



Moving Upstream to Improve Children's Mental Health Through Community and Policy Change

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Abstract

Using a social determinants of health framework, we argue that the majority of evidence-based interventions focused on child and adolescent mental health are limited by their focus on individual youth (and sometimes families). While necessary, these interventions are insufficient for addressing the midstream- and upstream/macro-level determinants of mental health in society. We illustrate our perspective through four examples from youth mental health and related services, in which midstream and upstream interventions—i.e., at the community and public policy levels—need to be prioritized along with downstream treatments to improve population mental health and reduce social inequalities in mental health outcomes.

Keywords Social determinants of health · Child mental health · Evidence-based interventions · Public policy · Prevention

Introduction

The past several decades have seen tremendous advances in the development of evidence-based interventions (EBIs) for child and adolescent mental health problems (Chorpita et al. 2011; Southam-Gerow and Prinstein 2014; Weisz et al. 2017), including a variety of behavioral and cognitive-behavioral approaches as well as school- and family-based treatments. While important, these interventions have not significantly improved population health, defined as the distribution of health risks and outcomes within a population (Kindig and Stoddart 2003). Youth mental health problems remain highly prevalent (Costello and Angold 2016; Merikangas et al. 2010) and economically burdensome (O'Connell et al. 2009). In fact, rates of psychological distress and suicide have experienced a sharp and alarming increase among U.S. adolescents and young adults over the past decade (Twenge et al. 2019).

Many scholars and advocates have argued for more widespread uptake and sustained use of EBIs within child and adolescent mental health services (Bickman and Hoagwood 2010; Dopp et al. 2019; Proctor et al. 2009), because the impact of mental health systems is dependent in part upon the quality of interventions delivered (Bickman 1996) and many systems routinely offer low-value care (Bruns et al. 2016). Implementing effective mental health interventions for youth is critically important, yet often challenging and costly due to the need for provider training and organizational capacity-building—especially when the EBI itself is complex (Atkins et al. 2016; Bond et al. 2014; Proctor et al. 2019). The growing field of implementation science has identified various theories, frameworks, and models (Tabak et al. 2018) and strategies (Kirchner et al. 2019) that address the multi-level factors that influence EBI implementation. Yet once implemented, EBIs primarily rely on the biomedical model of treating individuals (and sometimes families) after a behavioral problem has been medically diagnosed, rather than focusing on primary and secondary prevention efforts that would alter the prevalence and social patterning of risk factors for childhood and adolescent mental health problems in communities and populations. Even existing prevention-focused EBIs still primarily target downstream factors such as youth behavior change, albeit with a large general population of youth rather than youth with specific diagnoses (Tanner-Smith et al. 2018).

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Sustained availability of EBIs is *necessary*, but also *insufficient*, from a population health perspective because the biomedical approach to child and adolescent mental health is limited due to two important and related considerations. First, efforts to achieve population-level improvement in youth mental health must be able to address the social determinants of mental health (Currie et al. 2012; Furumoto-Dawson et al. 2007). The World Health Organization model of the social determinants of physical and mental health emphasizes that individual health outcomes are all shaped by a number of factors or determinants that operate at the micro, mezzo, and macro levels of society. Micro-level or proximate factors that operate within families and individuals—including material factors such as food, shelter and health, individual risk behaviors, and psychosocial stressors—all operate within and are greatly influenced by the neighborhoods, communities, and local institutions in which people live, and by the socioeconomic status of the family. These mezzo-level factors are themselves determined by community socioeconomic status and other social factors, and are all shaped both positively and negatively by “upstream” macro-level social structural factors including the economy, cultural values, systems of discrimination and privilege, and the public policies that undergird all of these macro elements (World Health Organization and Calouste Gulbenkian Foundation 2014). Figure 1 provides an illustration and examples of the cascade of upstream, midstream, and downstream social factors that can have an impact on the mental health status of a child. The examples listed in each portion of the cascade represent modifiable targets for intervention, though they require different methods of intervention to achieve changes.

