMT
Lucy C. Daka	Nurse Lecturer	Lusaka School of Nursing
Kaliyangile Claymore	Assistant Cartographer	Central Statistical Office (Headquarters)

Resource Persons		
1.	Ms. Nchimunya Nkombo	CSO
2.	Ms. Margaret Tembo	CSO
3.	Ms. Chola N. Daka	CSO
4.	Mr. Richard Banda	CSO
External Trainers		
1.	Ms. Adrienne Cox	Macro International, Inc.
2.	Mr. Oliver Hazemba	MSH
3.	Mr. Niranjan Konduri	MSH
4.	Dr. Mohan P. Joshi	MSH

APPENDIX 3—Pretest Agenda

Antimicrobial Resistance (AMR) Module for DHS Individual Questionnaires
PRETEST TRAINING AGENDA

Training: October 29–November 1, 2007
Household Interviews: November 2–November 6, 2007

TRAINING FORMAT

MORNING:		AFTERNOON:	
Training	8:30–10:30 AM	Lunch	1:00–2:00 PM
Tea Break	10:30–10:45 AM	Training	2:00–3:30 PM
Training	10:45 AM–1:00 PM	Tea Break	3:15–3:30 PM
		Training	3:30–4:30 PM

DAY	TOPIC	PRESENTER
SUN, October 28	ARRIVAL	Registration
MON, October 29	Welcome remarks	Nchimunya
	Introductions and overview of project	Oliver and Niranjan
	Survey objectives, brief definition and overview of AMR; description of efforts to collect information about antimicrobial medicine use and knowledge within general community; description of the international program interests as it relates to advocacy, policy interventions, and evaluation standards in the general population	Niranjan
	Overview on AMR	Oliver and Niranjan
	Data Collector's Guide (Field Procedures and Questionnaire Completion Procedures); introduction of questionnaires and manuals (role of interviewers and supervisors; importance of the interviewers; and administrative matters)	Chola and Adrienne
TUE, October 30	Data Collector's Guide	Chola
	Presentation of Household Schedule	Margaret
	Demonstration of Household Schedule interview	Participants
	Presentation of AMR Module	Nchimunya
	Front-of-class mock interview	Participants
	Practice in groups (mock interviews) filling in the questionnaire (all three languages)	ALL
	Discussion on practice interview	ALL
	Introduce questionnaires in Zambian languages	Nchimunya

WED, October 31	How to observe and document constructive feedback; importance of interviewer observations through written and verbal communication Briefing prior to field practice Field practice Field practice near the training site in pairs with all trainers and supervisors observing and assisting in finding suitable respondents Each trainee to be assigned at least two households In-class debriefing Review of field practice to address what happened in the field and solve any problems that arise with the questionnaires, interviewer techniques, or logistics	Adrienne Nchimunya ALL Niranjan
THU, November 1	Field practice observations and questionnaire adaptation (all languages) In-class practice Overall review Administration and logistics	Margaret and Niranjan Adrienne Oliver Chola
FRI, November 2	Commence Pretest: Two teams will complete a total of 200–250 household questionnaires. These households should represent populations in both urban and rural areas. All three local language translations will be tested. Meet back at Kaingo Lodge at 15:00 hrs.	ALL
SAT and SUN, November 3–4	FREE DAYS	
MON, November 5	Continue with Pretest: Two teams will complete a total of 200–250 household questionnaires. These households should represent populations in both urban and rural areas. All three local language translations will be tested. Meet back at Kaingo Lodge at 15:00 hrs.	ALL
TUE, November 6	On Tuesday, end Pretest: If 200–250 households are not completed by this date, then pretest activities should be extended until the adequate number of households/questionnaires are completed.	ALL
WED, November 7	Session to systematically document AMR Module pretest feedback/observations	Mohan and Adrienne
THU, November 8	Session to systematically document AMR Module pretest feedback/observations	Mohan and Adrienne

APPENDIX 4—Interviewer Observations Checklist

Checklist for Recording Observations from the Pretest

Below are a few things to keep in mind for each question during the AMR questionnaire pretest. This list is not exhaustive, **so please record all observations** you may have, even if they are not listed below.

The checklist simply serves as a guideline for eliciting your constructive observations. We are relying on your feedback from your experience in administering the AMR questionnaire.

Please do not forget to note the start time of the AMR questionnaire.

