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THE EVALUATION OF HEALTH INTERVENTIONS IN CBD PROGRAMS

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INTRODUCTION

This paper will build on the foundation laid in Chapter VII, "Research and Evaluation Procedures" in A Review of Field Experience of Community Based Distribution of Contraception. Briefly, the principles discussed in that chapter are:

1. CBD programs need to develop an evaluative strategy that provides insights that are timely and practicable, yet adequately tested and generalizable.
2. CBD programs, by their nature and setting, do not usually have the ability to pursue full-fledged research, or even evaluation, but offer a unique opportunity for adequate documentation of whatever experience evolves and very focused evaluation for feedback.
3. CBD programs might greatly benefit from simplification and standardization of the data gathering and analysis.

There are three possible and not mutually exclusive major approaches to the evaluation of health interventions in Community Based Distribution Projects:

1. To evaluate the contributions of the health interventions to the health status of the population;
2. To evaluate the contributions the health interventions make to family planning acceptance and practice;
3. To evaluate the plan and implementation of the health interventions.

As shown before, the USAID sponsored OR-FP projects have a higher proportion than other family planning projects of experimental and quasi-experimental designs. But even so, few have the necessary set-up that would include three experimental groups--one with health interventions and family planning, one with family planning only, and one control to evaluate the contributions of the health interventions to family planning. Moreover, the limited duration (an average of three years) of most OR-FP projects leaves little hope of evaluating the impact on health status.

We will therefore limit ourselves to the common need of evaluators, planners, and managers to use evaluation for the improvement of the health interventions before, during, and after implementation and continuously throughout the life of a program. Too often there is no link between planning, implementation, and evaluation of health activities.

In the following sections, we will posit a generic framework for the evaluation of health interventions and discuss within this framework what might be most applicable to health interventions in CBD programs.

AIMS AND PHASES

Evaluation has definite costs and opportunity costs, and itself needs to be subjected to cost effectiveness considerations. Only that information which can be used for the resolution of planning or managment decisions should be collected. The major aim of evaluation is therefore the refinement of planning or management decisions by obtaining information. The nature of the decisions changes with the life of a project or program. It therefore follows that the specific priority aims of evaluation will vary from refining the design of the services in the preprogram evaluation to monitor-

ing the fidelity of an ongoing program to its original design, to program review in a mature program.

The different phases of the life of a program are associated with three types of evaluation concurrent with them:

1. Preprogram evaluation for planning purposes: What is the actual nature and magnitude of the health needs? Can we assess the efficacy, appropriateness, and adequacy of the planned program? In other words, are the planned services likely to lead to the fulfillment of the proposed objectives? Do they respond to priority needs?
2. Monitoring of services and support systems/process evaluation for management purposes continuously or periodically during implementation and running of the program to assure that the planned targets are being reached. Criteria: accessibility and acceptability measured together by coverage, flexibility, integration/coordination, community involvement, efficacy, equity of input and output, comparative norms for process.
3. Program review/impact analysis for planning purposes: After implementatio assess whether the plan was feasible, affordable, efficient, and effective and led to equity of input, output, and outcome. This should be done periodically as indicated by the results of the monitoring.

Comprehensive program evaluation encompasses all three evaluation phases above. In CBD programs they should take a different emphasis.

Preprogram evaluation usually will have received some attention. The CBD projects might benefit tremendously if "model" microplan modules for specific health interventions were fully developed and were available for different epidemiological patterns, economic levels, and population distribution patterns. This would facilitate meaningful preprogram evaluation without neces-

sitating expensive expert panel reviews.

The monitoring of services and support systems, the process evaluation, seeks to answer directly management questions. This phase of the evaluation would merit the greatest effort of individual CBD programs. Some standardization of the monitoring is possible, but even more than the preprogram evaluation, it demands care, attention, and evaluation skill within the CBD project. Because of its high potential for immediate feedback into the services, the motivation for monitoring can be more easily aroused.