Second, EBIs have primarily been developed from intervention research focused on clinical care services delivered at the micro or individual/family level that primarily provide treatment (Sampson and Galea 2018). Such downstream interventions, however, cannot prevent poor mental health outcomes in individuals or improve overall population health because the distribution of the upstream and midstream risks, exposures, and protective factors remains unchanged (Castrucci and Auerbach 2019; Lantz 2018). Improvements in the overall mental health status of children and adults in the population—including reductions in socioeconomic and racial/ethnic disparities in mental health—will only be achieved through social, economic, and political actions that change the upstream social structural factors, which in turn will create necessary shifts in the distributions of risks, exposures, and resources within the population.

Although most attention to the social determinants of health has focused on physical health, emerging evidence suggests their importance for mental health as well, especially for children and adolescents. In their model of the social determinants of mental health, Compton and Shim

(2015) emphasize the importance of how upstream social norms and public policies impact the distribution of opportunities and challenges for children (including those related to poverty, education, discrimination/social exclusions, food and housing security, criminal justice, and neighborhood environments) that are the drivers of community, family, and behavioral risks that lead to negative mental and physical health outcomes. Similarly, Keyes and Galea (2016) argue—based on a wealth of social epidemiologic research—that small changes in upstream factors that effect many people can result in bigger improvements in the health of a population than large downstream investments focused on specific diseases or health status outcomes.

Our fundamental premise, informed by the deep and growing research literature on the social determinants of population health, is that the vast majority of EBIs focused on child and adolescent mental health are downstream interventions that are designed to treat rather than prevent mental health problems in children and youth. Interventions that provide individual-level services to children are indeed necessary and important, but are not sufficient as they do not address the mezzo- and macro-level social determinants of mental health (and resulting mental health disparities) in society. We illustrate our perspective with four examples from child/youth mental health and related services, in which upstream and midstream interventions—including at the level of public policy—need to be prioritized along with downstream actions and treatments to improve population mental health and to reduce social inequalities in health outcomes.

Example 1: Increasing Rates of Attention-Deficit/Hyperactivity Disorder in Children

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common mental health problems affecting children in the United States, with an overall prevalence of > 10% (Xu et al. 2018). ADHD is a serious neurodevelopmental disorder for which individual-level clinical treatments (e.g., parent management training, medication treatment; see American Academy of Child and Adolescent Psychiatry 2007) are important for managing symptoms and promoting functioning. Nonetheless, appropriate treatment depends on accurate clinical diagnosis, and in most cases ADHD is diagnosed based on behavioral symptom reports/observations from parents, teachers, and other caregivers (although psychological testing is the gold standard). ADHD incidence and prevalence rates have increased dramatically among all sociodemographic groups over the past 20 years, and currently are over three times higher among male versus female children and significantly higher among children living in poverty and Black children (Xu et al. 2018).

