II. DESIGN PLAN FOR ASSESSING SYSTEMS CHANGE

Traditional evaluations may depict a project or initiative as operating within an unchanging environment called "context." In the EBHV cross-site evaluation, the grantees operate in, and interact with, complex, dynamic, and unpredictable environments. As they adapt to these changing conditions, their plans and activities change, altering their pathways and, ultimately, their outcomes. Each grantee is operating in its own sphere of contacts and relationships with people and organizations at many levels and with its own capacities, opportunities, and constraints. In effect, the cross-site evaluation must document the characteristics and changes in 17 unique systems, which share the purpose of preventing child maltreatment.

One goal of the cross-site evaluation is to design an evaluation that reflects this more complex and adaptive contextual reality. To do this, the Mathematica-Chapin Hall team will use evaluation strategies that track not only grantees' plans and activities for systems change, but also key systems attributes of the environments in which they are working and interactions between grantees and their environments (Hargreaves and Paulsell 2009). The team also aims to create a flexible, developmental design that is responsive to changes in grantees' initiatives and their environments (Patton 2008).

This approach will enable the evaluation to provide a more accurate picture of grantees' experiences and draw useful lessons from those experiences about how to build infrastructure capacity that supports the implementation, scale-up, and sustainability of high-fidelity home visiting programs. Toward this end, we will track changes over time in (1) system attributes, (2) grantees' infrastructure capacity, and (3) grantees' progress toward achievement of their goals for systems change. We will seek to derive implementation lessons by examining barriers and facilitators to grantees' progress toward systems goals, and changes in patterns of system attributes.[4]

Overview of Domain and Key Research Questions

This section provides definitions of key system-based evaluation concepts and terms. We then bring together these concepts into an EBHV theory of change that depicts the process and

[4] Like other components of the cross-site evaluation design, the design for the systems domain will not permit us to make causal claims about the extent to which various system attributes and changes in infrastructure capacity contributed to the achievement of EBHV goals. Similarly, we will not be able to make causal claims about whether systems change produces particular family and child outcomes.

relationships that we aim to examine through the systems domain of the evaluation. Next, we introduce the research questions guiding the systems domain. The final section discusses the evaluation design for the systems domain and our measurement strategy.

Systems-Based Evaluation Concepts

To enhance understanding of the proposed research design, we begin by defining several key systems-based evaluation concepts. These are central to the systems domain evaluation design and provide the foundation for the rest of the topics covered in this chapter. First, we define systems-based evaluation. Second, we identify the attributes of systems, including boundaries, relationships, and perspectives, in which grantees function. Third, we define infrastructure capacity, which is the focus of the grantees' systems change activities, and list eight categories of infrastructure capacity, which we will track as part of the evaluation. Fourth, we define the infrastructure levels at which grantees are working to achieve their goals for the EBHV project. Finally, we describe and define the infrastructure development goals of the EBHV initiative that shape the systems change activities of the grantees.

Systems-Based Evaluation

The EBHV grantees operate in complex systems, conceptualized as groups of interrelated and interdependent agents (individuals and organizations) working together in various settings on activities that directly or indirectly influence the prevention of child maltreatment (Holland 1995; Foster-Fishman et al. 2007). These webs of agents form a complex whole that changes as interactions occur (Kauffman 1995; Coffman 2007). The actions of these semi-independent agents generate systemwide patterns of dynamic and unpredictable change (Olson and Eoyang 2001). These systems are nested, as well as networked; they have subsystems and function within larger systems (Barabasi 2002). Cause and effect relationships within these systems are likely to be recursive, not linear or unidirectional (Patton 2008). Such systems are not reducible to their individual parts; the whole is more than, and different from, the sum of its parts (Eoyang 2007).

Systems-based evaluation is concerned with looking not only at the interrelationships between individuals and programs, but also at their relationships to the functioning whole (Trochim et al. 2006). It is important to understand not only how relationships are currently structured within a given system, but also what types of relationships are needed to bring about desired systems change (Foster-Fishman et al. 2007). In the EBHV cross-site evaluation, we will use systems-based evaluation methods to understand how grantees are building infrastructure capacity, alone and in

combination, to achieve three infrastructure goals: (1) implementation with fidelity, (2) scale-up, and (3) sustainability of high-fidelity home visiting programs.