Q1101: 1) Are respondents generally familiar with the word "antimicrobial"? 2) Were you asked to explain or describe what you mean by antimicrobial? 3) Are respondents substituting the word "antimicrobial" with another word that is commonly used?	
Q1102: 1) Did you have difficulty in reading out the definition of antimicrobial medicine? Did respondents ask you to repeat what you said? 2) Are there other names respondents use for the medicines provided? Which names are these? 3) Should other medications be listed?	
Q1104: 1) When asking Q1104, does the respondent clearly understand what you mean? 2) Did you carefully distinguish spontaneous responses and probed medicines? 3) Are there other names respondents use for the medicines provided? Which names are these? For example, when you said ARVs, did they ask you if you mean Nevirapine? 4) Should other medications be listed?	
Q1105: 1) Is this question clear to the respondent? If not, what aspect of the question was not understood? What did you say to clarify the question? 2) Did you find words other than disease? 3) Which other diseases are commonly mentioned?	
Q1107: Is this question clear to the respondent? If not, what aspect of the question was not understood? What did you say to clarify the question?	
Q1109: 1) Does the respondent understand what you mean by "watery diarrhea"? 2) Did you hear other terms/words from the respondent?	

Q1110: 1) Did the respondent understand the term "health professional"? 2) Were you asked to clarify this term?	
Q1111: 1) Is this question clear to the respondent? 2) Did you need to repeat your question or define what an antimicrobial medicine is?	
Q1112: Did the respondent understand what you meant by "ever taken an antimicrobial medicine"? If not, what did you say to clarify the question?	
Q1113: 1) Did the respondent understand what you mean by "stop taking an antimicrobial medicine before completing the full course"? 2) Was any other word used instead of "full course"?	
Q1114: 1) Is this question clear to the respondent? 2) Are there responses that were commonly given, but are not included in the precoded list?	
Q1115: 1) Are there other words that are commonly used that have the same definition as drug resistance? 2) If so, please record and explain in your notes.	
Q1116: 1) Is this question clear to the respondent? 2) Did you need to probe a few times to find out the responses?	
Q1117: 1) Is this question clear to the respondent? 2) Did you get any spontaneous response? Did you need to probe a few times to get the response?	
Q1118: 1) Did the respondent confuse this question with the previous question? 2) Did you have to repeat this question?	
Q1119: Are there responses that were commonly given, but are not included in the precoded list?	
Q1120: Did you need to clarify what you meant by medicines?	
Q 1121 Did the respondent refuse to show you the medicines?	

Qs1122–1124: 1) Is this question clear to the respondent? If not, what aspect of the question was not understood? 2) Are there responses that were commonly given, but are not included in the precoded list?	
Q1126: **Please do not forget to record the end time of the questionnaire.** Because the AMR questionnaire has not previously been administered, we need to know the amount of time it takes to administer the questionnaire to respondents.	

APPENDIX 5—AMR Module Pretest Group Observations

Antimicrobial Resistance Module
Pretest Observations
November 7–8, 2007

Fieldwork to pretest the antimicrobial resistance (AMR) module was conducted November 2, 5, and 6, 2007. The 18 interviewers, CSO, MSH, and Macro shared observations from the pretest with the purpose of improving the data collection materials, which include the questionnaire and data collection guide. The following summarizes the feedback and decisions produced from the group discussion.

General Comments:

1. Need for an introductory statement: There needs to be some type of introduction explaining what the module is about. However, we should be aware of not completely defining the word "antimicrobial" in the introduction to avoid creating a bias.

2. Discussion about using the word "antimicrobial": The word "antimicrobial" is not recognized by the majority of respondents, and the interviewer must keep explaining what the word means throughout the questionnaire module. The interviewer has to build confidence in the respondent throughout the questionnaire by reminding him or her of the definition for antimicrobial and the purpose of its use. The word is too technical and intimidating. It makes the respondents uncomfortable.

What is the purpose of testing this word (antimicrobial)? Why are we using this word instead of another word? The word "antimicrobial" intimidated people and made them feel as if they are being tested. The group believed "antibiotics" was a word that was easily recognizable in the Zambian community. If we have to use a chain of words, let's use them to get at what the people know. Amendments to the AMR were made to substitute other words for "antimicrobials," so that the risk of loosing the respondent is reduced.

Participant 1: The way the questionnaire is designed would make it incorrect to substitute another word for antimicrobial. Based on footnote number one, we should have used the locally appropriate word, which would be "antibiotics."

Participant 2: Let Q1101 remain. Explain it in Q1102, then used another word in the subsequent questions.

Participant 3: We want to discover the medicines that are commonly abused by the community. Most of the questions should focus on the antimalarials and antivirals.

Participant 4: The main thing is the goal of why are we doing this study. The results that come out will help us have an intervention. At the end of the day, we want to communicate the information that diseases develop resistance to medicines.

