

**TECHNOLOGY OPPORTUNITIES PROGRAM EVALUATION GUIDE:
HEALTH PROJECTS**

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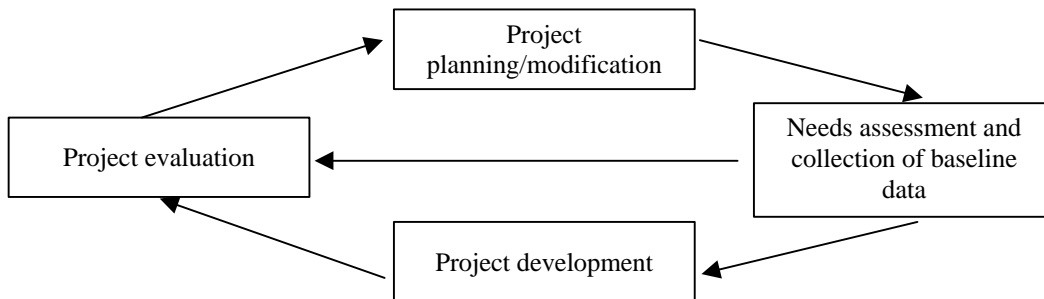
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INTRODUCTION

This document will provide you with a guide for developing an evaluation of your project. The document has been developed primarily with the novice evaluator in mind, although more experienced evaluators should also find it useful. Evaluation is a very important part of any Technology Opportunities Program (TOP) project. Evaluation starts at the time an application is first developed and goes hand in hand with implementation. Evaluation is not a single instrument or data collection methodology. The steps are not necessarily linear but interactive and iterative. Evaluation is multilevel and multipurpose, providing information for monitoring, improving the program, and increasing the knowledge base along every step of the way.

Some people think of evaluation as something that is separate from or added to a project, but that is not true. Program planning, evaluation, and program implementation are all parts of a whole, and they work best when they work together. Exhibit 1 shows the interaction between evaluation and the other aspects of your TOP project, showing key data collection points.

Exhibit 1.
The project development/evaluation cycle



In the pages that follow, we provide you with some help in thinking about your evaluation and structuring it so that it has maximum benefit. While every evaluation has multiple audiences, two are consistently important across all efforts: the first is the funding agency, in this case TOP, administered by the National Telecommunications and Information Administration; the second is the project itself.

This document is structured as follows. First, we present a set of definitions for key terms to make sure we are all speaking the same language. You may want to expand this list for yourself and your team so that everyone understands the key terms. Second, we present a set of worksheets to help guide you in the evaluation process. To illustrate how these worksheets can be used, we also include some examples of their implementation in each of the five application areas: Education, Culture, and Lifelong Learning (ECLL); Community Networking; Health; Public Safety; and Public Services. We have built our examples on real projects funded by TOP. However, in developing these examples and presenting evaluation plans we have frequently deviated from what a particular project actually did. Thus, the examples are based in fact and represent a real need that TOP funds were allocated to address, but they stray from actual history in discussions concerning the development of the evaluation design and the ways in which decisions were made.

Critical Terms

Some key terms will be used repeatedly throughout this document. To make sure that a common understanding exists, some simple definitions are presented here.

Activities. The steps a program takes to achieve its objects. Activities include a wide range of things, depending on your specific scope of work. Some examples are purchasing equipment, installing equipment, hiring staff, training staff and users, and providing technical support.

Baseline. Facts about the condition or performance of individuals or a system prior to intervention.

End users. Refers to workers or community members who will have direct access to the equipment or resources provided through your TOP grant. An end user may be a consumer of information, may be involved in an interactive communication with other end users, or may use information infrastructure to provide services to the public.

Indicator. Statistics that provide information on the condition or status of a program feature.

Indirect beneficiary. Refers to individuals or organizations who will benefit from the improved services offered through your project without having direct access to project resources or equipment.

Input. The resources a program uses to achieve program objectives. Resources include TOP funding, funding from other sources, and in-kind contributions.

Matrix. A display of rows and columns used to display multidimensional information.

Measurable outcomes. A measurable change in your community that could realistically and logically be expected to result from your project.

Needs assessment. An examination of the actual status of a service, resource, or capability in light of the desirable status.

Operationalization. Defining in concrete rather than conceptual terms what is meant by a concept, goal, or outcome statement.

Outcomes. The benefits that emerge as a result of program participation. Outcomes can be immediate or longer term. In defining an outcome, it is important to think along two dimensions: an indicator for each outcome and a target for success. Some examples include reducing the time spent commuting to hospitals and other health centers by 50 percent (health); increasing the number of students taking calculus by 60 percent (ECLL), and reducing the time to site for fire fighters by 35 percent (public safety).

Output. The products of the activities. Just like activities, output may vary. Some examples include networking six senior citizen centers, establishing shared databases at eight clinics, providing continuing education services to 200 adults, etc.

Partners. Organizations that (1) provide financial support to the project; (2) loan, donate, or provide discounts on equipment or supplies for project-related activities; (3) contribute expertise; or (4) loan or donate building/office space to the project.

Pilot test. An initial test of an instrument or procedure to see whether it works in terms of clarity, focus, length, etc. Findings from a pilot test are used to make revisions before the instrument or procedure is formally used.

Qualitative evaluation. The approach to evaluation that is primarily descriptive and interpretative.

Quantitative evaluation. The approach to evaluation involving the use of numerical measurement and data analysis based on statistical methods.

Sample. A part of a population. A random sample is a sample that is drawn from a larger group or population so that every individual item has a specified probability of being chosen. A purposive sample is a sample that is created by selecting information-rich cases from which one can learn a great deal about issues of central importance to the purpose of the evaluation.

Stakeholders. Groups or individuals who have an interest in a project and its outcomes. Some stakeholders may be participants.

Standard. Specific measurable target or benchmark that a program is striving to meet.

DESIGNING YOUR EVALUATION

This section presents a step-by-step guide to designing your evaluation. It can be very useful as you think about your project and develop your application. If you are beyond the application stage, this guide can be used to help you double-check your work to ensure that you have covered the bases. It also provides a useful scaffolding for group discussion, to see if your team members have a shared understanding of the project, the project's goals, and the indicators that will be used to determine whether or not these goals have been successfully attained. The guide starts by mapping out the project in clear and simple terms and ends with a consideration of dissemination and the reporting mechanisms that will be used to share findings with various audiences.

Please note that this guide places heavy emphasis on the initial steps in designing an evaluation: determining your questions, identifying measurable outcomes, collecting baseline data, etc. We have taken this approach because our experience with TOP and other projects has revealed that far too often these steps are given minimal or no attention. Case studies of TOP projects have consistently shown that work done upfront has a tremendous payoff in what is eventually learned from the effort. Projects that do a good job in needs assessment, collect baseline data on outcomes of interest, and understand fully their stakeholders and their needs have a far greater chance of succeeding than those that do not gather this information.

