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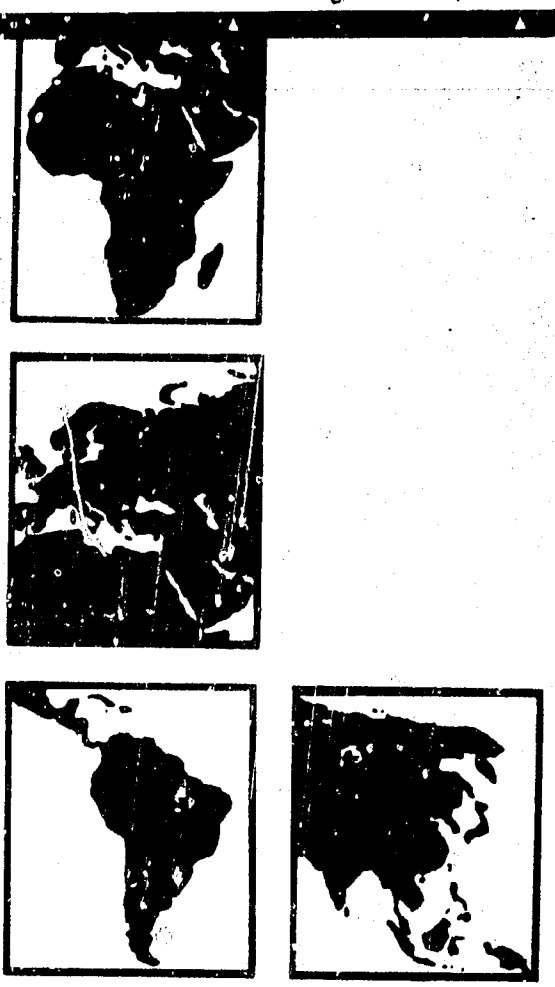

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PRICOR PROJECT
REPORT ON
THE PRIMARY HEALTH CARE THESAURUS

SEPTEMBER 1989

I. INTRODUCTION

In 1981, the AID/Bureau for Science and Technology/Office of Health (ST/H) entered into a Cooperative Agreement with the Center for Human Services to develop and implement a project aimed at helping researchers and managers in developing countries apply operations research (OR) methods to resolve problems in their primary health care programs. Over a 5-year period, the Primary Health Care Operations Research (PRICOR) Project provided funding and technical assistance to 49 projects in 32 countries.[1] In the course of assisting these projects, the PRICOR staff adapted a number of OR techniques to better suit the PHC situation in terms of the nature of the problems encountered, the kind of data that could be obtained, and the quantitative skill levels of local program managers. Related to the last point was the need to provide intuitively logical solution development methods so that decisionmakers could participate in the analytic process, helping to ensure that they internalized both the decisionmaking process and the resultant solution.

In 1985, ST/H extended the Cooperative Agreement for another five years. However, while calling for PRICOR to continue to provide assistance in solving operational problems in PHC service delivery, the new Agreement called for a more systematic approach to identifying those problems. In particular, it directed that special attention be paid to the activities of the most peripheral service providers and their supervisors. The resultant methodology developed by PRICOR to describe and analyze system performance and identify operational problems is termed systems analysis.[2] The objective of a systems analysis is to describe how service delivery personnel carry out the specific tasks that comprise primary health care activities, and the efforts of trainers, supervisors, and others to influence these activities.

Because a systems analysis seeks to verify how well health workers conduct a potentially large number of discrete activities and tasks, a framework was needed to guide the systems analysis design by operationally defining the critical PHC tasks that need to be studied to characterize system performance. This report describes the development and application of the central tool that PRICOR uses in designing a systems analysis and interpreting its results: the primary health care thesaurus.

II. DEFINITION AND FUNCTION OF THE THESAURUS

A sizable body of work exists on techniques for measuring inputs, outputs, effects, and even impact of primary health care services. Much less, however, has been done to identify comprehensively the many individual activities that PHC workers must carry out well in order to make primary health care effective in meeting its objectives and goals. In most PHC programs, the concrete activities expected of health workers and support personnel are formally described in only the vaguest terms, such as "provide health education in the community." Even less has been done to disaggregate those large activities into the component tasks and subtasks that comprise the operational definition of an activity. And finally, very little has been done to devise objective indicators of how well health workers perform this myriad of small tasks and subtasks. Yet, when evaluation shows that the goals and objectives of a service delivery system are not being met, it is often this level of analysis that is

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[1] *PRICOR Project Final Report: Solving Operational Problems in Primary Health Care, 1981-1987.* Center for Human Services, Chevy Chase, Md., 1987.

[2] For further discussion of how a systems analysis is carried out, see *PRICOR Project Mid-term Systems Analysis Report.* Center for Human Services, Bethesda, Md., October 1989.

necessary in order for the system manager to know what exactly is going wrong, information that is the foundation of well-reasoned corrective action.

The PRICOR II scope of work recognized this void and called for the development of a "service delivery activity thesaurus for primary health care." This thesaurus would "consist of a set of operational definitions of the activities logically necessary to deliver a limited range of basic health services. The definitions will be oriented toward a program in which these services are provided by non-professional health workers or lower-level professionals." While the general purpose of the thesaurus was defined by the Cooperative Agreement, PRICOR staff were given the task of developing its structure and content and applying the thesaurus in field systems analyses.

The PRICOR PHC Thesaurus was developed during the first two and half years of the project. Covering the seven major PHC subsystems of oral rehydration therapy, immunizations, malaria control, acute respiratory infections, child spacing, growth monitoring, and maternal health care, the thesaurus is a compendium of the principal service delivery and support activities that make up these interventions.[3] The thesaurus is more than an activity list, however, because it defines activities in measurable form by breaking them down into their component tasks and subtasks. Because of the level of disaggregation employed, the thesaurus provides readily measurable indicators that rely on a minimum of subjective judgment. This high level of objectivity greatly facilitates the use of non-expert field staff in data collection, reducing costs and giving the program manager more leeway in selecting staff to carry out the task and more confidence in the data turned in.

