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Creating Progam Logic Models: A Toolkit for State Flex Programs

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Creating Program Logic Models: A Toolkit for State Flex Programs

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The Medicare Rural Hospital Flexibility Program

The Medicare Rural Hospital Flexibility Program (Flex Program), created by Congress in 1997, allows small hospitals to be licensed as Critical Access Hospitals (CAHs) and offers grants to States to help implement initiatives to strengthen the rural health care infrastructure. To participate in the Flex Grant Program, States are required to develop a rural health care plan that provides for the creation of one or more rural health networks; promotes regionalization of rural health services in the State; and improves the quality of and access to hospital and other health services for rural residents of the State. Consistent with their rural health care plans, states may designate eligible rural hospitals as CAHs.

CAHs must be located in a rural area (or an area treated as rural); be more than 35 miles (or 15 miles in areas with mountainous terrain or only secondary roads available) from another hospital or be certified before January 1, 2006 by the State as being a necessary provider of health care services. CAHs are required to make available 24-hour emergency care services that a State determines are necessary. CAHs may have a maximum of 25 acute care and swing beds, and must maintain an annual average length of stay of 96 hours or less for their acute care patients. CAHs are reimbursed by Medicare on a cost basis (i.e., for the reasonable costs of providing inpatient, outpatient and swing bed services).

The legislative authority for the Flex Program and cost-based reimbursement for CAHs are described in the Social Security Act, Title XVIII, Sections 1814 and 1820, available at http://www.ssa.gov/OP_Home/ssact/title18/1800.htm.

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INTRODUCTION

The Flex Monitoring Team has developed this logic modeling Toolkit for use by state Medicare Rural Hospital Flexibility Programs (Flex Programs) in planning for and managing their Flex programs. The Toolkit also provides a framework for assessing and communicating state-level Flex Program performance.

The Flex Program is a complex program involving multiple stakeholders and a broad range of activities and interventions. The states have important policy development and program implementation responsibilities for the Flex Program including: 1) developing state rural health plans to guide policy development and implementation activities; 2) developing and applying state-specific criteria for designating Critical Access Hospitals (CAHs); 3) administering federal grant funds to support implementation at the state, hospital, and community level and fund initiatives to strengthen the rural health infrastructure; 4) providing assistance to hospitals considering CAH conversion; 5) conducting pre- and post-conversion surveys of hospitals that have applied for CAH status; and 6) evaluating their state Flex Programs.

State Flex Programs have undertaken two major sets of initiatives. The first involves the conversion of eligible rural hospitals to CAH status and the provision of technical assistance and support to hospitals eligible for CAH conversion. The second involves a series longer term initiatives to stabilize and support CAHs by targeting technical assistance, funding, and program development to areas such as strategic planning and quality improvement as well as on more difficult issues such as lasting structural improvement to rural EMS systems and addressing the capital needs of rural hospitals. These initiatives have received even greater emphasis with the evolution and maturation of the Flex program and the reduction in the pace of hospital conversions during the 2004 and 2005 state Flex grant cycles.

With the maturation of Flex program activities, it is critical that states allocate the relatively modest resources of the state Flex grants to activities that are most responsive to the needs of rural hospitals and communities and have the greatest chance of producing results. States are operating their Flex Programs within the context of very complex environments with multiple stakeholders and initiatives targeting rural hospitals. This creates a challenge for the states in planning, implementing, managing, evaluating, and communicating the performance of their Flex Programs.

To address these challenges, the Flex Monitoring Team has developed a strategic planning, management, and reporting framework and related tools to assist states in mapping the relationships among the resources available to operate their programs, program activities, program accomplishments, and program outcomes. This framework is based on the Program Logic Model (PLM), a tool that is increasingly being used for program planning and evaluation. Our goal has been to design a PLM framework and tools that foster an internally consistent program planning, management, monitoring, and reporting framework at the state level. The framework and tools are designed to facilitate the assessment of Flex Program goal achievement by defining and tracking program strategies, activities, and accomplishments within each of the major goals of the Program.

The use of a PLM framework will provide states with:

1) A tool for planning, managing, reporting on, and assessing their Flex Program goals, activities, and accomplishments;
2) Assistance in identifying and defining measurable outcomes for their Flex Programs (that are linked to specific program strategies and activities);
3) Information linking state-level Flex Program strategies to specific and measurable outcomes described above; and
4) A consistent program reporting framework to convey their results to both internal and external stakeholders (including ORHP) and, as appropriate, the Flex Monitoring Team.

PLMs are only one of many available strategic planning, program management, and evaluation tools available to states. As such, it is not our goal to replace planning and management processes that states may already be using. Rather, we offer this Toolkit as one potential strategic planning and management tool to state Flex Programs if it meets their needs. Regardless of the type of tool used by the states, we believe the ability of states to document their program strategies and activities and to link these with short and longer-term improvements in the performance of the hospitals, the stability of the rural health infrastructure, and the health of rural communities will be critical to maintaining support for the Flex Program.

The Audience for the PLM Toolkit

The PLM Toolkit was developed for state Flex Program staff and stakeholders who are involved in program development, implementation, and evaluation. It has the goal of being a useful and user-friendly resource framed around pertinent questions that might be asked by those involved with the Flex Program. Because the issues and related planning, management, and evaluation needs faced by each state Flex Program are unique, we provide checklists and open-ended worksheets primarily as ways to get started. We do not believe that "one tool fits all." We expect that you will select and modify items to fit your own needs. The value of this Toolkit will be measured by its usefulness to you and your colleagues involved in the Flex Program.

We recognize that users of this Toolkit will have varying degrees and types of program management and evaluation experience. The Toolkit is intended to serve as an introduction to the use of PLMs specifically in the Flex Program setting. We provide a resources section at the end of the document which includes additional, more sophisticated sources of information for those who have prior experience with the use of PLMs. It is our hope that this Toolkit will be able to "grow" with your program as you gain experience with its use.

How to Use This Toolkit

This Toolkit was developed to guide you through the development and application of a PLM by presenting key aspects of the entire process. It is important to note that many sections are interrelated and need to be understood in the context of the whole. As such, we do not advise taking individual sections out of context but recommend that you review the Toolkit from start to finish and then select those sections or items that fulfill your program needs.

The Toolkit is organized as follows:

Part 1 "Logic Models: The Basics" provides an overview of PLMs, the component parts, and the application of the PLM framework to the planning, implementation, and evaluation of the Flex Program. It also describes the benefits that can be gained from the use of PLMs, compares the PLM process to other common management tools and discusses how PLMs can be integrated with existing strategic planning initiatives.

Part 2, "Developing a Program Logic Model for Your State Flex Program" provides a step by step approach to developing a PLM including:

- o Stage 1: "Preparing for the Program Logic Modeling Process" sets the stage for undertaking the developing of a Flex PLM including the establishment a planning structure, identification of key participants, clarification of the roles and responsibilities of the participants, and preparation for the PLM process.
- o Stage 2: The "Planning Process" provides a process to identify: 1) what a program is designed to accomplish (e.g., defining the problem the program is designed to address and establishing preliminary goals and objectives based on that problem definition), 2) the underlying program theories of change (e.g., how the program will accomplish the desired outcomes); and 3) short, intermediate, and long term outcomes and objectives to gauge progress towards achieving desired goals.
- o Stage 3: "Implementation" covers the process for finalizing the PLM and using it as part of your program's ongoing implementation and management process.
- o Stage 4: "Review and Revision" discusses the PLM as dynamic representation of a program and the need to review and revise it as part of the ongoing strategic management of your Flex Program.

Appendix A, "PLM Worksheets" provides blank worksheets to use in constructing a Flex Program logic model.

Appendix B, "A Quality Improvement Example" provides a sample PLM focusing on a Flex Program quality improvement initiative.

Appendix C, "Program Logic Modeling Resources and References" lists a number of resources that provide additional information on the uses and applications of the PLM including web sites, articles, and books.

We Value Your Feedback on This Toolkit

Please let us know how this kit and Program Logic Models work for you. You can send us your feedback via e-mail or by mail to the address listed below. Specifically we are interested in the aspects of the kit you find most useful, those that may seem unimportant, and your suggestions for changes/revisions. Additional copies of this Toolkit are available on our website at www.flexmonitoring.org.

If you have any questions or comments, please contact:

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PART 1

PROGRAM LOGIC MODELS: THE BASICS

What are Program Logic Models?

Program logic models (PLMs) graphically illustrate a program's planned work and how that planned work leads to the program's intended results or outcomes. PLMs create a roadmap for understanding how program resources are used to implement key strategies and activities and how their implementation contributes to expected short and longer-term outcomes (W.K. Kellogg Foundation, 2001). PLMs can represent single projects or whole programs and may take on basic or complex forms. However, all PLMs utilize a series of if-then statements to illustrate how program activities will affect change (Taylor-Powell, Jones, & Henert, 2001).

Example:

> **IF** a state Flex Program holds an educational workshop with the state quality improvement organization (QIO) and Critical Access Hospitals (CAHs), **THEN** CAHs will have greater knowledge of statewide initiatives in quality improvement and the state QIO will learn about the unique challenges that small rural hospitals face in quality improvement.

> **IF** CAHs and state QIOs gain this knowledge, **THEN** CAHs will participate in statewide quality improvement initiatives and the state QIO will develop quality improvement initiatives specifically targeted to small rural hospitals.

> **IF** CAHs participate in statewide initiatives and the state QIO develop initiatives targeted to small rural hospitals, **THEN** quality in CAHs will improve.

