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TECHNICAL ADVISORY COMMITTEE  
TO THE  
STRENGTHENING RURAL HEALTH SERVICES DELIVERY PROJECT\*  
of the  
Ministry of Health  
Government of the Arab Republic of Egypt  
Final Report\*\* of the meeting held in Cairo  
January 5th through January 13th, 1983

Members of the Technical Advisory Committee (all participating)

Egyptian Members:

Dr. F. Gadalla  
Dr. H. Hammam  
Dr. M. Hussein  
Dr. F. Rizk (Chairman)

U. S. Members:

Dr. J. Banta\*\*\*  
Dr. E. Boostrom (Rapporteur)\*\*  
Dr. J. Jeffers\*\*\*

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\*\*This report has been reviewed and approved by all members of the  
Committee.

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Report of the meetings held in Cairo  
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Executive Summary

The Strengthening Rural Health Delivery Project (SRHD) is an established field operational research project that is making a very significant impact on strengthening Egypt's rural health services delivery system. After an understandably slow start, the project is now functioning in a manner which fulfills its mandate.

The joint Egyptian-U.S. Technical Advisory Committee (TAC) to the Strengthening Rural Health Services Delivery Project (SRHD) provides technical advice to the Ministry of Health regarding SRHD activities. Prior to the January 1983 meeting, the MOH requested that the TAC review reports on:

- o Three rounds of the Household Survey,
- o Supervisory Feedback results for the third quarters of 1980 and 1981,
- o Pre- and post-training test data (for pre-implementation training and for supervisor training), and
- o Phase I of the Lower Respiratory Tract Disease Study.

The TAC added the following item to its Scope of Work, with the approval of Project Director Dr. Almotaz B. Mobarak: "To review the project's progress in strengthening rural health services delivery, review related key issues, and make appropriate recommendations."

Since the last TAC meeting in December of 1980, the project has made much progress in carrying out, analyzing, and reporting the studies through which it tests various ways of strengthening the delivery of rural health services. The project has already contributed to strengthening rural services within the project areas. Approaches and techniques developed and/or field tested under the project have also already been adopted in national programs. The SRHD project office has been institutionalized as the research section of the Rural Health Services Directorate of the Ministry of Health. The project's staff demonstrates high motivation, team spirit, and dedication toward the fulfillment of project objectives. Overseas participant training further strengthens the endeavor.

The project is in the process of producing a substantial number of field-demonstrated health services research results. With appropriate adjustment and modification to suit local circumstances, interventions shown to be effective could be replicated broadly in health services throughout Egypt. For example:

The project has most impressively demonstrated the value of outreach activities, especially as an element of the Diarrheal Disease Control Study (DDCS). The DDCS also demonstrated the very effective complementary role that mothers can play as primary health workers of first resort in DDCS activities. The 50% reduction in mortality in infants and children under five due to diarrheal diseases in study areas is a spectacular accomplishment.

The project has prepared an excellent family planning protocol which has broad implications and significance for the integration of FP with other outreach activities in connection with the delivery of basic health services throughout Egypt.

The project is initiating cost analyses which are needed to determine the national replicability of various features of the project.

The reports reviewed by the TAC provide much information of great use to the MOH. The SRHD is making good progress in developing its reports now, having relieved some of the data analysis problems which delayed reports and feedback. However, the reports and discussions also reveal a need to strengthen certain aspects of the project's studies, including particularly study design and analysis and the development, validation, and use of data collection instruments. Members of the SRHD project were receptive to technical criticism and advice and show maturity and considerable capacity to develop their research capacity further in the future. In light of the technical assistance and technical review needs evident during this TAC review, full use should be made of long and short term technical assistance available to the project; the roles of technical assistance personnel in the SRHD might need to be revised in this light.

This report of the TAC is intended to assist the SRHD office to build upon experience gained in carrying out the project in general and particularly upon experiences in the studies which it asked the TAC to review. The TAC's overall assessment of the reports and of the efforts which they represent is positive. In order to be most useful to the SRHD, the committee has not sought to bring out in this report all of the many good points discussed regarding each study; rather, encouraged by the frankness and openness of the SRHD staff, we have endeavored to present technical comments on areas in which we see room for improvement.

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1. Introduction/Overview

The SRHD project is an established ongoing field operational research project that is making a very significant impact on strengthening Egypt's rural health delivery system. Precise areas of impact on the health services delivery system within the project areas and beyond are discussed in Section 4.0 and 5.0 below. It is clear that the SRHD project, after an understandably slow start, is impressively functioning in a manner which fulfills its mandate and is thus realizing the expectations of all parties concerned.

The joint Egyptian-U.S. Technical Advisory Committee (TAC) to the Strengthening Rural Health Services Delivery Project (SRHD) exists in order to provide technical advice to the Ministry of Health regarding all areas of SRHD activities. Prior to the January 1983 meeting which led to the present report, the MOH (See Scope of Work in Annex A.) requested that the TAC review:

- o Three rounds of the Household Survey,
- o Supervisory Feedback results for the third quarters of 1980 and 1981,
- o Pre- and post-training test data (for all pre-implementation training in six project districts and for supervisor training for all ten project districts), and
- o Results of Phase I of the Lower Respiratory Tract Disease Study.

Early in the meetings, the TAC added the following item to its Scope of Work, with the approval of Project Director Dr. Almotaz Mobarak:

"To review the project's progress in strengthening rural health services delivery, review related key issues, and make appropriate recommendations."

The seven-member committee met for seven days at SRHD headquarters in Cairo and spent one day in Fayoum on a field trip. Oral presentations by SRHD staff, to supplement documents, were followed by joint discussions and later by meetings of TAC members only. First drafts of most sections of the report were reviewed and revised by TAC (and then reviewed by SRHD) during the final meetings, but some key sections were delegated to the rapporteur for completion and distribution to the TAC chairman and other TAC members.

Since the last TAC meeting in December of 1980, the project has made much progress in carrying out, analyzing, and reporting the studies through which it tests various ways of strengthening the delivery of rural health services by the MCH. The project has already contributed to strengthening rural services within the project areas. Approaches and techniques developed and/or field tested under the project have also already been adopted in national programs as reported to TAC by Project Director Dr. Mobarak.