The thesaurus was designed to be the central tool that guides the description of health personnel performance in a systems analysis by providing a comprehensive framework from which analysts select those tasks that are relevant to their interest. Because the thesaurus touches on all significant service delivery and support activities within its frame of reference, including activities that may be performed infrequently, it is intended to ensure that analysts direct attention to the less documented and often forgotten activities that may be critical to effective performance. The thesaurus thus serves as a menu from which analysts must select the program elements that they wish to study.

Once the activities to be studied have been determined, analysts then choose from the various indicators proffered to design data collection instruments suitable to their particular needs and resources. The indicators are the most important aspect of the thesaurus because they outline the data to be collected in a systems analysis. The management questions that accompany the indicators are intended to provide a practical framework for interpreting the data collected in a way meaningful to program managers.

The subsequent sections of this report discuss the principal issues faced in developing the thesaurus and describe how the thesaurus, as it has evolved, has been applied in PRICOR systems analyses.

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[3]PRICOR Project *Primary Health Care Thesaurus*, Vols. I and II. Center for Human Services, Chevy Chase, Md., May 1988.

III. ISSUES IN DEVELOPING THE THESAURUS

Determining the Target Audience

One of the first issues considered by PRICOR staff was who the target audience for the thesaurus would be. There were a number of possibilities. One was the highly experienced advisor who would provide expert technical assistance in designing both the data collection instruments and the field protocol for a systems analysis, as well as provide overall supervision of the data collection phase and the data analysis. Another possibility was a specialized group located in a government agency, such as a Ministry of Health, that could be trained in the systems analysis methodology and then direct systems analyses carried out in the agency. A third possibility was the system manager himself, whether at the national, regional or district level, directing his own staff, looking at his own problems. The implication of the choice of audience was that the more expert the user, the less specificity and comprehensiveness would be required in the thesaurus.

Very early, PRICOR rejected the notion of a methodology targeting the international specialist and adopted an ultimate goal of making the methodology, and thus the thesaurus, usable by the system manager in developing countries. It was recognized that this goal would have to be achieved in phases, wherein the earliest developmental stages would be guided extensively by PRICOR staff or subcontractors, while the systems analysis methodology was refined and simplified in the direction of eventual use by the system manager. The first version of the thesaurus was designed, however, to be readily usable by program personnel in developing countries. This objective dictated that the content and presentation of the thesaurus be straightforward and oriented to the needs of PHC program managers.

Service System Components Considered

The Cooperative Agreement specified that the Project focus on six primary health care interventions: oral rehydration therapy, child and maternal immunization, growth monitoring and nutrition, clinical management of malaria, management of pneumonia (which was expanded to management of acute respiratory infections), and non-clinical family planning. Maternal health was later added as a result of growing interest by the primary health care community in this important area.

The Cooperative Agreement also specified that the thesaurus should take into account the role of support systems such as supervision, training, logistics, and information in promoting effective delivery of PHC services. After considering various paradigms for PHC support activities, PRICOR staff decided that planning, community organization, and financial management should be covered in the thesaurus as well.

Conceptual Framework

The conceptual framework underlying the PRICOR systems analysis methodology is very much of the classic system theory mold. This orientation played a powerful role in the development of the thesaurus. Briefly, the system model states that a specifically desired impact is derived from a combination of effects (or outcomes), which in turn derive from a particular set of outputs, and that the specific outputs required are obtained when certain process activities are carried out and certain inputs are supplied to the system. Graphically:

Inputs + Process-->Outputs-->Effects (or Outcomes)-->Impact

In programmatic terms, inputs are resources required by the system (human, material--including plans and procedures--and financial), processes are the activities and tasks carried out in the program, outputs are the immediate result of those activities, effects are the next level of results, and impacts are the more distal results, both planned and desired as well as unplanned and undesired. To use an example from oral rehydration therapy: trained service staff, children with diarrhea, and ORS packets are inputs to the system; the interaction between service providers and the children and their mothers are process activities; children treated with ORT and mothers educated about ORT are outputs of the system; children treated earlier and more effectively in future episodes are one effect; and reduced mortality due to diarrheal disease is an impact. In evaluation terminology, impacts correspond to program goals and effects correspond to objectives.

The acceptance of the system model is the intellectual underpinning that allows the systems analysis to focus so heavily on the process component of the system. It says that the process (i.e., the activities) is a powerful determinant of the output of the system, and that from the output then flows the outcomes and impact delivered by the system. Since the purpose of systems analysis is to characterize how service delivery activities are routinely carried out, the thesaurus purposely emphasizes input, process, and output measures, and some immediate outcomes, but not the more distal outcomes or impact.

One advantage of the systems model is its recognition of interlocking systems. For example, trained personnel--an input to the system described above--is the output of the training system. Thus, the systems model underscores for the analyst and manager the importance of knowing that expected training program outputs actually are occurring, since a weak training program has a direct effect on the probable outcome of the ORT program. The thesaurus reflects the linkage between service delivery and support activities by systematically listing the support activities relevant to each PHC intervention.

While systems theory underlies the structure of the thesaurus, a conscious decision was made not to endow the thesaurus with an input/process/output framework, so as to make the document more readily understandable to program personnel who might not be familiar with systems terminology. Instead, all PHC service delivery and support elements are described using action verbs--i.e., as necessary activities that program personnel must carry out in the process of delivering primary health care services.

Relationship to the Management of Quality of Care

In the past decade, quality has become a central issue for managers in a variety of fields. In the industrial arena, this concern has led to a number of initiatives to optimize the management of quality in both the manufacturing and service sectors. One such initiative, called Total Quality Management (TQM), has been implemented by many of the largest industrial corporations in the United States. The central area of concern of TQM is the process component of the system. In the words of one of the expert proponents of TQM, Joseph Duran, "All quality problems stem from either lack of knowledge or lack of attention to detail. There are no other reasons. The only way to improve quality is to examine every step of every task in every process. There is no other way."

In the health sector, more and more emphasis is being placed on quality assurance. For the most part, quality assurance efforts have focused on in-hospital care. Surprisingly little work or research has been carried out in the ambulatory or preventive health service areas.

The PRICOR thesaurus is directly related to the issue of how to manage health services in such as way as to ensure that the services provided are of acceptable quality. First, it is a groundbreaking attempt to define the essential activities and tasks for seven major child survival interventions. Secondly, the thesaurus provides a set of minimal standards which can be used by managers to guide, assess, and assure quality of care. Finally, the thesaurus contains practical indicators with which managers can examine the process of service delivery and measure quality in an objective way.

