

The Pediatric Patient-Centered Medical Home: Innovative Models for Improving Behavioral Health

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This article examines the concept of the Patient Centered Medical Home (PCMH) as it applies to children and adolescents, emphasizing care for behavioral health conditions, the role of psychology and psychological science, and next steps for developing evidence-informed models for the Pediatric PCMH. The PCMH concept for pediatric populations offers unique opportunities for psychological science to inform and enhance the transformation of the United States health care system and improve health in our nation. Available evidence on the outcomes of PCMH implementation for pediatric populations is limited, underscoring the need for additional research evaluating Pediatric-PCMH models and concepts. While behavioral health has only recently been emphasized as a formal part of the PCMH, accumulating evidence supports the effectiveness of some approaches for providing behavioral health care through pediatric primary care. These approaches suggest that a comprehensive Pediatric-PCMH model that includes behavioral health care has the potential to optimize the availability, quality, benefits, and cost-effectiveness of behavioral health services. This could ultimately enhance youth health and behavioral health, with effects potentially extending through the adult years. Rigorous research and demonstration projects are needed to guide further development of optimal strategies for improving health and behavioral health in pediatric populations and advancing the public health impact of behavioral health care services.

Keywords: patient-centered medical home, children, adolescents, pediatric, integrated care

Editor's note. This article is one of five articles in a special issue of *American Psychologist* titled "Patient-Centered Medical Homes: The Role and Value of Psychology" (January, 2017). Anne E. Kazak, Kimberly Hiroto, and Nadine J. Kaslow provided scholarly lead for the special issue. Susan H. McDaniel served as action editor for the articles in the issue.

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This article is a product of the 2014 APA Presidential Taskforce on the Patient Centered Medical Home. Partial support for this work was provided by the Society of Clinical Child and Adolescent Psychology (SCCAP), Division 53 of the American Psychological Association, which has established a task force on health and behavioral health care for children and adolescents, and NIMH Grant 1RO1MH078596. We thank Susan McDaniel, PhD, for her helpful contributions. The content is solely the responsibility of the authors and does not necessarily represent the official view of the agencies providing funding.

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Current federal health care initiatives aim to increase access to services for behavioral health problems.¹ The pediatric primary care setting has become a critical venue in this agenda because it offers opportunities to enhance the health and well-being of children, while also decreasing the unmet need for behavioral health care. An important example is the Patient-Centered Medical Home (PCMH), where children have a primary health team that can help them access a wide range of needed family-centered health services in a setting that provides continuity of care that is personalized and holistic. While behavioral health services have not always been emphasized in PCMH models, current health care delivery models and incentives recognize the need to incorporate behavioral health care within the PCMH (Kuo et al., 2012; SAMHSA-HRSA Center for Integrated Health Solutions, 2014).

This article focuses on the application of the PCMH concept for pediatric populations. Consistent with the view of the PCMH as a structure for providing integrated coordinated care for overall health needs, the term P-PCMH is used in this article to refer to a PCMH for pediatric populations that includes comprehensive health *and* behavioral health care. We explore the unique strengths of psychology and psychological science for informing the development and implementation of the P-PCMH and some next steps for developing evidence-informed P-PCMH models.

The article is organized in four sections. The first is a review of the background for the P-PCMH; here we emphasize the field of pediatric psychology, which has long recognized the importance of collaborations between pediatric psychologists and pediatricians and other clinicians caring for children and their families, and yielded a number

