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## **FIELD NOTE**

### **DEVELOPING A QUESTIONNAIRE TO EXAMINE ACUTE RESPIRATORY INFECTION AMONG HONDURAN CHILDREN**

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HEALTHCOM is a USAID-funded program which utilizes communication technologies to promote child survival practices in developing countries. The Academy for Educational Development (AED) provides technical assistance to the governments that implement projects under the program. Applied Communication Technology (ACT) is under contract with AED to evaluate HEALTHCOM campaigns in Honduras and The Gambia.

HEALTHCOM has recently begun to apply its health communication methodology to combatting acute respiratory illness (ARI), which ranks with diarrhea as the most common cause of infant and early childhood mortality in the Third World. In anticipation of an ARI campaign in Honduras, Applied Communication Technology worked with the Honduran Ministry of Public Health and AED project staff to develop a baseline questionnaire to measure pre-intervention ARI knowledge and treatment patterns.<sup>1</sup> During June and July, 1987, the questionnaire was administered to approximately 700 caretakers of children under five years of age in six sites in rural Honduras. This article notes some of the measurement problems encountered in attempting to develop a reliable and valid survey instrument.

ARI encompasses viral and bacterial infections of the ear, nose, throat, and lung, which have a short onset. Examples are influenza, tonsillitis, and pneumonia. Such illnesses are differentiated from respiratory ailments such as tuberculosis and bronchitis, which are chronic in nature and which develop and persist over a long period of time. (Occasionally, however, tuberculosis in very young children can be acute, with dangerous symptoms appearing rather rapidly.)

Pneumonia is the ARI illness of primary concern, since it carries the most serious consequences.<sup>2</sup> However, less serious respiratory ailments such as colds and coughs may

<sup>1</sup> ACT wishes to acknowledge the assistance of Bonnie Bradford in developing the ARI questionnaire.

<sup>2</sup> Pneumonia is also prevalent in developed countries, but the mortality rate is dramatically lower. According to the PAHO publication Acute Respiratory Infections: A Guide for the Planning, Implementation, and Evaluation of Control Programmes within Primary Health Care, a child with ARI in a developing country is 30-70 times more likely to die from the illness than a child from an industrialized country. Low birthweight and malnourished infants are most at risk.

be included as campaign targets since they often become de facto precursors of pneumonia. The Honduran intervention is predicated on the premise that many cases of pneumonia could be avoided if coids and flu were given proper management in the home. Correct home care entails continuation of breastfeeding and feeding, increasing liquid intake, and, if necessary, keeping the child's nose clean. The latter is particularly important for a breastfeeding infant who would have difficulty breathing while nursing.

As a starting point for developing the baseline instrument, ACT staff spoke with Dr. Antonio Pio, Chief Medical Officer of the World Health Organization's (WHO) Respiratory Infections Unit in Geneva, and with Dr. Fabio Luelmo of the WHO regional office in Washington, to discuss the etiology and treatment of ARI and the experience of health education efforts to date. WHO and PAHO documents on ARI were collected and reviewed. Most of the informational materials on ARI addressed the medical aspects of the disease or pertained to health education directed at health providers. Very little information on home care educational efforts was available, and it appears that the Honduras ARI intervention will be one of the first of its kind in terms of scope of objectives and depth of planning.

In preparation for the Honduran campaign the Ministry/AED group carried out a developmental investigation comprised of ethnographic research, focus groups, a survey of mothers, and interviews with health care workers. The results of these studies were used to define project objectives and guide decisions in the planning process. ACT benefitted from the experience of individuals in the Ministry of Public Health and at AED who carried out this research, as they provided valuable advice on symptomatology, selection of terminology, and behavioral focus in the development of the ARI instrument.

ACT staff drafted a questionnaire designed to elicit information in several areas: prevalence of symptoms, knowledge of proper treatment, actual home treatment, recognition of signs indicating that a child needs to be taken for professional help, and information relating to communication exposure and impact. Development of a reliable and valid instrument, however, proved particularly challenging, as there are a number of problems inherent in the nature of respiratory infections and their treatment which make it difficult to define the illness and measure its treatment. Basic information on prevalence, duration, seriousness of illness, and treatment is even more complex to gather for ARI than, for example, diarrheal disease. Five problems in developing ARI instruments are noted here, along with suggestions for addressing them.

