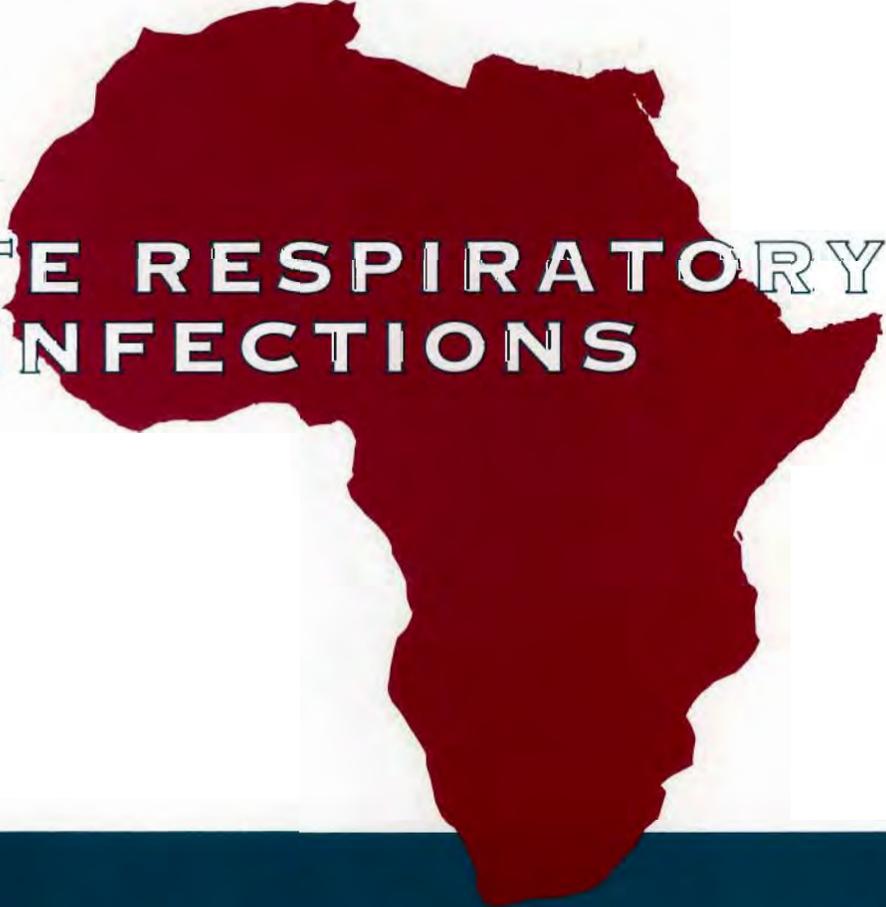


AFRICA CHILD SURVIVAL INITIATIVE  
COMBATting CHILDHOOD COMMUNICABLE DISEASES  
(ACSI-CCCD)

**WORKING PAPER:**

**DIAGNOSIS AND MANAGEMENT OF ACUTE  
RESPIRATORY INFECTIONS BY SWAZI CHILD  
CARETAKERS, HEALERS, AND  
HEALTH PROVIDERS, 1990-1991**



ACUTE RESPIRATORY  
INFECTIONS



UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT  
Africa Regional Project (698-0421)



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Centers for Disease Control  
and Prevention  
International Health Program Office



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## WORKING PAPER:

# Diagnosis and Management of Acute Respiratory Infections by Swazi Child Caretakers, Healers, and Health Providers, 1990-1991

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## Introduction

In 1990, acute respiratory infections (ARIs) were responsible for 4.3 million deaths of children under 5, an estimated one-third of infant and child mortality in developing countries (WHO 1992). ARIs are of two basic types: upper respiratory infections (AURI), which include colds, rhinitis, tonsillitis, and ear infections; and acute lower respiratory infections (ALRI), which are primarily pneumonia. Bacterial pneumonia is the principal cause of mortality from ARI (UNICEF 1988a; Galway, Wolff, and Sturgis *et al.* 1987).

During 1988, 15% of under-5 hospital deaths in Swaziland were attributed to ARI (Primary Health Care Project 1990). In 1989, the Ministry of Health (MOH) initiated the development of a program strategy based on guidelines developed by the World Health Organization (WHO) for reducing ARI mortality, through early detection of ALRI by mothers and health providers and through appropriate ALRI case management at the health facility (WHO 1990).

Early detection of ALRI can be hampered by the similarity of some symptoms to those of less serious upper respiratory infections. Knowing how a population identifies and classifies the various symptoms of ARI is useful in promoting early detection of severe disease by mothers and other caretakers, and in improving case management by health providers.

This study, conducted as part of the baseline data collection for program development in Swaziland, describes the diagnosis and treatment of ARI in children under the age of 5 by mothers and caretakers, traditional healers, and health providers.