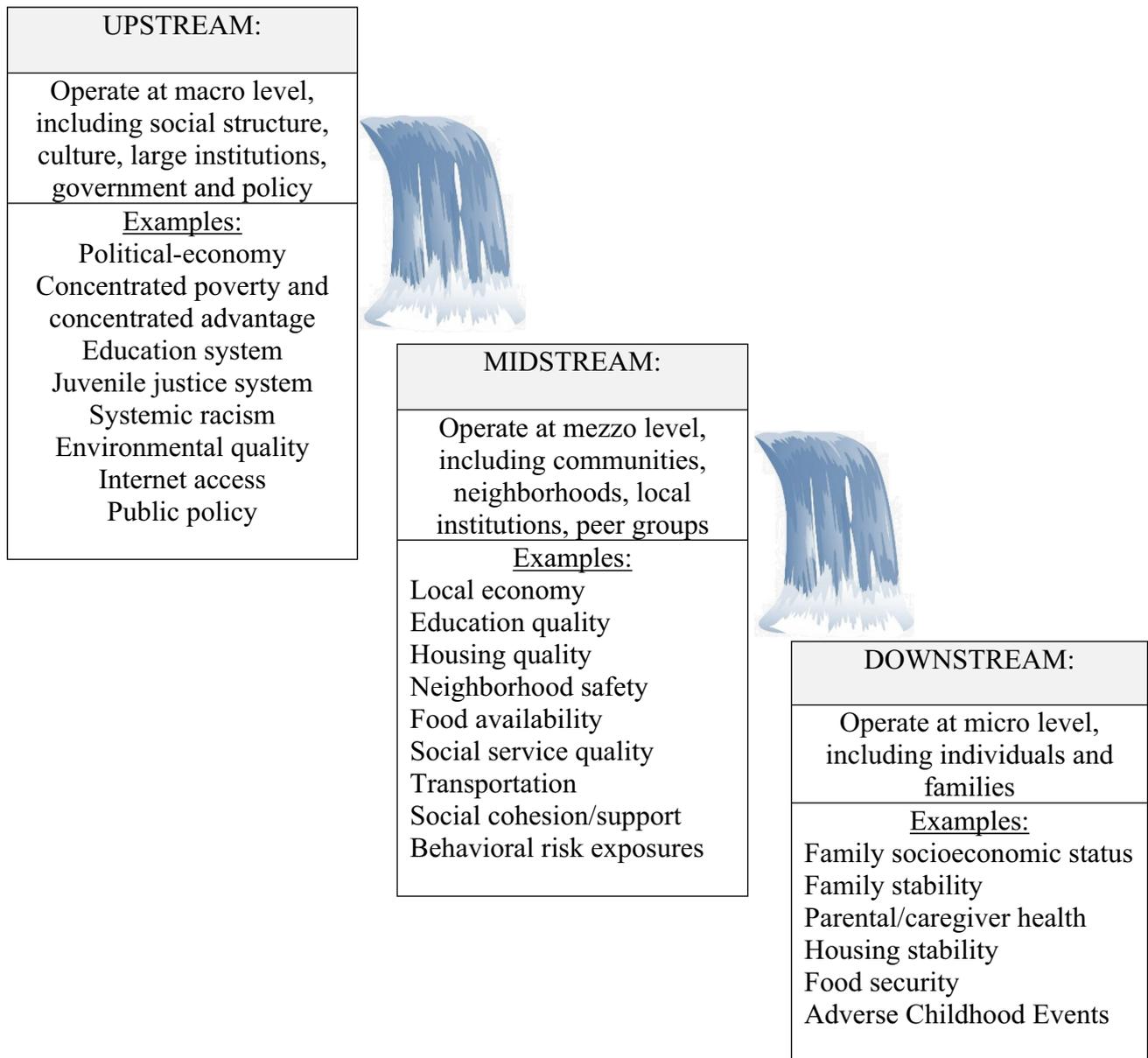


Fig. 1 Summary and examples of the cascade of upstream, midstream, and downstream social determinants of youth mental health

It remains unclear if these statistics represent a true increase in the incidence of ADHD or changes in the recognition, labeling, and reporting of common childhood behaviors as mental health pathology. The social epidemiology of ADHD has led to concerns regarding the potential over-diagnosis of this disorder, including concerns about the “medicalization” of child behavioral problems that are primarily driven by upstream social factors such as education policy related to public school resources, class sizes and teacher quality, family-related psychosocial stressors, and poverty-related problems that affect learning such as

food insecurity, housing insecurity, and sleep deprivation (Rafalovich 2004).

For example, Layton and colleagues used a regression discontinuity design to show that, in school districts with a September 1 age cut-point for enrollment, the incidence of ADHD diagnosis between the ages 4 and 7 was significantly higher among children born in August (the youngest students in a grade) than those born in September (the oldest students in a grade) (Layton et al. 2018). This pattern was not observed for other childhood health issues such as obesity, asthma, or diabetes. The findings suggest

that the observed increase in behavioral problems related to attention, concentration, and impulse control could be reflecting the ways in which children's behavioral issues are assessed and controlled in schools and other settings—such that developmentally normative behaviors are viewed as a medical problem when children are placed in a grade with comparatively older peers.