We also want to point out that this guide will not answer all the questions you might have about evaluation. It is meant to provide an overview and a starting point for approaching the design and implementation of your project's evaluation. We strongly recommend that you consult additional sources for more indepth discussion. We have tried to offer some suggestions for additional sources you might wish to read.

Describe the Project

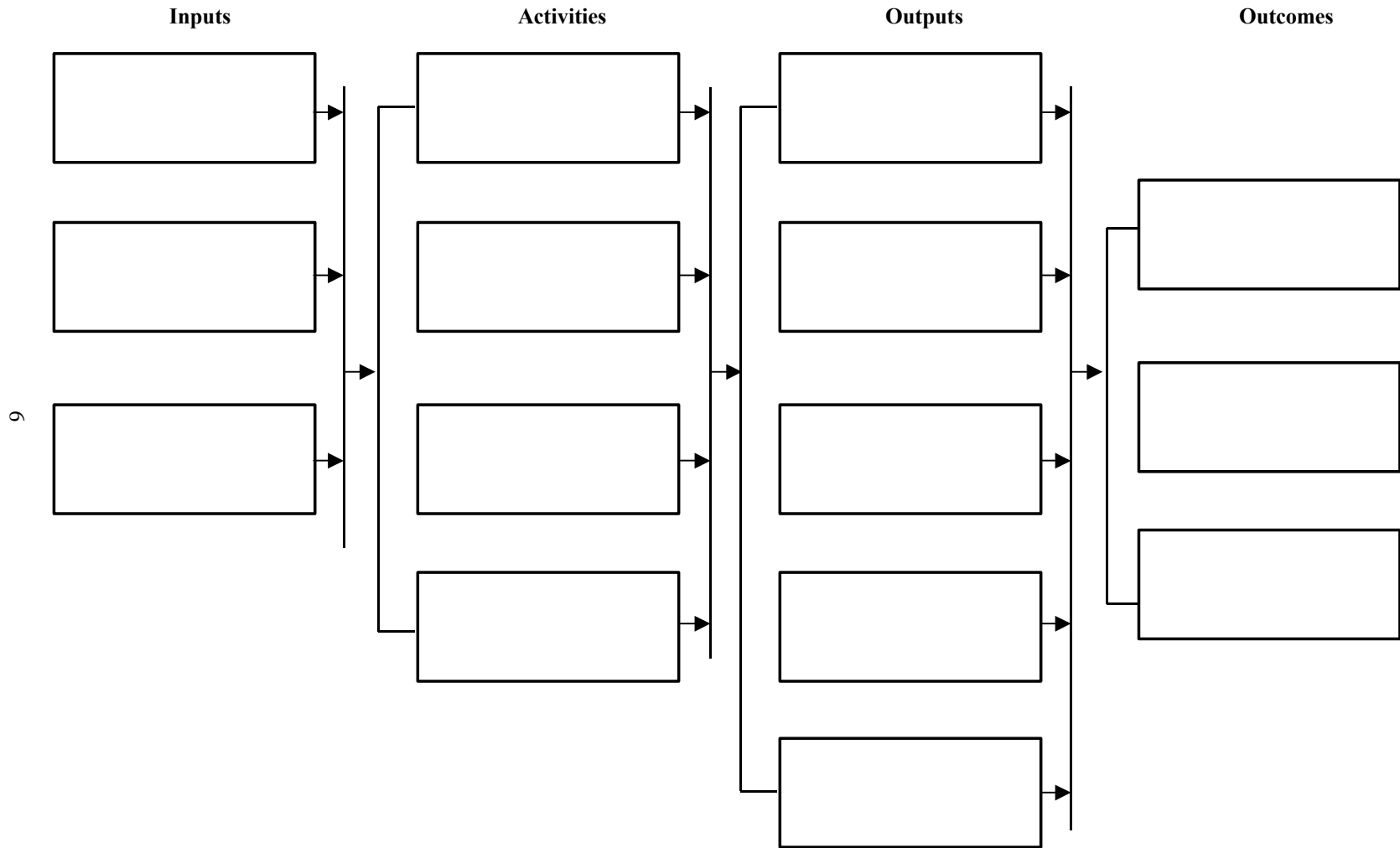
The first step is describing the project in terms of its inputs, the activities that will be carried out with these inputs, the expected outputs, and the desired outcomes. If you have already developed your application, you have begun this task by defining the need or problem, proposing solutions, and identifying expected outcomes from your project's implementation. Worksheet A presents a simple shell for expanding on this description and making clear the links that occur between its parts.

- Start by filling in the inputs column with your funding sources and other resources that may be supporting your project. These resources may be in-kind contributions—full-time equivalents (FTEs), equipment, space, etc.—as well as actual monetary supports.
- Then list the activities that will be carried out. You can do this in a generic way, trying to capture the big picture of the project, or complete it in greater detail. For example, you may want to replicate the shell and describe the activities on a year-by-year basis to more accurately capture the flow of your work.
- The next step is to describe the outputs you expect to see. Remember, an output is something that happens as a result of a particular activity. In describing your output, please keep in mind that there is not necessarily a one-to-one relationship between activities and output. That is, while each activity may have an output, a single output may be the same for two or more activities.
- The final step is to describe your outcomes, that is, the benefits that you expect your end users and indirect beneficiaries to receive. These outcomes should be linked to your problem statement and provide a logical progression from the activities and outputs you have identified. They may be ones that have been highlighted by the TOP program (i.e., improve the quality or efficiency of social services, improve adult training and learning opportunities, etc.) or ones that are specific to your project. As relevant, major and minor goals should be identified. In specifying outcomes, you may wish to go beyond those that will accrue to end users and indirect beneficiaries and look at benefits that you and your partners may experience.

Remember that it is important to distinguish between activities, outputs, and outcomes. The first term refers to what you do, your strategies or program components; the second refers to the products of those activities, frequently defined in terms of how many, how much, or how quickly; the latter term refers to the result of those activities, what benefits were found and what changes occurred. Sometimes people confuse output and outcome, seeing an output to be an end in itself. While successfully completing an activity and generating a specific output are important, a project must be assessed in terms of the benefit to which it leads, not merely in terms of its success in carrying out a series of activities.

Worksheet A. Describe Project

A Logic Model



Define Outcomes in Measurable Terms

In determining the ways in which the success of your progress will be evaluated, it is critical to define your outcomes in clear, precise, measurable terms and to indicate what you see as your standard for success. TOP has placed special emphasis on the development of measurable outcomes and will look closely at both how outcomes are defined and whether they are met through the Performance Reporting System (PRS).

What do we mean by measurable terms? An outcome is defined in measurable terms when it is clear what behaviors or changes will be examined to determine progress and a standard against which to measure progress has been established. This process is also referred to as operationalization, defining in concrete rather than conceptual terms what is expected to be seen if a goal is reached. Defining outcomes in measurable terms is important for the following reasons:

- Without this level of articulation, it is impossible to take the next steps in designing an evaluation; if you try to do so, the data that are collected may not satisfy the funder's need.
- You may discover that some of your outcomes are very ambiguous or so general that it is very difficult to gain consensus on an acceptable indicator of change.