The program review of CBD programs cannot, in view of the constraints mentioned above, concentrate only on effectiveness and cost effectiveness; instead it should focus on the feasibility, affordability, and equity of the health interventions. Only in selected cases will an estimate of effectiveness be available.

THE EVALUATION PROCESS

As evaluation is the handmaiden of decisionmaking, the choice of information and analytical methods as well as the choice of participants in the interpretation and formulation of alternative solutions need to be considered carefully to optimize the resulting decisions. We will first discuss the choice of participants in the evaluation.

A. Wherever potential decisions are involved that will seek to change community participation or the nature or frequency of service delivery or the intensity of supervision, the widest possible participation should be sought in the interpretation of the data and formulation of alternative

strategies. This wide participation can take the form of a series of freewheeling, brainstorming meetings; these can be staff meetings, village meetings, or combined staff and village meetings. The complexity of the process should depend upon the nature of the problem, its "seriousness," and the need to avoid staff versus village cleavage or staff domination of the process.

B. Wherever the decisions are related to management approaches such as record keeping, which are unlikely to affect the community's participation or the delivery of services, the participation in decision making and interpretation should be limited to those workers who will be affected or will have to institute the change.

C. Wherever decisions are "purely technical" such as the frequency of evaluation or other such specialized technical matters, only the informed technicians should be involved, and whenever possible, algorithms should be constructed, formalizing these decisions for a specific program and specific program phases and components.

We will discuss the more formalized part of evaluation and decisionmaking that relates to these technical matters (See Table 1, Appendix)

Step I: Specify the Management/Planning Questions and Related Decision Options

These fall mostly into one of the following categories, shown in Column I, namely:

a. Health problem definition.

b. Planned activities.

c. Performance of health activities.

d. Impact of health activities.

e. Satisfaction with health activities.

As the essential reason for evaluation is choosing the correct action, these decision options should form the basis for the choice of information to be collected and what analysis is most appropriate. Clearly the range of decision options varies with the phase of the program, as indicated in Column II.

Step II: Specify the Evaluation Question

To define whether it is a management or planning question and translate it into an evaluation topic, we need a conceptual framework for which we propose to use a two step process making use of systems and functional analysis approaches. Evaluation topics are therefore expressed in the same terms as the characteristics or criteria of the health services or their plans and their components.

Step III: Explore the Context of the Evaluation Question

The "microplan" framework of health interventions can be used to identify the context of the evaluation question. If the evaluation topic belongs in one specific systems component, it is necessary to explore at least tentatively whether the entire systems component is possibly disturbed, or there are other components which also need exploration.

For example, if measles are reported while vaccinations are theoretically going on, the evaluation topic might be the coverage with measles vaccination. This points to an intuitive belief that coverage may be deficient, therefore the context of the evaluation topic is output. Subsidiary questions to be explored during evaluation planning are within the systems component:

a. Is output of vaccinations in general in doubt?

b. Is output of other services in doubt?

Subsidiary questions across components are, for each output in doubt:

a. Is the corresponding input in doubt? If not, go to b.

b. Is the corresponding process in doubt?

This will help to define whether the original management and planning question is truly the major or only problem that needs evaluation. It will also help to determine the linkages of the original question or other aspects of the program and therefore help to construct a "gestalt" of evaluation topics and to operationalize them.

Step IV: Select the Study Design: Five Substeps

i. Choose indicators that measure or are proxies for the evaluation question(s) and the overall performance of the primary health care services. These indicators can be derived from the "objectives" as stated in the micro-plan, and the location of the evaluation question in the system and functional analysis.

ii. Where evaluation of process or output is indicated, choose mutually agreed upon evaluation criteria, which are "qualities" of the services we are after, which mostly are assumed, but rarely stated explicitly.

iii. Where evaluation questions relate to specific stated targets, use them as standards; where that has not been explicitly stated, agree on specific standards to be used.

iv. Design the analytical steps to transform the data into information, and the information into meaningful interpretations.

v. Decide who will participate at what stages, and how feedback will be organized.