The project's vigorous and competent local staff demonstrates high motivation, team spirit, and dedication toward the fulfillment of project objectives. Overseas participant training is beginning to bear fruit and should continue to strengthen the endeavor. The SRHD project office has already been institutionalized as a research section of the Rural Health Services Directorate of the Ministry of Health, and it has high visibility within the Ministry, in the field, among donor agencies, and among other health projects operating in Egypt.

The project is in the process of producing a substantial number of field-demonstrated health services research results. With appropriate adjustment and modification to suit local circumstances, interventions shown to be effective could be replicated broadly in health services throughout Egypt. For example:

The project has most impressively demonstrated the value of outreach activities, especially as an element of the DDCS, and the effective complementary role that can be played by mothers serving as primary health workers of first resort in DDCS activities. The fact that mortality in infants and children under five due to diarrheal diseases was reduced by 50 percent in study areas is a spectacular accomplishment.

The project has prepared an excellent family planning protocol which has broad implications and significance for the integration of FP with other outreach activities in connection with the delivery of basic health services throughout Egypt.

The project is initiating cost analyses which will provide crucial information for determining the national replicability of various features of the project. (TAC cannot comment on the appropriateness of the cost study design, methodology, and results, because the recent cost analysis design consultant's report had not yet been submitted. Cost analyses are crucial parts of the project and should be given full attention by the SRHD and the MOH in general.)

The reports reviewed by the TAC provide much information of great use to the MOH. The SRHD is making good progress in developing its reports now, having relieved some of the data analysis problems which delayed reports and feedback. However, the reports and discussions also reveal a need to strengthen certain aspects of the project's studies, including particularly study design and analysis and the development, validation, and use of data collection instruments. Members of the SRHD project were receptive to technical criticism and advice and show maturity and considerable capacity to develop their research capacity further in the future.

This report of the TAC is intended to assist the SRHD office to build upon experience gained in carrying out the project in general and particularly upon experiences in the studies which it asked the TAC to review. The printed documents provided useful summaries in preparation for the TAC meeting, and the committee makes no attempt to re-summarize the studies. Oral presentations to the TAC by SRHD staff members provided opportunities for clarification of many points, and both the presentations and the ensuing discussions have provided much of the content of this report. The TAC's overall assessment of the reports and of the efforts which they represent is positive. In order to be most useful to the SRHD, the committee has not sought to bring out all of the many good points discussed regarding each study; rather, encouraged by the frankness and openness of the SRHD staff, we have endeavored to present technical comments on areas in which we see room for improvement. Those comments and recommendations are presented for each study in Section 2 and summarized in Section 5.

## 2. Review of Individual Studies (based on documents presented) as They Relate to Strengthening Rural Health Services Delivery

The studies which have been carried out under the SRHD Project have been important and useful in the management and continued development of the project and in testing initiatives which provide options for consideration by the MOH as it attempts to strengthen its rural services. This experience will serve the project office well, after external support of the office ends, when it continues such activities as the branch of the MOH rural health services department charged with ongoing development and testing of improvements in rural health services delivery.

In this section, for each study for which a document was presented for TAC review, TAC comments are presented under the following categories:

- Objectives
- Design
- Data Collection
- Interpretation of Results
- Implications/Applications
- Follow-up
- Recommendations of TAC

A separate section (2.5) discusses TAC findings and comments on data processing and analysis

### 2.1 Respiratory Disease Control Study

Phase I of the Respiratory Disease Control Study (RDCS) has been a valuable experience for the staff of SRHD and of the test district and facilities. It has also provided additional tests of the use of nurse outreach programs to promote detection and early, effective treatment of key health problems in rural Egypt. The following comments are intended to help the SRHD staff interpret and build upon their experiences in the RDCS.

#### 2.1.1 Objectives of the Respiratory Disease Control Study

The basic objective of Phase I the Respiratory Disease Control Study, as presented and discussed by SRHD staff, was to demonstrate that nurses with special training for the task are able to detect respiratory disease signs and symptoms in children under the age of six years, identify those signs and symptoms, and use them according to pre-set criteria to correctly classify the children as having upper respiratory infections (URTI) or lower respiratory tract infections (LRTI). LRTIs are usually more serious and require quick medical treatment, so emphasis in Phase I of the study was to be on detection of LRTIs and their referral to physicians for treatment with penicillin injections. (A second phase was initially intended



to test the nurses' immediate administration of an initial penicillin injection to young children they were referring to physicians.)

Phase I of the Respiratory Disease Control Study had additional objectives of determining (1) what effects the nurses' referrals for LRTIs would have on coverage and health facility utilization, (2) what common pathogenic bacteria in the throat were associated with LRTIs, and their antibiotic sensitivity (3) what percentage of children with LRTIs had Chlamydia trachomatis organisms in their throats, and (4) what would be the curative effects of treatment with penicillin injections of children whom MOH facility physicians considered to have LRTIs.

### 2.1.2 Design of the study

The study design permits determination of nurses' compliance with the pre-set criteria for classification of children as having LRTI or URTI on the basis of the signs and symptoms which the nurse considered the child to have.

The basic design of the study did not permit assessment of the sensitivity and specificity of the specially trained nurses as instruments for the detection and classification of URTIs and LRTIs, because only those children whom the nurses considered to have LRTIs were to be referred to the local MOH physician for verification of the diagnosis and treatment.

A control group was established for the study, consisting of villages in a contiguous district which the SRHD staff asserts to be similar to the villages in which the test activities were carried out. Nonrandom assignment and different selection criteria make comparisons between the test and control villages difficult to justify; this design problem applies, for example, to comparisons of facilities' utilization between the two groups. In addition, both control and test populations were too small to permit detection of changes in LRTI mortality which might have been achievable even if Phase II had been carried out successfully; during the three months of Phase I, only 23 deaths in children under six were reported in the test area, of which eight were attributed to LRTIs.

The project used penicillin injections as the study's "treatment of choice" for LRTI's, potentially increasing the risk of allergic reactions.

