

**Community
Assessment of
Availability and Use
of Medicines for
Childhood Illness**

*Loreto and
La Libertad Regions,
Peru, 2003*

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ACRONYMS

ADD	acute diarrheal disease
AED	Academy for Educational Development
ARC	American Red Cross
ARI	acute respiratory infection
ASIS	Análisis de Situación de Salud (Health Status Assessment)
DGSP	Dirección-General de Salud de las Personas (Department of Public Health)
DHS	Demographic and Health Survey
DIGEMID	Dirección General de Medicamentos, Insumos y Drogas (Department of Medicines and Medical Supplies)
DIREMID	Dirección Regional de Medicamentos, Insumos y Drogas (Regional Directorate of Medicines and Medical Supplies)
DISA	Dirección Regional de Salud (Regional Health Directorate)
ENDES	Encuesta Demográfica y de Salud Familiar (Demographic and Family Health Survey)
EPI	Expanded Programme on Immunizations
ESSALUD	Seguro Social de Salud (Social Security Health System)
FFAA	Fuerzas Armadas (Peruvian Armed Forces)
HC/HP	Health Centers and Health Posts
IMCI	Integrated Management of Childhood Illness
INDECOPI	Instituto de Defensa de la Competencia y de la Propiedad Intelectual (Institute for the Defense of Competition and Protection of Intellectual Property)
INEI	Instituto Nacional de Estadística e Informática (National Institute of Statistics and Data Processing)
MOH	Ministry of Health
NGO	nongovernmental organization
ORS	oral rehydration salts
PAHO	Pan American Health Organization
RPM Plus	Rational Pharmaceutical Management Plus [Program]
SISMED	Sistema Integrado de Suministro de Medicamentos (Integrated Medicine Supply System)
UNICEF	United Nations Children's Fund
USD	U.S. dollar
WHO	World Health Organization

EXECUTIVE SUMMARY

The primary aim of the Integrated Management of Childhood Illness (IMCI) strategy is to reduce mortality and morbidity in children under five; pharmaceutical management is an important component of this strategy. Childhood mortality and morbidity reduction is often hindered by the lack or misuse of medicines; therefore, ensuring appropriate availability of medicines at community medicine outlets and dispensaries as well as encouraging successful home treatment should be priorities for integrated child health programs.

Various players are involved in the availability and use of medicines in the community. They include the health workers who prescribe, dispense, or recommend medicines and the caregivers who recognize the signs and symptoms of a child's illness, seek health care, and obtain and administer medicines. Failure to properly perform these roles can lead to delays in the healing process and unnecessary spending. A key requirement for improving pharmaceutical management is to identify problem areas in the availability of medicines at the community level, particularly related to the acquisition and use of medicines in the home.

In order to generate information to support the lines of intervention of the IMCI strategy in areas related to community management of medicines for childhood illness, the Rational Pharmaceutical Management (RPM Plus) Program, the Pan American Health Organization (PAHO), and the Ministry of Health (MOH) of Peru developed the study "Community Assessment of the Availability and Use of Medicines for Childhood Illness."

The study was based on the methodology recommended in the *Community Drug Management for Childhood Illness Assessment Manual* (Nachbar et al. 2003) and took place between October and December of 2003 in two regions of Peru (Iquitos Norte and Virú-Laredo). The objectives of the study were to—

- Identify the problem areas of community management of medicines for childhood illnesses
- Guide the planning and development of interventions that contribute to the improvement of child health-related programs

The study consisted of a cross-sectional analysis of the availability and use of medicines in the community and focused on three common childhood illnesses: acute respiratory infection (ARI), acute diarrheal disease (ADD), and malaria. It was conducted using the cluster sampling method and used two tools: a questionnaire for caregivers of children under five years of age who had experienced symptoms of the studied conditions within the two weeks preceding the survey, and a questionnaire for the various types of medicine providers identified for the study (Health Centers and Health Posts [HC/HP], pharmacies, community dispensaries, and stores) in the communities sampled.

The information collected from the households targeted the behavior of caregivers with regard to the child's illness, timeliness of treatment seeking, sources of care, perceptions regarding the availability of medicines, and acquisition and use of medicines. Providers' knowledge of

childhood illnesses (ADD, ARI, and malaria), the corresponding treatments, and the medicines recommended by national protocols or guidelines was assessed along with the availability of a list of tracer medicines identified for the study, the cost of acquiring those medicines, and dispensing practices. A total of 300 households were surveyed in each district; 80 providers were surveyed in Iquitos Norte and 106 in Virú-Laredo.

Main Findings of the Community Assessment of Availability and Use of Medicines for Childhood Illness

The results of the study are described using indicators and grouped by the components of the framework provided in the *Community Drug Management for Childhood Illness Assessment Manual*—

Caregiver Practices

1. Caregiver recognizes warning signs early, assesses severity, and decides whether child needs treatment

In both regions, caregivers' perceptions of the severity of serious illnesses presented by children were low. This finding was particularly true in the case of fast breathing, where half of caregivers did not perceive their child's illness to be serious.

2. Caregiver seeks timely care from an appropriate source

The majority of caregivers sought care outside the home when their child became ill, and of this group, most obtained medicines from health centers, health posts, and pharmacies. More than 70 percent of caregivers seeking care outside the home went to an appropriate source, although most failed to do so promptly.

3. Caregiver obtains medicines

In both districts, the majority of caregivers had heard of co-trimoxazole, amoxicillin, and oral rehydration salts (ORS), but few had heard of furazolidone or antimalarial medicines. In Iquitos Norte, caregivers' perception of the availability of these medicines in their community was high and, in terms of percentage, was twice that of the perception of caregivers in Virú-Laredo.

In the survey, most caregivers in Iquitos Norte reported they most often obtained antibiotics and antimalarials at health centers and health posts. In Virú-Laredo, caregivers obtained all medicines at HC/HP and pharmacies equally. In both regions, ORS purchases were made at HC/HP and pharmacies in similar proportions.

Most medicines were recommended by trained personnel (HC/HP personnel, community health workers, or private doctors). Self-medication (medicine selected by caregivers themselves and not recommended by another person) was practiced by approximately one-fifth of caregivers.

4. Caregiver administers appropriate medicines correctly

Only one-fourth of children with fast breathing in Iquitos Norte and a tenth of those in Virú-Laredo received first-line antibiotics. Three-fourths of those in Iquitos Norte were given antibiotics for an appropriate period of time. In cases of children who had cough without fast breathing, a condition for which antibiotics are not needed, nearly half of those in Iquitos Norte and about two-thirds of those in Virú-Laredo received an antibiotic.

Of the cases of watery diarrhea in Iquitos Norte, approximately half received the recommended treatment (ORS or homemade rehydration solution), compared with one-third in Virú-Laredo. According to the responses of caregivers, antidiarrheals are not commonly used for treating watery diarrhea, although some providers, especially those in stores, reported antidiarrheals are the most commonly sold medicines for this condition. Antibiotics were given in more than half the cases.

Only a tenth of children with bloody diarrhea in Iquitos Norte received the first-line medicine, but a third received one of the two recommended antibiotics. In Virú-Laredo, less than a fifth received the first-line medicine, but more than three-fourths received one of the two recommended antibiotics. In both districts, the second-line medicine (co-trimoxazole) was given more often than the first-line medicine (furazolidone), a finding consistent with the prescribing and dispensing practices of the providers.

Provider Practices

1. Provider has appropriate medicines available in stock

There was a good supply of first-line antibiotics for ARI and ADD at HC/HP and in pharmacies, although at somewhat lower levels.

Community dispensaries, the only alternative for populations in remote areas, did not have an adequate supply of ORS or antibiotics for ARI and ADD. Although the availability of antibiotics was low in local stores, a risk of potential misuse of these medicines still exists because the store clerks working in those facilities lack the necessary training.

The availability of antimalarials in MOH health establishments was good, and for the most part, other providers did not have them. However, the presence of antimalarials in one of the pharmacies in Iquitos Norte indicates these medicines are, in some cases, being sold and used without any form of supervision.

2. Provider appropriately assesses signs and symptoms to identify the likely cause and provide specific treatment

The majority of respondents from HC/HP, pharmacies, and dispensaries recognized the key signs of pneumonia and could distinguish it from the common cold, whereas few respondents from stores recognized these signs. In the case of diarrhea, only the HC/HP respondents knew antibiotics may be needed if blood is present; few of the other respondents mentioned signs of blood in cases of diarrhea could require antibiotics. The results of the survey show that few of

the respondents from the various provider categories knew febrile convulsions are a key indicator for distinguishing severe malaria from uncomplicated malaria.

3. Provider dispenses or recommends appropriate medicines or refers the patient

The percentage of providers who knew which medicines are recommended for the treatment of pneumonia is very low. In the case of ARI non-pneumonia, some respondents mentioned antibiotics as the correct treatment.

The majority of respondents at HC/HP mentioned the use of ORS and increased fluid intake as effective treatment for watery diarrhea. Approximately two-thirds of health workers identified ORS as the recommended treatment for watery diarrhea. In contrast, fewer pharmacy respondents mentioned ORS, and none mentioned increased fluids as effective treatments for this type of diarrhea. Half of dispensary respondents indicated ORS and increased fluids are effective, but in the stores, few respondents named any of the appropriate forms of treatment as the most effective. Knowledge of recommended treatments is much lower among pharmacy, dispensary, and store providers than among HC/HP providers.

Most HC/HP respondents knew bloody diarrhea should be treated with antibiotics; fewer providers from the other categories were aware of this. Only a third of HC/HP respondents correctly named the first-line antibiotic for bloody diarrhea, while the majority were able to identify the second-line antibiotic.

HC/HP and dispensary respondents did not mention antidiarrheal medicines as the most-effective treatment for diarrhea; however, pharmacy and store respondents did mention them. The results demonstrate that antidiarrheals, primarily Donafan, are sold in some pharmacies and in most shops. More important and of greater concern is the widespread sale of antibiotics for cases of watery diarrhea.

The treatment guidelines for malaria are known by the majority of HC/HP respondents in Iquitos Norte but by few in Virú-Laredo. Only a small number of dispensary, pharmacy, and store respondents knew the treatment guidelines for malaria.

4. Provider gives appropriate information/instructions/recommendations/labeling

According to self-reported practices, more than half of the respondents from the various provider groups in both districts provide caregivers with basic information (advice) on how to use medications. Actual practices are not known because they were not observed at the time of dispensing. In all provider categories, all medicines were dispensed in their original packaging, but many did not contain appropriate labeling information on medication dose, frequency, and duration.

Recommendations

The recommendations and interventions proposed by regional workshop participants have been grouped according to the level of implementation.

Regional Level

1. Implementation of plans for caregiver education, such as systematic educational campaigns. These campaigns will require planners to review the concepts and messages to be disseminated and prioritize the issues. The most important concepts include recognizing warning signs, promoting treatment-seeking behavior, increasing awareness of the supply of free medicines for children under five in government health facilities, educating about rational use of medicines, and developing job aids and other visual media to inform caregivers of the proper procedures for administering common medicines.
2. Implementation of training plans for health workers (at each level: HC, HP, and dispensaries), which include applying new methods, using appropriate materials, and maintaining adequate supervision. These plans should also include a quality of care improvement component to address areas such as rational use of antibiotics and warning signs and symptoms of conditions such as pneumonia and diarrhea.
3. Dissemination of guidelines by agencies responsible for medicine supply and verification that such guidelines are used in daily work activities.
4. Establishment and strengthening of communication between dispensaries, health centers, and health posts.
5. Organization of information days for commercial sector providers to familiarize them with Technical Treatment Procedures and the risks of irrational use of medicines.

Central Level

Policy Decisions

1. Institutionalization of the IMCI strategy in the framework of the new health care model (MAIS), which is considered the best form of intervention from a cost-benefit perspective for controlling and preventing childhood illness and promoting healthy lifestyles for individuals, families, and communities.
2. Evaluation of banning the sale of antimalarial medicines in the commercial sector in order to ensure the new treatments being implemented will not become ineffective.

Technical-Regulatory Aspects

1. Revision of Technical Treatment Procedures for ARI, ADD, and malaria to ensure consistency with the procedures of the IMCI strategy and with the National Drug Registry.

2. Definition and specification of the role of community dispensaries as an extension of health facilities for populations living in the country's most remote areas, and formalization of their connection to the health system.

INTRODUCTION

The Integrated Management of Childhood Illness strategy, proposed in 1992 by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), aims to reduce mortality and morbidity in children under five years of age by addressing the five leading causes: diarrhea, acute respiratory infection, malaria, malnutrition, and measles (Benguigui, Bossio, and Fernández 2001).

The IMCI strategy has three components: (1) training health workers, (2) strengthening health facilities, and (3) promoting key family and community practices (Table 1).

Table 1. Components of the IMCI Strategy

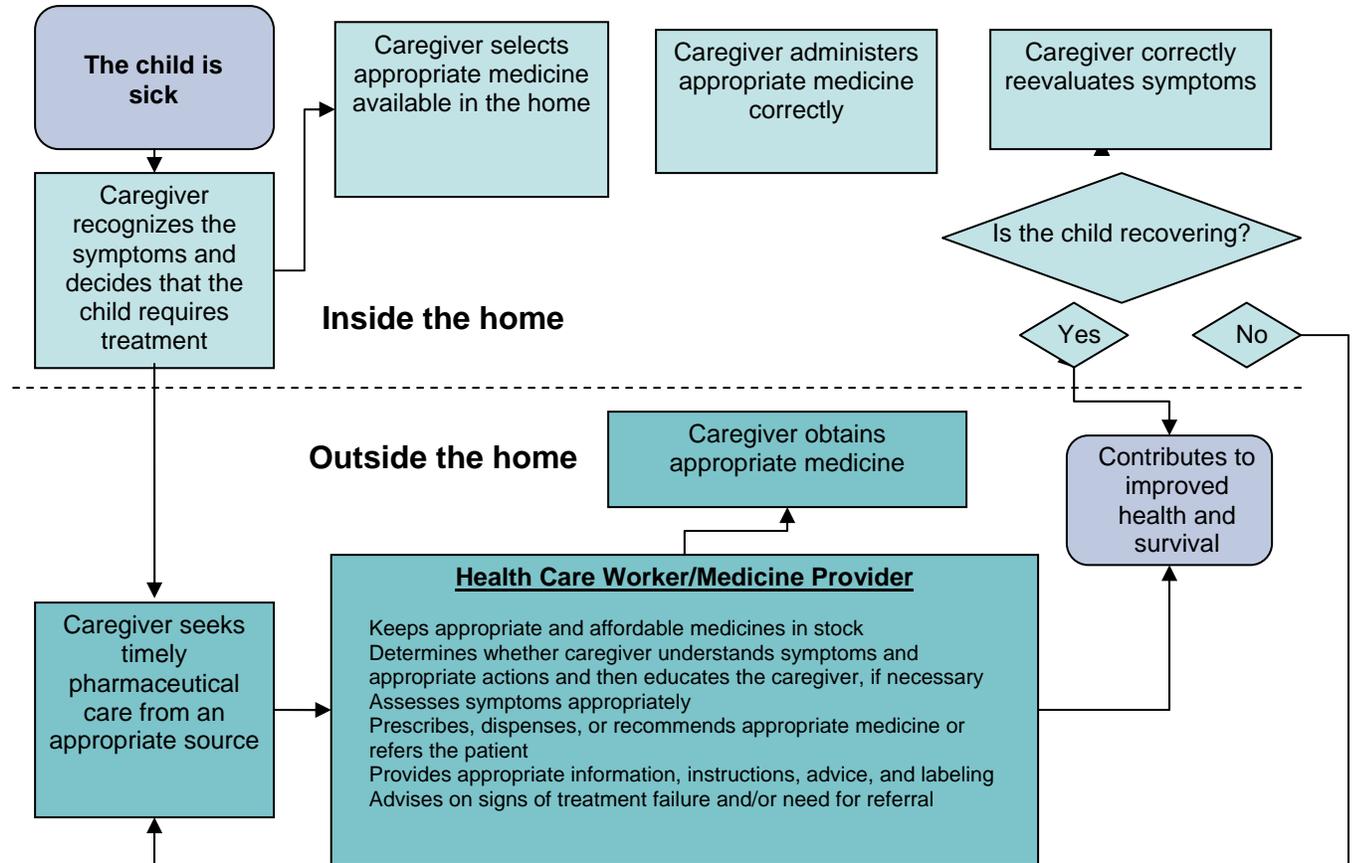
Training Health Workers	Strengthening Health Systems	Promoting Key Family and Community Practices
<ul style="list-style-type: none">▪ Treatment protocols▪ Training▪ Post-training follow-up	<ul style="list-style-type: none">▪ Management of pharmaceutical supply▪ Organization of work in health facilities▪ Management and supervision	<ul style="list-style-type: none">▪ Proper nutrition▪ Home case management and treatment adherence▪ Community participation

Pharmaceutical management has long been identified as a critical factor in the success of IMCI and other child health programs. For this reason, interventions aimed at improving the availability and use of medicines have most often taken place in the public sector and been viewed from a predominantly institutional perspective (Research 2001), primarily through management and training programs. Considering that, according to various studies, self-medication levels in the population range from 36 to 68 percent (Llanos et al. 2001; Lalama 1999; Carrizales, Quispe, and Retuerto 1995) and most of the population seeking care from health facilities continues treatment at home, the community and the family are where illnesses are most commonly treated. Therefore, institutional interventions alone are not enough to improve the various issues related to the availability and use of medicines.

Framework for Community Management of Medicines for Childhood Illness

When a child becomes ill, a series of processes and interactions to treat the disease is set in motion. These processes take place both inside and outside the home, and the interactions that occur, mainly between the child's caregiver and the health worker (or medicine provider) depend on the knowledge, abilities, and resources involved, as well as on the decisions made by each player. Figure 1 shows the actions that are expected of the caregiver when a child becomes ill. These actions are the components of the framework for the appropriate community management of medicines for childhood illnesses.

If the efforts of the child’s caregiver and health care worker/medicine provider are inadequate or insufficient, the child’s condition may worsen, thereby wasting resources and increasing the spread of antimicrobial resistance.



Source: Nachbar et al. 2003.

Figure 1. Framework for appropriate community management of medicines for childhood illnesses

Each of the elements included in the framework depends on various factors, such as the organization and operation of the supply chain, as well as the cultural and economic factors that determine the availability of medicines at outlets and their accessibility to those who need them.

The availability of medicines in the community and their use in the home are critical factors in the success of child health programs, particularly the second and third components of the IMCI strategy. The RPM Plus Program and PAHO have implemented this study—“Community Assessment of Availability and Use of Medicines for Childhood Illness”—in two regions of Peru (Loreto and La Libertad) to identify problem areas in the management of medicines.

The study is based on the *Community Drug Management for Childhood Illness Assessment Manual* (Nachbar et al. 2003) developed by RPM Plus, the Academy for Educational

Development (AED), and Harvard University. The tools (questionnaires) and methodology proposed by the *Manual* were first applied in Senegal in 2002.

The *Community Drug Management for Childhood Illness Assessment Manual*—

- Provides a cross-sectional analysis of the use and availability of medicines in the community
- Allows for problem identification without the need for tests of statistical significance
- Uses an indicator-based approach to identify the strengths and weaknesses of pharmaceutical management

Objectives of the Study

- To identify problems areas in community management of medicines for childhood illness
- To guide the planning and development of interventions that contribute to improved child health programs

Health Situation in Peru

According to the estimates of the National Institute of Statistics and Data Processing (Instituto Nacional de Estadística e Informática, or INEI), Peru has a population of 27 million. In the previous decade, its population growth rate was 2 percent; however it dropped to 1.7 percent in 2000, and according to projections for 2000–2005, the growth rate will decrease to 1.6 percent (INEI 2002). Among other reasons, this decrease is caused by the decline in the global fertility rate, which was 3.5 in 1996 and 2.9 in 2000. The Peruvian population is young, with a trend toward aging; the population under 15 years of age was 41.2 percent in 1981 and is estimated to be 30.8 percent in 2005 (INEI 2000). Life expectancy is 69.1 years (INEI 2001).

The population is distributed unevenly across three geographical regions: coast, mountains, and jungle. With a little more than a tenth of the country's total area (11 percent), the coast is home to more than half of the population (52 percent). An average of 64 percent of the total population lives in urban areas (INEI 2000).

In 1996, infant mortality was 43 per 1,000 live births, and it fell to 33 per 1,000 live births in 2000. However, this average masks large variations: in the rural areas of some Andean regions, infant mortality is as high as 84 per 1,000 live births, while in urban areas of the country's capital, the rate is 17 deaths per 1,000 live births.

The country's epidemiological profile is characterized by a higher frequency of infectious diseases in the poorest sectors of society and chronic degenerative diseases in the higher-income

sectors.¹ The 2000 Demographic and Family Health Survey (Encuesta Demográfica y de Salud Familiar, or ENDES) measurement of the prevalence of the primary causes of infant mortality shows a 20 percent incidence of ARI in children under five years of age. Of the children who presented these illnesses, 58 percent were taken to a health facility or health care provider. ADD had a prevalence of 15 percent, and 38 percent of the children who presented with this condition were taken to a health facility or health care provider. The prevalence of chronic malnutrition was 25.4 percent, with 13.4 percent in urban areas and 40.2 in rural areas (INEI 2001). Malaria, another leading cause of mortality, is increasing. According to data from the Malaria Control Program, in 2001 the prevalence rate was 301 per 100,000 inhabitants and in 2002, 371 per 100,000 inhabitants (2004);² 69.8 percent of these cases were *P. vivax* (MINSa 2002).

The indicators show that, overall, there have been improvements in maternal perinatal care and in the control of vaccine-preventable and communicable diseases over the past decade. However, these improvements have benefited only the more developed areas; maternal and child health problems continue to affect the poorer areas where low-income groups live and which are experiencing an increase in emerging and re-emerging infectious diseases.³

Health Services System

The health system is composed of the MOH, the Social Security Health System (ESSALUD), the Armed Forces (FFAA) health services, and the private sector. The MOH, which is funded primarily by the public treasury and to a lesser extent through the payment of user fees, is theoretically responsible for serving 65 percent of the population. ESSALUD is funded by worker contributions and serves this sector and its members, who represent 20 percent of the population. FFAA health services are funded through the public treasury and are exclusively for members of the military and their families, who represent approximately 3 percent of the population. The private sector, which is funded by health care users, serves the remaining 12 percent of the population. According to a study titled “Analysis of the Demand for Health Services” completed in 1996 (CIUP 1997), despite this demarcation of responsibilities and definition of the populations to be served, 26.6 percent of Peruvians did not have access to medical services; this situation has not improved since.

A large discrepancy exists between the assigned resources and the responsibilities of the various institutions. Although the coverage of ESSALUD reaches only 20 percent of the population, it spends 105 U.S. dollars (USD) per capita annually, while the MOH, which should serve 65 percent of the population, spends USD 28 per capita annually.⁴ This disparity also occurs within the MOH: the per capita health spending in the Lima Region was USD 108 in 1996; in Huancavelica, the nation’s poorest region, it was USD 14 (PFSS 1997).

At the central level, the basic organization of the MOH includes four Technical Departments (Department of Public Health [Dirección General de Salud de las Personas, or DGSP], Environmental Health, the Department of Health Promotion, and the Department of Medicines

¹ Personal communication by the authors with MOH officials.

² There are no specific statistics on this disease in children under five years of age.

³ Personal communication by the authors with MOH officials.

⁴ Personal communication by the authors with MOH officials.

and Medical Supplies [Dirección General de Medicamentos, Insumos y Drogas, or DIGEMID]). At the national level, the MOH has 34 Regional Health Directorates (Direcciones Regionales de Salud, or DISAs) that are organized much like the central-level departments and oversee the health facility networks, which are organized in levels, with health centers and health posts at the primary care level.