The above findings reveal that it is important to understand the upstream social structural factors that lead to significant sociodemographic patterns in ADHD incidence, including under- and over-diagnosis. Public policies regarding school enrollment age and student/teacher ratios can lead to increased pressures on teachers in terms of controlling disruptive behaviors in the classroom, which in turn appears to be associated with a more medicalized approach to addressing student behavioral and developmental issues. Potential upstream interventions include the allocation of sufficient funding for public schools so that classrooms are not overcrowded and teachers have the requisite resources and supports. Examples of midstream interventions include, for school districts with September 1 birthday cut-points for enrollment, appropriate training for administrators and teachers regarding the implications of younger age distributions in classrooms for learning and behavior management.

Also, importantly, there needs to be an increased use of the array of EBIs in school settings for students with behavioral problems related to attention, concentration, and impulse control. A number of campaigns and initiatives regarding discipline in school settings, including ReThink Discipline and the National Resource Center for School Justice Partnerships, offer guidelines and information on best practices for non-punitive and non-medicalized approaches that prioritize supportive and safe environments in which all children can learn and thrive (Executive Office of the President 2016; Ramey 2015).

Example 2: Family-Focused Interventions for Gang-Related Criminal Behavior

For youth who engage in serious antisocial behavior (i.e., legal and other rule violations), family-based interventions that are designed to address social-ecological drivers of such behavior (e.g., through interventions that incorporate family members, peers, school personnel, juvenile justice personnel, and other important people in the youth's life) have shown the strongest evidence for effectiveness (Dopp et al. 2017). Thus, viewing antisocial behavior as a treatable health problem has resulted in the development of several EBIs. These interventions are not consistently effective, however, with youth who are involved in street gangs (Boxer and Goldstein 2012), illustrating how even comprehensive interventions that address families' social needs still cannot fully address upstream drivers.

Street gangs are organized social groups whose members regularly use illegal means (e.g., threats, violence, drug sales) to exert influence. Numerous social determinants contribute to the presence and severity of street gang activity in a community, such as neighborhood disorganization, concentrated poverty, and family antisociality (e.g., gang affiliation of other family members) or instability (Howell and Egley 2005). There is increasing recognition that gang affiliation can offer youth a means of accessing power, resources, social connection, and safety in communities that do not offer prosocial opportunities for the same (Brown et al. 2014; Lauger 2012). In this way, although communities with high gang activity experience poorer population health overall, gang affiliation actually provides individual youth with a mix of risk and protection for negative outcomes.

Despite these findings, a disproportionate amount of anti-gang efforts focus on preventing or ending individual youths' gang affiliations, rather than addressing the upstream determinants that contribute to gangs' existence in a given community. It is not surprising that family-based EBIs for antisocial behavior are less effective with gang-involved youth when one considers that these interventions are designed to help youth and families draw on their personal strengths to overcome adverse conditions. Even the most promising gang-specific interventions (e.g., Gang Resistance Education and Training [GREAT]; Esbensen and Osgood 1999) are focused on individual youths' affiliations (see Boxer and Goldstein 2012). Such efforts are necessary, but they alone cannot improve the economic conditions and prosocial institutions within an entire community.

An alternative intervention that takes an upstream approach is the Office of Juvenile Justice and Delinquency Prevention Comprehensive Gang Model (OJJDP Model; National Gang Center 2009). That model involves a coalition of local agencies and citizens who coordinate policies, programs, and practices aimed at creation of prosocial opportunities (e.g., for education and employment), social engagement with gang-involved youth, and suppression of gang activity. The breadth of the OJJDP model makes the community itself, rather than individual youth or families, the target for intervention. There is preliminary empirical support for the effectiveness of this model in reducing gang activity (Cahill and Hayeslip 2010; Spergel et al. 2006) but it has not been widely studied or implemented to date.

