



## Supporting Evidence-Based Home Visiting to Prevent Child Maltreatment

### Evaluating Systems Change Efforts to Support Evidence-Based Home Visiting: Concepts and Methods

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**MATHEMATICA**  
Policy Research, Inc.



**ChapinHall**  
at the University of Chicago



# **Evaluating Systems Change Efforts to Support Evidence-Based Home Visiting: Concepts and Methods**

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In 2008, the Children’s Bureau (CB) within the Administration for Children and Families (ACF) at the U.S. Department of Health and Human Services funded 17 cooperative agreements to support the infrastructure needed for the high-quality implementation of existing evidence-based home visiting (EBHV) programs to prevent child maltreatment. Grantees are to leverage their grants with other funding sources to support the implementation of EBHV programs with fidelity, the scaling up of these high-fidelity home visiting models, and the sustainability of the models. Grantees must also conduct local implementation, outcome, and economic evaluations.

CB/ACF has funded Mathematica Policy Research, Inc. (MPR) and Chapin Hall at the University of Chicago to conduct a participatory and utilization-focused cross-site evaluation of the grantees’ initiatives over the next six years. The primary purpose of the cross-site evaluation is to identify successful strategies for adopting, implementing, and sustaining high-quality home visiting programs to prevent child maltreatment. The MPR-Chapin Hall (MPR-CH) cross-site evaluation will focus on four domains: fidelity, costs, systems, and family and child outcomes. The systems domain evaluation relies on system-based evaluation concepts and methods, articulating a theory of infrastructure change that incorporates key system attributes.

This memo provides a literature review for the systems domain evaluation. This literature review is not an exhaustive review of complex systems theory or of the EBHV implementation, scale-up, and sustainability literature. Instead, it focuses on three aspects of the systems domain evaluation: (1) the system-based evaluation approach and theory of change, (2) core EBHV infrastructure concepts, and (3) system-based evaluation methods.

## **System-Based Evaluation Approach**

In this section, we provide our rationale for using a system-based evaluation design, review key system concepts and attributes, and present a conceptual model of the EBHV initiative’s theory of change. These concepts and theoretical model form the basis of the systems domain evaluation and provide the foundation for the rest of the topics covered in this literature review.

### **Rationale for Using a System-Based Evaluation Design**

Traditional evaluations may depict a project or initiative as operating within an unchanging environment called “context.” In this evaluation, we see the EBHV grantees as operating in and interacting with much more 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 EBHV grantee is operating in its own sphere of contacts and relationships with individuals and organizations at many levels and with its own set of capacities, opportunities, and constraints. In effect, the cross-site evaluation must document the characteristics and changes in 17 unique systems, not one national intervention or program approach.

Our goal is to develop an evaluation design that will reflect this more complex and adaptive reality. We are using a conceptual model and evaluation strategies that track not only grantees’ plans and activities, but also key system attributes of the environments in which they are working, as well as the interactions between grantees and their environments. We are also using a flexible, developmental design that is responsive to changes in the initiatives and in their environments (Patton 2008). We think this approach will enable the evaluation to provide a more accurate picture of grantees’ experiences and draw useful lessons from those experiences on how to build

infrastructure capacity that supports the implementation, scale-up, and sustainability of high-fidelity EBHV programs.

## Complex System Concepts and Attributes

The EBHV grantees operate in complex systems, conceptualized as groups of interrelated and interdependent agents (individuals and organizations) that are working together in various settings on activities that influence the prevention of child maltreatment (Holland 1995; Foster-Fishman et al. 2007). These webs of agents form a complex whole that changes as the parts interact (Wheatley 1992; Kauffman 1995; Coffman 2007).

In these complex adaptive systems, 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 thinking” is concerned not only with looking at the interrelationships between system parts but with their relationships to a functioning whole (Trochim et al. 2006). It is important to understand not only how relationships are currently structured within a given system, but to also understand what types of relationships are needed to bring about desired system change (Foster-Fishman et al. 2007).

There are three core system attributes—boundaries, relationships, and perspectives—that influence system patterns (Williams and Imam 2007; Cabrera et al. 2008). These features are also sometimes called “conditions of self-organization” (Eoyang 2001). An important aspect of systems thinking is to ask questions about the relationships, boundaries, and perspectives within the system that influence infrastructure development (Parsons 2007).