Child health care within the MOH and the 34 DISAs is based on the IMCI strategy. This strategy was first implemented in Peru in 1996 with the adaptation of the general content of the National Program Standards and the training of a critical mass of 50 professionals who had participated as facilitators. In 1997, the clinical component was implemented in several pilot areas and, by 1998, had expanded nationwide in both MOH and ESSALUD facilities. The adaptation of the community component was initiated in 1999 and its implementation on a national level began in 2001, when nongovernmental organizations (NGOs) became strategic implementation partners.

In December 1999, the “Healthy Children: Goal 2002” initiative was launched, and at the end of 2000, PAHO and the American Red Cross (ARC) signed an agreement to develop the Regional Community IMCI Project in 10 of the region’s countries, including Peru. Accordingly, projects to promote key practices were implemented in Huancane-Puno, Alto Nanay in Iquitos, and Chao in La Libertad. The latter two are the sites for this study.

Pharmaceutical Supply in the Country

According to estimates from the Institute for the Defense of Competition and Intellectual Property (Instituto de Defensa de la Competencia y de la Propiedad Intelectual, or INDECOPI; 2002),⁵ in 2001 the pharmaceutical market in Peru totaled \$528 million, of which approximately 21 percent accounted for public sector purchases and the remaining 79 percent for private sector purchases. Each of the institutions that make up the public sector (MOH, ESSALUD, and FFAA) has its own pharmaceutical supply system.

Within the MOH, DIGEMID implemented the Integrated Medicine Supply System (Sistema Integrado de Suministro de Medicamentos, or SISMED) (MOH 2001) in 2000, which covers the service network at the primary care level: 4,954 Health Posts and 1,115 Health Centers (MOH 1999). This relatively new system, which is aimed at improving the availability and accessibility of essential medicines at MOH health facilities, was formed by integrating the three previously existing subsystems: the medicine supply system of the public insurance system known as “School Insurance” and the medicine supply system of the National Programs, both funded by the public treasury, and the supply system based on rotating funds. They represented 16, 34, and 50 percent, respectively, of the MOH medicine supply system.

The public sector provides free medicines to treat illnesses in children under five through National Programs (Diarrheal Disease Control Program, Acute Respiratory Infection Control Program, Extended Programme on Immunizations [EPI], Malaria Control Program, etc.) and the

⁵ INDECOPI is the public agency in charge of overseeing and promoting the correct operation of the market economy in Peru.

Comprehensive Health Insurance System (an insurance system for mother-child and school-aged groups).

In the private sector, medicines are supplied through the more than 9,058 pharmacies and drug stores⁶ in the country, 5,064 of which are located in the Lima Region (DIGEMID); the rest are located in cities throughout the country. Beginning in the 1990s, as a result of the economic crisis that affected the country and in view of pharmaceutical supply deficiencies in the public and private sectors (especially in rural areas), nonregulated suppliers began multiplying in the form of dispensaries sponsored by NGO-type institutions and stores not authorized to sell medicines and with no relationship whatsoever with the DISAs.

Currently, dispensaries are the medicine supply alternative for the most-remote populations, where the presence of the MOH is limited. Despite lacking legally recognized status, dispensaries enjoy a certain acceptance by the DISAs, which, to obtain control over their creation and operation, try to offer some level of training and supervision to the persons in charge of these facilities.

Health Situation in the Study Areas

Two locations were chosen for the study: the Iquitos Norte Micro Network and the Virú Network-Laredo Micro Network (for reasons explained in the “Methodology” section). The Iquitos Norte Micro Network is located in the Loreto Region, in the province of Maynas. Its boundaries include part of the districts of Iquitos, Punchana, and Alto Nanay. The Virú Network-Laredo Micro Network is located in La Libertad Region; the Virú Network spans the area of the province of Virú, and the Laredo Micro Network territory includes the district of the same name and part of the provinces of Trujillo and Otuzco.

Loreto Region (Iquitos Norte)

Located in the Amazon region, Loreto is the largest region in the country in terms of area: 368,000 square kilometers (28.7 percent of the national territory). It has a population of 921,572 and a population density of 2.50 inhabitants per square kilometer. The altitude of this area ranges from 61 to 220 meters above sea level (ASIS Loreto 2003). Because of its geography, Loreto’s transportation network consists almost exclusively of waterways.

⁶ The difference between these two types of establishments is their legal ownership. In pharmacies, the owner is a pharmacist. Drug stores may be owned by any individual but require a pharmacist to oversee pharmaceutical operations.

Table 2. Main Demographic Indicators, Loreto

Male population (1)	51%
Urban population (1)	58%
Intercensal growth rate (2)	2.4% annually
Women of fertile age (1)	24.22% of total population
Overall fertility rate 15–49 years (3)	4.3 children per woman
Gross birth rate (1)	30 per 1,000 inhabitants
Life expectancy at birth (1)	64.9 years
Gross mortality rate (1)	6.5 per 1,000 inhabitants
Infant mortality rate (3)	53 per 1,000 live births

Sources: (1) ASIS Loreto 2003; (2) INEI 2002; (3) INEI 2001.

Because of its environmental conditions, this region has become an endemic malaria area. In 2002, 56,670 cases of malaria were reported, accounting for 62 percent of the total cases reported in the country (DIGEMID), with particular predominance of *P. vivax* and a smaller proportion of *P. falciparum*. In 2002 the malaria incidence rate was 6,149 per 100,000 inhabitants. The prevalence of ARI and ADD in children under five years of age was 27.2 and 29.9, respectively (INEI 2001).

Implementation of IMCI in Loreto began in 1998, initially focusing on only the clinical component; however, starting in 2001, the initial groundwork was prepared for the implementation of the Project to Promote Key Practices with the support of PAHO and ARC. This project has been carried out in the districts of Santa Clara and Alto Nanay.

La Libertad (Virú-Laredo)

La Libertad Region is located on the northern coast of Peru. Its area comprises 25,569 square kilometers (2.7 percent of the national territory), with a population estimated by INEI for 2001 of 1,483,881 inhabitants and a population density of approximately 57 inhabitants per square kilometer. The region's altitude ranges from 0 to 4,947 meters above sea level (ASIS La Libertad 2002). Approximately 80 percent of its surface area falls within the Andean region. Temperature varies from 18°C and upward on the coast, and from 8° to 15°C in the Andean zone.

Table 3. Main Demographic Indicators, La Libertad

Male population (1)	48.8%
Urban population (1)	71.7%
Intercensal growth rate (2)	1.5% annually
Women of fertile age (1)	24% of total population
Overall fertility rate 15–49 years (3)	2.9 children per woman
Gross birth rate (1)	20.5 per 1,000 inhabitants
Life expectancy at birth (1)	73 years
Gross mortality rate (1)	5.7 per 1,000 inhabitants
Infant mortality rate (3)	45 per 1,000 live births

Sources: (1) ASIS La Libertad 2002; (2) INEI 2002; (3) INEI 2001.

According to the malaria program, 1,021 cases of malaria were reported in 2000, with an incidence rate of 67 per 100,000 inhabitants and a proportion of *P. vivax* and *P. falciparum* of 6:1. The prevalence of ARI in children under five years of age was 9.1, and of ADD 9.7 (INEI 2001).

As in Loreto, the implementation of IMCI in La Libertad began in 1998, initially focusing on only the clinical component; however, starting in 2001, the groundwork was laid to prepare for the implementation of the Project to Promote Key Practices with the support of PAHO and ARC. The project has been carried out in the district of Chao, province of Virú, the target area of this study.

METHODOLOGY

The study is a cross-sectional analysis of community availability and use of medicines in cases of ARI, ADD, and malaria in children under five years of age. It was executed using the cluster sampling method and used two tools: a questionnaire for caregivers of children, and another for the health care/medicine providers. These questionnaires generated indicators that were used to identify problems in medicine management.

To ensure the tool would be both thorough and consistent with the resources available in the district, the researchers designed, developed, and validated the methodology (sampling method, tools, and form of analysis).

Sampling

The study sites were selected based on the following criteria—

- Epidemiological profile that includes the three illnesses studied: malaria, ARI, and ADD
- Areas where community IMCI projects are being carried out so the findings may be applied to the planning and development of projects
- Geographical unit large enough to guarantee the minimum number of families and medicine providers to survey, as established by the methodology

Initially, the districts of Alto Nanay and Chao (where IMCI projects are currently being implemented), located in the Loreto and La Libertad Regions, were selected for the study. Ultimately, however, it was decided the same geographical areas defined for the health networks⁷ would be used because the previously selected districts did not have the number of families and providers required for the survey. Furthermore, scaling up from the district to the provincial level in Loreto, the geographic space was too large, and in La Libertad, not large enough, to ensure the minimum number of providers required. The ultimate choice was more appropriate for the purposes of the study and allowed the study team to cover areas where the methodology requirements could be met, while maintaining the profile of the districts so the results could be applied to them. Because each of these two regions has distinct features and epidemiological profiles, they were not selected for the purpose of comparing the results of their respective studies, which would have required additional selection criteria.

The recommendations of the *Manual* (Nachbar et al. 2003) were followed in selecting the sample of each study district. These recommendations state the sample for the household survey should include 300 households with children who meet the selection criteria, and for the provider survey, a minimum of 20 medicine outlets for each of the provider categories defined before the start of the study. The 300 households and 20 providers per category must be selected from 20

⁷ The territorial area of a health network is a geographic space connected by a road network and social corridors.

clusters, and a minimum of 15 household surveys and 1 survey per provider category must be completed from each of these clusters. This sampling method is based on the EPI household surveys and other medicine use surveys, which have proven to be valid.

To ensure each cluster would yield the minimum number of household and provider surveys, the researchers determined the numeric size of the clusters in each region according to their epidemiology, taking into account the IRA, ADD, and malaria incidence rates and the estimated under-five population. This information was used to determine the estimated number of children who were expected to meet the inclusion criteria in a given population. The number of persons required for each cluster was determined to be 2,000 in each region, and neighboring communities were grouped to form clusters in order to meet this figure.⁸

A total of 53 clusters were formed in Iquitos Norte, and 42 were formed in Virú-Laredo. These clusters included urban and rural areas in proportion to the population distribution: 45 of the 53 clusters in Iquitos Norte and 25 of the 42 clusters in Virú-Laredo were urban, representing 88 percent and 55 percent, respectively, in the two urban populations.⁹ Of these clusters, 20 were randomly selected for each site (Annex 3), maintaining the proportion between urban and rural areas, which was consistent with the population distribution. Table 4 shows the final distribution of the selected clusters.

Table 4. Distribution of Clusters

Site	Percentage of Urban Population	Percentage of Rural Population	Urban Clusters	Rural Clusters	Total Clusters
Iquitos Norte	88	12	17	3	20
Virú-Laredo	55	45	11	9	20

Selection of Households

Household selection was carried out by teams of data collectors in accordance with the guidelines of the *Manual* (Nachbar et al. 2003), which specify randomization as a criterion for selection and recommend data collectors visit every fifth house. In urban clusters, the questionnaires were administered in neighborhoods, while in rural clusters they were administered in localities that formed part of the cluster. Each locality was assigned a number of surveys proportionate to its population size.

⁸ In Iquitos, the number of members per family was five for urban areas and eight for rural areas. The estimated size of clusters was 2,500 people for urban areas and 2,000 for rural areas. In Virú-Laredo, the number of members per family for urban and rural areas was six; therefore the size of the clusters was 3,000 in urban areas and 1,500 in rural areas.

⁹ The percentages for the urban and rural population were obtained in the DISAs. These figures correspond to actual numbers for the provinces and districts in question and differ from official statistics, which are averages for the entire region.

Inclusion criteria for children were as follows—

- Under five years of age
- Sick within the previous two weeks¹⁰ with at least one of the following symptoms: cough, rapid breathing, fever/high body temperature, headache, chills, convulsions, or diarrhea
- Healthy at the time of the survey
- Not sick for longer than four weeks

To qualify as a respondent, the caregiver had to have been responsible for the care of the child during his or her illness and over 13 years of age.

Selection of Providers

In order to select the sample of providers, researchers prepared an inventory of the different providers for each of the study areas, using a list of HC/HP as well pharmacies/drug stores provided by the Regional Department of Medicines and Medical Supplies (Dirección Regional de Medicamentos, Insumos y Drogas, or DIREMID) as a starting point. Dispensaries, stores, clinics, and other providers were added to the list based on the information provided by caregivers during the survey when asked about the places they went to acquire medicines. Additionally, upon arrival at the site, data collectors informally asked individuals in the area where they purchased or obtained medicines in order to ensure *all* types of providers present in the community were identified. These three sources of information were used to determine the group of providers eligible to participate in the survey, from which the sample was selected.

The following provider categories were defined for the study—

- Health Center, Health Post, or public hospital
- Clinics: church, CARITAS, NGO, private
- Social Security (ESSALUD)
- Pharmacy/private drug store
- Community dispensary
- Store
- Community health agent
- Traditional healer
- Others

At the start of the study, it was decided providers would be grouped into four main categories from which the 20 providers needed for the sample could be drawn: HC/HP, pharmacies, dispensaries, and stores. If other categories were identified in the captured sample, they would be combined with the most appropriate of the four main categories.

¹⁰ Two weeks is considered the maximum time period for ensuring reliable results. A. Kroeger. 1985. Response errors and other problems of health interview surveys in developing countries. *World Health Statistics Quarterly* 38:15–37.

Although the Iquitos Norte Micro Network and the Virú Network-Laredo Micro Network each ensured the minimum number of providers within their territory, at least for the HC/HP category, not all of the clusters selected for the sample had the required minimum number of providers. It was therefore necessary to use clusters outside of the sample in both study areas to meet the required number of providers per category. The criterion was to include providers whose locations were closest to the study areas.

Medicine outlet respondents had to be the persons in charge of dispensing or selling medicines at the establishment.

Tools

The *Manual* provided generic questionnaires for households and providers that were adapted to the country's context before data collection.

Household Questionnaire

The first section of the household questionnaire contains a triage sheet used to determine whether a child meets the inclusion criteria and to obtain the informed consent of the caregiver. The second section is made up of the questions used in the actual survey, which are designed to obtain information about the behavior of the caregiver with regard to the child's illness, the timeliness of seeking treatment, the sources used to obtain medicines, caregivers' perceptions about the availability of medicines, and the acquisition and use of medicines. (See Annex 4.)

Provider Questionnaire

Intended for providers/medicine outlets from the different categories (HC/HP, pharmacies/drug stores, community dispensaries, and stores/markets), the provider questionnaire is designed to collect information on their knowledge of the illnesses covered in this study and the respective treatments. The questionnaire also collects information on the providers' understanding of the national guidelines or protocol, the availability of the tracer medicines defined for the study, and dispensing practices. (See Annex 5.)

Preparation Phase

Forming the Technical Team

RPM Plus recruited a consultant to oversee all aspects of the study. For the execution of the study, this consultant was assisted by a technical team composed of two representatives from DIGEMID, three from the DGSP of the Ministry of Health, and one PAHO representative. This team held work meetings with health authority representatives from the regions selected for the study to explain the nature and objectives of the activity and visited the selected districts to learn about the areas and recruit the study team. The technical team was also responsible for preparing

the list of tracer medicines, adapting the study tools, training supervisors in both study areas, and reviewing the results of the survey.

Preparing the List of Tracer Medicines

In order to target the medicines most essential to the treatment of ARI, ADD, and malaria in children, the technical team prepared a list of tracer medicines (Annex 2) based on national guidelines and IMCI guidelines in Peru. The list consisted of the recommended first-, second-, and third-line medicines and also included some nonrecommended medicines to measure inappropriate use.

The treatment guidelines for ARI identify co-trimoxazole as the first-line medicine and amoxicillin as the second-line medicine. The first-line treatment for ADD in the form of bloody diarrhea is furazolidone, and co-trimoxazole is the second-line medicine. For ADD in the form of watery diarrhea, which is mostly of viral origin and therefore runs a self-limiting course, the treatment is ORS or homemade rehydration solution because this condition may cause dehydration. The antidiarrheal loperamide, which is contraindicated and possibly unsafe for treating cases of watery diarrhea in children, was also included in the tracer medicine list in order to determine its use.

With regard to malaria, chloroquine + primaquine is the first-line treatment for malaria caused by *P. vivax* and *P. malariae*. The two study sites have different combined treatments for uncomplicated malaria caused by *P. falciparum* because of their resistance patterns. In Iquitos Norte, the first-line treatment is mefloquine + artesunate and the second-line treatment is quinine + clindamycin + primaquine. In Virú-Laredo the first-line treatment is sulfadoxine-pyrimethamine + artesunate, and mefloquine + artesunate is the second-line treatment.

The national guideline recommendations differed slightly from the IMCI recommendations, particularly with reference to the treatment of malaria. Because of planned changes to the IMCI guidelines, which were to be aligned with national guidelines, the team adopted the latter.

Adapting the Instruments

Together with the list of tracer medicines, the technical team adapted the tools provided by the *Manual* to reflect the local context of the study areas. The main adaptations to the questionnaire included the addition of two symptoms—headache and chills—which are signs of fever recognized by the population, the definition of eight types of providers that could be found in the districts, and the inclusion of local terms for the medicines mentioned in the survey. Four main categories of providers to be represented in the sample and analyzed for the indicators were established for the provider questionnaire.

In addition to the questionnaires, the list of indicators (see the final list in Annexes 6 and 7) was also adapted to match the behaviors and knowledge relevant in the country's context of health policies and services. Some indicators not deemed useful were eliminated. The adaptation of the indicators also included defining what constitutes an “appropriate” selection, use, or action with

regard to the selection of medicines, their use, and their sources, as well as the actions of caregivers and providers according to national guidelines and DIGEMID regulations.

After these adjustments were made, the technical team defined the evaluation standards that would be used to interpret the calculated indicators.

Selecting the Work Team

At the central level, the work team consisted of a coordinator, a data analyst, and a programmer. The teams for each of the selected sites included two supervisors, 12 data collectors, a data entry clerk, and an administrative assistant (Annex 1).

The study coordinator used the terms of reference provided in the *Manual* to recruit competent individuals to fill the work team positions. The data analyst and programmer were professionals based in Lima with training and experience in database creation and data analysis. The supervisors were doctors and pharmacists affiliated with the DISAs in the study areas. For data collectors, individuals *without* medical or pharmaceutical training were recruited in order to minimize bias in the data collection process. The majority were university students with survey experience. In both districts, the local Red Cross office helped recruit data collectors from among its volunteers.

The organizational structure adopted for the study established two levels of execution: central and regional. The coordinator, located at the central level, was responsible for overseeing the study and maintained ongoing coordination with the supervisors of each of the regional teams. At the regional level, the supervisors were in charge of directing the data collection process carried out by the data collectors in the selected districts. The collected data were first reviewed and verified by the supervisors, then entered at the regional level, and later sent to the central level, where the data underwent additional quality control by the coordinator and data analyst before processing and analysis.

Training

Supervisors were trained by the technical team over a period of four days in the city of Lima. Training consisted of an overview of the study objectives, a review of the general characteristics of the illnesses targeted by the study (IRA, ADD, and malaria), pharmaceutical supply, and interview and data-recording techniques. The questionnaires and procedures for the household survey were reviewed and pilot-tested in the district of San Juan de Lurigancho of the Lima Norte Health Office to fine-tune the tool to suit the needs and conditions of country and to validate it.

During training, supervisors analyzed the statistical and demographic information of the selected areas and identified the sample for the study. The list of tracer medicines defined for the study was also reviewed (Annex 2).

Data collector training lasted five days and was conducted at each location in sequential order, first in Iquitos and then in Virú-Laredo. The training was facilitated by the supervisors with the assistance of the technical team (coordinator, DIGEMID staff, and data analyst). The objective of

the training was to familiarize data collectors with the questionnaires and train them in their use. The training included an in-depth review of the tools, role-play, and discussions on how the survey was to be conducted. Data collectors practiced by administering the questionnaires in the Santa Clara region of Iquitos and the Moche district in Trujillo, and, in the process, performed a final validation of the adapted instruments.

In both locations data entry clerks were trained by the data analyst on how to enter questionnaire responses into the database that had been prepared.

Data Collection

Data collection took place during three weeks from November 25 to December 14, 2003, and was carried out by 12 data collectors in each district.

In Iquitos Norte, because of the distance of some rural communities, and in view of the transportation problems that could have arisen during the approaching rainy season, the decision was made to start work in the three rural clusters simultaneously. The team of data collectors divided into three groups that, after traveling to their assigned locations, returned on the fourth or fifth day. In preparing for this situation, the data collectors had been trained in the use of both questionnaires, so that if they identified a provider in rural areas, they could interview the provider and thereby avoid having to return to complete the interviews with those providers, which would have required several additional days. In the urban areas, data collectors formed four groups and each was assigned specific clusters. The providers identified by these four groups during the field work were scheduled for the corresponding questionnaire in the order they were identified.

In Virú-Laredo, data collectors were divided into two groups, one of eight and one of four, to administer questionnaires to households and providers, respectively. The identification of providers was carried out in the same manner as in Iquitos Norte.

The data collection process was monitored by supervisors at all times.

Data Processing and Analysis

When the questionnaires had been completed, they were checked for accuracy by the supervisors, who also entered the corresponding response codes before responses were entered into the database that had been developed in Visual Fox®. Upon completion of the data entry process, the database was reviewed to verify the information entered matched the responses given in the questionnaires.

The completed databases for Iquitos Norte and Virú-Laredo were sent electronically to Lima, where they were processed by the analyst through another program developed in Visual Fox, to calculate the indicator values (the complete lists of indicators used for the study appear in

Annexes 6 and 7). The results of the processing were reviewed to detect inconsistencies and adjust the program.

The technical team reviewed the preliminary findings to verify them and identify inconsistencies and then sent them to Management Sciences for Health/RPM Plus in Arlington, Virginia for further review and independent verification. No significant errors were detected. After the results were finalized, the findings were compared with the standards defined by the technical team at the beginning of the study to identify those most relevant and appropriate for consideration. Three workshops were held—in Iquitos, Trujillo, and Lima—to present the results to the stakeholders and other key partners, such as the Red Cross.

INTERPRETATION OF FINDINGS

Characteristics of the Sample

Households

The number of surveys assigned to urban and rural areas was in proportion to the population in each area within the study sites. In Iquitos Norte, 45 surveys were completed in rural areas and 255 were completed in urban areas, while in Virú-Laredo, the totals were 135 for rural areas and 165 for urban.

Table 5 shows the age distribution of the sample for both locations. In Iquitos Norte, children under two years of age accounted for 46 percent of the sample, and in Virú-Laredo 44 percent. There were no significant differences with regard to gender: in Iquitos Norte 51 percent of respondents were male, while in Virú-Laredo this number was exactly 50 percent.

Table 5. Under-Five Population in Study Areas

Age	Iquitos Norte n = 300	Virú-Laredo n = 300
Under 12 months	19%	21%
12–23 months	27%	23%
24–35 months	22%	21%
36–47 months	17%	18%
48–59 months	15%	17%

Household Respondents

As shown in Table 6, the respondents in both locations had very similar characteristics with regard to relationship and age. Mothers were the largest group of respondents, representing 74 percent of the respondents in Iquitos Norte and 77 percent in Virú Laredo, and the average age of mothers was approximately 30 years.

Table 6. Characteristics of Household Respondents

Relationship	Iquitos Norte n = 300	Virú-Laredo n = 300
Mother	74%	77%
Grandmother	9%	8%
Father	10%	7%
Other relative	6%	9%
Average age of respondent	31 (13–70)	30 (14–68)

Signs and Symptoms Presented

The signs and symptoms used in the surveys corresponded to the three illnesses of interest: ARI, ADD, and malaria. In accordance with national guidelines, fast breathing, bloody diarrhea, and convulsions or seizures were considered signs of pneumonia, dysentery, and severe malaria, respectively, and, because of their seriousness, those symptoms would require treatment with medication.

