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A Francophone Manual for Acute Lower Respiratory Infection Interventions in Developing Countries

Yvette Kimberly Wild

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A Francophone Manual for Acute Lower Respiratory Infection Interventions in Developing Countries

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B.S., Brown University, 1999
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A Thesis
Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Public Health at the University of Connecticut 2006
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A Francophone Manual for Acute Lower Respiratory Infection Interventions in Developing Countries

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University of Connecticut
2006
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ABBREVIATIONS

AIDS: Acquired Immunodeficiency Syndrome
ALRI: Acute Lower Respiratory Infection
ARC: American Red Cross
ARI: Acute Respiratory Infection
AURI: Acute Upper Respiratory Infection
BRAC: Bangladesh Rural Advancement Committee
CDC: Centers for Disease Control
CHW: Community Health Worker
IMCI: Integrated Management of Childhood Illness
HHF: Haitian Health Foundation
HIV: Human Immunodeficiency Virus
LPN: Licensed Practical Nurse
NGO: Non-Governmental Organization
PAHO: Pan American Health Organization
PHC: Primary Health Care
USAID: United States Agency for International Development
WHO: World Health Organization
INTRODUCTION

Pneumonia is the leading cause of mortality in children, resulting in 2 million deaths of children under 5 each year (WHO, 1998). The majority of deaths occur in developing countries with limited resources and trained personnel. The best way to reduce mortality is to provide effective and prompt assessment and treatment.

Community Health Workers (CHWs) have been used to implement community-based strategies in developing countries. In 1982, the World Health Organization (WHO) and United Nations International Children’s Emergency Fund (UNICEF) developed a community-based Acute Respiratory Infection (ARI) protocol for CHWs.

CHW training has been standardized to encourage quality and consistency of care for children with Acute Lower Respiratory Infections (ALRI). However, there is a further need for a manual on ALRI management in community settings. The manual’s objective is to be a written resource for CHW trainers to guide CHWs in assessing, classifying and treating ALRI.

This thesis describes the process of developing a CHW ALRI training manual. It begins with the impact of ALRI from both global and local perspectives and reviews how community-based and CHW level health ALRI interventions have evolved to prevent the fatal consequences of ALRI. Despite the development of ALRI protocols and strategies, there is a continued demand for community-based initiatives and resources to diagnose and treat ALRI in remote areas of developing countries. This manual provides a unified and comprehensive resource for CHW trainers and organizations to implement ALRI programs and a protocol implementation chapter for CHWs.
The Haitian Health Foundation (HHF) in Jeremie, Haiti, developed a community-based ALRI prevention strategy to train CHWs to recognize and treat ALRI in 1993. HHF was chosen to serve as a model for the manual based on its extensive experience implementing ALRI treatment, impact on pneumonia deaths, success in implementing public health outreach programs, recognition for programmatic excellence by international agencies and long-term relationship with the University of Connecticut. The author was in Jeremie for a two month period in 2003 conducting research on maternal mortality and was there for one month for this thesis. The previous experience provided familiarity with HHF and Haitian culture. The thesis month was used for data collection and piloting of the manual. The thesis provides a description of data collection and analysis methods. Qualitative data and staff recommendations were combined to create a comprehensive CHW training manual. The final manual details standardized CHW training to assess ALRI, with close supervision and feedback as well as community engagement. The final discussion comments on the implications of the data and manual development. Discussion points include study challenges, lessons learned, and future directions for this manual and for community-based ALRI strategies in general. Recommendations for further development and application of the CHW training manual are made.

The written manual is provided in Appendix F. It documents strategies and guidelines for program implementation, creates a sustainable resource for ALRI interventions and serves as a template for other manuals for community based treatment programs. CHWs and communities must work to improve ALRI recognition, care-seeking behaviors, and appropriate treatment. Together, well-trained and well-supervised
CHWs can act with communities to decrease deaths from preventable illnesses in the developing world.
BACKGROUND

Scope of the Problem

ARI is the leading cause for mortality in children under age 5 around the world (WHO, 1997). Every year, approximately 2 million children under 5 years of age die from pneumonia, which is responsible for 80-90% of all deaths from ARI (Benguigui, 1998). Pneumonia is an ALRI, a subgroup of ARIs. ALRI is responsible for most ARI mortality in the developing world. In this thesis, ARI and ALRI are used interchangeably, both referring to pneumonia as the most fatal ARI/ALRI. The most recent information indicates that pneumonia is responsible for over 19% of deaths among children around the world (WHO). Most of these deaths occur in developing countries and are bacterial in etiology. The Pan American Health Organization (PAHO) 1994 estimates indicate that mortality from ARI in children under 5 ranged from 30 deaths per 100,000 live births in the United States of America to 3,072 in Haiti; one of every four deaths in children under 5 in Haiti is due to ARI. The Dominican Republic, which shares the island of Hispaniola with Haiti, has 1/6 of that ARI-associated mortality rate (Figure 1) (PAHO, 1995).

![Mortality Rate (Children Under 5 Years)](image)

Pan American Health Organization, 1995

**Figure 1**
Other preventable and common causes of death include diarrhea, malaria, measles and injuries (Figure 2). The high rates of ALRI mortality in developing countries are in stark contrast with the situation in the industrialized regions of the world (Canada and the United States), where pneumonia accounts for under 2% of the deaths in children under 1 and 3% of the deaths in children between the ages of 1 and 4 (PAHO, 1995).

http://www.who.int/child-adolescent-health/Overview/Child_Health/map.htm

**Figure 2**

**Etiology of Disease**

Bacteria are the cause of the majority of ALRI mortality - *S. pneumoniae* and *H. influenzae* are the dominant pathogens in third world communities.
*Streptococcus pneumoniae*

S. pneumoniae kills approximately 1 million children under 5 years of age every year. Pneumococci are transmitted by direct contact with respiratory secretions from patients. Although transient nasopharyngeal colonization is the normal outcome of exposure to pneumococci, disease results from bacteremia following penetrating of the mucosal layer in susceptible children.

*Haemophilus influenzae*

*Haemophilus influenzae* is the second significant cause of bacterial pneumonia in the developing world. Transmission is by direct contact or by inhalation of respiratory tract drop. One of the most striking features of *H. influenzae* infections is the relationship between age and susceptibility. Invasive infections predominate during the age of relative humoral immunodeficiency (3 months to 3 years). The incidence of pneumonia is higher in children younger than 5 years of age, with a peak between 4 and 7 months of age.

*H influenzae type B* (*Hib*) is the most severe serotype of *H. Influenzae*. *Hib* accounts for over 95% of *H influenzae* that is invasive in children and half of invasive diseases from bacteremia, meningitis, cellulitis, epiglottitis, septic arthritis, pneumonia and empyema.

Beyond the general transmission of pneumonia in developing countries, a number of social and economic factors also contribute to the high rates of infectious diseases. Poverty, lack of access to health care, human migration patterns, new infectious agents and changing environmental and development factors contribute to the expanding impact of infectious disease. Overcrowded and poor living conditions make those living in
poverty especially vulnerable to communicable diseases. Poor nutrition, harmful
traditional practices and compromised immune systems are key risk factors for several
major causes of death (WHO, 1990). Malnutrition underlies most diseases and increases
the risk of dying from ALRI as well as from other diseases (Figure 3) (PAHO, 1995).
Illness and death from ALRI are particularly tragic because they are largely preventable
and treatable. The repercussions of these diseases go beyond morbidity and mortality
statistics. Poverty not only characterizes the circumstances in which infectious diseases
thrive, but the cycle of poverty is exacerbated by lost productivity and health-care costs.
ALRI morbidity and mortality affect individual families, communities and countries.

![An uncertain divide under five deaths by cause, 1999](www.childinfo.org)

**Figure 3**

**ALRI Treatment**

When pneumonia is diagnosed, pneumonia treatment with appropriate medication
should begin immediately. WHO recommends Cotrimoxazole as an inexpensive
pneumonia medication that attacks *Streptococcus pneumoniae* and *Haemophilus
influenzae* (WHO). However, widespread and inappropriate use of antibiotics has resulted
in antibiotic resistance. In areas where Cotrimoxazole does not work, the WHO considers
Amoxicillin in children with mild pneumonia (WHO). In Haiti, Cotrimoxazole treatment
costs private NGOs 45 Gourdes ($1 USD). However, some NGOs subsidize the cost of Cotrimoxazole for children in remote areas. Therefore, some families pay only 7 Gourdes ($0.15 USD) for a treatment. In contrast, Amoxicillin can cost up to 80 Gourdes ($2 USD) for a treatment and is often not subsidized (HHF, 2005).

If pneumonia is ruled out based on the lack of the above signs, the caretaker would not be given medication and instead receives instructions for home care and palliative treatment. Developing countries must develop strategies to regulate the appropriate use of antibiotics so that inexpensive and effective treatment is available to all children.

**Community-Oriented Primary Health Care**

Over the past 40 years, developing countries have successfully developed a model of primary health care promoted by the WHO. This is based on the idea of "essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain" (WHO, 1978). This model differs fundamentally from the primary care system in developed countries, which relies more on technical and curative care than the community oriented approach.

A community-oriented primary health care strategy integrates preventive and curative aspects of health care through a decentralized approach that involves the community in planning, providing and maintaining the health services. The training of health personnel is based on the health needs of the community rather than using the
health services in developed countries as a model. In particular, greater use is made of CHWs who assess patients in their home environment. CHWs may provide services to their own home communities or travel to neighboring areas to assess others. The following section of this thesis addresses the role of the CHW in detail. The success of the primary health care strategy hinges on the support of the community and the work of CHWs to provide prompt medical assessment and treatment in the field. A large number of community-based programs have been successfully implemented in the developing world.

The Bangladesh Rural Advancement Committee (BRAC) project is one of the first successful models of CHWs providing frontline care in communities and referring to clinics and hospitals (Hadi, 2003). From the early 1970s until today, BRAC has used female CHWs, known as Shastho Shebika, to provide the majority of health services in its general health and tuberculosis control program. CHWs are chosen by the community and initially receive 21 days training followed by monthly refresher sessions. These CHWs treat the “essential ten diseases”: diarrhea, dysentery, goiter, scabies, anemia, ringworm, intestinal worms, cold, fever and stomatitis. If CHWs see children with malaria or pneumonia, they refer caregivers to the government of Bangladesh or BRAC-run health facilities. When compared to a tuberculosis government program in Bangladesh that does not engage CHWs, the total costs for the BRAC program were less. In addition, more patients in the CHW program recovered from tuberculosis and fewer died (Hadi, 2003). CHWs can reduce costs and save lives.
The Community Health Worker

Community-based health interventions staffed by CHWs are successful in reducing disease rates and health care costs (Ro et al., 2003). CHWs are generally government-appointed local health providers, trained in both theory and skills. The required level of education to become a CHW is often minimal and previous health training is not required. Each country’s government dictates the specific responsibilities, level of training and area of service for their health workers. The service area (geographic units, number of people) for a CHW varies between countries and organizations. The level of CHW training and skills depends on the specific government’s standards for education, CHW monitoring and community needs.

The theoretical training analyzes local and national health conditions to identify the most prevalent illnesses and health risks, understand why they occur and describe the primary care measures and referrals required. Practical training includes learning to perform primary health care tasks such as providing care to newborns, treating fevers, vaccinations, growth monitoring and preparation of hydration salts. CHWs provide education and support to their local community. Their goal is twofold: provide essential and general information to the local community and refer complex cases. Each community-based program is unique and it is important to understand the range of services that CHWs perform. The efforts of the CHWs must be tailored to local resources, health needs and the specific population.

CHWs serve their communities. They offer culturally appropriate, economically sound services that are directly relevant to health care and social service needs. CHWs connect community members to appropriate health care providers, promote preventive
health care measures, educate on early signs and symptoms of disease and offer support to patients and families. CHWs make home visits and conduct health outposts at regular intervals to provide routine screening to community members. CHWs educate and mobilize communities around health and social concerns such as dehydration, child care, women’s health and sanitation.

Serving as CHWs allows members of local villages to “give back” to their communities, while educating and empowering themselves. Though most CHW are given minimal wages by the government, some organizations provide a salary that is commensurate with training and services provided. These organizations often have higher worker retention rates. CHWs provide a critical link between underserved and distant communities and the health care and social service systems intended to serve them (Ro et al., 2003). By valuing CHWs, communities can be transformed and create positive societal change and health education.

Community Responsibility

Trained CHWs prevent ALRI-related deaths, but only if the community first recognizes the signs of a child with possible ALRI. The community is defined as any person responsible for the direct or indirect health of children. This includes parents, relatives, neighbors, friends and teachers. At times, an entire village takes responsibility for the health of each of its children. This may take the form of a village health committee or other formal mechanisms decided by the community. The community is responsible for attending educational sessions, learning to identify danger signs and mobilizing for prompt treatment from a CHW. Together, CHWs and caregivers can apply
community-based case management of pneumonia. Delays in initial care-seeking can be fatal, especially for young infants. The basis of an ALRI program is this community involvement.

**ALRI Case Management**

Extensive effort was invested to develop a standardized CHW case management protocol by the WHO ARI Control Programme in 1982 (WHO, 1982), resulting in a training module, including the skills and knowledge required for CHWs. Since most ARI mortality in young children is due to pneumonia, the WHO/ARI case management strategy emphasizes case detection and treatment of pneumonia. In this algorithm, CHWs perform a targeted physical examination, including determination of chest indrawing and respiratory rate using a timer. Pneumonia is diagnosed clinically on the basis of cough with fast breathing or chest indrawing. The CHW then uses a standardized Flow Chart to classify the severity of the illness and make treatment decisions, including the use of antibiotics with signs of pneumonia. Death from pneumonia can occur rapidly—within 2 to 3 days. Therefore, early treatment with antibiotics can reduce mortality from pneumonia. The CHW may also monitor response to treatment by following the child at home. If the child has severe pneumonia or a severe illness, a referral is made to a health facility for oxygen, parenteral antibiotics, supportive care and monitoring beyond what can be provided in the community by the CHW (WHO, 1992).

Introduction of CHWs to the ARI guidelines and dissemination of ARI information are the basic principles of the ARI control program. WHO and UNICEF
issued a joint statement in May 2004 in support of this model (WHO/UNICEF 2004b). CHW diagnosis and treatment of pneumonia has proven effective in decreasing mortality.

**IMCI**

In 1996, WHO and UNICEF developed the Integrated Management of Childhood Illness (IMCI) strategy to reduce child mortality due to preventable and treatable illnesses such as pneumonia, diarrhea, malaria, measles and malnutrition, in 1996 (WHO 1999). IMCI is an integrated approach to health focusing on detection, prevention and treatment of childhood killers, recognizing that more than one underlying cause often contributes to an illness. IMCI strategies are most often implemented by nurses and physicians at the facility level although they can be implemented by CHWs with sufficient training and skills. Specific to pneumonia, IMCI uses systematic guidelines for detection and referral utilizing the WHO ARI protocol, but also factors in other conditions such as malnutrition, diarrheal disease and vaccinations for a more comprehensive intervention. Standardized IMCI guidelines for CHWs have not been widely accepted by national governments and the standards of care for community-based CHWs may be limited.

**Implementing an ALRI Program**

The manual developed as part of this thesis is intended to guide organizations in implementing strategies to decrease mortality associated with ALRI in children under 5. The following 4 step approach to implementing an ALRI case management program is a combination of literature searches (Benguigui 1998) and HHF recommendations.
1. **Describe the geographic area for the strategy.**

The first step is to establish the geographic area in which the activities will be carried out. This will establish the total population to be covered as well as the population of children under the age of 5 years and its distribution in the following age groups: 2 weeks – 2 months, 2-11 months and 1-5 years. It is helpful to make a map of the area to identify where the population is concentrated, transportation and communication routes, and geographic features.

2. **Describe the current status of the ALRI problem in the area.**

Before beginning to plan, it is important to know the magnitude of the ALRI problem in the area of application, especially with regard to mortality, morbidity and quality of care. Information should be collected on the number of deaths from pneumonia in different age groups, number of hospitalizations of under-5 children for pneumonia or other ALRIs, number of health service visits for pneumonia and proportion of cases in which antibiotics were prescribed for treatment. An ethnographic survey can determine the local context of ALRI etiology, diagnosis and treatment (traditional and non-traditional therapies). Such studies provide baseline information if they are conducted prior to the initial of the activities.

3. **Identify the health care structure that will be used.**

Once the area of application and the ALRI characteristics have been determined, the next step is to identify the structure available for implementation of the control strategies. The structure includes all resources or policies in place by the government
and all health providers participating in ALRI control, including hospitals, health centers, health posts and CHWs.

Close examination of the CHW role and the range of services permitted by the government (such as ability to dispense pneumonia medicines and refer to clinics and hospitals). For the ALRI protocol to be implemented, CHWs must be approved to administer Cotrimoxazole (pneumonia medication). This may require a policy change or approval of a pilot program by the government.

A list of health care service sites should be made and referral patterns determined. Identifying the available health care structure also includes determining the number and category of health personnel involved in the planning and supervision of strategy application.


The implementation of ALRI control strategies in a selected area should be carried out in a sequential and organized manner to ensure efficient achievement of the proposed objectives. It is necessary to acquire funding, train CHWs, provide drugs for treatment and supervise CHWs in order to ensure effective application of the strategies.

It is also important to partner with other organizations serving the same community. Partnerships should be established with health centers to whom sick children will be referred, local health organizations, community groups (Mothers’ Groups, Fathers’ Groups), community leaders and religious groups. This program relies on community engagement and must be supported by the community.
The management of ALRI described in the manual must be phased into the overall health strategies of the community to have maximal results. According to HHF experiences in training outside Haitian organizations, a realistic Plan of Action for implementing an ALRI protocol requires at least 6 months.

A CHW ALRI Training Course

The ALRI case management training course prepares CHWs to assess, classify and treat children with ALRI. It is important to emphasize practical training. At least 50% of the training time should be devoted to practice. The remaining time should be learning ALRI management strategies.

Course designs may vary by region. The model for this manual was the ALRI course developed by HHF. The HHF course works with a group of 20 CHWs for 5 days. Most of this takes place in a training room with a combination of interactive training and skills practice; however, there are 2 important sessions which take place in rural health posts. By the end of the program, the CHWs recognize danger signs of ALRI and use charts to assess and treat children. The course has a strong practical focus with emphasis on the skills for assessment, treatment and communication with caregivers. A detailed description of this training course can be found in Appendix A.

Data Collection and Manual Development in Haiti

HHF was chosen as the site for this thesis for several important reasons. These included the organizational experience and expertise in ALRI program implementation,
professional onsite supervision by the Public Health Program director, and the author’s previous experience in Jeremie, Haiti. Several HHF primary health outreach programs (including ALRI) have achieved recognition from the WHO and Centers for Disease Control (CDC) as a model for other community-based organizations. HHF has extensive experience in training CHWs in ALRI strategies. Dr. Bette Gebrian, the HHF Public Health Director, is an American-trained nurse, MPH and medical anthropologist, with faculty appointments in the University of Connecticut - Schools of Nursing and Medicine. HHF and the University of Connecticut have had an 18-year relationship of partnering for public health initiatives and supporting public health and medical students conducting research on projects relevant to HHF program development. The author, also a fourth year medical student, spent one month with the HHF in Jeremie, Haiti, collecting data for the training manual. The author conducted research on HHF maternal waiting home utilization for 2 months in the summer of 2003, becoming familiar with the local area and culture. Therefore, HHF was an appropriate site to collect data for a CHW ALRI Training Manual.

**Haiti**

The Republic of Haiti occupies the western third of the island of Hispaniola, which it shares with the Dominican Republic. The country is divided into nine departments ("départements"), 133 municipalities ("communes") and 561 districts ("sections communales") (PAHO, 1998) Haiti achieved independence from France two hundred years ago, but has continuously experienced political violence, instability and persistent poverty, resulting in poor health conditions.
Water supply and basic sanitation services are deficient. There are no public sewage systems. Only isolated wastewater treatment units exist. Solid waste management is a serious problem; most of the 18 water sources supplying Port-au-Prince are polluted (PAHO, 1998). Poor sanitation and poverty are even more extensive in the countryside, where sanitation and access to clean water may be completely absent. Nearly two-thirds of the country’s 8.6 million people live in rural areas and 80% survive on less than $2 USD per day (World Bank, 2004).

The major trends in the Haitian economy over the past decade indicate a steady decline in the actual gross domestic product and a net rise in unemployment (World Bank, 2004). Haiti is the poorest country in the Western Hemisphere. This is paralleled by a population growth rate of 1.8% per year and decline in per capita income from 2000-2004 (World Bank, 2004). The Haitian Institute for Statistics and Information Technology estimated the population of Haiti at 8,359,000 inhabitants in 2001 (PAHO, 1998). Children under the age of 5 years account for 15% of the total population (WHO Statistical Information System, WHOSIS, 2004).

Haiti’s children are particularly vulnerable to these poor socioeconomic conditions. Pneumonia is the second leading cause of death (diarrhea is the leading cause) of death of children under 5 years in Haiti (UNICEF, 2004). From 1998-2004, the United Children’s Emergency Fund (UNICEF) estimated 39% of children suffered from at least one episode of ARI. Of these children, only 26% had access to a health provider (UNICEF, 2004). The rate of childhood deaths from pneumonia in Haiti is the highest in the region.
Jeremie Health Situation

Jeremie is a small city surrounded by mountainous rural areas located on the Grand Anse peninsula, 270 km from the capital, Port-au-Prince. Jeremie is a town of approximately 30,000 people. Unlike much of the rest of Haiti, Jeremie and the surrounding areas are politically calm and topographically rich. People mainly depend on subsistence farming and charcoal production for their livelihood (per capita average annual income: $300 USD) (HHF). The area is geographically isolated with limited communication and transportation with Port-au-Prince and other urban centers.

Although western medicine exists in Haiti, traditional medicine continues to be a popular resource for local care – it is convenient, culturally appropriate and inexpensive. Practitioners of traditional medicine see the most common illnesses common in rural areas. The health system in Jeremie includes a combination of urban western medical facilities, traditional birthing attendants, and rural traditional and alternative folk healers such as voodoo priests, herbalists, injectionists and bonesetters. Western medical providers are a minority of health care providers. The only hospital in Jeremie is a government run hospital, St. Antoine Hospital, located in the middle of Jeremie. However, St. Antoine Hospital has virtually no equipment, supplies, or reliable basic resources (i.e., electricity, water). There is also a Mother Teresa’s Missionaries of Charity hospice in Jeremie.