Comprehensiveness and Prescriptiveness

A critical issue in the development of the thesaurus was to establish the degree of detail in which the document would examine primary health care activities. The range of variants of effective primary health care programs is nearly limitless. Different approaches to carrying out the same activity abound, and it is not possible to say that one way is better than another, so long as the activity is carried out in a manner that leads to the desired outcome. The same activity may be assigned to one level of health worker in one country and to another in another country. In some programs, for example, community health workers play a direct role in intervention by distributing materials such as antimalarials, analgesics, or contraceptives, while in others they function as educators. In different countries, all of these roles may be assigned to different levels of health workers. Program organization may be very different as well. Immunizations may be delivered from fixed facilities, by a mobile team, or by some combination. Supervision of a particular task may come from workers at the level directly above the service level or from a separate, unifocal component of the system. Supply procurement may be centralized or decentralized. This wide range of reasonably effective variations in delivering and supporting PHC services led to two related problems in developing the thesaurus, comprehensiveness and prescriptiveness.

An initial assessment was made of the implications of including in the thesaurus most of the subtasks and indicators particular to a great many of these variants. Ultimately PRICOR staff determined that this level of comprehensiveness would yield a very large and unwieldy number (quite literally millions) of performance indicators. The presentation of a huge volume of material, even as a menu from which the systems analysis designer could pick and choose, would be confusing and intimidating, running counter to the ultimate thesaurus goals of simplification and ease of use. On the other hand, depicting only one strategic variant without representing all the acceptable alternatives could be read as prescriptive, when this was not the intention of the thesaurus.

To maintain the flexibility required to allow this instrument to be applicable across a wide variety of national approaches, PRICOR adopted a two-part strategy. Initially, highly comprehensive activity and task lists were screened and priorities were set on the basis of expected relationship to service program effects. Next, for those subtasks which were considered by the staff and expert consultants to be particularly critical to assuring desired effects, indicators were devised that operationalized how the performance of each task could be objectively measured. The indicators were formulated in such a way so as to accommodate local procedures or policies, without prescribing what those procedures should be. For example, in taking the history of a diarrhea episode as requisite precursor to delivering appropriate oral rehydration therapy, the thesaurus directs the analyst to determine whether the worker asks about frequency of stools. However, the frequency which is

defined as diarrhea is left to be defined locally. Similarly, the thesaurus makes no reference to the type or level of training of the health worker who is expected to carry out any task.

The decision to provide performance indicators for only key tasks was the main strategy for limiting the size of the thesaurus. Those activities or tasks that were deemed less important to achieving program effects, while shown in the thesaurus, were not further disaggregated into subtasks with associated indicators. For example, although health workers are expected to use sterile needles and syringes when immunizing children and that indicator is specified, no attempt is made to develop information about how those items are sterilized. Such information was felt to be beyond the level of detail required by most users of the thesaurus.

Selection of Tasks, Subtasks, and Indicators

If all possible tasks and subtasks and corresponding indicators were not to be presented in the thesaurus, then decisions had to be made as to which were to be. The advantages and disadvantages of turning the task over to individuals or small panels of experts in each intervention were weighed.[4] The PRICOR staff represent a wide variety of technical disciplines[5] and have significant field experience in all of the substantive PHC service areas. Therefore, it was decided that the staff would produce the first sets of activities, tasks, and subtasks in each of the service areas covered by the thesaurus. In most areas, these then were reviewed by external consultants, either as panelists or individually, for completeness and to help develop a sense of priorities among tasks with regard to impact on outcomes in the system.[6]

Before the first external review of a thesaurus chapter, the PRICOR staff and AID Cognizant Technical Officer came to consensus about the criteria to be used for selecting tasks and indicators for inclusion in the final thesaurus. The criteria selected were:

1. An expectation based on the system model that the appropriate performance of a task was strongly associated with system effectiveness in terms of outcomes.

2. That the task represented a decision opportunity for the system manager, i.e., that the manager can influence the level of performance in such a way that the system outcomes could be improved.

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[4]Advantages: greater diversity of opinion and expertise before positions became fixed, PRICOR staff freed for other tasks which also had to be done for the project. Disadvantages: problems in identifying undisputed experts who had time available for this painstaking task in the timeframe required, a felt need for the PRICOR staff to review the work of the panel or individual in any event.

[5]Medicine and nursing, epidemiology, social science, health education, management science, systems analysis, operations research, and program evaluation.

[6]The Cooperative Agreement authorizing the PRICOR Project stipulates that the Project's Cognizant Technical Officer in the AID Office of Health will play a substantive technical role in the development of the systems analysis methodology and the thesaurus. AID CTO Dr. James Heiby functioned as technical sounding board and reviewer at all stages in the development of the thesaurus.

3. That an indicator is both valid and reasonably consistent, and can be standardized nationally and internationally.

4. That an indicator is cost-effective, i.e., provides information that is "worth" the cost of acquiring it.

External review panels with two or more specialists were convened to review the immunization, ORT, malaria, and growth monitoring chapters of the thesaurus, which were the first chapters developed. The acute respiratory infections, child spacing, and maternal health chapters developed later were reviewed individually by consultants. The initial review meetings provided valuable feedback to the staff on the overall structure and format of the thesaurus. Consequently, changes made as a result of reviewer comments on one chapter often affected the content and structure of other chapters as well. This permitted later thesaurus chapters to be developed in less time and require fewer modifications.

In addition to the advice of external reviewers, PRICOR drew on its own field tests of early drafts of the thesaurus to shape the final document. Field testing of the thesaurus began in Haiti and Thailand in late 1986. While the basic structure and content of the thesaurus had been developed by early 1987, the thesaurus was still undergoing revisions to further reduce the number of indicators presented when the Zaire, Colombia and Haiti systems analyses were designed in early 1987. These country experiences allowed PRICOR to test out alternative indicators to find out which ones were the most feasible to collect while at the same time yielding information meaningful to system managers.