A large majority of the children who met the inclusion criteria had more than one sign or symptom. Cough was the most common symptom in both regions (86 percent in Iquitos Norte and 72 percent in Virú-Laredo), followed by fever (76 percent in Iquitos Norte and 61 percent in Virú-Laredo). Overall, the frequency of the most serious symptoms (fast breathing, convulsions/seizures, and bloody diarrhea) was low, with the exception of the 27 percent of children in Iquitos Norte who had rapid breathing within the two weeks preceding the survey.

Table 7. Signs and Symptoms Presented in the Sample of Sick Children under Five

Sign or Symptom	Iquitos Norte* n = 300	Virú-Laredo* n = 300
Cough	86%	72%
Fast breathing	27%	3%
Fever/hot body	76%	61%
Headache	23%	4%
Chills	11%	1%
Fever, headache, or chills	81%	61%
Convulsions/seizures	3%	1%
Diarrhea (bloody and nonbloody)	47%	27%
Bloody diarrhea	10%	4%

* The percentages total more than 100 because some of the children had more than one sign/symptom.

The signs and symptoms presented by the children in the study areas occurred more frequently in Iquitos Norte than in Virú-Laredo, which is more or less consistent with the data on the frequency of ARI, ADD, and fever recorded in 2000 Demographic and Family Health Survey (ENDES).¹¹ The most significant difference between these two sites was found in the percentages obtained for cases of fast breathing (27 percent in Iquitos Norte and 3 percent in Virú-Laredo).

¹¹ The results of the 2000 Demographic and Family Health Survey showed that in children under five in the Loreto Region, the incidence of ARI was 27.2 percent, of ADD 29.8 percent, and fever 33.7 percent, while in La Libertad, the incidence of ARI was 9.1 percent, ADD 9.7 percent, and fever 20.9 percent.

Medicine Providers by Category and Distribution by Location

A total of 80 medicine providers in Iquitos Norte and 106 in Virú-Laredo were surveyed from the following four main categories—

- Public health facilities: HC/HP, MOH hospitals, and ESSALUD health care centers
- Pharmacies: all private sector medicine providers registered with the MOH’s DIREMID and with an official operating license
- Dispensaries: all medicine outlets operating in the community associated with the MOH for the purposes of training and supervision, or affiliated with NGO-type institutions
- Stores: shops and all other outlets selling medication without an operating license

The number, type, and distribution of the providers surveyed in urban and rural areas are shown in Table 8. The distribution does not correspond to the percentage of urban and rural clusters selected for the sample because the sample was completed, as mentioned earlier, by incorporating providers used by the surveyed households but not located in clusters selected for the study.

Table 8. Location of Providers/Medicine Outlets

Setting/ Location	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Urban	50%	100%	55%	95%	38%	95%	34%	30%
Rural	50%	0%	45%	5%	62%	5%	66%	70%

In Iquitos Norte, the majority of the providers surveyed from the four categories were located in urban areas. All of the pharmacies and 19 of the 20 stores surveyed were in urban areas. The data indicate rural providers included only health centers, health posts, and dispensaries. In Virú-Laredo, however, most of the providers surveyed for the study were located in rural areas, with the exception of pharmacies. This distribution of providers suggests access to medicine providers in rural areas of Virú-Laredo may be greater than in the rural areas of Iquitos Norte.

Nevertheless, it is important to note that this information is not a complete inventory of all health care providers and these providers and outlets are only those used by the survey respondents, as well as formal health centers and health posts located in the study areas.

Distance from Medicine Outlets to Nearest Health Facility

Because transportation is by river in Iquitos Norte and the distance in kilometers is unknown, travel time was used to estimate the distance between the medicine outlet/provider and the nearest MOH facility, which is an influential factor in the decision whether or not to refer a patient. The same criterion was used in Virú-Laredo despite the fact that transportation there is primarily by road, because the concept of distance is most often expressed in terms of the time it takes for a person to travel from one place to another.

Table 9 shows the distances between providers/medicine outlets and the nearest HC/HP. In Iquitos Norte, 35 percent of the dispensaries, and in Virú-Laredo, 27 percent of the dispensaries and 23 percent of the stores, were more than 30 minutes from an HC/HP. In contrast, all pharmacies in both study sites were within 30 minutes of a health facility. These data suggest the dispensaries in Iquitos Norte and dispensaries and stores in Virú-Laredo are the types of providers most commonly available to populations isolated from health facilities.

Table 9. Distance from Medicine Outlets to Nearest Health Facility

Travel Distance in Minutes	Iquitos Norte			Virú-Laredo		
	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Less than 15 minutes	65%	40%	60%	86%	38%	53%
Between 15 and 30 minutes	20%	10%	0%	4%	4%	6%
More than 30 minutes	0%	35%	0%	0%	27%	23%
Does not know/ no response	15%	15%	40%	10%	31%	18%

Most pharmacies (65 percent in Iquitos Norte and 86 percent in Virú-Laredo) and stores (60 percent in Iquitos Norte and 53 percent in Virú-Laredo) are less than 15 minutes from a health facility. This fact suggests some households used these private pharmacies and stores despite having access to health facilities where they can receive medicines at no cost and health care from trained medical personnel.

It is important to note that 3 of the 20 dispensary respondents in Iquitos Norte and 8 of the 26 dispensary respondents in Virú-Laredo, which in theory have some level of coordination with the MOH, do not know the distance to the nearest HC/HP.

Level of Training of Respondents at Medicine Outlets

The level of training of each of the respondents was ascertained because this factor is a key indicator of their knowledge of illnesses, appropriate treatments, and the instructions the patient should be given at the time medicines are dispensed, and because it provides useful information to identify and guide provider-targeted interventions.

As the results in Table 10 demonstrate, in the 20 HC/HP in Iquitos Norte, 16 of the respondents were nursing technicians, 2 were health care professionals (pharmacists, nurse-midwives), 1 was a health worker, and the other a laboratory technician. In Virú-Laredo, 13 were nursing technicians, 10 were health care professionals, and 1 respondent was a pharmacy technician.

Although a law requires all pharmacies to have a trained pharmacist, the level of training of pharmacy respondents participating in the study indicates untrained pharmacy attendants also provide services to customers. Half of the respondents in Iquitos Norte and 10 of the 16 respondents in Virú-Laredo had no medical training. In dispensaries, 11 of the 20 respondents in Iquitos Norte and 10 of the 26 in Virú-Laredo had no medical training. In all of the stores surveyed in Iquitos Norte and in 32 of the 34 in Virú-Laredo, the store attendants had no medical training.

Table 10. Level of Training of Respondents, Providers

Professional Level	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Pharmacist	5%	10%	0%	0%	8%	22%	0%	0%
Pharmacy technician	0%	5%	0%	0%	4%	18%	4%	3%
Nursing technician	80%	30%	15%	0%	54%	14%	4%	3%
Doctor	0%	0%	0%	0%	4%	0%	0%	0%
Nurse-midwife	5%	5%	0%	0%	30%	5%	0%	0%
Health worker	5%	0%	30%	0%	0%	0%	54%	0%
Other	5%	50%	55%	100%	0%	41%	38%	94%

Results of the Study

The results of the study are presented according to the elements of the framework.

Behavior and Knowledge of the Caregiver

1. Caregiver recognizes warning signs early, assesses severity, and decides whether child needs treatment

The caregiver's ability to recognize and assess the signs and symptoms of a sick child and ensure children are taken to health facilities where they can be treated is a key factor in reducing morbidity and mortality levels in children under five. The survey measured whether caregivers regarded the symptoms as signs of severity.

Although most episodes of ARI are viral and are therefore self-limiting, some could be cases of pneumonia, which places the child's life at risk. The percentage of cases of fast breathing (the main symptom of pneumonia) that were perceived as very serious was quite low for both

districts: 15 percent of the 82 cases in Iquitos Norte and 3 of the 10 cases in Virú-Laredo (Table 11).

Table 11. Perception of the Seriousness of Fast Breathing

Level of Seriousness Perceived by the Caregiver	Iquitos Norte n = 82	Virú-Laredo n = 10
Very serious	15%	30%
Somewhat serious	34%	20%
Not serious	50%	50%
Does not know	1%	0%

The sample size was small, but it is interesting to note that in Iquitos Norte, 2 of the 10 caregivers of children with convulsions or seizures thought their child’s illness was very serious, and 4 of the 10 thought it was not serious. This low percentage of respondents who considered their child’s convulsions or seizures serious could be caused by the high relative frequency of epilepsy in the area according to anecdotal evidence supported by epidemiological data. In Virú-Laredo, 2 of the 3 caregivers believed the convulsions or seizures of their child were very serious.

The perception of the seriousness of bloody diarrhea among children with this condition shows the large majority of caregivers did not view an episode of bloody diarrhea as very serious. Only 6 of the 30 respondents in Iquitos Norte and 1 of 11 respondents in Virú-Laredo considered it to be “very serious.” In fact, more respondents believed it was “not serious” (12 of the 30 respondents in Iquitos Norte and 7 of 11 in Virú-Laredo) than “very serious.”

2. Caregiver seeks timely care from an appropriate source

a. Treatment-Seeking Behavior

Currently, proper case management of pneumonia, malaria, and bloody diarrhea calls for caregivers to seek care outside the home when children show symptoms of these illnesses, especially in cases of fast breathing and convulsions, given the seriousness and danger posed by these conditions.¹² The results of the measurement of this behavior are presented in Table 12.

For cases of fever, 73 percent of caregivers in Iquitos Norte and 82 percent in Virú-Laredo sought care outside the home. The number of cases of bloody diarrhea was lower, but the behavior of caregivers was similar to care-seeking for fever: in three-fourths of the 30 cases of bloody diarrhea in Iquitos Norte and in 8 of the 11 cases in Virú-Laredo, the caregiver sought care outside the home. Treatment-seeking behavior for fast breathing and convulsions in Iquitos Norte shows similar percentages; in three-fourths of the 82 cases of fast breathing and in 8 of the 10 cases of convulsions, the caregiver had sought outside care. In Virú-Laredo (although the samples are smaller) outside care was sought for all cases of convulsions and fast breathing.

¹² At the time of the study, the recommendation for fever was to seek outside care. It is expected that this recommendation will be changed when the home treatment guidelines for fever are defined.

Table 12. Treatment-Seeking Outside the Home

Serious Sign or Symptom	Iquitos Norte	Virú-Laredo
Fever	73% (n = 229)	82% (n = 182)
Convulsions	80% (n = 10)	100% (n = 3)
Fast breathing	78% (n = 82)	100% (n = 10)
Bloody diarrhea	77% (n = 30)	82% (n = 11)

b. Source of Treatment

In both study areas, MOH health facilities were the source of treatment most commonly used by caregivers for the four conditions of interest (Table 13). In Iquitos Norte, more than 70 percent of caregivers went to these facilities seeking treatment for fever, convulsions, fast breathing, and bloody diarrhea. In Virú-Laredo, treatment-seeking behavior was not consistent for the four conditions. Because of the small sample sizes for the other symptoms, in this study the source of treatment for fever is the more reliable indicator of where caregivers turn when their children are sick: 58 percent of them went to the MOH health facilities for treatment.

Pharmacies and private medicine stores were the next most common sources of treatment in this study, especially for cases of fever (12 percent in Iquitos Norte and 21 percent in Virú-Laredo). In very few cases, caregivers went to stores and dispensaries.

Table 13. Source of Treatment

Source of Treatment, by Symptom	Iquitos Norte	Virú-Laredo
Fever	n = 167	n = 149
Traditional healer	0%	0%
Health Center or Post	71%	58%
Private clinic, NGO	4%	8%
Social Security (ESSALUD)	7%	1%
Private pharmacy/drug store	12%	21%
Community dispensary	1%	3%
Store or market	6%	8%
Other	1%	1%
Convulsions	n = 8	n = 3
Traditional healer	0%	0%
Health Center or Post	75% (6)	100% (3)
Private clinic, NGO	0%	0%
Social Security (ESSALUD)	13% (1)	0%
Private pharmacy/drug store	0%	0%
Community dispensary	0%	0%
Store or market	0%	0%
Other	13% (1)	0%
Fast Breathing	n = 64	n = 10
Traditional healer	0%	0%
Health Center or Post	72%	80% (8)
Private clinic, NGO	3%	0%
Social Security (ESSALUD)	9%	0%
Private pharmacy/drug store	6%	0%
Community dispensary	2%	10% (1)
Store or market	3%	10% (1)
Other	5%	0%
Bloody Diarrhea	n = 23	n = 9
Traditional healer	0%	0%
Health Center or Post	74%	45% (4)
Private clinic, NGO	0%	33% (3)
Social Security (ESSALUD)	9%	0%
Private pharmacy/drug store	9%	22% (2)
Community dispensary	4%	0%
Store or market	4%	0%
Other	0%	0%

Data from the 2002 Demographic and Family Health Survey (ENDES 2002) indicate that in Iquitos Norte and Trujillo (the geographic areas used in the ENDES survey that correspond to the areas of this study) 46 percent and 33 percent, respectively, of children with fever were taken to an MOH health facility. A comparison of these data with the 71 percent (Iquitos Norte) and 58 percent (Virú-Laredo) found in this study suggests an increase in the preference for public services. However, this conclusion is not definitive because differences between the two surveys do not allow for a direct comparison of the results.

According to the caregiver responses, no caregivers brought children to a traditional healer for care. This finding could be a reflection of the reality in the communities, but other explanations could be that respondents did not identify traditional healers as a source of care because of the stigma against the use of traditional healers or because the respondents knew they should not use traditional healers. However, the absence of traditional healers in this study does not affect the

analysis of the availability and use of medicines in these areas given that traditional healers do not provide the modern medicines being studied.

c. First source of treatment sought from an appropriate provider

For the purposes of the study, appropriate providers were defined as public health facilities (MOH and ESSALUD facilities); health facilities of churches, NGOs, and private clinics; and community dispensaries. Table 14, which relates to seeking treatment from appropriate sources, shows only one of the eight children with convulsions in Iquitos Norte was not taken to an appropriate source of care. Anecdotal evidence suggests epilepsy is a relatively frequent occurrence in Iquitos Norte, so caregivers may not be prompted to seek timely care. As shown in the table, not all of the children with fast breathing were taken to an appropriate provider; this finding is cause for great concern, considering that this symptom could be life-threatening to the child.

Table 14. First Source of Treatment from an Appropriate Provider

Serious Sign or Symptom	Iquitos Norte	Virú-Laredo
Fever	78% (n = 167)	70% (n = 149)
Convulsions	88% (n = 8)	100% (n = 3)
Fast breathing	83% (n = 64)	90% (n = 10)
Bloody diarrhea	87% (n = 23)	78% (n = 10)

d. Timeliness of Seeking Treatment

The timeliness of action—the moment when warning signs are identified—is a key factor in treating illnesses and preventing complications. This behavior, expressed by seeking treatment on the same day of onset of signs/symptoms, occurred for only 4 of the 8 children with convulsions and 28 of the 64 children (44 percent) with fast breathing in Iquitos Norte, while in Virú-Laredo, it occurred in 2 of the 3 cases of children with convulsions and 3 of the 10 with fast breathing, as shown in Table 15. This delay in seeking treatment for serious conditions may be related to the low perception of the severity of these illnesses.

Table 15. Timeliness of Treatment Seeking

Response	Iquitos Norte	Virú-Laredo
Sought care the same day as onset of convulsions	50% (n = 8)	67% (n = 3)
Sought care the same day as onset of fast breathing	44% (n = 64)	30% (n = 10)

e. Knowledge and perceptions of availability of appropriate medicines

Knowledge of the existence of medicines and the perceptions of caregivers with regard to their availability are factors that, when well directed, have a significant impact on the decision to seek health care. Tables 16 and 17 present the data on whether caregivers had heard of certain medicines (by their generic or brand names), their perception of the availability of these products in their area, and the availability of such products in their homes.

The results show that in both sites the majority of caregivers had heard of the antibiotics co-trimoxazole and amoxicillin, as well as ORS, which is not surprising given the extensive advertising for antibiotics in particular. Few had heard of furazolidone, the recommended treatment for bloody diarrhea.

Antimalarials were identified much more frequently in Iquitos Norte than in Virú-Laredo, a fact that could be explained by the differences in the incidence of malaria in the two regions. In Iquitos Norte, the differences between the responses given for chloroquine (53 percent) and primaquine (33 percent) and those obtained for artesunate (2 percent) and mefloquine (5 percent) can be attributed to the fact that the latter two medicines were not used in the region until 2000, whereas the use of the first two dates back much earlier. However, awareness of chloroquine and primaquine is lower than would be expected, considering that these are first-line medicines for *P. vivax* malaria and chloroquine has been used to treat malaria for many years.

Table 16. Knowledge and Perceptions of Availability of First-Line Medicines, Iquitos Norte

Medicine	Have Heard of the Medicine n = 300	Always Able to Obtain It Where They Live	Had Medicine at Home
Co-trimoxazole	83%	77% n = 248	
Amoxicillin	97%	85% n = 292	
Furazolidone	29%	84% n = 86	
ORS	87%	76% n = 262	10% n = 262
Chloroquine	53%	52% n = 160	3% n = 160
Primaquine	33%	62% n = 100	2% n = 100
Artesunate	2%	83% n = 6	0% n = 6
Mefloquine	5%	53% n = 15	0% n = 15

As for perceptions of the availability of first-line medicines (co-trimoxazole, amoxicillin, furazolidone, and ORS) among caregivers who had heard of these medicines, the percentages of caregivers in Iquitos Norte who thought they could always get them where they live were nearly

double the percentages in Virú-Laredo. The perceived availability of antimalarials was also much higher in Iquitos Norte.

With regard to presence in the home of the medicines listed in Table 17, 10 percent of caregivers in both sites reported they had ORS available in their homes despite the fact that the Diarrheal Disease Control Program recommends ORS should be obtained at health facilities and not stored in the home.

The presence of antimalarials in the home, even at low percentages, is not consistent with the Malaria Control Program’s medicine policy. The policy favors supervised treatment of malaria patients and requires antimalarials to be administered to the patient directly by health care workers and health promoters in the community. The findings indicate supervised treatment guidelines are not always followed and a percentage, albeit small, of patients is obtaining antimalarial medicines and taking them without any type of supervision.

Table 17. Knowledge and Perceptions of Availability of First-Line Medicines, Virú-Laredo

Medicine	Have Heard of the Medicine n = 300	Always Able to Obtain It Where They Live	Had Medicine at Home
Co-trimoxazole	91%	43% n = 273	
Amoxicillin	94%	56% n = 281	
Furazolidone	29%	44% n = 88	
ORS	89%	38% n = 268	10% n = 268
Chloroquine	8%	9% n = 23	4% n = 23
Primaquine	6%	6% n = 18	0% n = 18
Artesunate	1%	0% n = 4	0% n = 4
Sulfadoxine/ pyrimethamine	6%	11% n = 19	0% n = 19

3. Caregiver obtains medicines

a. Source of medicine supply

In both regions, most respondents obtained antibiotics, ORS, and antimalarials from HC/HP, followed by pharmacies (Table 18). Of respondents in Iquitos Norte, 60 percent got medicines from an HC/HP, and one-fourth obtained them from a pharmacy. These results are consistent with the findings of Table 13 (Source of Treatment), which show slightly more than 70 percent of caregivers went to MOH health facilities for care. The percentages of respondents in Virú-Laredo who obtained their medicines at HC/HP and pharmacies were nearly equal (44 percent

and 41 percent, respectively), despite the fact that medicines can be obtained from MOH health facilities at no cost. Data from both regions indicate very few respondents acquired these medicines from dispensaries.

Table 18. Source of Medicines* Used by Caregivers

Medicine Source Category	Iquitos Norte n = 230	Virú-Laredo n = 194
Had in the home	2%	4%
HC or HP	60%	43%
ESSALUD	5%	3%
Private NGO	0%	2%
Dispensary	1%	2%
Pharmacy	27%	41%
Store	4%	3%
Other	1%	2%

* Medicines = antibiotics, ORS, and antimalarials

With regard to the places where caregivers obtained antibiotics, specifically, Table 19 shows MOH health facilities were the leading source in Iquitos Norte with 66 percent, followed by pharmacies with 24 percent. In Virú-Laredo, caregivers most often obtained antibiotics from the HC/HP of the MOH (45 percent) and pharmacies (41 percent); the percentages for the two provider categories were virtually the same. If these percentages are compared with those of Table 13, it shows not all caregivers who took children to HC/HP for fast breathing or bloody diarrhea acquired medicines in those same facilities, and therefore a portion of them must be obtaining medicines at a pharmacy.

Table 19. Source of Antibiotics Used by Caregivers

Medicine Source Category	Iquitos Norte n = 155	Virú-Laredo n = 175
Had in the home	1%	4%
HC or HP	65%	45%
ESSALUD	7%	2%
Private NGO	0%	2%
Dispensary	1%	2%
Pharmacy	24%	41%
Store	1%	3%
Other	1%	1%

Less than half of caregivers in both regions obtained ORS from an HC/HP (Table 20): 46 percent in Iquitos Norte and 42 percent in Virú-Laredo. In Iquitos Norte, 35 percent obtained them from a pharmacy and 12 percent from a store. In Virú-Laredo, more caregivers obtained ORS at a pharmacy (47 percent) than at an HC/HP (42 percent), while none obtained them from a store. It

is interesting to note that only one person in Iquitos Norte obtained ORS from a dispensary, given that these outlets aim to be a primary source of this treatment for the community.

Table 20. Source of ORS Used by Caregivers

Medicine Source Category	Iquitos Norte n = 68	Virú-Laredo n = 19
Had in the home	3%	0%
HC or HP	45%	43%
ESSALUD	2%	5%
Private NGO	0%	0%
Dispensary	2%	0%
Pharmacy	34%	47%
Store	12%	0%
Other	2%	5%

In all, seven caregivers in Iquitos Norte and two in Virú-Laredo obtained antimalarials from all sources. Six of the seven in Iquitos Norte obtained them from an MOH health facility, in accordance with the national policy on malaria. One caregiver reported having had them at home.

b. Source of recommendation for medicines used

Case management requires that treatment with medicines be recommended, prescribed, and dispensed by trained personnel. Self-medication practices, especially in the case of antibiotics for the health conditions addressed in this study, pose a risk to the health of the child and could contribute to antimicrobial resistance. Furthermore, if these medicines are used without the proper supervision of trained personnel, the likelihood of errors in dosage, dosing intervals, and duration of treatment increases.

As shown in Table 21, 72 percent of the medicines used in Iquitos Norte and 69 percent of those used in Virú-Laredo were recommended by trained personnel (health facility personnel and community health agents). The rate of self-medication—the respondent decided which medicine to use—was 16 percent in Iquitos Norte and 22 percent in Virú-Laredo. These reported rates of self-medication represent a significant risk.

The percentages of respondents who used medicines *recommended* by pharmacy personnel (8 percent in both regions) were significantly lower than the percentages of caregivers who used medicines *obtained* from a pharmacy (Table 18; 27 percent in Iquitos Norte and 41 percent in Virú-Laredo), which suggests caregivers may use pharmacies more for medicine purchases than advice on which medicines to use. Storekeepers were not a significant source of medicine recommendations in either of the two regions.

Table 21. Source of Recommendation of Medicines Used

Source of Recommendation	Iquitos Norte n = 518*	Virú-Laredo n = 471*
No one (respondent decided)	16%	21%
Health facility personnel (public or private)	70%	64%
Community health agent/dispensary	1%	3%
Pharmacy/drug store attendant	8%	8%
Store/market attendant	0%	1%
Friend/neighbor/relative	3%	3%
Traditional healer	0%	0%
Other	2%	0%

* Total amount of medicines reported by caregivers.

