

Preventing Risk and Promoting Young Children’s Mental, Emotional, and Behavioral Health in State Mental Health Systems

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Early neural development and maternal health have critical long-term effects on children’s mental health and outcomes later in life. As child mental disorders continue to rise nationwide, a number of states are considering new ways of investing in the critical early childhood period to prevent later poor outcomes and reduce the burden on the mental health system. Because most state mental health authorities (SMHAs) have no dedicated mental health dollars to devote to this early, crucial period of child development, building coalitions is key to implementing prevention and promotion programming. The authors describe two issues—coalition building and contractual considerations—that should be considered as SMHAs develop these types of policies or plan new prevention and promotion initiatives. Coalition building

includes establishing the structural conditions for implementing a prevention or promotion initiative, resolving workforce issues (i.e., who will carry the program out), and engaging communities and families in the effort. Contractual considerations include establishing agreed-upon measures and metrics to monitor outcomes, assigning accountability for those outcomes, and delineating realistic time frames for these investments before expecting improved outcomes. The promise of moving services upstream to support early childhood development, to prevent mental health issues from derailing children’s development, and to promote children’s well-being are goals that are within reach.

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A maturing scientific knowledge base clearly demonstrates the critical influence of early neural development and maternal health on long-term (i.e., two- and even three-generation) health and mental health outcomes. At the same time, communities are demanding higher-quality child and family supportive services in light of the disturbing rise in mental, emotional, and behavioral health disorders, including increases in children’s depression, anxiety, self-harm, and suicide, and disparities in access to care, made even more concerning by the COVID-19 pandemic. The convergence of this critical mass of scientific evidence and community demand for better care is leading some state mental health policy makers to consider new ways of investing in the early childhood period to prevent later mental health problems (1, 2).

“Prevention” refers to programs that address risks (e.g., interventions that address caregiver needs to mitigate potential risk factors or those that target externalizing or internalizing behaviors in early childhood settings); “promotion” refers to programs that strengthen skills and support resilience to facilitate healthy development (e.g., universal parenting support programs or social and emotional learning

in early childhood settings) (3–5). Such programs are sometimes referred to as “upstream” programs. Blueprints for Healthy Youth Development (<https://www.blueprintsprograms.org>) offers one example of a searchable registry of these programs based on age, setting, and targeted outcomes. Two-generation, or “2-gen,” approaches that address both child and parent needs are increasingly being used by states

HIGHLIGHTS

- Initiatives that focus on upstream services to promote young children’s mental, emotional, and behavioral health are of interest to a growing number of state mental health authorities (SMHAs).
- In most states, early childhood risk prevention and mental health promotion initiatives are driven by dollars from outside mental health systems.
- SMHAs can consider two broad issues—coalition building and contractual considerations—when developing and implementing policies or initiatives to promote children’s mental, emotional, and behavioral health.

to promote the health and well-being of the entire family, and new evidence is emerging that the benefits of some of these approaches are extending into the third generation. New findings from a longitudinal study (1980–2011) of an

early childhood preventive intervention, Raising Healthy Children, which provided schoolteacher instruction, parent support, and social and emotional skills training, report positive impacts on the children of the children who participated in the intervention—or third-generation impacts (6).

State funding strategies for prevention and promotion programs are complex, vary widely, and warrant a full review. Some of these are supported by federal policy incentives (e.g., pay for performance, social impact bonds, and value-based purchasing) and offer new flexibilities in what care can be provided—and how it can be paid for. However, because of the complexity of funding and financing issues and the fact that most funds for prevention come from outside state mental health authorities (SMHAs), payment approaches are not discussed here. In this article, we highlight two issues that SMHAs can consider as they shift attention to upstream services: coalition building and contractual considerations. We focus on state prevention initiatives that support young children's health and development (ages 0–5), including those that support maternal pre- and postnatal health. (A table summarizing examples of these state prevention initiatives is available as an online supplement to this article.)

