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Active Implementation Frameworks for Program Success

How to Use Implementation Science to Improve Outcomes for Children

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Over the past decade the science related to developing and identifying evidence-based programs and practices for children and families has improved significantly. However, the science related to implementing these programs with high fidelity in real-world settings has lagged far behind. Several recent reports from groups such as the Institute of Medicine (2000, 2001, 2007) have highlighted the gap between researchers' knowledge of effective interventions and the services actually received by vulnerable populations who could benefit from research-based interventions. In fact, the lag time between translating research into practice has been documented as 20+ years.

The research-to-practice gap is a critical issue because children and families cannot benefit from services they don't receive. In 2005, the National Implementation Research Network released a monograph (Fixsen, Naoom, Blase, Friedman, & Wallace) that synthesized implementation research findings across a range of fields and developed four overarching frameworks, referred to as the Active Implementation Frameworks, based on these findings.

Although creating practice and systems change is a nonlinear, interconnected process, for the purpose of this article we will discuss these frameworks individually.

1. **Implementation Stages**—Conducting stage-appropriate implementation activities is necessary for successful service and systems change.
2. **Implementation Drivers**—Developing core implementation components, referred to as Implementation Drivers, results in an implementation infrastructure that supports competent and sustainable service delivery.
3. **Policy–Practice Feedback Loops**—Connecting policy to practice is a key aspect of reducing systems barriers to high-fidelity practice.
4. **Organized, Expert Implementation Support**—Implementation support can be provided externally through active purveyors and intermediary organizations or internally through Implementation Teams. There is evidence that creating Implementation Teams that actively work to implement interventions results in quicker, higher-quality implementation.

Implementation Stages

There is substantial agreement that planned change is a recursive process that happens in discernable stages. It is clear that implementation is not

Abstract

Over the past decade the science related to developing and identifying evidence-based programs and practices for children and families has improved significantly. However, the science related to implementing these programs in early childhood settings has lagged far behind. This article outlines how the science of implementation and the use of evidence-based Active Implementation Frameworks (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005) can close the research-to-practice gap in early childhood and ensure sustainable program success. Four implementation frameworks include: Implementation Stages; Implementation Drivers; Policy–Practice Feedback Loops; and Organized, Expert Implementation Support. The authors provide examples and discuss implications for early childhood settings.

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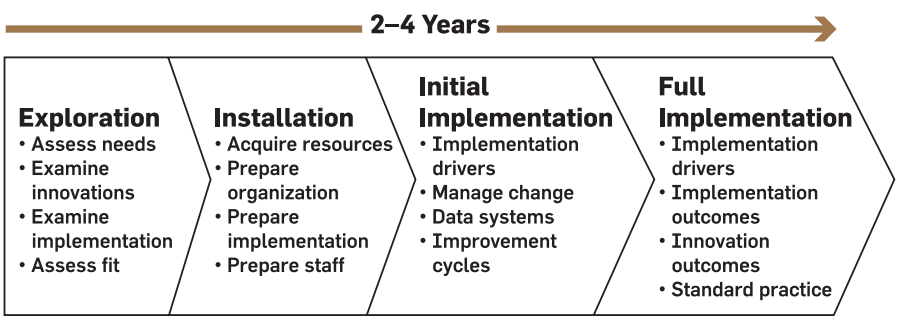
an event, but a process, involving multiple decisions, actions, and corrections to change the structures and conditions through which organizations and systems support and promote new program models, innovations, and initiatives. Implementing a well-constructed, well-defined, well-researched program can be expected to take 2 to 4 years (Bierman et al., 2002; Fixsen, Blase, Timbers, & Wolf, 2001; Panzano & Roth, 2006; Prochaska & DiClemente, 1982; Solberg, Hroscikoski, Sperl-Hillen, O'Conner, & Crabtree, 2004).

There are four functional stages of implementation (see Figure 1). Sustainability is embedded within each of the four stages rather than considered a discrete, final stage. Each stage of implementation does not cleanly and crisply end as another begins. Often they overlap with activities related to one stage still occurring or reoccurring as activities related to the next stage begin. The following section describes each of the four stages in more detail.