4. Caregiver administers appropriate medicines correctly

a. ARI pneumonia and non-pneumonia

In an effort to prevent and control cases and contain antimicrobial resistance, the strategies of the ARI and ADD Control Programs have clearly established the appropriate therapeutic options to be used in the community. Nevertheless, the results of the study show the population received or obtained medicines other than those recommended by national guidelines. As seen in Table 22, of the 82 cases of fast breathing in Iquitos Norte, only 24 percent received co-trimoxazole, the first-line antibiotic. In Virú-Laredo, co-trimoxazole was given in only 1 of 10 cases (10 percent). In both regions, the majority of children with symptoms of pneumonia received an antibiotic, but more were given the second-line medicine, amoxicillin, or another antibiotic, rather than co-trimoxazole.

Table 22. Administration of Appropriate Medicine

Site	Cases of Fast Breathing That Received the First-Line Antibiotic: Co-trimoxazole
Iquitos Norte (n = 82)	24%
Virú-Laredo (n = 10)	10%

The duration of treatment for pneumonia in Iquitos Norte is presented in Table 23, which shows that of the 20 children receiving co-trimoxazole, only 50 percent received it for the correct period of time (7 days according to national guidelines), while 75 percent received it for 5 to 10 days, in accordance with international recommendations. The majority were given the medicine for less than 5 days. The fact that some caregivers received the recommended medicine but did not administer it for the correct period of time indicates caregivers did not receive adequate information on how to use the medicine correctly (instructions, dose, duration, precautions), they received the correct information but did not understand it, or they received this information and understood the correct administration but chose to administer the medicine in a different way because of other financial, social, and/or cultural reasons.

Table 23. Duration of Treatment with Co-trimoxazole for Pneumonia, Iquitos Norte

Amount of Time	Percentage Who Took Co-trimoxazole for the Indicated Time n = 20
Too short (<5 days)	20%
Too long (>10 days)	5%
Correct (5–10 days)	75%

The combination of several findings collected from the household surveys demonstrates how cases of fast breathing were managed (Table 24). The total number of cases of fast breathing in Iquitos Norte was 82, but of these, only 20 children (24 percent) received the first-line treatment, and even less—14 children, 17 percent of all cases of fast breathing—took the treatment for an appropriate period of time (5–10 days). The only case of fast breathing in Virú-Laredo that received the first-line medicine (1 of the 10 cases) took it for less time than recommended.

Table 24. Care Received by Children with Fast Breathing (expressed in frequencies)

Site	Presented Symptoms	Sought Outside Care	Went to an Appropriate Provider	Was Treated the Same Day	Received First-Line Medicine	Took First-Line Medicine for an Appropriate Time Period
Iquitos Norte	82	64	53	28	20	14
Virú-Laredo	10	10	9	3	1	0

Although ARI non-pneumonia should not be treated with antibiotics, a high level of inappropriate use of antibiotics was detected in these cases (results not shown). In Iquitos Norte, 43 percent of the 178 cases with cough but no fast breathing received antibiotics, and in Virú-Laredo, 66 percent of the 210 cases. These findings suggest the inappropriate use of antibiotics in cases of ARI non-pneumonia may be contributing to antimicrobial resistance in the country.

b. ADD: watery diarrhea and bloody diarrhea

Only 57 percent of the 140 cases of watery diarrhea in Iquitos Norte and 28 percent of the 80 cases in Virú-Laredo received the recommended treatment—homemade rehydration solution or ORS. (Table 25). For bloody diarrhea, 3 of the 30 cases (10 percent) were treated with the first-line medicine (furazolidone) in Iquitos Norte, while 2 of the 11 cases (18 percent) in Virú-Laredo received it. In both study areas, the second-line antibiotic (co-trimoxazole) was given more often: 9 cases in Iquitos Norte and 4 in Virú-Laredo. An analysis of the other responses shows two-thirds of the cases in Iquitos Norte and more than three-fourths of those in Virú-Laredo received some kind an antibiotic. The other antibiotics most commonly given were amoxicillin and metronidazole, even though they are not recommended at all by the national guidelines. In fact, more children in Iquitos Norte received amoxicillin, which is neither the first- nor the second-line treatment for bloody diarrhea,, than furazolidone, which is the first-line treatment.

Table 25. Administration of Appropriate Medicine for Diarrhea

Percentage of cases of <i>watery diarrhea</i> that received ORS or homemade solution	Iquitos Norte n = 140	Virú-Laredo n = 80
Homemade solution	8	4
ORS	49	24
Total (homemade solution or ORS)	57	28

Percentage of cases of <i>bloody diarrhea</i> that received an antibiotic	Iquitos Norte n = 30	Virú-Laredo n = 11
Furazolidone (first-line)	10	18
Co-trimoxazole (second-line)	30	36

It is interesting to note co-trimoxazole is preferred over furazolidone in the treatment of bloody diarrhea despite the fact that the guidelines were changed four years ago to make it the second-line medicine.

The duration of treatment with the first-line medicine for diarrhea was not assessed because of the limited number of cases where the appropriate treatment was administered.

The results in Table 26 show that antidiarrheals, which are considered inappropriate medicines for the treatment of diarrhea in children, were administered in a few cases: 4 percent of the 140 cases in Iquitos Norte and 5 percent of the 80 cases in Virú-Laredo. Furthermore, as can be seen from the table, children with watery diarrhea—which should not be treated with antibiotics—were given antibiotics in 56 percent of the 109 cases in Iquitos Norte and in 57 percent of the 69 cases in Virú-Laredo. This inappropriate use of antibiotics could lead to an increase in antimicrobial resistance.

Table 26. Administration of Inappropriate Medicines

	Iquitos Norte	Virú-Laredo
Children who had watery diarrhea and took an antidiarrheal	4% (n = 140)	5% (n = 80)
Children who had watery diarrhea and took an antibiotic	56% (n = 109)	57% (n = 69)

c. Malaria

Because of the limited number of cases of convulsions/seizures that occurred in the two weeks preceding data collection and the difficulty in differentiating between convulsions caused by malaria and those caused by epilepsy, specifically in Iquitos Norte where epilepsy is prevalent, definitive conclusions cannot be made about the management of malaria cases in the study areas. However, it is worth noting that in this study no children in Virú-Laredo and only two in Iquitos Norte received first-line antimalarials when they had fever and/or convulsions, the symptoms for malaria.

Provider Practices and Knowledge

1. Provider has appropriate medicines available in stock

Availability of Tracer Medicines

To determine the availability of tracer medicines, data collectors visually verified the presence of the various medicines at the medicine outlets included in this study. Because malaria treatment includes the use of two antimalarials in combination, the concurrent availability of both antimalarials was verified.

As mentioned in the “Methodology” section, tracer medicines included first- and second-line treatments for the three health conditions covered in this study, which should be available at the HC/HP and, in some cases, at pharmacies and dispensaries as well. Loperamide, an antidiarrheal not suitable for use in children, was also included (the only inappropriate medicine in the list of tracer medicines).

HC/HP

The findings in Table 27 show that at the MOH health facilities in Iquitos Norte and Virú-Laredo availability was good (over 90 percent) for ARI and ADD medicines: co-trimoxazole, furazolidone, and ORS.

As for antimalarials, availability of the first-line treatment for *P. falciparum* malaria (artesunate and mefloquine) in Iquitos Norte was good at 90 percent; however, the first-line combination for *P. vivax* (chloroquine and primaquine) was only 70 percent. This difference could be attributed to primaquine supply problems occurring in the study area during the data collection phase. Compared with Iquitos Norte, Virú-Laredo has a lower availability of the two first-line antimalarial combination therapies (chloroquine and primaquine for *P. vivax* and artesunate and sulfadoxine-pyrimethamine for *P. falciparum*). This finding may be because, in the past year, the Malaria Control Program has managed to effectively control the disease in this region and, as a result, there has been a decrease in malaria cases and a reduction demand for antimalarials. The supply of first-line antimalarials may no longer be a priority in this particular area.

Table 27. Availability of Tracer Medicines

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Co-trimoxazole	90%	90%	15%	5%	96%	73%	39%	6%
Amoxicillin	100%	95%	10%	50%	88%	64%	19%	9%
Furazolidone	90%	55%	0%	0%	92%	64%	0%	0%
ORS	90%	85%	50%	80%	96%	91%	46%	9%
Loperamide	10%	65%	0%	65%	0%	64%	4%	50%
Chloroquine and primaquine	70%	5%	15%	0%	21%	0%	0%	0%
Artesunate and mefloquine	90%	0%	20%	0%	*	*	*	*
Artesunate and sulfadoxine-pyrimethamine	*	*	*	*	4%	0%	0%	0%

*The two districts have different recommendations for the treatment of *P. falciparum*. For this reason, the availability of nonrecommended combinations in each district was not evaluated (artesunate + sulfadoxine-pyrimethamine in Iquitos Norte and artesunate + mefloquine in Virú-Laredo).

Pharmacies

The availability of first- and second-line medicines for ARI pneumonia (co-trimoxazole and amoxicillin) was high in Iquitos Norte pharmacies (90 percent and 95 percent, respectively), but lower in Virú-Laredo (73 percent and 64 percent). The availability of co-trimoxazole also applies to bloody diarrhea, which is the second-line medicine for treating this condition.

A relatively low availability of the first-line medicine for bloody diarrhea was found: only a little over half of the pharmacies in Iquitos Norte and two-thirds of those in Virú-Laredo had furazolidone in stock. A similar number (65 percent in Iquitos Norte and 64 percent in Virú-Laredo) had the antidiarrheal medicine loperamide, which should not be used to treat any type of diarrhea.

The survey also confirmed some pharmacies in Iquitos Norte were selling antimalarials, despite the policy of the national malaria program, which prohibits the sale of antimalarials outside MOH health facilities.

Dispensaries

The availability of the medicines recommended for ARI and ADD was low at community dispensaries notwithstanding that the role of dispensaries and community health agents is, in part, to facilitate community access to these medicines. As for antimalarials, the higher percentages of availability shown for these facilities may be explained by the malaria program's incorporation of health advocates in the implementation plan of the new combination therapies; in some communities, they have been trained to administer supervised treatment.

Stores

Stores are not authorized to sell prescription medicines; however, 10 of the 20 stores surveyed in Iquitos Norte and 6 of the 34 in Virú-Laredo had antibiotics available. In Iquitos Norte, 9 of the 10 had amoxicillin and 1 had co-trimoxazole. The two antibiotics were divided equally between the 6 stores in Virú-Laredo. This availability of prescription medicines at unauthorized outlets poses a risk of administration of these medicines by untrained personnel.

At the time of the survey, ORS was available in 14 of the 20 stores in Iquitos Norte (70 percent), compared with only 3 of the 34 in Virú-Laredo (9 percent). The availability of loperamide (or Donafan) in both districts is of particular note, given the danger this medicine poses to children under five years of age. As such, it should not be sold at any outlet for use in children. Nevertheless, in Iquitos Norte, 13 (65 percent) and in Virú-Laredo, 12 (35 percent) of the stores had this medicine available.

2. Provider appropriately assesses signs and symptoms to identify the likely cause and provide specific treatment

a. Knowledge of the primary signs and symptoms that distinguish pneumonia from the common cold

The assessment of providers' knowledge of the main symptoms of pneumonia (Table 28) shows the HC/HP respondents in both districts recognize fast breathing as a key sign that distinguishes pneumonia from the common cold. This knowledge was somewhat lower in pharmacies and dispensaries. The percentages obtained for stores revealed a low level of knowledge about the main symptoms of pneumonia.

Table 28. Providers Who Mentioned Fast Breathing or Chest In-Drawing as Primary Symptoms for Distinguishing Pneumonia from the Common Cold

Iquitos Norte				Virú-Laredo			
HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
90%	85%	80%	35%	100%	64%	82%	29%

b. Knowledge of the symptoms of diarrhea that may require antibiotics

Among the HC/HP health care providers, 80 percent in Iquitos Norte and 88 percent in Virú-Laredo believed bloody diarrhea may require antibiotics (Table 29). Percentages for the other provider categories were much lower (less than 50 percent).

Table 29. Providers Who Mentioned Blood as the Primary Symptom for Cases of Diarrhea That Would Respond to Antibiotics

Iquitos Norte				Virú-Laredo			
HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
80%	25%	40%	20%	88%	32%	50%	9%

c. Knowledge of the primary symptoms that distinguish severe malaria from uncomplicated malaria

As seen in Table 30, the results of the assessment show that in both districts few of the providers knew convulsions and fever are the key symptoms that distinguish severe malaria from uncomplicated malaria.

Table 30. Providers Who Mentioned Fever with Convulsions as the Primary Symptom for Distinguishing Uncomplicated Malaria from Severe Malaria

Iquitos Norte				Virú-Laredo			
HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
30%	5%	10%	0%	8%	5%	5%	0%

3. Provider dispenses or recommends appropriate medicines or refers the patient

The effective medicines recommended by the national treatment guidelines are not always obtained by caregivers, partly because providers dispense or recommend other products. Three measurements were used to assess providers' practices in terms of dispensing and recommending the appropriate medicines: (a) the medicines they believed to be most effective for treating the diseases of interest, (b) their knowledge of the medicines recommended by national guidelines, and (c) their reported selling practices. The results of these measurements were compared with each other and with the standards defined at the start of the study.

a. ARI

(i) Opinions on the most-effective medicine for ARI pneumonia and ARI non-pneumonia

Co-trimoxazole, the first-line antibiotic for pneumonia, and amoxicillin, the second-line antibiotic, have proven to be both effective and cost-efficient. However, many providers, particularly in Iquitos Norte, recommended other antibiotics (Table 31), which, according to the findings of the survey, included mainly oral, injectable, and parenteral penicillin. Penicillin G sodium or procaine penicillin, the previously recommended medicine, was the most common response among HC/HP providers who mentioned an antibiotic other than co-trimoxazole or amoxicillin, especially in Iquitos Norte, where 11 providers (more than half of the total sample) mentioned this medicine. Megacillin (oral penicillin) and ampicillin were the most common responses among pharmacy respondents in both districts. Overall, knowledge of the most-effective medicine for treating pneumonia was higher in Virú-Laredo than in Iquitos Norte.

Table 31. Providers Who Mentioned an Antibiotic as the Most-Effective Medicine for Treating Pneumonia

Antibiotic Mentioned	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Co-trimoxazole	10%	0%	10%	0%	50%	0%	23%	6%
Amoxicillin	5%	5%	5%	0%	13%	5%	12%	6%
Other antibiotic	70%	60%	30%	15%	33%	55%	8%	3%
Other	10%	5%	0%	0%	0%	4%	3%	0%
Does not know/no response	5%	30%	55%	85%	4%	36%	54%	85%

Proper case management of ARI non-pneumonia does not require antibiotics but rather requires supportive measures (adequate hydration, continued feeding, protection from cold, and hygienic measures) and monitoring of symptoms. The assessment of how providers would treat a case of ARI non-pneumonia (Table 32) suggests some providers in both districts, although the percentages are low, would use antibiotics to treat this pathology. In fact, 35 percent of the dispensaries in Virú-Laredo said antibiotics are the most-effective treatment for the common cold in children. In contrast, none of the providers of the HC/HP in the same area mentioned an antibiotic for the treatment of ARI non-pneumonia.

Table 32. Providers Who Mentioned an Antibiotic for ARI Non-Pneumonia

Iquitos Norte				Virú-Laredo			
HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP N = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
5%	10%	20%	0%	0%	14%	35%	12%

(ii) Knowledge of the medicines recommended by the guidelines for ARI pneumonia

Table 33 shows, overall, providers in both districts had poor knowledge of the antibiotics recommended by the guidelines for pneumonia. HC/HP providers in Virú-Laredo had the highest level of knowledge; however, only half of them knew co-trimoxazole is the recommended first-line medicine. The finding suggests these providers use other alternatives before, or in place of, the medicines recommended by the ARI Control Program, as has already been indicated in Table 31.

Table 33. Providers Who Knew Which Antibiotics Are Recommended by the Guidelines for Pneumonia

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Co-trimoxazole	20%	5%	0%	0%	54%	5%	19%	3%
Amoxicillin	15%	5%	0%	0%	4%	23%	4%	3%
Other medicine	60%	25%	20%	0%	38%	41%	12%	3%
Does not know/no response	5%	65%	80%	100%	4%	31%	65%	91%

An analysis of the other responses (the “other medicine” category) indicates many HC/HP providers still believe injectable penicillin is the antibiotic recommended by the guidelines, which most likely explains why they also consider it to be the most-effective antibiotic for pneumonia.

Although they were still low overall, the percentages of providers from HC/HP and dispensaries who knew the guideline recommendation were higher in Virú-Laredo (54 percent and 19 percent, respectively) than in Iquitos Norte (20 percent and 0 percent, respectively). This difference, which is also seen in the results of providers’ opinions on the most-effective medicine, suggests dissemination of the guidelines for pneumonia in health centers and health posts in Virú-Laredo has been better than in Iquitos Norte. Knowledge of pneumonia guidelines among providers in pharmacies was very low in both districts.

(iii) Dispensing and selling practices

As in Tables 31 and 33, the results on the dispensing and sale of pneumonia medicine show practices are consistent with knowledge and that the use of appropriate first- and second-line medicines is poor (Table 34). The high percentage of HC/HP providers in both districts, especially Iquitos Norte (75 percent), who mentioned other antibiotics, namely penicillin, rather than the first-line medicine (co-trimoxazole) as the most commonly sold medicine is consistent with the previous findings.

The results also show the percentages of providers who most often dispense co-trimoxazole for pneumonia were lower than the percentages of those who knew this medicine is the most effective and is recommended by the guidelines. This finding reveals a gap between what providers know, recommend, and do at the time of dispensing or sale.

In the majority of pharmacies (60 percent in Iquitos Norte and 50 percent in Virú-Laredo), respondents reported other medicines, not those recommended in the guidelines, were more commonly sold for pneumonia.

Table 34. Medicines Reported as the Most Commonly Sold or Dispensed for Pneumonia

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Co-trimoxazole	5%	0%	10%	0%	38%	0%	23%	0%
Other medicines	75%	60%	20%	5%	42%	50%	12%	6%
Does not know	20%	40%	70%	95%	20%	50%	65%	94%

b. Diarrhea

(i) Opinions on the most-effective treatment for watery diarrhea

The best treatment for watery diarrhea consists of increased liquid intake and ORS; the use of antidiarrheals and/or antibiotics is contraindicated. The assessment of providers' knowledge of this information in the study (Table 35) reveals that at the HC/HP of the MOH, 55 percent of the 20 respondents in Iquitos Norte and 75 percent of the 24 in Virú-Laredo believe ORS is effective for treating watery diarrhea; 30 percent and 17 percent, respectively, also mentioned increased fluids as an effective form of treatment. As for the use of contraindicated medicines for watery diarrhea, none of the HC/HP respondents in either of the districts mentioned antidiarrheals, although 15 percent in Iquitos Norte and 8 percent in Virú-Laredo said antibiotics were effective.

Knowledge of ORS as the most effective treatment is lower at the pharmacy level, especially in Iquitos Norte, where only 2 of the 20 respondents mentioned it. With regard to increased intake of fluids, none of the pharmacy respondents in either of the districts mentioned fluids as an

effective treatment option. Instead, several pharmacy respondents (65 percent in Iquitos Norte and 46 percent in Virú-Laredo) believed antibiotics are the most effective treatment for watery diarrhea and some (4 in Iquitos Norte and 1 in Virú-Laredo) considered antidiarrheals to be the most effective.

Table 35. Opinions on the Most-Effective Treatment for Watery Diarrhea

Treatment	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
ORS	55%	10%	40%	15%	75%	45%	42%	24%
Abundant fluids and/or homemade rehydration solution	30%	0	15%	15%	17%	0	12%	21%
Antidiarrheal	0%	20%	0%	35%	0%	5%	0%	15%
Antibiotic	15%	65%	30%	30%	8%	46%	27%	27%
Other	0	0	5%	0	0	4%	4%	0
Does not know	0	5%	10%	5%	0	0	15%	13%

In both districts, half of dispensary respondents mentioned ORS, homemade rehydration solution, or abundant fluids as the most-effective treatment. Although none mentioned antidiarrheals, six of the respondents in Iquitos Norte and seven in Virú-Laredo said an antibiotic is the most-effective form of treatment.

In stores, relatively small percentages of respondents mentioned one of the appropriate treatments as the best treatment option (30 percent in Iquitos Norte and 45 percent in Virú-Laredo), and even higher percentages mentioned one of the contraindicated medicines (65 percent in Iquitos Norte and 42 percent in Virú-Laredo). More respondents in this group than in any other provider category considered an antidiarrheal to be most effective for watery diarrhea.

(ii) Knowledge of medicines recommended by treatment guidelines for diarrhea

Based on training in diarrheal disease control, the health care worker should know and use the Technical Standards of the Diarrheal Disease Control Program, which specify that the recommended treatment for watery diarrhea consists mainly of increased fluid intake and rehydration therapy with ORS.

Table 36 shows that 65 percent of the 20 respondents in the HC/HP of Iquitos Norte knew the treatment recommended by the guidelines for watery diarrhea; in Virú Laredo, 63 percent of the 24 HC/HP respondents knew the recommended treatment. The level of knowledge of the other

provider categories regarding these guidelines was even lower. For example, only 10 percent of the pharmacies in Iquitos Norte (2 of the 20 respondents interviewed) mentioned ORS as the treatment recommended by the guidelines for watery diarrhea.

Table 36. Providers Who Mentioned the Medicine Recommended by the Guidelines for Watery Diarrhea

Category of Response	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
ORS	65%	10%	35%	5%	63%	37%	42%	24%
Other medicine	25%	65%	25%	10%	33%	36%	23%	6%
Does not know/no response	10%	25%	40%	85%	4%	27%	35%	70%

When the providers' knowledge of the first-line medicine recommended for bloody diarrhea (Table 37) was assessed, 3 of the 20 respondents at the HC/HP in Iquitos Norte and 9 of the 24 in Virú-Laredo mentioned furazolidone. In fact, the majority of the providers in this category named co-trimoxazole as the first-line medicine according to the treatment guidelines, and of this group, 4 mentioned furazolidone as being the second-line medicine. Together, furazolidone and co-trimoxazole were mentioned by 75 percent of HC/HP providers in Iquitos Norte and 96 percent in Virú-Laredo. Although this situation is not critical, it appears the program guidelines have not been adequately disseminated, which has caused an apparent lack of understanding regarding which of these two medications is the first-line medicine.

It is interesting to note that five of the seven providers in the study who mentioned metronidazole as the medicine recommended by the guidelines for bloody diarrhea were HC/HP providers in Iquitos Norte. This number represents 25 percent of the HC/HP providers in that district.

Table 37. Providers Who Knew Which Medicine Is Recommended for Bloody Diarrhea

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Furazolidone	10%	5%	0%	0%	38%	18%	4%	0%
Co-trimoxazole	65%	30%	15%	0%	58%	23%	19%	3%
Other medicine	20%	20%	25%	0%	4%	23%	0%	0%
Does not know/no response	5%	45%	60%	100%	0%	36%	77%	97%

(iii) Dispensing and selling practices

The practices reported by providers in both districts show many providers are selling or dispensing inappropriate or unnecessary medicines instead of, or together with, ORS (Table 38). The medicines they reported selling or dispensing most for watery diarrhea were co-trimoxazole, furazolidone, and other antibiotics such as chloramphenicol and tetracycline, which indicates an irrational use of medicines for this type of diarrhea.

The providers who reported selling the highest percentages of “other medicines” were the pharmacies in both districts: 95 percent in Iquitos Norte and 77 percent in Virú-Laredo, of which the large majority reported selling an antibiotic. Three pharmacies in Iquitos Norte and two in Virú-Laredo reported the antidiarrheal, Donafan, is the most commonly sold medicine for watery diarrhea.