There are a number of small private and public clinics that provide medical services; most of these are located in the rural areas. The government operates three clinics in the Grand Anse; these clinics are understaffed and not well supplied. HHF, a non-governmental organization established in 1987, operates a large well-stocked clinic
in Jeremie. In addition, there are 5 other clinics operated by private groups or missionaries in the surrounding rural area. These clinics are usually better supplied than the government clinics, because they are largely funded by outside donations.

The exact morbidity and mortality statistics for children are not known in Jeremie. However, based on HHF’s database, ALRI and diarrhea are the highest causes of morbidity and mortality for children under 5.

**Haitian Health Foundation**

HHF is a NGO based in Connecticut, but with its primary operation in Jeremie, Haiti. HHF was started by American volunteers in 1982. Its mission is to improve the health and well being of the poor, sick and infirm of the greater Jeremie area, with a focus on women and children. In 1987, HHF received a child survival grant from the Haiti Mission of the United States Agency for the International Development (USAID). Dr. Gebrian was a co-author on this grant and program director for training local health care workers to provide primary health care to a rural population. USAID/Haiti remains the largest single donor, contributing 30% of HHF funds. Other donor support includes churches, private individuals and foundations (Gebrian, 2005).

HHF is staffed by 180 staff members including a medical doctor, physicians in social service post medical education, nurses, LPNs, 53 CHWs, health educators, a pharmacist, lab and radiology technicians and administrative staff. All but six of the staff are Haitian, including the medical director (Gebrian, 2005). Today’s permanent staff is supplemented by many physicians, nurses and dentists who travel to Haiti at their own expense to volunteer their services.
HHF currently services approximately 200,000 people. Although its clinic and offices are located in Jeremie, HHF provides services in isolated mountain villages within the Grand Anse peninsula. These services include basic primary health care, referral and community health education. Community participation and engagement is part of all HHF efforts. Examples of specific HHF projects include a breast feeding promotion program for women, growth monitoring, counseling for children, rehydration, parasite eradication, anemia treatment and a planned iodine deficiency disease program. HHF utilizes CHWs to assist rural populations in the Grand Anse with their health care issues.

**Haitian Health Foundation CHWs**

In each HHF village, local health committees and CHW candidates are chosen and are established by community participation. The local health committee acts to:

1. Supervise the CHW in the non-technical aspects of his or her work such as the scheduling of home visits,
2. Determine epidemics of disease,
3. Facilitate health-related activities such as the cleaning of drinking water sites,
4. Motivate the community to become involved in preventive health activities, and
5. Provide assistance in the transport of seriously ill people to the nearest clinic.

CHWs work with health committees to provide health and social services. CHWs in the Grand Anse are appointed by the Haitian government and attend 9 months of training on general health knowledge and skills. To be employed by HHF, CHWs are
required to be literate, full-time residents of the area with no intention of moving from the locality. HHF regularly provides additional in-service education sessions to enhance their health knowledge and skills. Current HHF CHWs have an average education at a 7th grade level (HHF, 2005). They provide the following services:

A. Vaccine Posts and Well Care

On a monthly basis, each CHW conducts an all-day vaccine post in designated rural areas with the assistance of a LPN supervisor. Neighboring communities sometimes walk many hours to attend these vaccine posts. The post is not limited to vaccines and is thus primarily a well-care day. There are separate “stations” for a variety of health services including prenatal care, vaccines for mothers and children, vitamin A supplementation, weighing of children, blood pressure and medical consultation (i.e. for ALRI).

B. Home Visits

CHWs are required to make at least one visit every three months to the homes of children under the age of 5 and pregnant women (if they are not seen at a vaccine post during that time period) in their service area. For children who are malnourished, the CHW is required to have frequent contact (every 4 to 6 weeks); if the mother does not bring the child to a vaccine post to be weighed during that time period, then the CHW must make a home visit. In addition, people feel free to bring sick children to the CHW’s home for such consultation, treatment and referral.
C. Community Education

Initially, all health education was done in home visits. In an effort to conduct education more efficiently, Mothers’ Clubs were started in each village in 1990. These clubs are composed of groups of mothers who meet with the CHW on a weekly basis. The women receive information on topics such as when and how to use oral rehydration therapy, the importance of vaccines and how to recognize pneumonia in a child. Because of low literacy, the health messages are usually communicated through songs and skits, which are easily remembered.

In addition, CHWs conduct semi-annual community-wide health education fairs on similar topics as those covered in the Mothers’ Clubs. These are day-long events that focus on a variety of topics using local villagers as theater groups. This is typically held in a church after the Sunday service and attended by 200-300 people. Health education continues during home visits for families not involved in the clubs.

D. Other CHW Activities

CHWs are also responsible for reporting all births and deaths so that the computerized data census is accurate. In addition, once every five to six years, CHWs conduct a complete census by visiting every home in their service area.

HHF charges a nominal fee for the services of CHWs, including ALRI diagnosis and treatment. While most villagers can afford to pay the small charge, the CHW pays for those that cannot out of his or her own salary. Adequate funding opportunities allow HHF to offer their CHWs an adequate salary to subsist. HHF CHWs earn approximately $60
USD per month (HHF, 2005). Some HHF CHWs earn as much as a new nurse. Because of the accessibility and affordability of HHF CHWs, residents outside of the service area may also utilize the CHW system. HHF services are available to anyone, however, only individuals within HHF’s service area receive an identification number and have their services recorded in the data system. HHF’s health outreach services are wide-spread and well-utilized.

**Haitian Health Foundation ALRI Experience**

Since 1988, HHF has been conducting child survival activities in remote villages in the Grande Anse using CHWs and LPN supervisors. In 1990, HHF was one of four international sites selected by WHO to conduct a focused ethnographic survey of explanatory models of pneumonia among rural women.

The HHF ethnographic survey explored how rural Haitians conceptualize respiratory infection – specifically “bwonch” (the local term for pneumonia) and “grip” (the local term for flu). Interviews were held with health practitioners and community members to create explanatory models of “bwonch” and “grip”. Causes, home treatments, expectations and use of health services were investigated. Mothers believed that pneumonia was caused by incomplete treatment of a previous illness and bathing in cold water. A list of identifying symptoms included cough, fever, rapid breathing and vomiting. ALRI education was low, with only 26% of mothers able to identify fast breathing associated with pneumonia in a video (HHF, 1990). A focused group discussion of health practitioners – from traditional to urban - suggested antibiotics, vitamins, antitussives and aspirin in addition to home treatment. In order to implement an
ALRI community-based protocol, it was necessary to understand the local context of ALRI, caregiver and practitioner concerns, the existing level of knowledge about ALRI in the community and the perceived need for interventions.

The WHO guides for CHWs and nurses were translated into Creole. The USAID and UNICEF-Haiti funded training was conducted by John Snow Inc. beginning with nurse supervisors and then CHWs. HHF adapted and implemented the WHO protocol in 1993, when all trained CHWs had 4 years of experience. The ALRI program involved intense training of CHWs and community education with Mothers’ groups, Fathers’ groups and local health committees. It also included traditional healers in group and individual training sessions. Another key component of the protocol was direct supervision of and feedback to CHWs by field supervisors. During 1993 though 1999, HHF field staff applied the protocol 17,000 times and each case record was entered into a database (HHF, 2005).

In 1997, the CDC evaluated HHF’s ALRI intervention program. The pneumonia-specific mortality rate for children under 5 was cut in half over a 5 year period (to 3.1/1000/year). It was noted that “the HHF program for ALRI detection and treatment is a mature and well-functioning one with a number of important strengths.” (CDC, 1997). The strengths identified were:

“Early identification of cases, ... strong community participation, ... Mothers’ and Fathers’ Groups were well-educated to the danger signs of ALRI, ... appropriate clinical evaluation is performed by CHWs, ... careful explanation of diagnoses and treatment to mothers, ... and supervision and monitoring of record-keeping is well-institutionalized (CDC, 1997).
In 1998, a team of University of Connecticut medical students and faculty investigated possible environmental and intrinsic health risks that increased the susceptibility of a child having multiple episodes of pneumonia. Preliminary data failed to reveal any significant differences between cases and controls based on socioeconomic status, health seeking behaviors, nutrition, environmental exposures and material goods of households (Alerte et al., 1998).

Later that year, CDC epidemiologists returned to HHF to conduct a case-control study of children less than 5 years of age with 3 or more episodes of bacterial pneumonia diagnosed by CHWs. They identified pneumonia cases and appropriate controls from data on ALRI cases in the HHF Epi Info database. Next, they conducted a physical exam, placed Purified Protein Derivative (PPD) tests for tuberculosis screening, performed HIV rapid tests and interviewed all case and control children. All children in the “pneumonia case” group also received chest X-rays. The results of this study showed that the only significant factor associated with multiple cases of pneumonia was a history of wheezing. This led to the conclusion that wheezing may be an important contributor to recurrent pneumonia and/or may be misclassified as pneumonia by the WHO ALRI algorithm (HHF, 2005). A follow-up study was conducted later that year by a University of Connecticut medical student, who investigated traditional therapies for children with multiple cases of pneumonia, presumed to be diagnosed with asthma. Home treatments for pneumonia included: coffee, teas, lemon, oranges, leaves (hibiscus, langrichat, eucalyptus, zabaklou and akornish) and chocolate. While some of these treatments provided adequate relief of asthma symptoms, they are not appropriate or curative.
treatments for bacterial pneumonia (Williams, 1999). In response, HHF added education and referral for asthma to its primary health care program.

To supplement existing ALRI methods, IMCI strategies were introduced to Haitian nurses in 1999. All HHF nurses and physicians received the 11 day training in IMCI in 2003. ALRI is one aspect of the IMCI protocol. Currently, pediatric consultations are completed using the WHO Flow Charts and Haitian government case forms. CHWs continue to use the ALRI program because nurses are only present in the villages periodically. When nurses perform the IMCI diagnostic process in the villages, children with pneumonia receive a home visit by the CHW within 2-4 days to assess illness resolution (Gebrian, 2005). IMCI and ALRI strategies have proven to successfully reduce the ALRI-associated mortality in children. In order to apply these strategies in the field, there needs to be an organized plan of events in place to coordinate the program implementation.

By 2005, HHF had documented 48,500 cases of pneumonia and the program had expanded to 53 rural CHWs (HHF, 2005) responsible for a registered population of 150,000 and an additional 50,000 in access areas. The recognition of pediatric pneumonia spread beyond the confines of the registered villages of HHF.

HHF’s program development led to several observations regarding future implementation of such programs. First, it takes almost one year for experienced CHWs to master the WHO ALRI Flow Chart. This period is even longer for new CHWs. Certain skills, such as recognition of chest indrawing in babies, require numerous attempts and intense supervision to educate CHWs. Community education also requires time to allow for better recognition of ALRI symptoms and appropriate follow-up of
children with ALRI. In communities greater than 8 hours away by foot from a clinic, the CHWs effectively treated children with pneumonia in the field with Cotrimoxazole. Lastly, HHF could not have realized success if the other child survival activities were not well integrated into their health program (HHF, 2005).

As a result of HHF’s success in reducing mortality from ALRI, 6 organizations in urban Port-au-Prince have been trained by HHF in the field application of the ALRI protocol and have started to implement their own programs. The manual in this study will disseminate lessons learned from the HHF ALRI program throughout Haiti and to other Francophone countries.

**Objectives of the Francophone Manual for ALRI Case Management**

The development of a written Francophone manual for CHWs on ALRI interventions is based on HHF’s successful adaptation of the WHO case management protocol in 1990. The manual was created in 2005-2006 by Dr. Bette Gebrian, Prof. Judy Lewis, Dr. Renate Schneider and Yvette Wild, a medical and public health student at the University of Connecticut. The objectives for this manual are:

1. To bring together existing HHF resources into a unified written manual for community health prevention. This may be expanded to community-based program implementation of other common diseases.

2. To provide a manual for programs in other Francophone countries to use in implementing community-based ALRI treatment programs.

3. To reduce ALRI-related mortality in children under 5.
METHODOLOGY

The methods used to create a CHW ALRI Training Manual involved a combination of assembling existing HHF data and gathering new qualitative data. The study was conducted with the review and approval of the University of Connecticut Health Center Institutional Review Board. The data sources are presented below, followed by a chronology of the data collection.

A. Existing HHF Data

HHF has a census-based data system, “Health Track”. This contains demographic information on each individual, family, household and village enrolled in HHF, as well as all individuals diagnosed with ALRI, follow-up visits and outcomes. Data was organized by medical activity (clinical treatment, children’s growth monitoring and vaccinations) and community characteristics (community participation, health education and sanitation). Using this data, the author located outreach areas for CHWs and determined village characteristics, such as distance to Jeremie and population (total and children under 5 years of age) statistics.

HHF has a separate computerized database to document, organize and analyze ALRI episodes. This contains case information for each child, including illness characteristics during the initial assessment, presence of danger signs or other illnesses, vaccination and nutritional status, classification, medications given, referrals made and follow-up. Cases can be analyzed separately or grouped to examine trends in area, disease and age distributions. Using this data, HHF can look at the following outcomes:
• Seasonal ALRI variations in a year
• Types of ALRI in various areas (sorted by location, altitude, geography)
• Frequency of ALRI
• Clustering of high occurrences of pneumonia
• Multiple episodes of pneumonia (leading to possible asthma studies)
• Age and gender differences
• Vaccination history in a specific area
• Nutritional status of sick children
• Projection of medication needs by season
• Status of pneumonia during follow up visits
• Rigor of follow up by individual CHWs
• CHW success and failure in application of the ALRI algorithm
• Overall impact of the intervention (ALRI-related deaths)

B. Key Informant Interviews

Key informants were HHF staff members with expertise in the ALRI program implementation. They had worked with HHF for many years, could provide detailed information regarding the local culture and were willing to consider and discuss the ALRI implementation topics. The informants described the history of ALRI in their community, national and local resources, the local terms for signs, symptoms and illnesses related to ALRI, community beliefs about the ALRI cases and challenges and advantages of HHF case management. They commented on CHW training, field supervision, feedback and case documentation.
Interviews and discussions were open-ended, conversational and wide-ranging. Key informants concentrated on specific areas in which they had the most experience. Key informant questions are provided in Appendix B.

C. Focus Groups (CHWs, CHW Trainers)

Two focus groups were assembled – one with CHWs and one with CHW Trainers. The objective of the CHW focus groups was to generate a discussion on the cultural perceptions of CHWs and community members. Topics of discussion included the importance of ALRI in the local community, opinions of HHF interventions and feedback on methods of program improvement in the future. Information collected from CHW focus groups provided insight into the teaching sessions, necessary resources and equipment for an ALRI program and continuing education sessions after the initial training. This group was asked to evaluate and help revise teaching tools (i.e., algorithm flowcharts, home care cards, case record forms and observational supervision forms). The CHW Trainers focus group reviewed the first draft of the Training Chapter individually and then met as a group to discuss their recommendations. All focus group questions are provided in Appendix C.

D. Structured Questionnaires (CHW, Non-HHF Haitian Health Professionals)

Two anonymous questionnaires were created. One questionnaire was to be distributed to all CHWs during their monthly meeting. Consent was obtained with the completion of the questionnaire. The questionnaire consisted of multiple choice questions and short answers. It addressed the CHW’s educational background and work
experiences, the design of their ALRI training session and productive methods of learning and teaching each other and community members. This information helped to create a manual accepted by and applicable to other CHWs.

The second questionnaire addressed non-HHF Haitian health professionals who attended the HHF ALRI training sessions with the intent of implementing a similar program in their own communities. Letters were sent electronically to all six outside organizations, describing the nature of the study and the assistance to the study that trained health professionals in ALRI skills would provide. The questionnaire addressed the individual’s experience and training, characteristics of their ALRI training session at HHF, the implementation of their Plan of Action and feedback on case management skills learned. All questionnaires are provided in Appendix D.

E. Observational Data

Observation of health worker implementation of the ALRI algorithm in the field and observation of CHW training modules was conducted to provide an understanding of the context of teaching community-based prevention strategies in Jeremie, Haiti.

The following table represents the chronology of the methods used by the author in the creation of a CHW ALRI Training Manual.
<table>
<thead>
<tr>
<th>Prior to Leaving For Haiti</th>
<th>Activity</th>
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<tbody>
<tr>
<td></td>
<td>Performed literature search on ALRI background, program evolution</td>
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<tr>
<td></td>
<td>Reviewed UNICEF, WHO, and HHF community-based CHW manuals on primary public health programs.</td>
</tr>
<tr>
<td>Week One</td>
<td>Reviewed HHF ALRI materials and publications, ethnographic survey, CHW case management documentation, WHO/CDC consultations</td>
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<tr>
<td></td>
<td>Created preliminary questionnaires and focus group questions</td>
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<tr>
<td></td>
<td>Created “Table of Contents” for the ALRI Training Manual</td>
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<tr>
<td></td>
<td>Reviewed ALRI database and HHF field data from August - September 2005.</td>
</tr>
<tr>
<td>Week Two</td>
<td>Training Chapter draft written and reviewed by Public Health Director, Director of Special Projects and academic advisor</td>
</tr>
<tr>
<td></td>
<td><strong>Key Interview #1:</strong> ALRI Supervisor responsible for CHW training and community mobilization</td>
</tr>
<tr>
<td></td>
<td><strong>Key Interview #2:</strong> ALRI Supervisor</td>
</tr>
<tr>
<td></td>
<td><strong>Key Interview #3:</strong> HHF Public Health Director and CHW trainer</td>
</tr>
<tr>
<td>Week Three</td>
<td>Rural Health Post visit to Astie</td>
</tr>
<tr>
<td></td>
<td>Training Chapter translated into Creole</td>
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<tr>
<td></td>
<td><strong>Key Interview #4:</strong> ALRI Education Supervisor, CHW trainer,</td>
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<tr>
<td>Medications and Case Management Supervisor</td>
<td></td>
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<tr>
<td>------------------------------------------</td>
<td></td>
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<tr>
<td>Rural Health Post visit to Robin</td>
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</tbody>
</table>

**Week Four**

<table>
<thead>
<tr>
<th>Distributed Training Chapter in Creole to senior ALRI CHW trainers and reviewed recommendations in a focused group discussion</th>
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<tbody>
<tr>
<td><strong>Key Interview #5:</strong> Director of Special Projects</td>
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<tr>
<td>Administered the CHW individual questionnaire</td>
</tr>
<tr>
<td>Conducted CHW focused group discussion</td>
</tr>
</tbody>
</table>

A complete draft of the training manual was returned to Haiti in March 2006 and was reviewed by Dr. Gebrian, Dr. Schneider and Prof. Lewis. The manual was updated based on their feedback.
RESULTS and DISCUSSION

Qualitative data was collected from key interviews, focused group interviews and observation of ALRI case management application in the field by CHWs. Quantitative data was collected through CHW surveys. The final outcome was the creation of a written CHW training manual on ALRI case management strategies. The implications of the existing and collected data will be discussed here.

Key Interview Results

All interviews were conducted by the author and a translator, when necessary. Interviews were scheduled at the convenience of the respondent. The author asked them about valuable lessons learned through the process of implementing a community-based ALRI protocol. Because each respondent had specific responsibilities within the organization, the author allowed him or her to lead the course of the interview. The author asked for clarification, detailed information and follow-up questions.

All interview respondents stressed the need for a chapter on community mobilization and education. The community is integral in identifying danger signs and bringing the child to a CHW for treatment. The traditional perception of “bwonch” (pneumonia) prior to the program implementation was supernatural in causation and that there was little the community could do. As a result of educating CHWs and villages on pneumonia causation and risk factors, ALRI-related mortality was reduced. Community members and CHWs took pride in their ability to intervene and reduce pneumonia fatalities and were motivated to continue learning and applying ALRI case management
strategies. Without community motivation and support, the ALRI program would not have been successful.

In addition, the collection and organization of information was emphasized by all respondents. Prior to program implementation, it is important to be familiar with local and global ALRI epidemiology (ALRI prevalence and mortality). Local information on ALRI cases must be collected and trends reviewed in order to evaluate the impact of interventions. This type of database can track seasonal and geographic variations in ALRI, identify multiple cases of ALRI and measure supply and demand for Cotrimoxazole. Progress results should be reviewed with CHWs and communities to create a sense of accomplishment and motivation.

Key Interview Respondent #1 (ALRI Supervisor, community nurse, lawyer) explained that training CHWs can be difficult and it is important to provide educational strategies for people with diverse skills, experiences and levels of education. During training, the most difficult skills were counting respiratory rate and understanding the Flow Chart. These tasks took some individuals up to one year to master. Therefore, he said that it is important to be patient with CHWs. CHWs will initially struggle with the ALRI case management strategies. He suggested organizing mandatory training equipment and documentation forms.

Key Interview Respondent #2 (ALRI Supervisor, CHW field trainer, LPN) reviewed all aspects of CHW training (documentation, Flow Charts, Home Care Cards,
monthly review sheets, medication summary sheets) with the author in order to develop a description of CHW responsibilities in the Training Chapter.

Key Interview Respondent #3 (HHF Public Health Director, CHW Trainer, Ph.D. anthropologist, MPH, American-trained nurse) had been involved with HHF since it began. She reviewed HHF’s history, the foundation’s objectives and goals, past and ongoing public health projects, grants and donations and local resources in Jeremie. She reviewed the history of ALRI interventions globally and locally, including the introduction of the WHO ARI protocol and the transition from standard ALRI case management to IMCI for Haitian nurses in 1999. She noted, however, that the Haitian government had not approved CHW-level IMCI. Therefore, CHWs continue to be trained in ALRI case management.

This background information allowed the author to understand the historical context of ALRI in this community. The respondent stated that the benefit of a training manual would be a comprehensive and unified collection of existing HHF documents for ALRI Case Management, which can be used by other programs in Haiti and elsewhere. It can also serve as a template for future manuals for other leading causes of morbidity and mortality, such as diarrhea and malaria.

After a standardized CHW training session, she stressed that CHW supervision is vital to an ALRI program’s success, including direct supervision of CHWs and indirect examination of case reports. She stated that individual feedback on physical assessment, use of the Flow Chart and accuracy of documentation must be given to a CHW on a
regular basis. Also, support systems need to be in place for those CHWs who are in need of further education and guidance in their case management skills.