Step V: Choose an Information System Methodology

Choose an information system methodology, preferably an integrated information system to collect all the necessary information periodically or continu-

ously. Choose the simplest methodology that will yield relevant information.

INFORMATION METHODOLOGY

The information methodology chosen should be the cheapest, with a level of accuracy that satisfies the information needs for the decision involved. The nature of the decisions and the speed with which they have to be made tend to vary with the phase of the program.

Table 2 (Appendix) shows the availability of sources of information in the different phases of the program. The costs of the different methodologies are very different. The more informal methods such as key informants or participant observation tend to be the cheapest, and give the richest quality of information in the hands of skilled investigators, but they are difficult to quantify. In many cases they yield sufficient information in and of themselves. In those cases where they are insufficient, they should be complemented with more formal methodologies. We will follow with a brief discussion of the specific formal methodologies that are applicable to the different phases.

PREPROGRAM EVALUATION

1. For health problem assessment: cross-sectional or retrospective survey.
2. For causes and intervention possibilities: expert group consensus Delphi or nominal group method, or participant observation.
3. For appropriateness of objectives and targets: expert group consensus, Delphi or nominal group method.
4. For resources assessment: FIRE data (Fast, Informal, Relevant, Efficient).

MONITORING

Monitoring is continuous longitudinal collection of a minimal amount of key indicators that permit management by exception.

1. For health problems: routine data from health services, significant disease summary.
2. For program surveillance: monitoring input, process and output indicators, workers' logbooks.
3. For individual surveillance: monitoring agreement with standing orders and outcome indicators, high risk files.

The data in management information systems for monitoring have traditionally been so underdeveloped in most developing countries that they provide an abundance of totally unreliable, unstructures, seldom analyzed data. Therefore, the greatest need is to economize on data collection and organize meaningful analysis and reporting.

PROGRAM REVIEW

Ideally CBD programs would apply a functional analysis to build up their program review. The full-fledged functional analysis includes:

--health record analysis

--work sampling

--sample household surveys

--cost and time analysis.

This method has been well developed in recent years by the Department of International Health, Johns Hopkins University, but has some limitations:

--It is usually cross-sectional, thus giving a one-shot picture.

--It therefore assumes continuous skill levels and productivity of the health workers.

--It is relatively expensive, and therefore seldom indicated in its full form because the cost of evaluating should be axiom never exceed the cost of not evaluating, i.e., the loss of efficiency resulting from

a lack of information.

The above discussion may give the false impression that choices of information methodologies are entirely determined by the phase of the program and the ad hoc dictation of a decision. In fact, we want to enter a plea for both a core integrated information system that serves the basic needs of monitoring, program review, and future preprogram evaluation and a variable set of quick and temporary or intermittent information efforts that respond to unforeseen decision points.

INTEGRATED INFORMATION SYSTEM

Most often, separate information systems have been used for:

1. Preprogram evaluation
2. Monitoring
3. Program review.

The reasons for this are that:

1. Different aims and designs give rise to different information needs.
2. Often the responsibility for evaluation in different phases is given to different groups: consultants, managers, donors, etc.
3. Data sources and methods used are different in different phases and tend to come from different disciplines.

Very often there is no internal consistency between these different information systems, available information is not analyzed and/or not used for program decisions, and there are usually enormous gaps, especially in preprogram evaluation and monitoring.

To prevent these problems and develop an evaluation that is focused on planning and management needs on a continuing basis, we suggest that the fol-

lowing basic principles be observed:

1. KISS: Keep it simple, straightforward: minimal amount of data gathered. The size of samples depends upon numbers necessary for reliability and accuracy (sensitivity and specificity versus feasibility and cost). Save overloading of peripheral workers. Amount of information per unit of time needs to be limited.

2. INTEGRATED: Internally comparable core data information system for pre-program evaluation, monitoring, and program review.

3. INTERNAL: CBD workers themselves gather and compile information using standard methods and standard forms and simple analytical approaches; information immediately used for both individual patient care and program whenever possible.

4. COMMUNITY BASED: Information should reflect the health status, services, etc. present in the community as well as receive its interpretation in collaboration with the community.