### 2.1.3 Data Collection

Data used in the analyses were generated by several sources. The most important source was the record each test area nurse kept of respiratory tract infection (RTI) signs and symptoms she detected

and of her classification of each child having one or more symptoms as LRTI or URTI. No data are presented in the report which permit assessment of the validity or reliability of the sign and symptom information in those records.

Clinical records maintained in their rural facilities by MOH physicians are the second most important source of the study's data, because they are used as the standard with which the nurses' URTI/LRTI classifications are compared and because their LRTI cases were the starting point of those parts of the study dealing with, for example, bacteriological and treatment effect investigations.

Laboratory examinations carried out by the School of Medicine at Alexandria University provided additional data for aspects of the study. *Chlamydia trachomatis* grew on only three cultures, possibly indicating a technical flaw in the collection, handling, or culture of the specimens. The test and conclusions of the report will be revised by SRHD staff to reflect this consideration and the relevance of the findings to rural health services delivery.

The fact that records of follow-up observations of patients who had received penicillin injections were missing in many cases makes it difficult to draw any conclusions based on those data available.

#### 2.1.4 Interpretation of Results

As a pilot study this was a useful exercise if the lessons learned will be applied to another study of more rigorous design. The essential objective as a health services research study was to determine if nurses can identify and classify respiratory disease as to its gravity and ensure early adequate treatment thereby reducing mortality. For several reasons, it is not possible to confidently interpret the results of this Phase I RDC study. Objective, criteria, rigorously understood and utilized by nurses and physicians, were not shown. Villages were not randomly assigned to treatment and control groups. Data concerning the true incidence of respiratory disease among the total study population (universe) were not gathered. Those statistical and design flaws make evaluation of the specificity and sensitivity of the nurses' diagnoses impossible.

#### 2.1.5 Implications/Applications

Data suggest that nurses can identify and classify respiratory disease, but it is not proved. Attention to explicit criteria, study design, enlarging the pool of outcome indicators by extending the recall time, and attending to medical and research methodology should ensure a scientifically satisfactory and highly useful study for policy implementation.

### 2.1.6 Follow-up

In Phase II of the RDC study, classification of cases will be done on the basis of their degree of severity ("mild", "moderate" or "severe"), rather than anatomical classifications (as "URTI" or "LRTI"). In Phase II, nurses who detect a case of "severe" RTI will stop the home visit round and immediately accompany mother and child to the MOH physician/facility, rather than just requesting that the child's family take him or her there.

The SRHD plans to consider, for RDCS Phase II, the use of oral penicillin (rather than injections, or after one initial injection) for treatment of "severe" respiratory tract infections by nurses and physicians.

### 2.1.7 Recommendations of TAC

- a. Criteria and standard orders used in the study should be clear and explicit and should be understood and applied by all staff involved.
- b. More simple indicators (rather than mortality), such as duration of morbidity and the length of interval between appearance of signs and symptoms and presentation for (physician) treatment, should be utilized.
- c. Comparability between treatment and control groups should be assured. Both medical and research methodology aspects of the study should pass expert technical review before implementation of Phase II.
- d. The TAC approves the ideas (Sec. 2.1.6) regarding redesign of Phase II of the RDCS, provided other TAC RDCS recommendations listed above are implemented.

2.2 Pre- and Post-Training Tests of Pre-Implementation Training of Health Facility Level Physicians, Nurses, and Sanitarians

AND

Pre- and Post-Training Tests of Supervising District and Governorate Level Nurses, Sanitarians, and Laboratory Technicians

2.2.1 Objectives

The basic objective of pre- and post-training tests of pre-implementation training of health facility level physicians, nurses, and sanitarians was to determine the effectiveness of SRHD's training efforts in improving the specific knowledge and skills which they would need in carrying out their roles in the strengthened rural health services delivery system.

The basic objective of pre- and post-training tests of supervisory training of supervising district and governorate level nurses, sanitarians, and laboratory technicians was to determine the effectiveness of SRHD's training efforts in improving the specific knowledge and skills which they would need in carrying out their supervisory roles in the strengthened rural health services delivery system.

2.2.2 Design

The basic design is appropriate for the objective.

Control groups were not included, with reliance instead on before and after training comparisons of the average scores of groups of trainees to demonstrate changes which are then attributed to the training. This technique is often used in training research.

2.2.3 Data Collection

The SRHD staff reacted appropriately to their experiences in the field and to their initial experiences with short answer essay questions by emphasizing practical knowledge and skills in their training courses and by adopting multiple choice questions and practical skill demonstrations in their pre- and post-testing.

Identical tests were used before and after each group's training. This procedure was intended to simplify comparisons and to avoid problems of equating scores on one test with scores on another. Unfortunately, such a procedure introduces other problems. For example, exposure to the test items sensitizes the trainees to the material in those items, making it more likely they will learn those materials and the correct response to the specific items during the training, thereby decreasing the validity of the repeated test as a measure of a sample of the materials to be mastered during the training.

No data are presented in the report which permit assessment of the validity or reliability of the data collection instruments used in the tests. Some of the test items presented were discussed in terms of certain improvements which could be made in item structure. Scoring criteria for skills demonstration ratings were not presented, but SRHD staff indicated that scorers used the instructions for each skill which were included in the training manuals.

#### 2.2.4 Interpretation of Results

The results, once retrieved from the large amount of data presented, are suggestive of an improvement in knowledge and skills as a result of SRHD's training efforts. The basic design is appropriate, but unfortunately there are serious questions with regard to the educational testing methodology employed; these mitigate against firm conclusions being drawn from the data base. Particularly unfortunate is the absence of any objectively stated behavioral outcomes as learning objectives and of any data relating to the validity and reliability of the test instruments employed to assess cognitive knowledge and behavioral skills.

#### 2.2.5 Implications/Applications

Seen as a pilot or preliminary endeavor, this exercise has been highly useful. By building upon the experience gained, giving attention to behavioral outcomes and learning objectives, and by employing valid and reliable educational testing methodology, learning can be more rigorously assessed. There is also a need to objectively assess various teaching methods as to their effectiveness under the circumstances of the training centers and the special needs of the health personnel concerned and within the realistic time constraints required.