of pioneering examples of colocated, integrated, and collaborative child- and family-centered services consistent with the P-PCMH approach (see, e.g., Drotar, 1995; Kolko, 2009; Roberts & Wright, 1982; Routh, Schroeder, & Koocher, 1983; Schroeder, 1979; Stancin, Perrin, & Ramirez, 2009). Second, we review the scientific evidence on P-PCMH implementation. Because the science on P-PCMH implementation and associated outcomes for youths is limited, partly because of the relatively recent expansion to emphasize behavioral health integration; we also review rigorous research on other models for improving care coordination and behavioral health and provide examples of these models. While these models were tested in more traditional non-PCMH practices, the models can be incorporated within a P-PCMH structure. Third, we examine the potential benefits and challenges of the P-PCMH, given the unique needs of children and adolescents. The article concludes with recommendations for future research and practice innovations, with the goal of highlighting next steps for creating evidence-informed models for integrated medical-behavioral health care within the P-PCMH, related, or alternative models. For an overview of the fundamental changes that are occurring in primary care and associated opportunities for psychology, readers are referred to the 2014 *American Psychologist* Special Issue on Primary Care and Psychology (McDaniel & deGruy, 2014). Other articles in this special issue on the PCMH discuss the PCMH model more generally and as implemented with other populations (e.g., geriatrics, minority populations).

Background

Defining the PCMH

As defined by the Agency for Healthcare Research and Quality (AHRQ, 2015), Patient-Centered Primary Care Collaborative (PCPCC, 2014), and described elsewhere in this volume (Kazak, Nash, Hiroto, & Kaslow, 2017), the PCMH is not a physical location but is a model or philosophy of primary care that is comprehensive, patient-centered, coordinated and team-based, accessible, and focused on quality and safety. This philosophy of health care delivery encourages providers and care teams to meet patients where they are, from the most simple to the most complex conditions; treat patients with respect, dignity, and compassion; and enable strong and trusting relationships with providers. The PCMH is a “model for achieving primary care excellence so that care is received in the right place, at the right time, and in the manner that best suits a patient’s needs” (PCPCC, 2014).

¹ Behavioral health is used as a broad term referring to mental health, substance use, and health-related behavior.



David J. Kolko

Other terms are also being used to refer to similar concepts. These include the following: the medical home; health home, defined by Medicaid as a team-based clinical approach explicitly focused on integrated behavioral health and primary care for individuals with multiple chronic illnesses that builds links to community supports and resources (SAMHSA-HRSA Center for Integrated Health Solutions, 2015); behavioral health home, where a behavioral health agency serves as a health home for individuals with mental health and substance use disorders (SAMHSA-HRSA Center for Integrated Health Solutions, 2012); and health neighborhood, which refers to a cluster of coordinated services to deliver primary care that is generally consistent with the PCMH model.

The PCMH in Pediatrics

The concept of a medical home was first introduced by the American Academy of Pediatrics (AAP, 1967; for review, see Stancin & Perrin, 2014). Because of the complexity of caring for children with special health care needs, the medical home concept originally emphasized the special needs population and the child's medical records were viewed as the center of the health home. However, this emphasis on coordination and sharing of medical records evolved to reflect changing perspectives and health care needs. Accumulating research with child and adolescent populations has also led to practice innovations and renewed interest in, and development of, the medical home concept for pediatric populations. An official policy for the medical home was adopted considerably later by the American Academy of Pediatrics in 1992 and focused on com-

prehensive care that included preventive care, access, continuity of care, communication among providers for specialty care, involvement of schools and community agencies, as well as the centralized health record (AAP, 1992).

There has been increasing emphasis on behavioral health integration within PCMH models, as reflected by more rigorous standards for behavioral health integration in the 2014 standards for PCMH recognition developed by the National Committee for Quality Assurance, (SAMHSA-HRSA Center for Integrated Health Solutions, 2014). A set of joint principles calling for the integration of behavioral health into the PCMH were endorsed by six family medicine associations (Working Party Group on Integrated Behavioral Healthcare, 2014), the American Academy of Pediatrics, the original primary care disciplines that signed the Patient-Centered Medical Home white paper, and the APA. Eight additional organizations including behavioral health, nursing, medicine, and interdisciplinary practice groups endorsed behavioral health integration in the health home (Mauksch & Fogarty, 2014), and an expert workgroup composed of primary care and behavioral health clinicians, researchers, policymakers, and a family and patient advocate developed policy recommendations for promoting primary care and behavioral health integration (Ader et al., 2015). Recommendations were to (a) test existing approaches to integration through demonstration projects; (b) develop interdisciplinary training programs to support integrated care teams; (c) use population-based strategies for improving behavioral health; (d) test innovative payment models to replace and eliminate behavioral health carve outs; and (e) develop population-based measures for evaluating integration.