(1) "Acute respiratory infection" is not a concept with which the layperson is familiar. In attempting to obtain information on ARI prevalence or treatment, an

interviewer cannot ask about acute respiratory illness per se,<sup>3</sup> for it is unlikely that an individual outside the health profession will know what the term means. Questions must refer to specific symptoms or use terminology that the respondent is sure to comprehend, often making for cumbersome usage: "If a breastfeeding child gets a cough and a stuffy nose, should a mother continue to breastfeed or stop breastfeeding?" Or: "If a child under five years of age becomes fatigued, is breathing rapidly, and has an indrawn chest..." In diarrheal disease surveys, on the other hand, the term "diarrhea" can be used directly, since respondents are familiar with the word and its meaning.

(2) ARI is not a single illness with a defining symptom, but is rather a range of ailments which exhibit a wide variety of symptoms. ARI encompasses ailments as diverse as an earache and pneumonia, and is associated with some fifteen possible symptoms, as the following list indicates:

|                              |                          |
|------------------------------|--------------------------|
| nariz tapada                 | stuffy/blocked nose      |
| moquera                      | runny nose               |
| mocos ralos                  | runny nose (more watery) |
| tos                          | cough                    |
| molesto/decaído              | "bothered"/fatigued      |
| calentura                    | mild temperature         |
| fiebre                       | high temperature         |
| dolor de oído                | earache                  |
| supuración de oído           | ear discharge            |
| ronchas                      | rash                     |
| dolor de garganta            | sore throat              |
| estornudos                   | sneezing                 |
| dificultad de respiración    | difficult breathing      |
| respiración rápida           | rapid breathing          |
| hervor de pecho              | noisy breathing          |
| hundimiento de las costillas | chest indrawing          |

<sup>3</sup> After ARI prevalence, knowledge, and treatment questions, the ACT survey did use the term "respiratory illness" in the question, "Ha oído hablar de infecciones respiratorias?" ("Have you ever heard of respiratory illness?") The purpose of this question was to obtain a baseline measure of awareness of this term itself, to be compared with post-intervention levels of awareness.

In the context of an instrument which is designed primarily to elicit information on knowledge, behavior, and campaign exposure, it would be tedious and time-consuming to ask a respondent about each possible symptom on the list in order to obtain prevalence data--especially since an interviewer must go through the list for each young child.<sup>4</sup> Even a small increment in survey administration time can translate into high costs when the sample size is large. Given limited interview time and respondent attention span, a decision must be made as to which of the indicators should be retained and which should be dropped.<sup>5</sup>

Selection of appropriate symptoms depends upon the purpose of the instrument. Our survey was designed to measure campaign impact; therefore, after consultation with health education planners in Honduras, we selected ten indicators which were going to be mentioned in intervention messages and which represented a range of seriousness of illness. For example, Honduras campaign messages about mild cases of ARI will be based on the symptoms of "tos," "moquera," and "molesto/llorón/decaído." Pneumonia will be identified as the presence of "respiración rápida," "cansancio," or "hundimiento de las costillas." All of these symptoms, therefore, were included in our questionnaire, as we will want to know if their presence prompts the promoted treatment more frequently after the campaign. Also included were "calentura" and "fiebre," since it appeared from pretesting that the presence of a temperature may be a prime trigger symptom that indicates that professional attention is needed. Another indicator included was "dolor de oído," since it is a classic sign of an ARI problem.

Again, one can compare this process of obtaining ARI prevalence data with the analogous procedure for diarrhea prevalence. A survey on diarrheal disease can gather such data by simply asking, "Has this child had diarrhea in the past (period of time)?" Although diarrhea can vary considerably in its severity, etiology, and medical implications, it nonetheless constitutes a single, commonly recognized symptom. While it is a rather straightforward matter to ask a mother if her child has had diarrhea in the past two weeks, it is a much more complex matter to find out whether her child has had any respiratory illness in a given period.