#### 2.2.6 Follow-up

Follow up should assess retention of knowledge and skills by the trainees as a basis for continuing education and educational reinforcement of the knowledge and skills of the trainees.

#### 2.2.7 Recommendations of TAC

- a. Expert technical assistance and review should be obtained (probably from a university department of education or medical education) for pre- and post-test protocols and instruments, to assure validity of measurements and comparisons.
- b. Expert technical assistance and review should be obtained (probably from a university department of education or medical education) on training methodology, given the results of pre- and post-tests.

## 2.3 Results of Supervisory Feedback Document in All Quarters of 1980 and in the 3rd Quarter of 1981

### 2.3.1 Objectives

The objectives of this survey are in keeping with the overall objectives of the SRHD Project. This study is an important activity which sheds considerable light on important aspects of the rural health services delivery system, the contributions of the project in strengthening management, supervision, and on needs for training.

The objectives of this study are as follows:

- o To develop a survey instrument appropriate for assessing performance of peripheral health team members (physicians, nurses, sanitarians and lab assistants).
- o To develop an administrative procedure for applying the survey instrument, analyzing the results, and providing feedback to decisionmakers and supervisors at headquarters, governorate, and district levels.
- o To develop procedures for using the survey instrument results for the purposes of developing appropriate training programs for peripheral health staff, and for determining staff members' eligibility for incentive payments.

These precise objectives were not clear from the written documents, but became clear during discussions.

During the meeting, the TAC team commented favorably on the objectives of the Supervisory Feedback exercise. However, issues were raised concerning the prevailing attitudes of supervisory personnel in taking their supervisory roles seriously, the competency of those in supervisory positions effectively to evaluate the performance of peripheral staff in certain instances, and certain confusing or unclear items included in the survey instrument. These issues are recognized by the SRHD, and actions have been taken to correct deficiencies.

Concerning attitudes of supervisory personnel and their perceptions of their roles, it was noted that supervisory roles and responsibilities between governorate and district level have come to be less directly related than they were in the past, due to the effects of the decentralization laws of the 1960s. However, in the SF study governorate supervisors visited roughly 12 SRHD facilities per quarter in each governorate, in the interest of exercising supervisory services to peripheral health staff. Direct supervisory responsibility at district level lies with the district supervisor, who appears to operate with little direct supervision from governorate or headquarters levels.

With respect to competency of supervisory personnel, it was concluded that the survey instrument at best was able to provide only indirect evidence on the basic clinical skills of supervisory personnel and that this evidence was nonconclusive. The project staff itself pointed out that various procedures (e.g. census taking) were presented during pre-implementation training in ways different from those commonly in practice. These matters led to some confusion concerning the appropriate application and administration of the instrument, thus detracting somewhat from the achievement of the objectives of the survey.

The project staff provided an excellent critique of the draft report which had been prepared by a consultant. It was generally agreed that the report was unnecessarily large, that statistical results are not presented concisely and clearly, and that the report contained certain cases of misrepresentation of fact and of overgeneralization.

It was generally agreed that the report should be reduced in size; corrected in terms of factual content, statistical presentation and over generalization; and re-issued as an "official" project document.

### 2.3.2 Design of Study

Some of the comments offered above under "objectives" concerning the appropriateness of training and the wording of content items also present problems of design to be considered in future trials involving the use of the SF instrument. It was generally agreed by TAC members that the instrument did not allow for detection of incremental improvements in assessing performance, due to the heavy reliance on dichotomous variable responses (e.g. yes/no, performed adequately/not performed adequately, etc.). The design of the instrument did not allow for a differential assessment of the performance appraisals of governorate level and district level supervisory personnel. Memory aids (e.g. wall charts) for supervisory personnel would be useful in connection with assessments made by supervisory personnel.

### 2.3.3 Data Collection

The data forms were held for an unnecessarily long time (4 months) at district level, thus slowing down eventual processing and analysis. A large number of nurses' forms apparently are not included in the analysis, although they were collected. These will be incorporated in the presentation of the revised report. Verbal autopsies should be performed shortly after death, preferably on the same day, due to the unpleasantness associated with recalling the event and circumstances of death.

#### 2.3.4 Interpretation of Results

The TAC generally agreed that in most cases interpretation of results was accurate. However, it was generally agreed that there did not exist sufficient evidence to claim that "physician skills increased generally". (This related to a design issue discussed above.) Also, the consultant report asserted that the SF instrument has been proved to be valid and reliable. However, the TAC felt that there was insufficient evidence to support these assertions and that further development of the SF is required.

#### 2.3.5 Implications/Applications

Standardized forms and procedures for use by supervisors can help assure thorough and positive supervision and can help focus supervision on key areas of work. They can also provide needed feedback to various levels, including supervisors and higher levels of MOH. With appropriate simplifications and modifications, the SF forms and procedures used in SRHD could be useful in those ways beyond the project itself.

#### 2.3.6 Follow-up

The project should build on its experience with SF by redesigning the supervisory forms and procedures and continuing to experiment with its supervisory methods and the uses of SF information.

#### 2.3.7 Recommendations of TAC

- a. Re-issue a revised report.
- b. Simplify data collection procedures.
- c. Re-design the SF instrument so as to render it capable of reflecting incremental changes in performance.
- d. Provide supervisory personnel with memory aids.
- e. Process data locally in the future.
- f. Re-design the instrument to more directly measure clinical skills, task performance, etc. (utilizing appropriate instrument design consultants).
- g. Identify or discard invalid statistical test results.
- h. Continue to experiment with SF instrument prior to nationwide replication.
- i. Because such a major data collection effort was not necessary to meet the objectives of the survey, such an instrument should be administered less frequently, perhaps not more than once annually, or even less frequently.



## 2.4 Results of the Household Survey, Rounds 1, 2, and 4

### 2.4.1 Objectives

The basic objective of the study of the results of the household survey, rounds 1, 2, and 4 was to obtain baseline and follow-up data on communities' socioeconomic conditions related to health and health practices and on community members' health and health related practices. Data were also to be gathered which would indicate health facilities' outreach activities (home visits) in recent years.