*Key Interview Respondent #4 (ALRI Education Supervisor, CHW Trainer, Medications and Case Management Supervisor, trained as a CHW)* described the importance of CHW Cotrimoxazole administration as approved by the government. Once a CHW is allowed to administer Cotrimoxazole, he explained the importance of tracking its usage and distribution. At first, a CHW may request 500-1000 units of Cotrimoxazole for a community without knowing the incidence or prevalence of pneumonia in a village. However, examination of monthly reports completed by each CHW provides an accurate estimate of monthly Cotrimoxazole usage. The supervisor emphasized that documentation is important not only for case management, but for understanding the trends of Cotrimoxazole usage and thus variations in ALRI incidence based on case management strategies and treatment.

*Key Interview Respondent #5 (Director of Special Projects, Ph.D. Clinical Psychology, experience in international HIV/AIDS program implementation)* described the recognition HHF had recently received from WHO for their successful application of the ALRI case management program. As a result, HHF was approached by the Haitian Ministry of Health to be the in-country training facility for ALRI interventions for other organizations in Haiti. The Ministry of Health invited 6 organizations from other parts of Haiti to participate in a 5-day course on ALRI program implementation. The participants learned ALRI background and theory, assessed children with cough and difficulty
breathing, learned about the ALRI Flow Charts, treated children and made referrals in the field and learned to document and summarize cases. During these training sessions, the director discussed the importance of local and national support and resources for an ALRI program. The participant organizations returned to their home organizations and communities to gather resources and equipment to implement an ALRI program.

The respondent not only explained the need for national resources, but also described the “minimum infrastructure” to establish an ALRI case management program for other countries. She said that the country must have an existing CHW system approved by the local and national government. CHWs have responsibilities and expectations that are established by the government. This varies by country. One example she used of government authority was regarding administration of antibiotics in the field. Once a CHW system is established, the next step the director described is to obtain resources and funding. Initial expenses included CHW training, medications, equipment (timers, thermometers) and computers. Staff and resources must be allocated for post-training classes and monthly CHW meetings to review ALRI theory and to learn about the results of their work. She stressed that the main focus at these monthly meetings must be to continue CHWs motivation with feedback, education and praise.

Based on her experiences working with programs on the implementation of an ALRI program, she indicated that a realistic plan of action would take at least 6 months to implement a community-based program similar to HHF. She said that once a program is established, it should be easier to sustain in terms of employees and funding. Additional costs that she identified included documentation and medicines. In order for a program to be effective, she thought it was important to partner with other organizations.
to develop ALRI strategies. For example, HHF refers their sickest children to a government-based hospital in Jeremie which provides advanced treatment.

**Key Interview Discussion**

As a result of these interviews some specific recommendations were developed. The introductory chapter must describe the historical context in which ALRI, IMCI and local efforts have evolved to implement community-based strategies. Partnering with governmental and private organizations increases the availability of funding, personnel and resources for program implementation. The organization should have the “minimum infrastructure” needed to implement a program, such as funds for training, medications, equipment (timers, thermometers, scales, training videos and televisions), forms and ideally, a computer. In addition, each organization must determine the role of local CHWs prior to expanding upon the CHWs’ responsibilities.

The community is the most important component of a community-based program. This message is highlighted throughout the manual. It was critical to include a Community Mobilization Chapter, emphasizing community education and participation. The community must understand danger signs, treatment instructions and the value of follow-up visits.

Data management is essential to the success of an intervention program. Tracking ALRI epidemiology allows organizations to define the impact of their intervention and make changes accordingly. A written or computerized database must be created to organize and track cases. The HHF database should be used as an example for other organizations to replicate or adapt to their local context.
The key interview respondents were involved in CHW training and provided recommendations for training. The manual must be accessible to people with diverse skills, experiences and levels of education. The manual must be organized, clear, describe the role of the CHW, explain documentation and forms and provide practical examples.

It was clear that the most difficult skills for CHWs to master are assessing respiratory rate and understanding the Flow Chart. Respiratory rate is difficult to assess when the child is crying, moving or bundled in clothes. The manual recommends methods to calm or distract in order to accurately assess the child. The Flow Chart must be reviewed multiple times with clear examples. Review can occur on paper, with scenarios or by ALRI training videos. Repetition and practice are key to accurate Flow Chart use.

Mandatory monthly refresher sessions, direct and indirect supervision and feedback provide CHWs with the support needed to excel in ALRI skills. CHWs take pride in their work and appreciate feedback and updates on the impact of their work. The manual stressed the need to review documentation at regular intervals and provide feedback, continuing education and positive reinforcement.

**Focus Group - Community Health Workers**

The CHW focus group was conducted on October 26, 2005, during a CHW monthly in-service meeting. The group included 5 CHWs (3 women, 2 men from different HHF villages), a CHW supervisor, the author and a translator. The individuals in the group were forthcoming with details, opinions and recommendations.
Before the ALRI program, the CHWs said they were aware of children with cough or difficult breathing, but did not understand that pneumonia was a major cause of death. After the training, CHWs began to “demystify” ALRI in their communities using knowledge about ALRI causation and prevention. The community thought pneumonia was caused by “bad spirits”. Once the community understood the impact of ALRI on their children and were educated in risk prevention, the CHWs noticed increased community ALRI recognition and treatment seeking. The CHWs described community education sessions they led that stressed the importance of treatment adherence and follow-up. CHWs shared ALRI songs with Mothers’ and Fathers’ Clubs to spread the key messages. The most important symptoms that CHWs taught the community were to identify cough and difficulty breathing. If a child had these symptoms, the child should immediately be taken to a CHW. CHWs watched the ALRI-associated death rate decline as the community adapted these new strategies.

CHWs described the important points of assessing a child with ALRI. Initially, it is important to look at the child’s vaccination card. Next, inquire about each danger sign. It is necessary to know the characteristics of the illness before examining the child. According to the CHW group, the ALRI Flow Chart is the most helpful tool in the field and is used to classify and treat the child.

Even with an effective Flow Chart, the CHWs described challenges to assessing and treating ALRI. One difficulty is evaluating a child that does not sit still. The CHWs recommended giving the child something to play with, changing positions, or breastfeeding to calm the child. Another CHW described how the noise of the timer may bother the child. When this happens, it should be kept from view. Another problem is that
some caregivers do not know how to take care of the child at home. The CHWs recommended reviewing the treatment plan with the caregiver and posting the Home Care Cards at the caretaker’s home to aid in the review of daily treatments.

Helpful teaching tools for CHWs included the ALRI Flow Chart, basic ALRI theory, videos, Home Care Cards, practicing the ALRI algorithm in a scenario, using the timer and singing together. They recommended including drawings, theatre and stories of good and bad examples.

When asked about feedback from their supervisors, CHWs explained that they take pride in receiving constructive criticism because they advance in their skills and peer recognition through this process. CHWs work on their weaknesses as a group to improve ALRI case management skills.

CHW Focus Group Discussion

The CHW group discussion described the roles of the community and of CHWs. They reinforced the importance of the community in the implementation of the protocol. The manual must include examples of songs, skits and teachings to spread the messages of recognizing cough and difficulty breathing in a child. Strong community participation and support of the ALRI strategies will result in a decrease in ALRI-related mortality.

The CHWs also made recommendations for the Training Chapter. These were to:

- Start the assessment of a child with documentation of the child’s name, age, weight, height, vaccination and nutritional status from the child’s health card,
- Ask questions listed on a standardized intake form and
- Use the ALRI Flow Chart to assess and treat the patient.
According to the CHW group, the ALRI Flow Chart is the most important tool in evaluating and classifying ALRI. This Flow Chart was described in the manual for each age group.

**Focus Group – CHW Trainers**

The CHW trainers’ focus group was also conducted on October 26, 2005. The trainers had reviewed a preliminary draft of the chapter on CHW ALRI Training. The group included 4 CHW trainers (most of who were bilingual) and the author. The trainers were also the key interview respondents.

Suggestions and changes included:

- Changing the layout of pages to include more pictures and less text on each page
- Creating bullet-design of pages to simplify important data
- Minor editing
- It was apparent that the manual had been translated word-for-word, from English to Creole, which was often not appropriate. The trainers agreed to assume responsibility for translating the next version manual.

**Individual CHW Questionnaire**

The questionnaire was completed by all 46 (out of a total of 53) CHWs who attended the October 2005 monthly HHF meeting. Of these, 27 were male, 18 were
female and 1 did not specify gender. The average age was $38 \pm 8.8$ years (males $40 \pm 8.8$ years; females $36 \pm 8.6$ yrs).

Most CHWs represented distant villages at least 3 hours away by foot from Jeremie (32.6% traveled 3-5 hrs, 37% traveled 6-9 hrs and 23.9% traveled >10hrs to get to Jeremie). The majority of CHWs were responsible for 1000-4000 women and children in their service area (<1000 = 4.3%, 1000-2000 = 43.5%, 2000-3000 = 26.1%, 3000-4000 = 23.9% and >4000 = 2.2%). The number of children under age 5 ranged from 20-80 children per village in 93% of the villages (<20 = 4.3%, 20-40 = 39.1%, 40-60 = 37.0%, 60-80 = 17.4% and 80-100 = 2.2%). There was no correlation between distance of the village from Jeremie and the number of children in the village.

Most (70%) CHWs completed at least secondary school (4.3% = primary school, 63% = secondary school, 4.3% = reto/high school, 2.2% = philo/college and 26% did not respond). Most (59%) CHWs were not employed prior to working for HHF and, therefore, received all health care training in the field from HHF. Of the remaining CHWs, 84% had previous jobs related to community health education. Almost all (94%) CHWs worked for HHF for more than 2 years, the average was 8.75 years (range <1 year to >16 years).

Over half of the CHWs received ALRI Training before 2000 and had over 5 years of experience with the ALRI protocol. One-fifth had used the ALRI Flow Charts for over 1 year. All but one of the newer CHWs were certified to administer Cotrimoxazole in the field.

Because there had been several ALRI training sessions during the last 10 years, there was variation in groups of trainees. Over half of the CHWs reported more than 21
students in their class (11-20 = 21.7% and <10 = 13.0%). Students were all provided with timers, thermometers, Case Management Forms, an ALRI Flow Chart, an Antibiotics Log and Referral Forms. All CHWs used songs to learn ALRI skills. A majority of CHWs used skits, stories, pictures and a video in their training session. Those who had been trained more than 10 years ago were unsure of the specific learning tools used in their training.

In the field, 45.7% of CHWs reported using a combination of songs, skits, pictures and videos with their community. The most popular method of community engagement and education was songs. For questions about ALRI management in the field, 85% of CHWs turned to their supervisor.

**Individual CHW Questionnaire Discussion**

The CHW Questionnaire described the context for ALRI training and how strategies were used. Most CHWs worked in distant villages with scant resources and health facilities. Most CHWs served 1,000-4,000 people in their service area, with children under 5 making up 15% of their population (HHF, 2005). These villages rely on the CHW for health education, assessment and treatment of children. In these areas, the community participation is essential to the success of an intervention program. Caregivers must recognize a change in a child’s health status and seek care from a CHW immediately.

Although the level of education for CHWs varied, most were literate, having finished at least secondary school. Although the training manual was written for CHW Trainers, the ALRI Training Chapter was intended for both trainers and CHWs. Almost
60% of HHF CHWs were not employed prior to working for HHF, so it was important for the manual to be written for a CHW with limited experience in health care education and assessment.

The training chapter in the manual included Cotrimoxazole dosage, administration and follow-up instructions. It was noted that the first dose of Cotrimoxazole should be administered with the caregiver so that the caregiver can learn how to give the remaining doses.

Experience with ALRI training varied by year and the size of the classes. Most classes were between 10-25 students. A list of equipment for a training class was included in the training manual. The best methods for learning ALRI strategies included songs, skits, stories, pictures and videos and were all included in the training manual. Good rapport between the CHW trainer and CHWs was identified as an important factor in allowing questions about ALRI strategies. Helpful tips on feedback and supervision were provided in the Staff Quality Management and Supervision Chapters to maximize communication skills.

In the community, the best teaching methods included a combination of songs, skits, pictures and videos. The most popular method of community engagement was through song and an example is provided in the text.

**Field Observation**

The author observed CHWs applying the case management protocol in the field at two different health posts. Three CHWs were observed at each health post. Excerpts
from the author’s observation notes are provided below as examples of successful and difficult interactions.

Eight CHWs, 2 LPN supervisors and the Public Health Director gathered at the main HHF clinic in Jeremie to collect supplies, vaccinations, and medications to bring to the rural health post. The team sat shoulder-to-shoulder in a Land Cruiser truck, traveling for 3 hours to the health post on unpaved, dirt roads. The health post consisted of a large outdoor dirt-filled area, protected from the blazing sun by a thin cloth tarp attached to four wooden posts at each corner. Folding chairs and tables were set up for patient evaluation. Caregivers and children sat on small benches on one side of the service area, waiting for their name to be called by health providers. The air was humid and mosquitoes and flies swarmed around the community members and health providers.

*Example #1:* Mme. G was concerned about her 2 year-old daughter’s health. Amelie had a cough for 2 weeks that was not improving. The CHW, M. S, first asked to see Amelie’s health card. He documented the characteristics of the child such as age, weight, vaccination status, health status and family characteristics on the appropriate areas of the case documentation form. Then he asked the mother for any presence of danger signs. There were none. She did not have a fever. Amelie was sleeping calmly in her mother’s lap. M. S counted her respiratory rate with a WHO timer for a full minute. She was breathing 36 times per minute. He lifted her shirt and determined that there was no chest-indrawing. Using the Flow Chart located at his table, he determined that she did not have an elevated respiratory rate, no danger signs and no chest-indrawing. Therefore, she did not have pneumonia and probably had a cold or flu. M. S explained his diagnosis to
Mme. G and gave her a Home Care Card for home treatment. He used the card to show her how to identify danger signs and emphasized that she should offer Amelie food, liquids and soothing teas. He asked Mme. G to review the instructions, which she did accurately. M. S told Mme. G that he would visit Amelie in a few days, but if she had any danger signs, to notify him or another CHW immediately. Mme. G thanked M. S and took Amelie home.

Example #2: Mme. D brought her 4 month-old son, Alfred, to the health post for evaluation of fast breathing. He was sitting on his mother’s lap, crying. Mme. B, a CHW, began to fill out a case documentation form. She did not ask for the child’s health card, but instead asked Mme. D for the name and age of the child, and her address. Mme. B proceeded to ask about the characteristics of Alfred’s illness and presence of danger signs. Mme. D noted that Alfred had refused to breastfeed for the past 2 days. The next section of the case management form asked about vaccination and nutritional status. Mme. D did not know which vaccinations Alfred had received, and so Mme. B left that section blank. At least 10 minute elapsed before Mme. B began her clinical assessment. Mme. B attempted to count the child’s respiratory rate, but could not because he was crying. After distracting him and changing positions, Alfred quieted somewhat. His respiratory rate after a full minute was 60 times per minute. He also had possible chest-indrawing. It was difficult to determine if his chest was moving because of distress from crying or from the illness. Mme. B began to consult her Flow Chart; however, due to frequent use and harsh environmental conditions, her Flow Chart was stained and tattered. Mme. B classified the child’s illness from memory of the Flow Chart. Because
of the presence of increased respiratory rate for age, chest-indrawing and one danger sign (cannot breastfeed at all), she thought the child had either severe illness or severe pneumonia. She could not remember how to differentiate the two classifications. She asked another CHW to view his Flow Chart and diagnosed the child with severe illness. She explained the diagnosis to Alfred’s mother, administered 2 tablets of Cotrimoxazole, and filled out a referral form to the nearest clinic. Mme. Bordeau told the mother to keep Alfred warm and take him immediately to the clinic. Mme. Dimanche left promptly, walking Alfred to the referral clinic.

Field Observation Discussion

Field observation of CHW application of ALRI strategies provided an appreciation for the difficulties in assessing respiratory rate and chest-indrawing in a child. These two skills were described in detail in the ALRI Training Chapter of the manual and training groups were encouraged to practice their skills together as a group and observe video education of such skills.

The most utilized resource in the field was the ALRI Flow Chart. Laminating Flow Charts would allow these forms to withstand the wear and tear of frequent usage and encourage accurate diagnosis and treatment of ALRI. It is also important to have the caregiver repeat the instructions back to the CHW. Repeating Cotrimoxazole administration and home care instructions allows the CHW to make sure the caregiver understands the instructions and provides an opportunity for questions to be answered and clarified. Home Care Cards should be distributed during treatment and the CHW may use this card when clarifying treatment strategies.
Community engagement may occur in any setting: in the home, at a health post, or in small community groups. Methods for education, participation and motivation are suggested and the importance of community support is stressed throughout the training manual. The manual brings together results from all qualitative data and presents a comprehensive guide for CHW and community-based ALRI prevention programs.

The CHW ALRI Training Manual

The CHW ALRI training manual was written based on the recommendations of HHF ALRI trainers and CHWs and direct observation of ALRI application in the field. The manual components listed below represent important pieces of a comprehensive ALRI manual for CHW trainers. This manual has undergone several revisions and will continue to be refined. The manual is included in its entirety in Appendix E.

- Introduction
- ALRI Background and Definitions
- Key Players
- ALRI Training Chapter
- Supervision of CHWs
- Staff Quality Management
- Database Management
- Community Mobilization and Participation
- Conclusions
Study Challenges

Several challenges presented themselves during the study. Limited personnel, resources and inflexible scheduling meant that the manual was in development during the data collection process.

The lack of availability of certain personnel and resources created difficulty in collecting data based on the original plan. The author attempted to contact Haitian health professionals selected by the Ministry of Health to attend the first ALRI training session at HHF. The training sessions occurred over a 5-day period in September and October 2005. Letters were sent electronically to all six organizations, describing the nature of the study and the importance of gaining information from program participants. The plan was to distribute a questionnaire about the HHF training program, and to ask for feedback on chapter drafts. Unfortunately, none of the organizations responded with contact information of the training participants. This indicates the difficulty of collecting feedback after participants have returned to their home organizations.

The timing of the data collection was challenging. The fall Ministry of Health training was conducted prior to the author’s scheduled field observations, so it was not possible to document the training. The author was able to observe CHWs applying the ALRI skills in the field and training the community. Another limitation was that it was not possible to get feedback from all the CHWs at their monthly meeting because training on other topics had already been scheduled. There was limited time to administer questionnaires to all CHWs, conduct a CHW focus group discussion, but it was not possible for CHWs to review the chapter. Instead, 4 senior CHW ALRI trainers
performed a detailed review of the chapter, made comments in writing and in group discussion.

ALRI training DVD and VHS materials had disintegrated in Jeremie’s climate. Additional audiovideo materials from WHO in Geneva was requested for writing the manual. Though these resources are in the manual, they have yet to be viewed to determine the exact content and application to the training manual.

Approximately 200 hand-written and electronic case records were compared for accuracy for the months of August and September 2005. Twelve percent of the computer records had errors in data entry, primarily in the fields of child’s age, weight and home village. The presence of danger signs, illness classification and treatment protocol were accurately entered. It was assumed that the information collected by the CHW in the field was the true data. Mistakes in case records and data entry are important to recognize and correct. A complete assessment of the accuracy of the information would require a prospective study which examines accuracy of documentation and data entry. Some system of checking field data with data entry should be formalized.

**Challenges of Program Implementation**

Global challenges of a community-based ALRI program implementation include the variable role of the CHW by country and region, the ability of a CHW to master practical skills, funding and program suitability and follow-up.

The experiences, responsibilities and training of the CHW greatly affect the role of a CHW in implementing the ALRI strategies in this manual. The CHW model on which this thesis is based is specific to HHF and Jeremie, Haiti. Countries have
individual criteria for accepting and training local CHWs. The responsibilities of CHWs, such as the authorization of antibiotic administration, are determined by the Ministry of Health for each country. It is important for organizations to recognize specific CHW duties and to work directly with their government to change policies when necessary. There is also concern about the ability of a CHW with lower literacy and training to accurately diagnose ALRI and treat pneumonia with antibiotics. In areas with non-literate CHWs, a manual for CHWs will not work. CHWs may have no experience in keeping records, using timers, documenting weights or managing medications. Pneumonia medication is a resource that cannot be abused and must be administered in a controlled and accurate manner. It is important for the CHW training team to be experienced in working with CHWs. The training should emphasize practical skills through education, repetition, supervision and feedback. All teaching and documentation should be carried out in the local language and within the local cultural context.

CHW and community support and motivation are essential to the success of an ALRI intervention program. The program requires time and patience to become established. Classroom training is only the beginning. CHWs may have questions about using the strategies and feel unprepared to actually administer care. Post-training support must be available to CHWs. For example, a mandatory monthly training session may reinforce key points, provide group scenarios to work through and answer questions. In addition, regular visits to each CHW and home visits to recently treated patients should be included in the budget for CHW supervision and quality management. Both communities and CHWs should be provided with educational opportunities on a regular basis. This should include feedback on the impact of their actions in reducing ALRI
deaths and incentives to continue to learn about ALRI, recognition of danger signs and promptly treatment of sick children.

Adequate funding is always a barrier in resource-poor areas. Initial ALRI program costs include CHW training sessions, creation of a working database, medication, paperwork and equipment (timers, thermometers, videos, televisions and computers). In addition, monetary incentives or salaries for CHWs, CHW trainers and CHW supervisors are needed. Resources must be in place before a program can begin implementation. Nothing will deter a caregiver’s use of the system faster than expecting care for their child but finding the necessary antibiotic is not available.

Lastly, the ALRI program described in the manual may be suited for particular organizations. The model for this manual was a private NGO. Strategies for program implementation would be most applicable to other private NGOs. Governmental organizations and other types of NGOs may pose different challenges and the manual must be adapted to each organization. Additionally, once a program is implemented, there must be regular monitoring of the program. Data outputs should be generated to look at the impact of the intervention on the community, reviews of CHW documentation should be made and direct observation of CHW skills in the field should occur. A third party may provide the most objective evaluation of a program. This role may be held by the government, an experienced organization in program implementation, or another group. The timeline, objectives and goals of program implementation should be appropriate and monitored on a regular basis.
Importance of a Written Manual

A community-based ALRI Francophone manual will support the implementation of HHF ALRI strategies in other areas of Haiti and Francophone countries. Pneumonia continues to be the leading cause of death in young children worldwide. Community-based treatment is the best way to decrease disease and costs of health care. The Haitian Ministry of Health has expanded the responsibilities of a CHW and CHWs with appropriate training can treat with Cotrimoxazole. The number of CHWs is increasing to support the demand for local health services. CHWs are responsible for a variety of public health initiatives. A written manual will provide a concrete resource for CHWs.