Finally, a report from a team composed of three divisions of the American Psychological Association (APA, Clinical Child & Adolescent Psychology, Pediatric Psychology, Child & Family Policy & Practice, Divisions 53, 54, and 37, respectively), with consultation from other groups (Kaslow APA Presidential Task Force on the PCMH, APA Center for Psychology & Health, American Academy of Child & Adolescent Psychiatry, American Academy of Pediatrics) and diverse stakeholders (representatives of health care organizations, government agencies, insurance companies, and consumers) concluded that while extant data provides some support for the value of increasing access to behavioral health care through primary medical care for children including within P-PCMH models, additional research and demonstration projects are needed (Asarnow, Hoagwood, et al., 2015). Thus, the time is ripe for implementing effective behavioral health care and demonstrating the value of psychological services and psychologists as program developers with the expertise to perform rigorous evaluations of program effectiveness and inform policy, with the goal of improving health in our nation.



Jeanne Miranda

An Evolving Collaboration Among Psychologists and Pediatricians

Around the same time as the AAP was formulating the medical home, psychologists were forging collaborations in pediatric practice. Kagan wrote about the “marriage” of pediatrics and psychology, focusing on how developmental psychology could inform the understanding and treatment of children, and foreshadowing the emergence of “offspring” in the form of pediatric psychologists and psychosocially trained pediatricians (Kagan, 1965). Wright, often referred to as the father of pediatric psychology, similarly wrote about how psychologists could make favorable impact on a range of pediatric conditions (Wright, 1967). At this time, in the mid-1960s, the first pediatric psychology programs were also beginning to emerge. Classic examples exist of integrated and comprehensive pediatric primary care psychology practice, such as an integrated pediatric psychology service offering evening parent education groups, brief drop-in sessions for parents to address concerns, telephone hours, developmental screening, prevention programs, and direct care for behavioral health (Schroeder, 1979, 2004; see also Drotar, 1995; Roberts & Wright, 1982; Routh, Schroeder, & Koocher, 1983; Stancin et al., 2009). These approaches can have a substantial impact on children’s health and behavioral health by involving the family in the child’s medical and behavioral health care and impacting the child across multiple contexts of the child and family’s social ecology.

This whole systems approach is consistent with an integrated biopsychosocial model that promotes health and treats illness through consideration of biology, behavior (of

child, family, providers, others), and psychosocial context (Engel, 1977), rather than a biomedical model that focuses on biological determinants of disease. While the biomedical model has led to substantial advances in medicine, this approach has also contributed to mind–body dualism and the tendency for medical and mental health care to be addressed through different care systems, with “carve outs” for mental health care (McDaniel & deGruy, 2014).

The major clinical functions of pediatric psychologists have been diverse, and include delivery of psychosocial services for an array of health conditions (e.g., adjustment to chronic illness, medical treatment adherence, pain management, school reintegration), evaluation and management of intellectual and developmental disabilities, psychological problems presenting in medical settings with/without concomitant medical conditions, health promotion, disease and injury prevention, early intervention, and public policy supporting children and families (Roberts, Aylward, & Wu, 2014, p. 6). Primed for inclusion in health care settings, these activities address children across developmental periods, phases of illness, and include screening, assessment, intervention, consultation, and prevention. For many pediatric psychologists, therefore, the shift from traditional care delivery to a P-PCMH model is not as revolutionary as it may be in adult health, or for psychologists trained in more traditional mental health settings. Working collaboratively with pediatricians for several decades in chronic pediatric illness, pediatric psychologists have generally been trained in models of consultation and collaboration and have a long history of collaborations with developmental and behavioral pediatricians and other subspecialists (Drotar, 1995).