5. SAMPLING: For data only used in overall program decisions appropriate samples of community or records are used. The validity of any data gathering and compilation is verified through random sampling and checking by supervisors.

6. FEEDBACK: Rapid. As far as possible, make feedback immediate, involving supervisors, health workers, and the community, who will be involved in the decisions.

7. MANAGEMENT BY OBJECTIVES: The routine data gathering provides information on the position of the system components in relation to the objectives.

8 MANAGEMENT BY EXCEPTION: Action taken if the indicators show a deviation from the expected.

9. ALGORITHMS: standardized procedures for dealing with specific values of indicators describing what other information, if any, to obtain, how often to repeat the measurement, what program actions to consider.

The choice of the degree of leanness of this integrated information system depends strongly upon the complexity of the project program: breadth of functions, number of priority problems, number of categories of workers.

Moreover, it depends upon the nature of the program: routine, demonstration, or formal field research. The different categories of programs have evaluation either as a handmaiden (routine) or as a major desired objective (field research). Most CBD programs have few health interventions and are routine or demonstration programs. It has been estimated from the Narangwal experience that the acceptable costs of evaluation are very different and in the range of:

--Routine services: 10% of service costs.

--CBD projects: 10-40% of service costs.

--Demonstration projects: 30-40% of service costs

--Formal field research: 300-400% of service costs.

The steps to formulate the core evaluation topics have to proceed by listing the predictable planning and management questions that will need formal data gathering. In fact, three such lists are indicated. First, a list for continuous data gathering; second, a list of intermittent data needs; third, a list of predictable data needs with unpredictable timing. The first list of questions is chosen by the following criteria:

1. The question must necessitate the use of longitudinal data (sample or universe) and can be gathered cheaply, or;
2. The question necessitates data which are also used for continuity of individual patient care or for accountability and are therefore

gathered anyhow for other than evaluation purposes.

The second list for intermittent data gathering is likely to relate to:

1. Needs assessment or outcome.
2. Community initiated activities.
3. Resource assessment.
4. Process evaluation.

The third list for predictable data gathering may have to be started on an unpredictable timing and have to be triggered by some signals within the continuous or intermittent data. Such questions are likely to relate to:

1. Epidemiological surveillance of seasonal diseases (diarrhea, pneumonia, etc.) or epidemic diseases (meningitis).
2. Performance of individual workers or communities

These three lists together will form the core for the conceptualization of the integrated information system.

In CBD programs, the emphasis of evaluation of health interventions is probably best placed on:

1. Cost accounting through continuous data gathering by the support system.
2. Coverage/equity through continuous data gathering by the service personnel.
3. Community initiated health activities through intermittent data gathering.
4. Individual/community performance by occasional data gathering triggered by any "abnormal" findings in the first three categories of data.

ANALYTICAL APPROACHES SPECIFIC TO MONITORING

Program monitoring and individual surveillance are the most important tools for evaluation of health interventions in CBD programs. It is also the phase of evaluation with the greatest need for innovative analytical approaches in CBD programs.

The overriding purpose of any data collection and analysis for monitoring is to provide quick feedback of information into program management decisions. The primary focus is therefore on the subsystem of health delivery, with the data base reflecting its input, output, and outcome. Part of this monitoring can be done by direct supervision, but equally important is the systematic gathering of data to provide a built-in, quick feedback. The individual surveillance has as its primary purpose good quality and continuity of care to individuals.

Programmatic monitoring and individual surveillance need to be closely coordinated since their aims are mutually reinforcing. Although we will discuss them separately for ease of understanding, they are inseparable in most field situations. In fact, whereas program monitoring can be directed at input, output, or outcome measurements, monitoring at the outcome level principally relies on individual surveillance methods. Individual surveillance gains in importance as overall program monitoring indicates high levels of performance at the input and output level.