System Attributes

System attributes refer to specific system features—boundaries, relationships, and perspectives (Williams and Imam 2007; Cabrera et al. 2008). Similarities and differences in these and other attributes create systemwide patterns. Changes in these patterns may lead to systemwide change, as system attributes interact with grantee activities in ways that influence the system.

- ***Boundaries:*** Boundaries define what is inside and outside of a system and separate activities within the system (Midgley 2007). They can refer to physical entities, organizational identities, social systems, or other demarcations, such as the multiple levels at which the EBHV grantees are working. One way to determine a system's boundaries is to first identify a problem of interest and then ask who or what is involved in addressing that problem (Foster-Fishman et al. 2007). To define the boundaries of systems in which the 17 grantees are working, we asked them to identify the individuals and organizations they are working with on prevention of child maltreatment. The boundaries may change as grantees reach out to develop new partnerships.
- ***Relationships:*** Relationships are defined as the connections and exchanges that occur within and across system levels, such as flows of information, client referrals, collaborative arrangements, program funding, and other resources (Olson and Eoyang 2001; Parsons 2009). These relationships may also change, for example, when a grantee develops stronger relationships with local funders and policymakers.
- ***Perspectives:*** System perspectives refer to stakeholders' worldviews and purposes. System agents may have different perspectives or pursue different purposes within a given situation (Williams and Imam 2007; Parsons 2009). For example, grantees that choose different infrastructure development goals may focus on building different kinds and combinations of infrastructure capacity.

Infrastructure Capacity

The EBHV initiative is designed to help grantees develop the infrastructure needed to support the EBHV grantee-selected program models. Capacity is defined as "the skills, motivation, knowledge, and attitudes necessary to implement innovations, which exist at the individual, organizational, and community levels" (Wandersman et al. 2006). Infrastructure development involves building capacity in many areas: planning, operations, workforce development, funding, collaboration, communication, political support, and quality assurance or program evaluation (Table II.1).

Table II.1 Infrastructure Capacity Categories by Types of Activities

Infrastructure Capacity Categories	Types of Activities
Planning	Strategic planning, tactical planning, decision making
Operations	Outreach, intake, screening, assessment, referral procedures
Fiscal Strategies	Fiscal partnering, fundraising, researching funding sources, leveraging dollars to support direct services
Communications	Information sharing, dissemination of lessons learned, policy advocacy, marketing, public awareness, disseminating information through the media
Collaboration	Leadership, alignment of goals and strategies, development of relationships, working through existing partnerships
Community and Political Support	Building community awareness and support, building political buy-in and support
Workforce Capacity	Training, technical assistance, coaching, supervision, retaining staff
Evaluation Capacity	Data collection, storage, retrieval, and analysis for quality assurance, quality improvement, epidemiology, surveys, or program evaluation

Sources: Flaspohler et al. 2008; Coffman 2007; October 2008 evidence-based home visiting cross-site evaluation kickoff meeting.

Infrastructure capacity does not simply refer to "bricks and mortar"—fixed structures and processes—but also to infrastructure functions that are robust and flexible enough to sustain their original purpose even as they evolve in response to changing conditions (Holladay 2005). Effective home visiting programs depend on multiple infrastructure capacities that include establishing lasting relationships between home visitors and families, well-trained and competent staff, high-quality supervision, strong organizational capacity, and links between home visiting programs and other external resources and supports (Daro 2006).

Several kinds of infrastructure capacity are particularly important for leveraging systems change. Stakeholders use collaborative structures, for example, to moderate the impact of existing rules and regulations, so that system activities are more aligned with system values, beliefs, and goals (Hodges et al. 2007). Other common targets for systems change include financing services and making them more accessible (Emshoff et al. 2007). The flow, content, and structure of program feedback and other system information through formal and informal communication channels is also an important facilitator of systems change by expanding knowledge and spurring action (Hodges et al. 2007).

