SPECIAL REPORT

Measuring Health Program Effectiveness in the Field: An Assessment Tool

Sharon M. McDonnell, MD, MPH;[1] Abdiaziz S. Yassin, MA, PhD;[2] Wayne G. Brown, MA;[3] Helen N. Perry, MA, PhD (Cand);[4] Stephen B. Thacker, MD, MPH[5]

1. Institute for Health Policy and Clinical Practice, Center for Evaluative Clinical Sciences-Educational Programs, Dartmouth Medical School, Hanover, New Hampshire USA
2. Division of International Health, Centers for Disease Control and Prevention, Atlanta, Georgia USA
3. Coordinating Office for Global Health, Division of Epidemiology and Surveillance Capacity Development, Centers for Disease Control and Prevention, Atlanta, Georgia USA
4. Division of Emerging Infections and Surveillance Services, National Center for Prevention, Detection and Control of Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia USA
5. Office of Workforce and Career Development, Centers for Disease Control and Prevention, Atlanta, Georgia USA

Correspondence:
Sharon M. McDonnell, MD, MPH
c/o Dartmouth Medical School
PO Box 197
Peacham, Vermont 05862 USA
E-mail: sharon.mcdonnell@dartmouth.edu

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Abbreviations:
NGO = non-governmental organization
MCH = maternal child health

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Abstract

To assist field workers in program evaluation and to explicitly discuss program strengths and weaknesses, a practical method to estimate the effectiveness of public health interventions within the existing program capacity was developed. The method and materials were tested in seven countries (Afghanistan, Zimbabwe, Tanzania, Uganda, Guatemala, the Philippines, and Ghana). In this method, four core components are assessed using a questionnaire: (1) the efficacy of the intervention; (2) the level of existing human resources (i.e., quality of recruitment, training, and continuing education); (3) the infrastructure (i.e., supplies, salary, transportation, and supervision); and (4) the level of community support (i.e., access and demand). Using the assessment tool provided, program staff can determine if all necessary elements are in place for a successful program that can deliver the specific intervention. Based on the results of the assessment program, weaknesses can be identified, explicitly discussed, and addressed. The usefulness of this tool in humanitarian relief may be twofold: (1) to assess the design and implementation of effective programs; and (2) to highlight the inevitable need for capacity building as the disaster situation evolves.

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Introduction

There is great interest in measuring the effectiveness and impact of programs developed to assist populations affected by disasters and to aid in their recovery.[1,2] To evaluate the effectiveness or cost-effectiveness of a specific health intervention typically involves comparing two populations, one that has received the intervention and the other that has not received it. The two populations are compared based on the probability that the intervention is effective in preventing or reducing the severity of the selected health outcome. In lieu of operations research, the probability of preventing the health outcome usually is based only on the clinical efficacy of the intervention, if it is known. For example, the estimated efficacy of poliomyelitis vaccination is 95% in laboratory trials, and this is the percentage used to describe the effectiveness of poliomyelitis vaccination.[3,4] This approach assumes a one-to-one relationship between efficacy and effectiveness and supposes that all programmatic elements for the health intervention (vaccination) are in place and effective, and that the community has access to and wants the intervention. As a result, these assumptions over-estimate actual program effectiveness and fail to identify barriers to successful program implementation.[5,6]

A great deal of applied research remains to be done to establish the efficacy and effectiveness of health interventions and to assess the impact of disaster relief. In the meantime, field staff need a systematic method to assess program effectiveness that is timely, inexpensive, and measures program capacity as well as acceptance by the population. This will help describe actual impediments to program success and to identify methods and resources for program improvement. Thus, to this end, an assessment process for field workers has

Efficacy (S_E)	Human resources and training *(T)*	Infrastructure and system support *(I)*	Community support *(C)*
-Efficacy of the health intervention based on review of the scientific literature	-Qualifications for the job or training and recruitment criteria -Quality of didactic training (i.e., information and knowledge) -Quality of applied training -Continuing education	-Supplies and equipment -Salaries -Transportation of staff members, patients and laboratory specimens -Supervision	-Access to health or program services -Demand for health or program services

Table 1—Worksheet for calculating health program effectiveness

been developed to explore and measure whether a health program or strategy is or will be effective in preventing or controlling disease. In this approach, four factors were considered: (1) efficacy; (2) human resources; (3) infrastructure; and (4) community support (Table 1). Together, these four factors are summarized as effectiveness, recognizing their basis in capacity development.[7,8]