Some indicators were removed from the earliest drafts of the thesaurus on the basis of experiences in Haiti and Zaire. (The Colombia systems analysis used early versions of the thesaurus for reference, but examined tasks of volunteer health workers that were not covered in depth in the thesaurus.) For example, a large set of indicators relating to health worker knowledge were deleted in favor of stronger emphasis on observation of what these workers actually do. Also, a number of open-ended questions were converted to closed-end ones. Another important issue that was resolved as a result of the early country experiences with the draft thesaurus was that the level of measurement for indicators should be the individual service delivery facility, as opposed to aggregation of facilities at higher (e.g., regional, national) levels. Finally, as a result of the field testing, more thought was given to setting priorities in use of different data sources. For example, systems analysis designers were urged to minimize costly household interviews in favor of greater use of exit interviews of mothers.

Physical Presentation

As noted earlier, the thesaurus and the systems analysis methodology are targeted ultimately to the system manager. Consequently, PRICOR staff recognized that the physical presentation of the thesaurus would play an important role in determining whether program managers could, or would, use this key tool.

The first presentation of the thesaurus reflected its conceptual origins in systems modeling by organizing activities into an input/process/ouput/effects/impact framework. However, this format proved to be difficult to carry over into the next step of developing data collection instruments for the field. It was especially feared that this format might be particularly difficult for the non-specialist to use. After some experimenting, it was determined that an outline format was the most understandable way to organize the material. This format underscored the basic approach of starting with the larger

activities that comprise a service or support system, and then subdividing each activity into a set of tasks and further disaggregating each task into its component subtasks and sub-subtasks, as shown below:

1.0 Major Activity (e.g., in ORT, Managing Diarrhea Cases)

1.1 Task (e.g., assessing hydration status)

1.1.1 Subtask (e.g., taking history, a multi-part index)

1.1.1.1 First sub-subtask of history index (ask duration of diarrhea)

1.1.1.2 Second sub-subtask of history index (ask frequency of stools)

Following selected subtasks, a quantifiable indicator is listed, along with the suggested data source. In order to make the concept of measurable performance indicators more understandable to program personnel, PRICOR introduced in the thesaurus the idea of "management questions" to express in straightforward language what program managers want to know about the performance of a particular task. A management question is posed for each subtask for which a performance indicator is given. For one of the sub-subtasks shown in the example above, the following management question and indicator appear in the thesaurus:

▪ *Do health workers ask about the frequency of children's stools?*
% of diarrhea cases for whom health workers ask about the number of stools in the pase 24 hours **Diarrhea Encounter Observation or Role-Play Exercise**

In this manner, the systems framework underlying the thesaurus is moved into the background and the guidance for specific data collection is couched in management terms rather than in systems terminology. Thus, the manager is presented not with a question such as "which inputs are being made" or "what process tasks are being carried out", but rather a box containing the question, "Do health workers take adequate histories", followed by the individual components that comprise the definition of adequate, along with suggested sources for obtaining these data. (In this case, while there are 11 components suggested to define "adequate", the manager/analyst is free to select any combination to suit a local definition.) The avoidance of systems jargon and the use of more familiar terminology is expected to make the thesaurus easier for the manager to use.

The thesaurus is presented in two loose-leaf notebook volumes to facilitate updating as sections are modified. Each service intervention is followed by sections showing its associated seven support systems with activities, tasks, subtasks, indicators, and data sources in the same format. Volume I of the thesaurus shows only activities, tasks, and subtasks. Volume II expands all of these with indicators and alternative data sources and as a result is considerably more voluminous than Volume I. Because it contains the performance indicators, Volume II is intended to serve as the principal reference for systems analysis. Volume I, because of its smaller size, is useful as an outline of the major activities and tasks contained within the seven PHC service delivery systems.

IV. UTILIZATION EXPERIENCE

As noted, the thesaurus was designed to be the central reference tool to guide the selection of performance indicators, design of data collection instruments, and the subsequent analysis of the data. (This process is described in the PRICOR mid-term report on the systems analysis methodology.)[2]

To date, PRICOR staff have used the thesaurus (including its early versions) in varying degrees to select activities and tasks for study, choose indicators, and design field data collection instruments for systems analyses in Thailand, Zaire, Colombia, Haiti, the Philippines, Niger, Senegal, and Pakistan. The earliest systems analyses used working versions of the thesaurus to conceptualize what aspects of service and support activities would be studied and how the data could best be collected. These studies, in turn, provided extremely valuable feedback on how the thesaurus could be made simpler and more focused on a smaller number of key indicators.

The earliest draft of the thesaurus was used to help design instruments for the systems analysis in Thailand. The PRICOR and Thai investigators found a number of problems. This was before both the outline format and the management-oriented presentation had been developed, and the analysts reported that they had found the thesaurus somewhat physically confusing and too prescriptive for easy adaptation to the local situation. On the other hand, a colleague very experienced in growth monitoring and nutrition reported that in trying to identify operational problems in Thailand in those areas he found the thesaurus, with its comprehensiveness, very useful for developing a checklist of items (corresponding to subtasks) for which to look. The other major problem was more easily anticipated: the mandate from the Thai Ministry of Health was to carry out a management analysis that focused on levels in the service system above the periphery--levels with which the thesaurus did not deal.

As a result of the Thailand experience and a subsequent field-test in Haiti, the thesaurus was considerably revised. A number of lower-priority indicators were dropped, imbalances in the amounts of data collected in each of the support systems were corrected, and more emphasis was given to the cost involved in using certain data sources, particularly household interviews. The systems analyses in Thailand and Zaire led the staff to conclude that we were still attempting to collect too much information, although the impact on the thesaurus was simply to reinforce the notion that it is a presentation of alternatives from which to select a minimal set of tasks, subtasks, and indicators for study. This idea is reflected in the much sparser data collection instruments used in the first systems analysis designed after the thesaurus was published, in the Philippines.

An example of one of the Philippine instruments, the service delivery observation instrument for acute respiratory infection, is shown in Annex A along with the corresponding pages from the current version of the thesaurus. It may be seen that the Filipino design team chose to omit some management questions entirely (e.g., 2.2.2 "did the health worker administer supportive treatment"), and to omit some indicators (2.1.1.3 "in taking the history, did the health worker ask about child's activity level"). Again, this customizing selectivity is integral to the systems analysis methodology.