The data were to permit assessment of the effects and acceptance in the community of SRHD's efforts to improve rural health services delivery (e.g., outreach activities). This information was to be used by the project to correct observed deficiencies and retained for further analysis and use.

### 2.4.2 Design

The study design was appropriate for its objectives.

### 2.4.3 Data Collection

In spite of a change in format between Round 1 and subsequent rounds in order to conform to the demand for computer capability, no data collection problems were serious enough to prevent establishing a satisfactory data base for analysis. A sample of 10% of the forms were monitored by central SRHD staff and they were assured that forms were completed satisfactorily.

### 2.4.4 Interpretations of Results

The data provided were extensive, occasioned by the frequent repetition of the surveys. Consideration must be given to the fact that repeated surveys of the same households may influence results; nevertheless, panels of households are required to assess changes resulting from program interventions. If the sample is to be truly representative and permit comparisons between treatment and control villages over time, it must be drawn appropriately. The SRHD included both "panel" and newly randomly selected households in the sample to permit assessment of both dimensions of the problem. Comparisons were made between data collected by the household survey and data collected by the national census. These comparisons assured SRHD of the representativeness of the household survey data, as they were generally consistent with census data. The survey provides a data base for analyzing a number of health indices, health behavior, attitudes and behavior concerning family planning, breast feeding, diarrheal disease, infant mortality

and health facilities utilization. These data provide an essential baseline for successful evaluation of subsequent interventions by the SRHD program.

#### 2.4.5 Implications/Applications

The data are extensive and from the many data presented it is difficult to distinguish the most relevant and important information from the rest. The issue of data redundancy and the work load upon data enumerators, processors, analyzers and the attendant costs must be raised. Fewer surveys, item analysis to identify the really significant indicators, extension of the morbidity recall period from 1 to 2 weeks, and continued attention to representativeness of the sample, should ensure enhanced usefulness, efficiency and cost-effectiveness in future surveys. Nevertheless, in spite of these concerns, the household surveys provide a valuable data base for many health, nutritional, and family planning studies, evaluation of subsequent program interventions, and sound policy formulation by the Ministry of Health.

#### 2.4.6 Follow-up

SRHD will continue the Household Survey at a decreased frequency, probably with modifications in the instruments in view of experience to date and the results of SRHD analyses and TAC discussions.

#### 2.4.7 Recommendations of TAC

- a. Use item analysis to shorten and enhance the criticality of the survey instrument.
- b. Lengthen the recall period and decrease frequency of survey rounds, to enhance the usefulness and cost-efficiency of the Household Survey.

## 2.5 TAC Overview of Data Processing and Analysis in the SRHD Studies

### 2.5.1 Overview of Data Processing and Analysis in the SRHD Studies

Data processing and analysis were long delayed (one and one half years in some cases), in spite of attempts to analyze some data in the U.S. The SRHD project now has an established capacity to analyze data locally; thus, lengthy delays in data analysis should not be expected in the future. The data processing staff now form an integral and extremely important part of the SRHD group, whose importance to the project's success will continue to grow.

The TAC was generally unable to assess the adequacy of the quality of data collection, processing, and analysis. It is suggested that greater efforts be made to assess the quality of data gathered, to maintain its quality (e.g., use more M.D. supervision of data collection activities at rural health facilities), and to maintain the quality of data processing capacity (i.e., to retain and continuously train and update computational personnel).

In some cases it was apparent that more data analyses could have been carried out (e.g. multiple cross tabulations of data). This is particularly important in view of the large number of intra-project area interventions that are being introduced in the project area longitudinally (e.g., outreach, health education, FP, and oral rehydration, all impacting on child morbidity and mortality). Thus, statistical design features and data analysis requirements are becoming increasingly complicated, requiring large samples, a greater number and variety of control areas and multivariate analysis (i.e., ANOVA and multiple regression) of data as the project launches new program initiatives. The BMDP programs used by SRHD are probably adequate to meet most of the project's needs for such analyses and for related tasks such as scaling of tests and of test items.

In some cases additional data are required (e.g., data required to investigate properly sensitivity and specificity in the RTI study). Data analysis requirements are dependent on the nature of research design as well as on specific objectives.

The reports submitted to TAC were not as complete as would be desired, and this seemed especially true with regard to data collection, transmission, coding, processing, and analysis. . In many cases, for example, criteria used, data collection methodologies, and scoring scales were not included in the written reports. While these details were presented more adequately in discussions, it would have been better to include them as annexes with brief descriptions in the text.

Certain statistical tests presented in computer printouts were not cited in the report as invalid, when they should have been.

**2.5.2 TAC Recommendations Regarding Data Processing and Analysis in the SRHD Studies**

- o When possible, computer programs should automatically "flag" invalid statistical tests and results on SRHD computer printouts in the future. Project staff should closely identify or discard invalid statistical results when they occur.
- o Tables presenting various categories of information should be more appropriately labeled.
- o Data collection instruments and their use under field conditions by the personnel who will use them should be subjected to tests of their reliability and validity, using standard methods for such tests, and the results of those tests should be documented and reported.
- o Quality control measures to assure that data collection and coding conforms to prescribed standards should be documented in reports or annexes or in separate documents available to interested parties.
- o Multivariate analyses should be used to determine key inter-relationships among the data, clarify findings, and reduce the mass of data to more understandable dimensions.

### 3. Review of Planned Activities of the SRHD Project (Based on SRHD Presentations)

The TAC has a positive overall view of the planned activities of the SRHD which were presented by the SRHD and discussed at the meeting.

#### 3.1 Family Planning Program Interventions

The TAC was impressed with the thorough outline of the family planning program component of SRHD as an activity to improve the health of rural people, especially women and children.

TAC agreed that there should be adequate baseline data to insure data for subsequent evaluation and control comparisons

It is advised that the proposed family planning profile be evaluated and field tested to insure that it is not too complicated for nurses to utilize it.

SRHD must be aware of possible antagonistic propaganda regarding family planning and be prepared to counter it.

Techniques must be developed to insure evaluation of F.P. activities of all Health Center and Health Unit personnel (physician, nurse, and sanitarian).