Participant 5: In the local language, it is dropped and the explanation of the word is used.

Participant 3: Patients would know antimicrobial if the nurses used it, but not even we nurses use the word at all in our every day work.

Participant 6: It is better that we maintain words we are used to.

Participant 7: Use the terms people are likely to have heard through the radio, television, and the community.

Participant 8: The purpose of the questionnaire is to first find out if people know the term "antimicrobial," then which drugs do they know related to the term, and what do they know about drug resistance.

Recommendations for AMR module questionnaire amendments

Replace "antimicrobial" in Q1101 with antibiotic and other medicines.

Have you heard of a group of medicines called antibiotics, antimalarials, antivirals, etc?

For those who responded "yes" to Q1101.

Q1101: Antibiotics, antimalarials, antivirals are a group of medicines known as antimicrobials. These medicines are used to fight infections caused by bacteria, viruses, fungi, and germs. Have you ever heard of these types of medicines? No skip.

Q1102: Combine Q1102 and Q1104: Which medicines do you know? RECORD SPONTANEOUS RESPONSES. Add instructions and response categories from Q1104 to Q1102.

I am going to mention some of these medicines (antimicrobials), and I want you to let me know if you have heard of them. Have you ever heard of Pen V?... Ask for each.

Q1103: Delete

Q1105: What **diseases** (illnesses) are these medicines that we just discussed used to treat? List examples for each category in the manual. Probe: Are there any other diseases?
State in data collector's guide to give the respondent time to think. Maintain diarrhea probe.

Q1106: Flu and cold were understood. Use "flu" and "cold" in the Zambian context. For the purposes of the module, only the word "cold" will be used.

Q1107: Do you believe that some of these medicines we have discussed are useful in treating a cold? Explain in manual that antibiotics are not used for cold, but antivirals are used for the flu, such as influenza and Avian flu.

Q1109: Do you believe that some of these medicines we have discussed (antimicrobials) are useful in treating watery diarrhea?

Q1111: Remove the parallel question for those who have not heard of the term antimicrobial medicine. Regardless of whether the respondent has heard of the term antimicrobial medicine or not, everyone is asked the same question. "When you have visited a health professional (doctor, nurse, pharmacist, clinical officer, health technician, or community health worker) have you ever asked for any of these medicines (antimalarials)?"

Q1112: Have you ever taken any of these medicines that we have been discussing. I am referring to the antibiotics, antimalarials, or antivirals (antimicrobials), which are used to fight infections?
Q1113: Did you ever stop taking these medicines before completing the full course?

Q1114: Why did you stop taking the medicine?

Q1115: Some of these medicines that used to work in the past for fighting infections are no longer working. This problem is called drug resistance. Have you ever heard of this problem where medicines no longer work?

Q1116: Where did you hear about this problem of medicines no longer working? Probe: From any other place or person?

Q1117: Can you name some of the medicines that used to work in the past but are no longer working? [MEDICINES FOR WHICH ANTIMICROBIAL RESISTANCE OR DRUG RESISTANCE HAS OCCURRED?] Probe: Do you know any others?

Q1118: Can you name some diseases or infections for which some medicines no longer work? [IN OTHER WORDS, ANTIMICROBIAL RESISTANCE OR DRUG RESISTANCE HAS OCCURRED?] Probe: Do you know any other diseases?

Keep the rest of the probes for diarrhea. Add "watery diarrhea" to response category.

Q1119: What can cause some of these medicines that used to work in the past to stop working? [IN OTHER WORDS, FOR ANTIMICROBIAL RESISTANCE OR DRUG RESISTANCE TO OCCUR?] Probe: Are there any other causes?

Q1120: Today or yesterday during the day or night did you take any medicines?
In the manual, emphasize to the interviewer about the difference between herbal and prescription or over-the-counter drugs.

Q1121 and Q1122: Well understood and went smoothly.

Q1123: Clarify that it is a seller in the manual and leave the coding categories as they are. Change HEALTH WORKER IN HEALTH FACILITY OR A MOBILE OUTREACH UNIT to HEALTH PROFESSIONAL/HEALTH FACILITY/MOBILE OUTREACH UNIT.

Add DRUG STORE…05

Q1124: Change HEALTH WORKER IN HEALTH FACILITY OR A MOBILE OUTREACH UNIT to HEALTH PROFESSIONAL/HEALTH FACILITY/MOBILE OUTREACH UNIT.