Unfortunately, there are only limited data describing the efficacy of many public health interventions, but fewer studies have simultaneously considered program delivery mechanisms and community support as factors.[5,9,10] For example, the cost-effectiveness of health workers as the delivery mechanism for health interventions has been calculated, but only in terms of the expense of their training and salary costs.[10–13]

The importance of estimating four key health program factors when measuring program effectiveness in acute or chronic disaster settings is demonstrated in this paper. These factors are proposed as core components to program effectiveness and the development of increased capacity. In addition, a method for assessing and quantifying these factors for use in the field is presented, and results of the initial field tests in seven different country programs are provided.

Developing a Practical Model

To develop a practical method to measure program effectiveness in the field, the literature on program evaluations was reviewed, looking for descriptions of program success. In addition, current and former field staff members in numerous health programs were interviewed about the factors or capacities essential to program success. Using this information, an organizational framework and a set of standard questions and instructions was created. To help health staff members to determine whether these elements increase or decrease their overall program effectiveness, and in what ways, a standardized field assessment tool was developed (Appendices 1 and 2). The questionnaire is designed to describe and measure the essential variables within the health program effectiveness categories (i.e., efficacy, training, infrastructure, and community support). The responses are recorded and later scored (Figure 1). Scores are summed and used to calculate an overall score for each of three of the components of effectiveness (training, infrastructure and community support). This score, with the efficacy, is used to calculate an aggregate probability of program effectiveness.

This assessment tool was tested in Afghanistan and refined to make each question more descriptive of the variables it included. It was retested in six different settings—Zimbabwe, Tanzania, Uganda, Guatemala, the Philippines, and Ghana—in order to determine:

1. Whether the questions adequately assessed the three components of health program effectiveness;
2. How well the questions were understood by non-governmental organization (NGO) staff members and the national and local public health workers that are most likely to use this method within their own programs;
3. Whether the three possible responses to each question usefully discriminated among an organization's good, fair, and poor compliance with the standards described as the essential features (Appendix 2); and
4. Useful sources of data for the various questions and methods.

Selected informants were re-interviewed to determine if they believed the process and methods accurately represented the major factors influencing their programs. Feedback from study participants regarding the program effectiveness tools and process was positive. In every case, program staff reported that systematically assessing the components of their program was a useful way to describe their situation and helped them to agree on priorities. During follow-up interviews, participants reported that the results would be applied to design program improvements and to advocate for resources, particularly for program components that previously have been difficult to highlight (e.g., infrastructure or continuing education).

Calculating Program Effectiveness

To calculate the expected effectiveness of public health interventions (E_{PH}), the relationship between the expected effectiveness of a health program and the factors that influence its success are a product of the efficacy of the strategy or intervention (S_E) and the probability that the health program in place can deliver the intervention successfully. The probability of health program success in this model is a function of three factors: *T*, representing human resources and training (i.e., whether there are health workers to deliver the intervention competently and consistently); *I*, representing the extent to which the health system and infrastructure support the delivery of the strategy(ies); and *C*, representing the ability and willingness of the community to access and demand services. These relationships can be expressed mathematically:

$$\textit{Effectiveness of public health interventions } (E_{PH}) = S_E * f(T,I,C)$$

Human resources and training		Infrastructure		Community support	
Variable	Score (0–2 points)	Variable	Score (0–2 points)	Variable	Score (0–2 points)
1. Recruitment	____	1. Supplies and equipment	____	1. Access	____
2. Supplies and equipment	____	2. Salary	____	2. Demand	____
3. Didactic training	____	3. Transportation	____		
4. Applied training	____	4. Supervision	____		
5. Continuing education	____				
Subtotal Score	____	Subtotal Score	____	Subtotal Score	____
Subtotal divided by total possible	/10	Subtotal divided by total possible	/10	Subtotal divided by total possible	/10
	=____		=____		=____

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Figure 1—Worksheet for calculating health program effectiveness

In this model, it is assumed that the relative contribution of each component is of equal weight (0.33), meaning that each contributes equally to the program's success. However, these weights can be altered based on local information and assessed using sensitivity analysis. Using Bayes' theorem, the aggregate probability $P(E_{PH})$ that the program in place delivers the health intervention effectively, is described as:

$$P(E_{PH}) = S_E\{P(T)P(E/T) + P(I)P(E/I) + P(C)PE/C)\}$$

Therefore, the aggregate overall probability of health program effectiveness is the product of the efficacy of the specific strategy or intervention (S_E) multiplied by the sum of the probabilities of each of the three weighted component contributions: health worker training (or the weight of this variable) $P(T)$, multiplied by the effectiveness of training $P(E/T)$; plus infrastructure $P(I)$, multiplied by the effectiveness of infrastructure support $P(E/I)$; plus community support $P(C)$, multiplied by the probability of the effectiveness of community support $P(E/C)$.