- **Boundaries.** Most important of these attributes, perhaps, are the system’s boundaries, which define what is inside or outside of the system and which 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). In planning the EBHV evaluation, we asked the 17 grantees to define the boundaries of their systems in terms of the individuals and organizations that they were working with to prevent child maltreatment. These boundaries may change, of course, when a grantee reaches out to new partners.
- **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 in order to sustain program funding.
- **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

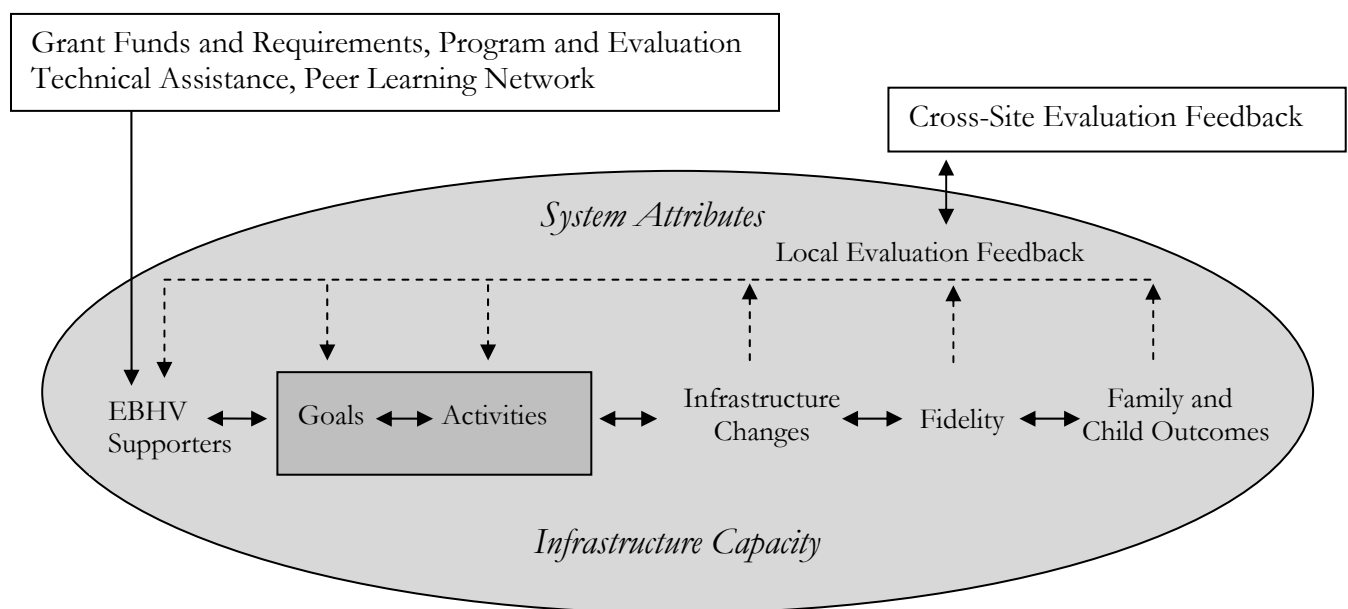
target different systemwide infrastructure goals may focus on building different kinds and combinations of infrastructure capacity.

These system concepts and attributes have been integrated throughout the design of the EBHV cross-site's systems domain evaluation. During the evaluation design process, for example, researchers worked with grantees to map their system boundaries by describing their activities and relationships with other system actors. The evaluation also includes system-based research questions, such as: How have grantees' system attributes changed over time? How have program costs, program fidelity, and changes in infrastructure capacity influenced each other over the course of the initiative? How have collaborative relationships evolved over time? and What factors and system attributes have influenced grantees' progress? Additional system-based evaluation topics are discussed in the final section of this report.

### EBHV Theory of Change

In comprehensive system-change initiatives, it is important to focus the evaluation by articulating the initiative's theory of change (Walker and Kubish 2008). The MPR-CH evaluation team developed a theory of change (Figure 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 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 system infrastructure goals—the implementation, scale-up, and sustainability of high-fidelity EBHV programs to reduce child maltreatment.

**Figure 1. EBHV National-Level Theory of Change**



Source: Mathematica Policy Research, Inc. 2009, adapted from Hodges 2007.