<sup>4</sup> Of course, questionnaires designed for other purposes may necessitate asking about the full range of symptoms. For example, a medical intake interview would require precise information on symptomatology in order to make treatment decisions.

<sup>5</sup> Our interview time was further limited by the fact that an oral rehydration therapy questionnaire was administered in tandem with the ARI instrument.

Most KAP (knowledge-attitudes-practice) questionnaires tie the questions in the "practice" section to a specific case recent enough for the respondent to recall with acceptable reliability. In diarrheal disease surveys, the interviewer can follow up a mother's report of a case of infant diarrhea occurring within, for example, the past two weeks, with a series of questions about how she treated that particular diarrheal episode. Because a child is ill with ARI only when a group of symptoms appears, the researcher must define specifically what set of indicators should be followed by behavioral questions. For example, a runny nose is extremely common among Third World children, and, as an isolated symptom is rarely considered grounds for special attention. It would not be appropriate to take the time to ask treatment questions for such cases. We instructed our interviewers to administer the set of treatment questions only if two or more of the mild-moderate symptoms occurred in the past two weeks, or if any one of the symptoms which the campaign was defining as indicative of pneumonia was present.

(3) In Spanish there are many terms for ARI symptoms and illnesses, and little consensus on their definition. For example, "gripe," which is probably best translated as "flu," means different things to different mothers. And there is some indication from an early review of the data that a symptom such as "moquera" means simply "runny nose" to some mothers, while others take it to mean a particular type of runny nose which requires treatment.

Our approach was to first ask, for each child, whether each of the selected symptoms was present, and then ask the mother what she called whatever group of symptoms her child exhibited. For example, a respondent might say that her child had a runny nose and fever. The interviewer would then say, "What is this illness called that Carlos had?" In this way a mother herself would name the illness and then describe what she did in response to it--rather than our asking if Carlos had flu and assuming that her idea of flu was the same as ours. Consequently, we can analyze how caretakers define a particular illness, the degree of consensus on what constitutes a given illness, and what particular symptoms trigger what kinds of treatments.

(4) Since ARI illnesses are comprised of a set of symptoms, it is difficult to obtain information about when the illness began. For example, a child may have had a runny nose for several days and then have developed a cough and eventually a fever. To ask how long each separate symptom was present is another time-consuming task and probably does not produce very reliable responses. The problem arises as to whether the duration question should refer to the period when MOST symptoms were present, or ALL, or only the most serious? We decided to base the question on the mother's perception of

when her child became ill. Therefore, after asking the mother the name of the illness her child had, the interviewer would ask, "And how many days did Carlos have (name of illness)?" Thus, in relating duration to treatments and decisions to seek help, we will have a measure based on the caregiver's judgment of when accumulated symptoms became an actual illness.

(5) There is no unique home treatment for ARI. There is no home treatment for ARI which is analogous to Oral Rehydration Solution for diarrhea; the promoted strategy for handling ARI consists of continuing routine behaviors such as the giving of foods and liquids, rather than the administration of a special treatment per se. This means that if one simply asks a mother how she treated a given case of ARI, she may not mention that she fed her child. Therefore, follow-up questions about feeding and administration of liquids have to be asked specifically. However, feeding is not as definitively measurable a behavior as the administration of oral rehydration solution is. A mother can give an unambiguous answer to a question asking if she administered ORS or not during an episode of diarrhea, but there is a range and variety of behavior between a "yes" and a "no" answer to the question of whether a mother fed her child ill with flu.

We decided to ask the respondent to indicate a relative amount of food and liquid intake during illness. For example, "While Carlos had (name of illness), did he eat more, less, or the same amount of foods as usual? A subsequent question is necessary to find out whether the quantity was determined by the child, or the caregiver, or a health provider. It might be the case, for example, that the mother offered food but the child refused it, or that a child wanted to eat but the mother was advised to withhold food.

As HEALTHCOM gains more experience with ARI, researchers will undoubtedly be able to refine instruments in response to these and other thorny issues. Meanwhile, our experience suggests that program planners and evaluators should allow plenty of time for preliminary instrument development and field testing of ARI instruments.