To quantify these probabilities, each component is considered separately. The efficacy of the intervention is based on research and clinical trials and may be available in the medical and public health literature. For the less familiar components of health program support, the major elements considered essential for successful implementation were identified (Table 1). Four essential elements of program effectiveness were selected based on the literature review and interviews with four groups.

Key Elements of Health Program Effectiveness

Human Resources and Training

The presence of adequately trained health workers is not a given.[14] Many health programs in underserved communities are not effective because no health workers are present.[15] In this situation, the probability of the health intervention being effective approximates zero. However, if health workers are available, their ability to deliver the health strategy effectively must be assessed.

Recruitment Criteria and Qualification for Training—Recruitment refers to qualifications for the job or job training whereby health workers selected for training have the appropriate level of education, maturity, language skills, and experiences needed to learn and apply the essential skills.[16] Recruitment also should consider the social and cultural factors of a community where a health worker may be placed such as religious beliefs, political groups, or languages that could affect their performance.

Quality of Didactic Training—Didactic or classroom training should be based on explicit performance-based objectives with course content that is relevant to the skill and knowledge required for effective performance. The content of the course should reflect the conditions under which the graduate will be working and contain examples of its application.

Quality of Applied Training—Applied training gives the trainees the opportunity to apply their skills and knowledge in realistic training situations and receive critical evaluation and feedback on their performance. Trainees are required to demonstrate acceptable performance to be certified as trained.[17,18] The length and pace of the training and opportunities for interaction with experienced faculty are also considered.

Continuing Education—Ideally, continuing education is linked with employment, certification, and promotion. Ongoing training is needed to maintain and update skills and knowledge and to prevent health practices from becoming inconsistent.[15,19,20] Health and medical information, as well as organizational strategies change over time, and health workers must be updated to keep current and effective. Too often, continuing education is limited to short workshops that have not been shown to be effective in improving health worker performance or health outcomes.[21,22] Sources of ongoing, up-to-date information and ways to access it should be established and known to health workers.[15]

Infrastructure and System Support

There is little agreement about the definition of the necessary components of infrastructure and the relevance or impact of these components to health program effectiveness.[22,23] Four essential elements based on a review of the literature and from focus groups were selected:

1. *Supplies and Equipment*—The timely and reliable availability of supplies and equipment can substantially improve health program success. There is a direct relationship between infrastructure support and health worker performance and, presumably, program performance.[24] In a survey of two African countries, 30% of district health workers did not have the forms they needed for their infectious disease surveillance system.[25,26] Similarly, in many settings, the allotment of medical supplies and medicines for health services runs out long before the scheduled resupply.[24,27,28] In these scenarios, the lack of supplies dramatically reduces the effectiveness of the specific health program, since the core services cannot be performed;
2. *Salaries*—Salaries for health workers often are delayed and provide inadequate compensation for the work and time involved.[27,29] As a consequence, public health and clinical personnel supplement their salaries with private work, which reduces their availability to perform their public jobs;[29,30]
3. *Transportation of staff members, patients, and laboratory specimens*—Transportation problems can limit the ability of health program staff members to investigate community outbreaks, deliver health outreach services, triage patients for services, get specimens to laboratories for timely diagnoses, and provide information to decision makers;[15,30]
4. *Supervision*—Supervision is perhaps the most overlooked and important aspect of health worker support.[31,32] In the smallpox eradication program, supervision was highlighted as crucial to success.[33] Effective supervisory authority is linked with improvements in quality and efficiency.[17,33] An important element of supervision is performance evaluation by respected sources (i.e., confirming that work is being done, that performance is appropriate, and that the desired results are being achieved).[34] Too often, supervision is cursory and is not conducted by the appropriate person. For example, supervision might only be administrative (e.g., a lower-level clerk records the presence or absence of a professional health worker), or there might not be any avenue for addressing problems (e.g., the chronic lack of supplies or inappropriate practices).