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 an EBHV 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.

## **EBHV Infrastructure Concepts**

In this section, we review key EBHV concepts, including infrastructure capacity, levels, goals, and changes. Based on definitions from the research literature, these terms are used in the cross-site evaluation's systems evaluation design and data collection instruments.

### **Infrastructure Capacity**

The EBHV initiative is designed to help grantees develop the infrastructure capacity needed to support EBHV programs. 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 several areas: planning, operations, workforce development, funding, collaboration, communication, community and political support, and program evaluation (Table 1).

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 over time in response to changing conditions (Holladay 2005). Effective EBHV 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, links among home visiting-related services, and other external resources and supports (Daro 2006).

Several kinds of infrastructure capacity are particularly important for leveraging system change. Collaborative structures are used by stakeholders, 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 system change include financing and accessible service delivery (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 system change by expanding knowledge and spurring action (Hodges et al. 2007).

### **Infrastructure Levels**

The implementation and spread of evidence-based practice is complex, and relies on different kinds of individual, organizational, and community capacities (Flaspohler et al. 2008). High-fidelity implementation of evidence-based programs is best achieved when “strong core implementation components are well supported by strong organizational structures, processes and cultures within an

enabling mix of external influences” (Fixsen et al. 2005). These external influences include the program’s “regulatory and funding environment and the political milieu that supports service delivery” (Raghavan et al. 2008).

**Table 1. Infrastructure Capacity Categories**

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

Sources: Flaspohler et al. 2008; Coffman 2007; and October 2008 EBHV cross-site evaluation fall 2008 kick-off meeting.

In addition to working with others within levels, it is also important to align or have similar structures, incentives, and processes across levels (Fixsen 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). Below, we describe each level in greater detail and highlight the fact that grantee activities occur within and across levels.

**Core operations level.** Core operations-level activities are defined as the most essential and indispensable components of an intervention practice or program (Fixsen et al. 2005). These operations include direct home visiting services, daily management of core home visiting operations, and ground-level implementation, as well as program adaptations and modifications. Such core components must be present for evidence-based program implementation to occur with fidelity (Fixsen et al. 2005).

**Organizational level.** Core components are contained within and 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 the organizational level,

managers also oversee program evaluation functions and intervene with external organizations to obtain ongoing resources and support for the evidence-based practices within the organization (Fixsen et al. 2005). Organizational-level functions include internal administration to support EBHV operations, external coordination with other local social service delivery agencies and organizations, and organizational cultural elements such as leadership commitment and staff belief in the program.

***Community level.*** Community-level grant activities can include developing government partnerships, advocating for community resources, building community-level awareness and support for EBHV programs, and creating political buy-in and support at the local level. At this level, for example, a grantee might work with the county board of commissioners, community advocacy groups, and local foundations to leverage local funding for EBHV 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 focused on promoting child health and development (Johnson 2009). State activities include developing regional or statewide awareness and support for EBHV 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 EBHV-related legislative, regulatory, and policy changes.

***National level.*** At the national level, leaders influence EBHV programs by creating multistate learning collaboratives to support and spread EBHV programs, supporting research on effective service delivery, providing federal leadership to support EBHV programs, and sponsoring federal legislation to support home visiting efforts (Johnson 2009). National-level activities include EBHV grant management and implementation, building awareness and support among policymakers and funders, sharing information and disseminating findings, and developing and implementing policy initiatives and financing policies.

The EBHV grantees are working within and across multiple levels to achieve the initiative's goals. Conversations with grantees revealed that all 17 grantees are working at the core operations and national levels. At the core operations level, they are using a range of infrastructure capacities, primarily planning, operations, communication, collaboration, and workforce development. At the national level, they are using primarily planning, operations, communication, collaboration, and evaluation capacities. In addition, 16 grantees are also working at the organizational level, using primarily planning, operations, funding, communication, collaboration, and community and political support capabilities. Also, 15 are working at the community/county level, using primarily planning, collaboration, community and political support, and workforce development capacities. Finally, 16 are working at the state level, using primarily planning, fiscal, communication, collaboration, and community and political support capacities.