COALITION BUILDING AND CONTRACTUAL CONSIDERATIONS

Numerous barriers to SMHA implementation of evidence-based prevention and promotion programming exist, including organizational and practitioner-, payment-, and community-related barriers. However, we focus on the two issues that have been inadequately addressed. These are coalition building and issues related to contractual considerations. Coalition building includes establishing the structural conditions for implementing a prevention or promotion initiative, resolving workforce issues (i.e., who will carry the program out), and engaging communities and families in the effort. Contractual considerations include establishing agreed-upon measures and metrics to monitor outcomes, assigning accountability for those outcomes, and delineating realistic time frames for these investments before expecting improved outcomes.

COALITION BUILDING

Because there is no dedicated federal funding to SMHAs to address early childhood mental, emotional, and behavioral health and maternal health, building coalitions is key to prevention and promotion planning and program implementation.

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Families and their children touch multiple service systems even when they are well, and prevention and promotion programming is more effective when coordinated and reinforced across systems and settings.

Ultimately, the success of

a prevention or promotion initiative will depend on implementation of a strategy that includes multisector commitment. Typically, education, pediatrics, maternal and child health, and child welfare systems are willing partners (7, 8). Prevention and health promotion may not be the primary mission or priority of a partner, but these objectives can become a galvanizing locus for action when there is robust coalition leadership and participation.

Coalition Structure

Creating a coalition with clear definition of roles for each member is a critical first step. The coalition needs representation from across a range of sectors. As noted, this may include education (especially early education), health (e.g., Medicaid and pediatric and primary care), child welfare (e.g., Head Start), criminal justice, and perhaps others. Clear delineation of roles for at least four coalition functions is important: a clearly defined leader or a catalyst for the effort (who may or may not be the primary funder of the initiative), an "integrator" (i.e., an anchor or facilitator), a funder or funders, and representation from both family organizations and community partners.

Coalition leadership can take many forms. State agencies, cities, health plans, hospitals, or community organizations have all taken the lead in various prevention initiatives, but maintaining an orderly process for planning requires identifying a designated lead agency, health plan, or other organizational entity. States have already-established Early Childhood Advisory Councils, created as a result of the 2007 Head Start Reauthorization Act, many of which are still in existence; these can become the platform for any new prevention and promotion initiatives (9). Clarity about how decisions will be made, including how funds will be allocated, is essential to building trust among coalition members.

Some states have looked toward "integrators," also called anchors or facilitators, to coordinate coalition activities and develop strategies and to either complete work products or designate other coalition partners to do so. The integrator can be a state, county, or city agency; an independent entity with primary responsibility for fiduciary oversight; or a community agency or health plan. Integrator functions include helping funders and service providers develop a framework and shared set of principles to make decisions about revenue streams and investments, managing distribution of any returns on investment (ROIs) over time, and assisting in measurement of outcomes and cost benchmarks. Connecticut's Health Enhancement Communities initiative,

with its focus on place-based, integrated care, is one example. Each region across the state has a single, multisector collaborative that is charged with aligning and implementing prevention and health equity strategies in its communities (10). Each regional collaborative is led by a single organization, but who that entity is varies across the state. Although it is typically the influence of leaders that brings everyone to the table, integrators ensure that the process is equitable.

Funders, of course, are essential to the success of the coalition. Defining who can contribute what resources (i.e., money, staff time, infrastructure, and research evidence) is key to the initiative's success. For example, in New York State, Governor Cuomo's Medicaid initiative, called The First 1,000 Days, was launched with a stakeholder engagement and planning process designed and staffed by a nonprofit policy organization, The United Hospital Fund (11). In South Carolina, the Department of Health and Human Services led an initiative to scale up the Nurse-Family Partnership program, with a nonprofit intermediary working with an array of private-sector and public-sector partners to structure investments, implementation, and evaluation (12). Another important resource that partners can contribute is research evidence or scientific expertise; sometimes it is an SMHA, through its partnership with an academic research center, that contributes this expertise.

Finally, substantive involvement by community leaders and family organizations is essential to enhancing community and family engagement, described in more detail below. A successful structure depends on having members of this broad "community" accept joint responsibility for achieving shared goals and identifying cross-sector metrics to which all are held accountable (discussed below).