Although most youth are healthy and visit a pediatrician only for routine preventive health care and occasional acute illnesses, two characteristics of pediatric practice are critically important in considering the role of psychology in the P-PCMH. One relates to children with chronic conditions and the other with primary care.

Much of the earliest work on pediatric medical homes focused on children with chronic illnesses and disabilities, a population where coordination across providers and settings, and communication with families is critical and clearly evident (Pollard et al., 2014; Sia, Tonniges, Osterhus, & Taba, 2004). For these children, the complexity of care and need to coordinate care over extended periods (often from infancy through young adulthood) necessarily encompasses many developmental stages and health care concerns. Many children with chronic conditions, such as cerebral palsy, spina bifida or other developmental conditions, may experience cognitive and neurodevelopmental problems. Psychologists are natural collaborators with pediatricians in identifying specific patterns of learning difficulties and providing helpful liaisons with families and schools to promote academic and social functioning.



Anne E. Kazak

Advances in medical treatments for other health conditions have led to dramatically improved medical outcomes, yet the long-term consequences of these treatments and cures were identified as generating other problems requiring behavioral and psychological expertise. For instance, children cured of cancer are at risk for neurocognitive problems related to chemotherapy and radiation treatments, as well as other “late effects” of treatment that impact psychological wellbeing (Kazak & Noll, 2015). Medical advancements also have led to improved survival rates among premature infants and treatments that improve the life span and quality of life of youth with cystic fibrosis, asthma, diabetes, and other conditions. Behavioral health interventions, such as those aimed at promoting adherence to complex medical and dietary regimens and pain and distress associated with treatments, have been critical for enhancing medical, psychological, and quality of life outcomes for these youths and families.

Parents historically have shared concerns about their child’s development or behavior with pediatricians. Indeed, the top parental concerns about children’s health, across racial and ethnic groups in the United States today, are all behavioral, and topics that are established areas of psychological research (e.g., childhood obesity, substance use, bullying, stress, teen pregnancy, violence, attention-deficit/hyperactivity disorder (ADHD), depression, Internet safety; C S. Mott Children’s Hospital National Poll on Children’s Health, 2013).

Advances in pediatric and clinical child and adolescent psychology, as well as psychiatry and other allied professions, have led to the development of a number of treatments and care strategies with strong evidence supporting

efficacy and effectiveness (for reviews, Asarnow, Rozenman, et al., 2015; Ougrin, Tranah, Stahl, Moran, & Asarnow, 2015; Palermo, 2014; Spirito & Kazak, 2006; Weisz et al., 2013). These advances have strong potential for improving care and outcomes through increasing access to evidence-based behavioral health care within P-PCMH models and pediatric practices.

The roles of doctoral level psychologists in health care are likely to be broad, including program development and evaluation, professional training, quality assurance monitoring, database development, complex evaluation, and treatment services. With an estimated 300,000 licensed clinical social workers (Center for Health Workforce Studies, 2006), and only 188,300 practicing psychologists, 2,350 of whom specialize in child clinical and/or pediatric psychology (AAP, 2015), it is clear that many direct care needs will be filled by social workers and other professionals.

Federal Health Care Initiatives and Models for P-PCMH Implementation

Recent legislation is transforming health and behavioral health care in the United States and is essential to consider in any discussion of care models. The Mental Health Parity and Addiction Equity Act, passed in 2008, provides increased insurance coverage for mental health and substance use problems; and the 2010 Affordable Care Act (ACA), designed to revamp the current illness-oriented medical system into one geared toward promoting health, includes behavioral health care as an “essential health benefit” leading to increased emphasis on behavioral health. These changes aim to achieve the triple aims of health care reform, to: (a) improve population health, (b) improve the patient experience of care, including quality and satisfaction, and (c) reduce the per capita cost of care (Berwick, Nolan, & Whittington, 2008; Kazak, Nash, Hiroto, & Kaslow, 2017). Although there is variation in state implementation of the ACA and political controversy continues, the ACA has led to expanded coverage for uninsured populations, opportunities for prevention of behavioral health problems, and incentives for integrated and coordinated health and behavioral health care through a P-PCMH or other model.