The thesaurus was also used as a reference for the design of systems analyses carried out by the PRICOR subcontractors in Costa Rica, Peru, and Togo. In Costa Rica, the systems analysis of measles vaccination drew extensively from the activity framework of the thesaurus. In Peru, the subcontractor organization developed its own indicator paradigm for systems analysis (called a "construct library"), but acknowledged the usefulness of the thesaurus in helping them to develop their indicators for the service delivery activities. The subcontractor for the Togo systems analysis had

helped PRICOR staff develop an early draft of the growth monitoring chapter of the thesaurus and adapted this draft for use in the Togo study.

In addition to the application of the thesaurus in systems analysis, other uses have become apparent for its comprehensive listing of PHC tasks and indicators. Recipients of the thesaurus have reported using the document to design child survival training activities, create evaluation instruments, and develop supervision tools.

V. DISSEMINATION

Volume I of the thesaurus was first published in December 1987, but was revised and re-issued in May 1988 based on changes made in the activity lists during the process of finalizing Volume II. Volume II of the thesaurus was first released in May 1988. Approximately 100 copies of the thesaurus were initially distributed to USAID Missions and AID/Washington officials involved with AID's health program, as well as to PRICOR researchers and representatives of major centrally-funded AID health projects. Since the publication of the thesaurus, several hundred additional copies have been distributed on request to U.S. universities and contractor organizations, and universities, government agencies, private organizations, and individuals in developing countries.

In order to facilitate greater use of the existing volumes by non-English speakers, the thesaurus has been translated into French and Spanish. These versions will also be distributed to appropriate USAID missions and other interested organizations.

VI. PLANS FOR THE FUTURE

The current version of the thesaurus is not a final document. Two further thesaurus development tasks are planned under the PRICOR project. The first is to prepare an introductory chapter which will discuss possible uses of the thesaurus, such as to develop data collection instruments, design training activities, or design components of a management information system. This chapter will be added to the current version of the thesaurus.

The second task is to update the full thesaurus, based on the experience gained in the systems analyses and operations research studies completed after the document was first published. Some tasks and indicators will be deleted or downplayed, while others are added or highlighted based on criteria of relevance to the improvement of service delivery, reliability, and relative economy of resources in data acquisition. Based on the field experiences to date, PRICOR staff have already identified the need for expansion of the tasks and indicators presented for health education and counselling activities, which were not as well developed in the first version of the thesaurus as were other technical tasks.

In conjunction with the process of simplifying and streamlining the PRICOR systems analysis methodology, the preparation of a third volume of the thesaurus is under consideration. This volume would consist of a substantially reduced set of tasks and indicators for some or all of the seven PHC interventions covered in Volumes I and II. The abridged thesaurus chapters would accompany data collection instruments (designed from the indicators featured in the abridged thesaurus) and an operations manual for carrying out a systems analysis. This self-contained package for systems analysis would be designed for use by PHC program managers at the regional and local levels, thereby fulfilling one of the objectives set by PRICOR concerning the ultimate target audience of the thesaurus.

ACUTE RESPIRATORY INFECTION: OBSERVATION OF SERVICE DELIVERY

Date(m/d)__/__ Observer(Lastname, Initial)_____

District_____ RHU_____ BHS_____

Bgy_____ HW Name_____ Position/Title_____

Child's Age___yrs___mos Name_____ Bgy_____

Did the HW ask: If child has had fever in last week How long child has had cough If child had chest pain If child had throat pain If child has had difficulty breathing If child has ever had asthma If there is TB in the household If child has had problem drinking What has already been done	Y N ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐N, but obvious
Did the HW: Take temperature Count respiratory rate Note color of nails Examine ears and nose for discharge Examine throat Observe for restricted breathing	Y N ☐ ☐ (Y,____o) ☐ ☐ (Y,____/min) ☐ ☐ ☐Could not tell ☐ ☐ ☐ ☐ ☐ ☐ ☐Could not tell
Did the HW classify the child as to mild, moderate, severe ARI?	☐N ☐Y-Class_____ ☐Not Sure
Did the HW prescribe an antibiotic?	☐N ☐Y-What_____
Was this antibiotic available at this facility?	☐N ☐Y, part of amount required ☐Y, entire amount required
Did the HW precribe/give any other medcines?	☐N ☐Y-What_____
Did the HW refer the child to another facility?	☐N ☐Y-Where_____
Did the HW tell the mother: To continue giving fluids and food To keep child at neutral temperature How to administer prescribed medicines Importance of completing drug regimen How to watch for cyanosis How to watch for chest indrawing	Y N ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Did the HW test to make sure mother understood how to: Administer the medicines How to recognize cyanosis How to recognize chest indrawing	Y N If Y, how did the HW test the mother? ☐→ ☐ _____ ☐→ ☐ _____ ☐→ ☐ _____

ACUTE RESPIRATORY INFECTIONS SERVICE DELIVERY INDICATORS AND DATA SOURCES

1. IDENTIFY CHILDREN UNDER 5 NEEDING ARI SERVICES

- *Do mothers or unsalaried community members and/or health workers adequately assess children's need for ARI services?*

a. % of mothers (with children under 5 with recent ARI episodes* not taken to the service delivery facility**) who report not taking their children to the service delivery facility because none of the (locally determined) indications for seeking medical care for ARI were present **Mothers' Interview (Household)**

b. % of mothers (with children under 5 with recent ARI episodes not taken to the service delivery facility) who report not taking their children to the service delivery facility on the advice of trained unsalaried community members or health workers **Mothers' Interview (Household)**

c. % of mothers (with children under 5 with recent ARI episodes taken to the service delivery facility) who report taking their children to the service delivery facility because one or more of the (locally determined) indications for seeking medical care for ARI was present **Mothers' Interview (Household)**

d. % of mothers (with children under 5 with recent ARI episodes taken to the service delivery facility) who report taking their children to the service delivery facility on the advice of trained unsalaried community members or health workers **Mothers' Interview (Household)**

2. MANAGE ARI CASES

- *Do children under 5 have access to ARI services?*

a. % of children under 5 in the service delivery facility catchment area living within 5 km. of a provider of ARI services **Service Delivery Facility Document Review** (census records and area maps)

b. Number of providers of ARI services per 1000 children under 5 in the service delivery facility catchment area **Service Delivery Facility Document Review and/or Service Delivery Facility Key Informant Interview**

c. Provision of ARI services by the service delivery facility **Service Delivery Facility Key Informant Interview**

- *Are ARI cases in children under 5 treated at the service delivery facility?*

d. Ratio of the number of ARI cases in children under 5 treated at the service delivery facility last year to the estimated total number of ARI episodes last year in children under 5 in the service delivery facility catchment area **Service Delivery Facility Document Review**

e. % of mothers (with children under 5 with recent ARI episodes) who report taking their children to the service delivery facility for treatment **Mothers' Interview (Household)**

*The term "recent ARI episodes" refers to ARI starting in the last month.

