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Collaborative Care in Schools: Enhancing Integration and Impact in Youth Mental Health

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Abstract

Collaborative Care is an innovative approach to integrated mental health service delivery that focuses on reducing access barriers, improving service quality, and lowering healthcare expenditures. A large body of evidence supports the effectiveness of Collaborative Care models with adults and, increasingly, for youth. Although existing studies examining these models for youth have focused exclusively on primary care, the education sector is also an appropriate analog for the accessibility that primary care offers to adults. Collaborative Care aligns closely with the practical realities of the education sector and may represent a strategy to achieve some of the objectives of increasingly popular multi-tiered systems of supports frameworks. Unfortunately, no resources exist to guide the application of Collaborative Care models in schools. Based on the existing evidence for Collaborative Care models, the current paper (1) provides a rationale for the adaptation of Collaborative Care models to improve mental health service accessibility and effectiveness in the education sector; (2) presents a preliminary Collaborative Care model for use in schools; and (3) describes avenues for research surrounding school-based Collaborative Care, including the currently funded *Accessible, Collaborative Care for Effective School-based Services (ACCESS)* project.

Keywords

Collaborative Care; Primary Care; Adaptation; Integration; School Mental Health

Over 18 million children and adolescents in the United States experience mental health problems (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), yet only one third receive treatment (Kataoka, Zhang, & Wells, 2002; Merikangas et al., 2011). Among those youth who receive care, up to 70% do so in the education sector (Farmer, Burns, Phillips, Angold, & Costello, 2003; Merikangas et al., 2010), which reduces barriers such as transportation and health insurance (Pullmann, Bruns, Daly, & Sander, 2013; Pullmann, VanHooser, Hoffman, & Heflinger, 2009). Schools have access to nearly the entire population of children and adolescents, which places them in a unique position to provide a range of

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interventions to prevent and treat youth mental health problems (Fazel, Hoagwood, Stephan, & Ford, 2014). Schools offer a variety of programs to address the social, emotional, and behavioral needs of their students and many offer some type of integrated school-based mental health (SBMH) services (e.g., prevention; early identification; individual, group, or family counseling) through school- or district-based mental health providers, school health/mental health clinics, or through formal relationships with community mental health providers (Fazel, Hoagwood, et al., 2014; Foster et al., 2005; Green, Xuan, Kwong, Hoagwood, & Leaf, 2015; Kutash, Duchnowski, & Lynn, 2006). Despite the established ability of SBMH to promote service accessibility (Kataoka, Stein, Nadeem, & Wong, 2007; Lyon, Ludwig, VanderStoep, Gudmundsen, & McCauley, 2012), a number of barriers inhibit the provision of optimally engaging and effective care. Barriers include continued stigma surrounding mental health treatment (Bowers, Manion, Papadopoulos, & Gauvreau, 2013), an insufficiently sized SBMH workforce to address the service needs of school populations (Lyon, Maras, Pate, Igusa, & VanderStoep, 2015), and low use of high-quality, evidence-based practices (EBP) among existing school practitioners (Owens et al., 2014). Greater use of integrated approaches for providing mental health care in schools could substantially improve mental, emotional, behavioral, and academic outcomes for youth by improving the effectiveness, efficiency, and contextual appropriateness of education sector services (Atkins, Hoagwood, Kutash, & Seidman, 2010; Bruns et al., 2016; Stephan, Mulloy, & Brey, 2011).

The Collaborative Care (CC) model, an integrated approach to improving access to mental health services in primary care settings, may be a particularly useful model to address barriers to quality mental health care and improved outcomes for youth in schools. CC is focused on delivering patient-centered, population-based care using a team of coordinated providers. It also emphasizes accountable, evidence-based, and measurement-driven interventions (Asarnow, Rozenman, Wiblin, & Zeltzer, 2015; Campo et al., 2005; Kolko et al., 2014; Kolko, Campo, Kelleher, & Cheng, 2010; Kolko & Perrin, 2014). Drawing from established CC practices that integrate mental health and primary care – as well as preliminary work conducted by the authors – the purpose of this paper is to (1) explore the potential usefulness of the CC model to facilitate improved access, service integration, and quality in SBMH; (2) articulate a CC informed model to enhance SBMH services; and (3) outline a research agenda to further advance CC in schools. This work represents the first step in an iterative process designed to adapt the CC model for use in schools with the goals of improving (a) the capacity of schools to provide mental health services, (b) mental health service accessibility, and (c) the use of evidence-based practices. The project, titled *Accessible, Collaborative Care for Effective School-based Services (ACCESS)*, is intended to be responsive to barriers such as an insufficiently sized SBMH workforce to address the service needs of school populations (Lyon, Maras, et al., 2015) and low use of high-quality evidence-based practices among existing school practitioners (Evans & Weist, 2004; Owens et al., 2014).