Core Components of the PLM

As illustrated in Figure 1, the core components of a PLM include: (A**)** a **Problem** statement describing the problem the program is designed to address; (B) a list of the **Resources** devoted to the program; (C) a description of the **Program Strategies** to which those resources are applied and the (D) **Activities** associated with those strategies; and the expected (E) **Outputs,** (F) **Short and Intermediate Outcomes,** and (G) **Long-term Outcomes/Impacts** resulting from the implementation of those strategies and activities. Additionally, the PLM includes a discussion of the **Assumptions** (otherwise known as the theory of change) through which the program's strategies and activities are tied to expected outputs and outcomes and a specification of factors in the **Environment** external to the program that are likely to affect both the program's planned work and its results. The following narrative explains each of these components in greater detail:

A. Problem: The foundation of a PLM begins with a clear statement of the problem that the program or project intends to address. The problems that programs are usually designed to address are often imbedded in a context of specific economic, financial, social and/or other

circumstances. The problems being targeted by a program and its components should be clearly and succinctly identified. Any problem statement should include a description of:

What the problem is,
Why the problem exists, and
Who is affected by the problem.

Figure 1: Core Components of the Program Logic Model
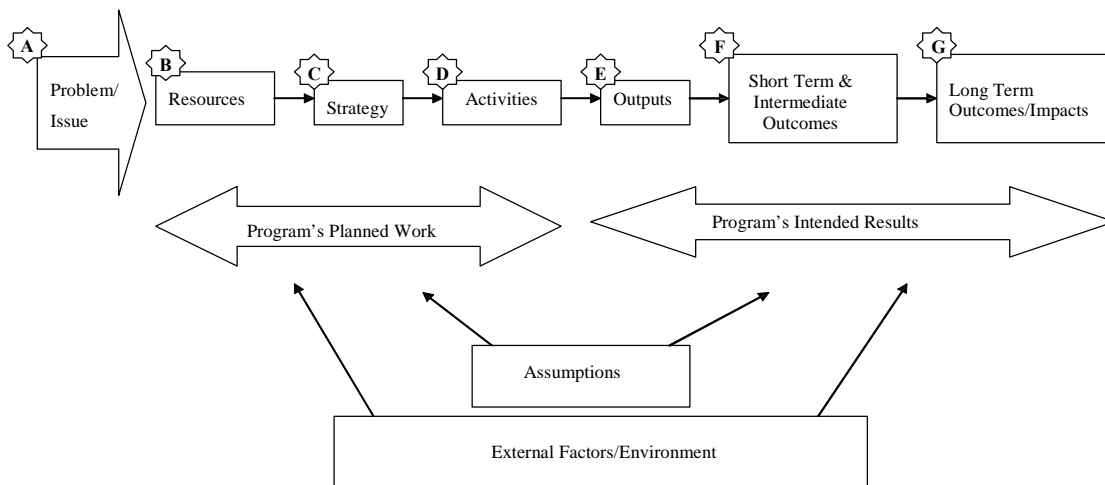
During the process of defining problems, baseline data should be collected to add clarity to the description and definition. Baseline data define the scope of the problem and help to identify appropriate measures that can be used to monitor and evaluate program performance in addressing the particular problem. Therefore, careful baseline data collection represents a key process in the development of the problem component. It pinpoints data sources that can be used to develop program indicators, informs the development of data collection and reporting strategies, and establishes a reference point from which to gauge progress (Taylor-Powell, Jones, & Henert, 2001).

Example of problem definition: Due to limited human, technological, and financial resources and other key characteristics of small rural hospitals (e.g. geographic isolation), Critical Access Hospitals are less equipped than other hospitals to develop quality improvement programs.

B. Resources: A broad range of financial, human, political, organizational, and community resources are usually available to a Flex program to undertake its work. These resources represent the nature and degree of the investment needed by the program to perform its expected activities and to obtain the desired outcomes (Taylor-Powell, Jones, & Henert, 2001).

Example of resources: To address quality improvement deficits, available resources include funding for quality improvement through the state Flex grant, state Flex grant staff, state Hospital Association programs and staff, system/partner hospital staff, QIO staff, and/or quality improvement consultants.

C. Strategies: Strategies are the approaches adopted by a program to address the problems identified through achievement of desired long-term outcomes. Given the defined problem, strategies tell us how the program's planned work will lead to the desired outcomes (W.K. Kellogg Foundation, 2001).

Example of a strategy: To address CAHs' inability to develop quality improvement programs within their hospitals (problem), the state Flex program will foster a relationship between CAH staff and the state Quality Improvement Organization (QIO, strategy) to improve the quality of care provided by CAHs (Long-term Outcome).

D. Activities: Program activities are the necessary steps needed to carry out the program's strategies in order to achieve the program's intended results. These activities may include processes, events, projects, or other actions (Taylor-Powell, Jones, & Henert, 2001).

Example of an activity: To foster a relationship between CAHs and the state QIO (strategy), our program will convene meetings and provide educational workshops on quality improvement involving CAH staff and the state QIO (Activities).

E. Outputs: Outputs are frequently confused with outcomes. Unlike outcomes, which are changes or benefits to the program's targeted participants; outputs result from the successful completion of program activities. They can also be thought of as the products created by result of program activities (Taylor-Powell, Jones, & Henert, 2001). Under the Flex Program, outputs might include the amount of technical assistance provided to CAHs, the number of scholarships provided to local EMS personnel, technical assistance manuals, etc.

Example of outputs: Over the next year, two meetings and three educational workshops will be held between CAH staff and the state QIO. All relevant CAH quality improvement staff will have participated in one or more of those meetings and workshops.

F. & G. Outcomes: Outcomes are the changes or benefits to individuals, groups, organizations, and communities that result from program outputs (e.g., improved health status through greater access to care, improved financial performance resulting from operational changes, and reduction in EMS related mortality rates through the development of effective transport and treatment protocols). Outcomes are time specific (short, intermediate, and long-term), can be positive, negative or neutral, and either intended or unintended.[2] Outcome statements may be written for each problem that the program intends to address. These statements should specify 1) who or what the program hopes to change, 2) what change is expected to occur, 3) when the

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[2] The time horizon for outcomes will vary depending on the nature and complexity of the strategies and activities and the planned changes in behavior and/or status.

change is expected to occur, and 4) what the expected results are (Taylor-Powell, Jones, & Henert, 2001).

a. **Short-term outcomes-** These outcomes are typically changes in participants' knowledge, attitudes, and/or skills. These changes can be expected to occur within one to two years (Taylor-Powell, Jones, & Henert, 2001).

> *Example of a short-term outcome: CAHs in the state will have greater knowledge of statewide initiatives in quality improvement. The state QIO will learn about the unique challenges that small rural hospitals face in quality improvement.*

b. **Intermediate outcomes-** These outcomes are typically changes in participants' behavior. These changes can be expected to occur within three to four years (Taylor-Powell, Jones, & Henert, 2001).

> *Example of an intermediate-term outcome: CAHs in the state will participate in statewide quality improvement initiatives. The state QIO will develop quality improvement initiatives specifically targeted to small rural hospitals.*

c. **Long-term outcomes/Impacts-** These outcomes or impacts are the ultimate or final changes that the program hopes to achieve and typically involve changes in participants' condition or status. These changes can be expected to occur in five or more years (Taylor-Powell, Jones, & Henert, 2001).

> *Example of a long term outcome: CAHs will demonstrate improved overall quality of care in the areas of medication safety, falls prevention, reduction in medical errors, and patient outcomes.*

Other Key Components

Assumptions- Assumptions represent underlying beliefs or ideas about why the specific strategies and activities implemented by the program will lead to the desired outcomes (Taylor-Powell, Jones, & Henert, 2001). As with problem/issue statements, clearly defining and understanding the assumptions associated with the program's strategies and activities are fundamental to the logic modeling process. Although frequently overlooked, assumptions have a significant impact on program outcomes. If strategies and activities are developed based on false or inaccurate assumptions, the program strategies and activities may result in poor, unintended, or negative outcomes (Taylor-Powell, Jones, & Henert, 2001).

Examples of assumptions:

> 1) *CAHs highly value improving the quality of care provided by their hospitals, and so will be willing to work with the state QIO to develop new initiatives, and will create the staff time and resources needed to work with the state QIO to develop new initiatives.*

> 2) *The state QIO is interested in working with CAHs and allocating the time and resources needed to work with CAHs to develop new initiatives.*

3) *The state QIO has the capacity to tailor quality information to meet the needs of small rural hospitals.*

Environmental Factors- Environmental factors represent the larger social, economic, political and market-related context in which the program exists (Taylor-Powell, Jones, & Henert, 2001). As shown in Figure 1 (on page 2), these factors influence the strategies and activities as well as the ability of the program to achieve its desired outcomes. External or environmental factors include, but are not limited to, community conditions, politics, and other programs. Often evolving over time, these factors may force program staff to revise their strategies, assumptions and related outcomes.

> *Example of environmental factors: Turnover in quality improvement staff at CAHs makes it difficult to develop a strong relationship between the state QIO and CAH staff.*

Indicators and Measures- Indicators and measures are quantitative or qualitative information used to assess the program's progress toward achieving the desired outcomes. These indicators and measures should be developed based on the time line of the specific outcomes (e.g., short-term, intermediate, or long term) (Hatry, et al., 1996).