**The term "service delivery facility" refers to any provider of ARI services, including a community health worker operating out of his/her home.

- *Is desired ARI program impact being attained in the service delivery facility catchment area?*

f. Proportional distribution of ARI cases in children under 5 treated at the service delivery facility last year by degree of severity **Service Delivery Facility Document Review**

g. Number of pneumonia deaths in the service delivery facility catchment area last year per 1000 children under 5 in the service delivery facility catchment area **Service Delivery Facility Document Review**

2.1 ASSESS SEVERITY OF ARI

2.1.1 TAKE MEDICAL HISTORY

- *Do health workers take adequate medical histories from ARI cases?*

a. Mean % of medical history items asked about for ARI cases*** (10 items = 100%) **ARI Encounter Observation or Role-Play Exercise**

2.1.1.1 Ask about presence/level of fever

2.1.1.2 Ask about duration of cough

- *Do health workers ask about the duration of children's coughs?*

a. % of ARI cases for whom health workers ask about the duration of cough **ARI Encounter Observation or Role-Play Exercise**

2.1.1.3 Ask about activity level

- *Do health workers ask about children's activity levels?*

a. % of ARI cases for whom health workers ask about activity level **ARI Encounter Observation or Role-Play Exercise**

2.1.1.4 Ask about ability to drink

- *Do health workers ask about children's ability to drink?*

a. % of ARI cases for whom health workers ask about the ability to drink **ARI Encounter Observation or Role-Play Exercise**

*** The term "ARI cases" refers to children under 5 identified by health workers as ARI cases.

2.1.1.5 Ask about presence of sore throat

- *Do health workers ask about the presence of sore throat?*

a. % of ARI cases for whom health workers ask about the presence of sore throat **ARI Encounter Observation or Role-Play Exercise**

2.1.1.6 Ask about presence of earache

- *Do health workers ask about the presence of earache?*

a. % of ARI cases for whom health workers ask about the presence of earache **ARI Encounter Observation or Role-Play Exercise**

2.1.1.7 Ask about any past history of respiratory problems (asthma)

2.1.1.8 Ask about past history of choking on food or swallowing foreign body

2.1.1.9 Ask about family history of TB or other respiratory illness

2.1.1.10 Ask about any treatment administered

2.1.2 CONDUCT PHYSICAL EXAMINATION

- *Do health workers conduct adequate physical examinations of ARI cases?*

a. Mean % of physical examination items obtained for ARI cases (11 items = 100%) **ARI Encounter Observation or Role-Play Exercise**

2.1.2.1 Count respiratory rate

2.1.2.2 Observe breathing for chest indrawing

2.1.2.3 Listen for stridor, wheeze and/or hoarseness

2.1.2.4 Observe for nasal flaring and/or listen for grunting

2.1.2.5 Auscultate chest (per local policy)

2.1.2.6 Assess general status (alertness, muscle tone)

2.1.2.7 Observe coloration of lips, ears, face and nailbeds

2.1.2.8 Examine throat for exudate/discharge, enlarged tonsils and inflamed pharynx

2.1.2.9 Examine neck for tender glands

2.1.2.10 Examine ears (tympanic membrane) (per local policy)

2.1.2.11 Take temperature

2.1.3 CLASSIFY CHILD BY SEVERITY OF ARI (SEE APPENDIX A FOR CLASSIFICATION SCHEME)

- *Do health workers classify ARI cases by degree of severity?*

a. % of ARI cases classified by degree of severity **ARI Encounter Observation or Role-Play Exercise**

2.2 ADMINISTER APPROPRIATE TREATMENTS PER CHILD'S CLASSIFICATION AND PER LOCAL POLICY (SEE APPENDIX B FOR TREATMENT PROTOCOLS)

- *Do health workers administer, prescribe or distribute appropriate treatments to ARI cases according to children's classifications and local policy?*

a. % of ARI cases administered, prescribed or distributed appropriate treatments according to their classifications and local policy **ARI Encounter Observation or Role-Play Exercise**

2.2.1 ADMINISTER THERAPEUTIC TREATMENT

- *Do health workers administer, prescribe or distribute appropriate therapeutic treatments to ARI cases according to children's classifications and local policy?*

a. % of ARI cases administered, prescribed or distributed appropriate therapeutic treatments according to their classifications and local policy **ARI Encounter Observation or Role-Play Exercise**

2.2.1.1 Administer appropriate antimicrobial drug per recommended schedule (locally determined)

2.2.1.2 Prescribe or distribute appropriate antimicrobial drug per recommended schedule (locally determined)

2.2.2 ADMINISTER SUPPORTIVE TREATMENTS

2.2.2.1 Administer fluids, if child is dehydrated

2.2.2.2 Administer, prescribe or distribute antipyretic drug

2.2.2.3 Administer appropriate bronchodilator and/or cough mixture (locally determined)

2.2.2.4 Drain nose, if necessary

2.3 COUNSEL MOTHER (SEE ARI: SERVICE DELIVERY -- 3.1 PROVIDE INDIVIDUAL COUNSELLING TO MOTHERS OF ARI CASES)

2.4 REFER CHILDREN WITH SEVERE ARI OR WITH COUGH LASTING MORE THAN 30 DAYS

- *Do health workers refer children with severe ARI?*

a. % of ARI cases classified as "severe" referred **ARI Encounter Observation or Role-Play Exercise**

- *Do health workers refer children under 5 with cough of more than 30 days duration?*

b. % of children under 5 with cough reported as being of more than 30 days duration referred **ARI Encounter Observation or Role-Play Exercise**