Integrated and Collaborative Care Models

Models of integrated care – defined as care received from a team of health professionals working together to coordinate or deliver services in nontraditional mental/behavioral health

settings (e.g., primary care, schools) – are becoming increasingly popular, largely as a result of evidence supporting their ability to increase the accessibility and effectiveness of care for vulnerable populations of youth (i.e., low SES, racial/ethnic minority) (Asarnow et al., 2005; Kolko et al., 2014, 2010; Richardson et al., 2014). Elkin and colleagues (in press) recently articulated how integrated models may be categorized according to three different dimensional constructs: *coordination* (primary care providers deliver care in conjunction/communication with community-based behavioral health specialists), *co-location* (primary care and behavioral health providers are located in the same setting or in nearby offices), and *collaboration* (multidisciplinary teams working with care coordinators). For instance, in a model emphasizing coordination, a mental health specialist may serve as an advisor to a primary care provider without seeing the individual client. In this type of model, a primary care provider may access a psychiatrist through a centralized mental health telephone program (e.g., Hilt et al., 2013) or receive skills training in mental health interventions. In co-located models, providers occupy the same or adjacent physical space, but usually do not develop a shared care plan. Collaborative care models are integrated approaches that tend to be team-based, evidence-based, use population-based tracking, and utilize care managers to facilitate the coordination between primary care providers (PCPs) and mental health providers.

CC is one of the most common integrated care models and reflects one of the best-tested and most effective models for overcoming barriers to treatment and improving outcomes for mental health conditions. A recently published meta-analysis (Asarnow et al., 2015) synthesized 31 randomized control trials (RCTs) comparing a variety of integrated primary care interventions to usual care to address youth mental health problems. Pooled analyses of all studies investigating integrated treatment interventions estimated that youth from the trials involving integrated care models had a 66% probability of having a better treatment outcome compared to usual care. This probability increased to 73% for the five trials that explicitly evaluated CC interventions. The CC model includes: (1) patient-centered care using a multidisciplinary team working together to coordinate care through case management and shared treatment plans; (2) a “population-based approach” to tracking outcomes with plans for increasing treatment intensity if patients are not improving, such that attention is paid to improving outcomes for the whole population rather than just the individual; (3) use of evidence-based interventions; (4) using measurement-based treatment models and systems to monitor and track progress based on patient specific treatment goals; (5) accountability through consultation and supervision; and (6) client education and engagement (Asarnow et al., 2015; Campo et al., 2005; Kolko et al., 2014; Kolko & Perrin, 2014; Richardson et al., 2014; Unützer, Harbin, Schoenbaum, & Druss, 2013). To achieve the principles outlined, the CC model employs several strategies including reassigning delivery of specific components of care to a care manager, the development of a pre-defined treatment protocol with input from all care providers that includes clarity on who will play which role, use of clinical information systems to track and improve outcomes, a focus on client engagement to increase activation, regular team meetings to review progress and adjust treatment, and involvement of a care manager in the provision of self-management support. A common component of several CC interventions is the advancement of treatment intensity for service recipients who are not improving, which is referred to as “stepped care”

(Von Korff, Gruman, Schaefer, Curry, & Wagner, 1997). Stepped care was developed based on the recognition that (a) not all service recipients require the highest level of care and (b) tracking outcomes allows for evaluation of client response to lower intensity treatment, pragmatic clinical decision making, and more effective and efficient services. Because CC explicitly involves shared work by multidisciplinary teams, well-defined team roles become critical. In this vein, there is often a need for “task shifting” (Patel, 2009) such that new types of professionals (e.g., depression care managers) are trained in activities that have been historically completed by another type of professional (e.g. specialized mental health providers). This requires planning to define these roles, methods to train individuals in new skills, and a focus on developing strategies for communications among all parties.

Over 70 randomized trials support the effectiveness of CC for adult populations with multiple meta-analyses and systematic reviews documenting short and long term benefits for depression and anxiety (Archer et al., 2012; Thota et al., 2012; Woltmann et al., 2012). Furthermore, because they emphasize the integration of different health services, transparency/accountability, efficiency, and the effective use of data, CC models have been identified as particularly well aligned with the provisions of the Affordable Care Act (Katon & Unützer, 2013; Mechanic, 2012). Although far fewer than with adults, a number of studies systemically explored the acceptability, feasibility, and effectiveness of the model in pediatric primary care settings. Three randomized trials have investigated CC interventions for depressed adolescents (e.g., Asarnow et al., 2005; Clarke et al., 2005; Richardson et al., 2014), and two others (Kolko et al., 2014, 2010) studied the impact of the model on younger children with behavioral disorders (i.e., attention-deficit/hyperactivity disorder [ADHD] and oppositional defiant disorder). Collectively, these studies provide initial support for CC’s effectiveness, although in several of the studies, the advantage was modest.