Consonant with other MOH experimental efforts to utilize dayas in the delivery of health services, SRHD might also utilize dayas in promoting family planning where this is advantageous.

#### 3.2 Community Obstetrics

TAC recommended changing the name to "Strengthening MCH Program (Maternal Care)" and that the focus should be on natal care.

The Ministry of Health will need to ensure adequate incentives for the extra night duty inherent in carrying out midwifery duties.

There must be appropriate training of RHC and RHU physicians and nurses to insure adequate skills in carrying out the duties of the strengthened maternal care and community obstetrics program.

TAC commends the community outreach focus of the strengthening maternal care program.

#### 3.3 Neonatal Tetanus Control

There is a need to determine the true incidence of tetanus and tetanus neonatorum in Egypt.

TAC agreed that vigorous efforts of health education are required to insure complete immunization coverage and to prevent rumors concerning any supposed harmful effects resulting from immunization.

#### 4. Progress in Strengthening Rural Health Services Delivery

##### 4.1 Progress in Strengthening Rural Health Services Delivery

The following items serve to indicate the range and nature of the principal contributions which the SRHD has thus far made to strengthening rural health services delivery:

- Revised standing orders for Rural Health Unit and Rural Health Center Staff involved in outreach activities.
- Home visiting program (increased outreach and coverage of rural facilities, for case finding, referral, treatment, and health education)
- Training of RHC and RHU staff
- Training of district and governorate level supervisory staff (in-country and overseas)
- Strengthening support systems for rural health services delivery
  - Supervision at and of RHC's and RHU's
  - Family planning supplies (replenishment at the facility)
  - Information system (revised forms, procedures, processing, and feedback, plus development of a survey capacity) for MCH and family planning.
  - Incentive system(s)
- Increased capacity for health services research in the Rural Health Department (including in-country and overseas training), necessary to meet the increased needs and demands foreseen for such work as the MOH increasingly decentralizes its operations.

##### 4.2 Impacts thus far of the SRHD Project's Experience and Findings on Modifications of the Rural Health System and of Other Aspects of the National MOH Health System

The TAC is pleased to note the very positive impact which the SRHD project has had upon the development of new programs and innovations adopted by the Ministry of Health on a national basis. This speaks well for the utility and value of the SRHD in improving the health of the Egyptian people, as reflected in the report presented by Project Director Dr. Almotaz B. Mobarak to the TAC. Dr. Mobarak's summary of that report is included below in this section (see next page), because of the extreme importance of these advances in strengthening health services delivery in the MOH.

System Modifications: Impacts of SRHD Results on  
Modifications of Rural Health System\*

1. Problems diagnosed by SRHD among other studies and experiences led to emphasis on Primary Health Care and re-organization of MOH.
2. Effectiveness of outreach led to adoption by other programs and projects.
3. Results of DDCS led to initiation of a national oral rehydration program.
4. Effectiveness of direct health education led to adoption of visual learning kits developed by SRHD by other programs and projects.
5. Deficient skills for doctors in family planning led to development of a training program for medical graduates on IUD insertion during internship year, in collaboration with universities.
6. Training of doctors on assessment and management of common community health problems led to testing incorporation of relevant SRHD training materials into doctors pre-service training at the 4 SRHD Governorates, prior to its nation-wide implementation.
7. Need of continuing training of all staff and emphasis on supportive and even supervision led to getting their importance to the attention of administrators, and to realization of supervisors role as trainers.
8. Decentralization of training; building-up and upgrading local training capabilities; emphasis of practical vis-a-vis theoretical training led to initiation of a nurse training of trainers program.
9. Shortcomings in nurse practical training on obstetrics led to initiation of modifications of nursing school curriculum.
10. The F.P. program approaches, if effective, will be recommended for nation-wide adoption.
11. The program on Control of Tetanus Neonatorum, will be used as a feasibility study for a nation-wide campaign.

\*This page reproduces a summary report distributed to the Technical Advisory Committee by SRHD Project Director Dr. Almotaz B. Mobarak.

## 5. Summary Conclusions and Recommendations

### 5.1 Summary Conclusions

#### 5.1.1 Overall Appraisal of Project

The SRHD project is an established ongoing field operational research project that is making a very significant impact on strengthening Egypt's rural health delivery system. Precise areas of impact on the health services delivery system within the project areas and beyond are discussed in Section 4.0 above. A succinct list of project impacts on the health services systems, as presented by Dr. Almotaz B. Mobarak, First Undersecretary of State, Ministry of Health and Project Director, is presented in that section. The list of project impacts is long and is most impressive. Since comments on these important matters have already been presented in 4.0 above, it is not necessary to repeat them here. Suffice it to say that it is clear that the SRHD project, after an understandably slow start, is impressively functioning in a manner which fulfills its mandate and is thus realizing the expectations of all parties of concern.

In addition to the commendable and positive aspects of SRHD activities presented in Section 4.0 above, the TAC has noted other positive features of the project that should be recognized. These may be listed and described individually as follows:

- o The SRHD project has been institutionalized as a research section of the Rural Health Services Directorate of the Ministry of Health.
- o The SRHD project has assembled a vigorous and competent local staff which demonstrates high motivation, team spirit, and dedication toward the fulfillment of project objectives, and efforts are being made to retain key personnel. It is difficult for the TAC to determine whether measures taken to retain key personnel, including computer personnel are adequate. However, project officers have given the TAC affirmative assurances on this point.
- o Overseas participant training is beginning to bear fruit. Indeed the present incumbent Executive Director is a very positive result of this endeavor, assuring continued and excellent leadership. As other overseas trainees return to the SRHD, this aspect should continue to strengthen the endeavor.
- o The SRHD project has high visibility within the Ministry of Health, in the field, among donor agencies, and among other health projects operating in Egypt.