2.5 FOLLOW UP ARI CASES AS APPROPRIATE TO REASSESS CONDITION AND MODIFY TREATMENT, IF NECESSARY (SEE ARI: SERVICE DELIVERY -- 3.1.1.5 TELL MOTHER TO BRING HER CHILD FOR RETURN CONSULTATION IF CHILD'S CONDITION WORSENS OR DOES NOT IMPROVE)

3. MOTIVATE/EDUCATE MOTHERS AND OTHER COMMUNITY MEMBERS REGARDING ARI TREATMENT

- *Do mothers have adequate knowledge about ARI?*

a. % of mothers (with children under 5) who know the recommended treatment for mild ARI in the home **Mothers' Interview (Household)**

b. % of mothers (with children under 5) who know at least 3 signs or symptoms of moderate or severe ARI **Mothers' Interview (Household)**

c. % of mothers (with children under 5) who know that they should immediately seek medical care if any sign of moderate or severe ARI develops **Mothers' Interview (Household)**

3.1 PROVIDE INDIVIDUAL COUNSELLING TO MOTHERS OF ARI CASES

- *Do counselled mothers of ARI cases have adequate knowledge for managing ARI in the home?*

a. % of mothers (of ARI cases for whom health workers prescribed or distributed antimicrobial drugs) who know the recommended antimicrobial drug administration schedule (quantity and frequency) **Mothers' Interview (Exit)**

b. % of mothers of (ARI cases for whom health workers prescribed or distributed antimicrobial drugs) who know the possible consequence of not completing the entire treatment course **Mothers' Interview (Exit)**

c. % of mothers (of ARI cases) who know that they should return for consultation if their children's conditions worsen or do not improve **Mothers' Interview (Exit)**

3.1.1 TRANSMIT KEY MESSAGES AND REQUIRED SKILLS

3.1.1.1 Tell mother how to administer antimicrobial drug prescribed or distributed for home administration

- *Do health workers tell mothers how to administer antimicrobial drugs prescribed or distributed for home administration?*

a. % of mothers (of ARI cases for whom health workers prescribe or distribute antimicrobial drugs) told the recommended antimicrobial drug administration schedule (quantity and frequency) **ARI Encounter Observation or Role-Play Exercise**

3.1.1.2 Tell mother the importance of completing entire treatment course

- *Do health workers tell mothers about the importance of completing the entire treatment course?*

a. % of mothers (of ARI cases for whom health workers prescribe or distribute antimicrobial drugs) told about the possible consequences of not completing the entire treatment course **ARI Encounter Observation or Role-Play Exercise**

3.1.1.3 Tell mother how to administer basic supportive treatments

3.1.1.3.1 Tell mother to continue breastfeeding and to give extra fluids and appropriate foods (locally determined)

3.1.1.3.2 Tell mother to maintain a neutral temperature in the home or sickroom

3.1.1.3.3 Tell mother how to administer appropriate brochodilator and/or cough mixture (locally determined)

3.1.1.3.4 Tell mother how to drain nose and ears, if necessary

3.1.1.4 Tell mother about the signs and symptoms of moderate or severe ARI

- *Do health workers tell mothers about the signs and symptoms of moderate or severe ARI?*

a. % of mothers (of ARI cases) told at least 3 signs or symptoms of moderate or severe ARI **ARI Encounter Observation or Role Play Exercise**

3.1.1.4.1 Tell mother about stridor

3.1.1.4.2 Tell mother about chest indrawing/rapid breathing

3.1.1.4.3 Tell mother about inability to drink

3.1.1.4.4 Tell mother about cyanosis

3.1.1.4.5 Tell mother about weakness or lethargy

3.1.1.5 Tell mother to bring her child for return consultation if child's condition worsens or does not improve

- *Do health workers tell mothers to bring their children for return consultation if children's conditions worsen or do not improve?*

a. % of mothers (of ARI cases) told to bring their children for return consultation if their children's conditions worsen or do not improve **ARI Encounter Observation or Role-Play Exercise**

3.1.2 USE APPROPRIATE COUNSELLING TECHNIQUES

3.1.2.1 Demonstrate required skills

3.1.2.1.1 Demonstrate how to recognize rapid breathing

- *Do health workers demonstrate to mothers how to recognize rapid breathing?*

a. % of mothers (of ARI cases) to whom health workers demonstrate how to recognize rapid breathing **ARI Encounter Observation or Role-Play Exercise**

3.1.2.1.2 Demonstrate how to inspect for chest indrawing

- *Do health workers demonstrate to mothers how to inspect for chest indrawing?*

a. % of mothers (of ARI cases) to whom health workers demonstrate how to inspect for chest indrawing **ARI Encounter Observation or Role-Play Exercise**

3.1.2.1.3 Demonstrate how to inspect for cyanosis

3.1.2.1.4 Demonstrate nasal draining methods

3.1.2.2 Ask mother to repeat key messages and/or demonstrate required skills

- *Do health workers ask mothers to repeat key messages and/or demonstrate required skills?*

a. Mean % of key messages and skills repeated or demonstrated by mothers (of ARI cases) (4 messages and skills = 100%) **ARI Encounter Observation or Role-Play Exercise**

3.1.2.2.1 Ask mother to repeat the administration schedule for antimicrobial drug prescribed or distributed for home administration

3.1.2.2.2 Ask mother to repeat under what circumstances to return for consultation

3.1.2.2.3 Ask mother to demonstrate how to recognize rapid breathing

3.1.2.2.4 Ask mother to demonstrate how to inspect for chest indrawing

3.1.2.3 Ask mother if she has any questions

3.2 PROVIDE OUTREACH ARI EDUCATION

- *Does the service delivery facility hold group ARI education sessions[****]?*

a. % of clinic sessions which include group ARI education **Session Observation**

b. Number of group ARI education sessions held in the last 3 months by site of sessions (service delivery facility; outreach locations) **Service Delivery Facility Key Informant Interview**

- *Do health workers provide ARI education during home visits?*

c. Number of home visits made in the last 6 months per 100 households in the service delivery facility catchment area **Service Delivery Facility Document Review**

d. % of home visits (to households with children under 5) which include ARI education **Home Visit Observation**