The manual will be used by HHF, and will promoted among other organizations in the ongoing effort to improve ALRI strategies and decrease ALRI in children under 5. There is a growing demand for CHWs to manage pneumonia, as well as malaria, diarrhea treatment with Oral Rehydration Solution (WHO/UNICEF 2004a) and neonatal infections (Bang et al. 1999). This manual can serve as a template for other community-based prevention programs, such as diarrhea, malnutrition and malaria.

Future Steps for Implementation of Manual Strategies

Prior to distribution and implementation of this manual, it must be revised and piloted in training and field settings. The following steps are proposed:

1. Distribute drafts of the CHW ALRI training manual to HHF for final feedback on manual contents, format, expansion and adaptation.
2. The manual must be translated into Creole and French before piloting the manual with both CHWs and their trainers. Translation will occur by bilingual HHF staff members from English to Creole and from English to French. The translated manuals will then be back-translated into English to ensure accuracy of translation.

3. Distribute the CHW ALRI training manual to experienced HHF CHW Trainers. Collect feedback from trainers on their experiences with other primary health care manuals and from teaching CHWs and community members in the classroom and in the field.

4. Distribute the CHW ALRI training manual to new HHF CHW Trainers. Create a pre-test and post-test to evaluate their comfort with training ALRI strategies to CHWs before and after reading the CHW ALRI training manual. Collect feedback on their experiences.

5. Pilot the ALRI Training Manual Chapter with experienced HHF CHWs. Collect feedback on their experiences with understanding and implementing lessons presented in the manual.

6. Pilot the ALRI Training Manual Chapter with new HHF CHWs. Create a pre-test and post-test to evaluate their comfort with utilizing ALRI strategies in the field before and after reading the CHW ALRI training manual. Collect feedback on their experiences.

7. The manual will be distributed to a select number of health organizations working in Haiti and organizations in Francophone countries for piloting and
implementation. Feedback will be collected on the ease of understanding and implementing lessons presented in the manual.

8. While the manual is being tested in various settings, sources of funding for publication will be identified.

9. Follow-up should be part of the dissemination plan, to document how the program is implemented, adaptations, expansions and utilization of the training manual.

**Future Directions**

Although CHW diagnosis and treatment of ALRI will decrease pneumonia-related mortality in children, an effective ALRI control program should also reduce risk factors through vaccinations and improved social and public health conditions.

Timely childhood immunization must be promoted to reduce disease morbidity and mortality. Measles, pertussis and diphtheria are directly or indirectly responsible for 15-25% of all deaths associated with ALRI among children. Therefore, childhood vaccination coverage is an essential component of an ALRI program.

Newly developed vaccines for pneumonia-causing bacteria should also be incorporated in future ALRI control strategies. The protein conjugate *H. influenzae* vaccine, which has been widely used in developed countries, has been shown as effective in preventing *H. influenzae* pneumonia. Population-based field studies in the Gambia have shown that rates of pneumonia can be decreased by about 25% with comprehensive immunization programs, including the HiB vaccine. Development of a *S. pneumoniae* vaccine conjugate (polyvalent pneumococcal vaccines) in the United States is also promising. However, both these vaccines are not currently available in developing
countries. It is important for WHO, UNICEF, related organizations and the governments of developing countries to carefully analyze the relative cost of treating ALRI cases versus preventive measures to determine the most effective and efficient methods.

The social factors that affect children’s health status must also be addressed. This not only includes training health care workers in the management and prevention of ALRI, but reducing the cost of ALRI-associated vaccines, adding Vitamin A supplementation to a child’s standardized health care, improving basic sanitation and studying the association between respiratory infections and other diseases such as malaria and HIV infection. Encouragement of exclusive breast-feeding and the acknowledgment that mothers have a vital influence on their children’s health status are important steps that need to be taken in order to reduce ALRI incidence. Work must continue to improve healthcare systems and increase training and monetary incentives for CHWs. Social factors must be addressed at the local, national and global levels.

WHO, UNICEF and other non-governmental agencies have made steps towards controlling ALRI prevalence, but more remains to be done. There is a continued need for a comprehensive approach to control ALRI. This written manual addresses these needs and documents strategies and guidelines to be used in training CHWs in the community-level treatment of pneumonia. This manual can be widely implemented to create a sustainable program of ALRI interventions. CHWs and communities will be encouraged to work together to improve recognition of ALRI, knowing when and where to seek care, and how to recognize danger signs and follow treatment plans. Well-trained and well-supervised CHWs will join local and global communities to decrease the number of child deaths from ALRI in the developing world.
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### APPENDIX A

#### TRAINING SESSION (HHF Partners Example – 5 Day Program)

<table>
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<tr>
<th>Session</th>
<th>Duration</th>
<th>Theme</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Introduction to ALRI</td>
<td>Introduction to training session&lt;br&gt;Scope of problem&lt;br&gt;Theoretical background review&lt;br&gt;Goals and objectives of program&lt;br&gt;History of HHF ALRI program&lt;br&gt;Review MSH-HHF ALRI manual&lt;br&gt;Background documents&lt;br&gt;Confirmation of theoretical training&lt;br&gt;Pre-test&lt;br&gt;Community participation in ALRI</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Review of materials</td>
<td>Review program documents:&lt;br&gt;- Algorithm of classification&lt;br&gt;- Case management form&lt;br&gt;- Home care card&lt;br&gt;- Management of antibiotic form&lt;br&gt;- Referral form&lt;br&gt;- Monthly summary and evaluations&lt;br&gt;- Quality assessment&lt;br&gt;- Feedback form&lt;br&gt;Management and Documentation</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Practicum</td>
<td>Rally post in rural village&lt;br&gt;Meet with community members about ALRI knowledge and practice</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Practicum</td>
<td>Rally post in rural village&lt;br&gt;Visit referral clinic for IMCI</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Plan of Action</td>
<td>Supervision&lt;br&gt;Plan of action&lt;br&gt;Post-test</td>
</tr>
</tbody>
</table>
APPENDIX B1: Key Informant #1 Questions

1. What is your role in HHF ALRI program implementation?

2. What are the objectives of HHF ALRI teaching?

3. What are some difficulties with CHW training?

4. Do you have recommendations for the training manual?
APPENDIX B2: Key Informant #2 Questions

1. What is your role in HHF ALRI program implementation?

2. What are the objectives of HHF ALRI teaching?

3. What are some difficulties with CHW training?

4. Do you have recommendations for the training manual?
APPENDIX B3: Key Informant #3 Questions

1. Please review the history of ALRI and IMCI globally and in Haiti.

2. How does HHF receive grants and donations?

3. What are other HHF community projects?

4. How to people become CHWs?

5. How do people become ALRI trainers?

6. What are some difficulties with CHW training?

7. Do you have recommendations for the training manual?

8. What are the advantages of an ALRI Training Manual for HHF?
APPENDIX B4: Key Informant #4 Questions

1. What is your role in HHF ALRI program implementation?
2. What are the objectives of HHF ALRI teaching?
3. What are some difficulties with CHW training?
4. Do you have recommendations for the training manual?
APPENDIX B5: Key Informant #5 Questions

1. What is your role in HHF ALRI program implementation?

2. How have HHF’s efforts been recognized by the government?

3. Tell me about training the outside organizations of Haitian health professionals.

4. What resources must be in place for a training program?

5. What materials are needed for a training program?

6. Do you have recommendations for the training manual?
APPENDIX C1: CHW Focus Group Questions

1. Tell me about the problem of ALRI in your community.

2. What have the ALRI case management done in the community?

3. In the ALRI protocol, what works best?

4. What is the most difficult aspect of implementing ALRI interventions?

5. What types of techniques did you use to learn about ALRI interventions?

6. Are there other ways that you use to learn ALRI interventions?

7. How does feedback on your performance help you to become a better CHW?
APPENDIX C2: CHW Trainers Focus Group Questions

Please review the draft of the Training Chapter individually. Together as a focused group, we will discuss changes to be made.
CONSENT

This survey is part of an evaluation of the ARI Training Manual being developed for use in Haiti and Francophone countries. Completion of this survey indicates your willingness to participate. If you do not wish to participate, it is okay.

I am Yvette Wild, a 4th year medical and MPH student at the University of Connecticut, who is working with the Haitian Health Foundation (HHF) on a pneumonia treatment training program. HHF has been working with Health Agents to deliver pneumonia treatment and save the lives of young children. Pneumonia is a major cause of death in many parts of the world and trained health agents can help reduce this problem.

Your participation in this research will help the Haitian Health Foundation create a training manual that will be useful to many programs. Reading a chapter from the manual will take 10 minutes and completing the survey will take approximately 15-20 minutes. If you are not comfortable with any of the questions, you do not have to answer them.

None of the information will be reported in any way that can identify you. If you have any questions after we are finished, you can reach Yvette Wild until the 27th of October through the Haitian Health Foundation, or you can contact Dr. Bette Gebrian at HHF any time.

Thank you for your time and cooperation in helping to make this a successful survey!
Date:  
Gender:  
Age:  
Location:  

**Education/Employment Background**

1. Length of time employed by HHF as a Health Agent:  

2. Have you had health care jobs before working as a Health Agent?  
   - Yes  
   - No  
   - If yes, please describe:  

3. How many people are you responsible for in your service area?  

4. How many children under 5 in your service area?  

5. What is the last year of school that you completed?  

**Health Agent Educational Program Design**

6. How long ago did you receive ARI training at HHF?  

7. Are you certified to provide pneumonia medication?  
   - Yes  
   - No  
   - If yes, how long have you been certified?  

8. How many people were in your ARI training class?  

9. Were you provided the following equipment and handouts in your class?  
   a. Timers  
   - Yes  
   - No  
   b. Thermometer  
   - Yes  
   - No  
   c. Case Management Forms  
   - Yes  
   - No  
   d. FICH Technique Classification  
   - Yes  
   - No  
   e. Antibiotics Log  
   - Yes  
   - No  
   f. Referral Forms  
   - Yes  
   - No  

10. Which of the following did you use to learn about ARI interventions?  
   a. Songs  
   - Yes  
   - No  
   b. Skits  
   - Yes  
   - No  
   c. Sharing stories  
   - Yes  
   - No  
   d. Pictures  
   - Yes  
   - No  
   e. Videos  
   - Yes  
   - No  

11. Which ONE of the above techniques worked the best?  

12. If you have questions about the FICH technique, whom do you ask?  

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Manual for Acute Respiratory Illness
Health Professional Questionnaire (English)

CONSENT
This survey is part of an evaluation of the ARI Training Manual being developed for use in Haiti and other Francophone countries. Completion of this survey indicates your willingness to participate. If you do not wish to participate, it is okay.

I am Yvette Wild, a 4th year medical and MPH student at the University of Connecticut, who is working with the Haitian Health Foundation (HHF) on a pneumonia treatment training program. HHF has been working with Health Agents to deliver pneumonia treatment and save the lives of young children. Pneumonia is a major cause of death in many parts of the world and trained health agents can help reduce this problem.

Your participation in this research will help the Haitian Health Foundation create a training manual that will be useful to many programs. Reading the manual will take a couple of hours, completing the survey will take approximately 15-20 minutes. If you are not comfortable with any of the questions, you do not have to answer them.

None of the information will be reported in any way that can identify you. If you have any questions after we are finished, you can reach Yvette Wild until the 27th of October through the Haitian Health Foundation, or you can contact Dr. Bette Gebrian at HHF any time.

Thank you.
Name of Health Organization:  
Gender:  
Date:  
Age:  
Occupation:  
Location:  

Education/Employment Background

1. What is your highest level of education completed?

2. Length of time as a health professional:

3. How many people are you responsible for in your service area?

4. How many children under 5 in your service area?

Health Agent Educational Program Design

5. How many people were in your ARI training class?

6. Are you certified to provide pneumonia medication? If yes, how long have you been certified?

7. What types of equipment/resources/handouts were you provided in your class?

8. Did you bring any of your own equipment to class?

9. What types of equipment/resources/handouts did you take home with you?

10. Please rank the following from most helpful (1) to least helpful (5) as a tool for LEARNING about ARI interventions:

   ___ Songs  
   ___ Skits  
   ___ Sharing stories  
   ___ Pictures  
   ___ Videos  

11. Please rank the following from most helpful (1) to least helpful (5) as a tool for TEACHING about ARI interventions:

   ___ Songs  
   ___ Skits  
   ___ Sharing stories  
   ___ Pictures  
   ___ Videos  

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12. Have you shared or used any other ways to teach the community of ARI?

Protocol in Action

13. What ARI interventions did you have in your community prior to HHF’s training?

14. How do you find children who have ARI?

15. Did you feel comfortable assessing ARI after the training session? Do you now?

16. Did you feel comfortable treating ARI after the training session? Do you now?

17. Did you feel comfortable educating others in ARI prevention after the training session? Do you now?

18. Have you implemented new ARI interventions in your communities since the HHF training session?

19. Do you refer back to any handouts from your HHF training session? Which ones?

20. What is the most difficult aspect of implementing ARI interventions?

21. If you have questions, who can you ask?

22. When do you provide follow-up with these children?

Follow up

23. How does feedback on your performance help you to become a better health professional?

24. Do you have opportunities to have more ARI training after your initial class?

25. Do you have opportunities to review regional data to see the difference you have made in treating ARI? If yes, please explain.

THANK YOU FOR YOUR TIME AND COOPERATION IN HELPING TO MAKE THIS A SUCCESSFUL SURVEY!
APPENDIX E: CHW ALRI Training Manual

Please see Attached CHW ALRI Training Manual following this page.
A Francophone Manual for Acute Lower Respiratory Infection

Interventions in Developing Countries

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Using This Manual

The purpose of this manual is to guide organizations in establishing and implementing an ALRI case management program implemented with Community Health Workers. Components include ALRI case collection and analysis, community health worker supervision and feedback, the creation of a database, and community mobilization. The ultimate goal is to decrease ALRI-associated mortality in developing countries.

**Part A** begins with the global impact of ALRI and the need for community-based ALRI programs. It introduces the Haitian Health Foundation, which has successfully adapted the World Health Organization protocol for ALRI assessment and treatment to their local community. The basic etiology and the signs and symptoms of ALRI are reviewed. Key players and their role in an ALRI prevention program are also described.

**Part B** is devoted to how to follow the ALRI Flow Chart and the information needed to document each ALRI case. This particular section is suitable for use by the Community Health Worker trainer and may also be distributed to the Community Health Worker as a review and resource of ALRI case management strategies. Community Health Workers should make every effort to perform each step according to the ALRI Flow Chart and complete documentation of ALRI cases, medications, referrals and monthly summaries. At the same time, it is essential to maintain an attitude of flexibility, and make adjustments in procedures as required by local conditions. At the end of the chapter, there is a self-assessment to review the materials presented in this training chapter. Answers and references to chapter categories are provided.
**Part C** provides the guidelines for Community Health Worker trainers to supervise Community Health Workers in ALRI techniques and skills. A sample supervisory form may be used in classroom settings and in the field. The Community Health Worker is observed and interviewed, caregivers give feedback regarding their experiences with the Community Health Worker, and documentation of cases is reviewed. Guidelines for effective and useful feedback are provided. The concepts of supervision and feedback ensure an educational continuum and level of excellence in the work of a Community Health Worker.

**Part D** describes the importance of creating and managing a database. It is intended to facilitate the analysis of case management in order to track local ALRI epidemiology and to determine the impact of the program in the local community. A simple database is described, which is modeled after the HHF database. This database is useful for people who are not trained in advanced epidemiology and biostatistics.

**Part E** emphasizes the importance of community mobilization in a community-based prevention program. Examples of song and theatre are given, which can be used in a community setting to teach and review signs and symptoms of ALRI and to encourage the caregiver to go to a CHW when their child has symptoms of ALRI.

The final sections of the manual are the **Conclusions** and **Appendix**. Final remarks stress the impact of ALRI training in developing countries. Communities are encouraged to use the manual to train Community Health Workers in applying the ALRI Flow Chart to decrease the mortality of ALRI. The final Appendix includes important forms for use in the field and by the organization to document the individual cases of ALRI and to determine the overall impact of the implementation of ALRI case management strategies.
SIGNIFICANCE

In 1993, the Haitian Health Foundation (HHF) responded to the World Health Organization’s (WHO) request to minimize the pneumonia-specific mortality rate in children under five by adapting a WHO protocol to their own community. The cause-specific mortality rate was decreased by 50%. Community Health Workers (CHWs) have been trained, are well supervised, and are anxious to classify and treat children with respiratory difficulty in their own villages.

A Francophone manual that is adapted to the local context and community based will allow the successful strategies used by the HHF to be implemented into other areas of rural Haiti and Francophone countries. Pneumonia continues to be the leading cause of death in young children worldwide. A manual will be immediately put into use by the HHF, its neighboring agencies and global Francophone areas to improve Acute Lower Respiratory Infection (ALRI) strategies and decrease ALRI in children under five. A successful manual will also serve as a template for the creation of other manuals for other public health programs. The ability to decrease childhood mortality has a great impact on the lives of families, communities and our global society.
INTRODUCTION

Scope of the Problem

Acute lower respiratory infection (ALRI) is the leading cause of mortality overall and a primary cause of death for children under age five around the world (Figure 1) (WHO, 1998). Every year, approximately 2 million children under 5 years die from pneumonia, which is the most serious of the respiratory infections and is responsible for 80%-90% of all deaths from ALRI (Benguigui, 1998). Most of these deaths are bacterial in etiology and occur in developing countries. The majority of ALRI-associated deaths occurs in areas with limited resources and trained personnel. The best way to reduce pneumonia-related mortality is to provide effective assessment and treatment promptly.

ALRI Case Management

Extensive effort was invested to develop a standardized Community Health Worker (CHW) case management protocol by the World Health Organization (WHO) ARI Control Programme in 1982 (WHO, 1982), resulting in a training module, including the skills and knowledge required for CHWs. Since most ARI mortality in young children is due to pneumonia, the WHO/ARI case management strategy emphasizes case detection and treatment of pneumonia. In this model, CHWs perform a targeted physical examination, including determination of chest indrawing and respiratory rate using a timer. Pneumonia is diagnosed clinically on the basis of cough with fast breathing or chest indrawing. The CHW then uses a standardized Flow Chart to classify the severity of the illness and make treatment decisions. CHWs treat the child with antibiotics if there are signs of pneumonia. The CHW may also monitor response to treatment by following the child’s response to treatment at home. If the child has severe
pneumonia or a severe illness, a referral is made to a health facility for oxygen, parenteral
antibiotics, supportive care and monitoring beyond what can be provided in the
community by the CHW (WHO, 1992). Introduction of CHWs to the ARI guidelines and
dissemination of ARI information are the basic principles of the ARI control program.
WHO and UNICEF issued a joint statement in May 2004 in support of this model
(WHO/UNICEF 2004b). CHW diagnosis and treatment of pneumonia has proven
effective in decreasing mortality.

IMCI

In 1996, the World Health Organization (WHO) Department of Child and
Adolescent Health and Development (CAH), in collaboration with 11 other WHO
programs and United Nations Children’s Education Fund (UNICEF), developed the
Integrated Management of Childhood Illness (IMCI) strategy to manage the increasing
child mortality due to preventable and treatable illnesses such as pneumonia, diarrhea,
malaria, measles and malnutrition. IMCI is an integrated approach to child health that
focuses on the prevention, detection and treatment of the leading childhood killers of
children under 5 years. IMCI recognizes that in most cases, more than one underlying
cause contributes to the illness of the child. IMCI strategies are implemented by nurses
and physicians primarily at the facility level and periodically at the community level.

Community IMCI is intended to use comprehensive and systematic guidelines to
detect pneumonia in the community and refer to the closest clinic. IMCI strategies in
outpatient settings lead to identification of illnesses, treatment, counseling and timely
referral, thereby reducing pneumonia-related mortality in rural areas (PAHO).

IMCI was introduced to nurses in Haiti in 1999. All HHF nurses and physicians
received the 11 day training in IMCI in 2003. All pediatric consultations are completed
using the WHO Flow Charts and Haitian government case forms. ALRI is one aspect of
the IMCI protocol. CHWs continue to use the ALRI program because nurses are only
present in the villages periodically. When nurses perform the IMCI diagnostic process in
the villages, children with pneumonia receive a home visit by the CHW within 2-4 days
to assess illness resolution (Gebrian, 2005).
A community-oriented primary health care strategy aims at integrating preventive and curative aspects of health care through a decentralized approach that involves the community in planning, providing, and maintaining the health services. The training of health personnel is geared to the health needs of the community rather than patterned after the health services in developed countries. In particular, greater use is made of CHWs. The success of the primary health care strategy hinges on the support of the community and the work of CHWs to provide prompt medical assessment and treatment in the field. A large number of community-based programs have been successfully implemented in the developing world.

Community Health Workers (CHWs)

CHWs intervene on behalf of their communities in several essential ways. The CHW is elected by a community to assess, treat, counsel and refer sick children to a dispensary or nearby hospital. The CHW is often the first health provider to assess a sick child. CHWs offer economically sound services within the local context directly relevant to the health care and social service needs of their community. CHWs connect community members to appropriate health care providers, promote preventive health care measures, provide education about early signs and symptoms of disease, offer support, and thereby help to reduce health and social disparities among populations. Serving as a CHW provides a local village member with opportunities to “give back” to their own communities, while educating and empowering themselves. Though most CHW systems exist as a volunteer structure, some CHWs are now paid for their services, and more are receiving further training to enhance their skills. CHWs mobilize communities around health and social issues such as dehydration, child care, and sanitation. CHWs provide a critical link between underserved and distant communities and the health care and social service systems that are intended to serve them (Ro et al., 2003). By valuing CHWs, communities can be transformed and create positive societal change and health education.
Community Responsibility

Trained CHWs with accurate case management skills can avoid many ALRI-related deaths, but only if families and the community first recognize the signs of possible ARI. The community has a responsibility to identify possible ALRI and mobilize to get the child prompt help. Therefore, it is important that the community is knowledgeable about ALRI signs and symptoms. Together, CHWs and caregivers can successfully apply community-based case management of pneumonia. Delays in initial care seeking can be fatal, especially for young infants, who can die quickly from pneumonia. The basis of an ALRI program is community education, mobilization and participation about when to seek care for a sick child.