Engaging Families and Communities

Family and community engagement brings the perspective of service recipients (i.e., families) into the implementation process and helps ensure that interventions reflect the real needs of the community, rather than administrative conveniences. Importantly, the identification of meaningful metrics is often shaped by the input of families and community stakeholders. These stakeholders can also be especially helpful in identifying opportunities to address inequities.

Families can also be a part of the workforce that delivers prevention and promotion programming, helping to address workforce shortages and improve families' socioeconomic status through compensation (see below). Finally, community engagement also exerts an independent effect on the well-being of families by building a sense of collective efficacy within communities, including the shared belief that through their unified efforts they can improve their community.

States have taken a variety of approaches to engaging families in their prevention initiatives. For example, many of California and Washington State's Accountable Communities for Health held open forums to solicit community feedback throughout implementation. Others ensured that

family representatives were placed in leadership roles within the governance structures of the initiatives. In New York State's Medicaid redesign efforts, a significant stakeholder engagement effort was undertaken involving more than 500 stakeholders, including individuals from advocacy groups and community-based organizations, to lay out the "road map" for transitioning to value-based Medicaid payment. Providers, consumer groups, and payers all provided perspectives that shaped the new payment policies (13).

Workforce Needs: Training and Development

In addition to building coalitions and engaging families and communities, SMHAs have a unique opportunity to strengthen their behavioral health workforce, not only through licensing and credentialing but also through training. When this training is conducted in affiliation with academic research centers, it appears to be linked to the provision of evidence-based practices (14). In prevention and promotion service planning, the existing workforce may need to be trained in new programs or skills (e.g., Good Behavior Game), or it may be necessary to create new workforce roles to implement these programs with fidelity (e.g., Communities That Care).

Two specific areas in which states can prepare their workforce for delivering prevention and promotion initiatives are in expanding parenting skills programs and peer support programs. Numerous programs exist to train and certify staff to assist parents in developing more effective parenting skills. One useful resource is *Parenting Matters*, a recent National Academies of Science, Engineering, and Medicine (NASEM) report featuring several state initiatives (15). For example, Washington State allows some providers who have been trained and certified in the Triple P Positive Parenting Program to bill for these services under Medicaid. Colorado has systematically trained all employees in two-generation approaches, which focus on simultaneously meeting the needs of children and their parents. Wisconsin allows professional development dollars under the Every Student Succeeds Act to go toward training teachers in evidence-based prevention of mental disorders.

In addition to parenting skills programs, a growing number of states are expanding their training and credentialing of peer support workers, including parent peer specialists (also called family advocates, family navigators, or family support specialists) and youth peer specialists. Parent peer specialists, who have lived experience, provide peer-to-peer (i.e., parent-to-parent) support to parents of youths with mental, emotional, or behavioral needs. An even newer peer-to-peer workforce subspecialty is youth peer specialists, who are youths or young adult peer advocates with lived experience who provide support to youths who have mental, emotional, or behavioral needs. For example, New York State has trained and certified 747 parent peer specialists, called family peer advocates in the state, who are working across the children's mental health system. In many states across the country, these parent peer specialist

services are now billable under Medicaid. With training and supervision, this workforce could be used to support the implementation of prevention programs.

Even with a trained workforce in place, fidelity over time can drift. Therefore, it is wise to include both evidence-based training and ongoing coaching and supervision as part of the implementation strategy for prevention and promotion programs. This includes protecting staff time to attend trainings (or fitting trainings into existing workflows) and having a recruitment and onboarding strategy prepared for hiring individuals who will deliver the prevention or promotion program (16).

CONTRACTUAL CONSIDERATIONS

There are two primary contractual issues that arise when implementing prevention and promotion programming: establishing agreed-upon measures and metrics to assess outcomes and accountability to them; and delineating realistic time frames for any expected outcomes and ROI from the prevention and promotion initiatives.

Measurement and Accountability

Measurement drives implementation. The selection of the measures to track is a critical process for the coalition; the measures ultimately selected will change behaviors. It is important that coalitions approach this thoughtfully and come to consensus on the final set of measures. Decisions need to be made about main outcomes, methods and frequency of measure collection, and the data systems and actions (i.e., shared or coordinated systems) needed to capture the outcomes. Importantly, agreement on consequences for failure to achieve the outcomes (i.e., accountability) is essential—and sometimes overlooked.