This is not an easy process. Some important outcomes may be difficult to measure in a valid and reliable way. Other outcomes may not be assessable in a timely fashion. There may be critical impacts that cannot be expected to emerge until some time, even years, after the end of your TOP grant. In addition, unless some kind of historical data already exist to provide trend data, you will have to gather baseline information about the status of critical outcome indicators in order to set targets that are ambitious but realistic. While this may sound like an onerous task, it is hard to imagine how progress can be determined if the starting point is undefined.

Worksheet B. Define Outcomes in Measurable Terms

1. Briefly describe your outcome.

2. State the outcome in terms of an outcome indicator.

3. Set an outcome standard.

4. If this target could only be expected to be met after several years, state interim annual targets.

5. Is there another outcome indicator that you might use? If so, define it.

6. Set an outcome target for the second indicator.

7. If this target could only be expected to be met after several years, state interim annual targets.

REPEAT FOR EACH OUTCOME YOU HAVE IDENTIFIED.

Identify Key Stakeholders, Their Interests, and the Evaluation Questions They Want to Have Addressed

In developing your plan, you have already identified the goals of your project in consultation with your partners and other stakeholder groups. This is a start for identifying the evaluation questions that you will need to address. As you and your team develop these questions, think of information that will be needed by the two key stakeholders for your project evaluation—the TOP program and you and your staff. However, every project has multiple stakeholders—some that are currently involved, others whose involvement and support you may seek later on. In the early stages of design, it is important to think big and think broadly. What are the issues or concerns of each of the key stakeholder groups? What are the evaluation questions, both output and outcome, that each of your potential stakeholders might want to have answered? What questions might future partners or funders want addressed? Are these any different than those of the current stakeholders?

Worksheet C provides a tool for listing the stakeholders and delineating their interest. Worksheet D builds on the information detailed in the previous worksheets, transforming their interests into output and outcome questions defined in measurable terms. While it is clear that no evaluation will be able to accommodate the full range of interest that stakeholders might have addressed, elaborating them up front is useful. This elaboration helps you to identify issues held in common by the stakeholder groups and interests that may be unique. Both common and unique interests need to be examined for relevance, priority, and political/practical importance in making your evaluation a success.

Worksheet C. Identify Key Stakeholders and Their Interests

Stakeholder	Values, interests, expectations, etc. that evaluation should address

Worksheet D. Potential Evaluation Questions

Stakeholder group(s)	Questions	
	Output	Outcome

Prioritize and Eliminate Questions

Once you have identified the full range of questions that your stakeholders might want to have addressed, the next step is prioritizing them. Many considerations go into the process—determining the importance of the particular stakeholder group, the importance of the question to the stakeholder group, the importance of the question to goals of the project, the availability of data to address the question, the costs of gathering the data if they are not available, and the timeframe required for gathering the data. Worksheet E provides a tool for addressing this task.

Each of these factors needs to be weighed in reaching a final conclusion regarding priorities. There is no hard and fast rule for making this judgment, and different criteria may be given stronger weight for different questions. A question may be eliminated because it is tangential to the overall purpose of a project, even though it may be very important to one stakeholder group. In another instance, a question may be eliminated because it requires the use of data collection activities that are either too expensive or too intrusive to adopt. Finally, it may be that the question addresses a long-term impact, an impact that would not be expected to occur until some time, maybe even several years, after the grant has been finished.

The last concern can be very frustrating. TOP grants are given for a 2- or 3-year time period. In some cases, important outcomes may be difficult to achieve in that time period. In such cases, it is important to identify shorter term outcomes that could be examined to determine whether or not progress is being made. What would you expect to see happen if the conditions for achieving this longer term outcome are being put in place? Are there interim outcomes that you can identify that provide support for progress toward this longer term outcome? The logic model that you have developed on Worksheet A might help you in this identification process.

Worksheet E. Prioritize and Eliminate Questions

Take each question from D and apply criteria below.

Evaluation question	Which stakeholder(s)? (specify groups)	Importance to stakeholders (high, medium, low)	New data collection? (yes or no)	Resources required (low, moderate, high)	Timeframe (short-, medium-, or long-term)	Priority (high, medium, low, or eliminate)			
						H	M	L	E
						H	M	L	E
						H	M	L	E
						H	M	L	E
						H	M	L	E
						H	M	L	E
						H	M	L	E
						H	M	L	E

Develop Your Overall Design

Once your evaluation questions, indicators, and targets are established, the next step is developing your overall design. Your design can be as simple as a set of surveys for your participants or as complex as an evaluation that involves randomly assigned individuals to two or more groups. Most likely, your evaluation will fall somewhere in between.

In developing your design, there are several questions that you will have to address. These questions, which will look familiar to many of you, are very much like the ones you need to consider in developing the evaluation component of your TOP application.

What data collection strategies will be used? Possible data collection strategies include surveys, focus groups, document reviews, observations, problem-solving activities or tests, etc. Selection of a particular strategy is influenced by many things: the nature of the question being addressed, the skills of the staff you have available, the funds you have available, your timeline for instrument development and data collection, the accessibility of your respondents, etc. While gathering quantitative data is important, most evaluations benefit from a judicious combination of quantitative and qualitative approaches.

What samples or groups will you include in the study? Classic evaluation studies have used treatment and comparison groups, ideally with random assignment. With real-world problems it is frequently very difficult to use this “clinical trials” paradigm. Even if no formal comparison group is used, you still need to make some decisions about how you will choose your respondents. To what extent will you draw upon information from end users? From indirect beneficiaries? From project partners? Are the groups small enough so that all representatives will be included? Are the groups large enough that sampling is preferable? How will you draw this sample? Can you identify actual individuals? What incentives can you offer them to increase the likelihood of their participation? How will you make sure that you get an adequate response rate?

Who will be the respondents from these groups? It is important to identify your respondents carefully for at least two reasons—one conceptual, one practical. Conceptually, you need to decide the extent to which you will use single versus multiple respondent groups for addressing a question, for example, end user and indirect beneficiaries as opposed to end user alone. While a single group makes the evaluation tasks easier, evaluators use multiple respondent groups for several reasons. There may be an issue of access to knowledge. Multiple groups may be needed because some groups have knowledge in area “a” but may be uninformed in area “b.” In addition, multiple respondents are sometimes used to provide verification. Asking different groups the same question helps to determine whether opinions are widely shared or if different participant groups see things in different ways.

The practical concern is also important. While some of your respondent groups may represent a “captive audience” (e.g., your own staff), others may need some special handling if their cooperation is to be obtained. Further, when dealing with some possible respondents (e.g., children), you may need to obtain special permission. In developing the timeline for your study, it is important to build in the steps needed to gain the cooperation of such groups.