Exploration Stage

The overall goal of the exploration stage is to examine the degree to which a particular model, program, or approach meets the community's needs and whether implementation is feasible. In this first stage of implementation, communities must assess the goodness of fit between potential program models and the needs of the children and families they serve. Requirements for implementation must be carefully assessed and potential barriers to implementation examined. Involvement of key stakeholders and the development of program champions are key activities during this stage. A prerequisite for implementation is to ensure that core intervention components are identified and fully operationalized. Even with existing evidence-based and evidence-informed practices, more program development work might need to be done during the exploration stage before final implementation decisions can be made.

Figure 1. Implementation Stages



Installation Stage

The installation stage is often overlooked in implementation. Once a decision is made to adopt a program model, many structural and instrumental changes in a number of settings and systems must be made in order to initiate the new practices. Practical efforts to initiate the new program are central to the installation stage and include activities such as developing referral pathways, ensuring that financial and human resources are in place, and finding physical space or purchasing equipment and technology. Developing the competence of practitioners is a key component of this stage to ensure that programs are implemented with fidelity.

Initial Implementation Stage

During the initial implementation stage, the new program model or initiative is put into practice. Attempts to implement a new program or innovation often end or seriously falter during the installation stage or early in the initial implementation stage. The key activities of the initial implementation stage involve strategies to promote continuous improvement and rapid cycle problem solving. Using data to assess implementation, identify solutions, and drive decision making is a hallmark of this stage. It is critical to address barriers and develop system solutions quickly rather than allowing problems to re-emerge and reoccur.

Full Implementation Stage

Full implementation occurs as the new learning at all levels becomes integrated into practice, organization, and system settings and practitioners skillfully provide new services. The processes and procedures to support the new way of work are in place, and the system, although never completely stable, has largely been recalibrated to accommodate and, it can be hoped, fully support the new ways of work. The time it takes to move from initial implementation to full implementation will vary depending upon the complexity of the new program model, the baseline infrastructure, the availability of implementation supports and resources, and other contextual factors.

Sustainability

Sustainability planning and activities need to be an active component from the initial stages of implementation. To sustain an initiative, both financial and programmatic sustainability are required. Financial sustainability involves ensuring that the funding streams for the new practice are established, reliable, and adequate. Programmatic sustainability is related to ensuring that sustainable supports are in place to continue effective training, coaching,

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and performance assessment protocols; to measure fidelity and make data-driven decision for continuous improvement; and to ensure that facilitative policy-making and procedural decisions continue to support full implementation.

Questions to Consider

The following are questions to consider when conducting stage-based activities to support evidence-based practices in early childhood:

- How might stage-based work support early childhood program implementation?
- How can the careful assessment and selection of early childhood interventions be supported?
- What role can fit and feasibility assessments play in early childhood programming?
- How can issues of readiness and buy-in be assessed and addressed?
- What types of stage-based data collection are important to consider before moving to the next stage?

Implementation Drivers

The implementation drivers are the core components or building blocks of the infrastructure needed to support practice, organizational, and systems change. The implementation drivers emerged on the basis of the commonalities among successfully implemented programs and practices (Fixsen et al., 2005; Fixsen, Blase, Duda, Naoom, & Wallace, 2009) and the structural components and activities that make up each implementation driver contribute to the successful and sustainable implementation of programs, practices, and innovations (see Figure 2).

There are three types of implementation drivers[1] and when used collectively, these drivers ensure high-fidelity and sustainable program implementation: competency drivers, organization drivers, and leadership drivers.

Competency Drivers

Competency drivers are mechanisms to develop, improve, and sustain practitioners' and supervisors' ability to implement a program or innovation to benefit children and families. The four competency drivers include selection, training, coaching, and performance assessment. The competency drivers are described below.

[1] The Active Implementation Frameworks consist of three types of drivers: competency, organization, and leadership. For the purpose of this article, only competency and organization drivers are discussed.