## Background

Swaziland is a small (17,364 sq. kilometers) landlocked country in southeastern Africa with a population of 702,800 (Swaziland Government 1987). Its language is siSwati; English is the second and official language of the government. The Swazi trace their descent through patrilineal links, reinforced by their primary residential pattern, patrilocal. In this system, a married woman resides with or near her husband and his relatives. Although patriarchy is the norm among the Swazi, elderly women have an influential role in homestead decisions. In the family, the child's father, mother, and (depending on where the married couple resides) paternal grandmother make decisions regarding the health care of young children (Kuper 1947; Booth 1983; Huppert 1983; Ngubane 1983; Wilson 1992).

Swaziland has an estimated infant mortality rate of 110/1000 (UNICEF 1988b). A good road system connects most homes to a health facility. Health services are provided by the government, missions, industry, and individuals (private physicians in urban areas and registered nurses in rural areas) (Gule 1990). The physician-to-population ratio is 1/10,000 (Swaziland Government 1987). As of 1986, the MOH reported a total of 1,298 health workers, most of whom are registered nurses (703) supervised by the MOH. Traditional healers provide another source of health care. Green and Makhubu estimated that in 1984 there were over 5,000 traditional healers (*tinyanga temitsi*) in Swaziland (Green and Makhubu 1984). Thus, in contrast to the physician to population ratio, the estimated healer to population ratio is 1/110 (Swaziland Government 1987). For this reason, traditional healers, as well as conventional health workers, were included in this study.

## Materials and Methods

### Respondent Selection

The 1986 census divided Swaziland administratively into 1,080 census enumeration areas. We initially intended to link our results to the 1988 Swaziland Family Health Survey (SFHS). The SFHS used a two stage, cluster sample and included women aged 15-49 and men aged 15-59 from homesteads in 174 enumeration areas. Therefore, using the list of enumeration areas from the SFHS, we selected at random, and systematically chose every 10th enumeration area for participation in our study. This resulted in a total of 17 areas and would have yielded about 400 individual interviews throughout Swaziland's four administrative districts. However, the interviews proved to be lengthy, and the cluster design of the survey may not have provided precise estimates, so we opted for a more qualitative study design:

Six interviews were planned for each site: two focus group interviews (one group of males, one group of females) and four individual interviews (two mothers of children under 5, one healer, and one health provider).

For each area, a map with prenumbered homestead areas was obtained from the Department of Economic Planning and Statistics. After randomly selecting the first homestead in each area, next nearest homesteads were visited until two mothers of children under the age of 5 had been interviewed. Respondents for the focus group interviews were purposively selected from nearby homesteads, trade stores, and other sites close to the randomly selected homesteads. Inclement weather precluded completion of one individual interview and one male focus group.

Each mother was asked to identify the health facility and the traditional healer she would contact if her child became ill. One health care provider was interviewed at each of the 17 health facilities identified by mothers.<sup>1</sup> All 13 healers, identified by 25 mothers, agreed to be interviewed (8 mothers did not name a healer).

### Data Collection

The study used rapid assessment procedures (RAP) (Scrimshaw & Hurtado 1988a) and focused ethnographic study (FES) (WHO 1991) methods to assess how ARI is diagnosed and treated. RAP and FES use several anthropologic methods (such as individual structured and unstructured interviews, and focus group interviews) to gather qualitative and

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1 There was no problem selecting prospective respondents in rural clinics because there was only one staff nurse on duty at the time of the interviews. However, when urban hospitals were identified as the usual source of medical care, we obtained permission from the sister or matron to interview one of the nurses who was on duty and who was responsible for seeing young children in the outpatient clinic.

quantitative data quickly. The FES protocol contains research procedures specifically developed for the study of ARI.

Focus group interviews were used because they can yield reliable behavioral and contextual data from a large number of respondents in a short period of time (Krueger 1988; Glik, Gordon, Ward, Kouame, and Guessen 1988). Individual interviews provided more in-depth information.

Information on respondents' understanding of the etiology, diagnosis, and treatment of ARI was elicited through the use of two case scenarios. The first scenario described a child with AURI symptoms, and the second a child with ALRI symptoms. In each focus group and individual interview, the scenario was read aloud by the interviewer in the local language, siSwati. Respondents were then asked to diagnose, indicate an etiology, and suggest a treatment for the illness in the scenario. After this process was completed, respondents were asked to list the symptoms and treatment for three siSwati ARI illness terms (*umkhuhlane*, *emahlaba*, and *lucabangu*).

The ARI-specific questions were part of a larger interview that addressed the sociodemographic characteristics of respondents, their knowledge and practices related to four childhood illnesses, and three preventive maternal and child health activities. Each complete interview required 45 to 60 minutes. Focus groups (FGs) also averaged 45 to 60 minutes. <sup>2</sup> Interviews (including the presentation of the ARI case scenarios and the listening exercise) were carried out by a team of six MOH staff members trained and supervised by one of the authors (RPW). Community respondents were interviewed in siSwati; health provider interviews were conducted in English or siSwati. Interviews and FG's were conducted in 1990 during October (14 sites) and December (3 sites).