What data collection schedule or strategy will be used? A critical part of developing your design is determining when the various kinds of data collection should take place. And, it is likely that different schedules will be appropriate for different questions. While the classical data collection strategy is called pre-post design—baseline data collected before an intervention begins and outcome data after it is completed—most TOP projects will probably adopt variations on this theme. For example, the collection

of data on program implementation will probably take place on a much more frequent basis than a pre-post schedule. In some cases it will be important to collect such data each month. In other cases, every other month or every 6 months will be sufficient. Data on progress toward goals also need to be gathered periodically; in most cases, annual assessment is sufficient. The type of data collection method used also makes a difference. For example, while surveys probably can be given on an annual basis, and record reviews may need to be undertaken only once, observations should be carried out multiple times in order to get data that are reliable and valid.

In developing your evaluation schedule, it is important to allow time for a pilot test of your data collection procedures if you have not tried them out previously. A pilot test allows you to see if your instrument works on a small sample of respondents. Usually, respondents for the pilot test are selected because they are similar to your project's respondents but will not actually become project participants. The pilot test allows you to make sure your questions are clearly understood, that response choices, if offered, cover the major responses that a subject is likely to make, and that the time needed to complete the data collection is reasonable. The pilot test also gives you the luxury of making mistakes in ways that are least likely to interfere with the collection of solid evaluation data.

What data analysis techniques will be used? Silly as it may seem, some people gather data without really thinking about how they will be used later on. This is especially true where qualitative data in the form of narratives or rich textual responses are collected, but it may also be true in the collection of quantitative information. Recognizing that data analysis is always a somewhat iterative process, include an initial design for data analysis. This design should include plans for cleaning the data and assembling them into some kind of a database, and a consideration of the types of statistical analyses and displays of data that will be used.

Worksheets F, G, H, and I have been provided to assist you in making decisions regarding each of these areas and in summarizing these decisions in a systematic way. Worksheet F links questions to data sources, indicating whether existing or new data will be examined. If new data are to be collected, the types of data collection approaches are identified. Worksheet G goes a step further linking the questions and data collection techniques to particular respondent groups and comparison groups, if used. Worksheet H adds questions regarding the schedule for collecting each of the types of data. Finally, Worksheet I adds information on the data analysis technique to be used. You will find that Worksheet H actually does double duty. Not only does it allow you to summarize important information quickly, but also it can be used for monitoring the progress of your work to make sure that it is moving on schedule.

Worksheet F. Determine Data Collection Techniques

Evaluation question	Specify how data on questions can be obtained		
	Existing data source that can be easily accessed by evaluator/grant recipient <i>(specify below)</i>	New data collection planned <i>(specify below)</i>	Comments

Worksheet G. Select Groups

Evaluation question	Data collection technique	Respondent group <i>(specify respondents; sampling strategies)</i>	Comparison group <i>(specify respondents; sampling strategies)</i>	Comments

Worksheet H. Develop a Design Matrix

Evaluation question	Who	How	When

Worksheet I. Develop Data Collection and Analysis Matrix

Evaluation question	Collection procedure	Analysis procedure	Comments

Provide Information to Interested Audiences

Reporting, in its broadest sense, is a critical part of any TOP project. Several kinds of reports are required by TOP, including the start-up, quarterly, and final reports that are part of the PRS and financial reports. Beyond TOP, it is likely other reports will be needed for other funding sources or for partner and stakeholder groups. Finally, if the data collected from the evaluation are to be useful, make sure that findings are discussed at planning and management meetings on a regular basis. Develop a schedule for the formal exchange of information for this purpose, especially if it can be made to coincide with critical times for making decisions on project revisions or modifications in scope.

Worksheet J has been developed to help you lay out your reporting plan. In using this worksheet, keep in mind that “reporting” as defined here does not mean only formal written reports. A variety of reporting formats are available that TOP projects should consider, including brochures, conference presentations, fact sheets, etc. For example, communicate with your partners using a simple memo or fact sheet format. Presentations to public groups might best be accomplished through newsletters or even briefings accompanied by visual displays. Submissions to journals will assume still another format and level of detail. As you develop your plan, alternatives suited to various audiences needs should be evaluated and plans for developing them established.

Worksheet J. Provide Information to Interested Audiences

List evaluation audiences	Describe focus of reports	Identify format to be used	List date of report or frequency	Identify event associated with report (if relevant)

SUGGESTED ADDITIONAL REFERENCES

In selecting books and major articles for inclusion in this short bibliography, an effort was made to incorporate those useful for project staff who want to find information relevant to the tasks they will face and which these guidelines could not cover in depth. Thus, we have not included all books that experts in evaluation would consider to be of major importance. Instead, we have included primarily reference materials that TOP grantees should find most useful.

Some of these publications are heavier on theory; others deal primarily with practice and specific techniques used in data collection and analysis. However, with few exceptions, all the publications selected for this bibliography contain a great deal of technical information and hands-on advice.

American Evaluation Association. *New directions for program evaluation*, Vols. 35, 60, 61. San Francisco, CA: Jossey-Bass, Inc.

Almost every issue of this journal contains material of interest to those who want to learn about evaluation, but the issues described here are especially relevant to the use of qualitative methods in evaluation research. Vol. 35 (Fall 1987), *Multiple Methods in Program Evaluation*, edited by Melvin M. Mark and R. Lance Shotland, contains several articles discussing the combined use of quantitative and qualitative methods in evaluation designs. Vol. 60 (Winter 1993), *Program Evaluation: A Pluralistic Enterprise*, edited by Lee Sechrest, includes the article "Critical Multiplism: A Research Strategy and its Attendant Tactics," by William R. Shadish, in which the author provides a clear discussion of the advantages of combining several methods in reaching valid findings. The contributions by several experienced nonacademic program and project evaluators (Rossi, Datta, Yin) are especially interesting.

Campbell, D.T., and Stanley, J.C. (1966). *Experimental and quasi-experimental designs for research*. Boston, MA: Houghton Mifflin.

This slim (84 pages) volume is a slightly enlarged version of the chapter originally published in the 1963 *Handbook of Research on Teaching* and is considered the classic text on valid experimental and quasi-experimental designs in real-world situations where the experimenter has very limited control over the environment. To this day, it is the most useful basic reference book for evaluators who plan the use of such designs.

Denzin, N.K., and Lincoln, Y.S. (Eds.). (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.

This formidable volume (643 pages set in small type) consists of 36 chapters written by experts on their respective topics, all of whom are passionate advocates of the qualitative method in social and educational research. The volume covers historical and philosophical perspectives, as well as detailed research methods. Extensive coverage is given to data collection and data analysis and to the “art of interpretation” of findings obtained through qualitative research. Most of the chapters assume that the qualitative researcher functions in an academic setting and uses qualitative methods exclusively; the use of quantitative methods in conjunction with qualitative approaches and constraints that apply to evaluation research are seldom considered. However, two chapters—“Designing Funded Qualitative Research,” by Janice M. Morse, and “Qualitative Program Evaluation,” by Jennifer C. Greene—contain a great deal of material of interest to the projects.

