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FROM THE FIELD

Putting Implementation Science into Practice: Lessons from the Creation of the National Maternal and Child Health Workforce Development Center

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Abstract
Purpose This article describes how implementation science informed the design of a national training and technical assistance (TA) center, and how implementation best practices have been used to improve the quality of training and technical assistance services offered to states/jurisdictions. *Description* An existing tool, based on the Implementation Drivers Framework (in: Fixsen et al., Implementation research: a synthesis of the literature, University of South Florida, The National Implementation Research Network, Tampa, 2005), was adapted to assess efforts of the National MCH Workforce Development Center (the Center) against known implementation best practices. Staff identified specific examples of effective practice and gaps for inclusion in this article. *Assessment* Using implementation science to establish, assess and improve Center practice was both feasible and practical, requiring intentionality, dedicated time, and staff committed to deepening their understanding of implementation science. The Implementation Drivers framework proved useful for creating a shared approach to analysis and identification of opportunities for improvement of Center practice. *Conclusion* Policymakers and funding agencies should consider how training and technical assistance programs demonstrate knowledge and use of implementation science best practices among other evidence based practices in their work. Increasing attention to the use of implementation science can contribute to a higher quality of service among technical assistance centers, with the long term goal of improving outcomes for training and assistance recipients and the communities they serve. Establishing the link between customer satisfaction and quality of technical assistance, on the one hand, and long term outcomes, on the other, remains a challenge and an area of focus and learning for the Center.

Keywords Implementation science · Workforce development · Maternal and child health · Title V workforce

Significance

MCH professionals have prioritized the use of evidence based practice to enhance MCH systems. Attention to implementation practice has been shown to enhance program process and outcomes of evidence based practices (Durlak and DuPre 2008; Acosta et al. 2013; Flaspohler et al. 2012; Metz et al. 2015). Significant investments have been made in training and technical assistance centers to improve program outcomes. This article demonstrates the use of implementation science to improve the quality of training and technical assistance services. Given the significant public investment

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in training and technical assistance centers, nationwide, greater attention to their use of implementation best practice is warranted.

Introduction

As a key element of the Social Security Act of 1935, the Title V program funds public health services and systems, enabling services, and direct services to improve maternal and child health, including a significant investment in services for children and youth with special health care needs (CYSHCN). The program has historically sought to fill gaps in service access, while being a leader in advocating for quality improvement in population level and clinical programs to protect and promote the health of women, children and families. With major transformations in the organization and funding of health systems, Title V programs have been challenged to assess the changing landscape, build new partnerships and develop new strategies to advance its mission.

To better align the Title V program with the transformed national context, the Maternal and Child Health Bureau (MCHB) of the Health Resources and Services Administration (HRSA) undertook a comprehensive review of the Title V block grant program, resulting in a streamlined administrative process and a focused set of national outcome and performance measures. An enhanced focus on the use of evidence based practice to create positive change on the identified measures was prioritized (Kogan et al. 2015; Lu et al. 2015). Recognizing the scale of the change, the MCHB also allocated additional resources for technical assistance (TA) to build workforce capacity.

The National Maternal and Child Health Workforce Development Center (the Center) was launched in 2013 with funding from the MCHB. The Center's mandate is to enhance the capacity of state and jurisdictional Title V leadership and the Maternal and Child Health (MCH) workforce to engage in and lead health transformation plans and actions within their states/jurisdictions. Focal points for capacity building in the initial 3-year phase of the Center (2013–2016) included four core areas: change management, systems integration, access to care and quality improvement. Workforce development in these areas has been recognized as critical to sustain and expand upon the public health achievements of the twentieth century (Erwin and Brownson 2017; National Consortium for Public Health Workforce Development 2017).

The Center's TA model offers state and jurisdictional Title V leaders training, collaborative learning, coaching and consultation to address locally identified public health systems challenges. Because each state/jurisdiction is unique in its context and approach to health transformation (see Box 1), the Center's services are tailored, ranging from intensive, long term assistance, including on site consultation visits and coaching, to telephone consultations and universally available online learning resources (Margolis et al. 2017). Collectively, these services reflect a robust mix of technical assistance activities, expanding well beyond the provision of advice and training for specific or categorical questions (Le et al. 2016; Margolis et al. 2017).