## Data Analysis

Individual interview data were entered and analyzed using EPI Info software (Dean, *et al.* 1990). Focus group data were manually aggregated, and then entered and analyzed with Epi-Info. For focus group interviews, the group is the unit of analysis; for other interviews, it is the individual. Thus, frequencies and percentages reported in the text often reflect consensus group responses for the focus groups, not individual responses. For some questions more than one answer was allowed (for example the questions on the diagnosis and etiology of the case scenarios). During analysis only the first response was counted.

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2 All individual and focus group interviews were tape recorded.

For the questions on how the child should be treated, we asked respondents to name the first, second and third steps that should be taken. FGs discussed their options and provided a consensus response.<sup>3</sup> For the free listing exercise, all reported symptom responses were counted.

For clarity, we use specific terms in describing each type of respondent. “Mother” is used for respondents in the individual interviews of mothers with children under 5. “Focus group” is used for men and women who participated in focus group discussions; “health provider” is used for health workers interviewed in health facilities (clinic or hospital); and “healer” is used for those traditional healers identified by mothers as sources of care. SiSwati illness terms are shown in italics, with approximate English equivalents indicated in parentheses.

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3 Consensus after group discussion is a natural and common process among several Southern African ethnic groups.

## Results

### Respondent Characteristics

A total of 96 interviews were completed, consisting of 33 mothers, 33 groups of adult men and women, 17 health providers, and 13 traditional healers for an overall total of 303 persons. Table 1 presents the type and number of respondents in the urban and rural study sites, by region.

**Table 1**

Number of interviews conducted by type and region. Swaziland Health Seeking Behaviors Study, 1990					
Region Name	Site Type	Health Workers	Individual Caretakers	Focus Groups	Healers
Hhohho	2 Urban	2	4	4	0
	3 Rural	3	5	6	2
Lubombo	1 Urban	1	2	2	1
	3 Rural	3	6	6	2
Manzini	2 Urban	2	4	4	2
	3 Rural	3	6	5	3
Shiselweni	3 Rural	3	6	6	3
Overall Interview Totals	5 Urban 12 Rural	17	33	33	13

#### *Individual Mothers*

We conducted 33 individual interviews of mothers with children under 5 years of age. Two interviews were conducted at each site; inclement weather impeded one interview at one site. Most mothers said they had received some type of formal training in school: 10 had attended (but not completed) grade school, 19 had completed middle school, and information was not provided by 4. Twenty-three mothers said they could read siSwati.

#### *Focus Groups*

Thirty-three focus groups were conducted, 16 male and 17 female groups. One male focus group was not completed due to inclement weather. A total of 240 individuals participated. The average group size was 7 (range = 4-15), and the mean age of groups of respondents was 34 for males (range = 20-47) and 27 for females (range = 22-41). While being a parent was

not a selection criteria, most participants in the FGs were parents. The mean number of children per focus group participant was reported for 24 focus groups. For male focus groups, the average number of children per participant was 6, for female groups the average number of children per participant was 4.

#### *Traditional Healers*

Healer interviews were conducted in 13 of the 17 clusters. Twelve traditional healers were *tinyangas*, and one was a *sangoma* (diviner). Their specialties included general practice, herbal treatments, treatment of chest pains, divination, pregnancy and childhood illnesses, and spiritual problems. Most healers were married men who resided and practiced in rural communities. The average age was 49 years (range = 34-88). Membership in a religious denomination or tradition was common: 11 belonged to a Protestant denomination, usually the Zionist Church; one practiced Swazi traditional religion; and one claimed no religious affiliation. Few healers had any formal schooling but most could read siSwati. Healers had practiced 1-72 years (mean = 25 years); 8 had practiced for more than 15 years.

#### *Health Providers*

Seventeen health provider interviews were completed; 16 interviewees were nurses, 1 was a nurse assistant. Eight of the nurses were also certified midwives. Sixteen were women. The average age was 40 (range = 24-64). Only 3 reported less than 10 years of professional experience.

## Hypothetical ARI Scenarios

### *Diagnosis and Etiology of Case I*

<b>Case I</b>
<i>A mother has a one-year old baby with the following signs: coughing, fever, sore throat, running or blocked nose, and red or teary eyes. When you ask the mother she tells you that the child can breast-feed well but is not actively playing.</i>

Table 2 summarizes the responses related to diagnosis and etiology of hypothetical ARI Case I by type of respondent. Health workers are not included in this table because their interviews were in English. *Umkhuhlane* (flu) was the primary illness term given to ARI Case I by mothers and traditional healers. *Umkhuhlane* was often associated with cough, fever, and/or runny nose, which may be accompanied by loss of appetite. Respondents felt *umkhuhlane* was caused by such things as cold weather, poor nutrition, not dressing the child properly, a dirty home, bewitchment, or giving the child too much hot water.