Example 3: Interventions for Families Experiencing Homelessness and Housing Insecurity

It is well known that children who live in poverty or other forms of economic hardship have higher rates of myriad health problems across the life course through multiple mechanisms, including pathways associated with housing (Gilman et al. 2003). Children exposed to toxic stress in

the forms of homelessness and housing insecurity—such as evictions, multiple moves, and crowding—are at risk for lifelong negative effects on both physical and mental health (Shonkoff and Garnder 2011). For example, housing insecurity is associated with multiple health vulnerabilities among young children, including developmental delay (Cutts et al. 2011). In addition, housing insecurity among low-income children is also associated with serious problems with sleep duration and quality, which in turn decreases cognitive performance and increases maladaptive behaviors in school settings (Buckhalt et al. 2007). Finally, housing-related problems have a serious detrimental impact on parents' ability to function and care for their children, and are associated with higher levels of material hardship and parenting stress (Desmond and Kimbro 2015) and child welfare involvement (Fowler and Farrell 2017).

It is critically important to screen children who are experiencing psychological distress for contributing factors such as housing insecurity, homelessness, or other adverse childhood experiences related to socioeconomic hardship. Supportive housing programs for chronically homeless persons and families, including Housing First models and Critical Time Interventions, have been demonstrated to significantly increase stable tenancy and reduce health care, emergency services, and criminal justice costs (Fowler and Farrell 2017; Lantz and Iovan 2018). Such efforts, however, can only address midstream social needs (i.e., helping a family secure housing) and cannot ensure all children of safe, secure, and stable shelter in the first place. As an alternative, Taylor (2018) describes four upstream intervention pathways for addressing the ways in which housing has a negative impact on health.

The first pathway is to increase *housing stability* in terms of tenancy through such interventions as public policies and community-based programs aimed at rental assistance, eviction prevention, and foreclosure prevention. In a recent review of housing stability approaches for improved child welfare, Fowler et al. (2017) describe many effective programs while adroitly noting that there are a number of systemic constraints—located further upstream—that constrain the use of interventions focused on individuals' housing stability and tenancy. The second pathway is focused on improving the *quality and safety of housing*, including reducing environmental exposures such as lead, asthma triggers, and extreme temperatures. For example, research has demonstrated that children in families receiving assistance through the Home Energy Assistance Program have healthier weights and are less likely to have nutritional risks and deficits than other low-income children (Frank et al. 2006). The third pathway is focused on *housing affordability* beyond government-subsidized or public housing. Many communities are attempting to expand affordable housing through a variety of public policies and public-private

partnerships including: rent control ordinances, inclusionary zoning, property tax assistance for long-term residents, tax incentives for developers, community development financing, and community land trusts (Kalugina 2016; ChangeLab Solutions 2015).

The fourth pathway is furthest upstream and is focused on *neighborhood quality*. Many social and environmental aspects of neighborhoods pose mental and physical health risks to children, including crime, transportation challenges, lack of safe green/recreational spaces, and concentrated poverty. One of the many findings from the Moving to Opportunity experiment was that, compared to the families who stayed in public housing in high poverty neighborhoods in New York City, parents who moved to higher income communities reported significantly lower psychosocial stress and their adolescent boys reported fewer symptoms of anxiety, depression, and dependency 3 years later (Leventhal and Brooks-Gunn 2003). Improving the overall safety and quality of the neighborhood environments in which children live needs to be addressed through a wide variety of investments and policy changes.

Example 4: Youth Telemental Health Interventions for Rural Populations

Rural communities disproportionately experience many social risks (e.g., geographic and social isolation, low socioeconomic status, inadequate transportation) that simultaneously increase the prevalence and impact of certain mental disorders (e.g., depression, suicide, substance use) while limiting access to mental health care (Bolin et al. 2015). Telemental health, or use of technology to deliver mental health services at a distance (Turvey et al. 2013), is increasingly promoted as a solution that can achieve similar outcomes to in-person EBI delivery while increasing accessibility—including with youth, for whom technology can help make services more relevant and engaging (Myers et al. 2017; Slone et al. 2012). Relevant examples include video-conference parent coaching, self- and therapist-guided web-based training modules, and web portals.