Add DRUG STORE…05

APPENDIX 6 – AMR Module Version Used During the Zambia Pretest

DEMOGRAPHIC AND HEALTH SURVEYS
ANTIMICROBIAL RESISTANCE (AMR) HOUSEHOLD SCHEDULE

ZAMBIA CENTRAL STATISTICAL OFFICE

IDENTIFICATION

PLACE NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . [ ][ ][ ]

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

PROVINCE . . . . . [ ]

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

LUSAKA=1, OTHER CITY=2, TOWN=3, VILLAGE=4 . . . . . [ ]

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY [ ][ ]
				MONTH [ ][ ]
				YEAR [ ][ ][ ][ ]
INTERVIEWER'S NAME	_____	_____	_____	INT. NUMBER [ ][ ][ ]
RESULT*	_____	_____	_____	RESULT [ ]
NEXT VISIT: DATE	_____	_____		TOTAL NUMBER OF VISITS [ ]
TIME	_____	_____		

*RESULT CODES:

1 COMPLETED
2 NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4 POSTPONED
5 REFUSED
6 DWELLING VACANT OR ADDRESS NOT A DWELLING
7 DWELLING DESTROYED
8 DWELLING NOT FOUND
9 OTHER _____ (SPECIFY)

TOTAL PERSONS IN HOUSEHOLD [ ][ ]

TOTAL ELIGIBLE WOMEN [ ][ ]

TOTAL ELIGIBLE MEN [ ][ ]

LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE [ ][ ]

LANGUAGE OF QUESTIONNAIRE** **ENGLISH** **0 1**

LANGUAGE OF INTERVIEW** . . . . . [ ][ ]

RESPONDENT'S LOCAL LANGUAGE** . . . . . [ ][ ]

TRANSLATOR USED: 1=NOT AT ALL; 2=SOMETIMES; 3=ALL THE TIME . . . . . [ ]

LANGUAGE CODES: 01 ENGLISH 02 BEMBA 03 NYANJA 04 TONGA

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

Introduction and Consent

Hello. My name is _____ and I am working with (NAME OF ORGANIZATION). We are conducting a national survey about various health issues. We would very much appreciate your participation in this survey. The survey usually takes between 10 and 15 minutes to complete.

As part of the survey we would first like to ask some questions about your household. All of the answers you give will be confidential. Participation in the survey is completely voluntary. If we should come to any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, we hope you will participate in the survey since your views are important.

At this time, do you want to ask me anything about the survey?
May I begin the interview now?

Signature of interviewer: _____ Date: _____

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

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	AGE		ELIGIBILITY	
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-32 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	How old is (NAME)?		CIRCLE LINE NUMBER OF ALL WOMEN AGE 15-49	CIRCLE LINE NUMBER OF ALL MEN AGE 15-59
(1)	(2)	(3)	(4)	(5)		(6)	(7)
01			M F 1 2	IN YEARS		01	01
02			1 2			02	02
03			1 2			03	03
04			1 2			04	04
05			1 2			05	05
06			1 2			06	06
07			1 2			07	07
08			1 2			08	08
09			1 2			09	09
10			1 2			10	10

CODES FOR Q. 3: RELATIONSHIP TO HEAD OF HOUSEHOLD

01 = HEAD
02 = WIFE OR HUSBAND
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER OR SISTER
09 = NIECE/NEPHEW BY BLOOD
10 = NIECE/NEPHEW BY MARRIAGE
11 = OTHER RELATIVE
12 = ADOPTED/FOSTER/ STEPCHILD
13 = NOT RELATED
98 = DON'T KNOW

(1)	(2)	(3)	(4)	(7)	(9)	(10)
			M F	IN YEARS		
11			1 2		11	11
12			1 2		12	12
13			1 2		13	13
14			1 2		14	14
15			1 2		15	15
16			1 2		16	16
17			1 2		17	17
18			1 2		18	18
19			1 2		19	19
20			1 2		20	20

TICK HERE IF CONTINUATION SHEET USED ☐

2A) Just to make sure that I have a complete listing. Are there any other persons such as small children or infants that we have not listed? YES ☐ → TO TABL

2B) Are there any other people who may not be members of your family, such as domestic servants, lodgers, or friends who usually live here YES ☐ → TO TABL

2C) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed? YES ☐ → TO TABL

01 = HEAD
02 = WIFE OR H
03 = SON OR D
04 = SON-IN-LA
DAUGHTE
05 = GRANDCH
06 = PARENT
07 = PARENT-IN
08 = BROTHER OR SISTER
09 = NIECE/NEPHEW BY BLOOD
10 = NIECE/NEPHEW BY MARRIAGE
11 = OTHER RELATIVE
12 = ADOPTED/FOSTER/
STEPCHILD
13 = NOT RELATED
98 = DON'T KNOW