Program monitoring should help to increase coverage and impact of the program. Whereas this dual objective is constant, the focus of data gathering should shift in order to maintain a lean system with clear and quick feedback. The first level of monitoring is at the input level. If personnel, drugs, and so on are at or near targeted levels, it becomes more worth-

while to analyze the output in terms of coverage by type of service provided. Similarly, if coverage is significant, then outcome measures can play an increasingly important role in refining the quality of services and further targeting coverage.

Most health systems routinely gather data at the input and output level. If necessary, one can use these routine service data for monitoring. If one has the freedom to design a monitoring system, then it is usually possible to simplify and refine measurements of input and output and tailor them to specific program objectives. For example, any CBD program that aims at equity in service delivery should include meaningful measures of it in its collection of data characterizing the output (sex, socioeconomic level or some proxy, etc.) linked with appropriate feedback mechanisms. Few systems, however, give one the ability to do this on the basis of routine data. Similarly, a CBD program that aims at coverage of pregnant women by providing at least two prenatal visits needs to distinguish between first, second, and subsequent visits for each woman rather than count only the number of women attending for prenatal services.

To permit meaningful feedback, the results of monitoring need to be available on a regular short-term basis. For outcome surveillance one can use simple alarm signals that alert one to possible problems in the performance vis-a-vis high risk groups, significant diseases, or unacceptable health practices. These serve as proxies for total performance in population coverage and can readily feed back into in-service training and management.

Some examples from our system of program monitoring in field projects in Narangwal, India will illustrate possible approaches. First is an example of the high risk group approach. Cases of anemia detected in the clinic or on

routine screening were kept in a special high risk index card system. The supervisor would check on a monthly basis whether all had received treatment and monthly checkups (output) and whether their hemoglobins had individually improved significantly. Each case that was not provided with expected services or did not improve was investigated thoroughly. The supervisor discussed with the worker the steps to be taken in individual cases as well as programmatic implications. If programmatic implications seemed of interest to the whole program, the finding was also fed back in overall procedures and in-service training.

Second follows an example of the significant disease approach. The Narangwal program aimed at total eradication of tetanus. Therefore, a system needed to be developed to detect and report cases. In this specific case it meant a quick reporting of all neonatal deaths (high sensitivity, low specificity) and investigation of all of them. If tetanus neonatorum was found to be the probable cause of death, the case was explored to expose how and why the health system did not prevent tetanus and feedback was carried through. Because of the persistent finding that some pregnant women were not being immunized, we finally decided to vaccinate all women of reproductive age rather than persis in trying to immunize them in the third trimester of pregnancy. Indeed, this surveillance for tetanus also turned up other findings important to the refin ment of those components of the program that aimed at lowering neonatal death in general.

Third is an example of surveillance of detrimental practices. Late supplementation of breastfed children was a problem in Narangwal, and this tends to flatten growth curves. Individual growth curves are thus evidence of this practice and can be used for nutrition education as well as program monitoring.

From the examples it is very clear that program monitoring of outcomes is in fact based on samples of individual records selected by different criteria. It therefore easily merges with individual surveillance and is largely based on the same data.

Individual surveillance conceptually aims at providing early detection and appropriate treatment for a number of significant diseases to all in the target population. Growth and morbidity surveillance therefore looks at a limited number of selected indicators that can and should trigger health education or curative care. Fertility surveillance for early detection of pregnancy is a somewhat special case as it looks for physiological rather than pathological indicators for the provision of services.

In developed countries it is usual to aim for the best possible sensitivity and specificity by submitting the whole population to less expensive, highly sensitive, but not so specific screening or surveillance and follow this up with more expensive "definitive" tests that are highly specific and sensitive and eliminate most false positives. In developing countries, in order to limi- opportunity costs to the actual provision of services, it is usually more advantageous to select only one indicator of an acceptable level of specificity and sensitivity. Such indicators are strongly determined by the environment. Where malaria affects most people, fever may be a good enough indicator to trigger malaria treatment; where malaria is less common, other surveillance methods need to be devised.

Most outcome indicators discussed under program monitoring were also used as indicators in individual surveillance. They give an idea of the range of indicators that may be useful. Analysis of surveillance data can in many cases be limited to numerator analysis or use of simple proportions. Use of more

sophisticated statistical methods is only rarely indicated.