Specifically, in studies addressing adolescent depression, Asarnow et al. (2005) and Richardson et al. (2014) both found positive effects, relative to controls, of CC models on some intervention processes (e.g., engagement; Asarnow et al., 2005), and service recipient outcomes, such as depression symptoms and remission rates (Asarnow et al., 2005; Richardson et al., 2014). Regarding behavioral disorders, Kolko and colleagues (2012; 2014) conducted two RCTs investigating pediatric CC interventions for younger children (aged 5–12). Findings from the first trial found an advantage for the CC intervention, relative to a usual care condition, demonstrating significantly better performance in several specific domains – including reducing oppositional behaviors, inattention, hyperactivity and functional impairment (Kolko, Campo, Kilbourne, & Kelleher, 2012). There were no reductions in anxiety, depression or conduct disorder symptoms (Kolko et al., 2012). In their second randomized study, compared to the control group, CC study pediatricians reported greater gains in skills and competency in treating ADHD, but did not demonstrate improved beliefs about delivering psychosocial treatment in primary care. Study participants showed clinically significant improvements in ADHD symptoms, behavioral problems in general, internalizing symptoms and parental stress (Kolko et al., 2014).

Applicability of Collaborative Care to the Education Sector

The education sector offers an avenue for increasing access to, and quality of, mental healthcare for youth. Indeed, the accessibility of mental health services in schools eclipses that in any other setting (Farmer et al., 2003; Kataoka et al., 2007; Lyon et al., 2012). School-based personnel are often the first to identify student mental health problems and frequently connect students to mental health services, including those who are unable or unlikely to access services in primary care or specialty mental health care settings (Green et al., 2013, 2015). As a result, schools are in a unique position to offer a range of mental health prevention and intervention services.

Given that academic problems are likely to co-occur with both physical and mental health difficulties (McLeod, Uemura, & Rohrman, 2012), schools present a compelling setting for integration of physical health, behavioral/mental health, and academic support services for students. A growing number of schools offer population-based services through Multi-Tiered Systems of Support (MTSS), an integrative framework for organizing school-based approaches to preventing and addressing emotional and behavioral as well as academic problems (Bruns et al., 2016; Fazel, Hoagwood, et al., 2014). MTSS is intended to provide a continuum of care that emphasizes evidence-based services, progress monitoring, and data-driven decision making based on student needs. The MTSS and CC models share many commonalities and could be integrated to enhance the school mental health service delivery model and assure coordination of mental health and school-based academic and social/emotional support services. As described below, however, CC may offer specific roles and activities through which to realize the principles of the broader MTSS framework.

Commonalities across the MTSS and CC models include matching levels of intervention to the type, severity, and complexity of presenting problems across multiple tiers of intervention (i.e., stepped care). In MTSS, Tier 1 interventions are delivered to all students and students who are identified as needing additional help receive targeted support at Tier 2. Those who continue to struggle after receiving secondary-level supports are provided with intensive, individualized, Tier 3 interventions (Bruns et al., 2016). CC begins its *stepped care approach* with a caseload of service recipients who receive brief, relatively inexpensive interventions (that approximate the focus of Tier 2) before advancing to more intensive services reminiscent of Tier 3. Treatment adjustments – often including psychiatric consultation or the delivery of specific evidence-based treatment protocols – occur when patients do not improve as expected or meet treatment targets on standardized scales. Both models emphasize regularly tracking of student progress and outcomes, although procedures for tracking and adjusting interventions tend to be more specifically articulated within applications of CC (e.g., via regular supervisory or consultation meetings for case review).

Attention to, and evidence for, Tier 1 services within MTSS has grown rapidly nationwide (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), however many schools are struggling with day-to-day implementation efforts (VanDerHeyden & Burns, 2010). Furthermore, far fewer studies and less guidance is available to inform Tier 2 and 3 services (Bruns et al., 2016) and a significant gap between “what works” and what actually gets implemented, particularly in relation to school-based mental health, remains (Forman et al.,

2013; Owens et al., 2014). Integration of components of the CC approach, such as navigating entry into appropriate services, delivering a continuum of selective and indicated behavioral health supports, and systematizing effective behavioral health progress monitoring, could facilitate achievement of MTSS objectives. For example, MTSS models call for universal screening of students with the aim of identifying at risk students and subsequently monitoring progress (Sugai & Horner, 2009). Research, however, indicates that less than 2% of schools utilize systematic screening of mental and behavioral health problems (Romer & McIntosh, 2005) and frequently do not have systems in place to monitor treatment progress for students receiving Tier 2 and 3 services (Lyon, Bruns, et al., 2014). A cornerstone of the CC model is the systematic utilization of primary care or physical health providers (e.g., via targeted training and the provision of standardized assessment tools) to support the identification of appropriate cases for services that are then coordinated by case managers. Schools often employ multidisciplinary health and mental health professionals (e.g., nurses, psychologists, and social workers), who consult regularly with school- and community-based supports for students (Weist et al., 2012) and could be utilized to help identify students and assure that students get needed services. As described in further detail below, CC addresses these issues by establishing and revising professional roles to support its key components, such as case management, building communication and collaboration structures to facilitate information sharing, and promoting accountability. Key functions of CC roles include initial identification of cases, assessment of needs/diagnosis, liaising/coordination with service providers and recipients, psychosocial intervention delivery, and medication management, among others. Because the MTSS framework is comprised primarily of overarching principles, it is less specific with regard to the specific roles and functions of participating professionals. For this reason, CC reflects a possible method through which to support MTSS objectives, particularly at the Tier 2 and 3 levels.