Community Support

The two variables central to whether a community-at-risk will receive an intervention are: (1) access to the health services; and (2) demand for these services when they are available.[35,36] These issues are explored elsewhere in the health literature; however, too often, they are overlooked. We have provided a simplified version in the questionnaire for field workers to stimulate their thinking.

1. *Access*—Important features of access are proximity and transportation, as well as political security and physical safety; and
2. *Demand*—Demand is complex and is influenced by overall economic development, levels of education, cultural beliefs, and the existence of health promotion programs. Community acceptance and support extend not only to the health worker, but also include the interventions they are delivering. Health services must be planned in the context of the community and, to some extent, the access and acceptability of these services are the responsibility of health planners and implementers.

Although the components of a health program are described and calculated separately in this method, the actual relationships among these components are complementary and interdependent. For example, an informed and competent health worker is credible to the community and increases the likelihood the community will demand and use preventive health services.[35–37]

Case Study—Maternal Child Health Program in Afghanistan

A maternal child health (MCH) program run by a NGO was designed to reduce maternal and infant mortality in rural Afghanistan through the training and support of female, mid-level health workers to serve as birth attendants. In 1999, the tools to measure program effectiveness were used in collaboration with field staff of the NGO to evaluate the likelihood of success of this public health program. The findings from this community—beset with chronic conflict and internally displaced persons—are described here and scored numerically on a worksheet (Figure 2). In the category of human resources and training, for the program and the recruitment processes were disconnected from the reality of long-term, female health worker placement. Highly skilled, highly educated young women from the cities often were recruited to fill rural Afghan health posts. The program did not consider local language, family issues, ethnicity, and political background. The result was that most graduates never went to the health posts they were meant to staff. Trainees had adequate educational background and qualifications for the didactic training. In fact, most had at least high school and, in some cases, college education, and most spoke English (the native language of many of the trainers). These qualifications appeared to be inversely associated with the likelihood of returning or moving to the rural health post.

The training program was objective-based, and the delivery of didactic training was organized. Only 15% of total training time was spent in practical application with only moderate supervisory feedback. Continuing education consisted of workshops every 1–2 years on topics the health workers did not consider a high priority. Workers were not given notification of changes in the drug formulary or treatment protocols from the central level. Based on the reviews of patient records, it was found that most services provided by the trained birth attendants were not related to childbirth or prenatal care, but rather to routine medical care for musculoskeletal complaints, a topic not covered sufficiently in the training program.

Human resources and training		Infrastructure		Community support	
Variable	Score (0–2 points)	Variable	Score (0–2 points)	Variable	Score (0–2 points)
1. Recruitment	0	1. Supplies and equipment	2	1. Access	2
2. Supplies and equipment	2	2. Salary	1	2. Demand	1
3. Didactic training	2	3. Transportation	0		
4. Applied training	1	4. Supervision	0		
5. Continuing education	0				
Subtotal Score	5	Subtotal Score	3	Subtotal Score	3
Subtotal divided by total possible	5/10	Subtotal divided by total possible	3/10	Subtotal divided by total possible	3/10
	= 0.50		= 0.38		= 0.75

Figure 2—Worksheet for calculating health program effectiveness, Afghanistan

1. Probability of Program Effectiveness = P(T)*P(E/T) + P(I)*P(E/I) + P(C)*P(E/C)
   P(T), P(I), and P(C) are the contribution (or weight) given to each category—if equal, as in this model, 0.33 for each.
   P(E/T), P(E/I), and P(E/C) are the probabilities of effectiveness for each program component based on the scoring system
   Probability of Program Effectiveness = (0.33)*(0.5) + (0.33)*(0.38) + (0.33)*(0.75) = 0.54 or 54%
2. Probability of Aggregate Program Effectiveness = S_E {P(T)P(E/T) + P(I)P(E/I) + P(C)P(E/C)}
   S_E is the efficacy of the intervention, assuming S_E = 0.40
   Probability of Aggregate Program Effectiveness = (0.4)*(0.54) = 0.22 or 22%

Respondents reported that the supply system for materials and equipment was sufficient, but that technical supervision was non-existent. The NGO paid the workers' salaries, which were deemed sufficient, although a few supplemented their incomes by seeing private patients. Lack of transportation meant that women needing care could not be referred elsewhere for more specialized care or even be visited in their homes.