Most grantees also reported working on some EBHV activities at multiple levels, although specific activities and levels varied by grantee. For example, some grantees reported working on developing a client outreach, recruitment, and referral system at the core operations, organizational, and community/county levels. Some grantees reported working at both the community/county and state levels on developing a program replication plan, developing a program funding plan, and conducting community needs assessments. Some grantees also reported working on developing and implementing data collection systems at the core operations, organizational, and state levels.

## Infrastructure Goals

Based on a review of the EBHV grant announcement, the grantees' proposals, project kick-off meeting materials, and subsequent conversations with grantees, we confirmed that the grantees are working to accomplish three overall infrastructure goals:

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

Conversations with grantees suggest that almost all of the grantees are focusing on all three goals, although not to the same degree. Specifically, all 17 grantees reported working on the first (implementation with fidelity) and second (scale-up with fidelity) goals, and 16 (all but one) grantees reported working on the third (sustainability) goal. Grantees' emphasis among these goals may also change over time as the initiative evolves and as grantees respond to changes in their environments. Each infrastructure goal is described in more detail below.

***Implementation with fidelity.*** This refers to the extent to which an intervention is implemented as intended by the intervention's designers, whether the intervention is implemented in the proper manner, and the quality of key aspects of the intervention such as the home visitor-practitioner relationship (Daro 2006). The EBHV grantees have identified a range of infrastructure changes that they plan to accomplish to achieve implementation with fidelity. These changes include creating a coordinated and efficient triage and referral system to match families with appropriate services, developing more rigorous programs that meet community needs, increasing organizational capacity to implement and evaluate evidence-based practices, developing mechanisms to support high-quality training and supervision of home visitors, integrating public and private funding sources for EBHV programs, and increasing collaboration with stakeholders and support for EBHV programs.

Researchers have also identified different kinds of infrastructure capacity as important to high-fidelity implementation of EBHV programs. Carroll argues that implementation monitoring, feedback, and training increase the likelihood of high-fidelity implementation (Carroll et al. 2007). Chinman and his colleagues have developed a checklist of the capacities needed to implement evidence-based prevention programs (Chinman et al. 2005). Through a review of over 500 quantitative studies, Durlak and DuPre found that "the level of implementation affects the outcomes obtained in promotion and prevention programs." They identified 11 factors affecting the implementation of evidence-based practices, many of which matched factors identified in comparable studies by Fixsen et al. 2005, Greenhalgh et al. 2004, and Stith et al. 2006). The National Implementation Research Network (NIRN) has also identified factors that facilitate the implementation of evidence-based practices (NIRN 2009). These lists of implementation factors are presented below (see Table 2). Although these researchers place the most emphasis on staff-related capacity, they also acknowledge the importance of technical expertise, funding, and community linkages in implementing high-fidelity programs.

**Table 2. Implementation with Fidelity Capacities**

Chinman et al. 2004	Durlak and DuPre 2008	NIRN 2009
<b>Staff Capacities</b>		
An adequate number of staff in clearly defined roles with appropriate credentials and experience, leaders who understand the program, strong program leadership, strong staff commitment to the program	Positive work climate, leadership, program champions, and providers' skill proficiency	Staff experience, belief that the program will benefit consumers, good fit between the philosophy of the program and the host agency, understanding of the program's theory of change, staff commitment to fidelity, leadership, internal and external champions, and agency-wide support
<b>Technical Expertise</b>		
Staff with the experience needed to address all aspects of program planning, implementation, and evaluation	Formulation of tasks, administrative support, training, and technical assistance	Program developer support, availability of onsite training, ongoing coaching and consultation and evaluation
<b>Funding Strategies</b>		
Adequate funding to implement the program as planned from many different funding streams	Funding	Financial support
<b>Linkage Capacities</b>		
Developing links, sharing resources, and gaining buy-in from community leaders	Shared decision making, coordination with other agencies	Community support

Sources: Chinman et al. 2004, Durlak and DuPre 2008, and NIRN 2009.

***Scale-up with fidelity.*** The scale-up or spread of a high-fidelity evidence-based program occurs both through diffusion (informal, unplanned, decentralized, and mediated by peers) and dissemination (formal, planned, often centralized, and likely to occur through vertical hierarchies) (Greenhalgh et al. 2004). For many home visiting programs, the most common growth has been an organic evolution from the ground up, backed by support from the grassroots organizational and community levels, as well as strong support from key state legislators (Wasserman 2006).