Implementing an ALRI Program in Your Community

The manual guides communities in implementing strategies to decrease mortality associated with ALRI in children under 5. The following steps to implement an ALRI case management program are provided:

1. Describe the geographic area of application for the strategy.
   The first step is to establish the geographic area in which the activities will be carried out, which will establish the total population to be covered as well as the population of children under the age of 5 years and its distribution in the following age groups: 2 weeks – 2 months, 2-11 months, and 1-5 years. It is helpful to make a map of the area to identify where the population is concentrated, routes of communication, and geographic features that may hinder access.

2. Describe the current status of the ALRI problem in the area of application.
   Before beginning to plan, it is important to know the magnitude of the ALRI problem in the area of application, especially with regard to mortality, morbidity, and quality of care. Information should be collected on the number of deaths from pneumonia in different age groups, number of hospitalizations of under-5 children for
pneumonia or other ALRIs, number of health service visits for pneumonia and proportion of cases in which antibiotics were prescribed for treatment. An ethnographic survey will determine the local context of ALRI etiology, diagnosis and treatment (traditional and non-traditional therapies). Such studies provide baseline information if they are conducted prior to the initial of the activities.

3. **Identify the health care structure that will be used.**

Once the area of application and the ALRI characteristics have been determined, the next step is to identify the structure available for implementation of the control strategies. The structure includes all resources or policies in place by the government and all health providers participating in ALRI control, including hospitals, health centers, health posts and CHWs.

Close examination of CHW systems helps to understand the range of services as determined by the government that CHWs may perform (such as ability to dispense pneumonia medicines and access to advanced centers of care). A CHW must be approved to administer Cotrimoxazole (pneumonia medication).

A list of health care establishments can be made and flows of referral between the various levels of care should be followed. Identifying the available health care structure also includes determining the number and category of health personnel involved in the planning and supervision of strategy application.

4. **Plan the implementation of ALRI control strategies in the area of application.**

The implementation of ALRI control strategies in a selected area should be carried out in a sequential and organized manner so as to ensure achievement of the proposed objectives as efficiently as possible. To this end, it is necessary to acquire funding, train CHWs, provide drugs for treatment, and supervise CHWs in order to ensure effective application of the strategies.

It is also important to partner with other organizations serving the same community. Partnerships should be established with health centers to whom sick children will be referred, local health organizations, community groups (Mother’s
Group, Father’s Group), community leaders and religious groups. This program relies on community engagement and must be supported by the community.

ARI control efforts must be phased into the overall health strategies of the community to have maximal results. According to HHF experiences in training outside Haitian organizations, a realistic Plan of Action for implementing an ALRI protocol requires at least 6 months.

**A CHW ALRI Training Course**

ALRI case management training prepares CHWs to assess, classify and treat children with ALRI. Therefore, it is important to emphasize practical training in the care of children. For this reason, at least 50% of the training time should be devoted to practice. The remaining time should be spent studying the ALRI strategies.

Course designs may vary by region. The model for this manual was the ALRI course developed by HHF. The HHF classroom course works with a group of 20 CHWs for 5 days. However, there are 2 important sessions which take place in rural health posts. By the end of the program, the CHWs recognize danger signs of ALRI and use charts to assess and treat children. The course has a strong practical focus with emphasis on the skills for assessment, treatment and communication with caregivers. A detailed description of this training course can be found in Appendix A.

**Haitian Health Foundation**

This manual was created based on the success of the Haitian Health Foundation (HHF) in decreasing ALRI-related mortality in children under 5 by 50% over a 5-year period. HHF is a non-governmental organization based out of Connecticut, United States of America. HHF established its primary care public health program in 1987 and a medical clinic in 1990. HHF serves villages that 1) are greater than 1 hour from a clinic, 2) have a population receptive to HHF, 3) demonstrate an established medical need, and 4) do not have a village-level government health worker working or living in their area.
Haitian Health Foundation ALRI Experience

Since 1988, HHF has been conducting child survival activities in remote Haitian villages using resident CHWs with a seventh grade education on average and Licensed Nurse Practitioner (LPN) supervisors. In 1990, HHF was one of the 4 international sites selected by WHO Geneva to conduct a focused ethnographic survey of the explanatory model of pneumonia with rural women (Gebrian, 2005). The WHO guides for CHWs and nurses were translated into Creole. The training was conducted by Johns Snow Inc. with the support of USAID and UNICEF-Haiti beginning with nurse supervisors and then CHWs. HHF adapted and implemented the WHO protocol in 1993, when all the CHWs had 4 years of experience. During 1993 though 1999, HHF field staff applied the protocol 17,000 times and computerized each case record. When the intervention was evaluated by the U.S. Centers for Disease Control, the evaluators determined that HHF had reduced the pneumonia-specific mortality rate in children under five by 50% (CDC, 1997).

By 2005, HHF had documented 48,500 cases of pneumonia (simple colds were no longer recorded); the program had expanded to a total number of 53 rural CHWs treating local children. HHF field staff was responsible for a verified censused population of 150,000 and an additional “area of access” of 50,000 more individuals (HHF, 2005). However, the spread of the recognition of pediatric pneumonia has spread far beyond the confines of the registered villages of HHF.

Objectives of the Francophone Manual for ALRI Case Management

The development of a written Francophone manual for CHWs on ALRI interventions is based on HHF’s successful adaptation of the WHO case management protocol in 1990. The manual was created in 2005-2006 by Bette Gebrian, Judy Lewis, Renate Schneider and Yvette Wild, a medical and public health student at the University of Connecticut, as a thesis project. The objectives for this manual are:
1. To bring together existing HHF resources into a unified written manual for community health prevention. This may be expanded to community-based program implementation of other common diseases.

2. To provide a manual for programs in other Francophone countries to use in implementing community-based ALRI treatment programs.

3. To reduce ALRI-related mortality in children under 5.
**Acute Lower Respiratory Infection (ALRI)**

An Acute Lower Respiratory Infection (ALRI) involves the trachea, bronchial tubes and the lungs themselves. When a respiratory infection strikes, any of these systems can be involved. Common ALRIs include a simple cold or cough, bronchitis, bronchiolitis, pneumonia, diphtheria, measles, and pertussis (whooping cough). Approximately 20% of all deaths are due to ALRIs – pneumonia, bronchiolitis and bronchitis. 90% of these deaths are due to pneumonia, which are approximately 2 million deaths of children under the age of 5 worldwide (Benguigui, 1998). Early recognition and prompt treatment of pneumonia is life saving. This chapter describes the causes of ALRI, its diagnosis, treatment and follow-up. This chapter does not discuss the ALRI Flow Chart for recognizing, classifying and treating ALRI. The flow chart is described in the Training Chapter.

**Cause of ALRI**

ALRIs are caused by an interaction between the child, the infectious agent, and the environment. In developed countries, ALRIs are caused by self-limiting viruses. In less developed countries, 80% of all pneumonia are caused by two types of bacteria, *Streptococcus pneumoniae* and *Haemophilus influenzae* (WHO). However, it is important to look for the presence of other diseases along with pneumonia such as measles that may occur before a serious pneumonia (Gebrian, 2005). ALRIs are transmitted mostly from infected to non-infected persons through the air we breathe. The infected person sprays bacteria into the air during sneezing, coughing, talking or sharing contaminated eating utensils. Other risk factors that increase the spread of ALRI include: low birth weight, diarrhea, malnutrition, poor breast-feeding, lack of immunizations, nutritional deficiencies (especially Vitamin A), high fever or cold body temperatures, indoor air pollution urban air pollution, overcrowding, poor hygiene, lack of access to health
services, and low socioeconomic status (WHO). All associated illnesses and risk factors must be explored when assessing a case of pneumonia in a child.

**HIV/AIDS and ALRI**

HIV infection is the newest risk factor for ALRI. The HIV epidemic has led to a dramatic increase in the incidence of *P. Carinii* pneumonia and makes children susceptible to bacterial pneumonia infection (WHO). HIV-infected children are more likely to have the other ALRI risk factors mentioned above, placing this group of children at an even higher risk of developing an ALRI. With the growing number of HIV cases in the developing world, any progress made in controlling ALRI spread is threatened. The connection between host, environment, and infectious agent can be directly seen when linking HIV/AIDS to ALRI.

**Prevention of ALRI**

Some ALRIs are prevented with vaccinations. These include measles, diphtheria, and whooping cough. If children are vaccinated against measles, whooping cough, and diphtheria, up to 25% of the deaths from these infections can be prevented (WHO). Vaccines specific to *H. Influenzae* and *S. Pneumoniae* have shown promising results in developed countries, but remain unavailable at the present time in developing countries (WHO).

Improving nutrition and breastfeeding also strengthen the defenses of the child. Other preventive measures include reducing the number of low birth weight deliveries, reducing indoor air pollution, and keeping infants warm. ALRI may be prevented, however due to present limitations of vaccines and the lack of measures to prevent risk factors for pneumonia, case management is the most important way to prevent mortality from pneumonia.
Symptoms of ALRI

ALRI include the following symptoms:

- trachea and bronchial tube infection – cough, with or without sputum, chest pain, difficulty breathing, wheezing, coarse breath sounds
- lung infection – wheezing

ALRI are often accompanied by fever, defined by a temperature above 100.4 degrees F (38 degrees C). Generalized body aches and pains, joint pains, sweats, and diarrhea or constipation can occur with respiratory infections. Lymph nodes may become enlarged and tender in the neck.

Community Diagnosis of ALRI

Community case management diagnoses ALRI by clinical signs. The earliest studies identified episodes by using such symptoms as respiratory difficulty, elevated respiratory rate, intercostal retractions, and wheezing with pneumonia. However, there was variation in the best way to combine respiratory signs and symptoms for diagnosing pneumonia. In an effort to minimize variations in ALRI diagnosing, the WHO initially recommended that a child with coughing and tachypnea (defined as respiratory frequency ≥ 50 per minute) be considered as a pneumonia case. However, the disagreements between definitions amongst organizations led to a debate on the variability in respiratory frequency according to the age of the child, variability in measuring respiratory frequency according to the methods employed, and variability among observers when patients are examined.

In 1982, WHO amended its recommendations, establishing that children under 5 years of age with coughing or respiratory difficulty should be treated as possible cases of pneumonia based on the following factors (WHO, 1982):

- The Respiratory Rate
- Chest Indrawing
The current definition of fast respiratory rate is:

- ≥60 breaths per minute for children between 2 weeks - 2 months of age
- ≥50 breaths per minute for children from 2-11 months of age
- ≥40 breaths per minute for children from 1-5 years of age

These recommendations are appropriate for case management by CHWs in the field and have been in use since 1982. These signs have been successfully evaluated in developing countries.

**Treatment of ALRI**

When pneumonia is diagnosed, pneumonia medication begins immediately. As mentioned previously, *Streptococcus pneumoniae* and *Haemophilus influenzae* cause about 80% of fatal pneumonia cases in the developing world. The WHO recommends Cotrimoxazole as an inexpensive pneumonia medication that attacks *Streptococcus pneumoniae* and *Haemophilus influenzae* (WHO). However, widespread and inappropriate use of antibiotics has resulted in some antibiotic resistance. In areas where Cotrimoxazole does not work, the WHO considers Amoxicillin in children with mild pneumonia. In Haiti, Cotrimoxazole is half the price of Amoxicillin treatment. Cotrimoxazole treatment costs HHF 45 Gourdes ($1 USD). However, HHF subsidizes the cost of Cotrimoxazole for children in HHF villages. Families pay 7 Gourdes ($0.15 USD) for a treatment. In contrast, Amoxicillin can cost up to 80 Gourdes ($2 USD) for a treatment and is not subsidized for the villages by HHF (HHF, 2005). Developing countries and CHWs must regulate the appropriate use of antibiotics so that effective treatment is available to all children in the developing world.

If pneumonia is ruled out based on the lack of the above signs, the caretaker would not be given medication and instead will be given instructions for home care and palliative treatment.
Follow-up

CHW case management assesses and treats ALRI in the field. Unless the patient is severely ill, most treatment for mild pneumonia occurs in the house. Due to the high risk of mortality from pneumonia, it is important for the community worker to ensure that they follow-up child’s health status in a day or two after the initial assessment. This may mean that the CHW will make a home visit to the child’s home or arrangements will be made with the caregiver for the child to be brought to the health worker 1-2 days after the initial assessment. At this time, the CHW can ensure pneumonia medication is administered correctly and can check the respiratory rate again to see if the child’s health is improving, stable or deteriorating. The treatment plan can change at this time, if necessary.
KEY PLAYERS

Introduction

Key players in the detection and treatment of ALRI for children under 5 years of age include Community Health Workers (CHWs), trainers and supervisors, and the community. CHWs act as a liaison between local villages and health services and are essential to ALRI management. Trainers provide CHWs with the skills to apply case management in their communities and act as a resource for questions, evaluation, and supervision of CHWs. Community members must be aware of the danger signs of pneumonia and bring the sick child to a CHW immediately to ensure prompt pneumonia detection and treatment.

Community Health Workers (CHWs)

CHWs are chosen by their community and are trained to provide preventive and basic health care and education to families in remote villages. CHWs make home visits to children within their area. CHWs give vaccines, monitor children for malnutrition, and conduct seminars on issues of public and preventive health, such as prenatal care, nutrition, and oral rehydration, among other topics.

CHWs are essential to providing individual and local ALRI assessment, classification and treatment. After being trained to follow the protocol in this manual, CHWs will provide first-line health care in their area.
Trainers

Trainers are senior members (for example, doctors, nurses, nurse practitioners, or senior CHWs) of the health services staff who are trained in ALRI case management. They then train local CHWs, and evaluate and supervise them in ALRI assessment, classification and treatment through direct observation and indirect evaluation of case records.

Community

The community and primary caretakers of children are another group who play an important role in observing changes in a child’s health. This group must be educated about ALRI symptoms and the fatal consequences of delaying prompt treatment. Community and family members must recognize signs of major childhood illness and know when to seek the help of a CHW. CHWs must recognize the importance of educating community members and make a firm commitment to doing so.
Training Community Health Workers (CHWs) in ALRI case management is the first step to increase access to ALRI interventions and to decrease pneumonia-related mortality in children less than 5 years of age. The training experience requires detailed planning and must teach CHWs to effectively evaluate, classify, and treat children with ALRI. Training of CHWs has two components:

1. Study of the materials that describe and analyze the strategies
2. Development of the skills needed to assess ALRI. Specifically, CHWs must be competent at measuring respiratory rate and looking for chest indrawing, correctly dispensing medicine, and documenting care.

This chapter defines the role of the CHWs in ALRI interventions. Careful decision-making and documentation are critical. Case records and other documents must be understood and maintained in an organized fashion. This chapter reviews:

- Importance of the Community Health Worker
- Importance of the Community
- ALRI Danger Signs
- ALRI Flow Chart
- Case Management Documentation
- Caregiver Home Care Cards
- Management of Cotrimoxazole
- Making a Referral
- Monthly Summary

Upon completion of the training outlined in this chapter, the CHW will be familiar with the strategies and skills used in ALRI case management. The CHW will know how to assess, classify and treat a child with ALRI. In addition, the CHW will know how to document case reports and to submit monthly summaries to their supervisor.
Importance of the Community Health Worker

The Community Health Worker (CHW) is elected by a community to promote good health practices. The CHW is also a local provider who can assess, treat, counsel and refer sick children to a dispensary or a hospital. If a child under the age of 5 has pneumonia, the CHW has a central role in providing accessible and immediate treatment and referral to a hospital, thereby decreasing the chance of death from pneumonia. The CHW is often the first health personnel to assess and treat a sick child. It is important that the CHW is well trained in effective ALRI interventions and can provide essential services to decrease ALRI-related morbidity in children under 5 years old.

Importance of the Community

The community and caretakers of children are another group who have an important role in observing changes in a child’s health. Community member education is important and CHWs must make a firm commitment to promoting health education. The community must learn to recognize ALRI danger signs and appreciate the fatal consequences of delaying prompt treatment. Community and family members learn to recognize danger signs of major childhood illness and know when to seek the immediate help of a CHW through community songs and skits.

ALRI Danger Signs

Mme. Bordeau notices that her 6 month old daughter, Marie, has not been well over the past few days. She started a cough 3 days ago and has not been breast-feeding her normal amount. She sleeps all day and her abdomen feels warm when her mother places her hand on her. Starting last night, she is breathing faster than normal and makes grunting noises when she breathes out. Today, she is not breast-feeding at all and continues to sleep and make grunting noises. Mme. Bordeau is worried and brings Marie to the village CHW.

Why is Mme. Bordeau worried?
CHWs and community members must know the Danger Signs well and be able to recognize them in a sick child! Each danger sign will be explained in details in the Case Management Documentation. Danger signs of pneumonia include:

Not Breathing Well
Not Breastfeeding or Drinking At All
Convulsions
Lethargy
Serious Malnutrition
Fever

Community members should be aware of cough or difficulty breathing in a child as signs of ALRI and seek medical care by a CHW immediately. CHWs are further trained to recognize the specific signs of pneumonia. Because children have symptoms of difficulty breathing and cough, *increased respiratory rate and chest indrawing* are the two signs that CHWs should recognize as most predictive of pneumonia. Respiratory frequency is measured with a UNICEF timer according to age. The timer beeps at 30 and 60 seconds, so the CHW does not need a watch.

**Respiratory Rate** is the number of times a child exhales and inhales in one minute.

**Practice:**
* Become aware of your own exhalation and inhalation.

**Exhalation** = Breath Out  
**Inhalation** = Breath In

* Using a timer, count the number of times you exhale in one minute. This is your respiratory rate per minute
1. To assess respiratory rate, the child must be lying down or sitting calmly. If necessary, the child can be held by a caregiver.

2. Respiratory rate can be counted by observing the chest or the back rise and fall. Observe the child, paying attention to exhalation and inhalation patterns.

3. Using a UNICEF timer, count the number of exhalations observed in one minute.

4. Repeat measurement of the child’s respiratory rate if the number is greater than the maximum normal respiratory rate in the table below.

<table>
<thead>
<tr>
<th>Age (or Weight) of Child</th>
<th>Danger Sign for Respiratory Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks - 2 months (less than 5 kg)</td>
<td>≥ 60</td>
</tr>
<tr>
<td>2 months – 11 months (5-10 kg)</td>
<td>≥ 50</td>
</tr>
<tr>
<td>12 months – 5 years (10 to 19 kg)</td>
<td>≥ 40</td>
</tr>
</tbody>
</table>

**Chest Indrawing**

Chest indrawing is a sign of severe pneumonia in children. The chest normally moves out with inhalation and moves in with exhalation. Chest indrawing is abnormal and is present if the lower chest moves in when *inhalation* occurs.

1. To assess chest indrawing, a child must be lying down or sitting calmly. If necessary, a child can be held by a parent.

2. Undress the child to expose the chest and abdomen.

3. Observe the lower chest movement as it changes with inhalation and exhalation.

4. If the child takes a breath in and the lower chest moves in, the child has chest indrawing.

**Practice:** * As a group, look for chest indrawing in a child in each age category above.

**DVD:**

IMCI Video Exercises: Department of Child and Adolescent Health and Development
World Health Organization - Part I and II (WHO, Geneva)

**VHS:**

Management of Sick Children - Part 1, 2, 3, 4
ARI Assessment of the Child with Cough or Difficulty Breathing
World Health Organization
Language English; Time 112; (WHO, Geneva)
ALRI Flow Chart

ALRI Flow Charts are used to assess, classify and treat ALRI in children under 5 years old. This technique is a standardized stepwise approach for CHWs. The ALRI Flow Chart is the most important tool to reduce pneumonia-associated morbidity in children. The ALRI Flow Chart is described for 3 age groups: 2 weeks - 2 months, 2-11 months, and 12 months–5 years. In the field, CHWs must use a laminated Flow Chart for ALRI assessment and treatment plans. Full size versions of each Flow Chart are found in APPENDIX B. The backside of the Flow Charts reviews treatment dosage, assessment and referral strategies.

Child 2 weeks - 2 months:

A child 2 weeks – 2 months of age who is coughing or breathing poorly is brought to the Community Health Worker

Count the number of respirations in a full minute. Recount the number of respirations if ≥ 60 times per minute

Are there any Danger Signs?
Cannot breastfeed well
Not breathing well
Convulsions
Lethargic
Fever or Chills

If NO

Does the child have CHEST INDRAWING or RESPIRATORY RATE ≥ 60 TIMES PER MINUTE?

If NO

SERIOUS ILLNESS
Refer IMMEDIATELY
Give the child 1st dose of Cotrimoxazole
Keep the child warm

PNEUMONIA
Refer IMMEDIATELY
Give the child 1st dose of Cotrimoxazole
Keep the child warm

NO PNEUMONIA
ONLY COUGH OR COLD
Counsel caretaker on proper home care

Counsel caretaker on proper home care

- 21 - CHW Training Manual-Flow Chart
A child 2 months - 11 months of age who is coughing or breathing poorly is brought to the Community Health Worker.

Count the number of respirations in a full minute. Recount the number of respirations if ≥ 50 times per minute.

Are there any Danger Signs?
- Cannot drink at all
- Not breathing well
- Convulsions
- Lethargic
- Serious Malnutrition

IF NO

SERIOUS ILLNESS
- Refer IMMEDIATELY
- Give the child 1st dose of Cotrimoxazole
- Keep the child warm

SERIOUS PNEUMONIA
- Refer IMMEDIATELY
- Give the child 1st dose of Cotrimoxazole

IF NO

Does the child have CHEST INDRAWING?

IF NO

PNEUMONIA NOT SERIOUS
- Give the child 1st dose of Cotrimoxazole with caregiver
- Teach caregiver to administer Cotrimoxazole at home
- Counsel caretaker on proper home care

IF NO

NO PNEUMONIA: COUGH OR FLU
- If coughing > 15 days, refer
- If the child has a fever or HAD a fever, refer
- Counsel caretaker on proper home care
A child 12 months – 5 years of age who is coughing or breathing poorly is brought to the Community Health Worker

Count the number of respirations in a full minute. Recount the number of respirations if ≥ 40 times per minute.

Are there any Danger Signs?
- Cannot drink at all
- Not breathing well
- Convulsions
- Lethargic
- Serious Malnutrition

If NO

If NO

Does the child have CHEST INDRAWING?