According to vaccination program records from another NGO, it was estimated that approximately 75% of women in the target communities met the definitions for physical access to health centers (most were within 5 km walking distance). However, these women were reluctant to seek or use services for childbirth outside of the home, calling untrained female relatives to attend them instead.

Based on these data (Figure 2), the probability that the health program would be able to deliver rural MCH services effectively was 54%. This probability of program effectiveness (0.54) when multiplied by the efficacy of the specific health intervention strategy (0.40) results in a total health program effectiveness of 0.22 or 22%.[38]

As part of the exercise, the team worked on-site to conduct a sensitivity analysis of the contribution (or weight) of each of the major program elements. The weights in three scenarios were varied from the baseline in which one component was given a weight of 0.75 (75%) and the other two components were weighted 0.15 (15%) and 0.10 (10%). In these scenarios, the range of the program effectiveness was 44–67%, and the range of the probability for the effectiveness of the public health intervention in this setting was 0.18–0.27 (18–27%). The highest probability for public health effectiveness occurred when community support was given a weight of 0.75%, resulting in a calculated aggregate program effectiveness of 27%.

Discussion

Field workers need tools to systematically describe and measure key elements of program effectiveness so that they can rapidly identify specific areas of insufficiency and communicate these needs more effectively to donors and home offices. Tools for program effectiveness that do not consider health worker training, infrastructure, and community assessment can greatly overestimate program effectiveness.[6,10,23,37–39] A known good intervention (e.g., immunization) delivered through a poor program cannot be effective. Too often, "training" is recommended as a strategy for improving deficiencies in health program effectiveness when managerial or administrative solutions or community advocacy would be more effective.[40] In only three areas of this assessment method—didactic and applied training, technical supervision, and continuing education—would traditional training strategies be recommended if significant weaknesses were identified. Field workers often find that program elements beyond training are difficult to fund, in part, because they are difficult to describe and difficult to link with changes in efficiency or quality of the health programs.

Field staff reported that using the assessment tool promoted more detailed and creative discussions about the actual problems and potential solutions that had to be considered in the design and improvement of their programs.

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In fact, the discussions among staff members regarding their programs often were reported as being just as important as the actual calculation of the numbers. For example, the health workers in the Afghanistan case study used the information gathered to discourage their NGO from adding more curriculum material in the basic course for female health workers. Instead, the program focus and grant proposal emphasized a shift to improved recruitment, applied training, and infrastructure components relating to supervision and continuing education. For some program staff, the calculations might appear discouraging and can be skipped. Many mentioned the value of reviewing the distinction between efficacy and effectiveness and to explicitly understand that for many program interventions, the efficacy is not known and effectiveness has not been well researched.

The major limitation of this approach is the potential for inter-observer variability. Different persons using the same questionnaire can get different results even in the same situation. However, within a program, the field staff usually worked with the questionnaire to define the terms and indicators. Another limitation of this method is that it has not been tested over time to determine how well it corresponds with actual program performance or health outcomes. There are not gold-standard tools available to measure program capacity and effectiveness.[7,8]

To improve this methodology and its tools, the authors intend to refine the questions within each component and to increase the specificity of the information collected. This is needed, particularly in the community support components. Further validation should assess inter-observer variation. The method's instructions also must be tested with new evaluators and within a variety of programs, to assess how easy it is for others to administer the questions, use alternative data sources, and calculate the overall probability. Staff members in Tanzania assessing health information systems raised the issue of the availability of allied services (e.g., laboratory); this method could be modified to address specific program elements.

Based on the information collected in the field tests, one of the most important areas that should be addressed is whether the weighting of the three components should be changed. For example, infrastructure problems were named as the biggest impediment to program effectiveness by health workers, ministry officials, and donors, and might need to be given a higher weight. The infrastructure measures used for this category often were associated with the concept of higher-level "political support" and long-term viability.[23]

The usefulness of this method will increase with more thorough descriptions of core health worker functions.[41] This is an important issue as more countries choose non-categorical healthcare approaches that rely on diverse healthcare workers and decentralized functions. Too often, primary healthcare workers do not have the competencies that define their priority skill needs.[45,46] Initial training and continuing education should address those competencies needed for worker function, especially as the tasks evolve over time.