Despite the potential for CC and MTSS to work synergistically to address student needs by promoting accountability, supporting mental health services using existing resources, and establishing specific roles and communication structures to facilitate efficiency and effectiveness, insufficient research has been done to advance a CC model for the education sector. This reflects a substantial missed opportunity, given the potential for integrated models to help address many outstanding issues surrounding the accessibility, effectiveness, and efficiency of school-based mental health.

A Preliminary Collaborative Care Model for Schools

In an effort to capitalize on the synergy between CC and MTSS, our research team is working to develop an adapted model that retains key core components from adult- and youth-oriented versions of CC while increasing contextual appropriateness for the education sector. Table 1 displays core components of the established CC model (i.e., service provider roles, emphasis on evidence-based intervention, symptom tracking/clinical information systems, stepped care, consultation/supervision, service recipient education, and case management), which have been synthesized from the extant models of pediatric CC (Asarnow et al., 2015; Campo et al., 2005; Kolko & Perrin, 2014, 2014; Richardson et al., 2014), as well as the intended functions of the components. In addition, the table details documented constraints of the education sector that are likely to drive modifications of the

CC model. These include the characteristics of students, who tend to present with a wide range of developmental and behavioral/emotional problems (Lyon, Bruns, et al., 2014; Walker, Kerns, Lyon, Bruns, & Cosgrove, 2010); the need for health and mental health interventions in schools to align with the educational mission and educational outcomes (Prodente, Sander, & Weist, 2002); tradeoffs between service accessibility and ease of facilitating parental engagement (Langley, Nadeem, Kataoka, Stein, & Jaycox, 2010); variability in medical staff availability in schools, as well as the appropriateness of a central role for medical providers (Bohnenkamp, Stephan, & Bobo, 2015; Power, Blum, Guevara, Jones, & Leslie, 2013); and opportunities to involve a range of educational personnel in mental health interventions (Owens et al., 2014).

To be responsive to these constraints, Table 1 also details potential adaptations for a school-based CC model. It is important to emphasize that this model is preliminary and that some components will change as it is subjected to further systematic development and evaluation as the ACCESS project advances (see below). Highlights of the preliminary model surrounding *service provider roles* include identifying existing school-based personnel to function as care managers. In contrast to MTSS models, which frequently do not have a central contact person to coordinate and monitor treatments for students receiving Tier 2 and 3 services, CC explicitly details the objectives of an individual functioning in the care manager position (Ratzliff, Unutzer, Katon, & Stephens, 2016) and brings a well-documented history of establishing care managers using primarily existing resources. Because they sit at the center of the CC model, specific attention should be paid to the most effective ways of identifying, recruiting, and training individuals who will function as care coordinators. Care managers are typically charged with liaising among service personnel and with service recipients, organizing the services delivered by the other medical and mental health professionals, delivering some lower-intensity mental health interventions within a stepped care model, and monitoring outcomes. Individuals who have existing expertise working with multiple systems and integrating physical health, mental health, and educational health – such as school social workers, school nurses, school counselors, or school psychologists – may be optimally suited for this role.

Furthermore, because schools vary widely in the extent to which they can offer comprehensive primary care services a school-based CC model is likely to differ from primary care models in the scope of medical providers' roles. Although schools with school-based health centers (SBHCs) typically provide primary care services, often via a nurse practitioner (Lofink et al., 2013), there are fewer than 2,000 such centers nationwide (Strozer, Juszczak, & Ammerman, 2010). To be effective and generalizable, an adapted CC model must be able to be responsive to varying school-based health and mental health personnel resources and administrative service arrangements (Foster et al., 2005). Such a model may ultimately deemphasize physical health providers, relative to existing CC models in primary care. Nevertheless, these types of providers are still likely to be critical to the overall success of the model, especially with regard to their ability to (1) facilitate the identification of students with mental health concerns who may present for physical health services, and (2) serve a supportive role – such as medication administration or monitoring – for more intensive cases where psychiatric medication may be prescribed by an external practitioner (e.g., psychiatrist, primary care provider).