SERIOUS ILLNESS
- Refer IMMEDIATELY
- Give the child 1st dose of Cotrimoxazole
- Keep the child warm

SERIOUS PNEUMONIA
- Refer IMMEDIATELY
- Give the child 1st dose of Cotrimoxazole

PNEUMONIA NOT SERIOUS
- Give the child 1st dose of Cotrimoxazole with caregiver
- Teach caregiver to administer Cotrimoxazole at home
- Counsel caretaker on proper home care

NO PNEUMONIA: COUGH OR FLU
- If coughing > 15 days, refer
- If the child has a fever or HAD a fever, refer
- Counsel caretaker on proper home care
Treatment:

*Note:* The CHW gives the first dose of Cotrimoxazole with the caregiver in **all** cases, and gives the medicine to the caregiver to give to the child at home or refers the child to an advanced center of care.

1. Immediate referral to a hospital or dispensary is indicated for:
   - Children 2 weeks - 2 months of age with **all** pneumonia or serious illness
   - Children more than 2 months of age with serious illness or serious pneumonia

2. Any child who is referred should receive their first dose of Cotrimoxazole before referral. Give the Cotrimoxazole at home.

*Note:* If a referral is not possible due to distance of travel or any other reason:
- Show the caregiver how to administer Cotrimoxazole at home
- Teach the caregiver home care of child
- Visit child every 2 days or have parent bring child to the CHW every 2 days to assess child’s health status
- If the child is worse or does not improve after 2 days, refer again

3. Children greater than 2 months of age with PNEUMONIA NOT SERIOUS receive the complete treatment of Cotrimoxazole at home. Note that the CHW must first be approved by the government to administer Cotrimoxazole. The CHW gives the first dose of Cotrimoxazole with the caregiver and gives the medicine to the caregiver to give to the child at home. Cotrimoxazole kills the bacteria causing the illness and is a medication for the child with serious illness or pneumonia.

**Cotrimoxazole:**
- The CHW **MUST** give the first dose of Cotrimoxazole with the caregiver.
- Give the recommended dose of Cotrimoxazole as noted in the table below
- **Dissolve each tablet of Cotrimoxazole in 10 cc of water, juice, or breastmilk**
- Readminister dose if child vomits less than 30 minutes after giving Cotrimoxazole
- Have the caregiver repeat what the CHW just did to ensure that the caregiver understands the directions
### Age of Child

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>Cotrimoxazole Tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(120 mg or 100/20)</td>
</tr>
<tr>
<td>(twice a day for 8 days)</td>
<td></td>
</tr>
<tr>
<td>2 weeks - 2 months (less than 5 kg)</td>
<td>1 tablet</td>
</tr>
<tr>
<td>2 – 11 months (5- less than 10 kg)</td>
<td>2 tablets</td>
</tr>
<tr>
<td>12 months – 5 years (10 to 19 kg)</td>
<td>3 tablets</td>
</tr>
</tbody>
</table>

4. Any child with PNEUMONIA NOT SERIOUS or COUGH OR FLU should remain at home for their treatment. The CHW must teach home care to the caregiver using a home care card that is then given to the caregiver.

How to teach the child’s family how to administer Cotrimoxazole:

- a. Show the caregiver the dose. Give the first dose of medication with the caregiver.
- b. Teach to give the dose each day, twice during the day.
- c. Give the dose each day for 8 days – even if the child is getting better.
- d. Show the caregiver the tablet.
- e. Show how to swirl and dissolve each tablet in 10cc of breast milk, water or juice.
- f. Explain to them to give the medication again if the child vomits within 30 minutes of receiving the first dose.
- g. Ensure that the child’s family understands everything well; ask questions about what you just did. Have the family repeat the instructions back to you.
- h. Ask the caregiver to prepare the medication and have them prepare the dose in front of you.
Follow Up:

The CHW must follow up with any child who receives home medication or home care after 2 days to assess the child’s health status and progression of disease.

Each time a follow-up visit is made:

- Write down Date, Respiratory Rate and Body Temperature
- Check to see if the parent has given Cotrimoxazole as indicated by counting the number of pills remaining. If any pills have been lost or if the child vomited the pills, the CHW must give replacement pills. For this reason, the CHW must bring Cotrimoxazole to the follow-up visits.
- Make a referral:
  - If there are danger signs, fast respiratory rate or chest indrawing
  - If the child’s health is not better after 2 days
The main objective of ALRI control is the identification of pneumonia among children with ALRI. The CHW is crucial to ensuring that appropriate treatment is provided. The first step in assessing a child with ALRI is to get a good idea of the illness. The CHW must document the child’s identification, characteristics of illness and treatment or medications used. During the assessment, the child must be calm. If child is not calm, decrease any noise, feed or distract the child.

1. **Identification**: Include the child’s name, age, gender, identification number and location. Write responses on appropriate lines of Case Management Form:

**IDENTIFICATION**

Name of Child  
Age of Child  
Address  
Date  
Gender  
Record number or Computer Identifier  

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Case Documentation
2. Characteristics of Clinical Illness:

Assessment of the Child with Cough or Difficulty Breathing

<table>
<thead>
<tr>
<th>ASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the child coughing? For more than 3 days or less than 3 days?</td>
</tr>
<tr>
<td>Is this child having difficulty breathing?</td>
</tr>
<tr>
<td>What has the mother done for care up to now?</td>
</tr>
<tr>
<td>Does the child have another illness, too? If yes, what is wrong?</td>
</tr>
<tr>
<td>Does the child have a fever?</td>
</tr>
<tr>
<td>Does the child breastfeed currently?</td>
</tr>
<tr>
<td><em>If less than 6 months:</em></td>
</tr>
<tr>
<td>- Exclusive</td>
</tr>
<tr>
<td>- Partial</td>
</tr>
<tr>
<td>- <em>Time-to-Time</em></td>
</tr>
<tr>
<td>Does the child have diarrhea?</td>
</tr>
</tbody>
</table>

**LOOK, LISTEN, RECORD**

Look for chest indrawing
Count the respiratory rate. Recount respiratory rate again.
Measure body temperature
Measure the weight of child (to determine nutritional state)
Listen for wheezing or stridor

**Record:**

a. Last date of Vitamin A dose
b. Vaccinations: Complete, Not Complete for age of child
c. Date of Measles Vaccination
1. The child **not breathing well**. It is important to know the child's age to know if the child is not breathing well. In particular, look to see if the child is:

- coughing more than 30 days, or
- breathing too fast, or
- making breathing noises, or
- using effort to breath

Remember,

<table>
<thead>
<tr>
<th>Age of Child (or Weight of Child)</th>
<th>Danger Sign for Respiratory Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks - 2 months (less than 5 kg)</td>
<td>≥ 60</td>
</tr>
<tr>
<td>2 months – 11 months (5- less than 10 kg)</td>
<td>≥ 50</td>
</tr>
<tr>
<td>12 months – 5 years (10 to 19 kg)</td>
<td>≥ 40</td>
</tr>
</tbody>
</table>

2. The child is **not breastfeeding or drinking at all**. A danger sign is if:

- the infant cannot breastfeed, or
- child cannot drink anything, or
- the child is too weak to drink, or
- each time the child drinks, the child vomits afterwards
3. **Convulsions.** This is an important sign if convulsions happen during the current illness for which the child has been brought to the CHW. Convulsions are seen if:

- the child may quickly twitch or shake part of the body, or
- the child’s eyes may appear to roll backward, or
- the child immediately becomes sleepy after shaking or rolling eyes backwards.

4. **Lethargy.** Look to see if the child:

- is floppy always, but was well and active before the current illness or
- sleeps when being spoken to, if someone claps hands or undresses the child, or
- has glazed eyes as if the child does not see.

5. **“Serious Malnutrition”** during the training, that is to say “the last stage”, which is called “marasmus” (the child has only skin and bones).

or **Kwashiokor** (when the child’s body shows swelling all over, and has red tinted sparse hair on his head).

6. **Fever/Chills.** If the body temperature rises to 38 degrees C or higher during examination or if the temperature was higher than 38 degrees C in the past.

7. **Chest Indrawing.** Chest indrawing occurs if the child takes a breath in and the lower chest moves in, the child has chest indrawing. This means that the child is working hard to breath and is using muscles to help bring in air.
Use the above assessment to fill out the section of the Case Management Form below:

**CASE MANAGEMENT**

Cough: yes ( )  no ( )  less than 3 days ( )  more than 3 days ( )

Difficult Breathing: yes ( )  no ( )

Care mother has already given: ___________________________________________________________________

Does the child have another illness?  No ( )  Yes ( )  What is it?  ______

Respiratory Rate: ___________________________ / ___________________________

**DANGER SIGNS: LESS THAN 2 MONTHS**

- Cannot breastfeed: present ( )
- Convulsions: ( )
- Lethargy: ( )
- Fever or Chills: ( )
- Chest Indrawing: Present ( )

**2 MONTHS TO 5 YEARS**

- Cannot drink at all: present ( )
- Convulsions: ( )
- Lethargy: ( )
- Serious Malnutrition: ( )
- Not Present: ( )

Fever: Yes ( )  No ( )  T ________

Breast-feeding: Yes ( )  No ( )  N/A ( )

Date of last dose of Vitamin A: ________________

**Nutritional Status (N-M 1-2-3)**

Vaccination status? Complete for Age: ( )

Not Complete for Age: ( )

Diarrhea: Yes ( )  No ( )

Breathing Noise: Yes ( )  No ( )

Measles Vaccine: Date: __________

3. **Classification of ALRI:** Using the ALRI Flow Chart, follow the stepwise approach to the correct diagnosis and place a check on the Case Management Form under the appropriate ALRI classification.

**ALRI CLASSIFICATION**

- Serious Illness: ________________
- Serious Pneumonia: ________________
- Pneumonia Not Serious: ________________
- No Pneumonia: Cough or Flu: ________________
4. **Medication**: Write down any medication you give the child immediately and to take at home. This includes Cotrimoxazole or Vitamin A capsule if it is warranted. Explain the home care card and document that you gave the home care card to the caregiver. If a referral was made, check off the appropriate boxes on the form.

**EXAMPLE 1**: Cotrimoxazole (120 mg tablet) – 2 co; twice a day for 8 days

or

**EXAMPLE 2**: No medication given. Counseling and home care education to Mother

This is an example of the Medication section on the Form:

**MEDICATION**

| DID YOU GIVE THE PARENT A HOME CARE CARD? | Yes ( ) | No ( ) |
| DID YOU REFER THE.Child? | Yes ( ) | No ( ) |

5. **Follow-up Visit**: If a referral is not initially made, the CHW must revisit the child at the child’s house or have the caregiver bring the child to the CHW 2 days after the initial assessment. Findings of the follow-up visit are documented on the original Case Management Form for appropriate treatment. Make a referral to the nearest advanced care facility if there are danger signs, fast respiratory rate, chest-indrawing or if the child’s health is not better after 2 days. If the child dies, the CHW fills out a death form.

Document the following:

- Respiratory Rate (repeated if initially elevated for the child’s age)
- Body Temperature
- Chest Indrawing: □ Improved □ Worse □ Same
- Child’s Health Status: □ Improved □ Worse □ Same □ Died
- Referral made at this visit: □ Yes □ No
2nd ALRI FOLLOW-UP VISIT

Date__________________ Respiratory Rate _____ / _______ T ____________

Chest Indrawing Better ( ) Worse ( ) Same ( )

Child Better ( ) Worse ( ) Same ( ) Dead ( )

Referral Yes ( ) No ( )

Follow the ALRI Flow Chart to for treatment. The Case Management Form is complete after the follow-up, when treatment may be changed accordingly. Submit this form to the CHW Supervisor at the end of the month.

Appendix C contains 2 forms: an example of a child’s Case Management Form and a blank Case Management Form. The child in the example is a 3 year old who has been brought to the CHW with 4 days of coughing and fever

Caregiver Home Care Cards

Any child with PNEUMONIA NOT SERIOUS or COUGH OR FLU remains at home for treatment. However, a child’s health may worsen and serious illness or pneumonia can lead to death. Caregiver education and rapid access to the CHW if the child is worse are crucial factors in reducing mortality.

The CHW counsels and provides home care education to the caregiver if the child needs home care. The important points of home care are described in words and pictures on Home Care Forms (Home Care Cards can be found in Appendix D). CHWs can use the pictures to teach home care, according to the child’s age:

- 33 -

Home Care Cards
Child 2 weeks - 2 months:
1. It is important to watch the baby and bring the baby to the Community Health Worker immediately if:
   - The baby breathes poorly
   - The baby cannot breastfeed well
   - The baby breathes quickly
   - The baby is worse

2. At home, the mother can:
   - Keep the baby warm
   - Breastfeed frequently
   - Clean the nose if baby does not breastfeed well

Child 2 months – 5 years:
1. It is very important to watch the child and bring the child to the Community Health Worker immediately if:
   - The child breathes poorly
   - The child cannot drink at all
   - The child breathes quickly
   - The child is worse

2. At home, the mother can: Depending on the child’s age,
   - Feed or breastfeed frequently
   - Give fluids to drink
   - Soothe the child’s throat while sick or after being sick
   - With traditional teas

   - Clean the nose if the child does not feed or breastfeed well.
After home care education is explained, the CHW should make sure the caregiver understands by having the caregiver repeat the warning signs and home care. The CHW should answer questions. The CHW will revisit the child after 2 days to observe home care, assess the child's illness at home and refer if necessary.
Management of Cotrimoxazole

Each month, the CHW requests a quantity of Cotrimoxazole based on the community needs and on known seasonal variation of ALRI episodes. It is important that the CHW records Cotrimoxazole distribution to ensure that medication is given to villages or neighborhoods with high rates of ALRI. At the end of the year, the Cotrimoxazole record should be submitted to the CHW Supervisor. Cotrimoxazole distribution and usage is documented on the “Monthly Cotrimoxazole Central Table” Form. (A blank copy of the form can be found in Appendix E).

Example:
Mme. W, a CHW for the village of LaSalle, used 366 doses of Cotrimoxazole to treat 48 cases of ALRI in the month of January. Therefore, for the month of February, she requested 400 tablets to replace what was used and prepare for the new month.

**Step 1: Fill in Amount Given**

<table>
<thead>
<tr>
<th></th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amt in stock</td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
</tr>
<tr>
<td>Jan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the end of February, Mme. W had to fill in the remaining boxes on the “Management of Cotrimoxazole” Form. She reviewed all of her Case Management Forms for the month of February.

She treated 5 children between the ages of 2 weeks – 2 months. Each child in this age group required 1 tablet per dose and received 1 dose twice a day for 8 days, for a total of 16 tablets for each case of ALRI. 16 tablets for 5 children gave her a total of 80 tablets of Cotrimoxazole used.
**Step 2: Fill in Quantity and # of Cases for the age group: 2 weeks – 2 months**

<table>
<thead>
<tr>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>366</td>
<td>48</td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mme. W treated 4 children between the ages of 2 – 11 months. Each child in this age group required 2 tablets per dose twice a day for 8 days, for a total of 32 tablets for each case of ALRI. 32 tablets for 4 children gave her a total of 128 tablets of Cotrimoxazole used.

**Step 3: Fill in Quantity and # of Cases for the age group: 2–11 months**

<table>
<thead>
<tr>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>366</td>
<td>48</td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mme. W treated 2 children between the ages of 12-59 months. Each child in this age group required 3 tablets per dose twice a day for 8 days, for a total of 48 tablets for each case of ALRI. 48 tablets for 2 children gave her a total of 96 tablets of Cotrimoxazole used.
**Step 4: Fill in Quantity and # of Cases for the age group: 12-59 months**

<table>
<thead>
<tr>
<th></th>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td>128</td>
<td>4</td>
<td>96</td>
<td>2</td>
<td>366</td>
</tr>
</tbody>
</table>

Mme. W classified 36 children less than the age of 5 with SERIOUS ILLNESS and SERIOUS PNEUMONIA. All these children were given 1 dose of Cotrimoxazole only and then referred to the hospital.

**Step 5: Fill in # of Cases of children who received 1st dose of Cotrimoxazole only**

<table>
<thead>
<tr>
<th></th>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td>128</td>
<td>4</td>
<td>96</td>
<td>2</td>
<td>36</td>
</tr>
</tbody>
</table>

Mme. W lost 10 tablets of Cotrimoxazole due to children who vomited their dose or tablets that dropped on the floor and were discarded.

**Step 6: Fill in # of Tablets Lost**

<table>
<thead>
<tr>
<th></th>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td>128</td>
<td>4</td>
<td>96</td>
<td>2</td>
<td>36</td>
</tr>
</tbody>
</table>

- 38 - Cotrimoxazole Management
**Step 7:** To fill out the Total Quantity, add up all Qty of Tablets for all age groups plus “1st dose only” plus “Doses lost”.

Mme W. added up $80 + 128 + 96 + 36 + 10$. This equals 350 Total Quantity.

**Step 8:** To fill out the Total # of Cases, add up all # of Cases for all age groups.

Mme W. added up $5 + 4 + 2$. This equals 11 Total # of Cases.

<table>
<thead>
<tr>
<th></th>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td># of Cases</td>
<td># of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td>128</td>
<td>4</td>
<td>96</td>
<td>36</td>
<td>10</td>
</tr>
</tbody>
</table>

**Step 9:** The Balance is the (Given monthly quantity) – (Total quantity used).

Mme W calculated $400 - 350$. This equals 50 and is the Balance.

<table>
<thead>
<tr>
<th></th>
<th>Amt in stock</th>
<th>2 wks - 2 mos</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Bal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
<td># of pills</td>
<td># of Cases</td>
<td># of pills</td>
<td># of Cases</td>
<td># of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>400</td>
<td>80</td>
<td>5</td>
<td>128</td>
<td>4</td>
<td>96</td>
<td>36</td>
<td>10</td>
</tr>
</tbody>
</table>

**Note:** Cases that are referred are not part of the total number of IRA cases. However, CHWs are required to follow up on these children when they return from the next level of care.
Making a Referral

Children diagnosed with SEVERE ILLNESS or SEVERE PNEUMONIA require an immediate referral to the nearest dispensary or hospital for advanced treatment. Similarly, a child who does not get better after 2 days of treatment needs to be referred. The CHW is responsible to make this referral by filling out a Referral Form in order for the accepting hospital or dispensary to understand the characteristics of the child’s illness. The form includes:

A. **Identification of CHW** – Provide:
   a. Date
   b. Your name
   c. Your position (ie CHW)
   d. Your village or neighborhood (Name and Number)

B. **Identification of Child** –
   Provide:
   a. Child’s name
   b. Identification number
   c. Age
   d. Sex
   e. Weight

C. **Administered Medications** – Provide details on medications given. Document if a 1st dose of Cotrimoxazole was given before referral. Include Cotrimoxazole, form (tablet or liquid), dose, frequency and number of days taking medication.
   **EXAMPLE**: Cotrimoxazole (120 mg tablet) – 2 co; twice a day for 2 days.

D. **Characteristics of the Illness** – Provide details on the child’s illness. Include how many days of cough or poor respiration, count respiratory rate, describe any chest indrawing, and list danger signs.

E. **Reason for Referral** – Write the child’s classification of illness or reason for referral, as described in the ALRI Flow Chart.

The Referral Form is given to the caretaker to bring with them to the hospital or dispensary. A copy of this form can be found in Appendix F.
Each month, CHWs are required to maintain a monthly tally of types of ALRI in their village or neighborhood. This monthly summary is very important. It will allow the organization to compare different seriousness of ALRI in each village or neighborhood and to evaluate changes in ALRI prevalence over time.

For each diagnosed ALRI case:

- Find the table with the appropriate diagnosis:
  
  **SERIOUS ILLNESS**
  
  **SERIOUS PNEUMONIA**
  
  **PNEUMONIA NOT SERIOUS**
  
  **NO PNEUMONIA : COUGH/FLU**

- Determine the child’s age and sex
- Put a mark in the appropriate MALE or FEMALE box to signify one case

At the end of each month:

- Add up the number of males and females in each box and write the total number in the TOTAL box
- At the end of each month, give the monthly summary to a CHW Supervisor. This is what a summary table for one diagnosis in the Monthly Summary Form looks like (Appendix G). All other diagnoses are arranged in similar tables.

### SERIOUS ILLNESS

<table>
<thead>
<tr>
<th>Age</th>
<th>MALE</th>
<th>TOTAL</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks – 2 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 months – 11 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months – 23 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 months – 35 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 months – 47 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48 months – 59 months</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Chapter Summary

This chapter emphasizes the role of the CHW in ALRI interventions. With proper assessment, classification of disease and treatment, the CHW impacts the ALRI-related mortality in children. An evaluation of the interventions will be made by reviewing documentation filled out by each CHW on a daily to monthly basis.

Chapter Review Questions

Use the following questions to review some major points of the role of the CHW in ALRI interventions. Choose the one answer that answers the question best. Correct answers and related chapter subsections follow.

1. The two signs of pneumonia that the CHW must look for are:
   a. Fever and Cough
   b. Increased Respiratory Rate and Chest Indrawing
   c. Poor Nursing and Lethargy
   d. Convulsions and Diarrhea

2. While using the ALRI Flow Chart, a 1 month old baby is diagnosed with SEVERE PNEUMONIA. The next step is to:
   a. Give home care
   b. Refer to hospital tomorrow
   c. Deliver the 1st dose of Cotrimoxazole and refer to hospital immediately
   d. Teach mother to give Cotrimoxazole three times per day for 8 days at home

3. The Home Care Cards are given to parents if:
   a. The child 2 months – 5 months has PNEUMONIA NOT SERIOUS
   b. The child has COUGH or FLU
   c. A child who needs a referral cannot be referred at this time
   d. All of the above

4. When making a referral to a dispensary or hospital, should you write if Cotrimoxazole has already been given and how much was given?
   a. Yes
   b. No

5. If a child who lives in a distant village has difficulty breathing and cough, who should the family bring the child to?
   a. Community Health Worker
   b. Police
   c. Hospital
   d. Teacher

Answers: b (Signs of Pneumonia), c (ALRI Flow Chart), d (Caregiver Home Care Cards), a (Making a Referral), a (Importance of a Community Health Worker)
SUPERVISION

CHWs must receive intensive supervision on a regular basis to ensure proper use of the ALRI case management protocol. Supervisors who are competent with ALRI case management will supervise the CHW during periodic field visits and will review the CHW’s monthly paperwork at the end of each month. During field supervisions, the Supervisor will perform the following five tasks:

1. Ask the CHW questions about ALRI case management.
2. Analyze with the CHW ALRI control problems detected in the health service at the time of the visit and review correct management.
3. Interview mothers or caregivers of children with cough or difficulty breathing who have been treated by the CHW.
4. Check to see that the health services have adequate supplies of the materials needed for standard case management.
5. Review the records of ALRI cases treated in the health service.