Table 2

Frequencies of illness terms used by mothers, healers, male focus groups and female focus groups to diagnose ARI Case I.* Also listed are a range of associated etiologies by type of respondent. Swaziland Health Seeking Behaviors Study, October 1990.				
Illness Term	Mothers N =33	Healers N =13	Male Focus Groups N =16	Female Focus Groups N =17
Umkhulane/yimbo (flu/cold)	(10) cold weather malnutrition improper dress too much hot water	(7) climate changes malnutrition "it happens on its own" fever	(6) cold weather bad air bewitchment dirty home	(2) cold weather
Lishashati (sore throat/ tonsillitis)	(4) stagnant blood coughing bad air malnutrition	(2) don't know	(8) malnutrition spoiled food fever cold weather bad air	(6) flu fever not immunized
Incubulunjwana (measles)	(3) not immunized	(2) climate changes drinking unsafe water	(0)	(3) don't know
Lukhwehlehwehle (whooping cough)	(1) dry throat	(0)	(0)	(3) not immunized
Other illnesses	(8) not enough time for breastfeeding	(2) maternity position	(1) maternity position	(3) not immunized bad air improper dress
Don't know	(7)	(0)	(1)	(0)

\* These are multiple response data for which only the first response of the individual and group is counted. Health providers were not included because their interviews were in English. Numbers in parentheses indicate the number of each type of respondent who mentioned the specific illness term and then offered one or more of the associated etiologies below.

The most frequently cited consensus diagnosis made by the focus groups and the second most frequently cited diagnosis made by the mothers was *lishashati* (sore throat/tonsillitis). Causes cited included malnutrition, fever, and "bad air".

Sixteen of the 17 health providers (not shown in the table) said that the child had an upper respiratory tract infection attributable to cold weather exposure, exposure to others with a similar illness, “improper cleanliness”<sup>4</sup>, or exposure to some kind of virus; one said the child had a lower respiratory tract infection or pneumonia, and suggested that it was caused by exposure to cold weather.

#### *Treatment Advice for ARI Case I*

##### *Treatment advice by mothers*

As the first step in treatment, 20 (61%) of the 33 mothers suggested taking the child to a health facility (42% clinic, 15% hospital); 9 (27%) would try a home remedy such as cough medicine, herbal teas, or a detergent enema; and 4 (12%) did not know what to suggest. If the child’s condition did not improve, 3 of those who suggested hospital referrals said they would leave the child at the hospital and 2 said they would try a healer. All mothers who suggested treating the child with a home remedy said they would take the child to a clinic or hospital if the child showed no improvement. Mothers did not suggest going to healers as a treatment option until after home or health facility treatment had been tried.

When asked to list treatments for *umkhuhlane*, mothers said it could be treated by dressing the child in warm clothes and giving the child home remedies such as water, herbal teas, soups, enemas, or over-the-counter drugs available at the market, trade store, or pharmacist.

##### *Treatment advice by focus groups*

The focus groups provided a consensus response for their first, second and third line treatment of the child in Case I. Male focus groups preferred a home remedy (44%) or treatment at a health facility as a first line of treatment (25% clinic, 19% hospital). If these methods did not result in improvement, males would then opt for a health facility (50%) or a traditional healer (38%).

Female focus groups preferred first treatment at a health facility (64% clinic, 12% hospital) to either home remedies (18%) or traditional healers (6%). Should the child show no improvement, the female focus groups recommended the child be taken to a hospital (47%), a clinic (41%) or to a traditional healer (12%).

##### *Treatment advice by traditional healers*

When traditional healers were asked how they would manage the child, 11 of the 13 suggested treating the child with traditional medicines and two suggested the mother take the child to the health facility. When asked if they had treated a child with these signs during the

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4 One of the health providers diagnosing the illness as measles (an upper respiratory tract infection) cited “improper cleanliness” as its cause.

past winter months, 11 (85%) healers said they had. Traditional medical treatments named by the healers included herbal medicines for enemas or teas, smoke inhalation therapy, and preparations purchased from the chemist. Healers expressed confidence in their treatments, and indicated that they would continue to treat the child or refer the mother to another specialist in traditional healing if the child did not respond positively. Traditional medicine was the second-line of treatment recommended by the two healers who suggested taking the child to the health facility as a first step.

#### Treatment advice by health providers

If a mother brought a child to a clinic with the signs described in Case I, 15 of 17 health providers (88%) recommended giving fluids to the child as a first step. Ten of those 15 health providers would recommend an additional treatment at their clinic as a second step, while 5 would continue to have the mother give fluids or medicine and check the child's respiration as a second step. Ten (59%) of the 17 health providers said they had treated cases similar to Case I during the past winter.