3.2.1 TRANSMIT KEY MESSAGES

- *Do health workers transmit key ARI messages?*

a. Mean % of key ARI messages transmitted during group ARI education sessions (4 messages = 100%) **ARI Education Session Observation or Role-Play Exercise**

b. Mean % of key ARI messages transmitted during home visits (to households with children under 5) (4 messages = 100%) **Home Visit Observation or Role-Play Exercise**

3.2.1.1 Explain how to distinguish mild from moderate or severe ARI

- *Do health workers correctly explain how to distinguish mild from moderate or severe ARI?*

a. % of group ARI education sessions in which health workers correctly explain how to distinguish mild from moderate or severe ARI **ARI Education Session Observation or Role-Play Exercise**

b. % of home visits (to households with children under 5) in which health workers correctly explain how to distinguish mild from moderate or severe ARI **Home Visit Observation or Role-Play Exercise**

3.2.1.2 Explain recommended treatment for mild ARI in the home

[****] A "group ARI session" is a group health education session with ARI messages transmitted.

- *Do health workers correctly explain the recommended home treatment for mild ARI?*

a. % of group ARI education sessions in which the recommended home treatment for mild ARI is correctly explained **ARI Education Session Observation or Role-Play Exercise**

b. % of home visits (to households with children under 5) in which the recommended home treatment for mild ARI is correctly explained **Home Visit Observation or Role-Play Exercise**

3.2.1.3 Explain importance of immediate medical care if signs of moderate or severe ARI develop

- *Do health workers explain the importance of immediate medical care if signs of moderate or severe ARI develop?*

a. % of group ARI education sessions in which health workers explain that immediate medical care should be sought if any sign of moderate to severe ARI develops **ARI Education Session Observation or Role-Play Exercise**

b. % of home visits (to households with children under 5) in which health workers explain that immediate medical care should be sought if any sign of moderate or severe ARI develops **Home Visit Observation or Role-Play Exercise**

3.2.1.4 Explain general preventive measures for ARI

3.2.2 USE APPROPRIATE HEALTH EDUCATION TECHNIQUES AND MATERIALS

3.2.2.1 Ask questions of and respond to questions from attendees

3.2.2.2 Use visual aids in transmitting key messages

ACUTE RESPIRATORY INFECTIONS

Appendix A

Plan of Classification for Mild, Moderate, and Severe ARI

Definitions:

ARI Case: Any child suffering from one or more of the following conditions will be considered a possible case of ARI - cough, wheeze, stridor, grunting, chest indrawing, nasal flaring, hoarseness, sore throat, earache or ear discharge.

Severity of ARI: Once it has been established that a child has possible ARI, severity is determined by the signs and symptoms listed below. A child is classified as moderate or severe if the child has one or more signs or symptoms in that category.

SEVERE ARI

- Respiratory rate >70/minute
- Chest indrawing
- Inability to drink
- Stridor at rest
- Cyanosis
- Apnea, seizures, or change in consciousness
- Marked reduction in activities and play
- Dehydration

MODERATE ARI

- Respiratory rate 50-70/minute
- Temperature $\geq$ 40°C (104°F)
- Nasal flaring or grunting
- Earache, ear discharge, or pulling at ears (classification and treatment per local policy)
- Sore throat with enlarged tender nodes, with or without exudate, (classification and treatment per local policy)
- Moderate reduction in activities and play

MILD ARI

- Respiratory rate, <50/minute
- Temperature < 40°C (104°F)
- Stridor relieved at rest
- Sore throat without enlarged tender nodes

SEE ACCOMPANYING NOTES ON CLASSIFICATION SCHEME

ACUTE RESPIRATORY INFECTIONS

Appendix B

Treatment Protocols for mild, moderate and severe ARI

SEVERE ARI: The child must be seen by a health worker immediately. Therapeutic and/or supportive treatment can be initiated by the health worker or the mother, but the patient should be referred to a higher facility as soon as possible, if he/she does not respond to therapeutic treatment administered or if his/her condition worsens. Recommendations:

A. Supportive treatment[1]
B. Therapeutic treatment[2]
C. Referral to higher facility for more intensive treatment[3]

MODERATE ARI: Supportive treatment can be initiated by the mother, but a health worker will usually have to intervene without delay, particularly for antimicrobial treatment. Recommendations:

A. Supportive treatment [1]
B. Therapeutic treatment [2]

MILD ARI: Treatment can be initiated by the mother with or without information to a health worker. Recommendations:

A. Supportive treatment [1] only

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[1]Supportive treatments:

- Antipyretics
- Bronchodialators and cough medicine (per local policy)
- Adequate fluids
- Proper feeding
- Maintenance of neutral environmental temperature
  (Do not bundle up the child with too many clothes. Do not overheat the room. Assure proper ventilation but protect the child from chills)
- Keep air passages clear
- Other recommended local measures

[2]Therapeutic treatments:

Primarily first line antimicrobials to be given per local policy. According to WHO recommendations benzylpenicillin or procaine penicillin G injections, or cotrimoxazole, amoxcillin, or ampicillin orally should be considered as first line antimicrobials, which can be distributed for ambulatory treatment.

[3]Intensive treatment:

May include intensive first line or second line antimicrobials (such as gentamycin, kanamycin, oxacillin and chloramphenicol), oxygen therapy, brochodialators, steam humidification or other measures that are available mainly in referral centers.

Notes on ARI Classification Scheme

1. One important objective of this classification scheme is to identify those children who should receive antibiotics. One is especially interested in treating early pneumonia.

2. There is no perfect scheme for classifying cases of ARI in the field. This is a fairly conservative approach in that it tends to err on the side of treating rather than not treating.

3. Using fever as a classification criterion is problematic in that high fever due to any cause may increase respiratory rate. In general a child should have some sign or symptom of ARI (see above definition) before assuming that fever and increased respiratory rate are due to ARI. If there is doubt, one might administer an antipyretic and see if the respiratory rate returns to normal when the fever drops.

4. Local program directors should decide if they wish to classify or treat suspected cases of throat infection that could be caused by Group A Beta Hemolytic Streptococcus or ear infections, especially where laboratory or otoscopic examination is not feasible.