Box 1 Health transformation

- Shifts the emphasis of healthcare from disease management to prevention and population health management, while improving access to affordable health care
- Develops an interprofessional/interdisciplinary approach to health care
- Integrates primary care, specialty care and public health
- Develops evidence-based, efficient health systems
- Drives partnerships across sectors to optimize the wellbeing of maternal and child health populations

Implementation Science and Maternal and Child Health

As noted above, Title V funded agencies are increasingly expected to demonstrate evidence based practice to address a diverse range of health and social outcomes. To realize their potential in practice, evidence based interventions must be delivered with attention to quality and fidelity of the practice. The complex environments and systems in which these interventions are delivered present a variety of barriers to high quality implementation (Albers et al. 2017). In response, attention to implementation science within the MCH field has been growing (Albers et al. 2017; Hofler et al. 2017; Kroelinger et al. 2014).

Implementation science encompasses the theory and methods of translating evidence into practice to realize improved outcomes (Eccles and Mittman 2006). Attention to implementation processes and outcomes has been shown to enhance program outcomes (Durlak and DuPre 2008; Acosta et al. 2013; Flaspohler et al. 2012; Metz et al. 2015). The growing focus on implementation science has implications for federal and state funding agencies, local public health agencies, direct service providers, and the wide variety of technical assistance centers working with these stakeholders.

Despite significant investments in technical assistance across multiple federal agencies, the design and effectiveness of technical assistance has not been widely studied (Le et al. 2016). As one approach to address this gap, the Center used the Active Implementation Frameworks (AIF), specifically the Implementation Drivers Framework, to define, analyze, and improve Center technical assistance practices from the design stage. This article describes how

implementation science can be used to inform and guide the design and delivery of technical assistance.

Brief Overview of the Implementation Drivers

Among the wide variety of implementation frameworks and models, several have been used extensively in child, youth and family service settings, including the AIF (Albers et al. 2017; Damschroder et al. 2009; Meyers et al. 2012). The AIF were designed to guide implementation of evidence based interventions and other innovations in human service settings (Fixsen et al. 2005; Metz et al. 2015). The implementation drivers, one of the AIF, provides the organizing structure for this analysis (see Fig. 1). The drivers correspond to the needs, responsibilities and roles of practitioners, leaders, and organizations involved in introducing and improving the use of evidence based practices and other innovations to achieve desired outcomes. Competency drivers are the mechanisms used to develop, improve and sustain the ability of service providers and other staff to implement an intervention as intended to benefit consumers. Organization drivers are mechanisms used to create and sustain hospitable organizational and system environments for effective services. Finally, leadership must apply the right leadership strategies for different types of challenges in support of evidence based practice. In addition to using the drivers to define and improve its own TA, the Center has also integrated training and TA about the drivers into its curriculum for Title V partners to advance their own work.

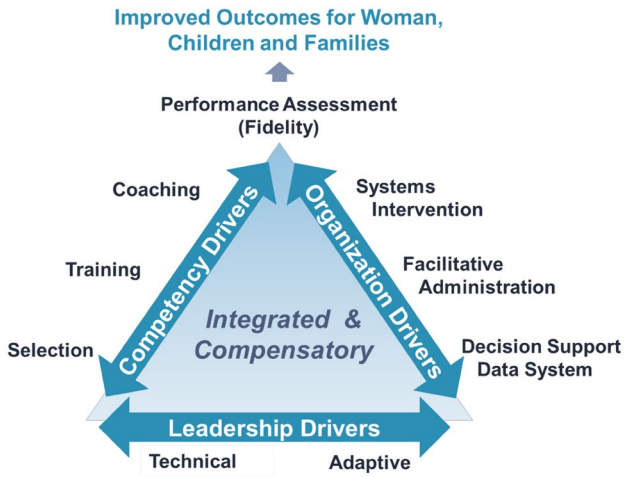

Fig. 1 Implementation drivers

Methods

For this analysis, an existing research based tool was adapted to assess Center actions and strategies against best practices identified for each implementation driver (Fixsen et al. 2013). Individual Center staff members used the tool to identify and compare Center practices against the identified best practice. A team of Center staff then analyzed the individual findings. Particularly compelling examples of implementation best practices and gaps were identified for inclusion in this article. Table 1 presents the tool and illustrative examples for each Driver. It is important to note that this analysis focused on the internal manifestation of the drivers within the Center, not on the work of Title V partners in their TA activities with the Center.