When asked how they would treat such a case, 11 (65%) suggested antibiotics (ampicillin, penicillin, or trimethoprim-sulfamethoxazole), as well as other medications to relieve specific symptoms: 13 (76%) of the 17 health providers suggested acetaminophen for the fever; 8 (47%) said the child should be given a cough medicine; 2 (12%) included nose drops as part of their suggested treatment; 3 (18%) included oral fluids in their recommendation; and 1 (6%) recommended multivitamins. Two respondents (12%) said that the child should be immunized and two (12%) of the health providers did not suggest any treatment.

Current MOH standards for AURI case management suggest that health workers should 1) advise mothers to increase the amount of fluids given to the child, and 2) provide supportive medicines (analgesics, antipyretics, or cough remedies) to control fever and soothe the throat. Antibiotics are not encouraged except in the case of otitis media or streptococcal pharyngitis.

#### *Diagnosis and Etiology of Case II*

<b>Case II</b>
<p><i>A ten-month-old baby boy was brought to a health center with the following signs: rapid or difficult breathing, chest indrawing, fever for one day, sunken eyes, coughing for three days. The mother tells you that the child does not have diarrhoea but has a poor appetite.</i></p>

There was a wider array of diagnoses offered for the case in scenario II. Mothers and female focus groups cited 3 illnesses most often: *sifuba semoya* (asthma), *emahlaba* (pneumonia), and *malaleveva* (malaria). *Lukhwehlehwehle* (whooping cough) was also mentioned by 3 mothers (Table 3).

Table 3

<b>Frequencies of illness terms used by mothers, healers, male focus groups and female focus groups to diagnose ARI Case II.*</b> <b>Also listed are a range of associated etiologies by type of respondent.</b> <b>Swaziland Health Seeking Behaviors Study, October 1990.</b>				
Illness Term	Mothers N =33	Healers N =13	Male Focus Groups N =16	Female Focus Groups N =17
Sifube semoya (asthma)	(7) cold weather hereditary cross infection	(3) hereditary bewitchment infection	(5) filthy conditions no immunization	(3) cold weather no immunization
Emahlaba (pneumonia)	(6) bad air cold weather prolonged cough malnutrition	(1) cold weather	(3) unknown	(6) cold weather unknown
Malaleveva (malaria)	(6) mosquito bites environment child neglect	(0)	(0)	(3) mosquitoes filthy conditions
Lukhwelekhwehle (whooping cough)	(3) asthma catching cold no immunization	(0)	(1) dirty breast	(0)
Umkhulane (flu)	(2) bad air cold weather	(0)	(0)	(1) cold weather
Lishashati (sore throat/ tonsillitis)	(2) bad blood unknown	(1) evil spirits	(2) poor nutrition	(0)
TB	(2) environment	(1) liver sores	(0)	(1) unknown
Other illnesses	(3)	(7) bewitchment	(4) heredity	(2)
Don't know	(2)	(0)	(1)	(1)

\* These are multiple response data for which only the first response of the individual and group is counted. Health providers were not included because their interviews were in English. Numbers in parentheses indicate the number of each type of respondent who mentioned the specific illness term and then offered one or more of the associated etiologies below.

The male focus groups and the traditional healers differed from mothers and female focus groups in their diagnoses for ARI Case II (Table 3); none of them mentioned malaria as a possible diagnosis. Seven of the 13 healers (54%) mentioned “other illness,” which included “vein malfunction,” “excess bile,” indigestion, and heart problems. Most healers attributed the named illness to bewitchment or evil spirits. The focus groups and mothers attributed the illness in Case II mostly to the weather, heredity, or the child’s home environment.

When asked to diagnose the child in Case II, 11 (65%) of the 17 health providers diagnosed a lower respiratory infection; 10 specifically mentioned “pneumonia”. They attributed this infection to cold weather exposure, coughing, and exposure of the child to the wind after a bath.

#### *Treatment Advice for ARI Case II*

##### *Treatment advice by mothers*

Twenty-six (79%) of the mothers said they would take the child to a health facility as a first step if he or she exhibited the signs cited in Case II. Seven mothers (21%) would try a home remedy first. If treatments at the health facility failed to cure the child, mothers would use health facility treatments and traditional medicine. One-third of the mothers said they would choose a healer as the final step in the treatment process.

##### *Treatment advice by focus groups*

The consensus advice of male focus groups recommended either taking the child to a clinic (31%), to a hospital (31%), or to a traditional healer (19%), or giving home remedies (19%) as a first step in the treatment process. As a second step, most (81%) would recommend a health facility; 18% would recommend taking the child to a traditional healer.