- o The SRHD project has prepared an excellent family planning protocol which has broad implications and significance for the integration of FP with other outreach activities in connection with the delivery of basic health services throughout Egypt. The approach taken toward the delivery of FP services, if properly implemented, represents potentially a great step forward towards increasing effective FP service delivery in rural Egypt.
- o The project has most impressively demonstrated the value of outreach activities, especially as an element of the DDCS, and the effective complementary role that can be played by mothers serving as primary health workers of first resort in DDCS activities. The fact that mortality in infants and children under five due to diarrheal diseases was reduced by 50 percent in study areas is a spectacular accomplishment.
- o The project is in the process of producing a substantial number of field-demonstrated health services research results. With appropriate adjustment and modification to suit local circumstances, interventions shown to be effective could be replicated broadly in health services throughout Egypt.
- o The project has initiated important cost analyses which will provide crucial information for determining the national replicability of various features of the project. It should be noted, however, that the consultant report on costs was not available to the TAC, since it has not yet been received by the project. Under these circumstances, the TAC commends the SRHD project for its initiatives in this important area, but cannot comment on the appropriateness of the cost study design, methodology, and results.
- o Members of the SRHD project were receptive to technical criticism and advice and show maturity and considerable capacity to develop their research capacity further in the future.

### 5.1.2 Suggested Areas of Needed Improvement

While it is clear that the SRHD project is now operating effectively, the results of the TAC review revealed several areas in which continued improvement is not only desirable, but is essential for the continued development of the project's future potential effectiveness. Areas of needed improvement are listed and briefly described individually below.

- o Many of the instruments used by the project were not tested for validity and reliability. There are known procedures for such testing, and the project should acquire proficiency with those procedures.
- o The TAC was generally unable to assess the adequacy of the quality of data collection and analysis. It is suggested that greater efforts be made to assess the quality of data gathered, to maintain its quality (e.g., use more M.D. supervision of data collection activities at rural health facilities), and to maintain the quality of data processing capacity (i.e., to retain and continuously train and update computational personnel).
- o In some cases it was apparent that more data analyses could have been carried out (e.g. multiple cross tabulations of data). This is particularly important in view of the large number of intra-project area interventions that are being introduced in the project area longitudinally (e.g., outreach, health education, FP, and oral rehydration, all impacting on child morbidity and mortality). Thus, statistical design features and data analysis requirements are becoming increasingly complicated, requiring large samples, a greater number and variety of control areas and multivariate analysis (i.e., ANOVA and multiple regression) of data as the project launches new program initiatives.
- o In some cases additional data are required (e.g., data required to investigate properly sensitivity and specificity in the RTI study). Data analysis requirements are dependent on the nature of research design as well as on specific objectives.
- o The reports submitted to TAC were not as complete as would be desired. In many cases, for example, criteria used, data collection methodologies, and scoring scales were not included in the written reports. While these details were presented more adequately in discussions, it would have been better to include them as annexes with brief descriptions in the text. Also, since some materials were translated from Arabic to English, there was some unavoidable loss of information, which led to some confusion (e.g., role of sanitarians in connection with typhoid fever control, discussed in relation to Supervisory Feedback draft report).

- o In some cases, it was clear to the TAC that certain general and specific conclusions were not adequately justified on the basis of data, study design, completeness, and data analysis and results (e.g., purported improvement in physicians' clinical skills in connection with the SF trial; see Section 2.3.4 above). In many cases tables were inappropriately labeled, rather unclearly presented, and invalid statistical test results were not identified or discarded.
- o Expert technical assistance and review are needed (probably from a university department of education or medical education) for pre- and post-test protocols and instruments, to assure validity of measurements and comparisons.
- o Expert technical assistance and review are needed (probably from a university department of education and medical education) on training methodology, given the results of pre- and post-tests.
- o It is the opinion of the TAC that there is a definite need for management technical assistance on the project. The project proposal that one person provide both administrative support to the Westinghouse COP and management advice to the project does not appear feasible.
- o It is the opinion of the TAC that while the project is a viable and extremely credible agent for improving rural health services delivery, there is clear-cut need for improvement in areas of management, research design, cost analysis, data preparation, analysis, and presentation, and training methodologies implementation, educational testing, and evaluation. These observations are not intended to detract from the TAC's sincere respect for the competency and credibility of the SRHD staff (including both Egyptian and expatriate personnel). Rather, the observation is intended constructively to suggest complementary competencies that if added to the project would allow it to achieve accomplishments even greater than those already realized.

## 5.2 Recommendations

The TAC considers that the following adjustments would increase the SRHD Project's potential contributions to strengthening rural health services delivery. Some of the detailed recommendations regarding individual studies presented in Section 2 are not repeated here.

- a. Revision and completion of the analyses and reports, which were submitted for TAC review: specifically,

Review reports to determine what conclusions are justified on the basis of study designs, instrument and data validity, and analyses done thus far.

In the area of each report, determine what questions of central importance to strengthening rural health services delivery still need to be answered. Then complete the analyses, interpretation, and reports in order to provide answers to those key questions in so far as is possible on the basis of existing data. (This will be greatly facilitated by the SRHD computer facility and the BMDP programs, but will require full use of available technical expertise both in the content areas of the reports and in research design and analysis.) After all relevant information has been extracted from the existing data, some of the remaining questions might be of sufficient importance to the MOH to warrant collection of additional data; the likely usefulness of additional information to MOH decision-makers should be carefully considered before deciding to gather additional data (as should be the case for all studies in a service improvement project).

- b. Prior to finalization of existing and future project documents and/or the replication of aspects of the project to other parts of the health services delivery system, draft documents should be reviewed with a panel of technical experts who would assess the appropriateness of conclusions, generalizations and results of studies forming the bases for system modifications.
- c. Provisions should be made for technical review of current and future study designs, plans for analysis, and research methods and instruments used by the SRHD in seeking information for use in improving rural health services delivery. This important step needs to be built into the SRHD so that it will take place in time for reviewers' comments to be considered by the SRHD before implementing studies. If only after-the-fact reviews are done, the MOH might be deprived of the full benefits of these important studies due to design errors which could severely limit the conclusions justified on the bases of the studies.
- d. Full use should be made of long and short term technical assistance available to the project, especially in light of the technical assistance and technical review needs evident during this TAC review. The roles of technical assistance personnel in the SRHD might need to be revised in this light, to best meet the needs noted in this report.