Results

Competency Drivers

Selection

Selection refers to the purposeful process of recruiting, interviewing, and hiring staff that will carry out a program or innovation (Fixsen et al. 2017e). In the Center, the selection driver manifested in selection of technical experts and staff members. As described above, the Center was directed to increase the capacity of MCH professionals in four technical areas, or cores (change management, systems integration, access to care and quality improvement). To support the cores, the Center also needed to ensure capacity in additional areas (e.g., evaluation). The first phase of selection began during the initial design and involved engagement of potential partner agencies from which technical experts would be drawn. Partner selection criteria included: previous experience working with Title V programs; technical expertise in core areas (e.g., systems science); capacity to respond to identified and emergent needs; and, the ability to advance collaborative learning projects lasting 6–8 months. Similar criteria were used to identify individual experts within partner organizations, with individual knowledge and experience of Title V programs growing in importance. In both cases, the result of selecting for these criteria was a team that was both technically qualified and sufficiently flexible to meet the needs of a new center in a transformative environment. The breadth and evolution of demand for Center assistance plus learning from initial collaborative experiences did result in one partnership change and revised staffing. However, four of five original partners remain, and all the

Table 1 Implementation drivers best practices and examples of their use in the National MCH Workforce Development Center

Implementation driver	Best practice	Examples
Selection	Accountability for development and monitoring of quality and timeliness of selection practices is clear Job description clarity (accountability and expectations) Pre-requisites for employment are related to "Center practices" and expectations Interactive interview process Interviewers who understand the skills needed and can assess applicants accurately A regular process is in place to feed forward interview data to training staff and administrators and coaches A regular process is in place to glean feedback from exit interviews, training data, turnover data, opinions of administrators and coaches, and staff evaluation data to evaluate effectiveness of this Driver	• Accountability for selection of technical experts and staff was clear • Job descriptions included expectations and accountability • Pre-requisites established for technical experts and staff related to public health/MCH knowledge and skills • Selection of Center staff for coach role (internal) was transparent and regularly reviewed • Feedback processes included ongoing internal evalaution, open and engaging staff meetings, and individual meetings with Center leadership
Training	Accountability for development and monitoring of quality and timeliness of training services is clear Timely training occurs before the person attempts to perform new skills/responsibilities Training is skill based Trainers have been trained and coached Outcome data collected and analyzed (pre and post testing) of knowledge and/or skills Performance assessment measures collected and analyzed related to training Training data are reviewed and inform other Drivers (feedback function)	• Training quality mechanisms established • Scripts developed to replicate high quality training delivery consistently • Training of coaches through Coaching of Coaches and peer discussions • Ongoing training of Center staff on MCH topics • Center staff participated in state/jurisdiction Block Grant reviews to deepen understanding of Title V goals, contexts and processes
Coaching	Accountability for development and monitoring of quality and timeliness of coaching services is clear Coaches are fluent in the innovations There is a written Coaching Service Delivery Plan Coaches use multiple sources of information for feedback to practitioners Coaches review records to obtain information to inform coaching Coaching information is obtained from interviews with others associated with the practitioner Accountability structure and processes for coaching service delivery plan are regularly reviewed Evidence that practitioner's abilities to deliver the intervention routinely improve as a result of coaching Multiple sources of information used for feedback to coaches on their own performance	• Coaching logs captured coach activities and notes • Regular coaching calls to improve coach skill (fluency of innovation) • Coaching of coaches provided one on one support for coaches to reflect and problem solve • Cross-Core calls provided a means for technical guidance to coaches from the range of Center technical experts

Table 1 (continued)