Stores also sell other medicines in lieu of ORS, mainly Donafan. Ten of the 15 stores in Iquitos Norte and 9 of the 19 in Virú-Laredo that reported selling other medicines most often for watery diarrhea mentioned this antidiarrheal.

Table 38. Most Commonly Sold or Dispensed Medicines for Watery Diarrhea

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
ORS	60%	0%	55%	15%	42%	23%	46%	0%
Other medicines (without ORS)	40%	95%	35%	75%	50%	77%	39%	56%
Does not know/no response	0%	5%	10%	10%	8%	0%	15%	44%

Self-reported sales or dispensing of the first-line treatment for bloody diarrhea (Table 39) show low values, caused in part by a preference for co-trimoxazole over furazolidone across all categories. This same trend is seen in providers’ opinions on the most-effective medicine and knowledge of the medicines recommended by the guidelines for bloody diarrhea.

One-third of pharmacy providers reported selling medicines, such as metronidazole and chloramphenicol, which are not recommended. None of the stores in Iquitos Norte and very few of those in Virú-Laredo responded to the question about the medicines people buy for bloody diarrhea. However, the results show some stores in Virú-Laredo sell antibiotics even though the sale of antibiotics is prohibited at this level.

Table 39. Most Commonly Sold or Dispensed Medicines for Bloody Diarrhea

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Furazolidone	20%	10%	5%	0%	25%	14%	0%	3%
Co-trimoxazole	55%	40%	25%	0%	50%	36%	19%	6%
Other medicines	20%	35%	20%	0%	17%	32%	4%	6%
Does not know/no response	5%	15%	50%	100%	8%	18%	77%	85%

c. Malaria

Because treatment for malaria is administered as a combination therapy and is supervised by health facilities or community health promoters, an etiological diagnosis of the disease is required. In order to ensure this, national policy prohibits the sale or dispensation of antimalarials in the private sector.

(i) Opinions on the most-effective treatment for malaria

Table 40, which presents the respondents' knowledge of the most effective antimalarials for uncomplicated malaria, shows that a high percentage of HC/HP in Iquitos Norte knew the combination of chloroquine and primaquine (85 percent), but low percentages of respondents in all the other categories knew it. In Virú-Laredo, only 13 percent of the HC/HP providers considered the chloroquine + primaquine combination to be the most effective course of treatment. The majority (two-thirds) mentioned only one of the two recommended antimalarials, mostly primaquine, or another antimalarial, such as quinine.

With regard to the antimalarials considered most effective for treating severe malaria (results not shown), the percentages who knew the recommended combination were even lower across all categories. The group of providers that had the highest level of knowledge of the first-line combination therapy in their respective area was the HC/HP providers in Iquitos Norte. Of the 20 respondents in this group, 9 (45 percent) said the artesunate + mefloquine combination was the most effective treatment for severe malaria. The only other provider group that mentioned artesunate and mefloquine was dispensaries, where 30 percent identified this combination as the most effective treatment.

Table 40. Opinions on the Most-Effective Treatment for Uncomplicated Malaria in Children

Treatment	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Chloroquine and primaquine	85%	5%	35%	0%	13%	0%	4%	0%
Other medicines	15%	45%	35%	0%	66%	32%	23%	6%
Does not know	0%	50%	30%	100%	21%	68%	73%	94%

Limited knowledge of the most-effective combination for malaria is expected in pharmacies and stores because the MOH does not focus its efforts on disseminating guidelines to these vendors who are not authorized to sell antimalarials. However, in spite of this policy, 45 percent of the pharmacies in Iquitos Norte and 32 percent in Virú-Laredo considered other medicines to be the most-effective treatments, perhaps because some of these pharmacies have one or more antimalarials in stock.

(ii) Knowledge of the medicines recommended by the malaria treatment guidelines

The findings summarized in Table 41 show 18 of the 20 HC/HP respondents in Iquitos Norte (90 percent) knew chloroquine + primaquine is the recommended combination therapy for malaria. Nine of them also knew artesunate and mefloquine is another recommended combination. In the HC/HP of Virú-Laredo, these percentages are lower: 58 percent knew chloroquine + primaquine is a recommended treatment and none knew sulfadoxine-pyrimethamine combined with artesunate is recommended in their district for *P. falciparum*. It is interesting to note the percentages of providers who knew which antimalarials the guidelines recommend are higher than the percentages of those who considered these same medicines to be the most effective for the treatment of malaria (Table 40).

As mentioned in the previous section, the limited knowledge of the treatment recommended in the guidelines among private sector providers may be caused by the emphasis on disseminating the guidelines to HC/HP, because antimalarials are allowed to be dispensed only at public facilities.

Table 41. Providers Who Knew Which Medicines Are Recommended by the Guidelines for Malaria

Medicine	Iquitos Norte				Virú-Laredo			
	HC/HP* n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Chloroquine and primaquine	90%	15%	25%	0%	58%	0%	15%	0%
Artesunate and mefloquine	50%	0%	20%	0%	**	**	**	**
Artesunate and sulfadoxine-pyrimethamine	**	**	**	**	0%	0%	0%	0%
Other(s)	10%	15%	10%	5%	13%	41%	12%	3%
Does not know/no response	5%	70%	55%	95%	29%	59%	73%	97%

* The percentages in these columns total more than 100 percent because nine respondents in the HC/HP category and one in the Dispensary category responded “Chloroquine and Primaquine” and “Artesunate and Mefloquine.”

** The two districts have different recommendations for the treatment of *P. falciparum*. For this reason, the availability of nonrecommended combinations in each district was not evaluated (artesunate + sulfadoxine-pyrimethamine in Iquitos Norte and artesunate + mefloquine in Virú-Laredo).

(iii) Dispensing and selling practices

With regard to self-reported sales and dispensing practices, 70 percent of the HC/HP in Iquitos Norte mentioned the chloroquine + primaquine combination (Table 42). This result was expected as the treatment for *P. vivax*, the most common type of malaria in the district. However, 25 percent mentioned a different medicine or combination, which was not the first- or second-line treatment for *P. vivax* or *P. falciparum*.

None of the providers in Virú-Laredo mentioned the first- or second-line treatment for either type of malaria as the treatment most frequently sold or dispensed for malaria. This finding may be caused by the very low prevalence of malaria in the region.

Although the percentages of providers outside the HC/HP who did not know or did not respond were high in both areas—as was to be expected given that these providers should not sell or dispense antimalarials—several establishments in both districts were found to be dispensing these medicines, mostly chloroquine alone. Of these establishments, only five dispensaries in Iquitos Norte and two in Virú-Laredo had antimalarials in stock and were authorized to dispense them.

Table 42. Medicines Mentioned as Those Most Sold or Dispensed for Malaria

Medicines Mentioned	Iquitos Norte				Virú-Laredo			
	HC/HP* n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Chloroquine and primaquine	70%	0%	20%	0%	4%	0%	0%	0%
Artesunate and mefloquine	10%	0%	0%	0%	**	**	**	**
Artesunate and sulfadoxine-pyrimethamine	**	**	**	**	0%	0%	0%	0%
Other(s)	25%	25%	30%	5%	13%	14%	8%	0%
Does not know/no response	5%	75%	50%	95%	83%	86%	92%	100%

* The percentages in this column total more than 100 percent because two respondents in this category responded “chloroquine and primaquine” and “artesunate and mefloquine.”

** The two districts have different recommendations for the treatment of *P. falciparum*. For this reason, the availability of nonrecommended combinations in each district was not evaluated (artesunate + sulfadoxine-pyrimethamine in Iquitos Norte and artesunate + mefloquine in Virú-Laredo).

c. Referral to a health facility

Providers at pharmacies, dispensaries, and stores, when presented with a child with signs and symptoms of pneumonia, malaria, watery diarrhea, or bloody diarrhea, are expected to refer the child to a health facility where he or she can be treated by trained personnel. This behavior was measured in the survey through self-reporting. The results that appear in Table 43 show provider referral practices are good overall and highest in the dispensary category.

Table 43. Providers Who Would Refer Children to Health Care Facilities

Symptom Category	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies N = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Symptoms of pneumonia	n/a	85%	95%	90%	n/a	86%	100%	91%
Symptoms of malaria	n/a	85%	90%	90%	n/a	86%	89%	85%
Symptoms of watery diarrhea	n/a	20%	35%	75%	n/a	18%	23%	47%
Symptoms of bloody diarrhea	n/a	60%	100%	100%	n/a	46%	100%	82%

n/a = not applicable

4. Provider offers appropriate information/instructions/recommendations/labeling

a. Reported dispensing practices

Dispensing and recommending medicines properly in the community can help ensure rational use and attainment of the desired results. These actions primarily involve advising the patient on matters related to the use of medicines; in order to do this, providers must have sound knowledge of the products they sell or recommend. Dispensing practices were evaluated in the study by assessing the type of information providers give to caregivers at the time of dispensing or delivery of medicines. The results indicate that in both districts and in all provider groups the respondents gave caregivers basic information about medicines on a regular basis (although more frequently in health facilities than in stores). It is important to note these findings are based on providers' self-reported practices, not their observed practices. Therefore, it is not known for certain whether providers actually explain all of the information they claimed to give patients at the time of dispensing.

Table 44. Type of Information Given at the Time of Dispensing Medicine

Type of Information	Iquitos Norte				Virú-Laredo			
	HC/HP n = 20	Pharmacies n = 20	Dispensaries n = 20	Stores n = 20	HC/HP n = 24	Pharmacies n = 22	Dispensaries n = 26	Stores n = 34
Instructions	60%	40%	55%	10%	29%	32%	23%	35%
Dosage	95%	70%	75%	45%	96%	77%	85%	27%
Duration of treatment	70%	65%	50%	5%	71%	46%	54%	15%
Side effects	30%	10%	0%	0%	8%	0%	0%	0%
Other	0%	15%	5%	60%	0%	18%	0%	32%

b. Appropriate medicine labeling

Medicine packaging in the country is the same for both generic and brand-name medicines because all medicines are sold in individual packages. Prior to survey data collection, information was received that bulk medicines from donations were being used in dispensaries, but this situation was not found during the study.

The results shown in Table 45, which were obtained from the household surveys but demonstrate provider practices, confirm that all of the medicines circulating in the public and private commercial sector were dispensed in individual packages, which is considered the appropriate form of packaging. Nevertheless, deficiencies in the labeling of medicines still exist, as indicated by the fact that only 23 percent of medicines dispensed in Iquitos Norte and 60 percent of those dispensed in Virú-Laredo were labeled with the medicine name, dose, frequency, and duration of treatment—the elements of “proper labeling.”

Table 45. Appropriate Medicine Dispensing

Response Category	Iquitos Norte n = 519	Virú-Laredo n = 478
Dispensed in appropriate packaging	99%	99%
Appropriately labeled	23%	60%

CONCLUSIONS

The conclusions that can be drawn from the results of this assessment are not exact characterizations of the study population, but rather they highlight problems or trends related to community management of medicines. The conclusions are presented according to the elements of the reference framework.

Caregiver Practices

1. Caregiver recognizes warning signs early, assesses severity, and decides whether child needs treatment

In both regions, caregivers' perceptions of the severity of the signs and symptoms of serious illnesses presented by children were low. This was particularly true in the case of fast breathing, where half of caregivers did not perceive their child's illness to be serious.

2. Caregiver seeks timely care from an appropriate source

The majority of caregivers sought care outside the home when their child became ill, and of this group, most obtained medicines from health centers, health posts, and pharmacies. More than 70 percent of caregivers who sought care outside the home went to an appropriate source, although most failed to do so promptly (only a third of all children with fast breathing received care on the same day they presented symptoms).

3. Caregiver obtains medicines

In both districts, the majority of caregivers had heard of co-trimoxazole, amoxicillin, and ORS, but few had heard of furazolidone or the recommended antimalarial treatment combinations—chloroquine + primaquine, artesunate + mefloquine, and artesunate + sulfadoxine-pyrimethamine. In Iquitos Norte, caregivers' perception of the availability of these medicines in their community was high and, in terms of percentage, twice as high as the perception of availability among caregivers in Virú-Laredo.

In the survey, the majority of caregivers in Iquitos Norte reported they most often obtained antibiotics and antimalarial medicines at HC/HP. In Virú-Laredo, caregivers obtained the tracer medicines at HC/HP and pharmacies in equal proportions. In both regions, ORS was obtained from HC/HP and pharmacies in similar proportions.

Some caregivers reported having antimalarials in the home. Although the number is low, this practice could present a risk of potential misuse of these medicines and contribute to the spread of resistance.

Most medicines were recommended by trained personnel (HC/HP personnel, community health workers, or private doctors). However, the results suggest not all of those who went to an HC/HP

for care and received a medicine recommendation from personnel there actually obtained their medicines at the HC/HP, despite the fact that medicines for treating illnesses in children under five are free at government health facilities. It appears some caregivers went to a private pharmacy to purchase these medicines. Self-medication (selection of the medicine by caregivers themselves and not recommended by another person) was practiced by approximately one-fifth of caregivers. In the case of antimicrobials, this practice could potentially increase the development of resistance.

4. Caregiver administers appropriate medicines correctly

Only one-fourth of children with fast breathing in Iquitos Norte and a tenth of those in Virú-Laredo received first-line antibiotics. Three-fourths of those in Iquitos Norte were given antibiotics for an appropriate period of time. In cases of children who had cough without fast breathing, for which antibiotics are not needed, nearly half in Iquitos Norte and three-fourths in Virú-Laredo received an antibiotic.

Of the cases of watery diarrhea in Iquitos Norte, approximately half received the recommended treatment (ORS or homemade rehydration solution), compared with one-third in Virú-Laredo. According to the responses of caregivers, antidiarrheals are not commonly used for treating watery diarrhea, although some providers, especially those from stores, reported antidiarrheals are the most commonly sold medicines for this condition. Antibiotics were given in more than half of the cases.

Only a tenth of children with bloody diarrhea in Iquitos Norte received the first-line medicine, but a third received one of the two recommended antibiotics. In Virú-Laredo, less than a fifth received the first-line medicine, but more than three-fourths received one of the two recommended antibiotics. In both districts, the second-line medicine (co-trimoxazole) was given more often than the first-line medicine (furazolidone), a finding that is consistent with providers' self-reported prescribing and dispensing practices.

Provider Practices

1. Provider has appropriate medicines available in stock

The availability of first-line antibiotics for ARI and ADD at HC/HP and pharmacies was good, with slightly lower levels of stock in the latter.

Community dispensaries, the only alternative for populations in remote areas, did not have an adequate supply of ORS or antibiotics for ARI and ADD. Even though the supply of antibiotics is low in local stores, a risk for potential misuse of these medicines still exists, given that the clerks working in those stores lack the necessary training to dispense them correctly.

The availability of antimalarials in MOH health facilities was good. For the most part, other providers did not have them on hand. However, the presence of antimalarials in one of the pharmacies in Iquitos Norte indicates that in some cases these medicines are being sold and used

without any form of supervision. This situation jeopardizes the efforts being made by the MOH to control the resistance of the malaria parasite to antimalarial medicines through the use of combined therapies, which are provided free and exclusively by government health facilities.

2. Provider appropriately assesses signs and symptoms to identify the likely cause and provide specific treatment

The majority of respondents from HC/HP, pharmacies, and dispensaries recognized the key signs of pneumonia and could distinguish it from the common cold, whereas few respondents from stores recognized such signs.

In the case of diarrhea, only the HC/HP respondents knew antibiotics may be needed if blood is present. Few of the other respondents mentioned blood as a sign that a case of diarrhea could require antibiotics.

The results of the survey show that few of the respondents from the various provider categories knew febrile convulsions are key symptoms for distinguishing severe malaria from uncomplicated malaria.

3. Provider dispenses or recommends appropriate medicines, or refers the patient

In the case of ARI pneumonia, the assessment found a widespread preference for using nonrecommended antibiotics, particularly in injectable form, rather than the first-line oral antibiotic. The extremely low percentage of provider respondents who knew which medicines are recommended for the treatment of pneumonia is consistent with this finding. In reference to ARI non-pneumonia, some respondents mentioned antibiotics as the most-effective form of treatment.

The majority of respondents at HC/HP mentioned the use of ORS and increased fluid intake as effective treatment for watery diarrhea, and approximately two-thirds of HC/HP health workers identified ORS as the recommended treatment for watery diarrhea. In contrast, fewer pharmacy respondents mentioned ORS, and none mentioned increased fluids as effective treatments for this type of diarrhea. Half of dispensary respondents indicated ORS and increased fluids are effective, but in the stores, few respondents named any of the appropriate forms of treatment as the most effective. Knowledge of recommended treatments was much lower among pharmacy, dispensary, and store providers than among HC/HP providers.

Most HC/HP respondents knew bloody diarrhea should be treated with antibiotics; fewer providers from the other provider categories were aware of this. Only a third of HC/HP respondents correctly named the first-line antibiotic for bloody diarrhea; however, the majority of them were able to identify the second-line antibiotic.

HC/HP and dispensary respondents did not mention antidiarrheal medicines as the most-effective treatment for diarrhea; however, pharmacy and store respondents did mention them. The results

show antidiarrheals, primarily Donafan, are sold in some pharmacies and in most shops. More important and of greater concern is the widespread sale of antibiotics for cases of watery diarrhea, which should not be treated with them.

The treatment guidelines for malaria were identified by the majority of HC/HP respondents in Iquitos Norte but by few in Virú-Laredo. Only a small number of dispensary, pharmacy, and store respondents knew the treatment guidelines for malaria.

4. Provider gives appropriate information/instructions/recommendations/labeling

According to self-reported practices, more than half of the respondents from the various provider groups in both districts provide caregivers with basic information (advice) on how to use medications. Actual practices are not known because they were not observed at the time of dispensing.

In all provider categories, the medicines were dispensed in their original packaging; however, many did not contain appropriate labeling information on the dose, frequency, and duration of treatment.

RECOMMENDATIONS

The results of the survey were presented at regional workshops held in Iquitos and Trujillo between February and March of 2004. Participants included authorities of the MOH at central level; regional health authorities and their respective technical teams; representatives from the health centers and health posts of the health networks where the study was conducted; representatives of the local Red Cross and NGOs working in the area of child health; civil authorities; and health workers. The objectives of the workshops were to discuss the problems identified in the survey in working groups and to prioritize interventions. The workshops also provided an opportunity for participants to receive technical feedback and to increase their awareness of child survival issues.

As a result of the workshops, the Regional Health Authorities of Loreto and La Libertad agreed to integrate the interventions, which were identified and prioritized into their Regional Operational Plans for 2004. The central level, which was represented by DIGEMID, made a commitment to monitor the implementation of these interventions.

Although the survey identified various problems in community management of medicines, in some cases further exploration of the causes or underlying factors is required in order to better understand them and properly guide interventions. The causes and underlying factors associated with prescribing/dispensing/recommending medicines have not been properly studied and should be explored in greater depth through qualitative research.

Health care worker qualifications is another area that requires further investigation, because merely identifying fast breathing as a symptom of pneumonia is not sufficient for diagnosis. Health care workers' level of training and knowledge of Acute Obstructive Bronchial Syndrome should also be assessed, given there is evidence suggesting both of these pathologies are not being handled properly.

The results of the study show frequent, unnecessary use of antibiotics, which is contributing significantly to the spread of antimicrobial resistance. Therefore, it will be important to conduct studies of antimicrobial resistance at the regional level and widely disseminate the results among health care workers and providers.

The recommendations and interventions proposed by the workshop participants in both sites have been included in this report and are grouped according to the level of implementation or target group. Emphasis has been placed on trainings, which should be aimed at both caregivers and community providers and integrated with other health care activities. All of these interventions should be targeted at caregivers, as well as HC/HP and pharmacies (less at dispensaries), because these are the sources from which the population acquires most medicines.

Regional Level

1. Implement plans for caregiver education, such as systematic educational campaigns. These campaigns will require planners to review the concepts and messages to be disseminated and then prioritize the issues. The most important concepts include recognizing the warning signs, promoting treatment-seeking behavior, increasing awareness of the supply of free medicines for children under five in government health facilities, educating about rational use of medicines, and developing job aids and other visual media to inform caregivers of the proper procedures for administering common medicines.
2. Implement plans for health worker training (at each level: HC, HP, and dispensaries), applying new methods, using appropriate materials, and maintaining adequate supervision. These plans should also include a quality of care component in order to address areas such as rational use of antibiotics and warning signs and symptoms of conditions such as pneumonia and diarrhea.
3. Disseminate guidelines by the agencies responsible for the supply of medicine and verify these guidelines are used in daily work activities.
4. Establish and strengthen communication between dispensaries, health centers, and health posts.
5. Organize information days for commercial sector providers to familiarize them with Technical Treatment Procedures and the risks of irrational use of medicines.

Central Level

Policy Decisions

1. Institutionalize the IMCI strategy in the framework of the new health care model (MAIS), which is considered the best form of intervention, from a cost-benefit perspective, to control and prevent childhood illness and to promote healthy lifestyles for individuals, families, and communities.
2. Evaluate a ban on the sale of antimalarial medicines in the commercial sector to ensure the new treatments being implemented will not become ineffective.

Technical-Regulatory Aspects

1. Revise the Technical Treatment Procedures for ARI, ADD, and malaria to ensure consistency with the procedures of the IMCI strategy and with the National Drug Registry.
2. Define and specify the role of community dispensaries as an extension of health facilities for populations living in the country's most remote areas and formalize their connection to the health system.

REFERENCES

- ASIS LA LIBERTAD (Análisis de Situación de Salud de la Libertad). 2002. *Análisis de Situación de Salud de la Libertad*. Peru.
- ASIS LORETO (Análisis de Situación de Salud de Loreto). 2003. *Análisis de Situación de Salud de Loreto*. Peru.
- Benguigui, Y., J. Bossio, and H. Fernandez. 2001. *Investigaciones Operativas sobre Atención Integrada de las Enfermedades Prevalentes de la Infancia (AIEPI)*. Washington, DC: Pan American Health Organization.
- Carrizales, H., O. Quispe, and M. Retuerto. 1995. Uso de Antibióticos en la provincia de Ica. *Perfil Farmacoepidemiológico, Medicamentos y Salud Popular*, Year 8, No. 29, May. Servicio de Medicinas PROVIDA, Lima, Peru.
- CIUP (Centro de Investigación de la Universidad del Pacífico). 1997. *Análisis de la Demanda por Servicios de Salud*. Study conducted by CIUP for the Ministry of Health on behalf of USAID/Peru. Lima, Peru.
- DIGEMID (Dirección General de Medicamentos, Insumos y Drogas). Dirección de Establecimientos Farmacéuticos de la Dirección Ejecutiva de Registros y Normas.
- INDECOPI (Instituto de Defensa de la Competencia y de la Propiedad Intelectual). 2002. Documento de Discusión No 05-2002/GEE, Compras Estatales y Competencia en el Mercado Farmacéutico, September. Lima, Peru.
- INEI (Instituto Nacional de Estadística e Informática). 2000. *Perú: Síntesis Estadística*. Lima, Peru.
- . 2001. *Encuesta Demográfica y de Salud Familiar (ENDES 2000)*. Lima, Peru.
- . 2002. *Compendio Estadístico*. Lima, Peru.
- Lalama, M. 1999. Perfil de consumo de medicamentos en la ciudad de Quito, Ecuador. *Educación Médica Continua* 64: 7–9.
- Llanos, F. et al. 2001. Automedicación en cinco provincias de Cajamarca, Perú. *Revista Médica Herediana* 12(4): 127–33.
- Malaria Control Program. 2004. Excel Spreadsheet on Prevalence Rates Statistics. Lima, Peru.
- MINSA (Ministerio de Salud). 1999. *Infraestructura Sanitaria de Salud*. Lima: Oficina General de Epidemiología.

———. 2001. Resolución Ministerial 396-2001-SA/RM, 9 July.