> *Example of an indicator or measure: The number and percentage of all CAHs in the state that participate in statewide quality initiatives (the intermediate outcome described above).*

Benefits of Using A PLM Framework

As mentioned in the Introduction, state Flex Programs are subject to increasing pressure to identify and document the outcomes of their activities. Although the process can be time consuming, the development of a Flex PLM provides them with a tool to do so. According to Milstein and Chapel (2003) and Renger and Titcomb (2002), PLMs provide a number of additional benefits. Specifically, PLMs:

> Integrate planning, implementation, and evaluation;
> Prevent mismatches between activities and effects;
> Leverage the power of partnerships by encouraging participants to "make changes based on consensus-building and a logical process rather than on personalities, politics, or ideology";
> Enhance accountability by keeping stakeholders focused on outcomes;
> Avoid activity traps in which the focus is the activities themselves rather than the desired outcomes (e.g., doing things right rather than doing the right things);
> Help planners to set priorities for allocating resources;
> Reveal data needs and provide a framework for interpreting results;
> Enhance learning by integrating research findings and practice wisdom; and
> Define a shared language and shared vision for community change.

Although typically thought of as an evaluation tool, PLMs can be used throughout a program's life cycle to plan, describe, manage, enhance, and revise program activities. Milstein and Chapel (2003) described the following ways in which a PLM could be used throughout the course of a program:

During planning to:

> clarify program strategy
> identify appropriate outcome targets (and avoid over promising)
> align the program's efforts with those of other organizations
> write a grant proposal or a request for proposals
> assess the potential effectiveness of an approach
> set priorities for allocating resources
> estimate timelines
> identify necessary partnerships
> negotiate roles and responsibilities
> focus discussions and make planning time more efficient

During implementation to:

> provide an inventory of what you have and what you need to operate the program or initiative
> develop a management plan
> incorporate findings from research and demonstration projects
> make mid-course adjustments
> reduce or avoid unintended effects

During staff and stakeholder orientation to:

> explain how the overall program works
> show how different people can work together
> define what each person is expected to do
> indicate how one would know if the program is working

During evaluation to:

> document accomplishments
> organize evidence about the program
> identify differences between the ideal program and its real operation
> determine which concepts will (and will not) be measured
> frame questions about attribution (of cause and effect) and contribution (of initiative components to the outcomes)
> specify the nature of questions being asked
> prepare reports and other media
> tell the story of the program or initiative

During advocacy to:

> justify why the program will work
> explain how resource investments will be used

Given the variety of organizations and contexts in which PLMs are used and the different purposes for which they may be developed, there are no hard and fast rules as to how a PLM should be created. Although there is a core process to creating a logic model along with key steps that should be undertaken, the process does not necessarily have to be followed in a strict step-by-step, sequential fashion. Instead the process can be started at various points in the logic model chain depending on the stage of program development and the purpose to which the PLM will be used. Logic modeling is best viewed as an iterative process whose structure and substance is driven by the needs of the program and/or agency. Once the key concepts are grasped, the process can be modified and adapted as the user sees fit.

Integrating Logic Models with Other Strategic Planning and Balanced Scorecard Frameworks

PLMs are one of a number of strategic planning, evaluation, and performance improvement tools available to state Flex Programs. PLMs do not necessarily supplant these other tools but, rather, can compliment and support existing planning, management, and performance improvement systems. Within the context of state Flex Programs, strategic planning and the balanced scorecard are two of the more commonly discussed management tools. As will be described in the following sections, PLMs fit nicely within the framework of either tool and can serve to enhance and extend their use.

Logic Models and Strategic Planning

Within the professional and academic literature, strategic planning is most often described within the context of organizational level planning while PLMs are associated with program level planning and management. In reality, PLMs are tools that can be integrated into an organization's strategic planning process.

At its core, the purpose of strategic planning is to assist an organization to do a better job by focusing its resources (human, financial, and physical) towards the attainment of an agreed upon set of goals and to set the context for making adjustments to the organization's direction in response to changes in its environment. Michael Policastro, a Vice President with the Travelers Insurance Company, defined strategic planning as a way to identify long-term goals and to direct a company toward fulfilling those goals (Introduction to Strategic Planning, 2005). He went on to identify the following components of a strategic planning process:

> Assessing the current business environment.
> Defining your company's purpose mission.
> Deciding what you want the business to look like in three to five years.
> Recognizing your organization's strengths, weaknesses, opportunities, and threats.
> Mapping out a course to take the company from its current to its desired position.

In comparison, logic modeling is most commonly used to chart the progress of a program towards achieving desired outcomes by describing how a program works in terms of inputs, activities, outputs, and outcomes. Logic modeling is more typically used in program design, implementation, and evaluation to help identify flawed assumptions and resource deficiencies and bottlenecks.

Given the commonly held understandings of strategic planning and logic modeling, it is clear that logic modeling is not a substitute for strategic planning but, rather, that it can be used to address some of the common traps of the strategic planning process. These traps, which are by no means unique to the Flex Program, include the following:

> Failure to clearly and explicitly develop an underlying theory of change by which the program will use the available resources and activities to accomplish its goals/outcomes;
> Adoption of new (and often popular) interventions and programs without understanding how they fit within the context of the program or how it is designed to achieve its goals;
> Failure to recognize resource deficiencies and bottlenecks (e.g. financial, human, and physical);
> Development of interventions that are not appropriately scaled to the size of the problem they are designed to address;
> Failure to recognize the potential conflict between multiple strategic goals; and
> Statement of goals in terms of activities/processes rather than outcomes/impact.

PLMs can be in the strategic planning process to avoid these traps by offering a process to work through and develop consensus on the logical relationships between the problem statements, vision, mission, goals, and strategies and clearly identify the inputs, activities, and outputs required to achieve the vision, mission, goals, and strategies. By working through the process of developing a PLM to support the strategic plan, an organization can produce a plan in which the component parts are logically and realistically directed towards the attainment of the program's desired outcomes and goals.

Logic Models and Balanced Scorecard

The balanced scorecard has generated a great deal of interest among Flex Program stakeholders. A number of state Flex Programs have supported the development of balanced scorecard projects for their CAHs. The federal Office of Rural Health Policy, the Technical Assistance and Services Center (TASC), and its parent organization, the Rural Health Resource Center (RHRC), have promoted the use of the Balanced Scorecard in the Flex Program. Further, TASC and RHRC have implemented the Balanced Scorecard in managing their own activities.

The balanced scorecard is a performance improvement tool developed by Robert Kaplan and David Norton of the Harvard Business School to address the limitations of using financial measures alone to manage an organization. It did so by encouraging organizations to look at performance indicators across the following perspectives or domains: financial; internal business process; customer satisfaction; and learning. More recently, it has evolved beyond a performance management system to become an organizational framework for a strategic management system (Crown Agencies Secretariat, 2003). Penna and Phillips from Rensselaerville Institute's Center

for Outcomes classified the balanced scorecard as a program and resource alignment tool that insures that resources and effort are expended in support of organization goals (2005). The authors noted that "the balanced scorecard's use of a resource or target matrix makes it particularly well suited to organizational alignment" (Penna and Phillips, 2005).

Recent iterations of the balanced scorecard have incorporated a tool known as the "strategy map" which is conceptually similar to the logic model in that it "identifies goals, objectives, strategies, and their corresponding performance measures required for the organization to achieve strategic success" (Crown Agencies Secretariat, 2003). In the process used by many to develop a balanced scorecard, the strategy map is created after core strategies are developed and grouped under the appropriate balanced scorecard perspective (Mountain States Group, 2005; Kaplan and Norton, 2004; Niven, 2003). Specifically, Kaplan and Norton (2004) suggest that a strategy map be created after the organization's core strategies are identified. In Niven's process (2003), the members of the balanced scorecard team should be given copies of the organization's mission, vision, and values statements as well as its strategic plan, prior to engaging in an all day session to create its strategy map. This sequence of developing the strategy map based on an already developed strategic plan assumes that the organization's or program's strategic plan and related strategies and activities are clearly aligned with the achievement of its stated goals and objectives. As has been discussed, this is not always the case, particularly when an organization has failed to make explicit the underlying program theory upon which its strategic plan and activities are based.

The creation of an organization- or program-specific logic model can help to address this problem and can serve as an important developmental step in the implementation of a balanced scorecard by clearly laying out the organization's or program's goals; mapping the theory, assumptions, activities and strategies necessary to achieve those goals; and identifying appropriate outcomes and indicators to map progress towards the achievement of those goals. The PLM process can help to ensure that the balance scorecard is built on the foundation of a sound strategic plan and carefully reasoned program theory.

Summary

As we have discussed, PLMs are a powerful tool that can help states to plan, implement, manage, monitor, and report the outcomes of their Flex Programs. It is also a tool that integrates well with existing strategic planning and management initiatives. The development of a Flex Program logic model can:

> Build a common understanding of the program among key stakeholders and develop a common set of expectations for results;
> Facilitate program design and improvement;
> Identify elements critical to goal attainment;
> Expose redundant elements, resource deficiencies and bottlenecks, activity traps, and inconsistent/impractical linkages; and
> Identify key performance measurement points.

If done properly, it can also help to clearly identify the relative contribution of a state Flex Program to improvements at the hospital and community level and communicate program results to key national, state, and community policymakers and stakeholders. Part II of this Toolkit provides a template to assist state Flex Programs in harnessing the power of the logic modeling tool.

PART II

DEVELOPING A PROGRAM LOGIC MODEL FOR YOUR STATE FLEX PROGRAM

The PLM development process serves two main purposes. First, it assists programs to clearly identify the problems they propose to address, the interventions developed to address these problems, and measures to assess progress in solving them (Frizsell, O'Brien, & Arnold, 2004; Taylor-Powell, Jones, & Henert, 2001). Second, it serves as a tool to involve other agencies, organizations, and program participants in the process and to obtain feedback and buy-in from these groups. Since state Flex programs operate within a larger environmental context in which other organizations are implementing programs that affect small rural hospitals, they (state Flex Programs) will find it difficult to develop programs to address problems faced by CAHs without an understanding of these other programs and the organizations implementing them. Therefore, these external stakeholders along with representatives from CAHs, the Flex Program, and program partners should play a significant role in the PLM development process discussed in this section.