The “Guide for Supervision of ALRI Case Management” evaluates the accuracy of a CHW’s assessment of ALRI in a child. The first part of the form is to be filled out by a supervisor in direct observation of a CHW diagnosing a child with ALRI. The second and third parts of the form pose questions to the CHW and gives immediate feedback to the CHW. The remaining parts of the form interviews caregivers on the effectiveness of the CHW’s communications, assesses adequate materials and supplies and checks on the accuracy of record keeping. This form can be found on the following pages and in Appendix H.
In order to maximize the effectiveness of the WHO adapted Case Management Flow Chart, it is important for the supervisor to “touch base” with the CHW on a regular basis. Feedback allows the supervisor to recognize the good work that the CHW has done and to review areas of weakness that can be further improved upon in order to maximize the CHW’s ALRI case management skills. In some cases, pairing a CHW who is having difficulty with stronger CHW improves the standard case management process.

During feedback sessions, the supervisor can:
1. Check how the activities are progressing
2. Determine if the CHW has any comments or questions
3. Provide the CHW with feedback on:
   - Performance of any specific activities
   - Overall performance regarding daily activities
   - Any issues related to attitude, knowledge or skills

**Types of Feedback**

- **Informal** unscheduled (e.g. in the field, during a scenario or skit, watching the CHW fill out paper work)
- **Formal** scheduled and in writing (e.g. checklists, written documentation)
- **Direct** to an individual CHW (e.g. following direct supervision in the field of the management of a child with ALRI, after reviewing case management paperwork)
- **Indirect** to a whole class (e.g. generic examples)
- **Summative** to an individual or group (e.g. given at the end of a review session, with the purpose of letting the CHW or CHW know what they have achieved).
When to Give Feedback

- Schedule formal feedback sessions at regular intervals, so that both the supervisor and the CHW can gather his or her ideas and questions to ensure a productive communication session.
- Informal feedback sessions may occur at scheduled times or at any time the supervisor feels it is appropriate to communicate with the CHW.
- Schedule the feedback session at less stressful times, when both the supervisor and the CHW are least likely to be rushed or called away.

How to Give Feedback

It is important to give feedback to a CHW in a manner that enhances, rather than damages, their self-esteem. Some believe that praising a CHW’s work will lead to under-performance and criticism will be embarrassing and not motivating. This is not true. If positive and negative feedback are given appropriately, they can give the CHW pride in their work and encourage them to better use the ALRI Case Management skills. CHWs are receptive to feedback from their supervisors. If errors are being made in case management skills or in the paperwork, feedback can identify and correct errors that may lead to death.

Feedback should:

- Be delivered in a calm voice
- Be prompt, closely following the event
- Contain praise, recognition and encouragement
- Be specific (based on first-hand data, actions, and behavior) about why something was good or not up to standard and what the student can do about it
- Focus on changes that can be made in the future
- Not focus on too many different aspects at the same time
Unhelpful feedback may be:

- Too generalized or vague
- Subjective - "I don't like the way that you…"
- Focused on some aspect of performance that the student can't change - the learner must be able to act on the feedback
- Critical of what has happened in the past

Conclusions

Feedback is a valuable and personal way of improving individual learning outcomes and developing rapport between supervisor and CHW. Good communication skills allow the CHW and supervisor to work together in order to correctly assess, categorize and treat ALRI. The majority of CHWs turn to their supervisor if they have any questions about case management skills and it is important the supervisor is available to answer questions, to provide encouragement and to identify areas of improvement that will allow the CHW to take pride in the use of ALRI case management strategies.
DATA MANAGEMENT

Data Management is important to the compilation, evaluation and analysis of ALRI Case Management records. CHWs may document ALRI cases in the field on a hand-written form. However, it is important to create a summative database to organize and analyze case information over time. A written or electronic database system must be in place for an ARLI program to be implemented. A database provides case management quality control and tracking of epidemiologic trends.

Later in this chapter, an Epi Info data set used by HHF to track various outcomes of the ALRI Case Management program will be used as an example. Other organizations may adapt this data set to fit their specific population or merely may use it as a guide to create other electronic methods for tracking and analyzing ALRI cases.

Description of Pneumonia Data Set

Hand-written case management forms are to be filled out in the field by each CHW each time a caretaker brings a child under the age of five for ALRI diagnosis. Data from these forms are entered into a community database on a monthly basis and made available for evaluation and analysis of the ALRI Case Management Program. The database must be developed in the local language.

Information to Use: The following parameters must be recorded in an ALRI program:

- For all children: date of diagnosis, diagnosis, sex, age, village, weight, vaccine status, concurrent diarrhea, breast feeding patterns, health status at follow-up, ID number allowing the child to be located again, child’s caretaker, household characteristics, record of all family members
**Data Format:** Data may be written by hand on a chart to document each measured variable over time. Multiple computer systems also provide database support (e.g. Epi Info, Excel, etc). The HHF Database was in an Epi Info file. Each record contains a subset of the information on a standard ALRI case record form. Appendix I provides an explanation of the individual variable names in the HHF Database.

**Who is Represented in the Data Set:** The data set includes all children under the age of five who are brought to a CHW for services, including ALRI diagnosis.

**How the Data are Entered:** Case records are completed by a CHW immediately after each encounter with a child with suspected ALRI. All CHWs meet monthly at the central office to submit all forms to their supervisor. The supervisor reviews the forms from their region. If there are errors, the form is returned to the CHW for correction. The CHW must either revisit the child or discuss the case with the supervisor to complete the form. If there are no errors, the supervisor submits the case management forms for data entry. It is helpful for the person responsible for the initial data entry to be one of the program supervisors. This person will also maintain and analyze coded data of the intervention so as to understand the impact of the program implementation. A number is put on each case form for verification.

**Calculated Fields:** Most of the fields are filled in by the user during data entry. However, some are automatically filled in by the Epi Info program based on the values of other fields. Wherever the case, in the HHF example, it is indicated in the description for the field that is automatically filled in.
Using the Pneumonia Information

The ALRI information can produce a variety of useful reports, including acting as a marker of internal quality control of the program and evaluating changes in epidemiological picture. The impact of ALRI case management interventions on child morbidity and mortality from ALRI may be followed over time. Possible data reports include:

- Seasonal ALRI variations in a year
- Types of ALRI in various areas (sorted by location, altitude, geography)
- Frequency of ALRI
- Clustering of high occurrences of pneumonia
- Multiple episodes of pneumonia (leading to possible asthma studies)
- Age and gender differences
- Vaccination history in a specific area
- Nutritional status of sick children
- Projection of medication needs by season
- Status of pneumonia during follow up visits
- Rigor of follow up by individual CHWs
- CHW success and failure in application of the ALRI algorithm
- Overall impact of the intervention (ALRI-related deaths)

Using outcomes of the database, feedback on the impact of the intervention can be given to both CHWs and the community. Updating local communities and CHWs on strengths and difficulties within a program is essential to motivate continued support for and community engagement in ALRI case management strategies.
The HHF Pneumonia Information is a product of the ALRI Case Management Project, started in 1993 by the Primary Health Care Outreach Program. As part of this project, a case record form was developed in the local language, Creole.

<table>
<thead>
<tr>
<th>HHF Num</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date &lt;MM/DD/YY&gt;</td>
</tr>
<tr>
<td>Village ###</td>
</tr>
<tr>
<td>Sex &lt;A&gt;</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>B = 0-2 months</td>
</tr>
<tr>
<td>2 = 24-35 months</td>
</tr>
<tr>
<td>Illness</td>
</tr>
<tr>
<td>G = Grip (cold)</td>
</tr>
<tr>
<td>MG = Maladi Grav (severe illness)</td>
</tr>
<tr>
<td>Follow-up</td>
</tr>
<tr>
<td>D = Died</td>
</tr>
<tr>
<td>Measles</td>
</tr>
<tr>
<td>WEIGHTKG</td>
</tr>
<tr>
<td>Nutritional Status</td>
</tr>
<tr>
<td>Breastfeed</td>
</tr>
<tr>
<td>Fever</td>
</tr>
<tr>
<td>Scabies</td>
</tr>
<tr>
<td>Parasites</td>
</tr>
<tr>
<td>Referred for SEVERE DX</td>
</tr>
</tbody>
</table>
Using this information, HHF provided hard evidence to demonstrate a 50% reduction in ALRI-related mortality of children under five years of age in its service area from 1993-1998. An organized and simple approach to an electronic database is essential to the evaluation and analysis of ALRI case reports and an ALRI Case Management program.
COMMUNITY ENGAGEMENT

This manual helps to train CHWs to use case management skills to decrease the rate of ALRI-related deaths in children less than five years of age. Trained CHWs and accurate case management can avoid many ALRI-related deaths, but only if families and the community first recognize the signs of possible ALRI and seek care promptly from a trained provider. Together, CHWs and parents can prove that community-level treatment of pneumonia can be widely implemented and is sustainable. Delays in initial care seeking can be fatal, especially for young infants, who can die quickly from pneumonia. Therefore, an essential component of ALRI programs is effective communication with communities about when to seek care for a child.

Community caregivers include mothers, fathers, neighbors, relatives and adults who provide care to children. Therefore, community engagement regarding ALRI recognition involves every single member of the community. Community outreach educates Mothers groups, Fathers groups, Grandmothers or Grandfathers groups, and community groups.

The most important signs to teach the community of a child with a possible ALRI are:

**COUGH**

**NOT BREATHING WELL**

- “Not breathing well” is to say:
  - The child is breathing too fast
  - The child is making breathing noise
  - The child is using effort to breath
In order for caretakers to act appropriately and quickly when a child shows signs of ALRI, community messages on when to seek care must be understandable and adapted to the local context. For example, in some communities fast breathing, which is a trigger for care seeking, may not be perceived as a danger sign. Discussions, songs and skits can address this danger sign. In other communities, caretakers may notice the rapid up and down movement of the stomach associated with rapid breathing, and messages that instruct a caretaker to bring a child with “rapid stomach movement” (using the local terminology) to a health facility may be more meaningful and effective than messages about “fast breathing”.

It is important for the CHW to integrate case management knowledge with community definitions, local perceptions and beliefs regarding illness in children. Traditional remedies may be used to treat certain illnesses. Some treatments are beneficial to the child while others may be harmful and should be discouraged.

Incorporating the WHO-adapted ALRI assessment and treatment within the cultural context of cough and difficulty breathing improves communication between CHW and caregiver and increases the acceptance of home therapies suggested by the CHW.

Methods of Community Education

SONG

In a population where literacy is low, it is possible for the CHWs to educate caregivers in the community about the dangers of ALRI and pneumonia with non-written materials. One example is a song. It is important that the messages are clear and correct. The melody may be changed or adapted depending on the local community. The CHW may learn the song from a supervisor, share this song with other CHWs, and most importantly, share this song with their community. This song should be sung as often as possible to make sure everyone learns the song and can repeat the key messages.

Below is an example of a Haitian song to review the danger signs of a child who may have pneumonia and the appropriate steps to take in seeking medical care.
Pneumonia Song

(Refrain):
Mothers, there is an illness called pneumonia
Which can kill little children. If you see children
Who breathe fast or who cough, go to the clinic.

Verse I.
Pneumonia is a serious illness, if you wait
You could lose the little one. If you see the little one get worse
Once you have been to the clinic, return with him immediately to the clinic

(Refrain)

Verse II.
Fathers help the mothers
To take care of the child who has pneumonia
Or another illness, because if you do not take care of them
They can easily die.

(Refrain)

THEATRE

CHWs may use theatre or role-playing to engage the community in learning about ALRI danger signs, diagnosis and treatment. CHWs will present a scenario, gather community volunteers to act in the scenario and then observe the actors working through the proper steps of community ALRI recognition and care-seeking behaviors or lead a discussion of appropriate actions of the child’s caregiver. A discussion led by the CHW will review the danger signs in the child and the appropriate steps to be taken. CHWs may repeat this exercise with different scenarios to ensure understanding of the important messages of ALRI management. Appendix J provides 2 examples of role-playing with CHWs in the community. The first skit is a bad example, showing inappropriate communication between CHW and mother. The second skit is a good example of appropriate behaviors.
Conclusion

CHWs are often the first health personnel to see a sick child after a family member or community members recognizes signs of distress or illness. CHWs act as the interface between the community and the provision higher medical services. They communicate with the caretakers in face-to-face encounters at the home and with the community members as a whole in Mothers and Fathers groups. It is therefore important for CHWs to understand the crucial role of community education, engagement and participation in the successful operation of effective ALRI case management. The community plays a vital role in starting the chain of events that will lead to prompt diagnosis, treatment and referral of a child suffering from ALRI.
CONCLUSIONS

Pneumonia remains a major killer of children under five years of age all over the world. The best way to reduce pneumonia-related mortality is to provide effective treatment promptly. Pneumonia can be effectively treated in the community. UNICEF and WHO have recommended that community-level treatment be carried out by well-trained and supervised CHWs.

CHWs

CHWs are key players in the assessment, classification and treatment of pneumonia in the field. Health workers can use simple and effective techniques to:

- Assess children for signs of pneumonia (based on respiratory rates and chest-indrawing)
- Select appropriate treatments,
- Administer the proper dosages of Cotrimoxazole for non-severe pneumonia,
- Counsel parents on how to follow the recommended treatment regimens
- Provide supportive home care, and
- Follow-up sick children and refer them to a health facility for complications.
Children with ALRI who are treated promptly and effectively with Cotrimoxazole have a significantly increased chance of survival. CHWs can effectively manage uncomplicated pneumonia in the community. Case management by CHWs has a significant impact on both overall and pneumonia-specific under-five mortality. A recent meta-analysis of community-based pneumonia case management studies estimated a 20% reduction in all-cause under-one mortality, and a 24% reduction in all-cause under-five mortality.

**Importance of the Community**

The community and caretakers of children are groups who have an important role in observing changes in a child’s health. Community member education is important and CHWs must make a firm commitment to promoting health education. The community must learn to recognize ALRI danger signs and appreciate the fatal consequences of delaying prompt treatment. Community and family members learn to recognize danger signs of major childhood illness and know when to seek the immediate help of a CHW through community songs and skits.

Effective community treatment of pneumonia requires knowledge of the community, adequate training of CHWs, support, supervision, links with higher health centers to refer patients, and adequate drug supplies. CHWs and health facilities are intimately linked. Supervision structures, health information systems, referral mechanisms and drug supply chains all require strong relationships between health systems and CHWs.
**Significance of a Manual**

This written manual documents strategies and guidelines to be used in the training of CHWs in the community-level treatment of pneumonia. A manual can be widely implemented and create a sustainable and trained program of ALRI interventions. Pneumonia prevention and treatment will be strengthened within the health care system and in the community. CHWs and communities will work together to improve recognition of signs and symptoms of ALRI, knowing when and where to seek care, and compliance with treatment and recognition of danger signs. United as one, well-trained and well-supervised CHW can start to join in with local and global communities to decrease the number of child deaths from ALRI in the developing world.
### TRAINING SESSION (HHF Partners Example – 5 Day Program)

<table>
<thead>
<tr>
<th>Session</th>
<th>Duration</th>
<th>Theme</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Introduction to ALRI</td>
<td>Introduction to training session Goals and objectives of program History of HHF ALRI program Review MSH-HHF ALRI manual Background documents Confirmation of theoretical training Pre-test Community participation in ALRI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope of problem</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Theoretical</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>background review</td>
<td></td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Practicum</td>
<td>Rally post in rural village Meet with community members about ALRI knowledge and practice</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Practicum</td>
<td>Rally post in rural village Visit referral clinic for IMCI</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; Session</td>
<td>1 Day</td>
<td>Plan of Action</td>
<td>Supervision Plan of action Post-test</td>
</tr>
</tbody>
</table>
APPENDIX B (TO BE PRINTED DOUBLE-SIDED)

ALRI FLOW CHART FOR THE CHILD 2 WEEKS – 2 MONTHS OF AGE
WITH COUGH OR DIFFICULTY BREATHING

A child 2 weeks – 2 months of age who is coughing or breathing poorly is brought to the Community Health Worker

Count the number of respirations in a full minute. Recount the number of respirations if ≥ 60 times per minute.

Are there any Danger Signs?
Cannot breastfeed well
Not breathing well
Convulsions
Lethargic
Fever or Chills

Does the child have CHEST INDRAWING Or RESPIRATORY RATE ≥ 60 TIMES PER MINUTE?

IF NO
SERIOUS ILLNESS
Refer IMMEDIATELY
Give the child 1st dose of Cotrimoxazole
Keep the child warm

IF NO
PNEUMONIA
Refer IMMEDIATELY
Give the child 1st dose of Cotrimoxazole
Keep the child warm

IF YES
NO PNEUMONIA: ONLY COUGH OR COLD
Counsel caretaker on proper home care
Age of Child | Cotrimoxazole Tablets
---|---
| (120 mg or 100/20)
| (twice a day for 8 days)

| 2 weeks - 2 months (less than 5 kg) | 1 tablet |
| 2 – 11 months (5- less than 10 kg) | 2 tablets |
| 12 months – 5 years (10 to 19 kg) | 3 tablets |

- Give dose two times a day for 8 days
- Always give the first dose of Cotrimoxazole with the caregiver.
- Dissolve each Cotrimoxazole tablet in 10 cc of water, juice, or breastmilk
- Readminister dose if the child vomits less than 30 minutes after giving Cotrimoxazole
- Have the caregiver repeat what the Community Health Worker just did to ensure that the caregiver understands the directions

**Each time you visit a child:**
- Check to see if parent has been appropriately giving Cotrimoxazole by counting the remaining Cotrimoxazole
- Check to see if the child has any danger signs, fast respiratory rate or chest-indrawing.
- Make a referral if the child has danger signs, fast respiratory rate or chest-indrawing.
- Make a referral if the child is not better after 2 days

**If a referral is not possible:**
- Show the caregiver how to administer Cotrimoxazole at home
- Teach the caregiver home care of child
- Visit child every 2 days or have parent bring child to the Community Health Worker every 2 days to assess child’s health status
- If the child is worse or does not improve after 2 days, refer again
ALRI FLOW CHART FOR THE CHILD 2 MONTHS – 11 MONTHS OF AGE

WITH COUGH OR DIFFICULTY BREATHING

A child 2 months - 11 months of age who is coughing or breathing poorly is brought to the Community Health Worker

Count the number of respirations in a full minute. Recount the number of respirations if ≥ 50 times per minute.

Are there any Danger Signs?
- Cannot drink at all
- Not breathing well
- Convulsions
- Lethargic
- Serious Malnutrition

IF NO

Dose the child have CHEST INDRAWING?

IF NO

IF YES

SERIOUS ILLNESS
- Refer IMMEDIATELY
- Give the child 1st dose of Cotrimoxazole
- Keep the child warm

IF YES

SERIOUS PNEUMONIA
- Refer IMMEDIATELY
- Give the child 1st dose of Cotrimoxazole

IF NO

Does the child have a RESPIRATORY RATE ≥ 50 TIMES PER MINUTE?

IF NO

PNEUMONIA NOT SERIOUS
- Give the child 1st dose of Cotrimoxazole with caregiver
- Teach caregiver to administer Cotrimoxazole at home
- Counsel caretaker on proper home care

NO PNEUMONIA: COUGH OR FLU
- If coughing > 15 days, refer
- If the child has a fever or HAD a fever, refer
- Counsel caretaker on proper home care

62
Age of Child | Cotrimoxazole Tablets
---|---
| (120 mg or 100/20)
| (twice a day for 8 days)

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks - 2 months (less than 5 kg)</td>
<td>1 tablet</td>
</tr>
<tr>
<td>2 – 11 months (5– less than 10 kg)</td>
<td>2 tablets</td>
</tr>
<tr>
<td>12 months – 5 years (10 to 19 kg)</td>
<td>3 tablets</td>
</tr>
</tbody>
</table>

- Give dose two times a day for 8 days
- Always give the first dose of Cotrimoxazole with the caregiver.
- Dissolve each Cotrimoxazole tablet in 10 cc of water, juice, or breastmilk
- Readminister dose if the child vomits less than 30 minutes after giving Cotrimoxazole
- Have the caregiver repeat what the Community Health Worker just did to ensure that the caregiver understands the directions

**Each time you visit a child:**
- Check to see if parent has been appropriately giving Cotrimoxazole by counting the remaining Cotrimoxazole
- Check to see if the child has any danger signs, fast respiratory rate or chest-indrawing.
- Make a referral if the child has danger signs, fast respiratory rate or chest-indrawing.
- Make a referral if the child is not better after 2 days

**If a referral is not possible:**
- Show the caregiver how to administer Cotrimoxazole at home
- Teach the caregiver home care of child
- Visit child every 2 days or have parent bring child to the Community Health Worker every 2 days to assess child’s health status
- If the child is worse or does not improve after 2 days, refer again
ALRI FLOW CHART FOR THE CHILD 12 MONTHS – 5 YEARS OF AGE
WITH COUGH OR DIFFICULTY BREATHING

A child 12 months – 5 years of age who is coughing or breathing poorly is brought to the Community Health Worker

Count the number of respirations in a full minute. Recount the number of respirations if ≥ 40 times per minute.

Are there any Danger Signs?
- Cannot drink at all
- Not breathing well
- Convulsions
- Lethargic
- Serious Malnutrition

IF NO

Dose the child have CHEST INDRAWING?

IF NO

Does the child have a RESPIRATORY RATE ≥ 40 TIMES PER MINUTE?