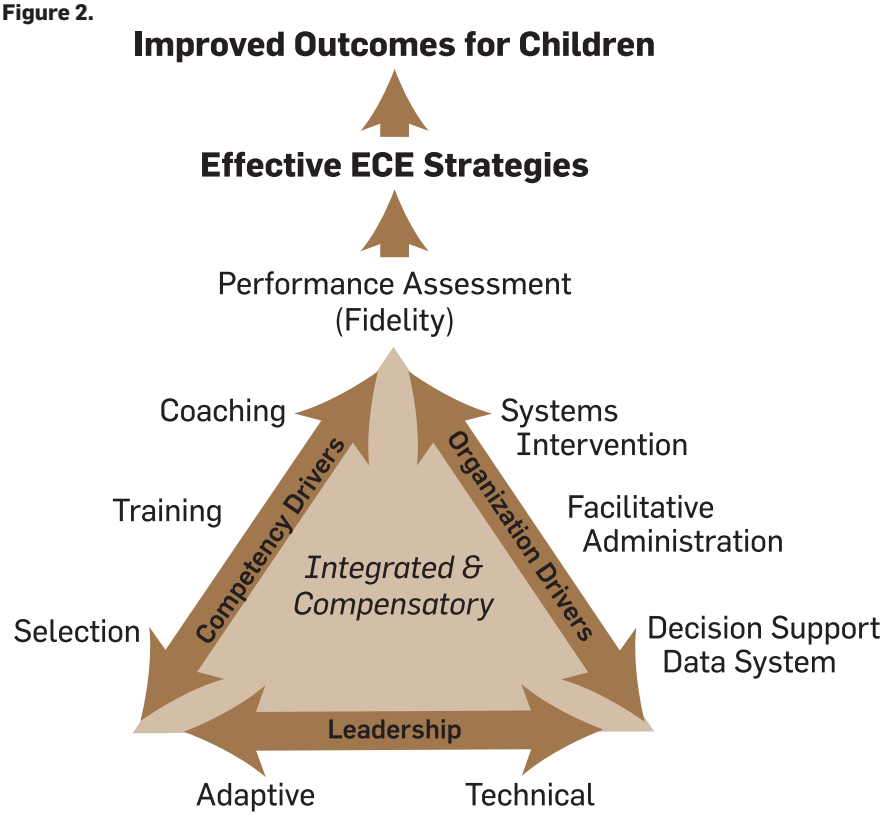


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Communities must assess the goodness of fit between potential program models and the needs of the children and families they serve.

- **Selection**—Effective staffing requires the specification of required skills, abilities, and other model-specific prerequisite characteristics. Once these prerequisites have been identified, agencies must identify methods for recruiting likely candidates who possess these skills and abilities, protocols for

Figure 2.



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Note: ECE = Early childhood education

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Most new skills can be introduced in training but must be practiced and mastered on the job with the help of a coach.

interviewing candidates, and criteria for selecting practitioners with those skills and abilities.

- **Training**—Direct service practitioners and others involved at the agency need to learn when, how, and with whom to use new skills and practices. Training should provide knowledge related to the theory and underlying values of the program, use adult learning theory, introduce the components and rationales of key practices, provide opportunities to practice new skills to meet fidelity criteria, and receive feedback in a safe and supportive training environment.
- **Coaching**—Most new skills can be introduced in training but must be practiced and mastered on the job with the help of a coach. Agencies should develop and implement service delivery plans for coaching that stipulate where, when, with whom, and why coaching will occur; use multiple sources of data to provide feedback to practitioners including direct observation; and use coaching data to improve practice and organizational fidelity.
- **Performance Assessment**—Evaluation of staff performance is designed to assess the application and outcomes of skills that are reflected in selection criteria, taught in training, and reinforced in coaching. Agencies should develop and implement transparent staff performance assessments, use multiple sources of data to assess performance, institute positive recognition so assessments are seen as an opportunity to improve performance, and use performance assessment data to improve practice and organizational fidelity.

Organization Drivers

Organization drivers intentionally develop the organizational supports and systems interventions needed to create a hospitable environment for new programs and innovations by ensuring that the competency drivers are accessible and effective and that data are used for continuous improvement. The organization drivers are described below.