Fowler, F.J., Jr. (1993). *Survey research methods*, 2nd Ed. Newbury Park, CA: Sage.

Using nontechnical language, the author has provided a comprehensive discussion of survey design (including sampling, data collection methods, and the design of survey questions) and procedures that constitute good survey practice, including attention to data quality and ethical issues. According to the author, “this book is intended to provide perspective and understanding to those who would be designers or users of survey research, at the same time as it provides a sound step for those who actually may go about collecting data.”

Greene, J.C., Caracelli, V.J., and Graham, W.F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*. 2 (3).

In this article, a framework for the design and implementation of evaluations using a mixed-method methodology is presented, based both on the theoretical literature and a review of 57 mixed-method evaluations. The authors have identified five purposes for using mixed methods, and the recommended design characteristics for each of these purposes are presented.

Herman, J.L. (Ed.). (1987). *Program evaluation kit*. Newbury Park, CA: Sage.

This kit, prepared by the Center for the Study of Evaluation at the University of California, Los Angeles, contains nine books written to guide and assist evaluators in planning and executing evaluations, with emphasis on practical, field-tested, step-by-step procedures and with considerable attention to the management of each phase. The kit makes heavy use of charts, illustrations, and examples to clarify the material for novice evaluators. Volume 1, *Evaluator’s Handbook*, provides an overview of evaluation activities, describes the evaluation perspective that guides the kit, and discusses specific procedures for conducting formative and summative evaluations. The remaining eight volumes deal with specific topics:

- Volume 2: *How to Focus on Evaluation*
- Volume 3: *How to Design a Program Evaluation*
- Volume 4: *How to Use Quantitative Methods in Evaluation*
- Volume 5: *How to Assess Program Implementation*

- Volume 6: *How to Measure Attitudes*
- Volume 7: *How to Measure Performance and Use Tests*
- Volume 8: *How to Analyze Data*
- Volume 9: *How to Communicate Evaluation Findings*

Depending on their needs, evaluators will find every one of these volumes useful. Volume 7, *How to Measure Performance and Use Tests*, covers a topic for which we have not located another suitable text for inclusion in this bibliography.

The kit can be purchased as a unit or by ordering individual volumes.

Jaeger, R.M. (1990). *Statistics: A spectator sport*, 2nd Ed. Newbury Park, CA: Sage.

This book takes the reader to the point of understanding advanced statistics without introducing complex formulas or equations. It covers most of the statistical concepts and techniques that evaluators commonly use in the design and analysis of evaluation studies, and most of the examples and illustrations are from actual studies performed in the field of education. The topics included range from descriptive statistics, including measures of central tendency and fundamentals of measurement, to inferential statistics and advanced analytic methods.

The Joint Committee on Standards for Educational Evaluation. (1994). *How to assess evaluations of educational programs*, 2nd Ed. Thousand Oaks, CA: Sage.

This new edition of the widely accepted Standards for Educational Evaluation is endorsed by professional associations. The volume defines 30 standards for program evaluation, with examples of their application, and incorporates standards for quantitative as well as qualitative evaluation methods. The standards are categorized into four groups: utility, feasibility, propriety, and accuracy. The standards are intended to assist legislators, funding agencies, educational administrators, and evaluators. They are not a substitute for texts in technical areas, such as research design or data collection and analysis. Instead, they provide a framework and guidelines for the practice of responsible and high-quality evaluations. For readers of this handbook, the section on Accuracy Standards, which includes discussions of quantitative and qualitative analysis, justified conclusions, and impartial reporting, is especially useful.

Krueger, R.A. (1988). *Focus groups: A practical guide for applied research*. Newbury Park, CA: Sage.

Krueger is well known as an expert on focus groups; the bulk of his experience and the examples cited in his book are derived from market research. This is a useful book for the inexperienced evaluator who needs step-by-step advice on selecting focus group participants, conducting focus groups, and analyzing and reporting results. The author writes clearly and avoids social science jargon, while discussing the complex problems that focus group leaders need to be aware of.

Marshall, C., and Rossman, G.B. (1995). *Designing qualitative research*, 2nd Ed. Thousand Oaks, CA: Sage.

This small book (178 pages) does not deal specifically with the performance of evaluations; it is primarily written for graduate students to provide a practical guide for the writing of research proposals based on qualitative methods. However, most of the material presented is relevant and appropriate for project evaluation. In succinct and clear language, the book discusses the main ingredients of a sound research project: framing evaluation questions; designing the research; data collection methods; and strategies, data management, and analysis. The chapter on data collection methods is comprehensive and includes some of the less widely used techniques (such as films and videos, unobtrusive measures, and projective techniques) that may be of interest for the evaluation of some projects. There are also useful tables (e.g., identifying the strengths and weaknesses of various methods for specific purposes; managing time and resources), as well as a series of vignettes throughout the text illustrating specific strategies used by qualitative researchers.

Miles, M.B., and Huberman, A.M. (1994). *Qualitative data analysis - An expanded sourcebook*, 2nd Ed. Thousand Oaks, CA: Sage.

Although this book is not specifically oriented to evaluation research, it is an excellent tool for evaluators because, in the authors' words, "this is a book for practicing researchers in all fields whose work involves the struggle with actual qualitative data analysis issues." It has the further advantage that many examples are drawn from the field of education. Because analysis cannot be separated from research design issues, the book takes the reader through the sequence of steps that lay the groundwork for sound analysis, including a detailed discussion of focusing and bounding the collection of data, as well as management issues bearing on analysis. The subsequent discussion of analysis methods is very systematic, relying heavily on data displays, matrices, and examples to arrive at meaningful descriptions, explanations, and the drawing and verifying of conclusions. An appendix covers choice of software for qualitative data analysis. Readers will find this a very comprehensive and useful resource for the performance of qualitative data reduction and analysis.

Patton, M.Q. (1990). *Qualitative evaluation and research methods*, 2nd Ed. Newbury Park, CA: Sage.

This is a well-written book with many practical suggestions, examples, and illustrations. The first part covers, in jargon-free language, the conceptual and theoretical issues in the use of qualitative methods; for practitioners the second and third parts, dealing with design, data collection, analysis, and interpretation, are especially useful. Patton consistently emphasizes a pragmatic approach: He stresses the need for flexibility, common sense, and the choice of methods best suited to produce the needed information. The last two chapters, "Analysis, Interpretation and Reporting" and "Enhancing the Quality and Credibility of Qualitative Analysis," are especially useful for principal investigators and project directors of federally funded research. They stress the need for utilization-focused evaluation and the evaluator's responsibility for providing data and interpretations, which specific audiences will find credible and persuasive.