A variety of care delivery models can be used to incorporate behavioral health services within a P-PCMH (Croghan & Brown, 2010; SAMHSA-HRSA Center for Integrated Health Solutions, 2014). Although definitions of such models vary (Butler et al., 2008; Heath, Wise, & Reynolds, 2013; McDaniel et al., 2014) major care models reviewed here are summarized in Table 1. These include the following: (a) coordinated care, in which behavioral health and primary care clinicians practice separately in their own systems and facilities, exchange information through telephone, online, or other communication systems, but collaboration is limited, (b) colocated care, defined as the inclu-

Table 1
Definitions of Care Models

Coordinated care	Behavioral health and primary care clinicians practice separately in their own systems and facilities, but often work together through telephone, on-line, or other communication systems to exchange information.
Colocated care	Behavioral health providers are located within primary care settings, and deliver behavioral health care in the primary care clinics. A common treatment plan or framework to integrate behavioral health and primary care is not present.
Integrated care	Behavioral health services are included as part of primary care using tightly integrated on-site teamwork, in which behavioral health and primary care services are available to all patients and often subsumed within a common framework.
Collaborative care	Team-based care involving a partnership between behavioral health and primary care clinicians, and patients and families involving a shared treatment plan.
Collaborative care, based on chronic care model (CCM)	Defined by five core principles that guide implementation: (1) patient-centered team care; (2) population based care; (3) measurement-based treatment to target; (4) evidence-based care; (5) accountable care. Two vital roles are added to the usual primary care treatment team: a care manager; and a psychiatric consultant. (http://aims.uw.edu/collaborative-care)

Note. Adapted from McDaniel, S. H., Grus, C. L., Cubic, B. A., Hunter, C. L., Kearney, L. K., Schuman, C. C., . . . Johnson, S. B. (2014). Competencies for psychology practice in primary care. *American Psychologist*, 69(4), 409–429 and University of Washington, 2015.

sion of behavioral health providers within primary care settings who deliver behavioral health care in the primary care clinics but who do not use a common treatment plan or framework to integrate that care; (c) integrated care, where behavioral health services are included as part of primary care using tightly integrated on-site teamwork often subsumed under a single organizational framework, with behavioral health services available to all patients through consultation to primary care, colocated care, or other approaches to behavioral health integration; and (d) collaborative care (CC), an overarching term that refers to care that involves a partnership between behavioral health and primary care clinicians, and patients and families involving a shared treatment plan (McDaniel et al., 2014, p. 411). While integrated care requires collaboration, CC does not by itself require integration.

Wells et al. (2000), Katon (2003), Unützer et al. (2002), and others at the University of Washington AIMS Center (Bauer, Thielke, Katon, Unützer, & Areán, 2014; University of Washington AIMS Center, 2015) have developed and adapted CC approaches for adults in a manner consistent with the chronic care model, hereafter referred to as CCM. Extensive data support the benefits of this CCM model for adults (for review, see Archer et al., 2012; Woltmann et al., 2012). More recent data support benefits of the CCM model for pediatric populations (for review, see Asarnow, Rozenman, Wiblin, & Zeltzer, 2015). In the few studies that have evaluated CCM models for pediatric populations, psychosocial treatment protocols and psychologists have played major roles (Asarnow et al., 2005a; Clarke et al., 2005; Kolko et al., 2014; Richardson et al., 2014), with psychologists often leading the team.