A PLM is a dynamic tool that changes and evolves through the life of a program. Although programs frequently use PLMs when starting a new program or project, they can also be used throughout the lifespan of a program to continually assess whether a program's strategies, activities, and outcomes still address important problems (W.K. Kellogg Foundation, 2001). This section lays out the stages and steps needed to develop a PLM. The process of creating a PLM for a new program or project involves the following four stages: **1) Preparation, 2) Planning, 3) Implementation, and 4) Review & Revision**. Programs wishing to assess the status of current activities may only need to carry out certain stages of the process. Regardless of whether the PLM is being developed for a new or an existing program, we suggest reviewing all four stages to understand the process as a whole. At the end of this section, we will provide suggestions as to how to develop a PLM during different stages of a program's life cycle and for the different purposes for which a PLM may be used such as program planning, program evaluation, and on-going program management.

Worksheets, found in Appendix A, are provided to assist programs in developing their PLMs. They may be copied and modified as necessary to meet your needs.

Stage 1: Preparing for the PLM Development Process

Many individuals and organizations are involved with the Flex Program at the state level, including state staff, program participants, program partners, and external stakeholders. Before beginning the PLM development process, several decisions should be made about how the process will be structured, who will be involved, and what roles and responsibilities the participants will have. Worksheet 1 is provided to assist in making these decisions.

Establishing a PLM Development Framework

The PLM development framework will determine the approach taken to the development process, who will participate, the roles and responsibilities each group participating in the process will have, the frequency of the meetings, the process by which they will conduct their

work, and the time frame in which this work will take place. This framework may build on already existing committees or workgroups or create ones to serve as the PLM Development Committee (Frizsell, O'Brien, & Arnold, 2004). This committee should, at minimum, include the State Office of Rural Health (SORH) director, the Flex program coordinator, and relevant program participants, partners, and stakeholders as described below. It is important to consider how the development committee will meet and how often. For some steps in the development of a PLM, especially those involving the definition of problems, establishment of long term goals and related outcomes, and the identification of program strategies; face to face or telephone conference meetings may be more effective in completing these activities. For other tasks, such as identifying program activities, resources and outputs and evaluating the program's outcomes, short conference calls and e-mail correspondence with committee members may be as or more effective than face to face meetings. Finally, it is also useful to identify the time frame in which this work will be completed and to provide the participants with a realistic estimate of their commitment to the process.

Identifying Who Should Participate in the PLM Development Process

Once the PLM development framework structure has been established, the SORH director and Flex coordinator should identify individuals who will participate in the process of developing the PLM. Although, the individuals chosen will vary depending on the type and number of program participants, partners, and stakeholders, there are certain organizations that should be represented in the planning process. In addition to the State Office of Rural Health and Flex Program staff, representatives from key project partners and stakeholders should participate on the PLM development committee. While the key project partners and stakeholders will vary from state to state, they will frequently include the state Hospital Association, the state EMS agency, and the Quality Improvement Organization (QIO) among others. Other program participants and stakeholders that should be considered for participation will include CAHs, support hospitals, and rural network members. The exact composition of the planning committee will be determined by the number of program partners, the range of program activities, the complexity of the state health care system and planning environment, and the number of CAHs. The exact composition of the PLM development committee should be determined by the number of program participants (i.e., CAHs, networks), the number of program partners and stakeholders, and the degree of overlap in major program areas (EMS, quality, and networks). The PLM development committee will offer program participants, partners, and stakeholders an opportunity to provide input into the development process and help to ensure buy-in from these groups when the PLM is implemented.

Roles and Responsibilities

Once the PLM development committee has been identified, Flex Program staff should develop a preliminary description of the roles and responsibilities of the participants in the process. Since the SORH director and Flex coordinator will play a significant role in implementing the PLM, they should be involved in all aspects of the planning process and serve as a general resource to the development committee. Similarly, core program partners should also be involved in the overall planning process. Other participants may be involved in specific aspects of the development of the PLM depending on their involvement and level of experience. For example,

EMS representatives may participate only in matters related to EMS activities. The preliminary descriptions should address the following issues:

Who will be responsible for key aspects of the planning process, such as defining problems, establishing goals, clarifying assumptions, determining program strategies, and identifying outcomes? Given that these are the foundation upon which a logic model is build, it is important to include an array of core program staff, participants, and partners in these steps. Whether the core group focuses on these steps across the full range of Flex program initiatives or breaks into smaller sub-committees with each addressing a particular problem will depend on the complexity of the overall program and the time frame set aside for the development of the PLM, and the wishes of the group.

Who will be responsible for identifying program activities, the resources allocated to these activities, and the outputs produced as a result? Program staff and core partners may be in the best position to determine the resources (e.g., financial, human, organizational, etc.) that are available to the Flex program and understand the overall program requirement established by the federal Office Rural Health Policy and should play a significant role in this stage of the PLM development process. This information should be shared with all participants in the process to aid in the development of program interventions to insure that they are consistent with the program guidance and realistic in the light of available resources.

How will input and feedback be obtained from program participants and partners, particularly those not directly involved in the PLM process? An explicit plan for obtaining input and feedback from program participants and partners not included in the planning process should be developed. The plan should identify when input and feedback will be obtained, from whom it will be obtained, and how it will be obtained (e-mail, conference calls, focus groups, surveys, etc.) (Frizsell, O'Brien, & Arnold, 2004).

How will meetings be conducted, decisions reached, and who has final decision making authority? Clearly outlining the process and details for these key points ensure that all participants know the ground rules and understand how the PLM development committee will conduct its work.

The preliminary descriptions of the roles and responsibilities of the members of the PLM development committee and related procedural issues should be shared with the committee and reviewed by all members. They should be finalized after the members have had an opportunity to provide input and comments.

Preparing Participants for Program Logic Model Planning Process

Once the PLM development structure and participants have been identified, program staff should complete two final steps in preparing to develop a PLM. First, all participants should be educated about the basic components of PLMs, what the PLM development process will entail, and the specifics of how the development stage will be structured, including what role each participant will be expected to play (Frizsell, O'Brien, & Arnold, 2004).

Second, Flex program staff should review and assess the current status of their program. The program's current and previous goals, strategies, activities, outputs, and outcomes should be reviewed to assess the progress that the program has made in achieving the desired outcomes. If activities have not been completed, staff should assess why they were not successfully completed. As part of this step, staff should compile and analyze pertinent data collected on program outcomes. The results of this review and assessment should be provided to all participants. This process will provide the development committee with a better understanding of the program's progress, strengths and weaknesses, and potential problems with strategies used (Frizsell, O'Brien, & Arnold, 2004).

Example: Preparing for the PLM Development Process

In this state's Flex Program, there are 46 CAHs, 3 hospitals in the process of being certified, 10 hospitals eligible for conversion, and 5 referral hospitals that participate in several rural health networks. Program partners include the state's hospital association, the state EMS Office, and the state QIO. The program has a steering committee with 32 members, including representatives from CAHs, referral hospitals, the hospital association, the EMS Office, and the state QIO. This committee has played a significant role in developing and revising the state's rural health plan.

The PLM Development Structure:

Given the state already has a steering committee with program participants and partners; they decide to use this committee in the development process. However, given the size of the steering committee, the staff decided to create three smaller subcommittees to address each of the major program areas.

Identifying Individuals to Participate in each Group:

The steering committee has already been established, so individuals participating in the PLM development process will not need to be identified. Since the steering committee already includes CEOs from each CAHs and referral hospitals, state staff decides to include additional hospital representatives on the quality sub-committee. The quality subcommittee will include quality managers from 10 CAHs, quality managers from at least 2 of the referral hospitals, and representatives from the state hospital association and QIO. Staff from the Flex Program and the SORH will also serve on each of the three subcommittees.

Roles & Responsibilities:

The steering committee will be responsible for defining problems and long-term outcomes for each program area. Subcommittees will be responsible for identifying potential strategies, activities, outputs, and short-term and intermediate outcomes. Recommendations made by these groups will be presented to the larger steering committee. In addition, staff will send the PLM model via e-mail to representatives from all CAHs, hospitals in the conversion process, hospitals eligible for conversion, and referral hospitals after each stage of the process to obtain feedback from these hospitals. The subcommittees and the steering committee will attempt to achieve consensus on the individual components as well as the overall model. When a consensus cannot

be reached, individual votes will be taken to resolve the disagreement. Staff from the SORH and the Flex Program will retain final decision-making authority on individual components and the overall model, although this authority will be exercised judiciously and only in the case of an irresolvable impasse.

Timeframe:

The PLM development process will be conducted over the course of a three month period and expected to be completed prior to the development of next year's Flex grant application.

Stage 2: The Program Planning Process

As the development of a PLM is essentially a program planning process which entails answering three key questions about your program (Frizsell, O'Brien, & Arnold, 2004):

(1) What does your program want to accomplish?
(2) How will your program accomplish the desired outcomes?
(3) How will your program know it has made progress toward or have achieved your desired outcomes?

The program planning stage of logic modeling will require multiple meetings to complete. The number and length of meetings required will vary depending on the development structure chosen and the size and complexity of your program. Those choosing a single group to complete the process may need fewer meetings than those choosing to use committees or subcommittees. Also, larger or more complex programs may take longer to complete the process.