Scriven, M. (1991). *Evaluation thesaurus*, 4th Ed. Newbury Park, CA: Sage.

A highly original, wide-ranging collection of ideas, concepts, positions, and techniques that reflects the critical, incisive, and often unconventional views held by this leader in the field of evaluation. It contains a 40-page introductory essay on the nature of evaluation and nearly 1,000 entries that range from one-paragraph definitions of technical terms and acronyms to philosophical and methodological discussions extending over many pages. The thesaurus is not focused on the field of education, but it provides excellent coverage of issues and concepts of interest to educational evaluators.

U.S. General Accounting Office. (1990). *Case study evaluations*. Transfer Paper 10.1.9. Program Evaluation and Methodology Division. Washington, DC: GAO.

This paper presents an evaluation perspective on case studies, defines them, and determines their appropriateness in terms of the type of evaluation question posed. Unlike the traditional, academic definition of the case study, which calls for long-term participation by the evaluator or researcher in the site to be studied, the GAO sees a wide range of shorter term applications for case study methods in evaluation. These include their use in conjunction with other methods for illustrative and exploratory purposes, as well as for the assessment of program implementation and program effects. Appendix 1 includes a very useful discussion dealing with the adaptation of the case study method for evaluation and the modifications and compromises that evaluators—unlike researchers who adopt traditional field work methods—are required to make.

Weiss, R.S. (1994). *Learning from strangers - The art and method of qualitative interview studies*. New York: The Free Press.

After explaining the different functions of quantitative and qualitative interviews in the conduct of social science research studies, the author discusses in considerable detail the various steps of the qualitative interview process. Based largely on his own extensive experience in planning and carrying out studies based on qualitative interviews, he discusses respondent selection and recruitment, preparing for the interview (which includes such topics as pros and cons of taping, the use of interview guides, interview length, etc.), the interviewing relationship, issues in interviewing (including confidentiality and validity of the information provided by respondents), data analysis, and report writing. There are lengthy excerpts from actual interviews that illustrate the topics under discussion. This is a clearly written, very useful guide, especially for newcomers to this data collection method.

Yin, R.K. (1989). *Case study research: Design and method*. Newbury Park, CA: Sage.

The author's background in experimental psychology may explain the emphasis in this book on the use of rigorous methods in the conduct and analysis of case studies, thus minimizing what many believe is a spurious distinction between quantitative and qualitative studies. While arguing eloquently that case studies are an important tool when an investigator (or evaluator) has little control over events and when the focus is on a contemporary phenomenon within some real-life context, the author insists that case studies be designed and analyzed so as to provide generalizable findings. Although the focus is on design and analysis, data collection and report writing are also covered.

THE PLAINS AND MOUNTAIN RURAL HEALTH PROJECT: EXAMPLE

Baseline Project Description

The Plains and Mountain Rural Health Project was designed to overcome the barriers associated with the remote locations of the region's clinics and hospitals by using "virtual patient records" to electronically link 17 rural clinics and 2 hospitals in the Northwest. The record-sharing system builds on a prototype telemedicine system that was developed by staff at a national laboratory. The system enables physicians to transmit patient information over a World Wide Web interface using Internet gateways or telephone lines. A physician in a remote clinic could use the system to connect to a larger hospital to determine (1) whether a patient had been treated for a given problem, (2) what treatments had been recommended by other medical providers, and (3) the types of medications that had been prescribed for the patient. Unlike paper-based systems, the virtual patient record is designed to enable multiple health care providers to update each record as needed from remote locations.

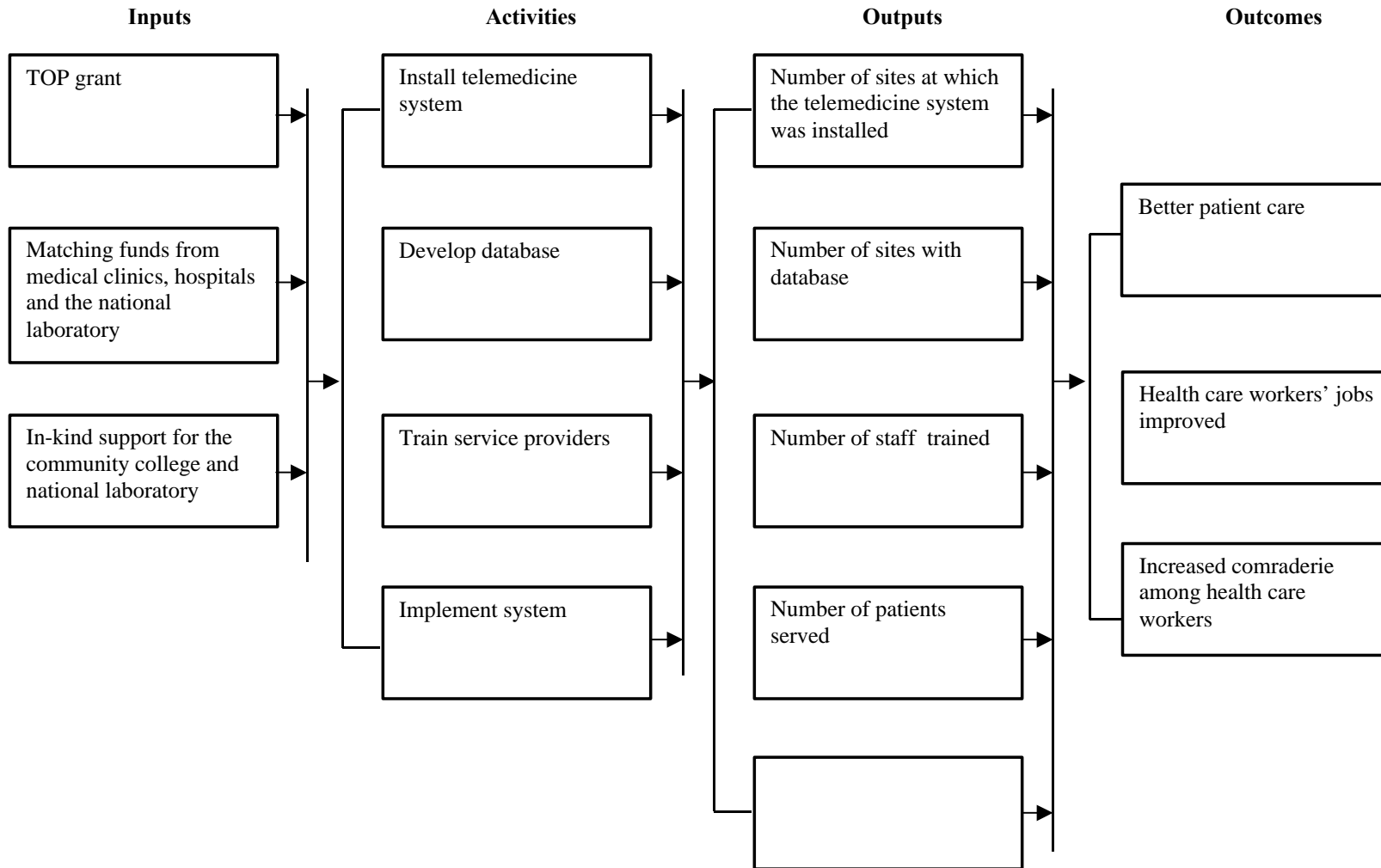
The goal of the project was to provide better and more time-efficient medical services to patients in isolated rural regions. It was also hoped that the sharing of information would help increase the feeling of comraderie among medical care providers in this isolated region. Three measurable objectives for patients were described in the proposal: decreasing the number of instances in which patients arrive without referral information; decreasing the number of records that were lost; and decreasing the number of patients with multiple and conflicting medical records. A second set of objectives was developed for the health care providers: reducing the time spent in developing or seeking patients' records; providing a system for more efficiently entering and updating records; decreasing turnover among medical providers; and increasing the number of patients reached in a given timeframe.