Implementation driver	Best practice	Examples
Decision support data systems	Accountability for measurement and reporting system is clear Includes data related to intermediate and longer-term desired outcomes Includes data on performance (fidelity) assessment results for each practitioner Measures are "socially important" Data are: reliable, reported frequently, built into practice routines, used to make decisions and are widely shared with: organization personal, family members, and community stakeholder	• Data routinely shared with Center staff and service recipients • Evaluation team used database platform that was accessible to all Center staff • Evaluation team met weekly to ensure data accountability • Longitudinal data collection methods
Fidelity	Accountability for fidelity assessment measurement and reporting system is clear (e.g. a lead person is designated and supported) Transparent Processes—Proactive staff orientation to the process and procedures used for fidelity assessment Fidelity assessment measures are highly correlated with (predictive of) intended outcomes Fidelity assessments are conducted on a regular basis for each practitioner The organization has a practical and efficient fidelity assessment measurement and reporting system Fidelity assessment measures extend beyond the measurement of context and content to competence (e.g. competency requires observation). Use of multiple data sources (e.g. practitioners, supervisors, and consumers) Positive recognition processes in place for participation (e.g. performance assessment is seen as a source of data to improve quality; not a punitive process) Performance assessments of practitioners are used to assess the effectiveness of coaching	• Evaluation team led efforts to measure fidelity • Center staff were oriented and supported to use data collection processes and tools • The degree to which planned activities took place was measured by coach records and reports as well as participant evaluations • Positive, learning oriented atmosphere was developed regarding data use for improvement • Participant evaluations were used to improve coaching and assistance provided
Facilitative administration	Leadership and Implementation Team(s) is formed The Leadership and Implementation Team has Terms of Reference that include communication protocols to provide feedback to the next level "up" and describes from whom feedback is received (Practice-policy communication protocol) Policies and procedures are developed and revised to support the new ways of work The team • Uses feedback and data to improve implementation drivers • Solicits and analyzes feedback from staff • Solicits and analyzes feedback from stakeholders • Reduces internal administrative barriers to quality service and high performance assessment implementation	• Sustained attention to Center implementation and improvement led by the evaluation team, supported by Center leadership • Data collection and feedback processes informed improvement, e.g. the development of a coaching of coaches function • Center policy and procedures respond to staff feedback, are developed with staff input, and designed to allow creativity and flexibility

Table 1 (continued)

Implementation driver	Best practice	Examples
Systems intervention	Leadership intervenes when needed to resolve system issues undermining the effectiveness of work in the organization (e.g. Directors meet with State leaders on issues at that level) Leadership engages and nurtures multiple "champions" and "opinion leaders" outside the organization Leadership objectively documents barriers and reports barriers to next level "up" Leadership makes constructive recommendations to next level "up" to resolve barriers Leadership develops formal processes to establish and use linking communication protocols to give and receive feedback from the practice level of the organization Leadership creates barrier busting capacity by using transformation zones to build capacity and resolve issues in a manageable slice of the organization and usability testing to rapidly test and improve processes with multiple small groups before widespread use Leadership creates optimism and hope by regularly communicating successes	• Leadership has ongoing dialogue with professional organizations to inform Center offerings • Center staff collaborate with the family of MCH-focused technical assistance and training centers to align complementary efforts • Center leadership and staff participate in and communicate success through Title V systems, including block grant reviews, jurisdiction meetings, and Title V Director meetings • Center advisory committee represents a broad range of Title V perspectives and actively guides Center efforts
Leadership		
Technical leadership	Leaders within the organization provide specific guidance on technical issues where there was sufficient clarity about what needed to be done Leaders within the organization are very good at giving reasons for changes in policies, procedures, or staffing Leaders within the organization actively engage in addressing all issues that get in the way of using the innovation effectively Leaders within the organization are very good at focusing on the issues that really matter at the practice level Leaders within the organization are fair, respectful, considerate, and inclusive in their dealings with others	• Center leaders utilized both adaptive and technical strategies • Center used a consensus focused model for Center decision making • Clear guidance about technical content expectations was provided • Changes to plans clearly communicated • Leaders set expectation of continuous quality improvement regarding Center practices • Leaders established regular meetings of all Center cores, regular All-Center meetings and newsletter updates • Leaders relied on Advisory Committee for feedback on utility of Center products
Adaptive leadership	Leaders within the organization continually look for ways to align practices with the overall mission, values, and philosophy of the organization Leaders within the organization convene groups and work to build consensus when faced with issues on which there was little agreement about how to proceed Leaders within the organization establish clear and frequent communication channels to provide information to practitioners and to hear about their successes and concerns Leaders within the organization actively and routinely seek feedback from practitioners and other regarding supports for effective use of the innovation Leaders within the organization are actively involved in conducting employment interviews, participating in practitioner training, conducting performance assessments of individual practitioners, and creating more and better organization-level assessments to inform decision making	

original core leads and Center administrative leads remain on the team, suggesting our criteria were well aligned with actual needs.