ANNEX A

Scope of Work for the TAC Meeting

The following addendum was proposed by the Technical Advisory Committee and accepted by Project Director Dr. Almotaz B. Mobarak on January 6, 1983, following initial discussions on January 5, 1983:

- (4) To review the project's progress in strengthening rural health services delivery, review related key issues, and make appropriate recommendations.

\*To be added as a new item number four in the Scope of Work, with the previous item number four re-numbered as a new number five

STATEMENT OF WORK

A. Objective

The consultant, as a member of the TAC, will provide technical guidance to the Ministry of Health (MOH), Westinghouse Resident Advisor and USAID/C-HRDC/H through a thorough review of data collected, analyzed, interpreted and reported by the MOH, Strengthening Rural Health Delivery Project Office.

B. Scope of Services

The consultant, as part of a seven, or eight, member U.S.-Egyptian Technical Advisory Committee (TAC) will work directly with the SRHD Project Team (to include the Westinghouse Resident Advisor), under the overall MOH Project Director and HRDC/H:

1. To review the following data, which has previously been collected, analyzed, integrated and reported:
  - a. Three of the five rounds of the Household Survey;
  - b. All Supervisory Feedback results for two quarters (third quarter 1980 and 1981);
  - c. All pre- and post-training test data for all pre-implementation training in six project districts; and for supervisor training data for all ten project districts, and
  - d. The first phase results of the Lower Respiratory Track Disease Study.
2. To analyze the reported data in terms of quality and validity of its collection, analysis and interpretation, and
3. To make recommendations (if necessary) as to how the SRHD project can improve its data collection, analysis, interpretation and/or processing.
4. As requested by the Project Director or USAID, to advise on other technical matters, as time permits.

C. Report

1. A draft copy of a joint U.S.-Egyptian Technical Advisory Committee Report is to be made available to the Project Director and USAID/H for review and discussion prior to the consultant departure from Egypt.

2. The title page of the report should include: Title of report, project number, project title, authors and reporting period. Format for the report will be determined jointly by the TAC.
3. The final report should be submitted in English, to the following, not later than 14 days after the meeting:
  - a. Project Director 4 copies
  - b. USAID/HRDC/H 4 copies
  - c. AID/NE/TECH 2 copies
  - d. AID Reference Center 2 copies

D. Term of Assignment

The effective date of this assignment is January 4, 1983 with an estimated completion date of January 15, 1983. Service was required in Cairo beginning January 5, 1983 through January 13, 1983.

E. Logistic Support

USAID and the Cooperating Country (c/c) will provide the following support to the consultants either in kind or in local currency:

1. Office space (c/c) in kind
2. Office equipment (c/c) in kind
3. Transportation in Cooperating Country (c/c) in kind
4. Transportation to and from country (USAID) local currency
5. Interpreter services/secretarial (c/c) in kind
6. Local per diem (c/c)

ANNEX B

Chronological List  
of the Joint Activities of the Technical Advisory Committee  
During the Meeting Held from January 5th through January 13th, 1983

Wednesday, Jan. 5

10:00 - 11:00	Welcoming, introduction, organization, and SRHD overview (from policy point of view)	(Dr. Mobarak)
11:00 - 12:00	SRHD New Organization	(Dr. Nagaty)
12:50 - 14:35	Progress over past two years	(Dr. Nagaty)

Thursday, Jan. 6

9:00 - 10:00	TAC members' meeting on Boostrom's notes of day 1 and on Scope of Work.	
10:00 - 10:15	Review of Scope of Work and approval by Dr. Mobarak of TAC Addendum to it	
10:15 - 10:40	Overview of special studies	(Dr. Mobarak)
10:40 - 12:15	Respiratory Disease Control Study	(Dr. Nagwa)
13:00 - 13:20	" " " "	" "
13:20 - 15:00	Pre and Post Pre-Implementation Training Test Results	(Dr. Fawzi)

Friday, Jan 7

Free Day

Saturday, Jan. 8

09:00 - 10:55	Pre/Post-training Tests for Supervisors	(Dr. Fawzi)
11:40 - 15:00	Supervisory Feedback Report	(Dr. Farouk)

Sunday, Jan. 9

09:30 - 11:45	Household Survey, Round 1	(Dr. Fawzi)
12:20 - 14:45	Household Survey, Rounds 2 & 4	(Dr. Nagaty)

Monday, Jan. 10

Field Visit to Fayoum

07:30	TAC members picked up at lodgings	
08:00	Left Cairo for Fayoum	
15:00	Left Fayoum for Cairo	



Tuesday, Jan. 11

09:00 - 11:40	Diarrheal Disease Control Study (Update)	(Dr. Nagaty)
12:00 - 14:00	Planned activities: <ul style="list-style-type: none"><li>- Focusing on Family Planning</li><li>- Proposed programs and studies</li><li>- Family Planning Program Interventions</li><li>- Community Obstetrics</li><li>- Neonatal Tetanus Control</li></ul>	<u>Panel:</u> (Drs. Mobarak, Shushum, Nagwa & Farouk)
13:30 - 16:00	Lunch (Invited by SRHD)	

Wednesday, Jan. 12

09:10 -	System modifications	Dr. Mobarak
	TAC reactions to Fayoum field visit	(TAC and SRHD)
- 15:00	Revisions of report sections drafted thus far	(TAC members only)

Thursday, Jan. 13

09:00 - 12:00	Finalization of report sections drafted thus far	(TAC Members)
12:00 - 14:00	Discussion of draft report with SRHD	(Dr. Mobarak & SRHD)
14:00 - 14:10	Closing remarks	(Drs. Mobarak & Rizk)

ANNEX C

List of Acronyms Used in this Report

COP	Chief of Party
DDCS	Diarrheal Disease Control Study
DHO	District Health Officer
FP	Family Planning
HHS	Household Survey
LRTI	Lower Respiratory Tract Infection
MCH	Maternal and Child Health
MOH	Ministry of Health
PHC	Primary Health Care
RHC	Rural Health Center
RHU	Rural Health Unit
RDCS	Respiratory Disease Control Study
RTI	Respiratory Tract Infection
SF	Supervisory Feedback
SRHD	Strengthening Rural Health Services Delivery Project
TAC	Technical Advisory Committee
URTI	Upper Respiratory Tract Infection