The EBHV grantees have identified a range of infrastructure changes that they plan to accomplish to scale up their interventions while maintaining fidelity. These changes include infrastructure changes that aid the replication and expansion of their EBHV model(s), creating a coordinated and efficient triage and referral system that matches families with appropriate services, ensuring that the community has enough EBHV providers to meet its needs, establishing the EBHV initiative as a replicable model for the state, developing new services for underserved populations, increasing integrated funding sources for EBHV programs, increasing organizational capacity to implement and evaluate evidence-based practices, and increasing collaboration and support for EBHV programs.

Researchers have identified different kinds of infrastructure capacity as important to the scale-up of high-fidelity EBHV programs. Capacities recommended by the Nurse Family Partnership (NFP) to foster effective dissemination and scale-up of NFP interventions include having: “an organization and community that are fully knowledgeable and supportive of the program; access to sustainable funding appropriate to the program’s design; a staff that is well trained and supported in the conduct of the model; and real-time information on program and benchmark outcomes to guide efforts in continuous quality improvement” (Olds et al. 2003; O’Brien 2005).

Other recommendations for bringing quality home visiting programs to full scale include identifying the capacity needed to maintain program quality through training, supervision, technical assistance, research, communication, and advocacy (Weiss and Klein 2006). Researchers also recommend creating and using a management information system for tracking and monitoring activities, investing in research to monitor what happens on home visits to support the best outcomes, and setting realistic expectations for what can be accomplished through home visiting programs (Weiss et al. 2002).

***Sustainability with fidelity.*** Sustainability has three elements: (1) the continuation of beneficial outcomes after program funding ends, (2) the continuation of program activities through institutionalization or routinization, and (3) continued community capacity to develop and deliver the service (Schreier 2005). Common sustainability challenges for home visiting programs include: “securing funding from several federal, state, local, and private funding sources that support services and system functions without compromising quality or the program model’s design; demonstrating the efficacy of the home visiting model and implementation; ensuring that the program model can be replicated with quality; and maintaining program characteristics that made the home visiting program successful in the past” (Wasserman 2006).

The EBHV grantees have identified a range of infrastructure changes that they plan to accomplish to meet these challenges. These changes include increasing and integrating funding sources to sustain the program, establishing their EBHV program as a replicable model for their state, carrying out infrastructure changes to support EBHV sustainability, making referrals to EBHV for first-time parents the norm among prenatal and pediatric providers, improving capacity to implement and evaluate evidence-based practices, disseminating findings of improved outcomes statewide to increase support for program funding, and increasing collaboration with stakeholders to support EBHV programs.

Researchers have identified different kinds of infrastructure capacity relevant to the sustainability of high-fidelity EBHV programs. One study provides a sustainability capacity checklist that recommends the following activities: “(1) developing a sustainability plan, (2) starting discussions early with community members about sustaining the program, (3) ensuring that the community’s needs are driving the program, (4) developing a consensus-building process to reach a compromise for addressing different stakeholder needs, (5) ensuring that the program is achieving its desired outcomes, (6) beginning an assessment of local community resources to identify potential financial ‘homes’ for the program, (7) considering other options (such as down-scaling the program) with those who might want to sustain the program, (8) having clear strategies in place for developing gradual financial self-sufficiency, (9) having a strong organizational base for the program, (10) ensuring that the program can be integrated with other programs, (11) having a program that is compatible with the mission and activities of the host organization, and (12) having a respected program champion who can gain endorsement for the program from the top of the organization” (Chinman et al. 2004). These activities may change over time (Schreier 2005).

Factors at multiple levels influence the sustainability of a program, including aspects of its design (cost, adaptability, and benefits), organizational factors (a program champion, overall capacity, and a fit with the organization's mission), and community-level factors (stability of external economic and political condition, support of community stakeholders and leaders, and access to new funding sources) (Schreier 2005). At a minimum, a program needs to deliver a service that people think is needed and effective, operate the program efficiently, raise funds, and gain public and stakeholder approval and support (Stevens and Peikes 2006). In particular, aggressive fundraising has been associated with sustainability (Beery et al. 2005).