Telemental health services can circumvent the effects of upstream social determinants on access to youth (or family) EBIs, but those determinants will continue to impact downstream mental health outcomes through other pathways. For instance, youth receiving exposure therapy for social anxiety via video-conference may remain too geographically isolated to develop more adaptive alternative behaviors (e.g., developing strong social bonds with peers) even as their maladaptive anxiety is extinguished. At a population level, the ultimate impact of telemental health services can be constrained by the structure and organization of the community, which in a rural setting often has insufficient resources for supporting health (e.g., lack of public transit, few shared spaces for

recreation or socializing). This illustrates how overcoming barriers to health care—the area in which telemental health excels—is not the same as promoting health. Telemental health services will be more likely to produce population health gains in the context of coordinated community-wide efforts to promote health.

Of particular relevance to telemental health, Internet access itself is increasingly counted among the social determinants of health, given that a growing proportion of modern life is lived online (Daniel et al. 2018)—especially among youth (Pew Research Center 2018b). Many telemental health EBIs cannot address this determinant because they directly rely on Internet connectivity (e.g., for video-conferencing or web-based content). Unfortunately, rural communities (vs. urban and suburban) are more likely to have problems accessing a high-speed broadband connection (Pew Research Center 2018a), a discrepancy that exacerbates disparities in mental health outcomes (e.g., through increased stress or isolation) while introducing a new barrier to accessing telemental health care in rural settings. Without attention to Internet access as a social determinant of health, telemental health service providers might replicate the very disparities in service accessibility for rural youth that they seek to eliminate—a trend that is already emerging (Barnett et al. 2018). Local, state, and federal investment in affordable Internet in rural communities would promote positive downstream effects on health—recognizing of course that how the Internet is used determines its ultimate impact.

Discussion

In keeping with the spirit of this festschrift special issue, we recall Dr. Leonard Bickman's pioneering work on measurement feedback systems (Bickman et al. 2016; Hamilton and Bickman 2008)—which made it clear that mental health systems need to invest in broad supportive infrastructure if they are to maximize the impact of implementing EBIs for particular clinical problems or sub-populations. In this paper, we extend that logic even further by emphasizing the critical role of upstream and midstream social structural factors on youth mental health and, thus, the need to address those factors with interventions at the appropriate social-ecological level. Significant research has demonstrated that social factors at the macro, mezzo and micro-level of society are key factors in the development, severity and chronicity of mental health problems across the life course, frequently starting during childhood (Compton and Shim 2015). Upstream policy and community-level interventions are essential in promoting mental wellness among youth (and subsequently, adults) at a population level.

Our case examples illustrate the many ways in which macro-level and mezzo-level interventions contribute to the

overall efforts to promote well-coordinated, high-quality mental health service systems that are actually addressing the social determinants of health. At the same time, much work remains to better understand comprehensive, coordinated approaches to address the social determinants of youth mental health. Importantly, although the impact of these upstream social factors can be observed as social needs at the individual level (e.g., in the form of being homeless, having food insecurity, or being unable to afford needed prescriptions), offering services for these social needs is not the same as addressing the more upstream factors that drive social and health inequities (Lantz 2018). The Culture of Health Action Framework (Chandra et al. 2016) purports that system change and policy action in four key areas is necessary to achieve population health: making health a shared value, fostering cross-sector collaboration, creating healthier and more equitable communities, and strengthening integration of health services and systems. This action framework offers a useful road map that can guide researchers, health systems, and communities in their efforts to promote population-level youth mental health and address upstream social determinants, as well as help identify priority research areas.

Broadly, there is a need for increased attention to social determinants of mental health from the most basic to the most applied sciences. Social epidemiological and psychological research on the mechanisms of risk and resilience can be designed to better account for macro- and mezzo-level determinants. Rigorous evaluations of community interventions and policy changes remain scarce at present, and should also be increased to match the testing of EBIs. As knowledge progresses, it will be important to develop specific guidelines for conducting research targeting social determinants of mental health (e.g. how to identify which social determinants are potent targets of intervention, when to focus on micro vs. mezzo vs. macro levels). Greater attention to evidence-based policymaking is needed as well since most states do not regularly use research evidence to inform social policies. Thus, we cannot assume that making a health problem a policy priority is enough, as numerous other factors can otherwise influence policy-making (e.g., highly punitive policies aimed at suppressing gang activity due to policy priority of public safety). Recently, implementation researchers have begun expanding the focus of their field to include the multi-level factors and strategies involved in adoption of evidence-based health and social policies, not just EBIs (Purtle et al. 2018).