- **Decision-Support Data Systems**—Data are used to assess key aspects of overall performance of an organization and support decision making to ensure continuing implementation of the intervention over time. Decision-support data systems include quality assurance data, fidelity data, and outcome data. Data need to be reliable, reported frequently, built into practice routines, accessible at actionable levels, and used to make decisions.
- **Facilitative Administration**—Administrators provide leadership and make use of a wide range of data to inform decision making, support the overall processes, and keep staff organized and focused on the desired innovation outcomes. Agencies should ensure leadership is committed to the new program and is available to address challenges and create solutions, develop clear communication protocols and feedback loops, adjust and develop policies and procedures to support the new way of work, and reduce administrative barriers.
- **Systems Interventions**—These are strategies to work with external systems to ensure the availability of financial, organizational, and human resources required to support the work of practitioners. The alignment of external systems to support the work is a critical aspect of implementation.

Questions to Consider

The following are questions to consider when installing implementation drivers to support evidence-based practices in early childhood:

- How are the implementation drivers relevant to early childhood program implementation?
- Within early childhood, which drivers have your program given the most and least attention to? Why?
- How can the drivers framework improve the implementation infrastructure of early childhood programs?

Systems Alignment in Early Childhood: The Cascading Logic Model

The implementation drivers framework demonstrates that organization and systems change is in service to practice change. The organization drivers ensure that hospitable environments are developed to host the required changes for practitioners and for the competency drivers to be used effectively. It is important to remember that "systems don't change; people do." (J. Wotring, personal communication, 2004). Therefore, systems change will require the implementation of strategies to change and maintain the behavior of every individual at every level of the current early childhood system in order to create hospitable organizational systems and ensure practitioners are working differently with children and families.

How can a program define and measure the changes that need to take place at each level of the early childhood system to ensure that practice change occurs and, ultimately, there are improved outcomes for children and families? "We tend to focus on snapshots of isolated parts of the system and wonder why our deepest problems never seem to get solved" (Senge, 1990, p.7). The cascading logic model (Blase, 2010; Metz, 2011) demonstrates the relationships between early childhood interventions and their accompanying implementation strategies.

On the next page we provide an example related to the implementation of early care and education professional development strategies (see Figure 3). The top row of the cascading logic model represents the theory of change related to the proposed intervention. In this case, we propose that the intervention—evidence-based implementation practices in early care and education settings—will lead to high-quality early care and education practices and, consequently, improved outcomes for children.

From this point on, the cascading logic model helps to clarify which adults need to change their practices in order to support the full and effective implementation of the early care and education evidence-based practices. Early care educators are the adults who interact directly with children and families.

All of the benefits to children and families are derived from those adults providing

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services fully and effectively. Therefore, in the next level of the cascade, the focus shifts from children and families to early care educators who will provide effective services. How will they gain the knowledge, skills, and abilities needed to provide effective services? In this logic model, the early care educators will be supported by their agency managers, who will use best implementation practices to ensure that early care educators receive the training, coaching, and support they need.

At the next level of the cascade, the managers of the early care provider agencies will be supported by regional and state early care and education trainers, quality consultants, and technical assistance providers to ensure that they can deliver the necessary supports to their early care educators.

At the next level of the cascade, trainer, quality consultants, and technical assistance providers will need to be supported by the state-level program and agency administrators who will operate using best implementation practices. To develop this implementation infrastructure, it will be necessary for changes to be made at multiple levels of the early childhood systems simultaneously, to develop implementation capacity to support and sustain effective supports and practices.

Implementation Teams and Expert Implementation Support

Traditional approaches to disseminating and implementing evidence-based and evidence-informed practices for children and families have not been successful in closing the research-to-practice gap. In extensive reviews of the dissemination and diffusion literature (Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004; Hall & Hord, 2011), past efforts to support implementation have been characterized as "letting it happen" or "helping it happen"(Greenhalgh et al., p. 593). Approaches that let implementation happen leave it to agency administrators, practitioners, and policymakers to make use of research findings on their own. Approaches that help it happen provide manuals or Web sites to help implementation happen in real world settings. Both of these approaches have been found to be insufficient for promoting the full and effective use of innovations (Balas & Boren, 2000; Clancy, 2006). Greenhalgh et al.(2004) identified a new category they called "making it happen," (p. 593) in which expert implementation teams can play a role in using evidence-based strategies to actively support implementation of a new innovation or initiative.