Training

Training is defined as purposeful, skill-based, and adult-learning informed processes designed to support staff in acquiring the skills and information needed to begin using a program or innovation (Fixsen et al. 2017g). Staff and technical experts selected by the Center brought with them considerable experience with Title V programs as well as expertise in the design, delivery and evaluation of technical assistance. This avoided the need for substantial investments in training of Center staff. However, the breadth of the Title V program and the complexity of the Center's four core competency areas did create opportunities for targeted staff training. For example, to ensure consistent understanding of Title V history and current priorities, Center leadership developed a series of brief orientations on key topics affecting the Title V program, such as its purpose and evolution, and other topics such as population health and health transformation principles. Participation in team meetings and activities was actively encouraged to increase interdisciplinary understanding among staff. For example, Center staff with expertise in change management collaborated with colleagues on the systems integration core to deepen their understanding of relevant and potentially intersecting theory and methods, resulting in a "cross-training" among staff.

Coaching

Coaching is defined as regular, embedded professional development designed to help staff use the program or innovation as intended (Fixsen et al. 2017a). Each state/jurisdiction collaborating with the Center was assigned a coach to carry out the functions shown in Table 2. Coaching quickly emerged as a critical aspect of the Center's approach, ensuring responsiveness to state/jurisdiction needs, supporting states/jurisdictions to troubleshoot complex challenges, and providing a supportive and sustained source of accountability. Therefore, ensuring consistently high-quality coaching was imperative and internal coaching support processes were developed.

Coaches (existing Center experts) were oriented to the Center coaching model and received ongoing feedback and guidance through bi-monthly discussions with the Coach of Coaches. In addition, all coaches participated in monthly group calls as an avenue for shared learning and problem solving. This approach leveraged both the collective experience of coaches (e.g., coordinating a diverse team to develop a coherent technical assistance strategy), as well as the specific technical expertise of a given coach (e.g., deep knowledge of programs for CYSHCN). In this way, the Center supported the successful introduction of a new practice (i.e., external coaching of state/jurisdictional teams) and related skills through the provision of coaching (i.e., internal coaching of coaches).

Fidelity

Fidelity assessment measures the extent to which an innovation is implemented as intended. Focused attention on the implementation drivers has been shown to improve the fidelity of interventions (Metz et al. 2015). Defining and measuring fidelity for a complex, responsive initiative like the National MCH Workforce Development Center presented challenges. The annual performance report submitted to the MCHB helped to provide structure for the fidelity assessment. As noted above, the core activities of the Center included recruitment, training, collaborative learning, coaching and consultation. Assessing the degree to which planned activities took place was measured by coach records and reports as well as participant evaluations. Assessing the degree to which the activities were relevant and of high quality was more challenging. Relevance could be assessed by comparison of the initial project proposal and evolving action plans against the activities delivered by the coaches and Center staff, captured in training plans, coaching logs and reports from on-site consultation visits.

The timeliness, relevance and quality of service was a product of the competency drivers described above—selection, training and coaching. Good selection and targeted training ensured a broad range of appropriate skills and abilities among Center staff involved in direct support to state/jurisdictional teams. Ongoing coaching of coaches ensured that each coach was meeting the expectations of the defined coaching process, which in turn ensured timely, relevant and high-quality TA provided to the Center's Title V partners.

Participant feedback was the most important, objective source of fidelity data. Feedback was collected immediately following specific activities (e.g., on site consultation by a Center led team) and a series of evaluations completed at end of project and 6 months later. By triangulating internal reporting data, Center staff could compare the plan and rationale for a range of tailored services with reports that tracked if they were provided as planned. The final step was to measure their effect on state/jurisdiction participants.

Organization Drivers

Decision Support Data System (DSDS)

The Decision Support Data System (DSDS) is a system for identifying, collecting, and analyzing data that are useful

to the staff and leadership to guide and improve program implementation (Fixsen et al. 2017b). The Center data systems were established to identify, collect and analyze data that are useful in carrying out three functions: (1) inform actions in Center implementation; (2) enable the provision of feedback to trainers and coaches; and, (3) produce process and outcome data for external reporting. The Center evaluation team is responsible for the DSDS and committed from the onset to find and use a platform(s) that would facilitate communication across the many components of the Center—the cores, the leadership team, and the evaluation team—to assess the Center's performance. The evaluation team met at least weekly to assure that the three functions were carried out in a timely manner, with ongoing quality improvement. These consistent meetings enhanced the adaptability of Center evaluation tools by responding to real time feedback from state/jurisdiction participants, as well as promoted accountability in the measurement system.