Infrastructure Levels

EBHV grantees are working at multiple levels to achieve the EBHV initiative's goals. In addition to working within levels, it is also important to align or have similar structures, incentives, and processes across levels (Fixen et al. 2005). Infrastructure change initiatives are more likely to succeed when they "permeate multiple levels and niches within a system, creating compatible changes or conditions across system components" (Foster-Fishman et al. 2007). Such a multilevel, ecological perspective is important for understanding the successful implementation of infrastructure change initiatives (Durlak and DuPre 2008). EBHV grantees are working at the level of core home visiting operations, organizations, communities, and states, and at the national level. Here, we describe each level in detail.

- ***Core Operations Level:*** Activities at the core operations level are defined as the most essential and indispensable components of an intervention practice or program (Fixen et al. 2005). These operations include direct home visiting services, daily management of core home visiting operations, ground-level implementation, and program adaptations and modifications. Such core components must be present for evidence-based program implementation to occur with fidelity (Fixen et al. 2005). At the core operations level, an EBHV grantee may work to build strong relationships between the home visiting program families, home visitors, and supervisors.
- ***Organizational Level:*** At the organizational level, core components are contained within, and are supported by, an organization that establishes administrative structures and processes to select, train, coach, and evaluate the performance of home visitors and other key program staff. At this level, managers also oversee program evaluation functions and intervene with external organizations to obtain ongoing resources and support for the home visiting practices within the organization (Fixen et al. 2005). Organizational-level functions include internal administration to support home visiting operations, external coordination with other local social service delivery agencies and organizations, external coordination with other social service organizations, and organizational cultural elements such as leadership commitment and staff belief in the program. For example, at this level, a grantee may work with or within home visiting agencies and other community organizations to coordinate system functions, such as common intake, triage, and referral services.
- ***Community Level:*** Community-level grant activities include developing government partnerships, advocating for community resources, building community-level awareness and support for home visiting programs, and creating political buy-in and support at the local level. At this level, for example, a grantee may work with the county board of commissioners, community advocacy groups, or local foundations to leverage local funding for home visiting services.
- ***State Level:*** At the state level, leaders influence evidence-based programs by working to improve the quality of local programs, replicate programs effectively, and link home visiting programs to other state efforts focusing on promoting child health and development (Johnson 2009). State activities include developing regional or statewide

awareness and support for home visiting programs, creating state-level political buy-in and support for expanding the program, leveraging funding for direct services, advocating for resources to preserve state fiscal support, and enacting home visiting-related legislative, regulatory, and policy changes. For example, at the state level, a grantee may work with or within the state health department, other state agencies, or state legislators and policymakers.

- ***National Level:*** At the national level, leaders influence the EBHV grantee-selected programs by creating multistate learning collaboratives to support and spread home visiting programs, supporting research on effective service delivery, providing federal leadership to support home visiting programs, and sponsoring federal legislation to support home visiting efforts (Johnson 2009). National-level activities include managing the EBHV grant and implementation, building awareness and support among policymakers and funders, sharing information and disseminating findings, and developing and implementing policy initiatives and financing policies. At the national level, for example, as part of this EBHV initiative, a grantee may work with a national home visiting model developer, the EBHV cross-site evaluation team, and CB/ACF.

Infrastructure Development Goals

Based on an initial review of the EBHV initiative's original grant announcement, grantee proposals, grantee kickoff meeting materials, and subsequent conversations with grantees, we confirmed that grantees are working to accomplish three infrastructure development goals:

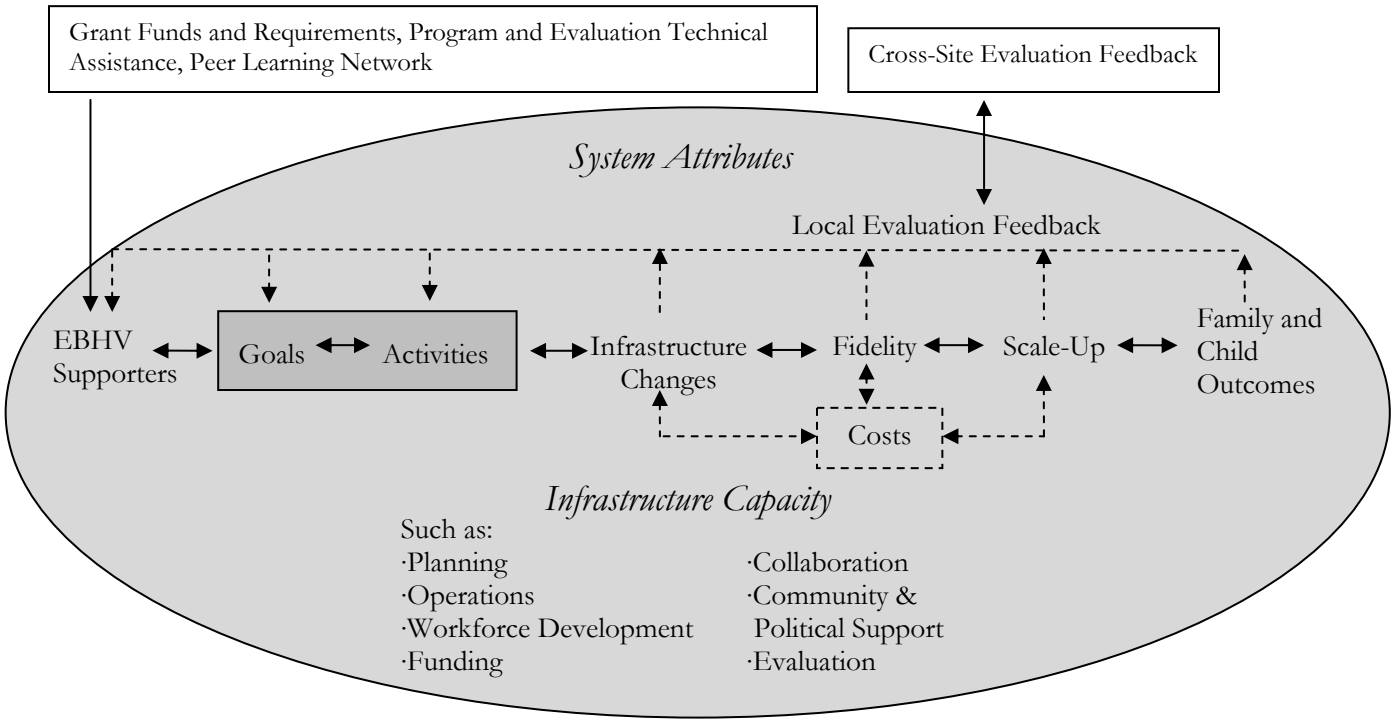
1. Develop infrastructure to support implementation with fidelity to the EBHV grantee-selected program models.
2. Develop infrastructure to support scale-up of home visiting models while maintaining fidelity. (Scale-up activities include expanding a model to a new geographic area, adapting a model for a new target population, increasing enrollment capacity in a home visiting program, and increasing adoption of home visiting models among funders and service providers.)
3. Develop infrastructure to support sustainability of the EBHV grantee-selected program models beyond the end of the grant period, while maintaining fidelity.

EBHV Theory of Change

In comprehensive systems change initiatives, it is important to focus the evaluation by articulating the initiative's theory of change (Walker and Kubish 2008). The Mathematica-Chapin Hall evaluation team developed a theory of change (Figure II.1) in which the 17 grantees are conceptualized as working within complex systems, supported by grant funding, program and evaluation technical assistance, a Peer Learning Network (PLN) of evaluators, and federal project staff. In these systems, individuals and organizations that understand and support the need for, and value of, evidence-based prevention programs work together on a wide range of activities to achieve

three EBHV goals: the implementation, scale-up, and sustainability of high-fidelity home visiting programs to reduce child maltreatment.