Implementation teams provide an internal support structure to move selected programs and practices through the stages of implementation in an early childhood organization or system. The teams focus on:

1. Increasing "buy-in" and readiness,
2. Installing and sustaining the implementation infrastructure,
3. Assessing fidelity and outcomes,
4. Building linkages with external systems, and
5. Problem-solving and sustainability.

An advantage of relying on implementation teams is that the team collectively has the knowledge, skills, abilities, and time to succeed. Collectively, the core competencies of the implementation team include: knowledge and understanding of the selected intervention and its linkages to outcomes; knowledge of implementation science and best practices for implementation; and applied experience in using data for program improvement.

Implementation teams might actively work with external purveyors of

Figure 3. Early Care and Education Professional Development Systems Cascading Logic Model

Population	Intervention Strategies (WHAT)	Intervention Outcomes
Children ages 0 to 5	Early care educators skillfully implement effective early care and education strategies	High quality early child care and education practices Positive child outcomes
Population	**Implementation Strategies (HOW)**	**Implementation Outcomes**
Early care educators	Provision of skillful, timely training, coaching, performance assessments in supportive administrative environments organized by early care and education providers, networks, and leadership	Early care educators competently and confidently use effective early care and education strategies
Early care and education provider managers	Agreements with trainers, quality consultants, and technical assistance providers Plans for release time for training, coaching, and ongoing consultation services Installation of data systems to monitor fidelity	Skillful, timely training, coaching, performance assessments and supportive administrative environments for early care educators
Regional and state early care and education trainers, quality consultants, and technical assistance providers	Professional development system planners develop standardized and centralized approach to professional development services in order to develop core knowledge and skills of professional development providers	Timely and skillful provision of services by regional or state early care and education trainers, quality consultants, and technical assistance providers
Early care and education policy makers, funders, and state leadership	Common mission for professional development in early care and education developed Formal structures created to build policy–practice feedback loops Changes in funding streams to support new functions and new relationships Collaborative partnerships to build professional development system infrastructure Fidelity and outcome data systems developed and maintained	Skillful professional development system leadership and planning to ensure high quality, consistent training for early care and education professional development consultants and technical assistance providers

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There must be good policy to enable good practice, but practice must also inform policy.

evidence-based practices and programs in early childhood. Early childhood purveyors represent a group of individuals very knowledgeable about the innovation who actively work to help others implement the new innovation with fidelity and good effect. Purveyors are often affiliated with researchers and training and technical assistance centers. External implementation support could be provided from intermediary organizations. Intermediaries facilitate the adoption, implementation, and sustainability of a number of evidence-based programs by:

- Broadly educating and stimulating interest
- Assessing the evidence and the program developers and purveyors
- Connecting program developers and purveyors with implementing agencies
- Ensuring effective implementation and fidelity
- Building capacity and integrating efforts
- Managing scale-up shifts
- Assisting with alignment
- Working simultaneously at multiple levels of the systems

Questions to Consider

The following are questions to consider when creating teaming structures to support evidence-based practices in early childhood:

- How might linked teams and communication protocols help implementation efforts in early childhood settings?
- How can frontline staff be included in implementation decision making?

What might be the benefits a ground-up approach to program implementation?

Improvement Cycles: Policy–Practice Feedback Loops

Connecting policy to practice is a key aspect of reducing early childhood systems barriers to high-fidelity implementation. There must be good policy to enable good practice, but practice must also inform policy. Many times early childhood practitioners experience barriers to service delivery that can be solved only at the policy level. There needs to be a system in place that ensures practice experiences are being fed back to the policy level to inform decision making and continuous improvement.