Funding for the project was provided by TOP with matching funds from local health care organizations and in-kind support from a research laboratory. The grantee was the local community college. In addition, the national laboratory that had developed the prototype system provided technical assistance in setting up the system and evaluating its effectiveness. At first, the project concentrated on setting up a system to exchange immunization records for children and adults.

A set of worksheets, A through J, has been completed to illustrate the evaluation design for this study.

Worksheet A. Describe Project

A Logic Model



Worksheet B. Define Outcomes in Measurable Terms

1. Briefly describe your outcome.
Better patient care
2. State the above in terms of an outcome indicator.
Fewer lost records, duplicate records, inconsistent records
3. Set an outcome standard.
Decrease the number of problem records to 25 percent.
4. If this target could only be expected to be met after several years, state interim annual targets.
Ten percent reduction at the end of year 2 of the project
5. Is there another outcome indicator that you might use? If so, define it.
6. Set an outcome target for the second indicator.
7. If this target could only be expected to be met after several years, state interim annual targets.

REPEAT FOR EACH OUTCOME YOU HAVE IDENTIFIED.

Worksheet B. Define Outcomes in Measurable Terms

1. Briefly describe your outcome.

Health care workers' jobs improved

2. State the above in terms of an outcome indicator.

Staff turnover

3. Set an outcome standard.

Decrease the number who leave their positions because of job dissatisfaction

4. If this target could only be expected to be met after several years, state interim annual targets.

Forty percent reduction by end of year 2 of the project

5. Is there another outcome indicator that you might use? If so, define it.

7. Set an outcome target for the second indicator.

7. If this target could only be expected to be met after several years, state interim annual targets.

REPEAT FOR EACH OUTCOME YOU HAVE IDENTIFIED.

Worksheet B. Define Outcomes in Measurable Terms

1. Briefly describe your outcome.
Increased camaraderie
2. State the above in terms of an outcome indicator.
Job satisfaction
3. Set an outcome standard.
Maintain level despite changes occurring
4. If this target could only be expected to be met after several years, state interim annual targets.
5. Is there another outcome indicator that you might use? If so, define it.
8. Set an outcome target for the second indicator.
7. If this target could only be expected to be met after several years, state interim annual targets.

REPEAT FOR EACH OUTCOME YOU HAVE IDENTIFIED.

Worksheet C. Identify Key Stakeholders and Their Interests

Stakeholder	Values, interests, expectations, etc. that evaluation should address
TOP program managers and administrators	Can health care in rural areas be improved by use of telemedicine? Who benefits? What is the extent of this benefit? What are lessons learned from the project?
Patients	Does the system make it easier to get health care? Does the system result in less travel distance? Less time waiting? Fewer mistakes? Better diagnosis and treatment?
Relatives of patients	Does the system make provision of health care more timely and effective? Does it reduce time spent on travel? Followups?
Employers	Is there a reduction in absenteeism due to time spent seeking medical care? What is the impact on insurance premiums and the cost to my company of providing various types of medical insurance?
Health care workers	What does the system mean for health care workers' jobs and job duties? Is the system easy to learn and use? What is the impact on existing procedures? Will there be security concerns? What will be the impact on information required by insurance providers, districts, etc.?
Community college	What does the system mean for the services delivered by community colleges? Is there a niche in continuing education that can be filled? Are there implications for the design of preservice programs? How much time does it take to train workers to effectively use the system?
National laboratory personnel	How well does this system work in different geographic and work environments? Are there different types of effects in different medical settings? Different types of medical personnel?
Nonparticipating clinics and hospitals	How effective is the system? Is it worth the trouble to try it at my institution? What is the jeopardy, if any, of maintaining the traditional approach?
Other funders	If the project is effective with regard to immunization records, what can it mean for other types of records? How effective is the system with different kinds of patients? Is there a model here that could be generalized to other parts of the health care industry? What is the relative cost/efficiency of the approach?

Worksheet D. Potential Evaluation Questions

Stakeholder group(s)	Questions	
	Output	Outcome
All	Has the telemedicine software been installed? How long did it take? How much did it cost?	
All	Has a database been developed? At how many sites? How long did it take? What barriers were encountered?	
Primary for community college; secondary for others	Was a training system developed? How many health care workers attended the training? How long did it take them to learn to use the equipment?	
All		What is the impact of the new system on the accuracy and speed of record retrieval? Updating?
Health care workers, community college personnel		Is there a reduction in staff turnover among health care workers?
Patients, relatives of patients, health care workers		Do patients receive service in a more timely manner? Is there a difference by type of patient?
Employers, patients		Do patients have less absenteeism from work? Are they more able to return to their normal routines?
Patients, TOP		How satisfied are patients with their health care?
Patients, health care workers, TOP		Is the health status of patients improved in terms of recovery time, lack of recidivism, etc.?
Health care workers		How satisfied are health care workers with their jobs and job duties?
TOP, staff from national laboratory		What special problems occur in setting up the telemedicine system in a rural county?

Worksheet E. Prioritize and Eliminate Questions

Take each question from D and apply criteria below.