Figure II.1 EBHV National-Level Theory of Change



Source: Hargreaves and Paulsell 2009, adapted from Hodges 2007.
EBHV = evidence-based home visiting.

To achieve these goals, EBHV supporters may launch or modify existing activities designed to develop infrastructure capacity in specific areas, including program funding, supportive policies and regulations, intake and referral networks, workforce development and training programs, program evaluation functions, communication policies, collaborative partnerships, and mechanisms for policy advocacy. These changes in infrastructure capacity support fidelity of implementation to a home visiting model and, ultimately, the achievement of family and child outcomes, such as changes in risk and protective factors that should lead to reductions in child maltreatment. Findings from grantees' local evaluations and the cross-site evaluation are fed back to grantees, leading to changes in grantees' goals and activities. Changes in system attributes (boundaries, relationships, and perspectives) also influence grantees' goals and activities.

Research Questions

We expand on the overarching research question for the systems domain—*How did grantees build infrastructure capacity to implement with fidelity, scale up, and sustain home visiting programs?*—through three

research questions and multiple subquestions (Table II.2). The table includes the data collection modes and analytic approach used to answer each question. The cross-domain research questions that relate to the systems domain are presented in Chapter VIII.

Table II.2 Systems Domain Research Questions, Data Collection Modes, and Analytic Approach

	Data Collection Modes			Analytic Approach	
Research Questions	Web-Based Data System	Site Visits	Partner Survey	Qualitative	Quantitative
How did grantees build infrastructure capacities to support the goals of implementing home visiting models with fidelity, scaling up high-fidelity home visiting interventions, and sustaining high-fidelity home visiting interventions?					
In what types of infrastructure capacity building activities are grantees engaged at each infrastructure level? How do these change over time?	X	X		X	X
How many people and institutions were engaged in grant-related activities at each infrastructure level? How did that number change over time, creating what benefits and risks for the project?	X	X	X	X	X
What were the boundaries, relationships, and perspectives of grantees' projects, and how did they change over time?	X	X	X	X	X
What were the number and nature of collaborative relationships with partners? What factors influenced the number and nature of those relationships?	X	X	X	X	X
How did those relationships evolve over the course of the initiative?	X	X	X	X	X
What changes in grantee-specific infrastructure capacity occurred over the course of the initiative?					
What short-term and long-term infrastructure development goals did the grantees expect to achieve?	X	X		X	X
To what extent did grantees achieve their short-term and long-term infrastructure development goals?	X	X		X	X

Table II.2 (continued)

Research Questions	Data Collection Modes			Analytic Approach	
	Web-Based Data System	Site Visits	Partner Survey	Qualitative	Quantitative
What challenges, barriers, and system attributes impeded grantees' progress toward their infrastructure development goals?	X	X		X	
What factors and system attributes facilitated grantees' progress toward their infrastructure development goals?	X	X		X	
How were grantees' projects influenced by economic changes and other contextual factors?	X	X		X	
To what extent were the three overarching EBHV goals achieved over the course of the initiative?					
What EBHV initiative goals did the grantees expect to achieve?	X	X		X	
To what extent did grantees achieve their EBHV goals?	X	X		X	X
What patterns of infrastructure development strategies, achievements, and system attributes are associated with achievement of EBHV goals?	X	X	X	X	X

EBHV = evidence-based home visiting.

Systems Measures and Analytic Approach

To address these research questions, the evaluation team will use a design based on grantees' logic models for developing the infrastructure capacities needed to achieve implementation with fidelity, scale-up, and sustainability of their home visiting models. The design includes four elements: (1) working with grantees to create infrastructure development logic models at baseline, (2) tracking grantees' activities and progress toward building infrastructure capacities over time, (3) tracking changes in system attributes, and (4) tracking achievement of EBHV goals. To conduct these analyses, the evaluation team will draw on three primary data sources: (1) site visits, (2) the web-based reporting system, and (3) the partner survey. Chapters VII and VIII include further description of the data collection and analytic approach for the systems domain. Data collection instruments are included in Volume II.