Female focus groups would recommend a clinic (38%), a hospital (31%), or a home remedy (31%) as a first step. If the child did not improve, all but one of the female groups would recommend health facility treatment. Only one group would recommend a traditional healer.

##### *Treatment advice by healers*

Ten (77%) of the 13 healers suggested a traditional treatment. Three said that they would advise the mother to go to the health facility first; should health facility treatment fail, they would try traditional methods. Five of the 10 healers who originally suggested traditional treatment said they refer patients to specialist healers for traditional medicinal therapies if their own methods fail to cure, and 5 said they would refer the mothers to a health facility. Traditional healers said that they would treat this illness with enemas, medicines, or inhalation of smoke from burning herbs.

### Treatment advice by health providers

All 10 health providers who diagnosed the child in Case II as having pneumonia indicated that they would first provide supportive care at the health facility, and then refer the patient to a hospital. Other health providers either misdiagnosed the child (4), said they did not know (2), or had a missing response (1).

Should chest indrawing occur, the health providers providing a correct diagnosis said they would either have already referred the child to a hospital before the development of this sign, or they would treat the child with antibiotics, give the child fluids, and then refer the child to the hospital.

MOH and WHO standards for ALRI case management focus on the diagnosis and treatment of pneumonia. Health providers should determine if the child has pneumonia by measuring his or her respiration rate using age-based standards, or other signs of danger (chest indrawing, wheezing, or stridor) as a basis for diagnosis. (WHO 1990). Should pneumonia danger signs be present, the MOH recommends that the health provider should treat the children with an antibiotic (cotrimoxazole) for the infection, provide an analgesic to ease the pain or discomfort associated with difficult breathing, and recommend that the child's caretaker increase the child's fluid intake.

### **Listing Exercise**

Multiple response data from the listing exercise for mothers and focus groups provided health seeking information for three illnesses: *umkhulane*, *emahlaba*, and *lucabangu*. Only *lucabangu* related responses will be reported here, since the case scenario data provided information on the other two illnesses.

#### *Lucabangu*

Of 29 responding mothers, 11 said they did not know the term *lucabangu*. Mothers recognizing it described symptoms of chest indrawing (8 of 18), rapid respirations (3), and general malaise (2). Weight loss, crying, difficulty breathing, discomfort, fever, gasping, pain, and sunken eyes were also mentioned.

Twenty-one of the 33 FG had participants who recognized this illness term. In responding FGs, chest indrawing was the most frequently cited symptom (cited in 5 of 10 MFGs and 7 of 11 FFGs). Less frequently cited symptoms included deepening of the chest, pain in the chest, loss of weight, and crying.

An abnormal condition in the child's eyes (eyes white, crossed, fixed, red, or dilated) was the danger sign most frequently reported by mothers (11 of 33) and focus groups (cited in 9 of 14 MFGs<sup>5</sup> and 10 of 17 FFGs). Coughing, vomiting, seizures, and loss of appetite also were reported as signs of severity by 2 or fewer mothers.

When asked how they would treat *lucabangu*, 10 mothers and 9 FFGs said that they did not know; 7 mothers, 8 MFGs, and 6 FFGs suggested either traditional practices or healers; 6 mothers, 1 MFG, and 2 FFGs suggested seeking help from a health facility; and 1 FFG suggested treatments from both the hospital and a healer.

For signs of severity, focus groups recommended a health facility (5 MFGs, 6 of 13 FFGs), home treatment or traditional healers (2 MFGs, 6 FFGs), or treatment from both sources (4 MFGs, 1 FFGs).

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5 Two of the MFG did not answer this question.

## Discussion

### Methods

We used two hypothetical case scenarios and a listing exercise to determine ARI illness terminology, symptoms, etiology, and treatment practices in Swaziland. Although the hypothetical scenarios provided useful data, it is significant that no caretaker identified the child in Case II as having *lucabangu*, an illness with symptoms of lower respiratory infections. Our experience using these methods suggests that case scenarios based on biomedical definitions of ARI may not be the most effective way of eliciting local illness terms. In this study and elsewhere (Wilson, Shale, and Parker 1991), we have found that open-ended interviews that allow caretakers to list illness terms and their symptoms should be the first step in developing hypotheses about local ARI illness terms and categories. These hypotheses can later be tested using other methods, such as case scenarios, clinical examinations, pile sorts, or surveys.

Although the sample size was small, we believe that this study provided robust data on terminology and practices related to ARI in Swaziland because: 1) respondents included most categories of persons who diagnose and treat children with ARI; 2) individual respondents were randomly selected for in-depth interviews and our sampling frame assured broad geographic representation; 3) data from the focus groups are consistent with and complement those from individual interviews; and, 4) our composite results are based on data from multiple sources using multiple methods. Selection of nearby homesteads may have facilitated consensus building in focus groups; however, this process would normally occur when treatment decisions must be made (Ngubane 1983). However, the use of focus groups, rather than more individual interviews, compromised our ability to make meaningful quantitative estimates. Nevertheless, the data presented here contain several implications for health provider training and for health education of mothers and other child caretakers.