DEMOGRAPHIC AND HEALTH SURVEYS
ANTIMICROBIAL RESISTANCE MODULE

ZAMBIA AMR MODULE
CENTRAL STATISTICAL OFFICE

IDENTIFICATION

PLACE NAME _____

NAME OF HOUSEHOLD HEAD _____

CLUSTER NUMBER . . . . . | | | |

HOUSEHOLD NUMBER ..... | | | |

PROVINCE . . . . . | |

URBAN/RURAL (URBAN=1, RURAL=2) ..... | |

LUSAKA=1, OTHER CITY=2, TOWN=3, VILLAGE=4 . . . . . | |

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY | | MONTH | | YEAR | | | |
INTERVIEWER'S NAME	_____	_____	_____	INT. NUMBER | | |
RESULT*	_____	_____	_____	RESULT |
NEXT VISIT: DATE	_____	_____		TOTAL NUMBER OF VISITS |
TIME	_____	_____		

*RESULT CODES:

1	COMPLETED	4	REFUSED		
2	NOT AT HOME	5	PARTLY COMPLETED	7	OTHER _____ (SPECIFY)
3	POSTPONED	6	INCAPACITATED		

LANGUAGE OF QUESTIONNAIRE** **ENGLISH** **0 1**

LANGUAGE OF INTERVIEW** . . . . . | |

RESPONDENT'S LOCAL LANGUAGE** . . . . . | |

TRANSLATOR USED: 1=NOT AT ALL; 2=SOMETIMES; 3=ALL THE TIME . . . . . | |

LANGUAGE CODES: 01 ENGLISH 02 BEMBA 03 NYANJA 04 TONGA

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____	NAME _____		
DATE _____ | |	DATE _____ | |	| |	| |

SECTION 1. RESPONDENT'S BACKGROUND

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is _____ and I am working with CSO. We are conducting a national survey that asks women (and men) about various health issues. We would very much appreciate your participation in this survey. This information will help the government to plan health services. The survey usually takes between 10 and 15 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary, and if we should come to any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, we hope that you will participate in this survey since your views are important.
At this time, do you want to ask me anything about the survey?
May I begin the interview now?

Signature of interviewer: _____ Date: _____

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

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . . [ ][ ] MINUTES . . . . . [ ][ ]	
102	In what month and year were you born?	MONTH . . . . . [ ][ ] DON'T KNOW MONTH . . . . . 98 YEAR . . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
103	How old were you at your last birthday? COMPARE AND CORRECT 102 AND/OR 103 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
104	Have you ever attended school?	YES . . . . . 1 NO 2	
105	What is the highest level of school you attended: primary, secondary, or higher?	PRIMARY . . . . . 1 SECONDARY . . . . . 2 HIGHER 3	
106	What is the highest (grade/form/year) you completed at that level?	GRADE/FORM/YEAR . . . . . [ ][ ]	