———. (date unknown). *Lineamientos de Política Sectorial para el Periodo 2002–2012 y Principios Fundamentales para el Plan Estratégico Sectorial del Quinquenio Agosto 2001–Julio 2006*. Lima, Peru.

———. 2002. Report Presented at the International Seminar on Malaria Prevention and Control, April 2002, Lima, Peru.

Nachbar, N., J. Briggs, O. Aupont, L. Shafritz, A. Bongiovanni, K. Acharya, S. Zimicki, S. Holschneider, and D. Ross-Degnan. 2003. *Community Drug Management for Childhood Illness: Assessment Manual*. Submitted to the U.S. Agency for International Development by the Rational Pharmaceutical Management Plus Program. Arlington, VA: Management Sciences for Health.

PFSS (Programa de Fortalecimiento de Servicios de Salud). 1997. *Análisis Financiamiento del Sector Salud*. Study conducted by PFSS, based on the study completed by ESAN/AUPHA/SEVERS/FUNSALUD for the Ministry of Health. Lima, Peru.

“Research to Support Household and Community IMCI.” 2001. Report on a meeting, January 22–24, 2001, Baltimore, Maryland.

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ANNEX 2. LIST OF TRACER MEDICINES

	Medicine	Concentration	Form	Classification
1	Oral Rehydration Salts	100 mg	Packet	First-line Plan B (diarrhea)
2	Co-trimoxazole (Trimethoprim- Sulfamethoxazole)	20/100 mg	Tablets	Antibiotic First-line pneumonia First-line bloody diarrhea
3	Co-trimoxazole (Trimethoprim- Sulfamethoxazole)	40/200 mg	Suspension x	Antibiotic First-line pneumonia Second-line bloody diarrhea
4	Furazolidone	50 x 15 mg x 5 ml	Suspension	Antibiotic First-line bloody diarrhea
5	Metronidazole	250 mg/5 ml	Suspension	Antibiotic Amebiasis or Giardiasis
6	Metronidazole	250 mg	Tablets	Antibiotic Amebiasis or Giardiasis
7	Amoxicillin	125 mg/5 ml	Suspension	Antibiotic Second-line pneumonia
8	Amoxicillin	250 mg	Tablets	Antibiotic Second-line pneumonia
9	Sulfadoxine- pyrimethamine	500/25 mg	Tablets	Antimalarial First-line <i>falciparum</i> (Virú)
10	Artesunate	50 mg	Tablets	Antimalarial First-line <i>falciparum</i> (Virú and Iquitos in combination)
11	Mefloquine	250 mg	Tablets	Antimalarial First-line <i>falciparum</i> (Iquitos) Second-line <i>falciparum</i> (Virú)
12	Chloroquine	150 mg	Tablets	Antimalarial First-line <i>vivax</i>
13	Primaquine	7.5 mg	Tablets	Antimalarial First-line <i>vivax</i>
14	Primaquine	15 mg	Tablets	Antimalarial First-line <i>vivax</i>
15	Quinine	300 mg	Tablets	Antimalarial 3 rd line <i>falciparum</i> (Virú) Second-line <i>falciparum</i> (Iquitos)
16	Salbutamol	2 mg/5 ml	Suspension	Obstructive Bronchial Syndrome
17	Salbutamol	100 mcg	Inhaler	Obstructive Bronchial Syndrome
18	Loperamide	2 mg	Tablets	Inappropriate antidiarrheal
19	Metamizole	1 g/2 ml	Vials	Inappropriate antipyretic

ANNEX 3. LOCATION OF CLUSTERS AND SITES PER CLUSTER

Iquitos Norte

	District	Rural Clusters	Sites
1	Alto Nanay	Samito-Santa María	Santa Maria Samito, Raya, Saboya, Pisco, Miraflores, Lagunas, Libertad,
2	Punchana	Padre Cocha	Punchana, Barrio Florido, Santa Maria de Ojeal, Santa Clara de Ojeal, Picuro Yacu, Manacamiri, San Jose de Lupuna
3	Punchana	Sargento Lores/Centro Fuerte	Sargento Lores, Punchana, Centro Fuerte
		Urban Clusters	
4	Iquitos	San Antonio 1	
5	Iquitos	San Antonio 2	
6	Iquitos	San Antonio 3	
7	Iquitos	San Antonio 4	
8	Iquitos	San Antonio 5	
9	Iquitos	San Antonio 6	
10	Iquitos	San Antonio 7	
11	Iquitos	San Antonio 8	
12	Iquitos	San Antonio 9	
13	Iquitos	Tupac Amaru 1	
14	Iquitos	Tupac Amaru 2	
15	Iquitos	Moronacocha 1	
16	Iquitos	Moronacocha 2	
17	Iquitos	Moronacocha 3	
18	Punchana	Bellavista 1	
19	Punchana	Bellavista 2	
20	Punchana	Bellavista 3	

Virú-Laredo

	District	Rural Clusters	Sites
1	Chao	Buena Vista	Buena Vista, El Palto, Palermo, Porvenir, San Carlos, San Jorge, San Roberto, La Fortuna, Palotal
2	Chao	Tanguche	Cesar Vallejo, Chao, El Inca, Laramie, El Lunar, Las Malvinas, Tizal, Tanguche, La victoria, Zapatal
	Virú	Huancaquito	San Idefonso, Baldemar, Callinga, Ramal El Pino, San Agustín, Huanaque, La Antena
3	Virú	Huancayo Alto	Puerto Morin, Río Seco, Frontón Alto, Frontón Bajo, Huancaquito Bajo,
4	Virú	Compositan	Compositan, Condornada, El Saudsalito, Huancayo Alto, Ramal Cartavio, Ramal El Corregidor
5	Laredo	Laredo 1	Barraza, Puente Fierro, Cerro Blanco, Qurihuac bajo,
6	Latredo	Laredo 2	Las Cocas, Caballo Muerto, Gaklindo
7	Paranday	Paranday	Cauoisaguda, Chota, Al Cardon, Huachanchan, Hualsacap, Huamismalca, Paranday, Peña Blanca, Rellambay, Chulgampampa, Sombrerito
8	Sinsicap	Sinsicap 1	Rasday, Calvara, Carpampa, Casa Blanca, Cruz Blanca, Iripoiday, Marcapalday, Marcuchas, Porgon, Puzna, Rasday, Sinsicap, Tukurame, Turum, Yerbabuena, Cambar
9	Sinsicap	Sinsicap 2	Calluchas, Caicharin, Chuite, La Florida, Mamalle, Oscal, Oscal Chico, Los Quinuales, Purrupampa, San Miguel, Vista Alegre, Compín
		Urban Clusters	
10	Chao	Chao	
11	Virú	Virú 1	
12	Virú	Virú 2	
13	Virú	Virú 3	
14	Laredo	Laredo 1	
15	Laredo	Laredo 2	
16	Laredo	Laredo 3	
17	Laredo	Laredo 4	
18	Laredo	Laredo 5	
19	Laredo	Laredo 6	
20	Laredo	Laredo 7	

**ANNEX 4. HOUSEHOLD QUESTIONNAIRE
 SURVEY ON THE AVAILABILITY AND USE OF MEDICINES FOR CHILDHOOD
 ILLNESS IN THE COMMUNITY**

Relationship with the child..... Age of respondent.....

<p>1. RECORD THE AGE RANGE OF THE CHILD SELECTED FOR THE SURVEY</p>	<p><input type="checkbox"/> 0-less than 1 year <input type="checkbox"/> 1 year-less than 2 years <input type="checkbox"/> 2 years-less than 3 years <input type="checkbox"/> 3 years-less than 4 years <input type="checkbox"/> 4 years-less than 5 years</p>
<p>2. RECORD THE SEX OF THE CHILD SELECTED FOR THE SURVEY</p>	<p><input type="checkbox"/> Male <input type="checkbox"/> Female</p>
<p>3. Just to be sure, please tell me which of these symptoms (NAME) had in the last TWO weeks. READ LIST OF RESPONSES ALOUD. MARK AN (X) NEXT TO ALL SYMPTOMS RESPONDENT CONFIRMS.</p>	<p><input type="checkbox"/> Cough <input type="checkbox"/> Fast breathing <input type="checkbox"/> Fever/hot body <input type="checkbox"/> Convulsions/seizures <input type="checkbox"/> Diarrhea <input type="checkbox"/> Headache <input type="checkbox"/> Chills</p>
<p>4. Would you say that the illness that (NAME) had this time was very serious, somewhat serious, or not serious? MARK ONLY ONE RESPONSE. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> Very serious <input type="checkbox"/> Somewhat serious <input type="checkbox"/> Not serious <input type="checkbox"/> (Does not know)</p>
<p>IF THE ONLY RESPONSE TO QUESTION 3 WAS COUGH, SKIP TO QUESTION 23</p>	
<p>BOX 1 INSTRUCTIONS IF YOU MARKED FAST BREATHING IN QUESTION 3, COMPLETE QUESTIONS 5-7. IF YOU DID NOT MARK FAST BREATHING, SKIP TO BOX 2 INSTRUCTIONS.</p>	
<p>5. Let's talk about when (NAME) had fast breathing. What did you do? I'm going to read you a list. Please listen to all of the options before responding. READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> Did nothing. SKIP TO BOX 2 INSTRUCTIONS <input type="checkbox"/> Treated at home. Did not seek care or medicine outside the home. SKIP TO BOX 2 INSTRUCTIONS <input type="checkbox"/> Treated at home and also sought care or medicine outside the home. <input type="checkbox"/> Sought care or medicine outside the home only. <input type="checkbox"/> (Doesn't know/doesn't remember) SKIP TO BOX 2 INSTRUCTIONS</p>
<p>6. How long after the onset of fast breathing did you seek care or medicines outside the home? READ THE RESPONSES ALOUD, DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> The same day <input type="checkbox"/> The following day <input type="checkbox"/> Two days after the onset of fast breathing <input type="checkbox"/> Three or more days after the onset of fast breathing <input type="checkbox"/> (Doesn't know/doesn't remember)</p>
<p>7. Of the following options, where did you first go to seek care or medicines when (NAME) had fast breathing? I'm going to read you a list. READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ONLY THE SITE WHERE THE RESPONDENT WENT FIRST.</p>	<p><input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> (Doesn't know/doesn't remember)</p>

BOX 2 INSTRUCTIONS IF YOU MARKED <u>FEVER/HOT BODY OR HEADACHE OR CHILLS</u> IN QUESTION 3, COMPLETE QUESTIONS 8–10. IF YOU DID NOT MARK <u>FEVER/HOT BODY OR HEADACHE OR CHILLS</u>, SKIP TO BOX 3 INSTRUCTIONS.	
<p>8. Let's talk about when (NAME) had fever/hot body, headache, or chills. What did you do? I'm going to read you a list. Please listen to the whole list before responding. READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> Did nothing. SKIP TO BOX 3 INSTRUCTIONS</p> <p><input type="checkbox"/> Treated at home. Did not seek care or medicine outside the home. SKIP TO BOX 3 INSTRUCTIONS</p> <p><input type="checkbox"/> Treated at home and also sought care or medicine outside the home.</p> <p><input type="checkbox"/> Sought care or medicine outside the home only.</p> <p><input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> SKIP TO BOX 3 INSTRUCTIONS</p>
<p>9. How long after the onset of fever/hot body, headache, or chills did you seek care or medicines outside the home? READ THE RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> The same day</p> <p><input type="checkbox"/> The following day</p> <p><input type="checkbox"/> Two days after the onset of fever/hot body, headache, or chills</p> <p><input type="checkbox"/> Three or more days after the onset of fever/hot body, headache, or chills</p> <p><input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i></p>
<p>10. Of the following places I'm going to read, where did you <i>first</i> go to seek care or medicines when (NAME) had fever/hot body, headache, or chills? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ONLY THE SITE WHERE THE RESPONDENT WENT FIRST.</p>	<p><input type="checkbox"/> Traditional healer</p> <p><input type="checkbox"/> Health Center/Post or Hospital</p> <p><input type="checkbox"/> Clinics: church, CARITAS, NGO, private</p> <p><input type="checkbox"/> Social Security (ESSALUD)</p> <p><input type="checkbox"/> Pharmacy/private drug store</p> <p><input type="checkbox"/> Community dispensary</p> <p><input type="checkbox"/> Store or market</p> <p><input type="checkbox"/> Community health agent (promoter, midwife, health care attendant)</p> <p><input type="checkbox"/> Other (specify)_____</p> <p><input type="checkbox"/> <i>(Doesn't know/ doesn't remember)</i></p>

BOX 3 INSTRUCTIONS IF YOU MARKED <u>CONVULSIONS/SEIZURES</u> IN QUESTION 3, COMPLETE QUESTIONS 11–13. IF YOU DID NOT MARK <u>CONVULSIONS/SEIZURES</u>, SKIP TO BOX 4 INSTRUCTIONS.	
<p>11. Let's talk about when (NAME) had convulsions/seizures. What did you do? I'm going to read you some options. Please listen to all of the options before responding. READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> Did nothing. SKIP TO BOX 4 INSTRUCTIONS</p> <p><input type="checkbox"/> Treated at home. Did not seek care or medicine outside the home. SKIP TO BOX 4 INSTRUCTIONS</p> <p><input type="checkbox"/> Treated at home and also sought care or medicine outside the home.</p> <p><input type="checkbox"/> Sought care or medicine outside the home only.</p> <p><input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> SKIP TO BOX 4 INSTRUCTIONS</p>
<p>12. How long after the onset of the convulsions/seizures did you seek care or medicines outside the home? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> The same day</p> <p><input type="checkbox"/> The following day</p> <p><input type="checkbox"/> Two days after the onset of convulsions/seizures</p> <p><input type="checkbox"/> Three or more days after the onset of convulsions/seizures</p> <p><input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i></p>
<p>13. Of the following places I'm going to read, where did you <i>first</i> go to seek care or medicines when (NAME) had convulsions/seizures? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ONLY THE SITE WHERE THE RESPONDENT WENT FIRST.</p>	<p><input type="checkbox"/> Traditional healer</p> <p><input type="checkbox"/> Health Center/Post or Hospital</p> <p><input type="checkbox"/> Clinics: church, CARITAS, NGO, private</p> <p><input type="checkbox"/> Social Security (ESSALUD)</p> <p><input type="checkbox"/> Pharmacy/private drug store</p> <p><input type="checkbox"/> Community dispensary</p> <p><input type="checkbox"/> Store or market</p> <p><input type="checkbox"/> Community health agent (promoter, midwife, health care attendant)</p> <p><input type="checkbox"/> Other (specify)_____</p> <p><input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i></p>

BOX 4 INSTRUCTIONS IF YOU MARKED <u>DIARRHEA</u> IN QUESTION 3, COMPLETE QUESTIONS 14–22. IF YOU DID NOT MARK <u>DIARRHEA</u>, SKIP TO QUESTION 23.	
14. Let's talk about when (NAME) had diarrhea. Did you notice blood in the diarrhea?	<input type="checkbox"/> Yes <input type="checkbox"/> No SKIP TO QUESTION 17 <input type="checkbox"/> Doesn't know SKIP TO QUESTION 17
15. What did you do when (NAME) had bloody diarrhea? I'm going to read you some options. Please listen to all of the options before responding. READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."	<input type="checkbox"/> Did nothing. SKIP TO QUESTION 17 <input type="checkbox"/> Treated at home. Did not seek care or medicine outside the home. SKIP TO QUESTION 17 <input type="checkbox"/> Treated at home and also sought care or medicine outside the home. <input type="checkbox"/> Sought care or medicine outside the home only. <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> SKIP TO QUESTION 17
16. Of all of the places I'm going to read, where did you <i>first</i> go to seek care or medicines when (NAME) had bloody diarrhea? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ONLY THE SITE WHERE THE RESPONDENT WENT FIRST.	<input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i>
17. Did (NAME) take rehydration solution that you prepared at home when he/she had diarrhea? (Verify with Card)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <i>(Doesn't know)</i>
18. Did (NAME) take Oral Rehydration Salts or Solution (Fruti Flex, Electrolight, Electrolal) when he/she had diarrhea?	<input type="checkbox"/> Yes <input type="checkbox"/> No SKIP TO QUESTION 21 <input type="checkbox"/> Doesn't know SKIP TO QUESTION 21
19. Of all of the places I'm going to read, where did you get the Oral Rehydration Salts or Solution (Fruti Flex, Electrolight, Electrolal)? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."	<input type="checkbox"/> Had at home <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> SKIP TO QUESTION 21
20. What is the name of the place where you (originally) got the Oral Rehydration Salts or Solution (Fruti Flex, Electrolight, Electrolal)?	<input type="checkbox"/> Name of establishment: _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i>
21. Did (NAME) drink more, the same, or less fluids than when he/she is healthy, including the Oral Rehydration Salts or Solution, homemade rehydration solution, or breast milk?	<input type="checkbox"/> More <input type="checkbox"/> About the same SKIP TO QUESTION 23 <input type="checkbox"/> Less SKIP TO QUESTION 23 <input type="checkbox"/> <i>Doesn't know/doesn't remember</i> SKIP TO QUESTION 23

<p>22. When did he/she begin to drink more fluids? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW."</p>	<p><input type="checkbox"/> The same day the diarrhea began <input type="checkbox"/> The day after the diarrhea began <input type="checkbox"/> Two days after the diarrhea began <input type="checkbox"/> Three or more days after the diarrhea began <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i></p>
<p>SAY: Now we're going to talk about medicines.</p>	
<p>23. While he/she was sick, did (NAME) receive an injection?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>24. While he/she was sick, did you give (NAME) any medicine?</p>	<p><input type="checkbox"/> Yes SKIP TO QUESTION 26 <input type="checkbox"/> No GO TO QUESTION 25 <input type="checkbox"/> <i>(Doesn't know)</i> SKIP TO QUESTION 26</p>
<p>25. What did you do while (NAME) was sick to cure the illness? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS RESPONDENT CONFIRMS.</p>	<p><input type="checkbox"/> Nothing <input type="checkbox"/> Sponged the child's skin with tepid water <input type="checkbox"/> Went to a traditional healer <input type="checkbox"/> Gave child traditional teas or herbs <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i></p> <p>IF RESPONDENT ANSWERED QUESTION 25, SKIP TO QUESTION 35.</p>

<p>26A. Can you tell me the names of the medicines, or show me the medicines or the container for the medicines that (NAME) took while he/she was sick? (PROBE ONCE, "SOMETHING MORE," EACH TIME RESPONDENT MENTIONS A MEDICINE.)</p> <p>WRITE THE NAME OF THE MEDICINE AS IT APPEARS ON THE CONTAINER OR THE PACKAGING, OR AS TOLD TO YOU, IN THE LEFT-HAND COLUMN. IF YOU CANNOT DESCRIBE OR SEE THE CONTAINER, MARK "DOESN'T KNOW" IN THE APPROPRIATE BOX. IF YOU CANNOT OBTAIN THE NAMES OF ANY MEDICINES, MARK THE BOX THAT READS "NO MEDICINE NAMES WERE OBTAINED."</p> <p>FOR ALL OF THE MEDICINES OR CONTAINERS SHOWN TO YOU, MARK "YES" UNDER "SHOWN" IN THE RIGHT-HAND COLUMN BELOW. IF THE RESPONDENT DID NOT SHOW YOU A PARTICULAR MEDICINE, MARK "NO."</p>		<p>26B. How many medicines did (NAME) take during the last illness he/she had but no longer has?</p>
<p>Name of medicine 1 _____ <input type="checkbox"/> Doesn't know</p> <p>Name of medicine 2 _____ <input type="checkbox"/> Doesn't know</p> <p>Name of medicine 3 _____ <input type="checkbox"/> Doesn't know</p> <p>Name of medicine 4 _____ <input type="checkbox"/> Doesn't know</p> <p>Name of medicine 5 _____ <input type="checkbox"/> Doesn't know</p> <p>Name of medicine 6 _____ <input type="checkbox"/> Doesn't know</p>	<p>Shown? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p><input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> More than six <input type="checkbox"/> Doesn't know</p>
<p><input type="checkbox"/> No medicine names were obtained</p> <p><input type="checkbox"/> No medicines were given to the child</p> <p>IF NO NAMES WERE OBTAINED OR NO MEDICINES WERE GIVEN SKIP TO QUESTION 35</p>		
<p>IF RESPONDENT DOES NOT SHOW OR MENTION MEDICINES IN QUESTION 26A, SKIP TO QUESTION 35</p>		

COLLECT THE FOLLOWING INFORMATION FOR ALL MEDICINES NAMED IN QUESTION 26A. DO NOT COLLECT INFORMATION FOR MEDICINES WHOSE NAMES YOU DO NOT HAVE. ASK QUESTION 27A THROUGH QUESTION 34A FOR THE FIRST MEDICINE. WHEN YOU COMPLETE ALL OF THE QUESTIONS FOR THE FIRST MEDICINE, ASK QUESTIONS 27B THROUGH 34B ABOUT THE NEXT MEDICINE, AND SO ON, UNTIL ALL QUESTIONS HAVE BEEN ASKED FOR ALL MEDICINES.

SAY: We're going to talk about the first medicine you mentioned/showed me [show respondent the container or mention the name of the medicine]. Below, write above each group of questions the number and name of the medicine asked about—number and name should be based on Question 26A.