During disasters, the emphasis on program service delivery dominates capacity development and operations research.[7] It is hoped that using this approach to evaluate program effectiveness might support field staff to advocate for the shift of program resources to building capacity in areas such as management, feedback, and technical supervision as the immediate survival needs become less pressing. In addition, perhaps the efficacy of interventions is the least known element in public health and disaster response. Tools such as the (US) Centers for Disease Control and Prevention Community Guide, the Cochrane Collaboration, and (US) Agency for Healthcare Research Quality's Clinical Preventive Services are important sources; however, more work is needed for interventions specific to humanitarian response during disasters.[47,48] Finally, the usefulness of this tool must be judged through further field-testing and validation to determine if its use by field workers leads to substantive changes in the processes and outcomes of health programs. Beyond the field level, it is hoped that by measuring and using these programmatic variables, more attention will be focused on innovative methods that improve the training and support of health workers, the quality and type of infrastructure, and the support of communities, thereby addressing well-known, but often ignored, problems of health programs.

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Appendix I—Instructions for field-based assessment questionnaire to assess health program effectiveness

To administer this exercise, first clarify what health (public health) program or program parts will be evaluated. Then follow these steps:

1. Specify the strategy or intervention within the health program to be evaluated and define the efficacy of this intervention using the available health literature or field trials. If it is not known, it can be discussed and estimated. Trying various estimates may highlight the importance of this information.
2. Select the assessment team. Agree on the definitions of terms and the scoring. Review and adapt the criteria and essential features for each of the three key implementation components (i.e., human resources and training, infrastructure and system support, and community support).
3. Determine who (or what institution) is responsible for each of the three key determinants and the data sources available to obtain the information needed for this evaluation.
4. Adapt the questionnaire as needed for the health program being evaluated. Identify, locate, and meet the staff members involved. If the respondents include persons of differing levels of responsibility, you might want different persons to respond to different questions depending on their expertise. In some instances, the evaluation team may ask multiple data sources about a specific question and use a range or average to record a single response.
5. Meet with program personnel (alone or in groups) and tell them the essential elements of what is being evaluated and that they should answer the questions about themselves and their work.
6. Some participants may be provided the questionnaire for self-administration; others may be asked the questions and the interviewer will record the answers. For each question, ask the participant to identify which of the three possible answers (a, b, or c) best describes their situation. Do not discuss the scoring system (i.e., how points will be assigned to responses).
7. Record the responses from the questionnaire on to the worksheet (Figure 1) using the following guidelines.
    a. All answers "a" are 2 points; "b" answers are 1 point; and "c" answers are zero points. If there was more than one respondent for a question, you can average the scores. Write the numerical score (or average) on the worksheet (Figure 1).
    b. Add the points for each component and calculate the subtotal score.
    c. Calculate the proportion of possible points assigned to each component. Calculate the subtotal score divided by the total possible score each component.
    d. Write the proportion from each component into the equation at the bottom of the worksheet.
    e. Using the equation, calculate the probability that the health program in place will be effective P(E).
    f. Using the equation, calculate the expected effectiveness of the health program (E_{PH}). To interpret the scores follow the next steps.
8. Each question that received a zero for any element of the 3 key components identifies a likely obstacle to the success of the health program. The health program should improve all sub-components with low scores to increase the likelihood of meeting its objectives.
9. If the total score is <50%, the program is unlikely to be effectively implemented; if the total score is >80%, the program is likely to be effectively implemented; if the score for any entire component (training, infrastructure or community) is zero (e.g., no human resources are available to implement the training program), the actual probability of program effectiveness should be considered zero. The formula as provided does not naturally lead to this conclusion because it is additive rather than multiplicative.
10. The exercise can be used to help public health personnel identify strengths and weaknesses in their programs and to initiate discussion regarding solutions.

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Appendix II—Field-based questionnaire to assess health program effectiveness *continued*

For each question under the three areas circle the letter of the answer that best describes the current situation for the program under review.

A. HUMAN RESOURCES AND TRAINING

Qualifications for training: Are health workers qualified for their position and for supplemental training?

Most health workers selected for training:

a. Have the educational background and experience relevant to the training. They are likely to meet the training objectives.
b. Have either educational background or relevant experience but not both. Moderate effort will be needed to meet the training objectives.
c. Were not selected with consideration of educational background or experience. It is unlikely they will meet thetraining objectives.

Qualifications for recruitment: Are health workers selected for training with consideration given to their ability to function effectively in the target community afterwards?