At the community level, program leaders can support sustainability in several ways. Strong leaders can connect the project with local networks of supporters—beneficiaries, community leaders, and other agencies (NCCE 2002). Project leaders can also use evaluation results as marketing tools for raising replacement funds (Weiss et al. 2002). In addition, they can increase program visibility through participation in community events and frequent media coverage (Hailman 2001). Programs are also more likely to be sustained in communities where the public is aware of the issues being addressed by the program and has articulated community goals and values that are supportive of the program (Howard and Howard 2000).

## System-Based Evaluation Methods

This final section of the literature review focuses on five critical challenges of the EBHV evaluation design: (1) evaluating system change in complex adaptive environments, (2) measuring systemwide change, (3) measuring changes in infrastructure capacity, (4) measuring changes in system relationships, and (5) providing continuous feedback to support systemwide learning. In this final section, we describe each of these challenges, review lessons from research, and then briefly describe the approach we have proposed in the systems domain's evaluation design.

### Evaluating System Change in Complex Adaptive Environments

The EBHV grantees are operating within their own contexts, pursuing unique sets of strategies to achieve their own infrastructure changes. They are also operating in dynamic, evolving conditions, with changing funding and operational challenges and opportunities. One challenge is to recognize that their worlds are dynamic, evolving, and interconnected, and to avoid using theories of change in the evaluation that are too static, narrow, and reductionist and thus do not match the complexity of the grantees' situations (Stermann 2006). Another challenge is to use evaluation methods that can track changes in grantees' local conditions over time (Stacey 2007).

**Research lessons.** One temptation in comprehensive system change initiatives is to try to measure everything possible, which proves to be neither feasible nor cost-effective. A better alternative is to specify a theory of change that articulates the alignment of activities that are critical to system change (Walker and Kubish 2008). It is important to begin the evaluation process with a “clear map of what initiatives are accomplishing compared to what they are trying to achieve, and how the change process is expected to occur” (Coffman 2007). A developmental evaluation approach, in which evaluators work closely with evaluation stakeholders to understand and support developmental or emergent changes in program design, may also be appropriate (Coffman 2007; Patton 2008). Another response is to shift evaluation designs over time or to use multiple designs simultaneously or sequentially in order to capture multiple dynamics operating within grantees' initiatives (Parsons 2007).

**EBHV design.** MPR grantee liaisons worked with grantees to develop grantee-specific theories of change, using information gathered from grantee proposals, kick-off meeting presentations, and follow-up phone conversations. In addition, at a breakout session of the March 2009 grantee meeting, grantees discussed how they conceptualized their systems and system change efforts. Some grantees described change in terms of changing system “stocks and flows” and feedback, creating common intake and triage processes to increase the flow of EBHV families into appropriate services. Others described creating “networks of networks,” creating separate county-level peer learning communities that are connected and facilitated by the grantee. Some used ecological terms, describing their EBHV programs as operating within, and influenced by state policies, operating within national policies. Taken together, these concepts and ideas constitute grantees’ individual theories of infrastructure change and grantee-specific infrastructure change logic models.

To track system-based changes over time, the evaluation will create web-based reports customized for each grantee using grantee-specific logic models. These six-month reports will allow grantees to confirm whether their goals, expected infrastructure changes, and activities have changed, modify these elements, and add any new activities or key players, as well as identify stopped or completed activities and key players no longer involved in the project. Grantees will also be asked for project changes and updates during two cycles of cross-site evaluation site visits.

## **Evaluating Systemwide Change**

In addition to working vertically in hierarchical government structures, the grantees are also working horizontally through a fundamentally different structure (“governing by network”) in which public, private, and nonprofit organizations are joining up to improve services (Goldsmith and Eggers 2004; Kamarck 2007). In these conditions, it is not only a challenge to conceptualize such projects as networked systems, but also to integrate them and develop effective knowledge-sharing practices across organizations and sectors within those networks (Goldsmith and Eggers 2004; Kamarck 2007).

**Research lessons.** Public managers who work with networked initiatives should set performance standards and measures for the overall initiative, as well as track contributions made by component parts that contribute to the initiative as a whole (Kamarck 2007). In developing systemwide measures, it is important to recognize that the whole is not simply the aggregate of its constituent parts (Flaspohler et al. 2008). One method for measuring system change is to look for shifts in “system patterns - similarities, differences, and relationships - over time in multiple units of analysis and in multiple sites” (Eoyang and Yellowthunder 2007). For example, one strategy for measuring systemwide patterns of change in an organization is to track the hierarchical alignment of goals and activities across nested organizational levels (units within a program, division, and department) and the horizontal alignment of goals and activities across different departments, divisions, programs, or units (Eoyang and Holladay 2005).