Additional proposed adaptations relate to the nature of the *evidence-based interventions* supported by a school-based CC model. Although most existing models have focused on a single type of diagnosis or presenting problem (e.g., ADHD, depression) to conduct well-specified research, service needs in schools may necessitate a broader approach. Service models that are prepared to address a wider range of presenting problems are more likely to be judged to be useful by stakeholders such as clinicians (Borntrager, Chorpita, Higa-McMillan, & Weisz, 2009). Some approaches to pediatric CC (e.g., Kolko & Perrin, 2014) have begun to incorporate common elements of evidence-based interventions (Chorpita, Daleiden, & Weisz, 2005a) –delivered within a modular intervention framework (Chorpita, Daleiden, & Weisz, 2005b) – that allow for flexibility and responsivity to client presenting problems. These approaches are compelling, considering research supporting the effectiveness of common elements interventions relative to both usual care and standard-arranged evidence-based treatment manuals (Weisz et al., 2012). Furthermore, prior research has documented that a modularized, common elements paradigm demonstrates good fit for groups of school-based mental health providers (Lyon, Ludwig, et al., 2014; Lyon, Charlesworth-Attie, Vander Stoep, & McCauley, 2011; Stephan, Wissow, & Pichler, 2010; Weist et al., 2009), with some studies including medical providers as well (Stephan, Connors, Arora, & Brey, 2013). Building on these findings, faculty from the University of Maryland’s Center for School Mental Health have developed an innovative initiative, the Mental Health Training Intervention for Health Providers in Schools (MH-TIPS; Bohnenkamp et al., 2015), which includes training for school nurses in common elements of evidence-based practice.

Potential opportunities for addressing a wider variety of presenting problems are discussed in the research agenda detailed below. In addition, *symptom tracking and clinical information systems* will likely need to be augmented to incorporate educational outcomes. A digital registry for outcome tracking, originally designed to support CC for adults, has recently been adapted for use with youth receiving school-based mental health services (Lyon et al., 2016), but is not yet optimized to support a school-specific collaborative model. Given that the functions of many health information technologies are only likely to be optimized if the clinical information and decision models that underlie them are well specified (Chorpita, Daleiden, & Bernstein, 2015), a clearly articulated CC model for schools is a critical first step in developing or adapting technologies to support it. Although existing information systems designed for clinical purposes may be adapted for this purpose, it may also be appropriate for school-based CC providers to make use of existing educational data systems that support monitoring these kinds of outcomes (e.g., May et al., 2003). A *stepped care* model in schools will also continue to be critical for efficiently addressing student needs. Such a model can be made more explicit through the MTSS multi-tier framework that also incorporates universal school-wide supports to reduce overall service needs and which makes clear distinctions between Tier 2 and Tier 3 services. Related, *consultation and supervision* can be expanded to support educators surrounding the identification of – and supports for – students with mental health service needs. *Client education and engagement* efforts may need to be increased, especially among younger students or students with externalizing problems – where parental involvement is particularly critical. Finally, to capitalize on existing school resources, *case management*

activities for school-based CC should attend to both internal and external resources, including indigenous helpers who can continue to support service recipients following the conclusion of formal services.

Advancing Research on Collaborative Care in Schools

There is strong evidence for the effectiveness of CC models for adults and, increasingly, for youth in primary care settings. The preliminary adaptations of the model, presented in the section above, provide a potential framework for pursuing a CC research agenda in schools. Doing so is likely to further expand the public health relevance of the model for youth by capitalizing on the accessibility of the education sector and building on the tiered service delivery systems already in place in many schools. Below, we articulate an overarching research agenda for evaluating the viability of CC in schools and determining which additional adaptations may be necessary in order to best achieve the accessibility, quality, and efficiency objectives on which the model was originally founded (Katon & Unützer, 2013). In addition, we describe a project currently underway to refine and evaluate the proposed model and advance the study of CC in schools.

A Preliminary Research Agenda

Given that research evaluating CC models in schools is only just emerging, studies should attend explicitly to evaluating and enhancing the contextual appropriateness, or fit, of these models. Indeed, innovation-setting fit has been identified as a commonly-referenced, but infrequently studied, implementation outcome (Aarons, Hurlburt, & Horwitz, 2010; Lyon, Ludwig, et al., 2014; Southam-Gerow, Rodríguez, Chorpita, & Daleiden, 2012). In particular, this includes the alignment of the model and its associated innovations (e.g., digital patient registries) with different aspects of the individuals (e.g., service providers, service recipients), structures/policies (e.g., academic calendar), and resources (e.g., funding sources, workforce allocation) available in the school context. Although many characteristics of destination settings are commonly conceptualized as barriers to the implementation or effectiveness of evidence-based practices, an alternative – or complementary – perspective is to view them as local constraints that may be leveraged to improve the local relevance and impact of new innovations (Chambers, Glasgow, & Stange, 2013; Lyon & Koerner, 2016). It is primarily this latter perspective that has informed the research directions described below, which include attention to: (a) alignment between the CC model and the roles and personnel present in schools, (b) intervention content, (c) technologies to support collaborative service delivery, and (d) the effectiveness and efficiency of the CC approach.

Professional role alignment—The preliminary model presented above provides some direction surrounding the school-based personnel whose roles could be shifted to support the implementation of a CC model in schools. Although the availability of school-based physical and mental health providers is variable across schools and districts, the CC model fortunately makes few assumptions about the specific type of professionals who must carry out its specific functions. Indeed, optimal distribution of the tasks contained within the model (e.g., student identification, service coordination, outcome monitoring) among existing or new service providers in the education sector remains largely unknown.