The CCM model integrates care for behavioral health within usual primary care services by incorporating two key roles into the primary care team: a care manager (usually a psychologist, social worker, or nurse) and psychiatric consultant to the team. This provides resources for patient evaluation, monitoring, psychosocial, and medication treat-

ments. The CCM model also defines care as including five core components: (a) patient-centered team care using shared care plans that incorporate patient goals, with both physical and mental health care available at a familiar location; (b) population-based care, with the care team sharing a defined patient group, tracking patient outcomes using a registry, and regular mental health specialist consultation on caseloads; (c) measurement based treatment to target, using clearly defined patient goals and clinical outcomes that are consistently measured using evidence-based assessment tools, and stepped care strategies to revise treatment plans when patients do not improve in order to reach clinical targets/goals; (d) evidence-based care, treatments are offered that are supported by credible research evidence; and (e) accountable care, where providers are accountable for the quality of care delivered and payment models reward care quality and good patient outcomes, rather than the volume of care delivered (University of Washington AIMS Center, 2015).

The Evidence

Data on PCMH and P-PCMH Implementation

While not all PCMHs have included behavioral health services, existing data indicate that the U.S. health care system is embracing the general PCMH concept, and most states are working to advance the medical home in their Medicaid or Children's Health Insurance plans. Statistics for 2011–2012 indicate that roughly 54% of U.S. children receive health care in a PCMH, with lower rates for youth with primary behavioral health versus physical health problems, ethnic minority children, and families living in poverty (Adams, Newacheck, Park, Brindis, & Irwin, 2013; Health Indicators Warehouse, 2015). The importance of the PCMH has continued to develop, including ways in which this model of care can impact health disparities by screening for social determinants of health and locating health care in

family/community locales (Garg, Jack, & Zuckerman, 2013).

Enthusiasm for the general PCMH concept stems partly from evaluation data, with a report from the Patient-Centered Primary Care Collaborative (PCPCC, 2014) concluding that the evidence is clear and compelling that the PCMH leads to improved health outcomes, enhanced patient and provider experiences, and reduced costs associated with unnecessary hospital and ED visits. Yet these data derive primarily from program evaluation, open trials, and cross-sectional comparisons of children with and without medical homes, rather than rigorous randomized controlled trials (RCTs). Also there are some negative studies (for review, see Friedberg, Schneider, Rosenthal, Volpp, & Werner, 2014; Hadland & Long, 2014; Long, Bauchner, Sege, Cabral, & Garg, 2012; PCPCC, 2014; Schwenk, 2014). We did, however, identify two RCTs focusing on children with chronic illness and special health care needs that evaluated a P-PCMH with behavioral health care and examined behavioral health outcomes.

The first RCT compared an enhanced, comprehensive P-PCMH for chronically ill children using primary care, specialists, and behavioral health providers within the same clinic compared with usual care (UC) in the community (Mosquera et al., 2014). Children in this trial included a large proportion of children under age five, many with multiple complex chronic conditions, and high health care use in the prior year, including emergency department (ED) visits, intensive care unit (ICU) admissions, and other hospitalizations. Relative to the UC group, children in the comprehensive P-PCMH group had a significantly lower rate of serious illness, ED visits, hospitalizations, hospital days, pediatric ICU admissions, and total hospital and clinic costs.

Farmer, Clark, Drewel, Swenson, and Ge (2011) evaluated consultative care coordination through a P-PCMH for children with a chronic health condition expected to continue for at least 12 months, relative to a waitlist condition with children receiving treatment as usual during the waitlist period. This study included a less ill and high-cost sample than the Mosquera et al. study (2014). However, results are promising, with the P-PCMH associated with improved parent satisfaction with mental health services and therapies. There were no significant group differences in child outcomes at the RCT endpoint. When prepost analyses were conducted combining children in the P-PCMH condition with children from the waitlist condition after receiving P-PCMH care, there was evidence of significantly improved child health and significantly reduced maternal and family strain.