IF NO

SERIOUS ILLNESS
Refer IMMEDIATELY
Give the child 1st dose of Cotrimoxazole
Keep the child warm

SERIOUS PNEUMONIA
Refer IMMEDIATELY
Give the child 1st dose of Cotrimoxazole

PNEUMONIA NOT SERIOUS
Give the child 1st dose of Cotrimoxazole with caregiver
Teach caregiver to administer Cotrimoxazole at home
Counsel caretaker on proper home care

IF YES

NO PNEUMONIA:
COUGH OR FLU
If coughing > 15 days, refer
If the child has a fever or HAD a fever, refer
Counsel caretaker on proper home care

64
## Age of Child Cotrimoxazole Tablets

(120 mg or 100/20)
(twice a day for 8 days)

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>Cotrimoxazole Tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks - 2 months (less than 5 kg)</td>
<td>1 tablet</td>
</tr>
<tr>
<td>2 – 11 months (5- less than 10 kg)</td>
<td>2 tablets</td>
</tr>
<tr>
<td>12 months – 5 years (10 to 19 kg)</td>
<td>3 tablets</td>
</tr>
</tbody>
</table>

- Give dose two times a day for 8 days
- Always give the first dose of Cotrimoxazole with the caregiver.
- Dissolve each Cotrimoxazole tablet in 10 cc of water, juice, or breastmilk
- Readminister dose if the child vomits less than 30 minutes after giving Cotrimoxazole
- Have the caregiver repeat what the Community Health Worker just did to ensure that the caregiver understands the directions

### Each time you visit a child:

- Check to see if parent has been appropriately giving Cotrimoxazole by counting the remaining Cotrimoxazole
- Check to see if the child has any danger signs, fast respiratory rate or chest-inrawing.
- Make a referral if the child has danger signs, fast respiratory rate or chest-inrawing.
- Make a referral if the child is not better after 2 days

### If a referral is not possible:

- Show the caregiver how to administer Cotrimoxazole at home
- Teach the caregiver home care of child
- Visit child every 2 days or have parent bring child to the Community Health Worker every 2 days to assess child’s health status
- If the child is worse or does not improve after 2 days, refer again

65
**APPENDIX C**

**Standardized ALRI Intake Form**

Name of Community Health Worker: 

**IDENTIFICATION**

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>Record number or Computer Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

**CASE MANAGEMENT**

<table>
<thead>
<tr>
<th>Cough</th>
<th>yes</th>
<th>no</th>
<th>less than 3 days</th>
<th>more than 3 days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Difficult Breathing</th>
<th>yes</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Care mother has already given</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**DOES THE CHILD HAVE ANOTHER ILLNESS?**

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
<th>What is it?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respiratory Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
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</table>

**DANGER SIGNS:**

<table>
<thead>
<tr>
<th>Less Than 2 Months</th>
<th>2 Months To 5 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cannot breastfeed</th>
<th>present</th>
<th>Cannot drink at all</th>
<th>present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Convulsions</th>
<th>Convulsions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lethargy</th>
<th>Lethargy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fever or Chills</th>
<th>Serious Malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chest Indrawing:</th>
<th>present</th>
<th>not present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fever:</th>
<th>Yes</th>
<th>No</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of last dose of Vitamin A</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Vaccination Status? Complete for age:</th>
<th>Not Complete for age:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diarrhea</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breathing Noise:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measles Vaccine: Date</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**ARI CLASSIFICATION**

<table>
<thead>
<tr>
<th>Serious Illness</th>
<th>Serious Pneumonia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pneumonia Not Serious</th>
<th>No Pneumonia: Cough or Flu</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MEDICATION**

<table>
<thead>
<tr>
<th>Did you give the parent a home care card?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did you refer the child?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**2nd ARI FOLLOW-UP VISIT**

<table>
<thead>
<tr>
<th>Date</th>
<th>Respiratory Rate</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chest Indrawing</th>
<th>Better</th>
<th>Worse</th>
<th>Same</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Child</th>
<th>Better</th>
<th>Worse</th>
<th>Same</th>
<th>Dead</th>
</tr>
</thead>
<tbody>
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<td></td>
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<table>
<thead>
<tr>
<th>Referral</th>
<th>Yes</th>
<th>Non</th>
</tr>
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</tbody>
</table>
Standardized ALRI Intake Form - EXAMPLE

Name of Community Health Worker: A. Jean Sante

IDENTIFICATION
Name of the Child: Petit Timoun
Age of the Child: 3 years
Address: Jeremie
Record # or Computer Identifier: 12-345-678

CASE MANAGEMENT
Cough: yes (x) no ()
Difficult Breathing: yes (x) no ()
Care mother has already given: none

DOES THE CHILD HAVE ANOTHER ILLNESS?
Respiratory Rate: 50 / 54

DANGER SIGNS:
Cannot breastfeed: present ( )
Convulsions: ( )
Lethargy: ( )
Fever or Chills: ( )
Chest Indrawing: present (x) not present ( )
Fever: Yes (x) No ( )
Breathing Noise: Yes (x) No ( )
Measles Vaccine: Date do not know

ARI CLASSIFICATION
Serious Illness: Serious Pneumonia
Pneumonia Not Serious: X

MEDICATION
Cotrimoxazole (20 mg tablet) - 3 co; twice a day for 8 days

DID YOU GIVE THE PARENT A HOME CARE CARD?
DID YOU REFER THE CHILD?

2nd ARI FOLLOW-UP VISIT
Date: 18/10/05
Respiratory Rate: 40 / 40
Chest Indrawing: Better (x) Worse ( ) Same ( )
Child: Better (x) Worse ( ) Same ( ) Dead ( )
Referral: Yes ( ) Non (x)
APPENDIX D
HOW TO CARE FOR A BABY BETWEEN TWO WEEKS AND TWO MONTHS OF AGE WHO HAS A COLD OR PNEUMONIA

1. It is important to watch the baby and bring the baby to the Community Health Worker immediately if:
   - The baby breathes poorly
   - The baby cannot breastfeed well
   - The baby breathes quickly
   - The baby is worse

2. At home, the mother can:
   - Keep the baby warm
   - Breastfeed frequently
   - Clean the nose if the baby does not breastfeed well
HOW TO CARE FOR A CHILD BETWEEN TWO MONTHS AND FIVE YEARS OF AGE WHO HAS A COLD OR PNEUMONIA

1. It is important to watch the child and bring the child to the Community Health Worker immediately if:
   - The child breathes poorly
   - The child cannot drink at all
   - The child breathes quickly
   - The child is worse

2. At home, the mother can:
   - Depending on the child’s age, feed or breastfeed frequently while sick and after being sick
   - Give fluids to drink
   - Soothe the child’s throat with traditional teas
   - Clean the nose if the child does not feed or breastfeed well
APPENDIX E - Monthly Cotrimoxazole Central Table

Name of CHW ______________________  Year ___________

<table>
<thead>
<tr>
<th>Month</th>
<th>Amount In stock</th>
<th>2 weeks – 2 months</th>
<th>2-11 months</th>
<th>12-59 months</th>
<th>1st dose only</th>
<th>Dose Lost</th>
<th>Total</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Pills</td>
<td># Cases</td>
<td># of Pills</td>
<td># Cases</td>
<td># of Pills</td>
<td># Cases</td>
<td># of Pills</td>
<td># Cases</td>
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<tr>
<td>January</td>
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<td>February</td>
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<td>April</td>
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<td>May</td>
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<td>November</td>
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<tr>
<td>December</td>
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</tr>
</tbody>
</table>
APPENDIX F

REFERRAL FORM

Identification of Community Health Worker

Name: ____________________________________________________________

Position: __________________________ Date: _________________________

Village: ___________________________ ID # of Village: ________________

Identification of Child Being Referred

Name: ______________ Village: ___________ Identification Number: ______

Age: ______________ Gender: _________ Weight: ________________

First Dose of Cotrimoxazole Given: yes ( ) no ( )

All Medications Administered:

_________________________________________________________________

_________________________________________________________________

Characteristics of the Illness

_________________________________________________________________

_________________________________________________________________

Reason for Referral

_________________________________________________________________

_________________________________________________________________
### SERIOUS ILLNESS

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Male</th>
<th>Total</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks – 2 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 months – 11 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months – 23 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 months – 35 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 months – 47 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48 months – 59 months</td>
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</tr>
</tbody>
</table>

### SERIOUS PNEUMONIA

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Male</th>
<th>Total</th>
<th>Female</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2 weeks – 2 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 months – 11 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months – 23 months</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>24 months – 35 months</td>
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</tr>
<tr>
<td>36 months – 47 months</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>48 months – 59 months</td>
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<td></td>
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</tbody>
</table>
**PNEUMONIA NOT SERIOUS**

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th>TOTAL</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks – 2 months</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 months – 11 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months – 23 months</td>
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<tr>
<td>24 months – 35 months</td>
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<tr>
<td>36 months – 47 months</td>
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<tr>
<td>48 months – 59 months</td>
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</tbody>
</table>

**NO PNEUMONIA: COUGH OR FLU**

<table>
<thead>
<tr>
<th></th>
<th>MALE</th>
<th>TOTAL</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 weeks – 2 months</td>
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<td></td>
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<tr>
<td>2 months – 11 months</td>
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<tr>
<td>12 months – 23 months</td>
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<td>36 months – 47 months</td>
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<tr>
<td>48 months – 59 months</td>
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APPENDIX H

Guide for Supervision of ARI Case Management

*For Health Agents*

Location: ____________________________ Date: ____________________________

District: ____________________________

Trained in ARI : ☐ Yes (Date __________) ☐ No

1. Observe the health worker as he/she cares for children under 5 years of age with ARI, and answer the following questions:

<table>
<thead>
<tr>
<th>Child</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

1. Did the ADS ask the age of the child?
2. Did the ADS ask the caretaker what treatments the child already had at home?
3. Did the ADS correctly assess:
   - Danger signs?
   - Chest indrawing?
   - Respiratory rate?
4. Was body temperature measured?
5. Did the ADS choose the age appropriate guide card?
6. Was the child correctly classified?
7. Was the child’s illness classified as severe disease or severe pneumonia?
8. Were other illnesses identified?
9. Did the ADS ask about diarrhea?
10. Was Cotrimoxazole given if the child’s illness was classified as pneumonia?
11. Was Cotrimoxazole given if the child’s illness was classified as not pneumonia?
12. Were any cold or cough remedies recommended?
13. Was the child’s immunization status checked on the child’s vaccination card?
14. Did the ADS check the most recent dose of Vitamin A?
15. Was the caretaker instructed about:
   - how to use Cotrimoxazole?
   - how to care for the child at home?
   - when to bring the child back to the health service?
16. Was the first Cotrimoxazole dose given in front of the caretaker?
17. Did the ADS ask the caretaker to repeat the instructions?
18. Was the caretaker given instructions for a follow-up appointment?
19. Were the diagnosis and treatment recorded on the correct forms?
Remarks:

2. Ask the health worker the following questions:

a) How do you assess a child under 5 years of age with cough or difficulty breathing?

b) When do you refer a child with ALRI to a hospital?

c) When do you prescribe Cotrimoxazole for a child with cough or difficulty breathing?

d) What signs and symptoms do you take into account in order to classify a child with cough or difficulty breathing as pneumonia?

e) How do you treat a child with pneumonia?

f) What instructions or recommendations do you give to mothers or those responsible for caring for children with pneumonia?

3. Analyze with the health worker any problems detected in the health service at the time of the visit in relation to ALRI control and review correct management.

Signature, ADS  
Signature, Supervisor
For Caregivers

4. Interview mothers or caregivers of children with cough or difficulty breathing who have been treated by the CHW (do not interview mothers of children who were referred to a hospital or were hospitalized).

a) Were you advised to give any kind of treatment at home? □ Yes □ No

If yes, ask whether Cotrimoxazole was prescribed. □ Yes □ No

b) If Cotrimoxazole was prescribed, ask the mother the following questions:

How much Cotrimoxazole will you give the child? ________________________________
How many times a day? ________________________________
For how many days? ________________________________

c) Did the health worker tell you when to bring the child back? □ Yes □ No

If yes, ask the mother when she will return with the child.

d) Did the health worker tell you how to care for the child at home? □ Yes □ No

If yes, ask the mother how she will care for the child at home.

Materials and Supplies

5. Check to see that the health services have adequate supplies of the materials needed for standard case management.

a) Antibiotics □ Yes □ No

b) Are the ARI case management charts prominently displayed in the place in which ARI cases are assessed, classified, and treated? □ Yes □ No

c) Are there enough forms and records to log the ARI cases treated during the next 2 months? □ Yes □ No

If not, which forms need to be replaced? ________________________________
Record Keeping

6. Review the records of ARI cases treated in the health service.

Summarize the findings of a review of 20 or more cases of ARI in children under 5 years of age. Check the records for the following:

a) Was the following recorded: child’s age, classification/diagnosis, treatment? □ Yes □ No

b) Were cases of severe pneumonia and very severe disease referred? □ Yes □ No

c) Was Cotrimoxazole administered to pneumonia cases that were not referred? □ Yes □ No

d) Was Cotrimoxazole used unnecessarily to treat non-pneumonia cases? □ Yes □ No

Notes:

________________________________________________________________________

________________________________________________________________________
APPENDIX I

Database Field Example

The following is an example of the HHF Database. The data set contains the following fields:

HHFNUM: An alphanumeric field which contains the HHF number if the child lives in a village that HHF serves. All villages are censused and each resident is assigned an ID number.

An example of an HHF number would be: 611093.202.
- 6 represents the borough
- 11 represents the village number
- 093 represents the house number
- the first 2 represents that the child is from the second family in that household
- 02 represents the number given to that particular child

DATE: The data on which the child was seen by the Community Health Worker.

YEAR: The year in which the child was seen.

NO: An integer field for the number of the month in which the child was seen by the Community Health Worker

MONTH: The name of the month in which the child was seen by the Community Health Worker. This field is automatically filled in after the “NO” field above is filled in.

VILLAGE: A 3-digit integer field for the village number of the village in which the child was seen by the Community Health Worker. This is not necessarily the village the child lives in, as mothers may bring their children to Community Health Workers in neighboring villages.

VILLNAME: The name of the village in which the child was seen by the Community Health Worker. This field is automatically filled in after the “VILLAGE” field is filled in.

AGE: A code for the age of the child when the child was seen. The age in months is not entered into the database, although it is available on the form. This field uses the following codes:

B: Under 2 months
0: 2-11 months
1: 12-23 months
2: 24-35 months
3: 36-47 months
4: 48-59 months
AGEMONTH: An alphanumeric field which shows the age range in months that corresponds to the code in the age field. This field is automatically filled in after the “AGE” field is filled in.

SEX: A code for the sex of the child: M: Male F: Female

MALFEM: An alphanumeric field for the sex of the child containing either “Male” or “Female”. This field is automatically filled in after the “SEX” field is filled in.

MALADIE: A code for the diagnosis made by the Community Health Worker. This field uses the codes:

- g: cold/cough (grip)
- ng: severe pneumonia (nemoni grav)
- n: pneumonia (nemoni)
- mg: severe disease (maladi grav)

DIAG: An alphanumeric field containing a description of the diagnosis made by the Community Health Worker. It contains one of the following values: “Cold”, “Pneumonia”, “Severe Pneumonia”, or “Severe Disease”. This field is automatically filled in after the “MALADIE” field is filled in.

FOLLOWUP: For pneumonia episodes, the Community Health Worker is to tell the caretaker to bring the child back in two to four days. If the caretaker does not bring the child back, the Community Health Worker is to visit the child’s house to follow-up on him or her. The child’s health is assessed at that time and this field contains one of the following codes for the child’s health status:

- c: better
- w: worse
- d: died
- s: same
- u: unknown

PROG: An alphanumeric field containing a description of the child’s status at follow-up. This field is automatically filled in after the “FOLLOWUP” field is filled in. It contains one of the following values:

- “Better”
- “Worse”
- “Died”
- “Same”
- “Unknown”

DOSEVITA: A code for whether or not the child had had a does of Vitamin A in the past four months. As part of its child survival program, the HHF Community Health Worker provides Vitamin A to children every four months starting at age six months until age
seven years. This information can either be obtained from the child’s health card, Community Health Worker’s records, or the supervisor can look up the information on the HHF service statistics database. The codes are:

Y: yes
N: no
NA: not applicable (due to age being less than 6 months)

MEASVACCIN: A code for whether or not the child had had a measles vaccine. As part of its child survival program, the HHF Community Health Worker provides a measles shot at nine months of age. This information can either be obtained from the child’s health card, Community Health Worker’s records, or the supervisor can look up the information on the HHF service statistics database. The codes are:

Y: yes
N: no
NA: not applicable (due to age being less than 9 months)

NUTSTATUS: A code for the child’s nutritional status. As part of its child survival program, the Community Health Worker weighs children periodically and records the information so it can be entered into the service statistics database. Every month, a program automatically calculates the nutritional status of each child based on the most recent weight obtained and the age of the child at that time. The nutritional status is then printed out and given to the Community Health Worker. Therefore, the Community Health Worker may have looked up the nutritional status and put it on the pneumonia form from the records that he had for the child. If he didn’t bother to look up the information, the supervisor would look the information up in one of two field rosters (either the vaccine roster or the weight roster) for the month in which the child was diagnosed. The codes used in this field are:

NORMAL
M1: Mild or first degree malnutrition (75-89% of standard weight for age)
M2: Moderate or second degree malnutrition (60-74% of standard weight for age)
M3: Severe or third degree malnutrition (< 60% of standard weight for age)
APPENDIX J

Skit #1 – Bad Example

Read the information below:

Mrs. Jean Louis took her little girl Joanne who is 6 months old, to see the Community Health Worker, Mr. Jacques, because Joanne has been coughing for 3 days. Mrs. Jean Louis brought Joanne’s health card, but Mr. Jacques did not look at it. Mr. Jacques did not ask Mrs. Jean Louis any questions. Mr. Jacques examined Joanne. Once he was finished, he diagnosed Joanne as having a cough or the flu, but it was not serious.

Mr. Jacques: Your child is not seriously ill. You can take care of her at home. You can give her something for her cough that is not too strong. Watch her to make sure she does not show any danger signs of pneumonia. Should that happen, see me right away. The cough can be caused by a microbe called a virus. Against viruses there is really no treatment. If the cough is caused by another microbe called bacteria we can treat that with Cotrimoxazole. But since this cough is caused by a virus there is nothing we can give you for it. If you see that she has difficulty breathing, starts convulsing or she cannot drink at all or she is lethargic, bring her to me immediately.

Do you understand?

Mrs. Jean Louis: Yes.

Mr. Jacques: Good. Remember, should she have any problem bring her to me right away, no matter what time of day or night it is. Good bye.

Mrs. Jean Louis: Good bye, thank you, Mr. Jacques.

Why This is a Bad Example:

When the baby was brought to Mr. Jacques, he did not look at the Health Card. The Health Card can provide a lot of information, such as the baby’s name, age, gender, weight, height, vaccination status and nutritional status. This is important data to document. He then should have asked the mother about danger signs, other illnesses and other treatments given to the baby. He did not ask her any questions.

After making his assessment, Mr. Jacques should ask the mother to repeat the instructions he gave her to make sure she understands. Some caregivers say that they understand, but then cannot repeat the instructions back to the CHW. He should have given her a Home Card card to teach her how to care for her baby at home. Lastly, he should have told her that he will make a follow-up visit in 2 days to see how the baby is doing. He will reassess the baby and adjust the treatment plan, if necessary.
Skit 2 – Good Example

Read the information below:

Mrs. Jean Louis took her little girl Joanne who is 6 months old, to see the Community Health Worker, Mr. Jacques, because Joanne has been coughing for 3 days. Mrs. Jean Louis brought Joanne’s health card and gave it to Mr. Jacques. Mr. Jacques documented the baby’s name, age, weight, height, vaccination status and nutritional status. He then turned to Mrs. Jean Louis to ask her some questions.

Mr. Jacques: Mama, did the baby have difficulty breathing, fever, convulsions, lethargy or decreased breastfeeding?

Mrs. Jean Louis: No, she did not have any of those symptoms.

Mr. Jacques: What treatments did you do at home?

Mrs. Jean Louis: I gave the baby some tea and massaged her chest, but she did not get any better. She continues to cough.

Mr. Jacques: Teas are good. I am glad you brought her in for a check.

Mr. Jacques then examined Joanne. Once he was finished, he diagnosed Joanne as having a cough or the flu, but it was not serious.

Mr. Jacques: Well, Mrs. Jean Louis, I am happy to see that Joanne’s case is not that serious. She only has a cough or the flu, and that will be over with in 2 or 3 days.

Now I would like to explain some things to you that I would like you to do. When a baby or little child cough it is possible that that is a sign of a more serious illness. You do not need to worry, because I do not think Joanne has a serious illness. But it is good if you observe her closely, simply to make sure. The more serious illness that can make kids cough is pneumonia. Do you know the people in Mr. Tony’s house, the guy who has the bakery at the intersection?

Mrs. Jean Louis: Yes, I do. I go there sometimes.

Mr. Jacques: Well then, the little boy, Jean Marie, had a cough which turned into pneumonia. His mother and father noticed that he had difficulty breathing, and they came to me right away. I gave him some medication, and his family took good care of him. Now he is doing very well, and his body is all healed. But if his family would not have noticed anything, he could have gotten much sicker. Some children die due to pneumonia if they do not get treated right away. What is most important is to get treated immediately. That is why it is important to watch Joanne closely to make sure that she does not develop any other signs of illness.
Mrs. Jean Louis: Well, I will try to do that, but what should I do?

Mr. Jacques: It is not necessary to give Joanne any pneumonia medication now because she does not have pneumonia. There are some things you can do at home to help her feel better. I will explain these steps to you and I will leave you this Home Care Card to keep somewhere in your house where you will look at it everyday and if you have questions.

It is important to keep her warm. You can wrap her in a blanket or keep her inside. It is also important to continue to breastfeed her to increase her strength. If you notice that she is having difficulty breathing, you can wipe her nose and clear some of the production from her nose. All these instructions are also displayed on the Home Care Card. Can you repeat the instructions I just gave you?

Mrs. Jean Louis: It is important to keep her warm in a blanket or inside. It is also important to breastfeed her to increase her strength. If she is having difficulty breathing, I can wipe her nose.

Mr. Jacques: If you see that she has difficulty breathing, starts convulsing or she cannot drink at all or she is lethargic, bring her to me immediately.

Do you understand?

Mrs. Jean Louis: Yes.

Mr. Jacques: Good. Remember, should she have any problem bring her to me right away, no matter what time of day or night it is. I will return in 2 days to see how she is doing. If she is worse, I will reassess her and may change her treatment. Good bye.

Mrs. Jean Louis: Good bye, thank you, Mr. Jacques.

Why This is a Good Example:

When the baby was brought to Mr. Jacques, he looked at the Health Card for the baby’s name, age, gender, weight, height, vaccination status and nutritional status. This is important data to document. He then asked the mother about danger signs and other treatments given to the baby.

After making his assessment, Mr. Jacques asked the mother to repeat the instructions he gave her to make sure she understands. He gave her a Home Card card to teach her how to care for her baby at home. Lastly, he told her that he will make a follow-up visit in 2 days to see how the baby is doing. He will reassess the baby and adjust the treatment plan, if necessary.
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