Redefining professional roles by shifting some tasks to other (less expensive or more accessible) service providers is an implementation strategy with growing enthusiasm and empirical support (Murray et al., 2014; Patel, 2009; Powell et al., 2012, 2015). Although there may be variability in the extent to which different service providers are interested in adopting new roles, authors have begun to point out the promise of this approach for SBMH (Bruns et al., 2016; Fazel, Patel, Thomas, & Tol, 2014; Owens et al., 2014). Mapping indigenous service providers' roles to determine who may be situated to deliver components of the CC model in schools represents an important future step for continued research.

Intervention content—CC is, first and foremost, a *service delivery model* driven by a set of structures and principles that shape provider communication, case conceptualization, and intervention. Although there is a strong emphasis on evidence-based practice, the content of the interventions delivered within this model varies across applications. If, as indicated above, CC in schools is going to be responsive to a wide range of student social, emotional, and behavioral health concerns (including those that are primarily internalizing or externalizing), then circumscribed and disorder-specific intervention approaches are likely to be insufficient. Future research on CC in schools should include explicit attention to the ways in which evidence-based content can best be delivered to service recipients with different presenting problems and at different developmental levels, as well as whether a common elements approach (Chorpita et al., 2005a) has the opportunity to increase the reach and effectiveness of the intervention model in that setting.

Use of technology—Digital technologies (e.g., patient registries and decision support tools) have quickly become a cornerstone of the CC model due to their ability to integrate physical and mental health data, support data-driven decision making, and enhance evidence-based service delivery (Kolko et al., 2014; Kolko & Perrin, 2014; Power et al., 2013; Richardson et al., 2014). Many outstanding issues remain, however, regarding how integrated data systems may support CC delivery in the education sector. For example, given that some school-based providers struggle with parent engagement (Langley et al., 2010), technologies may provide one pathway through which to collect and share information. Partnering to Achieve School Success (PASS), is another intervention model that includes explicit collaborative work between primary care and school settings, but with services located in primary care, not schools (Power et al., 2013; Power, Lavin, Mautone, & Blum, 2010). The PASS program (Power et al., 2010) relies heavily on a relatively simple technology, telephone communications, to augment face-to-face services. Findings suggest that telephone contacts predicted treatment initiation. Additional ways to strategically use technologies (e.g., service recipient portals for registries, personalized health records, text messages) to bridge the “home-school gap” and support involvement of parents and youth in education sector service delivery represents an important avenue for future research.

Considering that one goal of the adapted CC model is to track educational as well as health-related data (see Table 1) and that recent findings indicate school-based mental health professionals place a high value on educational indicators to monitor progress (Connors, Arora, Curtis, & Stephan, 2015; Lyon et al., 2015), it is imperative that decision support technologies for CC in schools have the capability to track educational outcomes. Lyon,

Borntrager, Nakamura, and Higa-McMillan (2013) articulated how digital infrastructure to support educational data monitoring in school-based mental health may include (a) the development of new technologies or (b) the repurposing of existing technologies to support clinical objectives. Implementation of CC in the education sector is unlikely to be fully supported by existing health-related or educational data systems, so some level of adaptation is likely to be indicated. Research is necessary to determine the ways that existing technologies may be best adapted to facilitate CC workflows in schools. Addressing data sharing between school and clinical staff to meet Federal Educational Rights and Privacy Act (FERPA) and Health Insurance Portability and Accountability Act (HIPAA) requirements will also be critical to developing adapted health information systems for schools.

Effectiveness and implementability—Ultimately, the value of CC models in schools will be determined by their ability to promote improved student outcomes, relative to more traditional services. Given the priorities of the education sector, evaluations should be designed to determine the impact of CC on both the mental health and educational outcomes of youth. In addition, to rapidly prepare a school-specific CC model for scale-up, hybrid effectiveness-implementation models (Bernet, Willens, & Bauer, 2013; Curran, Bauer, Mittman, Pyne, & Stetler, 2012) may be considered to circumvent the more traditional and protracted stepwise progression from efficacy to effectiveness and, ultimately, implementation. Hybrid designs simultaneously evaluate (a) an intervention's impact in real world and (b) the implementation strategy (or strategies) used to install the intervention. As an initial step, a "Hybrid 1" trial, which focuses on effectiveness, may evaluate the impact of the CC model on students receiving school-based services while simultaneously collecting descriptive information about the conditions or processes that lead to successful (or unsuccessful) implementation. This is particularly important given that very little attention has been paid to implementation models for establishing CC for pediatric populations (Kolko & Perrin, 2014). Relevant factors may include facets of implementation climate (Ehrhart, Aarons, & Farahnak, 2014), implementation leadership (Aarons, Ehrhart, Farahnak, & Sklar, 2014), or available personnel/resources. Finally, given prior research indicating that \$6.50 are saved for every \$1 spent delivering CC in primary care settings (Unützer et al., 2008), careful evaluation of the costs (and cost-effectiveness) of the model in the education sector is important. In schools, administrative arrangements for mental health services vary widely, with financial responsibility sometimes falling to districts, external healthcare providers, or other entities (Foster et al., 2005). The cost savings associated with CC delivery may be experienced by different SBMH stakeholders, based on these arrangements. Cost savings in schools may also be better reflected in nonmonetary benefits such as improved attendance, increased retention and graduation rates.