The primary data collection tool, REDCap, a web application that manages online databases, enables Center personnel to input, analyze, and export data (Harris et al. 2009). For example, a coach providing TA to a Title V partner can view participant feedback entered in REDCap from a training workshop. Based on the participant data, the coach may decide to contact a Center systems integration expert to support that state/jurisdiction's specific need for systems mapping. The systems integration expert can also access REDCap data to assess specific training needs before developing his or her training material.

Facilitative Administration

The Facilitative Administration Driver focuses on the internal processes, policies, regulations, and structures over which an implementing organization has some control (Fixsen et al. 2017c). Relatively lean on management and administrative staff, the Center's structure was designed to be responsive and supportive of the cores and teams responsible for the work. This was exemplified by the full-time support roles, including the Senior Collaboration Manager, Project Coordinator and the Knowledge Management Coordinator. Working with the Principal Investigator, these staff designed a series of communication processes that ensured active two-way feedback loops between Center staff and leadership.

The Senior Collaboration Manager role personified this driver. The position was designed to be an active problem-solving resource to provide guidance and support for staff and states/jurisdictions seeking assistance when needed. This position served to integrate and maximize the value of the Center resources. The Senior Collaboration Manager attended all core and team meetings to remain closely connected to the details of Center work, and to "cross-pollinate" all facets of Center work. The Senior Collaboration Manager also organized regular cross core meetings during which emergent issues were addressed.

This driver also manifested in the development of a Center coaching model and internal coaching of coaches to ensure coaching proficiency was measured, achieved and documented. Center leadership quickly recognized that coaches would need resources, support and clearly defined, measurable functions to be successful. Their intentional investment in new coaching processes and resources, including feasible data collection and decision-making tools, reflect the fundamental intent of this driver in ensuring staff have what they need to successfully carry out their assigned roles.

Systems Intervention

The Systems Intervention driver is focused on the external variables, policies, environments, systems or structures that influence or have impact on an implementing organization (Fixsen et al. 2017f). As a new national center in a landscape of complex Title V workforce development opportunities, the Systems Intervention driver was critically important for the Center in the first 3 years. First, there are several long standing technical assistance providers with whom the Center was expected to coordinate. Second, an established system of requesting TA was in place through the MCHB. Third, active professional associations—namely the Association Maternal and Child Health Programs (AMCHP) and CityMatCH—represented the considerable breadth and diversity of MCH professionals.

Strategies to address this driver include the development of the Center's Advisory Committee, which includes a range of state/jurisdiction Title V leaders, representatives from other national centers, and MCHB leaders. This committee helped to guide recruitment of Title V programs into Center activities, informed the timing and framing of Center

Table 2 MCH Workforce Development Center Coach Functions

Build and facilitate collaborative relationships with state/jurisdictional counterparts
Broker and coordinate Center support for state/jurisdictional health transformation efforts
Direct the provision of training and technical assistance T/TA (where relevant)
Guide and troubleshoot challenges
Advance Center practices through identification of opportunities, barriers, learning and resources

opportunities, and identified critical opportunities for collaboration with other TA centers. To avoid duplication and leverage complementary agendas, the Center Director and Senior Collaboration Manager actively reached out to and met with other training and assistance centers. These meetings helped raise awareness of the Center's workforce development mandate and identified opportunities to collaborate. Similarly, Center staff actively collaborated with the funding agency, MCHB, to ensure alignment and effective use of resources.

Leadership Drivers

Leadership

The Leadership driver focuses on leadership approaches related to transforming systems and creating change (Fixsen et al. 2017d). Best practices used for this analysis draw on the adaptive leadership strategies defined by Heifetz et al. (2009). Center leaders used both adaptive and technical strategies to establish a Center that was responsive to state/jurisdiction needs, the needs of internal stakeholders (i.e., practice and academic partners), as well as those the MCHB. Technical challenges included building an integrated structure that supported the Center's mandated focus on four core areas. The selected approach placed most staff in technical core teams that leveraged the specific academic or practice area expertise of team members. Adaptive challenges included finding ways to 'break the siloes' among these teams and develop collaborative solutions to overlapping or redundant approaches. In this context, the Center's Senior Collaboration Manager played a central leadership role in facilitating the identification of emergent conflict and creative solutions within and across cores. In addition, the Center's Director has invested significant time and resources to produce effective internal communication among and across all components of the Center. Regular meetings of all Center staff promoted open and frequent feedback into program decision making and foster collaboration. Finally, performance feedback loops, supported by the evaluation team, help to build shared understanding and ownership of Center performance beyond individual teams.