Throughout this stage, the PLM, found in Appendix B, will be used to illustrate each step in the process. This PLM uses a state's quality related goal as an example and denotes each step in the process. States should complete the planning process for each program area. Worksheet 2 provides a blank PLM template, which can be used throughout the process.

Step 1: What Does Your Program Want to Accomplish?

Defining the Problem

Defining the problems a program will address is an essential step in the PLM development process. Since the Flex program has been established for several years, programs may not need to spend much time discussing the problems. However, even programs established for many years may wish to re-assess problems to determine whether they still fit with the Flex Program's goals and what the program, its participants and partners want to accomplish, to revise existing problem statements and to identify new problems that may have arisen, and to develop consensus among the group on those problems. The discussion should focus on the following questions:

1. What is the problem?
2. Why is it a problem? What are economic, social, political, and system level factors that may be causing the problem?

3. For whom does this problem exist? What individuals, groups and/or organizations are affected by the problem and how is each affected?
4. Who has a stake in the problem? What individuals, groups and/or organizations are interested in the problem and its resolution?
5. What do you currently know about the problem? What research on/experience with the problem do you have?

Once the problem (or problems) has been identified, it is equally important to identify the antecedent conditions of the problem. Antecedent conditions are the causal factors related to a problem of interest and are critical to the development of necessary program strategies (Renger & Titcomb, 2003). This can be done by asking the question *why?* repeatedly until all possible antecedent conditions are identified. This process of identifying the antecedent conditions can be facilitated through the use of appropriate experts and literature reviews.

After this discussion, a problem statement should be written for each problem. Worksheet 3 will assist the group in writing problem statements. As shown in the examples below, problem statements provide a clear and succinct description of the problem, the individuals and organizations affected, and the evidence for why the problem exists. A problem statement should only include one problem, but may include multiple reasons for why the problem exists or multiple types of individuals or organizations affected. The group may identify more than one problem, as with the examples below. The group can choose to prioritize problems at this point or wait until outcomes, strategies and activities have been identified (Taylor-Powell, Jones, & Henert, 2001). In our quality example, we chose to address problem 2 (see below).

Examples of Problem Statements:

1: Due to limited resources (human, technological & financial) and the unique characteristics of small rural hospitals **(Why does the problem exist),** Critical Access Hospitals **(Who does the problem affect)** are less equipped than other hospitals to develop quality improvement programs in their hospitals **(What is the problem)**, potentially resulting in poorer quality care for their patients **(Who does the problem affect)**.

2: CAHs frequently transfer patients from their hospitals to larger referral hospitals for treatment. There is a high rate of medical errors during these transfers, resulting in poor patient outcomes **(What is the problem, who does the problem affect)**. Patient transfers require a high level of coordination and transfer of patient information between EMS providers, CAHs and referral hospitals, making the process susceptible to medical errors **(Why does the problem exist)**.

Identifying Program Outcomes

As discussed in Part I, PLMs have three levels of outcomes: short-term, intermediate, and long-term. These outcomes fit along a continuum with short-term outcomes influencing intermediate outcomes, and intermediate outcomes influencing long-term outcomes. Short-term outcomes are influenced by the program's outputs. Short-term outcomes typically entail a change in individuals' or groups' attitudes, knowledge or skills, while intermediate outcomes are a change in these individuals' or groups' behavior. Long-term outcomes are changes in program participants' status or condition (Taylor-Powell, Jones, & Henert, 2001). Since short-term and

intermediate outcomes are more directly influenced by program strategies, activities, and outputs, Step 1 will only focus on identifying long-term outcomes. Short-term and intermediate outcomes will be determined after strategies and activities have been identified. At that time, long-term outcomes should be revisited to determine their fit along the outcome continuum.

The discussion of long-term outcomes should focus on the question, "What does our program want to accomplish?" There are two main sources of information to facilitate this discussion. One source includes materials from the Flex Program's grant guidance and strategic plan, and state Flex program materials. In the grant guidance and strategic plan, the federal Office of Rural Health Policy delineates specific goals that the national program wants to achieve. State level Flex programs also have information about prior state goals, mission statements and needs assessments. These materials will provide a foundation for the discussion (Hatry, et al., 1996).

However, the discussion should not be limited to these materials. The discussion should also draw from program participants and partners. Program participants can describe their views of the program's purpose, the aspects they find most important, and the ways they benefit from the program. In addition, program partners provide a perspective on what their organizations view as important outcomes and how the patients they treat may benefit from the program. Lastly, other state Flex programs may provide a perspective on what the long-term outcomes of similar programs are (Hatry, et al., 1996).

While discussing potential outcomes, there are some issues that should be considered. First, there may be more than one long-term outcome or "outcome track". In fact, there is no right number of outcomes. The number and type of outcomes chosen will depend on the problem, program resources, and the types and number of populations targeted. Second, a program has the least direct influence over long-term outcomes since they are less directly tied to program activities and more likely to be influenced by other factors. These outcomes should not be excluded because factors external to the program may affect them. However, each of these outcomes should be assessed to determine to what extent the program can be expected to influence these outcomes (Hatry, et al., 1996).

As with problems, outcomes should be written clearly and succinctly in order to describe exactly what the program wants to accomplish. As shown below, outcome statements should describe **1) who or what the program wants to influence, 2) the desired change or effect, 3) the way individuals or organizations will be affected, and 4) by when changes or effects should take place** (Taylor-Powell, Jones, & Henert, 2001)**.** Worksheet 4 provides a table with each of these components that may be used to write outcome statements.
Example of a Long-term Outcome Statement

Four years after participating in the Flex Program's activities **(by when)**, CAHs, EMS providers, and referral hospitals **(who/what is affected)** will decrease **(desired effect)** the rate of medical errors occurring during patient transfers **(way organizations will be affected)**. Patients transported between facilities will exhibit better clinical outcomes, reduced levels of impairment, and lower mortality rates.

Prioritizing and Evaluating Long-term Outcomes

Although a number of long-term outcomes for each problem may be identified, limited available resources may force the program to prioritize outcomes and to select those most important to the program. This point during the planning process is a good place to get input from program participants and partners that may not be directly involved in the planning process.

After choosing long-term outcomes, each outcome selected should be evaluated. Worksheet 5 provides a form to evaluate each program outcome. This tool utilizes the SMART format (Taylor-Powell, Jones, & Henert, 2001) as described below.

- **S**pecific:
    Does your outcome statement clearly state who or what is expected to change and in what way it is expected to change?
- **M**easurable:
    Can you measure whether the expected change has occurred? Will the measure chosen help identify program success and pinpoint problems or weaknesses?
- **A**ttainable:
    Is it reasonable to believe that your program can achieve the desired outcome?
- **R**esults-oriented:
    Will program participants, partners, and funders view the outcome as meaningful or beneficial? Will they value the desired outcomes?
- **T**imed:
    Have you identified the length of time it will take to achieve the desired outcome? Is it reasonable to believe the desired outcomes can be achieved within this time period?

Identifying Measures for Long-term Outcomes

Outcome indicators measure the extent to which a program has achieved its outcomes. Some outcome indicators can be measured quantitatively (i.e., number, percent, or rate). Other indicators may be measured qualitatively; especially those that assess program participants' attitudes. As with outcomes, there is no right number of indicators. The number of indicators chosen will depend on the outcome being measured, the level of data needed, and the resources available to collect these data (Hatry, et al., 1996).

All indicators should have certain characteristics in order for them to effectively measure whether an outcome has been achieved. First, whenever possible, an indicator should directly measure what it is intended to measure. When a direct measure is unavailable, a proxy or approximate measure of the desired outcome is used. Second, an indicator should be clearly defined. The use of ambiguous terms may result in indicators being subject to interpretation, inhibiting their ability to be measured reliably. Third, indicators need to be practical so data on each indicator can be collected in a timely manner and at a reasonable cost. Fourth, indicators selected for an outcome should be comprehensive, measuring both potential positive and negative effects of the program (Hatry, et al., 1996). Worksheet 6 provides a tool to evaluate indicators based on these four characteristics. Although data sources and collection methods will

need to be identified for each indicator, this aspect of the planning process will be discussed in Step 3.

Step 2: How Will Your Program Accomplish the Desired Outcomes?

This step in the PLM development process requires a program to identify the strategies it will use to accomplish its desired outcomes. Strategies are the approaches that drive a program's activities. Since programs can adopt many different strategies to achieve its desired outcomes, this step entails assessing potential strategies to determine how effective each strategy might be, identifying the activities and resources needed to carry them out, and defining the outputs that will result (W.K. Kellogg Foundation, 2001). The discussion should focus on four sets of questions:

1) Why does your program think the strategy you have chosen will work?
2) What external and environmental factors will assist or hinder your program from successfully adopting this strategy?
3) What activities will your program need to implement in order to carry out this strategy? What resources will be needed to implement these activities?
4) What outputs will your program produce as a result of these activities?

Why Does Your Program Think the Strategy You Have Chosen Will Work?

As discussed in Part I, a program's failure to successfully achieve its desired outcomes is often a direct result of false or undefined assumptions. Assumptions explain why the program believes that the strategy adopted will work as expected. Therefore, to assess a strategy's potential effectiveness, the assumptions underlying this strategy must be clearly defined and tested to ensure they are valid (Taylor-Powell, Jones, & Henert, 2001; W.K. Kellogg Foundation, 2001). Worksheet 7 can be used to list assumptions for each strategy and describe how these assumptions were tested. In the PLM example (Appendix B), the assumptions describe how program participants view reducing medical errors and why developing patient transfer networks will lead to a reduction in medical errors associated with patient transfers. To test the first assumption, program staff may simply ask each type of provider whether they think reducing these medical errors are important and beneficial. For the second assumption, the program may review its own program to support the claim that networks will result in a stronger relationship among providers. Finally, for the third assumption, the program might review the patient safety literature to illustrate how network affiliations have been used to reduce medical errors associated with patient transfers.