Current Effort: The ACCESS Project

The ACCESS project was initiated based on identified needs to increase the use of evidence-based practices by school-based practitioners; further enhance service accessibility; and integrate mental health, primary care, and educational providers and services – needs which mirror those identified in the literature (described above). This project leverages a longstanding partnership involving a local public health organization, multiple community-

based health service organizations that provide embedded mental and physical health services in schools, area school districts, and academic researchers, who will engage in an iterative process, incorporating stakeholder input and pilot testing, to develop the ACCESS model. The CC model was selected for adaptation based on its strong empirical support, potential for fit with the school context and MTSS, the public health organization's existing familiarity with the model in the county's primary care settings (Unützer et al., 2012), and a desire for system-wide service model standardization. Key project activities include: (a) Synthesis of existing CC models to identify "core components" and "adaptable periphery" (Damschroder et al., 2009) of CC to determine which elements are essential when implementing the model in schools; (b) Holding collaborative stakeholder planning meetings to allow providers, districts, community agencies, and service recipients to provide structured input into the development of the ACCESS model; (c) Developing an adapted CC model for schools (i.e., the ACCESS model), based on the content presented in the current paper and stakeholder input; (d) Revising the ACCESS model through systematic, mixed methods data collection surrounding the model's adherence to core components of CC and appropriateness to the school context; (e) Piloting the ACCESS training and implementation procedures with a small number of integrated service teams in schools to determine acceptability, feasibility, appropriateness, and likely effectiveness; and (f) Articulating a plan for larger-scale implementation and sustainment, including review of existing methods of adjusting fee and payment structures to support CC (Unützer et al., 2012).

Through the process described above, we anticipate that the model presented in Table 1 will be revised, portions elaborated, and preliminary evidence gathered to drive future innovation and research. Most importantly, we intend to engage in a deliberate process with school stakeholders of identifying appropriate school-based and external personnel to engage in the key functions of each CC role (e.g., assessment/identification, monitoring, case management, consultation). In our pilot, we will also explicitly evaluate the extent to which existing health-information technologies support assessment, progress monitoring, stepped care decision-making, and effective consultation/supervision processes; all a key components of the CC model. Previous work in the service system in which the pilot will occur has involved adaptation of a measurement feedback system – a type of clinical information system that supports the progress monitoring by collecting and providing feedback to service providers and recipients – in the educational context (Lyon et al., 2016). We anticipate that providers and consultants piloting the ACCESS model will use this system to identify students for discussion and problem solving.

Conclusion

This paper is intended to build on innovative research conducted in the primary care and education sectors and move toward explicit adaptation of the CC model to support integrated school-based mental health services. In light of growing sentiment that traditional specialty mental health services are likely to be increasingly de-emphasized and supplanted in favor of co-located and integrated services (Fazel et al., 2014), initiatives such as the one described herein are timely and important. Models that support collaborations among medical providers, mental health providers, and educators carry great potential to support more accessible, effective, and efficient services (Katon & Unützer, 2013). Situating these models

in schools is likely to improve their reach and facilitate positive mental health and educational outcomes for youth. Nevertheless, many questions remain about the optimal ways to align CC with the education sector to ensure sufficient flexibility and to address the specific needs and resources of individual districts and school buildings. Although somewhat challenging, these questions are not new to CC, which almost invariably must be implemented with consideration of existing financial and practice resources (Kolko & Perrin, 2014). The preliminary model described above reflects our team's initial attempt to address some of the most critical elements of contextual appropriateness. Although we expect the model to be revised – perhaps substantially – as the ACCESS project activities unfold, we remain optimistic about the potential for the model to break down boundaries between physical health, mental health, and education in support of the larger goals of enhanced student wellbeing.