**EBHV design.** The systems domain evaluation will track changes over time in systems’ attributes, progress toward grantees’ changes in infrastructure capacity, and grantees’ achievement of their EBHV goals. The evaluation will attempt to derive implementation lessons by examining barriers and facilitators to making progress toward EBHV goals in the context of change over time in the patterns of the boundaries, relationships, and perspectives of grantees. To track achievement of the three EBHV goals, we propose to collect common measures at baseline and at six-month intervals. These quantitative measures will be standardized for comparison purposes. To analyze these data, we will look for changes in the measures over time and across grantees. Families will

serve as the unit of analysis for the scale-up goal. Program sites will serve as the unit of analysis for the implementation goal. Dollars will serve as the unit of analysis for the sustainability goal.

## **Measuring Infrastructure Capacity Change**

The goals of implementing, scaling up, and sustaining EBHV programs are almost overwhelmingly complex, requiring action on multiple fronts involving many different kinds of infrastructure capacity. Adding to this challenge on the evaluation side is the need to measure a wide variety of variables over time (Fixsen et al. 2008). The challenge in this evaluation will be to manage the design, collection, and analysis of the wealth of information needed for a comprehensive, complex system-based evaluation.

**Research lessons.** Experts' recommendations in this area are expansive and exhaustive. Evaluations of social change innovations should be: "theory-driven; process-oriented; ecological; using common definitions and measures; collaborative; multidisciplinary and multi-method; meticulously detailed; and participatory" (Greenhalgh et al. 2004). A system-based evaluation design should also: "consider the whole initiative, its parts, its context, identify multiple perspectives, obtain data from multiple aspects of the initiative, and draw on multiple research and theory bases" (Parsons 2007). Change should be measured in each part of the system— system norms, system resources, and system operations for all niches, organizations, and actors (Foster-Fishman et al. 2007). The core components, organizational variables, and external influence factors should also be measured simultaneously and at different levels (Fixsen et al. 2008).

Multiple methods are recommended to triangulate and corroborate information regarding grantees' achievement of goals; development of infrastructure capacity; levels of activities; relationships with key players; social, political, and economic contexts; implementation successes and challenges; and lessons learned from these experiences. Recommended methods include case studies, key informant interviews, media tracking, theory of change logic models, experimental and quasi-experimental designs, program monitoring, quality assessments, performance audits, management information systems, customer surveys, system mapping, network analysis, and population-based demographic analyses (Coffman 2007).

**EBHV design.** In order to capture the richness of grantees' experiences, the systems domain evaluation is designed to gather a variety of qualitative and quantitative data from many sources at different levels across multiple time periods. In addition to the quantitative data mentioned previously (number of families served, number of program sites operating with fidelity, total funding allocated to EBHV programs, etc.), the evaluation will also collect qualitative data through site visits and a web-based data system. At six-month intervals, grantees will answer a series of qualitative questions in three topic areas: (1) progress, successes, and challenges over the past six months; (2) key events or turning points in their projects over the past six months; and (3) ongoing assessment of their current infrastructure capacity.

The findings from the qualitative analyses will be used to create grantee-specific case studies and to conduct a cross-site analysis of the patterns of grantee activities, system attributes, and changes in infrastructure capacity. Descriptive statistics will be computed for the quantitative measures that will be collected through the cross-site evaluation's web-based data collection system. The evaluation team will also create scale scores for measures of the nature of collaboration among partners gathered through site visit interviews and partner/network surveys.

A network analysis will provide a quantitative assessment of the structure of project processes, identify the key players in these networks, and track the evolution of these networks. The results of these analyses will be used in the cross-site and cross-domain analyses to understand the relationships among grantees' network structures, infrastructure changes, achievement of EBHV goals, and their costs and program fidelity.

## Measuring Changes in System Relationships

Collaboration among partners involved in each grantee project is a central strategy for working toward infrastructure change goals. Understanding grantee relationships with key partners and how they change over time is important for understanding how the grantees' initiatives develop, as well as the implementation challenges and successes that grantees experience. The grantees have identified increasing their collaboration with key system stakeholders at multiple levels as an important infrastructure change strategy. The challenge is to use the right data collection method to capture the dynamic and interactive nature of these relationships.