Measurement. States typically need both population-level measures that indicate whether interventions are achieving their overall desired impact and practice-level measures that are rapid-cycle and that indicate whether an intervention is effective for a specific child. Population-level “vital signs” or indicators of children’s health and well-being are being developed by NASEM’s Forum on Cognitive, Affective, and Behavioral Health for Children and Youth, akin to the adult-only *Vital Signs* report (17). This new set of indicators is expected to include measures of early childhood social and emotional outcomes. For example, a prevention or promotion initiative might set improved rates of school readiness as a population-level measure to gauge overall impact (as Maryland and several other states are doing), and individual providers might use a measure such as the Pediatric Symptom Checklist, which assesses a child’s mental, emotional, and behavioral functioning, to determine whether an intervention was effective for a particular child and whether the child is on track to achieve school readiness (as many areas in Massachusetts are doing). It may also be valuable to specify and measure community engagement as an outcome,

because doing so can reinforce commitment to the goals of the initiative. Decisions about the measures to be used can be made within the coalition’s governance structure, a funders’ consortium, or some other planning group.

Accountability. Because SMHAs are ultimately responsible only for clients in their system (i.e., clients with chronic or serious mental illnesses), the opportunities to intervene early and keep children out of their mental health system are usually not part of their mandate. Prevention and promotion programming is more likely to fall under state departments of health or education. However, some SMHAs are developing value-based service models, and these can align well with prevention and promotion planning. In these models, client-level health outcomes and spending are linked or “attributed” to specific providers, thus enabling providers to understand the population and financial risk they are expected to manage. In these models, attribution, measurement, performance improvement, and program design are linked.

Attributional models vary. Some are based on geography, and others are based on service use or insurance plan membership. For example, Oregon, under its Medicaid Section 1115 Waiver Program, created 16 regional Coordinated Care Organizations (CCOs) that serve one million Medicaid beneficiaries. These CCOs, in partnership with community health systems, integrate and coordinate physical, behavioral, and oral health care and operate on a value-based care model that provides incentives for these systems to improve health (18). Because the CCOs were created on a regional basis, Medicaid beneficiaries are attributed to the CCOs based on where they live, and each CCO is accountable for all Medicaid enrollees in its region. Connecticut’s Health Enhancement Communities initiative, described above, is also using place-based attribution and is developing an algorithm to attribute lives to each Health Enhancement Community over a 5- to 10-year period.

Time Frame for Outcomes and ROI

ROI refers inclusively to long-term expected outcomes (e.g., reduced incarceration rates, less use of special education services, fewer child abuse or neglect reports, and decreased emergency room visits) that have value to the families, the different sectors engaged, or the larger society—whether ROI can be captured in explicit financial terms or not. Although the SMHA has a role in contributing to or perhaps leading the coalition, the expected outcomes and ROI will not necessarily benefit the SMHA solely, or perhaps even primarily; rather ROI will be seen over time, across many different sectors (e.g., reduced incarceration may benefit the county while reduced emergency room visits may benefit the state Medicaid agency in future years). The complex nature of ROI for children and families is what makes the facilitative—or perhaps leadership—role of the SMHA especially critical.

Although SMHAs are unlikely to reap direct benefits from investment in prevention initiatives, ROIs are a useful index

to assess improved outcomes and expected savings across different systems. State budgets are usually planned for 1 year at a time. However, likely returns from prevention and promotion initiatives require a much longer time frame. For example, it is estimated that for Connecticut's Health Enhancement Communities and its corresponding plan to modernize the pediatric health system, payoffs are likely to occur to the Medicaid program in a 10-year frame, rather than the 1- to 2-year savings time frames often used when managing the health of adult populations (such as in the Medicare Shared Savings Program). Consequently, Connecticut is establishing a 10-year cost benchmark for better managing the health of its child population while doubling its investment in pediatric primary care during that period. A valid and reliable ROI calculator for early childhood investments—the 13% ROI Research Toolkit (19)—is available to help states make the case for these longer-range ROIs.