SECTION 11. ANTIMICROBIAL RESISTANCE

FOOTNOTES

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1101	Have you ever heard of a type of medicine called an antimicrobial medicine? [1]	YES ..... 1 NO 2	→ 1104
1102	Antimicrobial medicines are medicines that are used to fight infections. [2] I am going to mention some of these medicines and I want you to let me know if you have heard of them.		
A	Have you ever heard of Penicillin?	**ANTIBACTERIALS** PENICILLIN 1 2	
B	Have you ever heard of Tetracycline?	TETRACYCLINE 1 2	
C	Have you ever heard of Amoxicillin?	AMOXICILLIN 1 2	
D	Have you ever heard of Chloroquine?	**ANTIMALARIALS** CHLOROQUINE 1 2	
E	Have you ever heard of Sulfadoxine-Pyrimethamine or SP?	SULFADOXINE- PYRIMETHAMINE/SP 1 2	
F	Have you heard of Artemisinin Combination Therapy or ACT?	ARTEMISININ COMB.THERAPY/ACT 1 2	
G	Have you heard of ZidovidIne or AZT?	**ANTIVIRALS** ZIDOVIDINE/AZT 1 2	
H	Have you heard of Fluconazole?	**ANTIFUNGALS** FLUCONAZOLE 1 2	
I	Have you heard of any other antimicrobial medicines?	**OTHER ANTIMICROBIALS** MEDICINE 1 _____ (SPECIFY) 1 2 MEDICINE 2 _____ (SPECIFY) 1 2	
1103	CHECK 1102: AT LEAST ONE "YES" (KNOW) → SKIP TO 1105	NOT A SINGLE "YES" (DON'T KNOW) →	→ 1115
1104	Which antimicrobial medicines do you know? [2] PROBE: Do you know any others? RECORD ALL MENTIONED SPONTANEOUSLY. FOR ANTIMICROBIALS NOT MENTIONED SPONTANEOUSLY, ASK: Have you ever heard of (ANTIMICROBIAL)? RECORD ALL MENTIONED BY PROBING. E96	SPONTANEOUS / PROBED **ANTIBACTERIALS** PENICILLIN ..... A 1 TETRACYCLINE ..... B 1 AMOXICILLIN ..... C 1 **ANTIMALARIALS** CHLOROQUINE ..... D 1 SULFADOXINE- PYRIMETHAMINE/SP ..... E 1 ARTEMISININ COMB.THERAPY/ACT ..... F 1 **ANTIVIRALS** ZIDOVIDINE/AZT ..... G 1 **ANTIFUNGALS** FLUCONAZOLE ..... H 1 **OTHER ANTIMICROBIALS** MEDICINE 1 _____ (SPECIFY) X MEDICINE 2 _____ (SPECIFY) Y	
1105	What diseases are antimicrobial medicines used for? [3] PROBE: Are there any other diseases? RECORD ALL MENTIONED. IF 'INFECTION' IS GIVEN AS AN ANSWER, PROBE TO OBTAIN THE NAME OF A SPECIFIC DISEASE IF 'DIARRHEA' IS GIVEN AS AN ANSWER, PROBE: Was it bloody diarrhea or watery diarrhea?	**APPROPRIATE INFECTIONS** STI/STD ..... A PNEUMONIA ..... B BLOODY DIARRHEA OR DYSENTERY ..... C HIV/AIDS ..... D TB ..... E MALARIA ..... F **INAPPROPRIATE INFECTIONS** COLDS ..... G WATERY DIARRHEA ..... H OTHER _____ (SPECIFY) X DON'T KNOW ..... Z	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1106	CHECK **1105** FOR CODE '**G**': "COLDS" **NOT** GIVEN AS A RESPONSE ☐↓	"COLDS" GIVEN AS A RESPONSE ☐ → 1108	
1107	Do you believe antimicrobial medicines are useful in treating colds? [4]	YES ..... 1 NO ..... 2 DON'T KNOW 8	
1108	CHECK **1105** FOR CODE '**H**': "WATERY DIARRHEA" **NOT** GIVEN AS A RESPONSE ☐↓	"WATERY DIARRHEA" GIVEN AS A RESPONSE ☐ → 1110	
1109	Do you believe antimicrobial medicines are useful in treating watery diarrhea? [5]	YES ..... 1 NO ..... 2 DON'T KNOW 8	
1110	Have you ever been sick and had to visit a health professional?	YES ..... 1 NO ..... 2 → 1112 DON'T KNOW ..... 8 → 1112	
1111	CHECK 1101: **HAS HEARD** OF THE TERM ANTIMICROBIAL MEDICINE ☐↓ When you have visited a health professional, have you ever asked for an antimicrobial medicine?	**HAS NOT HEARD** OF THE TERM ANTIMICROBIAL MEDICINE ☐↓ When you have visited a health professional, have you ever asked for an antimicrobial medicine, i.e., a medicine that fights infections?	YES ..... 1 NO ..... 2 DON'T KNOW 8
1112	Have you ever taken an antimicrobial medicine (i.e., a medicine that fights infections)?	YES ..... 1 NO ..... 2 → 1115 DON'T KNOW ..... 8 → 1115	
1113	Did you ever stop taking an antimicrobial medicine before you were supposed to?	YES ..... 1 NO ..... 2 → 1115 DON'T KNOW ..... 8 → 1115	
1114	Why did you have to stop taking the antimicrobial medicine? PROBE: Did you have any other reasons? RECORD ALL MENTIONED.	DIDN'T HAVE ENOUGH MONEY TO BUY THE ENTIRE COURSE ..... A WASN'T GIVEN ENOUGH ..... B RAN OUT ..... C WAS TOLD TO STOP BY A HEALTH PROFESSIONAL ..... D CONDITION DID NOT IMPROVE ..... E CONDITION IMPROVED ..... F THERE WERE SIDE EFFECTS/ MEDICINE MADE HIM/HER SICK ..... G DON'T LIKE TO TAKE MEDICINES ..... H DIDN'T THINK IT WAS WORKING ..... I OTHER _____ (SPECIFY) X DON'T KNOW ..... Z	
1115	Some antimicrobial medicines that used to work in fighting infections no longer work. This problem is called antimicrobial resistance. Have you heard of this problem before?	YES ..... 1 NO ..... 2 → 1120 DON'T KNOW ..... 8 → 1120	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1116	Where did you learn about antimicrobial resistance? PROBE: From any other place or person? RECORD ALL MENTIONED.	FROM HEALTH WORKERS ..... A ON THE RADIO ..... B ON THE TV ..... C IN A NEWSPAPER OR MAGAZINE ..... D OTHER _____ X (SPECIFY) DON'T REMEMBER ..... Z	
1117	Can you name some antimicrobial medicines that no longer work; in other words, medicines for which antimicrobial resistance has occurred? [2] PROBE: Do you know any others? RECORD ALL MENTIONED.	**ANTIMICROBIALS** ANTIBACTERIALS PENICILLIN ..... A TETRACYCLINE ..... B AMOXICILLIN ..... C ANTIMALARIALS CHLOROQUINE ..... D SULFADOXINE- PYRIMETHAMINE/SP ..... ARTEMISININ COMBINATION THERAPY/ACT ..... F ANTIVIRALS ZIDOVIDINE/AZT ..... G ANTIFUNGALS FLUCONAZOLE ..... H **NON-ANTIMICROBIALS** IBUPROFEN ..... I PARACETAMOL ..... J OTHER _____ X (SPECIFY) DON'T KNOW ..... Z	
1118	Can you name some diseases or infections for which an antimicrobial medicine no longer works; in other words, antimicrobial resistance has occurred? [6] PROBE: Do you know any other diseases? RECORD ALL MENTIONED.	STI/STD ..... A PNEUMONIA ..... B BLOODY DIARRHEA OR DYSENTERY ..... C HIV/AIDS ..... D TB ..... E MALARIA ..... F OTHER _____ X (SPECIFY) DON'T KNOW ..... Z	
1119	What can cause antimicrobial medicines to stop working; in other words, for antimicrobial resistance to occur? [7] PROBE: Are there any other causes? RECORD ALL MENTIONED.	POOR QUALITY ANTIMICROBIAL ..... A WHEN ONE STOPS TAKING IT BEFORE ONE IS SUPPOSED TO ..... B INSUFFICIENT AMOUNT OF ANTIMICROBIAL ..... C WHEN ONE USES ANTIMICROBIALS THAT ARE PRESCRIBED FOR SOMEONE ELSE ..... D WHEN ONE USES THE WRONG ANTIMICROBIAL ..... E OTHER _____ X (SPECIFY) DON'T KNOW ..... Z	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1120	Yesterday, during the day or at night, did you take any medicines? [8]	YES ..... 1 NO 2	 2 → 1126
1121	ASK TO SEE DRUG(S), THEIR PACKAGES, OR BOTTLES. Can you show me the medicines themselves, the packaging, or bottles for the medicines that you are taking? TRANSCRIBE IN THE TABLE BELOW THE NAME OF EACH MEDICATION (EITHER BRAND OR GENERIC). IF PACKAGES OR BOTTLES NOT AVAILABLE FOR A MEDICINE, ASK FOR THE NAME. USE ADDITIONAL QUESTIONNAIRES IF NECESSARY. ASK QUESTIONS 1123-1124 FOR EACH MEDICATION UNTIL ALL MEDICINES HAVE BEEN EXHAUSTED.		