At the same time, our case examples also make clear the value of the micro-level EBIs that have long been the focus of youth mental health services research. None of our arguments should be taken to advocate for de-investment in EBIs, as a purely macro-level approach would be just as limited as a purely micro-level approach and would also represent a profound disservice to youth and families

who are currently experiencing mental disorders. Rather, it is important to recognize that multi-level efforts—coordinated across systems, stakeholders, and specific diseases/problems—will be necessary to address the multi-level social determinants and downstream consequences at play in youth mental health (see Fig. 1). Testing of EBIs should also continue, but with an increased focus on the impact of social determinants (e.g., as moderators of intervention effects) and social needs (e.g., embedding social workers and programs within mental health services).

Research funders and evaluation planners need to recognize the increased complexity of including macro-level factors—from measurement issues, to expanded timeframes and geographic areas, to the need for interdisciplinary teams—and support projects accordingly. This complexity underscores the need for partnerships between researchers, policymakers, and community members (including intervention providers and recipients) to promote incorporation of multiple perspectives and forms of evidence. Involving partners who focus on different social-ecological levels could help bridge the divide in perspectives and facilitate more useful and productive work. For example, intervention providers can suggest questions or identify unintended consequences of a policy by virtue of having their “boots on the ground,” and policy experts could advise around when a “policy window” is open to advance interventions at upstream versus downstream levels.

Multiple perspectives will also be needed to address the siloed nature of health and social services (e.g., states that have separate mental health vs. substance use treatment systems), which often make it challenging to pursue a population-focused approach to youth mental health. The interventions that are likely to have the broadest impact on youth mental health are also the most challenging for siloed systems to execute because they involve significant investments in systems change (e.g., collaboration across service sectors) and primary prevention (e.g., which produces longer-term and more diffuse benefits). One example, referred to as the “wrong pockets” problem in public administration, is that it is hard to identify and capture savings from upstream interventions that are spread across the different budgetary pockets of juvenile justice, child welfare, public health, Medicaid, education, etc. Considerable transformation of health and social welfare systems administration and financing will be necessary to address these and other challenges. Sampson and Galea (2018) argue for a large-scale strategy applied to mental and behavioral health issues that is similar to the broader movement towards population health improvement and health equity, one that is premised on a social structural view of the determinants of health: “confronting social, political, and economic factors is essential to any efforts that

aims to improve population health, making this conceptual shift indeed overdue.”

Within the health care delivery system, there is a growing “population health management” movement that includes a strong focus on behavioral health. It is important to recognize, however, that population health management has tended to prioritize medical approaches and focus downstream, with the primary “populations” of interest being those who are members of an insurance plan or a defined health care system (Lantz 2018). The population health management efforts emerging from the health care system are primarily focused on identifying and “treating” individuals’ social needs, and are mostly silent about the upstream institutional, systemic and policy drivers of population health problems and disparities (Lantz 2018).

As illustrated in this paper and supported by a growing body of empirical evidence, it is essential that we resist conflating mental health with mental health care, and that we endeavor to ensure that personal medical and social services are combined with upstream and midstream interventions that address social determinants of mental health at the system, institutional, policy, community and neighborhood levels. With such coordinated and comprehensive efforts, we can achieve a future in which mental health is a normative expectation for every child, regardless of their background and socioeconomic standing.

Compliance with Ethical Standards

Conflict of interest Alex R. Dopp and Paula M. Lantz declare that they have no conflicts of interest. This paper has not been presented at a meeting.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent This article does not contain any studies with human participants performed by any of the authors.

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