It should be pointed out that where the general principles of monitoring and surveillance are clear, the methodology of program monitoring and individual surveillance needs further refinement and formalization. Many programs suffer either under a burden of monitoring/surveillance data that are too cumbersome and costly and do not lead to quick decisions or instead have virtually no data that keeps them on target.

Table 3 gives the range of possible indicators for selected health interventions under a modified functional analysis approach. In fact, this scheme can be used as the core for indicators in the different phases of evaluation--preprogram, monitoring, and program review--even though their analytical transformation may have to be adapted.

CONSTRAINTS TO EVALUATION IN CBD PROGRAMS

Financial

Available funds for health interventions in some developing countries are as low as $1.00 per capita per year, making the opportunity cost of the full-fledged evaluation too high. Accepting that evaluation costs should be 10-30% of the costs of routine services gives in some countries as little as $.10-.30 per capita per year for evaluation. In some projects, there is no budget for evaluation at all. We feel that at least a 10% commitment is necessary, and special sampling methods are needed to deal with financial constraints rather than putting too stringent constraints on the range of data to be obtained in CBD programs.

Political

Implementation of services is politically and emotionally more attractive

than evaluation; it is more tangible and seems more "useful," but well targeted evaluation with quick feedback to the appropriate decisionmakers has some chances of being acceptable.

Sociological

Program review (usually from the outside) is often perceived as imperialistic. Even monitoring from the inside is perceived by many workers and managers to be very threatening due to fear of negative sanctions if inevitable weaknesses come to light. This constraint needs to lead to careful management of participation in the interpretation of the evaluation and the necessary decision making.

Technological

Few cheap, reliable instruments are available for valid evaluation of health interventions in developing countries on an ongoing basis. Locally devised instruments are probably most indicated, using some basic principles.

Professional

The community oriented/community based approach in health interventions is fundamentally different from the classical curative, individually oriented approach of the physicians who are traditionally responsible for health services and evaluation in developing countries. This will demand retraining of these key decisionmakers.

Structural

As communication is a vital prerequisite for evaluation, the lack of team approaches and infrastructures in many projects is a major obstacle. Also, very few CBD programs have functioning evaluation units.

Training

Too few centers providing the necessary skills for the design and implementation of integrated evaluation of health interventions exist.

Managerial

Evaluation with participation of the community and health workers as well as health service managers presupposes, as well as contributes to, management by objectives based on mutual trust. Most managers unfortunately still function on distrust of villagers and workers; this attitude dates from colonial times.

CONCLUSIONS

The evaluation of health interventions in CBD programs should primarily serve the purpose of assuring optimal planning of each intervention and optimal implementation of the plan. This puts full emphasis on preprogram evaluation and monitoring.

The evaluation process has to proceed systematically through five steps, starting from the specification of management or planning questions to be resolved by the evaluation. Of equal importance with the technical content of the evaluation is the choice of participants in its formulation and interpretation.

The information methodology to be considered should range from the very informal, to surveys on random samples, to well-coordinated functional analysis batteries of surveys. Simplification and economy of information should be sought by the use of samples and sources of information with multiple purposes (accountability, continuity, or quality of care). The characteristics of such an information system are discussed. Analytical approaches, particularly to monitoring and surveillance, need to be innovative and rely on simple quanti-

tative decision procedures rather than sophisticated statistics. The high risk and significant disease approach help to increase the specificity of monitoring.

The constraints on evaluation are financial, sociological, technological, professional, educational, and managerial. Even so, the awareness of the nature of the constraints should invite effective activity.

In particular, we believe that if evaluation of health interventions were based on this generic framework and tried out in a variety of settings for a year or two, one would be able to evaluate the evaluation and be able to design modules and algorithms for the evaluation of health interventions in CBD programs.