Discussion

Attention to the use of implementation best practices has been shown to increase the quality of implementation and program processes, program fidelity and, ultimately, outcomes for intended beneficiaries (Acosta et al. 2013; Flaspohler et al. 2012; Metz et al. 2015). In reflecting on the Center, using implementation science best practices to establish, assess and improve Center practice was both feasible and practical. The work required intentionality to advance each of the implementation drivers, and dedicated time and staff committed to deepening their understanding of implementation science. These commitments resulted in a shared approach to analysis and improvement of Center efforts.

The Center's approach was, by design, intended to be flexible and responsive to state and jurisdictional program needs. This context differs from conventional evidence based interventions, which are typically much narrower in scope, are defined with greater specificity, and often supported by manuals and tools that help users deliver them with fidelity. However, the careful consideration and use of implementation best practices had considerable value for the Center as it was established, namely in its ability to use evidence based implementation practices to advance the core functions of the Center, rather than relying on past experiences or opinions about what strategies might produce an effective TA center.

The process of analyzing Center practice against the implementation drivers also provided the opportunity for robust and useful discussions about the nature of the Center's 'intervention'. While allowing for creative flexibility based on state/jurisdiction needs, these discussions illuminated ways in which internal supports could be developed and standardized to ensure that Center services for Title V teams were of high quality. The development of a consistent coaching model, for example, inclusive of regular support for coaches and active use of data, demonstrates how an implementation best practice can be nested within a complex program and enhance performance even in the absence of a standardized program model.

State and jurisdictional Title V programs often struggle with implementation challenges like those experienced by the Center. The range of evidence based interventions is limited compared with the scope of the Title V program. Title V leaders are typically addressing thorny systems challenges (e.g., improved care coordination) that lack well-defined, tested solutions. In applying implementation science to its own work, the Center is 'walking the walk', that is, modelling how implementation best practice can be creatively and effectively applied in the context of emergent evidence. The Center's work also yields practical examples that can be shared with collaborators for consideration and possible adoption. In recognition of the many unknowns related to ongoing health system transformation, the Center advocates for Title V teams to actively learn and improve as they go. By modelling this, the Center is being both consistent and accountable and, ideally, showing partners a way forward in uncertain contexts.

Finally, the use of implementation science has improved the Center's internal processes and structures over time. Attention to implementation science has helped to ensure that internal processes were linked to and accountable for

impact on state/jurisdiction projects and workforce development of Title V leaders. This internal improvement has had an impact on the Center's external results, that is, the ability to support Title V programs to develop their capacity to address their priority goals. The evidence of impact was demonstrated in the feedback from and the documented progress of Title V partners receiving TA from the Center.

We think it important to note some limitations of this analysis. First, we are unable to demonstrate a causal link between improved implementation practices and client outcomes at this point. While we do have evidence of impact (e.g. improved workforce capacity), making these links is an important, if challenging aspect of ongoing evaluation. Finally, there are other implementation frameworks and it could be illuminating to contrast the analysis we have provided with the perspective of a different framework. However, given the ongoing and widespread use of the AIF and their inclusion in subsequent implementation models, we feel that the drivers represent a broadly applicable and useful framework for practice settings.

Despite these limitations, this research contributes to the understanding of the nature and practice of technical assistance. We are not aware of the use of implementation science to analyze and improve the work of another technical assistance center. We hope this contributes to deepening the understanding of the application of implementation science to improve the definition, evaluation and delivery of technical assistance more broadly.

Conclusion

Policymakers and funding agencies should consider how requirements for the use of implementation best practices could be supported by funding and program guidance to maximize the impact of evidence based interventions. As with programming agencies, technical assistance centers should be required to demonstrate knowledge and use of evidence based practice, including implementation best practice. Increasing attention to the use of implementation science can contribute to greater quality of service from technical assistance centers, which in turn contributes to improving long-term outcomes for TA recipients and the families they serve.

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