At this stage, it is critical to ensure that the antecedent conditions identified earlier in the PLM process are actually targeted by the proposed program strategies (Renger & Titcomb, 2002). Too often, programs focus on activities rather than their outcomes (e.g., they focus on "doing things right rather than doing the right things"). Renger and Titcomb (2002) refer to this as an "activity trap" which results from failing to "connect the dots" between strategies and activities, the antecedent conditions, and desired outcomes.

What External and Environmental Factors Will Assist or Hinder Your Program from Successfully Adopting This Strategy?

State level Flex programs represent just one agency in a much larger environment. External and environment factors (e.g., social, economic, political and system) will influence whether the strategy developed will be successful or not. While developing strategies, factors that may positively or negatively influence their adoption and implementation should be identified (Taylor-Powell, Jones, & Henert, 2001). Identifying these factors can also assist the program in identifying potential program partners, in measuring program success, and in showing funders that program staff fully understand how the program fits within its larger environment. Worksheet 8 provides a form to list each type of factor and describe how it might assist or hinder the adoption of program strategies.

What Activities Will Your Program Need to Implement in Order to Carry Out This Strategy? What Resources Will Be Needed to Implement These Activities?

After identifying program strategies and assessing their potential effectiveness, the program must decide what activities and resources will be needed to carry out these strategies. Activities are the processes, events, projects or actions your program needs to perform in order to implement your strategy. Although, in the quality example, activities are listed in the same box, activities can be performed either simultaneously or sequentially. Each activity should describe what needs to be done and whom the activity is expected to reach (Taylor-Powell, Jones, & Henert, 2001). The implementation of a strategy will likely require multiple activities and/or types of activities. Worksheet 9 can be used to list each strategy and the activities associated with it.

As shown in Worksheet 10, there are a number of resources that may be needed to carry out program activities, including financial, staffing, travel and other resources. The worksheet assists in identifying the type of resources needed (i.e., funding sources, program staff needed) and the amount of each resource needed (i.e., amount of money, number of FTEs).

What Outputs Will Your Program Produce as a Result of These Activities?

Outputs are what your program has produced as a result of your activities and should lead directly to your program's short-term outcomes (Taylor-Powell, Jones, & Henert, 2001). In the Flex Program, outputs can include the amount of technical assistance provided to CAHs, the number of scholarships provided to local EMS personnel, the number of meetings held, the publication of a technical assistance manual, etc. Also, the potential outputs describe exactly what the product is and who the product targets. An activity may result in multiple products or outputs.

Step 3: How Will Your Program Know It Has Made Progress Toward or Have Achieved Your Desired Outcomes?

In this last step of the PLM development process, short-term and intermediate outcomes will be identified, the outcome chain will be evaluated, and indicators for each outcome will be identified. Data sources and collection methods will also be described.

Identifying Short-term and Intermediate Outcomes

Short-term outcomes typically consist of a change in participants' knowledge, attitudes or skills and are direct results of program outputs. Short-term outcomes in turn have a direct effect on intermediate outcomes, which are changes in participants' behavior. Although a program may only have one or two long-term outcomes for each problem, it may have multiple outputs, short-term and intermediate outcomes for each problem. Identifying short-term and intermediate outcomes entails the same process as identifying long-term outcomes: identifying outcomes, writing outcome statements, evaluating each outcome, and determining how each outcome will be measured. However, unlike long-term outcomes, short-term outcomes are more closely related to program activities and may not represent a major change. Therefore, short-term outcomes may seem like outputs. Therefore, these outcomes should be carefully assessed to ensure they are actually changes in participants' knowledge, attitudes, or skills (Taylor-Powell, Jones, & Henert, 2001).

Evaluating Your Program's Chain of Outcomes

As stated previously, outputs and outcomes fall along a continuum. Once program strategies, activities, outputs and all outcomes have been identified, the outcomes should be evaluated. The evaluation of proposed outcomes also provides another opportunity to seek feedback from program participants and partners. To evaluate the chain of outcomes, four questions should be discussed. Worksheet 12 will assist in the discussion. First, do the long-term outcomes represent meaningful and valued changes in the participants' status or condition? The long-term outcomes should represent significant and important changes for those expected to benefit from the program. Second, do program outputs and short-term, intermediate and long-term outcomes relate to each other logically? To check this, walk through the "If-Then" relationships between the program outputs, short-term, intermediate and long-term outcomes. If they relate logically to one another, then each output or outcome should reasonably be expected to result in the next outcome in the chain. Third, are the outcomes achievable given the available resources and the program's influence over the targeted population? Fourth, have potential negative outcomes of the program been identified (Taylor-Powell, Jones, & Henert, 2001)?

Assessing Progress toward Achieving Your Program's Desired Outcomes

ORHP requires each state to provide a plan for evaluating their program as part of the grant application. In order to effectively demonstrate to ORHP the impact the program has had on changes in participants' knowledge, behavior or condition, data for each indicator will need to be collected and assessed before and after program activities. In this section, potential data sources and collection methods will be discussed. Worksheet 13 can be used to list outcomes, indicators, data sources and collection methods. Many states use a consultant to assist them in evaluating their programs. When possible, this consultant should be involved in the discussion.

Although the data sources will vary, there are a number of potential data sources to consider. First, before considering other sources, program records should be reviewed to determine whether the information needed is already available (Hatry, et al., 1996). For example, the program may already collect information on the number of hospitals that receive technical assistance. Second, individuals that participate in various program activities are also excellent

sources of information. These participants can provide first-hand information before, during, and after participation in program activities including information on their 1) knowledge, attitudes or skills, 2) changes in behavior, and 3) improvements in their organizations' status or condition (Ibid). Second, given that the Flex Program participants are typically health care organizations (e.g. CAHs, other rural hospitals, EMS providers, etc.); these organizations may already collect the information needed. For example, this information may include the number and types of local EMS volunteers and the types of quality improvement initiatives they participate in. Third, program partners and the records their organizations collect could also be useful sources of information. Lastly, on occasion, the program may want to assess the needs of residents in local communities or to understand how program activities have affected local residents. In these cases, obtaining first-hand information from these residents may be helpful (Ibid).

Data Collection Methods

Data collection methods will likely represent a tradeoff between cost, expected response rate, and time required to collect the data. There are three characteristics to consider when determining what data collection method should be used. First, the feasibility and cost of collecting data using the chosen method should be assessed. The feasibility of collecting the data should take into consideration whether those collecting data will need to be trained. Second, the program should consider how useful the resulting data will be for program managers. Third, the program must assess how credible the data will be to those outside the program, including ORHP (Ibid). Table 1 provides a list of potential data collection methods with a brief description of the resources needed to implement each method and potential response rates.

Table 1. Comparison of Major Data Collection Methods

Characteristic	Data Collection Method		
	Program Records	**Questionnaire**	**Interview**
Cost	Low	Moderate	Moderate to high, depending on how administered
Training Required	Some	None to some, depending on how distributed	Moderate to high, depending on collectors' previous experience and interview complexity
Completion time	Short, depending on amount of data needed	Moderate to long, depending on how distributed	Long
Response rate	High, if records contain needed data	Depends on how distributed	Generally moderate to good

Source: Measuring Program Outcomes: A Practical Approach, United Way, 1996

Stage 3: Implementation

The program now has a full draft of its PLM for each core area. In this stage, the PLM development committee will test its quality and distribute the draft for comments and feedback. Once the PLM has been finalized, the program staff will establish data collection systems, assign staff to implement activities and monitor the execution of the PLM.

Assessing Quality and Finalizing the PLM

Assessing the quality of the PLM entails addressing four criteria: 1) meaningfulness, 2) plausibility, 3) "do ability", and 4) testability. Worksheet 14 lists each of these criteria with key questions, a rating scale and comment section for each. To be meaningful, a PLM should represent the program's purpose and have outcomes that constitute a significant benefit to its participants. In addition, the potential negative effects the program could have on participants should be identified. Plausibility tests whether the PLM is logical and whether the relationships between its components are causally connected. Three methods can be used to assess whether the relationships between components make sense. First, starting from resources, each individual should ask "why?" at each level of the model. Why does the program need these resources? Why does the program need to conduct these activities? Why will these activities lead to outputs? Second, starting from long-term outcomes and working backward, each individual should ask "how?" The answer to this question should be found in the previous PLM component. For example, how the program will produce this long-term outcome should be answered by the intermediate outcome. Lastly, sometimes a component will not be sufficient to result in the desired effect. Therefore, for every component, each individual should ask "what else?" to ensure that the program has not made any assumptions about how the component will affect the next component (Taylor-Powell, Jones, & Henert, 2002).

"Do ability" entails ensuring that the PLM is realistic. To be realistic, the activities and outcomes should be achievable given the resources available. Also, each individual should ask whether the assumptions underlying the PLM are valid. When answering this question, the evidence that the assumptions are based on should be considered. Those based on experience or research are likely to be more valid than those based on best guesses. Lastly, the outcomes should be assessed to ensure that they are testable. Are the outcomes clear, specific, and complete? Will outcome indicators truly tell whether the program has achieved its desired outcomes? (Taylor-Powell, Jones, & Henert, 2002)

Program staff should widely distribute the draft PLM to development committee members, program partners, current and future program participants, and other agencies that they may be involved in the Flex Program. Program partners can be especially helpful in evaluating whether the PLM is logical and realistic. Current and future participants can provide important information on whether outcomes are meaningful; identify potential negative effects overlooked, and whether the activities are "doable". For individuals not in the development committee, program staff should provide some background on the process, a list of questions that would help them in evaluating the PLM, and deadline for returning comments to the program. Once the program has received feedback from those interested, the development committee should reconvene to discuss issues and comments identified and revise the PLM as needed.