Gathering the political will to make such investments is still a significant challenge, particularly because the ROI may benefit a sector other than the one that made the initial investment. A coalition with a common vision can enable organizations to be creative about how they work together to solve ROI challenges, and having a measurement framework that acknowledges short-term progress (such as by using the Pediatric Symptom Checklist) can maintain motivation until long-term outcomes are achieved. ReThink Health has compiled a typology of potential creative financing structures for funding population health initiatives with longer-range ROIs (20).

CONCLUSIONS

Promoting children's well-being and preventing problems before children enter the state mental health system might be viewed as idealistic solutions to the inadequacies of the current mental health system. In some ways, they are. The United Nations has offered guidelines for rebuilding systems that have been weakened or destroyed by natural disasters, called "building back better." These guidelines suggest adhering to the principles of fairness, equity, and stakeholder engagement in rebuilding system infrastructures in order to sustain permanent, positive change (21). We suggest that especially in the post-COVID-19 period, when the mental health system and other public "safety net" systems are facing daunting challenges, "building back better" is not just a recommendation but ethically necessary.

Fortunately, as noted above, the science on prenatal, infant, and early childhood neurodevelopment and on effective parenting programs that create nurturing environments and thus optimize healthy development is clear: supports to families at the critical period of early childhood make a long-term difference at both the individual and the population levels. Children who receive these kinds of supports achieve better academic and health outcomes, and population-level changes in use of emergency rooms, use of special education

services, and reductions in rates of incarceration and unemployment have also been linked to the implementation of science-based early childhood interventions. As a result, SMHAs and other state systems are on solid ground in considering ways to shift resources upstream.

However, as we have discussed, this requires a cross-system effort, and the benefits will not accrue to any one sector. To address this, the federal government, through the Centers for Disease Control and Prevention, launched the Health Impact in 5 Years, or HI-5, initiative (22). Based on the health impact pyramid developed by Frieden (23), this initiative identifies, for communities, 14 nonclinical, communitywide approaches, evidence-based programs, or policies that have clearly demonstrable positive health impacts, that can achieve results within 5 years, and that generate cost savings over the lifetime of the population—or earlier. The convergence of federal leadership and community advocacy may have created an opportune moment for state experimentation.

Because SMHAs bring expertise in and have administrative responsibility for the delivery of effective mental health services for children and youths, they play an important role in facilitating well-functioning prevention and promotion governance structures, engaging families and communities, and planning for workforce retooling or expansions to meet prevention and promotion program needs. SMHAs can also advocate for shared accountability across systems by using feasible, valid, and reliable metrics to measure improvement in child and family outcomes. The promise of moving services upstream to support early childhood development, to prevent mental health issues from derailing children's development, and to promote children's well-being are goals that are within our reach. Science, best practices, and a shared vision for a better future can idealistically and realistically reshape children's lives.

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REFERENCES

1. National Academies of Sciences, Engineering, and Medicine: Fostering Healthy Mental, Emotional, and Behavioral Development in Children and Youth: A National Agenda. Washington, DC, National Academies Press, 2019. <https://www.nap.edu/catalog/25201/fostering-healthy-mental-emotional-and-behavioral-development-in-children-and-youth>