### ARI Illness Terms And Classification

A key finding from this study is the broad range of ARI-related terms in the siSwati language. The wide array of terms elicited for the hypothetical ARI case scenarios should not be misconstrued as respondents' confusion. This is not an unusual phenomenon. Ethnomedical studies of folk classification systems of diarrhea in young children document the plethora of folk illness terms used to describe one term in the biomedical domain (Yoder 1991; Scrimshaw and Hurtado 1988b; Bentley, Pelto, and Straus 1988). Therefore, we sought to describe the domain of ARI terms and to identify various terms that relate to AURI and ALRI. It is unrealistic to expect lay persons to achieve a high degree of specificity in their diagnosis of pneumonia; this is sometimes difficult even for physicians (Pio 1986).

One hypothetical ARI scenario (Case I) elicited illness terms with symptoms associated with AURI (*yimbo*, *umkhuhlane*, and *lishashati*), and related immunizable diseases. The data suggest that the use of *yimbo*, *umkhuhlane*, and *lishashati* is appropriate for health education

messages targeting AURI. Since respondents associated *incubulunwana* (measles) and *lukhwehlekhwehle* (whooping cough) with the lack of immunizations, health providers and health educators should build on community knowledge and continue to promote childhood vaccination, a key component of WHO's strategy for control of ARI.

The ARI Case II scenario elicited several types of conditions, including a pneumonia-like illness (*emahlaba*), asthma (*sifuba semoya*), malaria (*malaleveva*), and whooping cough (*lukhwehlekhwehle*). This suggests that the lay classification system may group *sifuba semoya* and *malaleveva* into the same domain as *emahlaba* and *lucabangu*, and thus may recognize the clinical overlap of these illnesses. For example, children with asthma can have similar symptoms as the child in the case scenario, such as difficulty breathing, cough, or chest retractions. Similarly, overlap exists between the clinical definition of malaria and ALRI in highly malarious countries of southern Africa. An evaluation of 1,599 children in Malawi indicated that 95% of the children who met the WHO clinical definition for pneumonia also met the clinical definition for malaria, which is "fever" (Redd, Bloland, and Kazembe *et al.* 1992), and 36% of the cases meeting the clinical definition for ALRI were also parasitemic with *P. falciparum*. Although malaria is less prevalent in Swaziland than in Malawi, it is reasonable to expect that caretakers might diagnose the child in Case II as having *maleleveva*.

Since local illness terms are seldom exact duplicates of clinical terms, one might assume that the most effective way to communicate with mothers is by describing key ALRI symptoms in biomedical terms (e.g., fast breathing and chest indrawing). Another choice might be to communicate with mothers using only terms they already know. New information is more likely to be acted upon when educators build upon existing beliefs and practices (Kleinman, Eisenberg, and Good 1978; Brieger, Ramikrishna, and Adeniyi 1983-84; Agyepong 1992; Brieger and Kendall 1992). Thus, a combined alternative would be to develop health education messages that address illness terms recognized by Swazi mothers (*sifuba semoye*, *emahlaba*, *lucabangu*, *malaleveva*), and that teach them to recognize the clinical symptoms of ALRI as expressed in more biomedical terms (such as fast breathing and chest indrawing).

## Etiology

Promoting change in health-seeking behaviors of mothers and treatment practices of healers can be built on their existing explanatory model of ARI-related diseases. Beliefs about the causes of diseases are likely to be closely linked to preventive and curative behavior (Kleinman 1981). "Exposure" was the primary causative factor used to explain ALRI illnesses. This "exposure" (to "bad things in the air", cold weather, the chill of wind, a sudden breeze, or drafts during bathing) through inhalation provides justification for treatment through the inhalation of herbal medicine-infused smoke. During his clinical assessment of Swazi children with wheezing disease, Simoes (1990) attributed "a distinct smell of burning grass" to the extensive burning of brush that occurs before the planting season. This study suggests that the "burning grass" smell may have resulted from inhalation treatments. If this were the case, a strategy could be developed to address and alter this inhalation treatment, which may complicate the child's condition. Health education

messages could also build on the Swazi explanation of “exposure” and encourage mothers to use protective clothing for children during the rainy, cool season, but lighter coverings when the child has ARI accompanied by fever. Given Swazi concern with “exposure” and the fact that most respondents lack housing with controlled temperatures, mothers may fear using tepid baths to lower their child’s fever. Focus group discussions should be conducted to determine if mothers would accept messages encouraging the use of tepid baths to lower fever and proper ventilation in areas where children sleep, especially during the rainy season when smoke from coal and wood fires permeates many homesteads.