MEDICINE NUMBER: _____ **NAME OF MEDICINE:** _____

<p>27A. Who recommended or prescribed (NAME OF MEDICINE) for (NAME)? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]</p>	<p>28A. How long after the onset of (NAME) illness did he/she take (NAME OF MEDICINE)? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]</p>	<p>29A. Where did you get (NAME OF MEDICINE)? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]</p>	<p>30A. What is the name of the place where you (originally) obtained (NAME OF MEDICINE)?</p>	<p>31A. Approximately how many days did (NAME) take this medicine?</p>
<p><input type="checkbox"/> No one or you decided yourself</p> <p><input type="checkbox"/> Traditional healer</p> <p><input type="checkbox"/> Health facility personnel</p> <p><input type="checkbox"/> Pharmacy/private drug store attendant</p> <p><input type="checkbox"/> Community dispensary attendant</p> <p><input type="checkbox"/> Store/market attendant</p> <p><input type="checkbox"/> Community health agent (promoter, midwife, health care attendant)</p> <p><input type="checkbox"/> Friend/neighbor/relative</p> <p><input type="checkbox"/> Other (specify) _____</p> <p><input type="checkbox"/> (<i>Doesn't know/doesn't remember</i>)</p> <p>(DO NOT READ THIS OPTION)</p>	<p><input type="checkbox"/> The same day</p> <p><input type="checkbox"/> The next day</p> <p><input type="checkbox"/> Two days after onset of illness</p> <p><input type="checkbox"/> Three or more days after onset of illness</p> <p><input type="checkbox"/> (Doesn't know/doesn't remember) (DO NOT READ THIS OPTION)</p>	<p><input type="checkbox"/> Had at home</p> <p><input type="checkbox"/> Traditional healer</p> <p><input type="checkbox"/> Health Center/Post or Hospital</p> <p><input type="checkbox"/> Clinics: church, CARITAS, NGO, private</p> <p><input type="checkbox"/> Social Security (ESSALUD)</p> <p><input type="checkbox"/> Pharmacy/private drug store</p> <p><input type="checkbox"/> Community dispensary</p> <p><input type="checkbox"/> Store or market</p> <p><input type="checkbox"/> Community health agent (promoter, midwife, health care attendant)</p> <p><input type="checkbox"/> Other (specify) _____</p> <p><input type="checkbox"/> (Doesn't know/doesn't remember) (DO NOT READ THIS OPTION) SKIP TO QUESTION 31A</p>	<p>Place: _____</p> <p>_____</p> <p><input type="checkbox"/> Doesn't know</p>	<p>[__ __] Days</p> <p><input type="checkbox"/> Doesn't know</p>
<p>32A. DESCRIBE HOW THE MEDICINE WAS PACKAGED. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come in its original container or loose or in some other way?</p>	<p>33A. DESCRIBE WHETHER THE MEDICINE WAS PACKAGED INDIVIDUALLY OR WITH OTHER MEDICINES. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come alone in the package or with other medicines in the same package?</p>		<p>34A. Did you receive written instructions about (NAME OF MEDICINE)? IF THE RESPONSE IS YES, ASK: Which instructions? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS THAT APPLY.</p>	
<p><input type="checkbox"/> Original container SKIP TO QUESTION 34A</p> <p><input type="checkbox"/> Loose tablets/capsules in resealable plastic bag</p> <p><input type="checkbox"/> Other form SKIP TO QUESTION 34A</p> <p><input type="checkbox"/> Doesn't know SKIP TO QUESTION 34A</p>	<p><input type="checkbox"/> Alone</p> <p><input type="checkbox"/> With other medicines</p> <p><input type="checkbox"/> Doesn't know</p>		<p><input type="checkbox"/> Name of medicine</p> <p><input type="checkbox"/> Dosage or amount to be taken each time</p> <p><input type="checkbox"/> How many times to take/apply per day</p> <p><input type="checkbox"/> How many days to take/apply</p> <p><input type="checkbox"/> (Doesn't know)</p>	

MEDICINE NUMBER: _____		NAME OF MEDICINE: _____		
27B. Who recommended or prescribed (NAME OF MEDICINE) for (NAME) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	28B. How long after the onset of (NAME) illness did he/she take (NAME OF MEDICINE) ? READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	29B. Where did you get (NAME OF MEDICINE) ? READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	30B. What is the name of the place where you (originally) obtained (NAME OF MEDICINE) ?	31B. Approximately how many days did (NAME) take this medicine?
<input type="checkbox"/> No one or you decided yourself <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health facility personnel <input type="checkbox"/> Pharmacy/private drug store attendant <input type="checkbox"/> Community dispensary attendant <input type="checkbox"/> Store/market attendant <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> (DO NOT READ THIS OPTION)	<input type="checkbox"/> The same day <input type="checkbox"/> The next day <input type="checkbox"/> Two days after onset of illness <input type="checkbox"/> Three or more days after onset of illness <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i>	<input type="checkbox"/> Had at home <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i> SKIP TO QUESTION 31B	Place: _____ _____ <input type="checkbox"/> Doesn't know	[][] Days <input type="checkbox"/> Doesn't know
32B. DESCRIBE HOW THE MEDICINE WAS PACKAGED. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come in its original container or loose or in some other way?		33B. DESCRIBE WHETHER THE MEDICINE WAS PACKAGED INDIVIDUALLY OR WITH OTHER MEDICINES. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come alone in the package or with other medicines in the same package?		34B. Did you receive written instructions about (NAME OF MEDICINE)? IF THE RESPONSE IS YES, ASK: Which instructions? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS THAT APPLY.
<input type="checkbox"/> Original container SKIP TO QUESTION 34B <input type="checkbox"/> Loose tablets/capsules in resealable plastic bag <input type="checkbox"/> Other form SKIP TO QUESTION 34B <input type="checkbox"/> Doesn't know SKIP TO QUESTION 34B		<input type="checkbox"/> Alone <input type="checkbox"/> With other medicines <input type="checkbox"/> Doesn't know		<input type="checkbox"/> Name of medicine <input type="checkbox"/> Dosage or amount to be taken each time <input type="checkbox"/> How many times to take/apply per day <input type="checkbox"/> How many days to take/apply <input type="checkbox"/> (Doesn't know)

MEDICINE NUMBER: _____ NAME OF MEDICINE: _____					
27C. Who recommended or prescribed (NAME OF MEDICINE) for (NAME) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	28C. How long after the onset of (NAME) illness did he/she take (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	29C. Where did you get (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	30C. What is the name of the place where you (originally) obtained (NAME OF MEDICINE) ?	31C. Approximately how many days did (NAME) take this medicine?	
<input type="checkbox"/> No one or you decided yourself <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health facility personnel <input type="checkbox"/> Pharmacy/private drug store attendant <input type="checkbox"/> Community dispensary attendant <input type="checkbox"/> Store/market attendant <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> (DO NOT READ THIS OPTION)	<input type="checkbox"/> The same day <input type="checkbox"/> The next day <input type="checkbox"/> Two days after onset of illness <input type="checkbox"/> Three or more days after onset of illness <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i>	<input type="checkbox"/> Had at home <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i> SKIP TO QUESTION 31C	Place: _____ _____ <input type="checkbox"/> Doesn't know	[] [] Days <input type="checkbox"/> Doesn't know	
32C. DESCRIBE HOW THE MEDICINE WAS PACKAGED. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come in its original container or loose or in some other way?		33C. DESCRIBE WHETHER THE MEDICINE WAS PACKAGED INDIVIDUALLY OR WITH OTHER MEDICINES. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come alone in the package or with other medicines in the same package?		34C. Did you receive written instructions about (NAME OF MEDICINE) ? IF THE RESPONSE IS YES, ASK: Which instructions? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS THAT APPLY.	
<input type="checkbox"/> Original container SKIP TO QUESTION 34C <input type="checkbox"/> Loose tablets/capsules in resealable plastic bag <input type="checkbox"/> Other form SKIP TO QUESTION 34C <input type="checkbox"/> Doesn't know SKIP TO QUESTION 34C		<input type="checkbox"/> Alone <input type="checkbox"/> With other medicines <input type="checkbox"/> Doesn't know		<input type="checkbox"/> Name of medicine <input type="checkbox"/> Dosage or amount to be taken each time <input type="checkbox"/> How many times to take/apply per day <input type="checkbox"/> How many days to take/apply <input type="checkbox"/> (Doesn't know)	

MEDICINE NUMBER: _____		NAME OF MEDICINE: _____		
27D. Who recommended or prescribed (NAME OF MEDICINE) for (NAME) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	28D. How long after the onset of (NAME) illness did he/she take (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	29D. Where did you get (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	30D. What is the name of the place where you (originally) obtained (NAME OF MEDICINE) ?	31D. Approximately how many days did (NAME) take this medicine?
<input type="checkbox"/> No one or you decided yourself <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health facility personnel <input type="checkbox"/> Pharmacy/private drug store attendant <input type="checkbox"/> Community dispensary attendant <input type="checkbox"/> Store/market attendant <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> (DO NOT READ THIS OPTION)	<input type="checkbox"/> The same day <input type="checkbox"/> The next day <input type="checkbox"/> Two days after onset of illness <input type="checkbox"/> Three or more days after onset of illness <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i>	<input type="checkbox"/> Had at home <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i> SKIP TO QUESTION 31D	Place: _____ _____ <input type="checkbox"/> Doesn't know	[] [] Days <input type="checkbox"/> Doesn't know
32D. DESCRIBE HOW THE MEDICINE WAS PACKAGED. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come in its original container or loose or in some other way?		33D. DESCRIBE WHETHER THE MEDICINE WAS PACKAGED INDIVIDUALLY OR WITH OTHER MEDICINES. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come alone in the package or with other medicines in the same package?		34D. Did you receive written instructions about (NAME OF MEDICINE)? IF THE RESPONSE IS YES, ASK: Which instructions? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS THAT APPLY.
<input type="checkbox"/> Original container SKIP TO QUESTION 34D <input type="checkbox"/> Loose tablets/capsules in resealable plastic bag <input type="checkbox"/> Other form SKIP TO QUESTION 34D <input type="checkbox"/> Doesn't know SKIP TO QUESTION 34D		<input type="checkbox"/> Alone <input type="checkbox"/> With other medicines <input type="checkbox"/> Doesn't know		<input type="checkbox"/> Name of medicine <input type="checkbox"/> Dosage or amount to be taken each time <input type="checkbox"/> How many times to take/apply per day <input type="checkbox"/> How many days to take/apply <input type="checkbox"/> (Doesn't know)

MEDICINE NUMBER: _____		NAME OF MEDICINE: _____		
27E. Who recommended or prescribed (NAME OF MEDICINE) for (NAME) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	28E. How long after the onset of (NAME) illness did he/she take (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	29E. Where did you get (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	30E. What is the name of the place where you (originally) obtained (NAME OF MEDICINE) ?	31E. Approximately how many days did (NAME) take this medicine?
<input type="checkbox"/> No one or you decided yourself <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health facility personnel <input type="checkbox"/> Pharmacy/private drug store attendant <input type="checkbox"/> Community dispensary attendant <input type="checkbox"/> Store/market attendant <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> (DO NOT READ THIS OPTION)	<input type="checkbox"/> The same day <input type="checkbox"/> The next day <input type="checkbox"/> Two days after onset of illness <input type="checkbox"/> Three or more days after onset of illness <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i>	<input type="checkbox"/> Had at home <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i> SKIP TO QUESTION 31E	Place: _____ _____ <input type="checkbox"/> Does not know	[] [] Days <input type="checkbox"/> Does not know
32E. DESCRIBE HOW THE MEDICINE WAS PACKAGED. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come in its original container or loose or in some other way?		33E. DESCRIBE WHETHER THE MEDICINE WAS PACKAGED INDIVIDUALLY OR WITH OTHER MEDICINES. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come alone in the package or with other medicines in the same package?		34E. Did you receive written instructions about (NAME OF MEDICINE)? IF THE RESPONSE IS YES, ASK: Which instructions? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS THAT APPLY.
<input type="checkbox"/> Original container SKIP TO QUESTION 34E <input type="checkbox"/> Loose Tablets/capsules in resealable plastic bag <input type="checkbox"/> Other form SKIP TO QUESTION 34E <input type="checkbox"/> Does not know <i>SKIP TO QUESTION 34E</i>		<input type="checkbox"/> Alone <input type="checkbox"/> With other medicines <input type="checkbox"/> Does not know		<input type="checkbox"/> Name of medicine <input type="checkbox"/> Dosage or amount to be taken each time <input type="checkbox"/> How many times to take/apply per day <input type="checkbox"/> How many days to take/apply <input type="checkbox"/> (Doesn't know)

MEDICINE NUMBER: _____		NAME OF MEDICINE: _____		
27F. Who recommended or prescribed (NAME OF MEDICINE) for (NAME) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	28F. How long after the onset of (NAME) illness did he/she take (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	29F. Where did you get (NAME OF MEDICINE) ? [READ RESPONSES ALOUD. MARK ONLY ONE RESPONSE.]	30F. What is the name of the place where you (originally) obtained (NAME OF MEDICINE) ?	31F. Approximately how many days did (NAME) take this medicine?
<input type="checkbox"/> No one or you decided yourself <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health facility personnel <input type="checkbox"/> Pharmacy/private drug store attendant <input type="checkbox"/> Community dispensary attendant <input type="checkbox"/> Store/market attendant <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Friend/neighbor/relative <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> <i>(Doesn't know/doesn't remember)</i> (DO NOT READ THIS OPTION)	<input type="checkbox"/> The same day <input type="checkbox"/> The next day <input type="checkbox"/> Two days after onset of illness <input type="checkbox"/> Three or more days after onset of illness <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i>	<input type="checkbox"/> Had at home <input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent (promoter, midwife, health care attendant) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> (Doesn't know/doesn't remember) <i>(DO NOT READ THIS OPTION)</i> SKIP TO QUESTION 31F	Establishment: _____ _____ _____ <input type="checkbox"/> Does not know	[] [] Days <input type="checkbox"/> Does not know
32F. DESCRIBE HOW THE MEDICINE WAS PACKAGED. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did (NAME OF MEDICINE) come in its original container or loose or in some other way?		33F. DESCRIBE WHETHER THE MEDICINE WAS PACKAGED INDIVIDUALLY OR WITH OTHER MEDICINES. IF YOU CANNOT SEE OR DESCRIBE THE PACKAGING, ASK: Did <i>(NAME OF MEDICINE)</i> come alone in the package or with other medicines in the same package?		34F. Did you receive written instructions about (NAME OF MEDICINE)? IF THE RESPONSE IS YES, ASK: Which instructions? READ RESPONSES ALOUD. DO NOT READ "DOESN'T KNOW." MARK ALL OPTIONS THAT APPLY.
<input type="checkbox"/> Original container SKIP TO QUESTION 34F <input type="checkbox"/> Loose Tablets/capsules resealable plastic bag <input type="checkbox"/> Other form SKIP TO QUESTION 34F <input type="checkbox"/> Doesn't know SKIP TO NO. 34F		<input type="checkbox"/> Alone <input type="checkbox"/> With other medicines <input type="checkbox"/> Doesn't know		<input type="checkbox"/> Name of medicine <input type="checkbox"/> Dosage or amount to be taken each time <input type="checkbox"/> How many times to take/apply per day <input type="checkbox"/> How many days to take/apply <input type="checkbox"/> (Doesn't know)

SAY: Now we're going to talk about a list of medicines that I have here. (REVIEW MEDICINE CARD)

	A CHLOROQUINE <i>Aralen</i>	B PRIMAQUINE	C ARTESUNATE	D SULFADOXINE/ PYRIMETHAMINE <i>Fansidar</i>	E MEFLOQUINE	F QUININE
35. Have you ever heard of a medicine called (READ THE NAME/S OF THE ANTIMALARIALS APPEARING AT THE TOP OF THE COLUMNS)?	<input type="checkbox"/> Yes, SKIP TO 36A <input type="checkbox"/> No, SKIP TO QUESTION 35B	<input type="checkbox"/> Yes, SKIP TO 36B <input type="checkbox"/> No, SKIP TO QUESTION 35C	<input type="checkbox"/> Yes, SKIP TO 36C <input type="checkbox"/> No, SKIP TO QUESTION 35D	<input type="checkbox"/> Yes, SKIP TO 36D <input type="checkbox"/> No, SKIP TO QUESTION 35E	<input type="checkbox"/> Yes, SKIP TO 36E <input type="checkbox"/> No, SKIP TO QUESTION 35F	<input type="checkbox"/> Yes, SKIP TO 36F <input type="checkbox"/> No, SKIP TO QUESTION 38
36. Are you able to get (NAME/S OF ANTIMALARIALS) always, sometimes, or never in the area where you live?	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Don't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Don't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Don't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Don't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Don't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Don't know
37. Do you have any (NAME/S OF ANTIMALARIAL) in your home now?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know

38. Have you ever heard of packets of Oral Rehydration Salts or solutions?	<input type="checkbox"/> Yes, CONTINUE TO QUESTION 39 <input type="checkbox"/> No SKIP TO QUESTION 41
39. Are you able to get packets of Oral Rehydration Salts or solutions (Fruti Flex, Electrolight, Electroral) always, sometimes or never in the area where you live?	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Does not know
40. Do you have any packets of Oral Rehydration Salts or solutions at home now?	<input type="checkbox"/> Yes <input type="checkbox"/> No

	A CO-TRIMOXAZOLE <i>Bactrim</i> <i>Mebrym</i> <i>Septtrin</i> <i>Bacterol</i>	B AMOXICILLIN <i>Velamox</i> <i>Amoxidin</i> <i>Amoxil</i> <i>Magnimox</i>	C FURAZOLIDONE <i>Enterophar</i> <i>Enteroxol</i> <i>Furoxone</i>
41. Have you ever heard of a medicine called (READ THE NAME/S OF THE ANTIBIOTICS APPEARING AT THE TOP OF THE COLUMNS)?	<input type="checkbox"/> Yes <input type="checkbox"/> No SKIP TO QUESTION 41B <input type="checkbox"/> Doesn't know SKIP TO QUESTION 41B	<input type="checkbox"/> Yes <input type="checkbox"/> No SKIP TO QUESTION 41C <input type="checkbox"/> Doesn't know SKIP TO QUESTION 41C	<input type="checkbox"/> Yes <input type="checkbox"/> No STOP <input type="checkbox"/> Doesn't know STOP
42. Are you able to get (NAME/S OF FIRST-LINE ANTIBIOTIC FOR PNEUMONIA) always, sometimes, or never in the area where you live?	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Doesn't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Doesn't know	<input type="checkbox"/> Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/> Doesn't know

SAY: We've completed the discussion. Thank you for allowing me to speak with you. I learned a lot from our conversation.

Survey End Time: ____/____

**ANNEX 5. QUESTIONNAIRE FOR PROVIDERS/MEDICINE OUTLETS
SURVEY ON THE AVAILABILITY AND USE OF MEDICINES FOR CHILDHOOD
ILLNESS IN THE COMMUNITY**

Verbal Greeting
For the Ministry of Health:
My name is _____ . I'm going to ask you some questions with regard to your work as a person responsible for patient care. This survey is anonymous and confidential.
BEGIN SURVEY

For the Private Sector:
My name is _____ . I am here on behalf of the Ministry of Health, which is developing strategies to work with the private sector on improving the health of children.
Are you the person who most often assists patients?
 If respondent says Yes, say:
This survey is anonymous and confidential. Would you mind if I asked you some questions?
 If respondent says Yes: Complete the following information, then start the interview with QUESTION 1.
 If respondent says No, say: **Is there anyone here today that regularly assists patients or customers?**
 If respondent says Yes, say: **Could I please speak with that person?**
 Start interview again with the new respondent.
 If respondent says No, say: **Thank you, I'll come back at another time. End the survey.**

Survey Start Time:

General Information

Name of Province:	Name of District:	Name of Establishment:
Name of Data Collector:	Date of Survey: _____/_____/_____ Day Month Year	Outlet Code:
Setting/location:	<input type="checkbox"/> Urban	<input type="checkbox"/> Rural
Type of establishment or facility:	<input type="checkbox"/> Public (MOH/or Social Security)	<input type="checkbox"/> Private <input type="checkbox"/> Dispensary <input type="checkbox"/> Other
Category of facility or medicine outlet : <i>(Mark the option that best describes the facility or outlet)</i>	<input type="checkbox"/> Traditional healer <input type="checkbox"/> Health Center/Post or Hospital <input type="checkbox"/> Clinics: church, CARITAS, NGO, private <input type="checkbox"/> Social Security (ESSALUD) <input type="checkbox"/> Pharmacy/private drug store <input type="checkbox"/> Community dispensary <input type="checkbox"/> Store or market <input type="checkbox"/> Community health agent <input type="checkbox"/> Other (specify)_____	

<p>If it is not a health facility, ask:</p> <p>1. How long does it take to get to the nearest health facility? <i>(Listen and note down response.)</i></p>	<p>Time:.....</p>
<p>2. What is your profession or occupation? <i>(DO NOT READ. Listen to the responses and mark all that apply.)</i></p>	<p><input type="checkbox"/> Pharmacist <input type="checkbox"/> Nursing technician <input type="checkbox"/> Doctor <input type="checkbox"/> Nurse, nurse-midwife <input type="checkbox"/> Community Health Agent <input type="checkbox"/> Other (specify) _____</p>

Knowledge of Childhood Illnesses

<p><i>Say: I would like to ask you some questions about the illnesses of the children you treat.</i></p>			
<p>COMMON COLD</p>			
<p>3. Can you tell me the symptoms that could be found in a child under the age of five who has a common cold? <i>(DO NOT READ. Listen to the responses and mark all that apply.)</i></p>			
<p><input type="checkbox"/> Convulsions/seizures <input type="checkbox"/> Frequent loose bowel movements/diarrhea <input type="checkbox"/> Abdominal pain <input type="checkbox"/> Headache <input type="checkbox"/> Sore throat <input type="checkbox"/> Earache <input type="checkbox"/> Child cannot eat</p>	<p><input type="checkbox"/> Child is restless <input type="checkbox"/> Child is lethargic <input type="checkbox"/> Fever (hot body) <input type="checkbox"/> Dry tongue <input type="checkbox"/> General discomfort <input type="checkbox"/> Stuffy or runny nose <input type="checkbox"/> Sunken eyes <input type="checkbox"/> Pale skin</p>	<p><input type="checkbox"/> Fast breathing/difficulty breathing <input type="checkbox"/> Wheezing <input type="checkbox"/> Bleeding <input type="checkbox"/> Bloody stools <input type="checkbox"/> Thirst <input type="checkbox"/> Heavy breathing/gasping</p>	<p><input type="checkbox"/> Sweating <input type="checkbox"/> Chest in-drawing <input type="checkbox"/> Cough <input type="checkbox"/> Vomiting <input type="checkbox"/> Doesn't know <input type="checkbox"/> Other (specify) _____</p>
<p>4. Which medicine do you consider most effective for treating a child under five years of age with a common cold? <i>(Listen and note down response)</i></p>		<p>_____</p> <p><input type="checkbox"/> None <input type="checkbox"/> I don't know</p>	
<p>PNEUMONIA</p>			
<p>5. What would you say are the key symptoms for differentiating a child under five years of age with pneumonia from one with a common cold? <i>(DO NOT READ. Listen to the responses and mark all that apply.)</i></p>			
<p><input type="checkbox"/> Convulsions/seizures <input type="checkbox"/> Frequent loose bowel movements/diarrhea <input type="checkbox"/> Abdominal pain <input type="checkbox"/> Headache <input type="checkbox"/> Sore throat <input type="checkbox"/> Earache <input type="checkbox"/> Child cannot eat</p>	<p><input type="checkbox"/> Child is restless <input type="checkbox"/> Child is lethargic <input type="checkbox"/> Fever (hot body) <input type="checkbox"/> Dry tongue <input type="checkbox"/> General discomfort <input type="checkbox"/> Stuffy or runny nose <input type="checkbox"/> Sunken eyes <input type="checkbox"/> Pale skin</p>	<p><input type="checkbox"/> Fast breathing/difficulty breathing <input type="checkbox"/> Wheezing <input type="checkbox"/> Bleeding <input type="checkbox"/> Bloody stools <input type="checkbox"/> Thirst <input type="checkbox"/> Heavy breathing/gasping</p>	<p><input type="checkbox"/> Sweating <input type="checkbox"/> Chest in-drawing <input type="checkbox"/> Cough <input type="checkbox"/> Vomiting <input type="checkbox"/> Doesn't know <input type="checkbox"/> Other (specify) _____</p>
<p>6. Which medicine do you consider most effective for treating a child under five years of age with pneumonia? <i>(Listen and note down response.)</i></p>		<p>_____</p> <p><input type="checkbox"/> I don't know</p>	

