

An Illustrative Communication Strategy for Amoxicillin

Step 1: Analyze the Situation

Health and Commodity Context

**The majority of the information in this section is a global-level analysis for purposes of illustration. The country-specific situation analysis should be focused on the local context.*

Health Context

An estimated 1.36 million children die each year due to pneumonia¹ alone. The majority of these child deaths (60%) occur in just 10 countries: India, Nigeria, Democratic Republic of Congo (DRC), Pakistan, Ethiopia, Tanzania, Uganda, Bangladesh, Kenya and Niger. Additional attention and investment are needed to scale up effective treatment of pneumonia and diarrhea, which has received limited consideration and funding to date. Inexpensive means of diagnosis and treatment are available.

Pneumonia is an infection that causes the lungs to fill with pus and fluid, which makes breathing difficult and limits oxygen absorption. In developing countries, the bacterial pathogens *Haemophilus influenzae type b* (Hib) and *Streptococcus pneumoniae* are two of the most common causes of pneumonia; pneumonia can be caused by viral infections, other bacteria and fungi as well. Pneumonia pathogens can be transmitted through the air, blood or during delivery in the birth canal (UNICEF, 2006). Risk factors that make children more susceptible to pneumonia include: inadequate nutrition and a lack of zinc, vaccine-preventable disease (e.g. measles, pertussis), HIV and tuberculosis infection, diarrhea, low birth weight, non-exclusive breastfeeding in first six months, indoor air pollution, lack of sanitation and crowded living conditions (WHO, 2013).

Laboratory tests and chest x-rays are used to confirm a pneumonia diagnosis. However, in resource-poor settings, pneumonia is commonly diagnosed according to clinical symptoms. The primary clinical symptoms of pneumonia are fever, cough, and fast or difficult breathing.

¹ This road map provides guidance on increasing demand for amoxicillin specifically to treat childhood pneumonia. Throughout this document, “pneumonia” and “childhood pneumonia” are used interchangeably.

Cases of severe pneumonia are diagnosed when children have lower chest wall indrawing and stridor (a harsh sound during inhalation) in addition to symptoms of fever, cough and fast or difficult breathing. Fast or difficult breathing is diagnosed by counting the breaths per minute; the thresholds for diagnosing fast breathing depend on the child's age (see table below). The table below classifies pneumonia and severe pneumonia based on the signs and symptoms (UNICEF, 2006)

Classification and Treatment of Pneumonia Based on Signs and Symptoms

Signs	Classify as	Treatment
Fast breathing (see below) Lower chest wall indrawing Stridor (in calm child)	Severe pneumonia	Refer urgently to hospital for injectable antibiotics and oxygen if needed Give first dose of appropriate antibiotic.
Fast breathing (see below)	Non-severe pneumonia	Prescribe appropriate antibiotic. Advise mother on other supportive measures and when to return for a follow-up visit
No fast breathing	Other respiratory illness	Advise mother on other supportive measures and when to return if symptoms persist or get worse.

What is fast breathing?

If the child is...	The child has fast breathing if you count...
2 months to 12 months old	50 breaths or more per minute
12 months to 5 years old	40 breaths or more per minute

Source: UNICEF, Pneumonia: The Forgotten Killer of Children. 2006

Non-severe pneumonia among children under five can be treated with simple antibiotics. Antibiotics, such as amoxicillin, can prevent the

majority of pneumonia deaths and cost only about \$US 0.21-0.42 per treatment course. Despite the existence of this simple, inexpensive treatment, many children in need are often left behind: only 30% of children with pneumonia receive an antibiotic (UNICEF, 2011).

UNICEF and WHO recommend three essential strategies to reduce deaths from pneumonia among children under five:

1. Ensure all caregivers recognize the danger signs of pneumonia in children, which are cough and difficult or fast breathing (UNICEF, 2006)
2. Ensure all children with signs of pneumonia are properly diagnosed by trained health personnel. WHO defines appropriate care as care from a provider capable of correctly diagnosing and treating pneumonia, including providers working in hospitals and health centers, as well as trained community health workers, and providers in private clinics (UNICEF, 2006).
3. Ensure all children diagnosed with pneumonia are treated promptly with effective antibiotics (UNICEF, 2011).