### Treatment Practices

In Swaziland, the first choice of health provider for children under the age of 5 is the health facility (Swaziland Ministry of Health 1989; Wilson 1992). Patient education as well as appropriate treatment should be conducted for mothers when their children with ALRI are seen in health facilities. Appropriate information about managing the child’s illness at home should also be provided in a manner that builds trust between mothers and health providers. For ALRI, the issue is early recognition of the symptoms of pneumonia and timely, appropriate care at the health facility, including proper instruction of mothers about home management and timing of follow-up visits. Health provider responses to questions about the advice and treatment they would give to mothers suggest that home remedies, such as increasing fluid intake, was their primary home care instruction for mothers.

Janzen and Arkininstall (1978) and Eng, Naimoli, Naimoli, and Parker (1991) have noted the importance of mobilizing community resources so that mothers can seek referrals and get medical help for a sick child. Swazi descent and residential patterns suggest that both the paternal grandmother and the child’s father should be recognized as important persons in this health care network. Gender differences in suggested health seeking behaviors further support targeting fathers for ARI-related health education activities.

Responses to ARI Case I and Case II scenarios suggest that after the first clinic visit, mothers in rural and urban areas may seek help from healers if the child does not improve within a short period of time. Oyejide and Osinusi (1990) suggest that the widespread use of herbal teas and enemas to treat children with ARIs in Africa may indicate that they have a beneficial effect. Future research should be conducted to identify the efficacy of herbs and roots used by caretakers and healers. If herbal treatments are found to be beneficial, the MOH should be supportive of the healers’ and the community’s use of herbal teas and should provide information about their appropriate use and correct dosage. However, home treatments, known to be detrimental, such as enemas prepared from detergent and disinfectants, should be discouraged.

Health providers’ responses to Case I and II suggest that there is a need to improve ALRI case management skills. The MOH should provide in-service and pre-service training emphasizing correctly diagnosing ALRI and the rational use of antibiotics.

Case management of ARI in Swaziland should also include a special emphasis on “communication with patients.” Tupasi, Miguel, and Tallo *et al.* (1989) note that confidence and trust is a major reason patients come to the health facility. Data from the Swaziland Health Seeking Behavior Study (Wilson 1992) suggest that the lack of trust and confidence in health providers may be the reason why the Swazi either go to a more distant health facility, seek help from healers, or administer home treatment when a child has ALRI. Any of these behaviors may cause a critical time delay during which severe illness can develop.

Traditional healers may feel confident in their ability to treat children with signs and symptoms of severe ARI; however, ineffective treatments may delay appropriate care and some of their treatments may directly compromise the child’s health. Given healers’ important role in providing care for ARI-related illnesses, the ARI program staff should continue their efforts to train healers to recognize the danger signs of ARI and to refer patients with possible ALRI (*emahlaba* or *lucabangu*) to a hospital. SiSwati training and health education materials should be developed for healers. Traditional healers will continue to have an important role in case management of respiratory infections in Swaziland, and should be engaged as ARI control programs are implemented in Swaziland.

## Implications of the Study

The key purpose of this study was to provide the MOH with information for program development. The study was designed to allow full participation and training of MOH staff at every step of the research—from the design of the protocol to the analysis of data, to the preparation of reports and manuscripts. Staff members said that this process allowed them to receive a first hand account of health problems and solutions from the community's perspective. In this activity, MOH staff communicated with the population in siSwati. The experience of participating actively in the research may have made the results more meaningful. Such benefits are important, since it is the MOH staff who are responsible for using the data and implementing recommendations.

Data from this study have helped the MOH tailor its ARI program activities for health providers, healers, and the community. Health providers are now encouraged to use WHO standards for diagnosing and treating ARI. An ARI Training Facilitators' Guide developed in Swaziland in 1991 instructs health providers to use specific siSwati illness terms when discussing ARI with mothers: *lishashati* (sore throat), *umkhuhlane* (cough, cold), *emahlaba* (pneumonia), and *lucabangu* (severe pneumonia). In accordance with international standards, supportive care is encouraged, and antibiotic use is discouraged, for the treatment of most upper respiratory infections.

In addition, an ARI training module for traditional healers has been developed. The module uses local ARI terminology for ARI training, focuses on teaching healers to recognize rapid respirations and other ARI danger signs, encourages the referral of children with *emahlaba* and *lucabangu*, and engages healers in dialogue during which there is a mutual discussion of treatments used for children with ALRI.

At the community level, ARI-related radio messages have been developed, tested, and transmitted during the peak ARI season. One of these messages reminds mothers to monitor their children's cough and breathing and to beware of the dangers of *emahlaba*. Mothers are encouraged to bring children with fast breathing to the health facility. One message, *emahlaba ayabulala* (pneumonia kills), has been developed and printed on T-shirts to promote social mobilization.



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