MALARIA			
7. Can you tell me the symptoms that could be found in a child under five years of age with uncomplicated malaria? <i>(DO NOT READ. Listen to the responses and mark all that apply.)</i>			
<input type="checkbox"/> Convulsions/seizures <input type="checkbox"/> Frequent loose bowel movements/diarrhea <input type="checkbox"/> Abdominal pain <input type="checkbox"/> Headache <input type="checkbox"/> Sore throat <input type="checkbox"/> Earache <input type="checkbox"/> Child cannot eat	<input type="checkbox"/> Child is restless <input type="checkbox"/> Child is lethargic <input type="checkbox"/> Fever (hot body) <input type="checkbox"/> Dry tongue <input type="checkbox"/> General discomfort <input type="checkbox"/> Stuffy or runny nose <input type="checkbox"/> Sunken eyes <input type="checkbox"/> Pale skin	<input type="checkbox"/> Fast breathing/difficulty breathing <input type="checkbox"/> Wheezing <input type="checkbox"/> Bleeding <input type="checkbox"/> Bloody stools <input type="checkbox"/> Thirst <input type="checkbox"/> Heavy breathing/gasping	<input type="checkbox"/> Sweating <input type="checkbox"/> Chest in-drawing <input type="checkbox"/> Cough <input type="checkbox"/> Vomiting <input type="checkbox"/> Doesn't know <input type="checkbox"/> Other (specify)_____
8. Which medicine do you consider most effective for treating a child under five years of age with uncomplicated malaria? <i>(Listen and note down response.)</i>		_____ <input type="checkbox"/> I don't know	
9. What would you say are the key symptoms for distinguishing a case of severe malaria from uncomplicated malaria in children under five years of age? <i>(DO NOT READ. Listen to the responses and mark all that apply)</i>			
<input type="checkbox"/> Convulsions/seizures <input type="checkbox"/> Frequent loose bowel movements/diarrhea <input type="checkbox"/> Abdominal pain <input type="checkbox"/> Headache <input type="checkbox"/> Sore throat <input type="checkbox"/> Earache <input type="checkbox"/> Child cannot eat	<input type="checkbox"/> Child is restless <input type="checkbox"/> Child is lethargic <input type="checkbox"/> Fever (hot body) <input type="checkbox"/> Dry tongue <input type="checkbox"/> General discomfort <input type="checkbox"/> Stuffy or runny nose <input type="checkbox"/> Sunken eyes <input type="checkbox"/> Pale skin	<input type="checkbox"/> Fast breathing/difficulty breathing <input type="checkbox"/> Wheezing <input type="checkbox"/> Bleeding <input type="checkbox"/> Bloody stools <input type="checkbox"/> Thirst <input type="checkbox"/> Heavy breathing/gasping	<input type="checkbox"/> Sweating <input type="checkbox"/> Chest in-drawing <input type="checkbox"/> Cough <input type="checkbox"/> Vomiting <input type="checkbox"/> Doesn't know <input type="checkbox"/> Other (specify)_____
10. Which medicine do you consider most effective for treating a child under five years of age with severe malaria? <i>(Listen and note down response.)</i>		_____ <input type="checkbox"/> I don't know	
DIARRHEA			
11. Which medicine do you consider most effective for treating a child under five years of age with watery diarrhea? <i>(DO NOT READ. Listen and note down response.)</i>		_____ <input type="checkbox"/> I don't know	
12. What would you say are the main symptoms that would indicate a need for antibiotics for a child with diarrhea? <i>(DO NOT READ. Listen to the responses and mark all that apply.)</i>			
<input type="checkbox"/> Convulsions/seizures <input type="checkbox"/> Frequent loose bowel movements/diarrhea <input type="checkbox"/> Abdominal pain <input type="checkbox"/> Headache <input type="checkbox"/> Sore throat <input type="checkbox"/> Earache <input type="checkbox"/> Child cannot eat	<input type="checkbox"/> Child is restless <input type="checkbox"/> Child is lethargic <input type="checkbox"/> Fever (hot body) <input type="checkbox"/> Dry tongue <input type="checkbox"/> General discomfort <input type="checkbox"/> Stuffy or runny nose <input type="checkbox"/> Sunken eyes <input type="checkbox"/> Pale skin	<input type="checkbox"/> Fast breathing/difficulty breathing <input type="checkbox"/> Wheezing <input type="checkbox"/> Bleeding <input type="checkbox"/> Bloody stools <input type="checkbox"/> Thirst <input type="checkbox"/> Heavy breathing/gasping	<input type="checkbox"/> Sweating <input type="checkbox"/> Chest in-drawing <input type="checkbox"/> Cough <input type="checkbox"/> Vomiting <input type="checkbox"/> Doesn't know <input type="checkbox"/> Other (specify)_____

Knowledge of Recommended Treatments

<p>13. Can you tell me which medicine is recommended in the National Treatment Programs (Protocols) for a child under five years of age suffering from pneumonia?</p> <p style="text-align: right;"><i>Listen and write down response, then ask Question 13a.</i></p>	<p>Name(s) of medicines:</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> I don't know</p>	<p>13a. For how long should the medicines be taken?</p> <p>Duration (days):</p> <p>_____</p> <p>_____</p>
<p>14. What do you do when you have a case of a child under five years of age with pneumonia?</p> <p style="text-align: right;"><i>Listen and write down response.</i></p>	<p><input type="checkbox"/> I make a referral</p> <p><input type="checkbox"/> Nothing</p> <p><input type="checkbox"/> Other (specify) _____</p>	
<p>15. Can you tell me which medicine is recommended in the National Treatment Programs (Protocols) for a child under five years of age suffering from malaria?</p> <p style="text-align: right;"><i>Listen and write down response, then ask Question 15a.</i></p>	<p>Name(s) of medicines:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> I don't know</p>	<p>15a. For how long should the medicines be taken?</p> <p>Duration (days):</p> <p>_____</p> <p>_____</p>
<p>16. What do you do when you have a case of a child under five years of age with malaria?</p> <p style="text-align: right;"><i>Listen and write down response.</i></p>	<p><input type="checkbox"/> I make a referral</p> <p><input type="checkbox"/> Nothing</p> <p><input type="checkbox"/> Other (specify) _____</p>	
<p>17. Can you tell me which medicine is recommended in the National Treatment Programs (Protocols) for a child under five suffering from watery diarrhea?</p> <p style="text-align: right;"><i>Listen and write down response, then ask Question 17a.</i></p>	<p>Name(s) of medicines:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> I don't know</p>	<p>17a. For how long should the medicines be taken?</p> <p>Duration (days)::</p> <p>_____</p> <p>_____</p>
<p>18. What do you do when you have a case of a child under five years of age with watery diarrhea?</p> <p style="text-align: right;"><i>Listen and write down response.</i></p>	<p><input type="checkbox"/> I make a referral</p> <p><input type="checkbox"/> Nothing</p> <p><input type="checkbox"/> Other (specify) _____</p>	

<p>19. Could you tell me which medicine is recommended in the National Treatment Programs (Protocols) for a child under five years of age suffering from bloody diarrhea?</p> <p align="center"><i>Listen and write down response, then ask Question 19a.</i></p>	<p>Name(s) of medicines:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> <i>I don't know</i></p>	<p>19a. For how long should the medicines be taken?</p> <p>Duration (days):</p> <p>_____</p> <p>_____</p>
<p>20. What do you do when you have a case of a child under five years of age with bloody diarrhea?</p> <p align="center"><i>Listen and write down response</i></p>	<p><input type="checkbox"/> I make a referral</p> <p><input type="checkbox"/> Nothing</p> <p><input type="checkbox"/> Other (specify) _____</p>	

Availability and Access to Medicines

Say: I'm going to ask you questions about the availability of certain medicines. I would like to know if you currently have them available. If you don't know or don't recognize the name of any of the medicines mentioned, please tell me.

Read the name of the medicine shown in the first column and ask QUESTION 21. If the person does not recognize the name, give the other names of this medicine appearing on the list to see if the person is able to recognize any of them. If the respondent still does not recognize the medicine, move on to the next medicine listed in the column. If the medicines are part of a Health Program, skip QUESTION 22.

GENERIC MEDICINE CATEGORIES (with brand names for each generic name) <i>For each medicine in this column, complete all questions across the row before moving down to the next medicine.</i>	21. Do you currently have the medicine available? Mark with an "X". Please show me the medicine.		Say: Please show me the least-expensive medicine you have. Then ask: 22. How much does this medicine cost?
	YES	NO	Unit Price
Oral Rehydration Salts			
Co-trimoxazole (Trimethoprim-Sulfamethoxazole), 20/100 mg, tablets <i>Bactrim, Mebrym, Septrim, Bacterol</i>			
Co-trimoxazole (Trimethoprim-Sulfamethoxazole), 40/200 mg, syrup <i>Bactrim, Mebrym, Septrim, Bacterol</i>			
Furazolidone, 50 mg/5 ml, syrup <i>Furoxona, Enterophar, Enteroxol</i>			
Metronidazole, 250 mg/5 ml, syrup <i>Flagyl</i>			
Metronidazole, 250 mg, tablets <i>Flagyl</i>			
Amoxicillin, 125 mg/5 ml, syrup <i>Velamox, Amoxidin, Amoxil, Magnimox</i>			
Amoxicillin, 250 mg, tablets <i>Velamos, Amoxidin, Amoxil, Magnimox</i>			
Sulfadoxine/pyrimethamine, 500/25 mg, tablets <i>Fansidar</i>			
Artesunate, 50 mg, tablets			
Mefloquine, 250 mg, tablets			
Chloroquine, tablets, 150 mg <i>Aralen</i>			
Primaquine, 7.5 mg, tablets			
Primaquine, 15 mg, tablets			
Quinine, 300 mg, tablets			
Salbutamol, 2 mg/5 ml, syrup <i>Ventolin, Salbutol</i>			
Salbutamol, 100 mcg, inhaler <i>Ventolin, Butotal</i>			
Loperamide, 2mg, tablets, <i>Donafan, Toban, Imodium</i>			
Metamizole, 1 g/2 ml, ampoules, <i>Antalgin, Novalgine, Phenalgin</i>			

<p>Say: At times you may recommend medicines for certain conditions, but often customers will purchase medicines that were recommended to them by other people, or for other reasons. We would like to know which medicines are most often sold here.</p>	
<p>23. Could you tell me which medicine people most often buy or receive for a child under five years of age with a cold?</p> <p style="text-align: right;"><i>Write the name of the medicine on the line in the box to the right..</i></p>	<p>Name of medicine _____</p> <p>Form _____</p> <p><input type="checkbox"/> Doesn't know or doesn't remember</p> <p>Generic name: _____</p> <p><i>To be completed by the supervisor</i></p>
<p>24. Could you tell me which medicine most people buy or receive for a child under five years of age with pneumonia?</p> <p style="text-align: right;"><i>Write the name of the medicine on the line in the box to the right.</i></p>	<p>Name of medicine _____</p> <p>Form _____</p> <p><input type="checkbox"/> Doesn't know or doesn't remember</p> <p>Generic name: _____</p> <p><i>To be completed by the supervisor</i></p>
<p>25. Could you tell me which medicine most people buy or receive for a child under five years of age with malaria?</p> <p style="text-align: right;"><i>Write the name of the medicine on the line in the box to the right.</i></p>	<p>Name of medicine _____</p> <p>Form _____</p> <p><input type="checkbox"/> Doesn't know or doesn't remember</p> <p>Generic name: _____</p> <p><i>To be completed by the supervisor</i></p>
<p>26. Could you tell me which medicine most people buy or receive for a child under five years of age with watery diarrhea?</p> <p style="text-align: right;"><i>Write the name of the medicine on the line in the box to the right.</i></p>	<p>Name of medicine _____</p> <p>Form _____</p> <p><input type="checkbox"/> Doesn't know or doesn't remember</p> <p>Generic name: _____</p> <p><i>To be completed by the supervisor</i></p>
<p>27. Could you tell me which medicine most people buy or receive for a child under five years of age with bloody diarrhea?</p> <p style="text-align: right;"><i>Write the name of the medicine on the line in the box to the right.</i></p>	<p>Name of medicine _____</p> <p>Form _____</p> <p><input type="checkbox"/> Doesn't know or doesn't remember</p> <p>Generic name: _____</p> <p><i>To be completed by the supervisor</i></p>

Prescribing, Dispensing, Recommending Appropriate Medicines or Referring the Patient

28. What do you explain to clients about the medicine while you are dispensing/giving it to them? (DO NOT READ. Listen to the responses and mark all that apply.)	<input type="checkbox"/> Name of the medicine <input type="checkbox"/> What it is indicated for <input type="checkbox"/> How much to take <input type="checkbox"/> How many days to take it <input type="checkbox"/> Side effects <input type="checkbox"/> Only dispenses/nothing <input type="checkbox"/> Other (specify) _____
--	--

Say: **That was my final question. Thank you very much for your time. End the interview.**
 Record the time the interview ended, then complete the final questions regarding the quality of dispensing.

Survey End Time:

Observed Dispensing Practices

<i>If any clients came to purchase medicines during the interview, note down how the medicines were dispensed to these clients and complete this section.</i>	
29. Medicines were dispensed to one or more clients during the interview.	<input type="checkbox"/> Yes <input type="checkbox"/> No STOP HERE
<i>If the answer was yes, complete the following section on dispensing practices.</i>	
30. Tablets were dispensed in the manufacturer's original packaging.	<input type="checkbox"/> Yes GO TO QUESTION 32 <input type="checkbox"/> No GO TO QUESTION 31
31. What type of packaging was used to dispense these tablets or capsules? (Mark all that apply.)	<input type="checkbox"/> Small bottles with lids <input type="checkbox"/> Bottles <input type="checkbox"/> Resealable plastic bags (mini-grips) <input type="checkbox"/> Open plastic bags <input type="checkbox"/> Paper bags <input type="checkbox"/> Folded paper wrapping <input type="checkbox"/> Other (Specify) _____
32. Several types of tablets were dispensed in the same package.	<input type="checkbox"/> Yes <input type="checkbox"/> No
33. The dispenser gave the client verbal instructions on how to take the medication.	<input type="checkbox"/> Yes <input type="checkbox"/> No
34. The dispenser asked the client to repeat the instructions on how to use the medication.	<input type="checkbox"/> Yes <input type="checkbox"/> No

ANNEX 6. HOUSEHOLD SURVEY INDICATORS

Characteristics of the sample	
1	Age of children in sample
2	Percentage of male/female children in the sample
Caregiver recognizes symptoms and decides to seek treatment	
3	Percentage of respondents whose child had a cough, fast breathing, fever/hot body, chills, headache, convulsions/seizures, watery diarrhea, bloody diarrhea
4	Percentage of respondents who thought their child's illness was very serious, somewhat serious, not serious
Caregiver seeks timely care from an appropriate source	
<i>Treatment-seeking behavior and source of care/medicine</i>	
5	Percentage of respondents whose child had fever or hot body, chills, or headache and sought care/medicines from a source outside the home
6	Percentage of respondents whose child had convulsions or seizures and sought care/medicines from a source outside the home
7	Percentage of respondents whose child had fast breathing and sought care/medicines from a source outside the home
8	Percentage of respondents whose child had bloody diarrhea and sought care/medicines from a source outside the home
9	Percentage of respondents who sought care from a source outside the home and went to category X as the first source of care (of those respondents whose children had fever/hot body, chills, or headache)
10	Percentage of respondents who sought care from a source outside the home and went to category X as the first source of care (of those respondents whose children had convulsions or seizures)
11	Percentage of respondents who sought care from a source outside the home and went to category X as the first source of care (of those respondents whose children had fast breathing)
12	Percentage of respondents who sought care from a source outside the home and went to category X as the first source of care (of those respondents whose children had bloody diarrhea)
13	Percentage of respondents who sought care from a source outside the home and went to an appropriate provider as the first source of care (of those respondents whose children had fever or hot body, chills, or headache)
14	Percentage of respondents who sought care from a source outside the home and went to an appropriate provider as the first source of care (of those respondents whose children had convulsions or seizures)
15	Percentage of respondents who sought care from a source outside the home and went to an appropriate provider as the first source of care (of those respondents whose children had fast breathing)
16	Percentage of respondents who sought care from a source outside the home and went to an appropriate provider as the first source of care (of those respondents whose children had bloody diarrhea)
<i>Timeliness of Treatment-Seeking</i>	
17	Percentage of respondents whose child had fever/hot body, chills, or headache and sought outside care on the same day or the day following the onset of fever, chills, headache, or hot body
18	Percentage of respondents whose child had convulsions or seizures and sought outside care on the same day or the day following the onset of convulsions or seizures
19	Percentage of respondents whose child had fast breathing and sought outside care on the same day or the day following the onset of fast breathing

20	Percentage of respondents whose child had diarrhea and reported that they gave the child more liquids than he/she normally drinks on the same day as the onset of diarrhea (including ORS, homemade rehydration solution, salt and sugar solution, and/or breast milk)
Caregiver obtains appropriate medicines	
	<i>Awareness of first-line medicines</i>
21	Percentage of respondents who had heard of the first-line antimalarial medicine
22	Percentage of respondents who had heard of the first-line antibiotic for pneumonia
23	Percentage of respondents who had heard of the first-line antibiotic for bloody diarrhea
24	Percentage of respondents who had heard of Oral Rehydration Salts
	<i>Availability of medicines</i>
25	Percentage of respondents who had ORS in their home
26	Percentage of respondents who had an antimalarial medicine in their home
27	Percentage of respondents who say they are always able to obtain antimalarial medicines in the area where they live
28	Percentage of respondents who say they are always able to obtain the first-line antibiotic for pneumonia in the area where they live
29	Percentage of respondents who say they are always able to obtain the first-line antibiotic for bloody diarrhea in the area where they live
30	Percentage of respondents that say they are always able to obtain ORS in the area where they live
	<i>Source of treatment/medicine</i>
31	Percentage of all antimalarial medicines that were already present in the home or that were obtained from category X (of all antimalarials used)
32	Percentage of all antibiotics that were already present in the home or that were obtained from category X (of all antibiotics used)
33	Percentage of all ORS treatments that were already present in the home or that were obtained from category X (of all ORS treatments used)
34	Percentage of medicines obtained on the recommendation of oneself, a health worker at a facility, pharmacist/pharmacy attendant, store attendant, dispensary attendant, neighbor, friend, etc.
	<i>Overall medicine treatment</i>
35	Percentage of respondents whose child did not receive medicines (of children with fever, convulsions, fast breathing, or bloody diarrhea)
36	Percentage of respondents whose child received any type of antibiotic
37	Percentage of respondents whose child received an injection
Caregiver correctly administers appropriate medicine	
	<i>Administers first-line medicines</i>
38	Percentage of respondents whose child had fever or hot body, chills, or headache and took the first-line antimalarial medicine
39	Percentage of respondents whose child had fast breathing and took the first-line antibiotic for pneumonia
40	Percentage of respondents whose child had diarrhea and took ORS or homemade solution
41	Percentage of respondents whose child had bloody diarrhea and took the first-line antibiotic for bloody diarrhea
42	Percentage of respondents whose child had diarrhea and took ORS or homemade solution and the first-line antibiotic for bloody diarrhea

	<i>Administers inappropriate medicines</i>
43	Percentage of respondents whose child had diarrhea and took any antidiarrheal medicine
44	Percentage of respondents whose child had diarrhea (nonbloody) and took any antibiotic
45	Percentage of respondents whose child had a cough without fast breathing and took any antibiotic
	<i>Follows correct dose/duration regimen</i>
46	Percentage of first-line antibiotics for pneumonia that were taken for too short, too long, or the correct period of time
47	Percentage of first-line antibiotics for bloody diarrhea that were taken for too short, too long, or the correct period of time
Health worker/medicine provider	
	<i>Appropriate Information/Instructions/Labeling</i>
48	Percentage of medicines dispensed in appropriate packaging (original manufacturer's container)
49	Percentage of medicines that were properly labeled with the following information: medicine name, dosage, frequency, and duration of use.

ANNEX 7. PROVIDER SURVEY INDICATORS

Characteristics of the sample	
1	Category of medicine outlet
2	Location of outlet (urban/rural)
3	Distance/travel time from the nearest health facility
4	Level of training of the respondent
Health worker/medicine provider has appropriate medicines available in stock at a reasonable cost	
	<i>Availability of appropriate medicines</i>
5	Percentage of medicine outlets with a specific first-line medicine in stock
6	Percentage of medicine outlets with all specific first-line medicines in stock
7	Percentage of medicine outlets with a specific second-line medicine in stock
8	Percentage of medicine outlets with specific antidiarrheal medicines in stock
9	Percentage of medicine outlets with first-line antibiotic tablets for pneumonia in stock but not syrup
10	Percentage of medicine outlets with first-line antimalarial tablets available but not syrup
11	Percentage of medicine outlets with second-line pneumonia medicines in stock but not first-line pneumonia medicines
12	Percentage of medicine outlets with antidiarrheals in stock but not ORS
13	Percentage of medicine outlets with second-line antimalarials in stock but not first-line antimalarials
	<i>Affordability of appropriate medicines</i>
14	Average cost of first-line antibiotic recommended for pneumonia in syrup form
15	Value of the average cost, expressed in work days, of purchasing the first-line antibiotic in syrup form to treat pneumonia
16	Average cost of the first-line antibiotic recommended for bloody diarrhea in syrup form
17	Average cost of the second-line antibiotic recommended for pneumonia in syrup form
18	Average cost of the second-line antibiotic recommended for pneumonia in tablet or capsule form
19	Average cost of the first-line antimalarial recommended for malaria in syrup form
20	Value of the average cost, expressed in work days, of purchasing the first-line antimalarial in syrup form to treat malaria
21	Average cost of the first-line antimalarial recommended for malaria in tablet form
22	Value of the average cost, expressed in work days, of purchasing the first-line antimalarial in tablet form to treat malaria
23	Average cost of the second-line antimalarial recommended for malaria in syrup form
24	Average cost of the second-line antimalarial recommended for malaria in tablet form
25	Average cost of the ORS treatment recommended for diarrhea
26	Value of the average cost, expressed in work days, of purchasing ORS to treat diarrhea

Health worker/medicine provider correctly assesses symptoms	
	<i>ARI (non-pneumonia) in children</i>
27	Percentage of respondents who mentioned an antibiotic for ARI (non-pneumonia)
28	Percentage of respondents who mentioned fast breathing or chest in-drawing as the primary symptoms that distinguish pneumonia from the common cold
29	Percentage of respondents who mentioned an antibiotic for pneumonia symptoms in children
30	Percentage of respondents who mentioned a first-line antibiotic for treating pneumonia
31	Percentage of respondents who mentioned an injectable medicine for treating pneumonia
	<i>Malaria in children</i>
32	Percentage of respondents who mentioned fever with convulsions as a sign that distinguishes uncomplicated malaria from severe malaria
33	Percentage of respondents who mentioned an antimalarial medicine for children with symptoms of malaria
34	Percentage of respondents who mentioned an injection to treat symptoms of malaria in children
	<i>Diarrhea in children</i>
35	Percentage of respondents who mentioned bloody stools as a primary symptom to distinguish a form of diarrhea that would respond to antibiotics
36	Percentage of respondents who mentioned ORS for children with diarrhea
37	Percentage of respondents who mentioned an antidiarrheal medicine for children with diarrhea
38	Percentage of respondents who mentioned an antibiotic to treat children with nonbloody diarrhea
Health worker/medicine provider prescribes, dispenses, or recommends an appropriate medicine or refers the patient: Knowledge of appropriate treatment for symptoms reported	
39	Percentage of respondents who knew the medicines recommended for pneumonia in children
40	Percentage of respondents who knew the correct duration of treatment with the medicines recommended for pneumonia
41	Percentage of respondents who knew the antimalarials recommended for malaria in children
42	Percentage of respondents who knew the correct duration of treatment with antimalarials in children
43	Percentage of respondents who knew the medicine recommended in the Protocols for diarrhea (nonbloody) in children
44	Percentage of respondents who knew the medicine recommended for bloody diarrhea in children
45	Percentage of respondents who knew the duration of treatment with a medicine recommended for bloody diarrhea
Health worker/medicine provider prescribes, dispenses or recommends an appropriate medicine or refers the patient: Most commonly sold or dispensed medicines	
46	Percentage of respondents who mentioned the first-line medicine in the Protocols as the most commonly sold or dispensed for pneumonia
47	Percentage of respondents who mentioned they would refer children with symptoms of pneumonia
48	Percentage of respondents who did not mention the first-line medicine in the Protocols as the most commonly sold or dispensed for treating malaria
49	Percentage of respondents who mentioned they would refer children with symptoms of malaria
50	Percentage respondents who mentioned ORS as the medicine most commonly sold or dispensed for treating watery diarrhea

51	Percentage of respondents who mentioned they would refer children with symptoms of watery diarrhea
52	Percentage of respondents who mentioned the first-line medicine in the STGs as the medicine most commonly sold or dispensed for treating bloody diarrhea
53	Percentage of respondents who mentioned they would refer children with symptoms of bloody diarrhea
Health worker/medicine provider provides appropriate information/instructions/advice/labeling	
54	Percentage of respondents who reported that they explain the instructions, dose, duration of treatment, and side effects when dispensing medication
55	Percentage of medicine providers who give verbal instructions when dispensing or delivering medicines
56	Percentage of providers who verify that customers have understood how they should administer the medicines