In areas where malaria is endemic, there is often an overlap in the presentations of malaria and pneumonia symptoms in children. Fever is a common symptom for both malaria and pneumonia. While fever or a history of fever in children is often sufficient clinical criteria to diagnose and treat for malaria, a malaria diagnosis based on fever does not eliminate the need to check for symptoms of pneumonia. Additionally, both pneumonia and malaria in children may present symptoms of a cough and faster breathing. A child who has fever, cough and faster or difficult breathing in malaria endemic regions may have both illnesses (UNICEF, 2004). In malaria endemic regions, it is recommended that caregivers and providers be encouraged to check for symptoms of pneumonia, and that providers be trained to check for co-infection.

Research and pilot programs have demonstrated effective approaches to scaling-up treatments such as amoxicillin, and a growing number of countries are scaling up integrated community case management programs, but these programs require significant systems supports in order to reach the majority of children in need. Comprehensive and ambitious programs designed to build on these initial projects are essential to achieve Millennium Development Goal 4 (reduce by two-thirds, between 1990 and 2015, the under-five mortality rate).

Commodity Context

The most updated guidelines from WHO for pediatric medicines recommend amoxicillin as the gold standard treatment for non-severe pneumonia in children under five. The WHO recommended dose of amoxicillin for children with pneumonia follows:

- If HIV prevalence below 5%: 40 mg/kg/dose, twice per day, for 3 days
- If HIV prevalence above 5%: 40 mg/kg/dose, twice per day, for 5 days

[Source: Every Woman Every Child website <http://www.everywomaneverychild.org/component/content/article/1-about/305-amoxicillin--product-profile->]

Despite the wide availability and relative affordability of broad-spectrum antibiotics, only 27% of children suffering from pneumonia in developing countries actually receive an appropriate antibiotic (UNICEF, 2006). In many cases, children receive inappropriate, and ineffective, medicines because health workers are not familiar with or disagree with standard treatment protocols and do not comply with national guidelines to correctly treat childhood pneumonia. Program managers report that often health providers are unaware that the pediatric formulation of the antibiotic recommended for pneumonia treatment is available at an affordable price (PSI, 2013).

Studies have shown that the pneumonia treatment regimen using cotrimoxazole is equally as effective as the treatment scheme using amoxicillin and the costs are similar; however, cotrimoxazole is increasingly recommended to be reserved for the treatment of opportunistic infections and should therefore not be used in pneumonia case management programs (WHO Priority Medicines for Children, 2011).

Pre-packaged pneumonia treatment kits have been introduced in countries such as Myanmar, Uganda and Madagascar. The pre-packaged kits contain the correct number of tablets/amount of syrup needed for one full course of treatment for one child, presented in a form suitable to children (e.g. flavored, dispersible). The packaging includes illustrated directions designed to assist caregivers and CHWs to understand the dosages and comply with treatment regimes.

The WHO recently recommended **dispersible antibiotics** as the most convenient formulation for children. Amoxicillin is prepared in 250mg scored, dispersible tablet (DT) in a blister pack of 10 DTs. The average cost per treatment course is approximately USD \$0.23-0.44 for children 2-11 months and US\$0.46 to 0.63\$ for children 12-59 months. Minimal manipulation is required prior to the use of a dispersible tablet: it is readily and easily swallowed after adding a small amount of water. This alleviates the need to break or crush tablets before giving the dose to the child. Furthermore, dispersible antibiotics are flavored, which masks the taste of the antibiotic making it more appealing to the child. However, dispersible antibiotics are not yet widely available although efforts are underway to register the medicine in many countries.

Audience and Communication Analysis

A recent global synthesis of existing demand creation evidence found 37 peer-reviewed articles, grey literature and reports from 2003-2013 that specifically examined demand generation for amoxicillin to treat childhood pneumonia. The evidence was documented primarily from

countries in sub-Saharan Africa, with a few studies from Asia (Health Communication Capacity Collaborative, 2013).