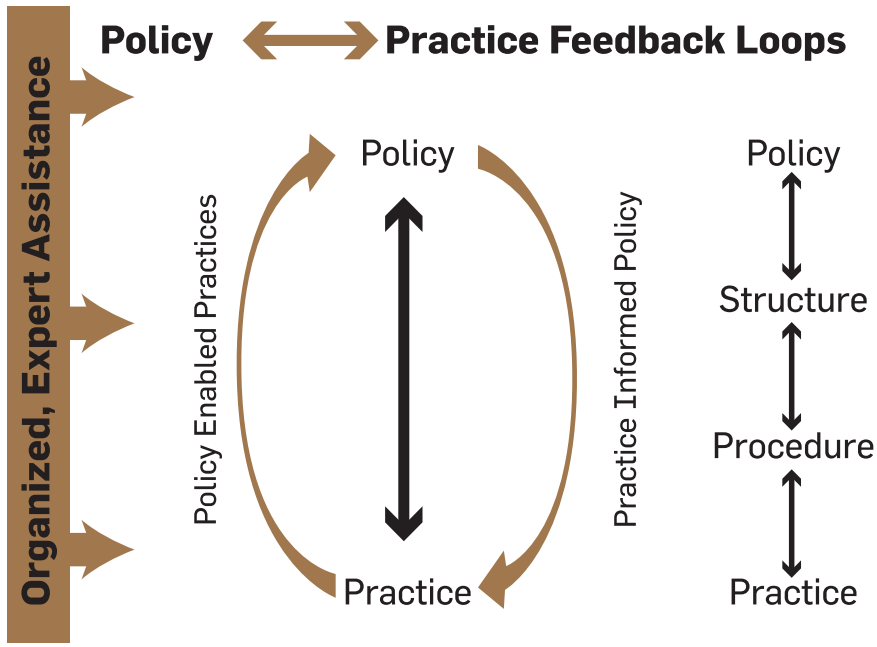
Policy–practice feedback loops (see Figure 4) are one type of improvement cycle and, therefore, follow the Plan, Do, Study, Act cycle (Deming, 1986; Shewhart, 1931) that signifies all improvement cycles.

- **Plan**—Specify the plan that helps move service and interventions forward
- **Do**—Focus on facilitating the implementation of the plan
- **Study**—Develop assessment to understand how the plan is working
- **Act**—Make changes to the next iteration of the plan to improve implementation

Policy–practice feedback loops demonstrate the Plan, Do, Study, Act cycle on a larger scale where moving through the cycle takes longer than when the Plan, Do, Study, Act is happening at one level of the system (e.g., rapid cycle problem solving at the practice level).

Effective policy–practice feedback loops must be institutionalized into the agency's way of work to ensure that change happens on purpose. New practices do not fare well in existing organizational structures and systems. Too often, effective interventions are changed to fit the system, as opposed to the existing system changing to support the

Figure 4.



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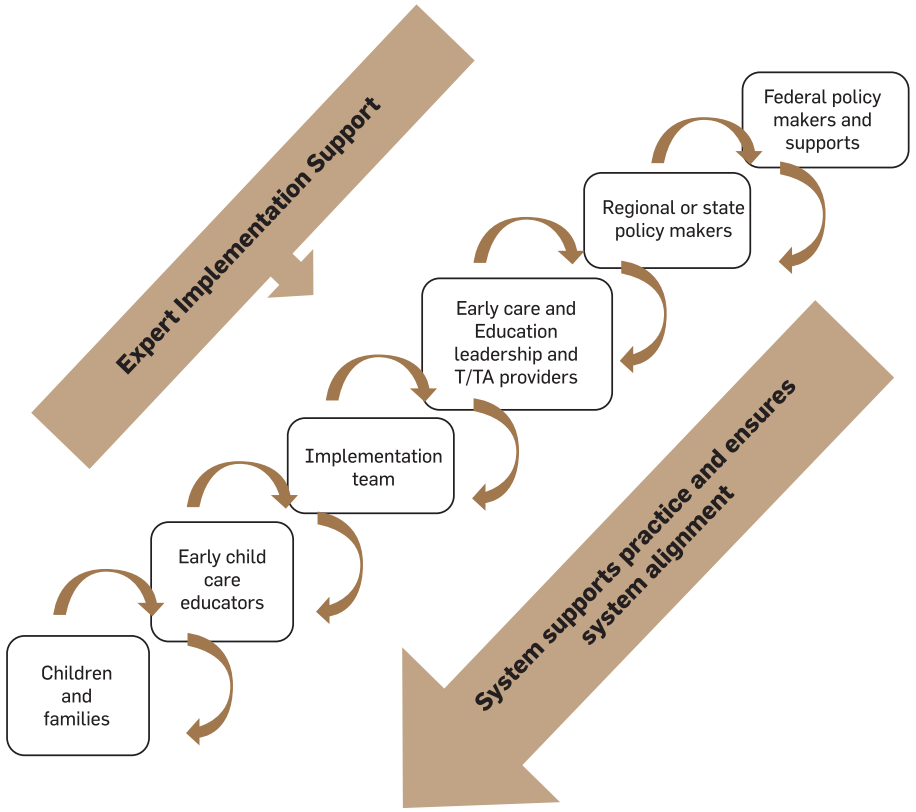
effective interventions. Embedded policy–practice feedback loops promote system change to support service change. Figure 5 depicts the role that implementation teams can play in promoting policy–practice feedback loops and linked communication up and down an early childhood system.