Most health workers were selected with:

a. Significant attention to community input and the likelihood of being able to fit in and work effectively with the target community
b. Limited attention to community input and the likelihood of being able to fit in and work effectively with the target community
c. No consideration of the likelihood of being able to fit in and work effectively in the target community.

Quality of didactic training: Is the training designed to provide adequate knowledge for executing the competencies required to perform effectively on the job?

a. The course is systematically planned and delivered with clear objectives, and provides the information relevant to the job. Most participants are likely to meet the objectives.
b. Objectives may not be performance-based. Much of the content of the course is based on personal views of instructors and is not selected to support the course's objectives or the participants' job description. Instructional outcomes are not evaluated in relation to the job performance.
c. The course is disorganized: There are few explicit objectives and these mainly describe what the instructors will do. The content is largely theoretical, and evaluation is only an end of course written test. Feedback may only be in the form of an overall score for the course.

Quality of applied training: Does the training include adequate opportunities for each participant to practice the skills in context?

a. The course allows adequate time for each participant to practice the skills in a realistic setting. Supervisors oversee training and provide timely feedback. Competency development is monitored.
b. The course allows some time to be spent in practical applied training. Supervision, evaluation and feedback are intermittent, and competency development is not well monitored.
c. The course has little or no time for individual practice. Supervision and feedback during training are essentially nonexistent and demonstration of competencies is not required or expected.

Availability of continuing education: Is continuing education available and offered to health workers?

a. A continuing education plan exists. Staff knows how to access it and do so. Changes in guidelines or policies are promptly transmitted to health workers.
b. Some continuing education efforts have been made, but they may be delayed or occur at irregular intervals. Participation is elective or not all; persons participate for other reasons.
c. Continuing education does not exist or occurs only as infrequent workshops with no plan or recognized need.

B. INFRASTRUCTURE AND SYSTEM SUPPORT

Supplies and equipment: Are supplies and equipment available for the health workers to use in the job?

a. Relevant supplies and equipment are almost always available. They are in working order and reliably available in adequate quantity and quality.
b. The availability of supplies and equipment is intermittent and often determines when program activities can be scheduled or limits the target population that can be reached or served.
c. Appropriate supplies and equipment are not usually available or are not functioning.

Salaries: Are salaries adequate to maintain workers in their jobs and are they paid on time?

a. For all or most workers, salaries are reasonable for their position and are paid on time.
b. Starting salaries may be adequate for most workers but periodic increases are small or infrequent. Exceptional performance is not rewarded.
c. For most health workers the salaries are inadequate. Workers do not consistently receive their salaries on time. Many may be supplementing their income in other ways.

Transportation of staff or specimens: Is transportation available within the health system to transport health workers or specimens so that work objectives are met?

a. Transportation is easy and is in the control of local health staff so that most objectives of the health program can be met.
b. Transportation is difficult. Vehicles may be present but lacking repairs or fuel. Some alternate arrangements can be made but it is difficult at least 50% of the time.

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Appendix II—Field self-assessment questionnaire *continued from page 404*

c. The routine lack of fuel and a working vehicle is a significant obstacle to meeting the objectives of the health program.

Supervision: Is technical supervision available for the health worker once placed in the job setting?

a. Supervision is technical, occurs regularly. The process examines and documents the required performances and outcomes. Feedback is provided, it is useful, and the supervisor later checks on progress. The health workers are familiar with the criteria for a job well done.
b. Supervision is provided in the technical area but the supervisor may not be highly qualified. Timing of supervision, feedback and follow up are irregular. Some but not all health workers know the criteria for doing the job well.
c. Supervision has few or none of the essential features and may not occur except at much longer intervals than prescribed. Feedback may be critical or negative rather than helpful

C. COMMUNITY SUPPORT

Access: Does the community have access to locations where health services are provided?

a. The majority of the community members in a defined catchment area, including women, children, and vulnerable populations, can get to the health facility or health program site.
b. At least 60% of the catchment area population can get to the health facility. Others may be less able to get to the facility/service.
c. The health facilities/services are not accessible to nearly half of the population in the catchment area, or the health service/program is unaware of the catchment population size.

Demand: Is there community interest and demand for health services present (either clinical or preventive)?

a. There is a high demand for the health service or program.
b. There is a moderate demand for health service or program. Some target groups may be unclear about the availability or need for service or, for specific reasons, choose not to use it.
c. Demand for the service being offered is nonexistent or very low compared to the defined need.