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TABLE 1

	PLANNING/MANAG. QUESTION (examples only)	DECISION OPTIONS	EVALUATION QUESTION	DATA NEEDED	GENERAL INDICATORS	STANDARDS & SOURCES	METHODS OF DATA COLLECTION
PRE-PROGRAM EVALUATION	Are the health problems that are addressed by the plan indeed among the priorities?	- Stop funding - Change program goals - Choose other target problems	Rank each health problem, included or not, on a number score for 10 (or at most 20) highest priorities	- Incidence/prevalence - Case fatality - Sequellae - Vulnerability to appropriate technology - Perceived causation - Direct and opp. costs - Political priority for each health problem	- % input is within top priority - % priority disease need covered	Ranking of priority problems in ideal micro-plan, selected epidemiologic studies, economic level and population distribution	- Use existing data - Household survey - Key informants - Delphi procedure experts
	Can the program as planned have a significant impact on these problems?	- Change service mix - Increase input objectives - Change process: i.e., increase outreach, vary input with need, increase prevention, facilitate referral, motivate community	appropriateness adequacy technical quality acceptability accessibility community involvement cost effectiveness flexibility integration coverage self-reliance of the plan	- Program plan or its reconstruction - "Ideal" microplan	- as above, and expected reduction in morbidity and/or mortality for x level of coverage and y level of input - % health need met	Value of plan-indicator in ideal microplan constructed on basis of priority problems, resource levels and political situation	examine: Planning documents Training manuals Job descriptions Standing orders interview: Planners, politicians, consultants, etc involved in planning
MONITORING	Is the program being carried out according to the plans?	- redistribute resources - increase resources - improve quality - increase coverage - improve equity coverage - retrain - modify standing orders - retrain supervisor - review information needs - modify supervision	- Faithfulness of the direct services to: input objectives process " output " outcome " - Support: targets logistics " referral/consulting facilitation information collection overall supervision	Direct service inputs Direct service outputs Support service inputs Support service outputs	% service with plan input % service with plan process % target group coverage % adequate drug stock % adeq. skill level % referral, standing order % feedback nec. given % information nec. collected % plan supervision performed	Value of performance indicator for every system component in actual microplan (re)constructed from available data, or in ideal microplan, if actual microplan cannot be reconstructed	Functional Analysis: household survey health record exam (health facility) work sampling cost analysis Reports on program plus any other documents related to the functioning of the program Interview managers, field workers, key informants in community, etc.
	Are the workers doing what they are supposed to do?	Re-allocate tasks Retrain Modify supervision Review overall program performance	- job performance - time spent on direct/supportive services/non-services - rural workload	- work sampling - observation of decision process	- comparison job performance and job description - comparison of decisions with standing orders		
IMPACT ANALYSIS	Does/did the program have the planned impact, at a reasonable cost? Is it equitable?	Review program Discontinue program Change input level Change output " Redistribute resources and services to high risk	effectiveness	- health status of population by target groups	% reduction in priority problem % change health status		Values of indicator(s) in actual microplan	Functional Analysis
			efficiency	- input and output by target groups	output/input outcome/output outcome/input		
			equity	- definition of high risk groups	outcome, output, and input for different work groups		
IMPACT ANALYSIS	Are all parties involved satisfied with the program and impact?	Improve feedback about goals and achievements of program. Change goals.	satisfaction	- subjective or objective measures of satisfaction	same rates as for effectiveness and efficiency by risk groups % demand addressed % perceived needs diminished % goals public and politicians achieved	Value of satisfaction indicator(s) in actual microplan	- Questionnaire to all participants - Interview key informants - Delphi procedure