Questions to Consider

The following are questions to consider when instituting Policy–Practice Feedback Loops to support evidence-based practices in early childhood:

- How can formal, transparent, and regular methods for hearing from the practice level about what's working in early childhood—and then moving information up the system and back down—support effective implementation of evidence-based practices?
- What are the next right steps in creating a more hospitable policy, funding, and regulatory environment for effective early childhood interventions to thrive?

Figure 5. Implementation Teams and Policy–Practice Feedback Loops



Summary

Science-based implementation strategies promote the full and effective use of evidence-based and evidence-informed practices and innovations so that child and family outcomes are improved. The following activities will improve the uptake of evidence-based practices by early childhood practice:

- Carefully assess and select effective and feasible early childhood innovations that are well-defined with clearly articulated fidelity measures, expected outcomes, and guidelines for adaptation if necessary.
- Use a science-based implementation framework to support the change process so that effective early childhood practices can become embedded and sustained in socially complex settings. This framework consists of stage-matched activities that guide the implementation process and implementation drivers that build the infrastructure necessary to promote and sustain the new way of work.
- Develop and build the capacity of expert implementations teams that will serve as an accountable structure to move through the stages of implementation successfully.
- Institute continuous improvement processes and data feedback loops between policy and practice levels to ensure that changes are made at every level of the system to support the new program model.

Allison Metz, *PhD, is a developmental psychologist and associate director of the National Implementation Research Network and scientist at the Frank Porter Graham Child Development Institute at the University of North Carolina at Chapel Hill. Dr. Metz specializes in the effective implementation and scaling-up of evidence-based and evidence-informed programs and strategies in early childhood, early care and education, and child welfare settings. She has expertise in the areas of organizational and systems change, implementation science, capacity building, training and technical assistance, and coaching. Dr. Metz is the principal investigator of a multiyear project funded by The Duke Endowment in Catawba County, North Carolina. Dr. Metz is also the co-principal investigator of an evaluation of a professional development system anchored in an online Associates degree for infant and toddler teachers for the Office of Head Start. She also directs the provision of implementation science technical assistance to the State of Ohio regarding the scaling-up of their Alternative Response Model within child welfare statewide. Dr. Metz provides implementation-informed training and technical assistance as part of the Children's Bureau's Permanency Innovations Initiative Training and Technical Assistance Center which provides support to six grantees funded nationally to reduce the number of children in long-term foster care.*

Learn More

The National Implementation Research Network
www.fpg.unc.edu/~nirn/
The mission of the National Implementation Research Network is to close the gap between science and service by improving the science and practice of implementation in relation to evidence-based programs and practices.

State Implementation and Scaling up Evidence-based Practices Center
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The purpose of the State Implementation and Scaling up Evidence-based Practices Center is to help states establish adequate capacity to carry out effective implementation, organizational change, and systems transformation strategies to maximize the academic achievement and behavior outcomes of students statewide.

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