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Table 1

Preliminary Adaptations of the Collaborative Care Model for Schools

Collaborative Care Model for Youth*		Education Sector Constraints	School-Based Collaborative Care Model
Core Components	Functions		
<p>Key Leadership Team/Service Provider Roles:</p> <ol style="list-style-type: none"> 1 Care manager (CM), 2 Primary care provider (PCP), 3 Specialized youth mental health expert (e.g., Psychiatrist, Psychologist) 	<p>Liaison, assessment/monitoring, (CM); Intervention support, medication management, case identification (PCP); Consultation, diagnostic clarification, CM training (Psychiatrist/Psychologist)</p>	<p>Mental health problems are frequently initially identified by educators (Green, Xuan, Kwong, Hoagwood, & Leaf, 2015). No clear individual to function in CM role (Power et al., 2013).</p>	<p>Potential Adaptations</p> <ul style="list-style-type: none"> Combine identification of mental health problems with universal emotional/behavioral health screening within a MTSS framework. Identify individual to serve as embedded care manager (e.g., school social worker, school nurse, school counselor, school-based mental health provider). Special education or other academic support personnel are included in the leadership team as needed (i.e., if a significant academic issue is identified) Develop or strengthen partnerships with local agencies for specialty mental health support/consultation to CM.
Evidence-Based Intervention	Maximize the effectiveness of clinical contacts	School mental health providers unlikely to use EBPs (Langley et al., 2010; Owens et al., 2014) Presenting problems seen in school mental health represent a wide range of internalizing, externalizing, relational problems, as well as educational problems, etc. (Walker et al., 2010).	<ul style="list-style-type: none"> Incorporate evidence-based interventions that demonstrate good “fit” with school context. Evidence-based interventions can include those that target physical health, mental health, and educational functioning. Selected mental health interventions should include major categories of presenting problems seen in schools.
Symptom Tracking / Clinical Information Systems	Monitor treatment and response; Decision support; Service recipient feedback and engagement; Facilitate service integration	Schools are principally focused on educational outcomes (e.g., attendance, grades, test scores), even when mental health services are concerned (Prodeno et al., 2002). Many youth presenting for school-based mental health services demonstrate subclinical levels of problems, making traditional symptom tracking less relevant (Foster et al., 2005; Jonson-Reid, Kontak, Cierman, Essma, & Fezzi, 2004). HIPAA and FERPA laws make sharing medical and school records difficult (Geierstanger, Amaral, Mansour, & Walters, 2004; Power et al., 2013). School-based providers often do not monitor treatment progress or provide client feedback related to health, mental health, and/or academic outcomes (Kelly & Lueck, 2011; Lyon, Ludwig, et al., 2015).	<ul style="list-style-type: none"> Information systems and data monitoring integrates contextually-appropriate educational outcomes (Lyon et al., 2013a). Make use of existing data systems that may already support educational data monitoring (e.g., Schoolwide Information System [SWIS]; May et al., 2003). Outcome monitoring informs mental health and academically focused intervention. Train clinicians to routinely monitor treatment, provide feedback to clients, and link outcomes to school success (when relevant). Use clinical information systems to support case review in existing educationally focused team meetings (e.g., IEPs) as well as health-related meetings. Clinical members of the Collaborative Care team may be named “agents of the district” to enable academic data sharing; School becomes HIPAA Business Associate and protects health information under HIPAA.

Collaborative Care Model for Youth [*]		Education Sector Constraints	School-Based Collaborative Care Model <i>Potential Adaptations</i>
Core Components	Functions		
Stepped Care Intervention Design	Efficient, individualized, and responsive service delivery	Schools must provide services to students with a wide range of severity levels (Fazel et al., 2014).	<ul style="list-style-type: none"> Integrate Collaborative Care into MTSS framework by applying brief (Tier 2) and more intensive (Tier 3) evidence-based interventions. Align Collaborative Care model with universal (i.e., Tier 1) school supports (e.g., PBIS; Sugai & Horner, 2002).
Consultation / Supervision	Decision support; Intervention integrity	Consultation with referral sources (i.e., teachers, administrators, instructional support teams) is often an expectation (Weist et al., 2012). School-based mental health providers often work in isolation from other providers (Lyon, Ludwig, et al., 2014).	<ul style="list-style-type: none"> Enhance accessibility by training key school-based educational staff to facilitate identification of students in need. Specialized mental health experts provide training and ongoing support to CM, and potentially the PCP, on the use of brief, evidence-based interventions via regular consultation and review of progress. Focus on structures to support collaboration and communication between mental health providers and school staff, as well as feedback to referring individuals.
Client Education and Engagement	Family problem solving & management; Psycho-education; Post-discharge maintenance	Parent engagement in school-based services is often problematic, especially for older adolescents (Langley et al., 2010). Variable feedback provided to students regarding treatment.	<ul style="list-style-type: none"> Additional supports for family engagement (e.g., conjoint behavioral consultation between school clinicians, students, and parents; use of technology to increase information/communication accessibility). Variable emphasis on parent involvement depending on student developmental level, presenting problem, age of consent, and preference. Provide education directly to youth regarding treatment expectations including information about their specific health and/or mental health needs. Effective data-driven feedback for students and parents.
Case Management	Coordinate care; Connect to community resources or more intensive specialty care; Maintain relationships with local providers	Successful referrals outside of the school setting are difficult (Lyon, Ludwig, et al., 2014). Multiple indigenous helpers exist within schools to support students (Atkins et al., 2010; Owens et al., 2014).	<ul style="list-style-type: none"> Link to <i>internal</i> school supports for social, academic, and behavioral functioning. Develop list of <i>external</i> resources available for youth in the community. CM provides additional support and follow up surrounding external referrals, and coordination with outside providers. Outside providers provide services on site to remove access barriers

^{*} Based on Asarnow et al., 2015; Kolko & Perrin, 2014; Kolko et al., 2014; Richardson et al., 2014; Campo et al., 2005

Abbreviations: PCP = pediatric care provider; CM = care manager; EBP = evidence-based practice; MTSS=Multi-tiered Systems of Support