Question	Which stakeholder(s)? (specify groups)	Importance to stakeholders (high, medium, low)	New data collection? (yes or no)	Resources required (low, moderate, high)	Timeframe (short-, medium-, or long-term)	Priority (high, medium, low, or eliminate)
Has the telemedicine software been installed? How long did it take? How much did it cost?	All	High	Yes	Low	Short term	H <u>M</u> L E
Has a database been developed? At how many sites? How long did it take? What barriers were encountered?	All	High	Yes	Low	Short term	H <u>M</u> L E

Worksheet E. Prioritize and Eliminate Questions (continued)

Question	Which stakeholder(s)? (specify groups)	Importance to stakeholders (high, medium, low)	New data collection? (yes or no)	Resources required (low, moderate, high)	Timeframe (short-, medium-, or long-term)	Priority (high, medium, low, or eliminate)
Was a training system developed? How many health care workers attended the training? How long did it take them to learn to use the equipment?	All	High for community college; medium for others	Yes	Low	Short term	H M <u>L</u> E
What is the impact of the new system on the accuracy and speed of record retrieval? Updating?	All	High	Yes	Moderate	Medium term	<u>H</u> M L E
Is there a reduction in staff turnover among health care workers?	Health care workers; community college personnel	High for health care workers; medium for community college personnel	Yes	Moderate	Medium term	H <u>M</u> L E

Worksheet E. Prioritize and Eliminate Questions (continued)

Question	Which stakeholder(s)? (specify groups)	Importance to stakeholders (high, medium, low)	New data collection? (yes or no)	Resources required (low, moderate, high)	Timeframe (short-, medium-, or long-term)	Priority (high, medium, low, or eliminate)
Do patients receive service in a more timely manner? Is there a difference by type of patient?	All	High for patients and relatives of patients; medium for others	Yes	High	Medium term	H M L <u>E</u>
Do patients have less absenteeism from work? Are they more able to return to their normal routines?	All	High for employers; medium for others	Yes	High	Long term	H M L <u>E</u>
Is the health status of patients improved in terms of recovery time, lack of recidivism, etc.?	All	High	Yes	High	Long term	H M L <u>E</u>
How satisfied are health care workers with the jobs and job duties?	All	High for health care workers; medium for others	Yes	Moderate	Medium term	H <u>M</u> L E

Worksheet E. Prioritize and Eliminate Questions (continued)

Question	Which stakeholder(s)? (specify groups)	Importance to stakeholders (high, medium, low)	New data collection? (yes or no)	Resources required (low, moderate, high)	Timeframe (short-, medium-, or long-term)	Priority (high, medium, low, or eliminate)
What special problems occur in setting up the telemedicine system in a rural county?	All	High	Yes	High	Long term	H M L <u>E</u>

Worksheet F. Determine Data Collection Techniques

Evaluation question	Specify how data on questions can be obtained		
	Existing data source that can be easily accessed by evaluator/grant recipient <i>(specify below)</i>	New data collection planned <i>(specify below)</i>	Comments
Has the telemedicine software been installed? How long did it take? How much did it cost?		Record form	This will be modified as needed as problems arise.
Has a database been developed? At how many sites? How long did it take? What barriers were encountered?		Record form	This will be a running record of issues as they arise.
Was a training system developed? How many health care workers attended the training? How long did it take them to learn to use the equipment?		Record form	The form will also include a brief description of the purpose of each session, target participants, and other descriptive information.
		Feedback form	This form will include some descriptive information on the attendees and their place of work.

Worksheet F. Determine Data Collection Techniques (continued)

Evaluation question	Specify how data on questions can be obtained		
	Existing data source that can be easily accessed by evaluator/grant recipient <i>(specify below)</i>	New data collection planned <i>(specify below)</i>	Comments
What is the impact of the new system on the accuracy and speed of record retrieval? Updating?	Patient records	Informal conversations with staff	
Is there a reduction in staff turnover among health care workers?	Personnel records	Survey/interview	
How satisfied are health care workers with the jobs and job duties?		Survey	
		Focus groups	

Worksheet G. Select Groups

Evaluation question	Data collection technique	Respondent group <i>(specify respondents; sampling strategies)</i>	Comparison group <i>(specify respondents; sampling strategies)</i>	Comments
What is the impact of the new system on the accuracy and speed of record retrieval? Updating?	Record review	50 percent sample of all patients	Same; within- subject comparison	
Is there a reduction in staff turnover among health care workers?	Record review survey/interview	Health care workers who resign during project period		
How satisfied are health care workers with the jobs and job duties?	Survey	Health care workers		
	Focus group	Sample of health care workers at participating clinics and hospitals	Sample of health care workers at nonparticipating clinics and hospitals	May be a problem to get cooperation of comparison group

Worksheet H. Develop a Design Matrix

Evaluation question	Who	How	When
Has the telemedicine software been installed? How long did it take? How much did it cost?	Laboratory staff; health care workers	Record forms; informal conversations	Monthly
Has a database been developed? At how many sites? How long did it take? What barriers were encountered?	Health care workers	Record forms; informal conversations	Monthly
Was a training system developed? How many health care workers attended the training? How long did it take them to learn to use the equipment?	Community college staff; health care workers	Record form; feedback form	Monthly, after training sessions
What is the impact of the new system on the accuracy and speed of record retrieval? Updating?	Clinic and hospital records	Document review; informal conversations	Periodically, 2 weeks each October, January, and July
Is there a reduction in staff turnover among health care workers?	Health care workers	Personnel records; survey	As they occur
How satisfied are health care workers with the jobs and job duties?	Health care workers	Survey Focus groups	End of grant Annual

Worksheet I. Develop Data Collection and Analysis Matrix

Evaluation question	Collection procedure	Analysis procedure	Comments
Has the telemedicine software been installed? How long did it take? How much did it cost?	Record forms; informal conversations	Count of completed installations; summary of barriers and comments	
Has a database been developed? At how many sites? How long did it take? What barriers were encountered?	Record forms; informal conversations	Descriptive	
Was a training system developed? How many health care workers attended the training? How long did it take them to learn to use the equipment?	Record form; feedback form	Counts; summary of comments	
What is the impact of the new system on the accuracy and speed of record retrieval? Updating?	Document review; informal conversations	T-test; comparison to established target	
Is there a reduction in staff turnover among health care workers?	Personnel records; survey	Count; descriptive summary of data collected via survey	
How satisfied are health care workers with the jobs and job duties?	Survey Focus groups	Counts of responses by category compared to baseline Qualitative analyses using Nu*Dist software	Need to test out efficacy of using Nu*Dist

Worksheet J. Provide Information to Interested Audiences

List evaluation audiences	Describe focus of reports	Identify format to be used	List date of report or frequency	Identify event associated with report (if relevant)
TOP	Progress against goals and benchmarks; changes in organization	PRS	Start-up, quarterly, close-out	Established TOP reporting dates
Management team	Update on progress; issues to address	Staff memo	Monthly	
Partners report	Update on progress; issues of concern	Newsletter	Quarterly	
Report for medical providers	Summary advantages and disadvantages for health care providers and institutions; technical details about how system works and what the issues are from the medical health care perspective	Technical report	Once	End of grant period

Worksheet J. Provide Information to Interested Audiences (continued)

List evaluation audiences	Describe focus of reports	Identify format to be used	List date of report or frequency	Identify event associated with report (if relevant)
Report for funders	Summary of impacts; persuasive document to attract more support	Brochure and fact sheet	Once	End of grant period
Technical report for scientific audience	Report on project implementation and impact; technical details for other laboratory personnel who might be interested in adoption	Technical document; article appropriate for a scholarly journal	Once	End of grant period