These data will be analyzed using both quantitative and qualitative methods. We will use the results to create case studies of grantees' systems change efforts over time and to identify common themes and lessons across all 17 grantees and subgroups of grantees, as appropriate. For example, subgroups may include grantees implementing a particular home visiting model, those implementing more than one model, different types of grantees (for example, state agencies versus private nonprofits), and other groups of grantees that emerge from the analysis.

Working with Grantees to Create Infrastructure Development Logic Models at Baseline

As part of the systems design planning process, the grantee liaisons from the EBHV cross-site evaluation team worked with grantees to develop grantee-specific logic models for their infrastructure development activities and goals. Liaisons used grantees' proposals and presentations from the grantee kickoff meeting to prepare tables, which displayed grantees' activities and key players organized by system level. For each activity, the tables also display the infrastructure capacities needed to complete the activity (see Table II.1). Liaisons then reviewed the tables and confirmed their accuracy with grantees. During a second conversation, liaisons and grantees identified outputs for each of the activities and short- and long-term infrastructure development goals that grantees expected to achieve to support the three overarching EBHV goals: (1) implementation with fidelity, (2) scale-up with fidelity, and (3) sustainability with fidelity. Together these two tables constitute a logic model of grantee-specific systems change activities (Table II.3). These logic models provide important baseline information about the attributes of systems within which the grantees are working—their boundaries (who is and is not involved), relationships (key players by system level), and perspectives (infrastructure development goals)—and their infrastructure capacity needs.

Table II.3 Components Captured in EBHV Infrastructure Change Logic Models

Logic Model Category	Definition
System Levels at Which Grantees Are Working	Core operations, organizational, community, state, and national
Infrastructure Development Activities	Activities that grantees are carrying out to build infrastructure capacities at various system levels
Key Players	Types of individuals or organizations involved in grantee activities at different system levels
Infrastructure Capacities Needed to Carry Out Planned Activities	Planning, operations, workforce development, funding, collaboration, communication, political support, and quality assurance or program evaluation

Table II.3 (continued)

Logic Model Category	Definition
Outputs of Infrastructure Development Activities	Direct results of grantees' infrastructure-related activities, often quantifiable
Short-Term Infrastructure Development Goals	Grantee-specific infrastructure development outcomes of infrastructure-related activities grantees expect by 2011 (after the planning year, plus two years of implementation)
Long-Term Infrastructure Development Goals	Grantee-specific infrastructure development outcomes of infrastructure-related activities grantees expect by the end of the grant period[5]

EBHV = evidence-based home visiting.

Tracking Grantees' Activities and Progress Toward Building Infrastructure Capacities

As the EBHV cross-site evaluation proceeds, we will use these baseline logic models to track grantees' infrastructure development activities and progress toward building infrastructure capacities over time, as well as changes in system attributes. We will update the logic models regularly through two primary data collection activities: (1) the web-based reporting system, and (2) site visits. The web-based reporting system includes questions about elements of grantee logic models that grantees will complete every six months (see Volume II for more information about the specific data fields and response categories):

- Changes in short- and long-term infrastructure development goals and progress toward meeting the goals
- Changes in the external environment or key events that affected activities and progress toward goals, and the infrastructure capacities affected by the events
- Infrastructure development successes and their importance to the project
- Infrastructure development challenges and their importance to the project
- Ratings of infrastructure capacities

During site visits, the EBHV cross-site evaluation team will work with grantees to select representatives of the grantee's local EBHV team to participate in a group discussion about the grantee's infrastructure development logic model. This discussion will include a thorough review of the logic model components, any changes or updates that should be made to the model to reflect what the grantee is currently doing, potential revisions to short- and long-term expected

[5] These long-term expected infrastructure changes may change as the logic models evolve.

infrastructure changes, and successes and challenges encountered in working toward the outcomes under each of the three infrastructure goals. The focus group will include respondents from multiple organizations, including the grantee.