NO.		MEDICINE 1	MEDICINE 2	MEDICINE 3
1122	NAME OF MEDICINE	____________ (NAME)	____________ (NAME)	____________ (NAME)
	MEDICINE/PACKAGE/ BOTTLE SEEN? IF SEEN, RECORD "1" IF RECALLED, RECORD "2" IF NAME NOT AVAILABLE, OR NOT LEGIBLE, RECORD "3"	MEDICATION SEEN ..... 1 MEDICATION RECALLED. ..... 2 NOT AVAILABLE 3	MEDICATION SEEN ..... 1 MEDICATION RECALLED ..... 2 NOT AVAILABLE 3	MEDICATION SEEN ..... 1 MEDICATION RECALLED ..... 2 NOT AVAILABLE 3
1123	Who recommended or prescribed that you take (NAME OF MEDICINE)?	HEALTH WORKER IN HEALTH FACILITY OR A MOBILE OUTREACH UNIT [9] ..... 01 COMMUNITY HEALTH WORKER ..... 02 PHARMACY/ DRUGSTORE ..... 03 GENERAL STORE/ MARKET STALL ..... 04 TRAD. PRACTITIONER ..... 05 FRIEND/NEIGHBOR ..... 06 RELATIVE ..... 07 NO ONE/RESPONDENT HERSELF/HIMSELF ..... 95 OTHER ____________ 96 (SPECIFY) DON'T KNOW 98	HEALTH WORKER IN HEALTH FACILITY OR A MOBILE OUTREACH UNIT [9] ..... 01 COMMUNITY HEALTH WORKER ..... 02 PHARMACY/ DRUGSTORE ..... 03 GENERAL STORE/ MARKET STALL ..... 04 TRAD. PRACTITIONER ..... 05 FRIEND/NEIGHBOR ..... 06 RELATIVE ..... 07 NO ONE/RESPONDENT HERSELF/HIMSELF ..... 95 OTHER ____________ 96 (SPECIFY) DON'T KNOW 98	HEALTH WORKER IN HEALTH FACILITY OR A MOBILE OUTREACH UNIT [9] ..... 01 COMMUNITY HEALTH WORKER ..... 02 PHARMACY/ DRUGSTORE ..... 03 GENERAL STORE/ MARKET STALL ..... 04 TRAD. PRACTITIONER ..... 05 FRIEND/NEIGHBOR ..... 06 RELATIVE ..... 07 NO ONE/RESPONDENT HERSELF/HIMSELF ..... 95 OTHER ____________ 96 (SPECIFY) DON'T KNOW 98