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Table 2

INFORMATION SYSTEM METHODOLOGIES

METHODOLOGY	PRE-PROGRAM EVALUATION	PROGRAM MONITORING	PROGRAM REVIEW
1. CENSUS	++	+	+++
2. SAMPLE HOUSEHOLD SURVEY	+++	+++	+++
3. INTERVIEW KEY INFORMANT	+++	+++	+++
4. PARTICIPANT OBSERVATION	only if pre-existing health services present	+++	+
5. WORK SAMPLING	as above	++	+++
6. HEALTH WORKER INTERVIEW	as above	+++	+
7. PATIENT FLOW ANALYSIS	as above	++	+++
8. H.S.RECORD ANALYSIS	as above	++	+++
9. COST/TIME ANALYSIS	as above	+	+++
10. HIGH RISK FILES	as above	+++	+
11. FAMILY FILES	as above	++	+
12. COMMUNITY INVENT.	as above	+++	++
13. PROBLEM MAP	as above	+++	++
14. SUPERVISORY FEED-BACK	as above	+++	+

Explanation

+ = seldom applicable

++ = more often applicable

Table 3

SELECTION OF INDICATORS

SELECTED MCH, IMMUNISATIONS, NUTRITION

AND CHILD-SPACING INTERVENTIONS

CATEGORY	IMMUNISABLE INFECTIOUS DISEASES	PREGNANCY RELATED PROBLEMS	NUTRITIONAL PROBLEMS	EARLY HOME TREATMENT ESSENTIAL	DISEASES SUSCEPTIBLE TO PROPHYLAXIS
REPRESENTATIVE DISEASE	measles	anaemia of pregnancy	malnutrition	gastro-enteritis	malaria
(TARGET UNITS) HEALTH SERVICE NEEDS	No. of new-borns per yr.	No. of pregnancies per yr.	No. of children under 5 yrs.	incidence diarrhea ch. below 5	No. ch. below 5 yrs & preg. women
(DRUGS) INPUT	% of New-borns visited w. prov. UF card	% preg. consults w. Fe & Folic Acid provided	% ch. below 5 consults prov. w. UF cards	% diarrhea consults prov. w. salt or sugar	% ch. & preg. women consults daraprim provided
(SERVICES) PROCESS	% consults ch. below 5 w. check vaccin. status	% consults preg. women w. check HB	% consults ch. below 5 w. weighing	% consults diarrhea w. OR fluid prep. demons.	% cons. expl. ch. below 5 & preg. women Daraprim doses
(COVERAGE) OUTPUT	% ch. below 1 attending UFC	% preg. women taking Fe daily more than 3 mos	% ch. below 5 wighed more than 8 X yrly	% diarrhea cases using OR at home	% ch. below 5 & preg. women taking Darapri
(HEALTH STATUS) OUTCOME	% reduction incidence measles	% reduction HB below 10 at delivery	% reduction prop. ch below Gomez 70%	% reduction dehydration deaths	% reduction fever incidence
(DRUGS - SUPPLIES) LOGISTICS	% UFC w. vacc. syr. needles in adeq. stock	% VHW w. adeq stock Fe & Folic Acid	% VHW w. functioning scale	% VHW w. adeq stock salt & sugar	% VHW w. adeq. Daraprim stock
(REFERRAL) SERVICES	% measles vacc. del w. intact cold chain	% referred Anaemia lab tested	% referred malnutr. w. causal invest.	% referred dehydr. being rehydrated within 6 hrs	% referrals malaria having blood slides checked
(CONTINUOUS) TRAINING	% adeq. score signs, sympt. measles	% adeq. score diagnosis Anaemia	% adeq, score diagnosis severe PCM	% adeq. score dehydr. ref. indications	% adeq. score fever ref. indications
(FEEDBACK) FACILITATION	% measles discuss w. VHW, vacc. status checked	% severe Anae, discuss. w. VHW for causes	% severe PCM discuss. w. VHW for causes	% dehydr death foll. by audit	% malaria deaths foll. by audit
INFORMATION COLLECTION	% ch. over 8 mos. w. immun. indic. on UF card	% preg. women w. HB indic. on preg. record	% ch. under 5 underweight recorded in summ. sheets	% referred dehydrations indic. in summ. sheets.	% fevers longer than 2 days indicated on summ. sheets
(OVERALL) SUPERVISION	% cold chains checked	% Anaemia w. HB below 6 referred blood transf.	% PCM record checked in RHC	% IV rehydration procedures checked	% Daraprim stocks checked at RHC