**Research lessons.** The best methods for capturing and depicting evolving system relationships are system mapping and network analysis (Patton 2008). Network analyses are central to system-based evaluations because “networks are by their very nature the fabric of most complex systems, and nodes and links deeply infuse all strategies aimed at approaching our interlocked universe” (Barabasi 2002). Complex system models such as network analyses are also important methodologically because they “bridge the gap between richness and rigor” (Miller and Page 2007).

**EBHV design.** To collect information on grantees' system relationships, the systems domain evaluation proposes to conduct a partner/network survey timed to coincide with each round of site visits as well as at the end of the grant period.<sup>1</sup> Conducting this survey will enable us to obtain views from multiple perspectives, including grantee staff, service providers, county and state government officials, and national model developers. Through a partner/network survey, we will be able to confirm and track not only the infrastructure areas in which partners are collaborating, but also whether their ties become stronger or weaker and more or less collaborative over time—moving along the collaboration continuum from sharing information to sharing service referrals, training, technical assistance, and resources. By analyzing network information by infrastructure level, the evaluation will also be able to track changes in the size and scope of these networks within and across levels, quantifying both vertical alignment and horizontal integration of grant activities across entities and organizations. We will also add a set of collaboration rating scale questions to the survey to triangulate and corroborate these network findings.

## Providing Continuous Feedback to Support Systemwide Learning

There are many valuable uses for the systems evaluation's findings, including determining whether the system initiative is achieving its overall goals, identifying effective system intervention strategies for implementing EBHV programs, and providing a framework for understanding common evaluation issues, such as unintended consequences, irreproducible results, and lack of program fidelity (Kamarck 2007; Fixsen et al. 2005; and Patton 2008). Another important use of the

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<sup>1</sup> The Children's Bureau has not yet approved the addition of a network survey to the cross-site evaluation. We believe it is the most efficient way to get at this key component of systems change. If the survey is not funded, we will explore other ways to collect this information but, so far, the alternatives we have considered have considerable limitations and lack the richness provided by a partner/network survey and network analysis.

systems evaluation's findings is to provide continuous feedback and learning to the EBHV initiative (Coffman 2007). Regardless of the evaluation design used, system initiatives "generally benefit from evaluations that make continuous learning and feedback a priority" (Coffman 2007). Providing a structure and flow of evaluation information and feedback across the initiative's stakeholder groups not only reinforces system values and expands the knowledge base of system participants, the very act of capturing what is emerging from the initiative and injecting that information back into the evolving system makes the evaluation an integral part of the system intervention (Hodges et al 2007; NCI 2007; Patton 2008).

**Research lessons.** Researchers provided practical advice about developing continuous feedback and learning mechanisms. Specifically, organizational, technological, information, and financial infrastructures should be developed to collect, synthesize, and distribute evaluation findings without causing information overload for system stakeholders (National Cancer Institute 2007). Adequate feedback loops should be established to ensure timely reporting of evaluation findings (Coffman 2007). The content of the evaluation findings should be both timely and relevant to issues of system performance (Hodges 2007). Evaluation findings should also be shared with state or county officials responsible for contracting with system providers. "That is the level at which a network really begins to learn from itself" (Kamarck 2007). In addition, it is important to bring innovators [grantees] together to "systematically and analytically reflect on what they have learned and to rigorously identify patterns of effective action" (Westley et al. 2006). In such discussions, participants should "report, discuss, and learn from failures as well as successes—to keep those balanced and in perspective" (Westley et al. 2006).

**EBHV design.** The cross-site evaluation has incorporated several elements that support ongoing feedback and learning among the initiative's grantees and other stakeholders. For example, the Children's Bureau and the cross-site evaluation team established a peer learning network (PLN) to facilitate information sharing across grantees, federal staff, and other stakeholders. The systems domain evaluation team hosted a set of PLN calls to solicit feedback from grantees on the system evaluation design and to share information regarding grantees' infrastructure goals and activities. In addition, the team plans to share three rounds of network analysis results with grantees throughout the evaluation and will contribute to other cross-site evaluation findings reports, briefings, memos, webinars, and presentations.

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