1124	Where did you get (NAME OF MEDICINE)?	HEALTH FACILITY OR A MOBILE OUTREACH UNIT [10] .... 01 COMMUNITY HEALTH WORKEI .... 02 PHARMACY/ DRUGST .... 03 GENERAL STORE/ MARKET STALL .... 04 TRADITIONAL PRACTITIONER .... 05 FRIEND/NEIGHBOR .... 06 RELATIVE .... 07 ALREADY HAD IT AT HOME .... 95 OTHER ________________ 96 (SPECIFY) DON'T KNOW 98	HEALTH FACILITY OR A MOBILE OUTREACH UNIT [10] .... 01 COMMUNITY HEALTH WORKEI .... 02 PHARMACY/ DRUGST .... 03 GENERAL STORE/ MARKET STALL .... 04 TRADITIONAL PRACTITIONER .... 05 FRIEND/NEIGHBOR .... 06 RELATIVE .... 07 ALREADY HAD IT AT HOME .... 95 OTHER ________________ 96 (SPECIFY) DON'T KNOW 98	HEALTH FACILITY OR A MOBILE OUTREACH UNIT [10] .... 01 COMMUNITY HEALTH WORKEI .... 02 PHARMACY/ DRUGST .... 03 GENERAL STORE/ MARKET STALL .... 04 TRADITIONAL PRACTITIONER .... 05 FRIEND/NEIGHBOR .... 06 RELATIVE .... 07 ALREADY HAD IT AT HOME .... 95 OTHER ________________ 96 (SPECIFY) DON'T KNOW 98
1125		GO BACK TO 1123 IN NEXT COLUMN; OR IF NO MORE MEDICINES, GO TO 1126.	GO BACK TO 1123 IN NEXT COLUMN; OR IF NO MORE MEDICINES, GO TO 1126.	GO BACK TO 1123 IN FIRST COLUMN OF A NEW QUESTIONNAIRE; OR IF NO MORE MEDICINES, GO TO 1126.
1126	RECORD THE TIME.		HOUR .... MINUTES	

FOOTNOTES

[1] The term 'antimicrobial' includes antibacterials, antivirals, antifungals, anthelmintics, and antiprotozoals (including antimalarials). The locally appropriate and publicized word should be used and substituted when any reference to antimicrobials is made in this questionnaire.

[2] Coding categories for drugs to be developed locally and revised based on the pretest. It may include brand and/or generic names that are commonly known in the community. However, the broad categories must be maintained.

[3] Coding categories for infections to be developed locally and revised based on the pretest. However, the broad categories (APPROPRIATE INFECTIONS AND INAPPROPRIATE INFECTIONS) must be maintained. If locally relevant inappropriate infections are added to the coding categories, for each infection add a pair of questions similar to 1108 and 1109 after 1109.

[4] Use country-specific word for viral upper respiratory tract infection

[5] Use country-specific word for non-bloody diarrhea of short duration

[6] Coding categories to be developed locally and revised based on the pretest

[7] Coding categories to be developed locally and revised based on the pretest. The final coding categories should reflect country-specific communication messages.

[8] Use country appropriate word that distinguishes regulated medicines (prescription or over-the-counter) from herbal or 'bush' medicine

[9] Each country to come up with a list of health professionals who are authorized to prescribe or recommend antimicrobials in that country and those who are not

[10] Each country to come up with a list of sources that are authorized to sell antimicrobials in that country and those that are not