The literature identified three key determinants of amoxicillin demand and utilization:

Lack of caregiver knowledge is a common barrier to prompt care-seeking for pneumonia, including a lack of knowledge about signs and symptoms, especially the differences from malaria, misperceptions about the severity of symptoms, and the benefits of antibiotics (Bedford, 2012; Taffa & Chepngeno, 2005; Mulholland et al., 2008; Ogunlesi, Runsewe-Abiodun & Olanrewaju, 2010; among others). Cultural beliefs play a large role in caregivers’ decisions in many contexts. For example, several studies in Kenya, and others in India, showed that caregivers may believe that pneumonia is caused by supernatural forces or other non-medical causes and is not treatable by modern medicines (Irimu, et. al. 2008; Bedford 2012, among others). Although many authors noted that education and communication strategies must address these entrenched cultural beliefs, there is little evidence on the best methods or strategies. For example, simply trying to “replace” traditional beliefs with science is unlikely to resonate with target audiences.

Lack of health information at the community level. A review by Mulholland and colleagues (2008) found that inequitable access to child health messages is also a barrier, with messages not reaching mothers in the most remote areas. In Kenya, caregivers felt that there was a general shortage of health education at the community level about pneumonia, home management, when to seek treatment, and the cost of treatment. When such education was available, key messages were not conveyed in simple, memorable ways (Bedford, 2012a). Lack of male knowledge or involvement in child care was identified as a barrier to care seeking for children with diarrhea, pneumonia, and malaria in Niger, Nigeria, and Uganda (Bedford, 2012b; 2012c; Mbonye, 2003). However, in Nigeria and Kenya, caregivers other than mothers, including fathers and older relatives, felt that health education was directed only at women (Bedford 2012a; Ebuehi & Adebajo 2010).

Lack of access to care, including distance, cost, and availability of amoxicillin. Antibiotics, including amoxicillin, are widely available, although dispersible antibiotics, recommended by WHO, are still being introduced in many countries. Studies from Kenya and India found that distance to health facilities and inability to afford treatment prevented caregivers from seeking care, and that higher household income was significantly correlated with care-seeking behavior (Mbagaya et al., 2005; Taffa & Chepngeno, 2005; Mulholland et al., 2005; Mathew et al., 2011; Burton et al., 2010). In Sierra Leone and Uganda, perceptions of poor quality of service in health facilities also hinder caregivers from seeking appropriate treatment (Concern Worldwide, 2010; Hildenwall et al., 2009; Mbonye, 2003; Kallander et al., 2008). For many of these reasons, caregivers in Kenya, Nigeria, Sierra Leone and Uganda often visit private health facilities (Amuyunzu-Nyamongo & Nyamongo, 2006; Mbagaya et al., 2005; among others).

Example of Table to Organize Key Information

	Current Behaviors	Primary Barriers to Desired	Primary Benefits of Desired
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		Behavior	Behavior
End-user/community members (e.g. women, men, caregivers)	<p>Caregivers of children under 5 lack knowledge of the signs, symptoms and the urgency of treatment.</p> <p>In many cultures, caregivers believe in supernatural causes of pneumonia, and that it is not treatable.</p>	<p>Lack of knowledge of signs and symptoms of pneumonia delays seeking treatment.</p> <p>Distance to health facilities, cost of transport, perceived quality of services, cost of treatment.</p> <p>Cultural beliefs in the causes and treatment of pneumonia.</p>	<p>Effective treatment may displace cultural beliefs as children treated appropriately recover.</p>
Providers (public and private, clinic- and community-based)	<p>Non-clinical providers lack knowledge of correct treatment – drug, duration and dose.</p> <p>Community-based health care workers are not permitted to treat with antibiotics in many countries and contexts.</p> <p>In areas where malaria is endemic, fever is associated primarily with malaria and pneumonia diagnosis may be missed.</p>	<p>Distance to clinics with trained providers.</p> <p>Community-based providers may lack knowledge of signs and symptoms of pneumonia and of correct treatment, so that treatment may be delayed.</p>	<p>Increase in correct diagnosis and treatment, including diagnosis of co-infections in malaria endemic regions, will build confidence of providers.</p> <p>Increased number of children receiving correct treatment and recovering.</p>