Implementing, Managing and Monitoring the PLM

With the final PLM, program staff must begin to implement it. As a first step, staff should distribute the PLM to all program staff, partners, and participants to prepare them for what the program plans to do (Frizsell, O'Brien, & Arnold, 2004). Although the PLM provides a list of activities that the program will carry out, each activity will likely require a number of tasks to be performed in order for activities to be implemented. Therefore, program staff and partners

responsible for activities in each core area should meet to create a work plan and timeline. The work plan and timeline should include a list of tasks needed to be completed, who will be responsible for completing them, and by when they should be completed. In addition, a data collection plan should be established to ensure that data are collected at appropriate times during implementation (e.g., before, during and/or after activities). At this time, program staff may wish to meet with the evaluation team to ensure that those carrying out the evaluation know what, from whom, and when information will be collected. Finally, program staff should set up a system to monitor progress toward completing activities and to identify and address problems that might arise (Hatry, et al., 1996).

Stage 4: Review & Revision

PLMs are dynamic representations of a program. Therefore, program staff and the development committee will need to review and revise it. The PLM should be reviewed and revised at least annually when applying for the next year's funding. However, the program may also decide to convene the development committee more often to keep them involved in the program and its activities. These meetings will assist program staff in writing progress reports and new activities for the new application. During this annual review, the group will not necessarily have to carry out the whole planning process discussed in Stage 2. However, the review should include an assessment of the extent to which activities have been completed, a discussion of issues that have arisen, a review of data collected and findings, and an evaluation of whether the problems are still important and whether outcomes are still meaningful. When the development committee identifies that changes are needed, they should discuss what changes will be made and re-evaluate the quality of the PLM (Frizsell, O'Brien, & Arnold, 2004).

In addition to annual reviews, program staff may wish to review the PLM, work plan, and timeline more frequently, either monthly or quarterly, to effectively manage and monitor implementation. These reviews will help staff to ensure activities are being completed on time, identify issues as they arise and ensure data are being collected when needed (Frizsell, O'Brien, & Arnold, 2004).

Using the Logic Model at Different Stages of a Program's Lifecycle

As mentioned above, PLMs can be developed and used effectively for different purposes such as clarifying the underlying theory of change that supports the program (e.g., how will the program contribute to the desired outcomes), supporting evaluation and reporting activities, and as part of ongoing program management. We will describe the use of the PLM for each of these three purposes in this section.

Although PLMs are most typically developed during the design and planning or evaluation stages of a program, they are a tool that can be effectively developed and used at any stage of a program's lifecycle. One important byproduct of the PLM development process is that it harnesses the power of group examination by focusing on and striving towards consensus on the details of a program including basic definitions of the problems the program is designed to address; program goals; its underlying theory of change and assumptions about how a program will achieve its intended goals; the use of available resources, specific program strategies and

activities; and related outcome measures. This review and revision of an ongoing program such as a state Flex Program can be particularly helpful in renewing commitment among existing and new program participants to the goals of the program, identifying recent developments in the program's external environment that may influence the direction and success of the program, making necessary midcourse corrections, and ensuring that the program is continuing to meet the current needs of CAHs and rural communities in a given state.

Given the power of developing consensus on program design and activities, particularly as individuals within participating organizations change, it is recommended that any of the steps involved in the development of a PLM be skipped entirely. It may not be necessary, for example, to spend as much time on problem definition for an ongoing Flex program, however, it is still useful to identify the basic problems that the program was designed to address to make sure that they are still valid or to make necessary revisions. This will provide a solid foundation for discussions related to the ongoing refinement of program strategies and activities.

Using a PLM to Clarify Underlying Theories of Change

Although this approach to the development of a PLM most commonly takes place during the design and planning stage of a program, it can also be helpful for established programs undertaking new strategies due to shifts in program direction or that have experienced significant changes among its target organizations or in its external environment. This approach focuses on problem identification and the reasons for proposed (or existing) program interventions. Take, for example, the case of a state in which all eligible hospitals have converted to CAH status. As the Flex program shifts its focus to the long term support of these hospitals, it is useful to determine if the problems faced by these hospitals have changed since conversion and, if so, how program interventions should change in response.

In this approach, the focus is on framing the problem with sound program theory. The questions that should be asked include the following:

> What are the problems that the Flex program is attempting to solve?
> What needs have led to the program to address these problems?
> What are the desired results?
> What external factors might contribute to or hinder the success of the Flex program in addressing these problems?
> How will the program work to address these problems?
> Why will the program's approach be effective?

For an existing Flex program, this focus on its underlying theory of change can be used to re-examine its current strategies and activities, use of resources, and planned outcomes to ensure that they are focused on addressing the underlying problems facing the CAHs and rural communities in its state. In doing so, the Flex program can revise existing strategies and activities or develop new ones to best address these problems identified above.

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Using a PLM for Program Evaluation

In using the PLM for evaluation purposes, the focus is on program planning and implementation and connecting the resources, strategies, and activities with the intended results. In doing so, the evaluators will seek to answer two types of questions. The first are formative questions designed to help improve the ongoing program and its activities. Formative questions seek to collect information to help monitor program progress and make necessary adjustments to improve the program's performance. In doing so, evaluative questions focus on program activities, outputs, and short term corrections. It is helpful to think of these questions as ongoing performance improvement activities.

The second are summative questions in which the questions are designed to help "prove" that the program is achieving its intended results. These questions seek to collect information to help demonstrate that the program is achieving results to key funders (such as ORHP in the case of the Flex Program) and state level stakeholders. To do so, these questions focus on intermediate and long-term outcomes and impact. The PLM can be very useful in this regard by establishing the underlying theory of change for the program and specifying the logic links between program strategies and activities and the intended short, intermediate, and long-term outcomes. While it may not be possible to fully "prove" the success of a program in achieving long term outcomes, the PLM's identification of these logical links can to identify progress towards these long term outcomes by documenting the attainment of short and intermediate term outcomes based on the establishment of the program's theory of change based on sound research and evidence.

In using the PLM as part of the evaluation of a Flex Program, the program staff should focus on following questions within each of the following areas:

1) Scope and focus of the evaluation

> What is the environmental context in which the Flex program operates and how does it influence the successful implementation of the program and the achievement of intended outcomes?
> Were program activities implemented and executed as planned? If not, why not? How did the implementation of the program vary from the original plan and what impact, if any, did this have on program success?
> What progress has the program made on achieving intended short and intermediate term outcomes?

2) Audience for the evaluation

> Who are the key audiences for the evaluation information (e.g., program management staff; participating CAHs, networks, and rural communities; state level policymakers; program partners; or ORHP and other funders)?

3) Information needs of the key audiences

> What are the information needs of the key audiences identified above?

How will they use the information collected through the evaluation?

Each of the key audiences identified through this process will have different information needs and will put the information to different uses. Program staff and partners, for example, will likely require information on day-to-day program implementation and operations. They will use this information to improve operations, make mid-course corrections, and to make decisions regarding project activities and resource use. State level policymakers are likely to be more interested in program outcomes and will use this information to make policy related decisions regarding the program. Funders will be focused both on implementation and outcomes in order to assess issues of accountability, to make decisions on continued funding, and to improve future the grant making and funding efforts. Working through these questions for each of the key audiences will help to ensure that the evaluation will provide useful information to meet their needs.

Using a PLM to Manage an Ongoing Flex Program

This approach focuses primarily on the specifics of program implementation and operation. As such, a PLM developed for this purpose will map the linkages between resources and the planned program strategies and activities and describe not only what the program plans to do but also the sequence and timing of the steps needed to implement and operationalize these strategies. As such, a PLM developed for the purposes of program management will typically provide greater detail on the specifics of resource utilization and the sequencing and timing of project activities.

In developing and using a PLM for management purposes, the following questions should be asked:

What resources (e.g., financial, human, and organizational) are currently available for the Flex program? What additional resources will be needed to implement the planned strategies and activities? How will these resources be obtained? What are the critical resources needed to implement the planned strategies and activities and whose loss would prevent successful implementation? Where are the resource bottlenecks?

What are the key activities that must be implemented to achieve intended program outcomes? In what order must the activities be implemented? What are the critical activities upon which further implementation progress depends?

What are the potential barriers to successful implementation of the planned strategies and activities? How might these barriers be overcome?

What levels of detail are necessary to effectively monitor and managing program implementation and operations?

Program staff can use the PLM created for this purpose to monitor the actual implementation of program strategies and activities against the planned strategies and activities to determine if the program is "on track", to make mid-course corrections and adjustments as necessary, and to anticipate potential resource and activity bottlenecks before they hinder program operations. This information can also be used to keep program partners, participants, and stakeholders informed about program status and any outstanding implementation issues.

Summary

As may be apparent by now, PLMs are not static tools nor is there a "best" logic model for all programs. It is dynamic tool that can be modified to meet the unique and evolving needs of a given program. They should be viewed as "works in progress" that will evolve as the program on which they are based evolves. Their use as an effective program tool takes practice. Similarly, trial and error is often needed to identify what works best for you and your program. Please view this Toolkit and the included forms as templates that can be modified and adapted to best meet your program's needs. The effort required to develop and produce a PLM, while not insignificant, can pay important dividends over the life of your program.