Tracking Changes in System Attributes

In addition to tracking changes in grantees' infrastructure development logic models and progress toward goals, the evaluation team will track changes in system attributes—boundaries, relationships, and perspectives—over time. This part of the evaluation will draw on two main data sources: (1) site visits, and (2) the partner survey. We will glean some information about system attributes from the site visit logic model discussions described above. For example, we will learn about changes in key players at different system levels and, thus, changes in system boundaries. In addition, site visitors will work with grantees to ensure that the team selects at least one informant from each infrastructure level and at least one informant involved in activities related to each of the three EBHV goals (implementation with fidelity, scale-up, and sustainability). We will include specific topics in the site visit interviews and focus groups to learn about system attributes and infrastructure development activities (see Volume II for the master site visit protocol).

We will also conduct a partner survey to learn more about the system attributes—the boundaries, relationships, and perspectives among key partners participating in grantee projects and how these change over time (see Chapter VII for more details about the survey and Volume II for the survey instrument). We will conduct three rounds of the survey—in 2010, 2012, and 2013—to track changes in system attributes over time. Grantee liaisons will work with each grantee to generate a list of survey respondents—organizations or organizational units within larger agencies—participating in grant activities. We will use the list of key players from grantee logic models described above as a starting point for developing these lists. We will work with grantees to ensure that we select respondents from each system level at which grantees are working, including the grantee agencies, local evaluators, and national model developers. We expect to survey approximately 25 respondents per grantee, on average.

The partner survey will collect information on the following topics:

- Respondent characteristics
- System levels at which respondent is working on the EBHV project
- Infrastructure capacity activities in which respondent is involved on the EBHV project

- Patterns of communication with other EBHV partners, including frequency, type, and content of communication
- Suggestions of organizations that are not involved in the EBHV project, but should be
- Quality of collaboration among partners
- Respondents' goals for the EBHV project and assessment of how well these goals align with those of other partners

Tracking Achievement of EBHV Goals

In addition to learning about changes over time in system attributes and progress toward infrastructure development goals, the evaluation team will examine the extent to which grantees achieve the overarching goals for EBHV: (1) implementation with fidelity, (2) scale-up with fidelity, and (3) sustainability with fidelity. Developing infrastructure capacity will be of limited value if it does not lead to achieving project goals. To track achievement of these EBHV goals, we will collect data to calculate common measures of progress across grantees at baseline and six-month intervals. These data will be collected through the web-based system (see Chapter VII for more information and Volume II for actual measures). Calculating common measures at multiple time points will provide snapshots of the grantees' progress. These quantitative measures will be standardized for comparison purposes.

These common measures include:

- Implementation of the EBHV Grantee-Selected Programs with Fidelity
  - Total number of program sites (ongoing and new) targeted for home visiting programs
  - Total number of sites (ongoing and new) operating at baseline and six-month intervals
  - Number and percent of (ongoing and new) sites that are certified by the national model developer (also called the program model purveyor)
  - Number and percent of (ongoing and new) sites delivering services to families with various levels of fidelity[6]
  - Percent change in the number of sites operating with high fidelity since the previous reporting period

[6] During the evaluation process, the Mathematica-Chapin Hall evaluation team plans to identify key indicators and fidelity scales, which are described in more detail in Chapter III.

- Scale-Up of the EBHV Grantee-Selected Programs with Fidelity [7]
  - Total number of families eligible for home visiting services
  - Total number of families targeted for home visiting services
  - Current active enrollment of families in home visiting services
  - Percent change in active enrollment since the previous reporting period
  - Current active enrollment as a percentage of the total enrollment goal
  - Current active enrollment as a percentage of the total eligible families
- Sustainability of the EBHV Grantee-Selected Programs with Fidelity
  - Level of funding secured for home visiting services in each year
  - Proportion of funding that is long term, defined as secured for three years or more
  - The ratio of annual program costs to the amount of annual funding that is long term.

In the next chapter, we discuss in much greater detail how we will measure fidelity, which is critical to the initiative's first goal of EBHV implementation with fidelity. In Chapter IV, we discuss the measurement of program costs, which is a key element of the sustainability goal.

[7] The first three indicators will be used to estimate the program's reach, which is defined as the proportion of eligible families in the target area who are served by the program.