2. Connecting the Brain to the Rest of the Body: Early Childhood Development and Lifelong Health Are Deeply Intertwined. Working Paper 15. Cambridge, MA, National Scientific Council on the Developing Child, 2020. https://46y5eh1lfhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2020/06/wp15_health_FINAL.pdf
3. Webster-Stratton C: The Incredible Years: a training series for the prevention and treatment of conduct problems in young children; in Psychosocial Treatments for Child and Adolescent Disorders: Empirically Based Strategies for Clinical Practice. Edited by Hibbs ED, Jensen PJ. Washington, DC, American Psychological Association, 2005
4. Prinz RJ, Sanders MR, Shapiro CJ, et al: Population-based prevention of child maltreatment: the US Triple P System Population Trial. *Prev Sci* 2009; 10:1–12
5. Schweinhart LJ, Montie J, Xiang Z, et al: Lifetime Effects: The High/Scope Perry Preschool Study Through Age 40. Monographs of the High/Scope Educational Research Foundation, 14. Ypsilanti, MI, High/Scope Press, 2005
6. Hill KG, Bailey JA, Steeger CM, et al: Outcomes of childhood preventive intervention across 2 generations: a nonrandomized controlled trial. *JAMA Pediatr* (Epub ahead of print, June 8, 2020)
7. Gloppen KM, Arthur MW, Hawkins JD, et al: Sustainability of the Communities That Care prevention system by coalitions participating in the Community Youth Development Study. *J Adolesc Health* 2012; 51:259–264
8. Hoagwood KE, Jensen PS, McKay M, et al: The Power of Partnerships in Children's Mental Health Research. New York, Oxford University Press, 2010
9. Early Childhood Policy Overview. Washington, DC, National Conference of State Legislatures, 2020. <https://www.ncsl.org/research/human-services/early-childhood-101.aspx>
10. State Innovation Model (SIM). Hartford, Connecticut State Office of Health Strategy, 2020. <https://portal.ct.gov/OHS/Content/State-Innovation-Model-SIM>
11. First 1,000 Days on Medicaid. New York, United Hospital Fund, 2020. <https://uhfnyc.org/our-work/initiatives/childrens-health/first-1000-days-medicaid/>
12. Fact Sheet: South Carolina Nurse-Family Partnership Pay for Success Project. Columbia, South Carolina Department of Health and Human Services, 2016. https://www.scdhhs.gov/sites/default/files/2-16-16-SC-NFP-PFS-Fact-Sheet_3.pdf
13. A Path Toward Value Based Payment: Annual Update—Year 3. New York State Roadmap for Medicaid Payment Reform. Albany, New York State Department of Health, 2017. https://www.health.ny.gov/health_care/medicaid/redesign/dsrip/vbp_library/docs/2017-11_final_vbp_roadmap.pdf
14. Bruns EJ, Parker EM, Hensley S, et al: The role of the outer setting in implementation: associations between state demographic, fiscal, and policy factors and use of evidence-based treatments in mental healthcare. *Implement Sci* 2019; 14:96
15. National Academies of Sciences, Engineering, and Medicine: Parenting Matters: Supporting Parents of Children Ages 0–8. Washington, DC, National Academies Press, 2016
16. Boat TF, Land ML, Leslie LK, et al: Workforce Development to Enhance the Cognitive, Affective, and Behavioral Health of Children and Youth: Opportunities and Barriers in Child Health Care Training. Washington, DC, National Academy of Medicine, 2016. <https://nam.edu/workforce-development-to-enhance-the-cognitive-affective-and-behavioral-health-of-children-and-youth-opportunities-and-barriers-in-child-health-care-training/>
17. Institute of Medicine: Vital Signs: Core Metrics for Health and Health Care Progress, 2015. Washington, DC, National Academies Press, 2015. <https://www.nap.edu/catalog/19402/vital-signs-core-metrics-for-health-and-health-care-progress>
18. Bonney J, Chang DI: Case Study: Medicaid and Public Health Collaboration in Oregon. Washington, DC, National Academy of Medicine, 2017. <https://nam.edu/case-study-medicaid-and-public-health-collaboration-in-oregon/>
19. 13% ROI Research Toolkit. Chicago, Heckman Equation, 2020. <https://heckmanequation.org/resource/13-roi-toolbox/>
20. A Typology of Potential Financing Structures for Population Health. Cambridge, MA, ReThink Health, 2018. https://www.rethinkhealth.org/wp-content/uploads/2019/09/RTH-TypologyChart_WB_Tab_1122018.pdf
21. Report of the Open-Ended Intergovernmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction. Seventy-First Session, Item 19(c). A/71/644. New York, United Nations General Assembly, 2016
22. Health Impact in Five Years. Atlanta, Centers for Disease Control and Prevention, 2020. <https://www.cdc.gov/policy/hst/hi5/index.html>
23. Frieden TR: A framework for public health action: the health impact pyramid. *Am J Public Health* 2010; 100:590–595