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APPENDIX A

PLM Worksheets

Worksheet 1: Establishing a Planning Structure

Type of Planning Group	Roles & Responsibilities	Participants	
		Name of Individuals	*Organization Represented*

Worksheet 2: PLM Template

Program Goal (as identified in the program guidance from ORHP):

Problem Statement:

Assumptions:

External Factors:

Strategies	Activities	Resources/Inputs	Outputs	Short-Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
To solve the problem we will use the following approaches:	To achieve the desired outcomes we will undertake the following activities:	To accomplish these activities we will need the following resources:	The planned activities will result in the following products:	If accomplished as planned, these outputs will lead to the following short-term outcomes:	If we successfully achieve these short-term outcomes, then we expect them to lead to the following intermediate outcomes:	As a result of this project and the related activities, we expect the following long-term outcomes:

Worksheet 3: Writing Problem Statements

What is the Problem?	Why does the Problem Exist?	Who does the Problem Affect?

Problem Statement 1:

What is the Problem?	Why does the Problem Exist?	Who does the Problem Affect?

Problem Statement 2:

What is the Problem?	Why does the Problem Exist?	Who does the Problem Affect?

Problem Statement 3:

Worksheet 4: Writing Outcome Statements

Who/What (target population)	Change/Desired Effect (action verb)	In what way (expected results)	By when

Outcome Statement 1:

Who/What (target population)	Change/Desired Effect (action verb)	In what way (expected results)	By when

Outcome Statement 2:

Who/What (target population)	Change/Desired Effect (action verb)	In what way (expected results)	By when

Outcome Statement 3:

Worksheet 5: Assessing Possible Outcomes

Outcome	Does it meet the Smart Test?									
	S		M		A		R		T	
	Y	N	Y	N	Y	N	Y	N	Y	N
	Y	N	Y	N	Y	N	Y	N	Y	N
	Y	N	Y	N	Y	N	Y	N	Y	N
	Y	N	Y	N	Y	N	Y	N	Y	N
	Y	N	Y	N	Y	N	Y	N	Y	N
	Y	N	Y	N	Y	N	Y	N	Y	N
	Y	N	Y	N	Y	N	Y	N	Y	N

Specific**:** Does your outcome statement clearly state who or what is expected to change and in what way it is expected to change?

Measurable: Can you measure whether the expected change has occurred? Will the measure chosen help identify program success and pinpoint problems or weaknesses?

Attainable: Is it reasonable to believe that your program can achieve the desired outcome?

Results-oriented: Will program participants, partners, and funders view the outcome as meaningful or beneficial? Will they value the desired outcomes?

Timed: Have you identified the length of time it will take to achieve the desired outcome? Is it reasonable to believe the desired outcomes can be achieved within this time period?

Worksheet 6: Identifying and Evaluating Indicators for Each Outcome

Outcome	Indicator(s) may be more than one per outcome	Is each Indicator…			
		Direct?	Specific?	Practical?	Comprehensive?
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N
		Y N	Y N	Y N	Y N

Direct: Does the indicator directly measure the intended outcome? If not, have you selected a proxy measure?
Specific: Has the indicator been clearly defined so that it can be measured in the same way by everyone?
Practical: Can the data be collected in a timely manner and at a reasonable cost?
Comprehensive: Do your indicators measure all important aspects of your program's outcomes, including possible negative outcomes?

Worksheet 7: Defining Assumptions

Strategies	Assumptions (Why do you think this strategy will work?)	Testing Assumptions (How do you know these assumptions are true?
1.	1a. 1b. 1c. 1d. 1e.	1a. 1b. 1c. 1d. 1e.
2.	2a. 2b. 2c. 2d. 2e.	2a. 2b. 2c. 2d. 2e.

Worksheet 8: Determining External and Environmental Factors

External & Environmental Factors	Effect on Program's Strategies	
	Positive	Negative
Social Factors		
Economic/Financial Factors		
Political Factors		
System Level		
Other		

Worksheet 9: Identifying Activities

Strategy	Activities	
	What is to be done?	**Who you expect to reach?**
1.	1a. 1b. 1c. 1d.	1a. 1b. 1c. 1d.
2.	2a. 2b. 2c. 2d.	2a. 2b. 2c. 2d.
3.	3a. 3b. 3c. 3d.	3a. 3b. 3c. 3d.

Worksheet 10: Determining What Resources Are Needed

Resources	Type	Amount
Financial	Flex Grant Funds State Funds Other Funds	$ $ $
Staffing	Flex Staff (Name) Program Partners (Organizations/Agencies): Consultants:	FTEs: Time Commitment: Time Commitment:
Travel	In-state Out of state	Number of people traveling Number of days and cost of lodging Number and cost of meals per person
Other		

Worksheet 11: Identifying Outcomes

Outcomes		
Short-Term	Intermediate	Long-Term

Worksheet 12: Evaluating Your Outcomes

Outcomes	Question 1: Important?	Question 2: Logical?	Question 3: Realistic?	Question 4: Negative Outcomes?
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Worksheet 13: Indicators and Data Collection

Outcome	Indicator	Data Source	Data Collection Method

Worksheet 14: Evaluating Your Program Logic Model

Criteria	Low 1	2	3	4	High 5	Comments
Meaningfulness						
Represents the program's purpose?	1	2	3	4	5	
Outcomes are significant benefit?	1	2	3	4	5	
Potential negative outcomes identified?	1	2	3	4	5	
Plausibility						
Are the relationships causally connected?	1	2	3	4	5	
Is there anything missing (what else?)?	1	2	3	4	5	
Doability						
Activities and outcomes realistic given resources?	1	2	3	4	5	
Have all assumptions been identified?	1	2	3	4	5	
Are all assumptions valid?	1	2	3	4	5	
Testability						
Are outcomes clear, specific and complete?	1	2	3	4	5	
Do outcome indicators tell whether program has achieved its desired outcomes?	1	2	3	4	5	

APPENDIX B

The PLM: A Quality Improvement Example

PLM Template: Step 2

Program Goal (as identified in the program guidance from ORHP): *Improve quality of services by implementing measurable goals and objectives*

Problem Statement: CAHs frequently transfer patients from their hospitals to larger referral hospitals for treatment. There is a high rate of medical errors during these transfers, resulting in poor patient outcomes. Patient transfers require a high level of coordination and transfer of patient information between EMS providers, CAHs and referral hospitals, making the process susceptible to medical errors.

Assumptions: 1) Each of these providers think reducing medical errors occurring during patient transfers is important and beneficial, 2) Developing patient transfer networks will lead to a stronger relationship between CAHs, EMS providers, and referral hospitals, 3) These networks will lead to improved coordination among providers when transferring patients between CAHs and referral hospitals.

External Factors: Positive: State EMS Office decides to pursue the development of a statewide trauma system
Negative: Financial resources are not available to implement network interventions.

Strategies	Activities	Resources/Inputs	Outputs	Short-Term Outcomes	Intermediate Outcomes	Long-Term Outcomes
1. Foster the development of patient transfer networks among CAHs, EMS providers, and referral hospitals in CAH communities.	**1a.** Convene meeting of CAHs, EMS providers, and referral hospitals in the state in order to share information about and the experiences with patient transfers	**1a.** Flex Coordinator, .05 FTE, $1275; Meeting Space, $1,000 (half day); Supplies $100	**1a.** # of CAHs, EMS providers and referral hospitals attending meeting; document sent to all participants summarizing info provided during meeting	**1a, 1c, 1d.** Improved knowledge of problems associated with patient transfers, challenges faced by other partners in transfer process & strategies and interventions used to solve problems **Indicators:** Measure of change in participants knowledge of these issues before and after the activity	**1a.** EMS, CAH and referral hospitals increase their willingness to work with one another on patient transfer issues. **Indicator:** # of participants willing to address patient transfer issues before and after the activity.	**1.** *Five years after participating in the Flex Program's activities, CAHs, EMS providers, & referral hospitals in the state will decrease the rate of medical errors occurring during patient transfers.* **Indicator 1)** *Average change in % of medical errors occurring during patient transfers*
	1b. Provide technical assistance to providers that want to develop patient transfer networks **1c.** Facilitate meetings of patient transfer networks and assist them in identifying problems with	**1b.** Coordinator, .10 FTEs, $2,500 Travel (10 site visits), $10,000 **1c.** Coordinator, .05 FTEs, $1,275	**1b.** Technical assistance provided to everyone interested in developing a network **1c.** Convene meetings with all interested networks;	**1b.** Improved knowledge of network development and skills needed to establish a network **Indicator:** Change in knowledge **1c.** See 1a above	**1b.** Providers develop new patient transfer networks. **Indicator:** # of networks initiated	

		document given to each network listing and discussing each problem identified	1d. See 1a above	
1d. Develop and implement workshops to educate patient transfer network members on potential strategies and interventions used to improve the patient transfer process	1d. Coordinator, .10 FTEs, $2,500; Consultant, .25 FTEs Meeting Space (2 days), $4,000; Supplies, $250	1d. Workshop agenda and content developed; # of networks participating; resource manual detailing strategies and interventions		1d. Patient transfer networks identify strategies and interventions to address transfer problems. Networks develop a formal work plan to implement interventions. **Indicators:** # networks identifying strategies and interventions # of formal work plans
1e. Provide TA to networks to assist them in identifying and obtaining funding to implement patient transfer interventions	1e. Coordinator, .10 FTEs, $2,500, Consultant .10 FTEs	1e. Potential funding sources identified	1e. Networks obtain needed funding to implement at least one intervention. **Indicators:** # networks obtaining funding	1e. Networks will implement at least one intervention **Indicator:** # networks implementing interventions

APPENDIX C

Program Logic Modeling Resources and References

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