Our search did not identify any RCTs evaluating P-PCMH models among the general population of pediatric patients, not specifically selected for special health care needs. However, observational research does suggest that

the P-PCMH model is associated with better health care use patterns, satisfaction and adherence to treatment, and positive health behaviors in children who do not have special health care needs (Long et al., 2012). (Causation cannot be determined from these studies.) Analyses of data from the National Survey for Children's Health (2007; Blumberg et al., 2012) also suggest that the P-PCMH model may be associated with increased likelihood that a child's behavioral health needs will be met through primary versus specialty care. Notably, children with attention-deficit/hyperactivity disorder (ADHD) who received care in a P-PCMH, compared with those who did not, were more likely to receive ADHD medication, but less likely to have mental health specialty care, behavior, and adjustment problems, and missed school days (Knapp et al., 2012; Toomey, Chan, Ratner & Schuster, 2011).

Despite these relatively limited data on the effectiveness of P-PCMH models, a recent systematic review and meta-analysis examined RCTs evaluating integrated behavioral health and primary care interventions (defined broadly as programs that made behavioral health care available through primary care services), a key component of the Pediatric P-PCMH. Results indicated that when compared with usual primary care services, there was a small statistically significant advantage for these integrated programs, with a medium effect size for CCM programs (Asarnow, Rozenman et al., 2015). CCM programs use a collaborative team-based approach, with primary care and behavioral health providers partnering with children and their families to prevent, identify, treat, and manage behavioral health problems in the primary care setting.

Finally, while there is growing enthusiasm for the P-PCMH, there are also substantial barriers that limit feasibility in some settings. Notably, reimbursement systems often present barriers for transitioning to P-PCMH and integrated care models. As noted in the recommendations from the PCMH Expert Workgroup (Ader et al., 2015), behavioral health carve outs and funding through separate health and behavioral health agencies contribute to fragmented and uncoordinated care, and create substantial obstacles to a P-PCMH. Feasibility is also limited when payment systems do not support time for care coordination and communication involved in team-based care. Indeed, some demonstration projects have included billing mechanisms for per member per month care coordination and for warm handoffs (National Quality Forum, 2010; Patterson, Roth, Woods, Chow, & Gomes, 2004). Finally, because children are generally living within families and spend a substantial amount of their time in school, a P-PCMH requires a high level of involvement and team-work with families, schools, and other community resources. Indeed, an advantage to a PCMH that provides pediatric, adult, and family care is that the needs of parents as well as children can be met, a critical issue given the adverse impact of parent behavioral health

problems such as depression and substance abuse on their children (National Research Council and Institute of Medicine, 2009).

Models for Addressing Behavioral Health Needs Through Primary Care: Implications for P-PCMH Development

Several models can be used to offer behavioral health services within a P-PCMH (Kolko & Perrin, 2014). In this section, we provide some examples of these models. Although this research was not conducted within “formal” P-PCMH structures, these models illustrate different strategies for addressing the PCMH components specified in the AHRQ definition: team-based care; patient-centered care; coordinated care; improved access to care; and evidence-based care a key quality improvement goal. As shown in Table 2, which summarizes the way each model and program address these PCMH components, the programs vary in the extent to which they incorporate all of the AHRQ-defined PCMH components, with the CCM programs including most of the PCMH components.

We begin with coordinated care models, an example of which is the Mental Health and Child Psychiatry Access

Approach (MCPAP, <http://nncpap.org>) first developed in Massachusetts. This program provides support for primary care management of child behavioral health through phone consultation by child psychiatrists or other behavioral health clinicians (www.mcpap.com/Provider/McPAPservice.aspx). Primary care clinicians can call into MCPAP offices and obtain consultation (within 30 min and often immediately) about care decisions such as diagnostic dilemmas, choice of medications, dosages, recommended monitoring and follow-up, and also receive support with care coordination and referring and linking patients to community behavioral health services. Close to 100% of pediatricians in the commonwealth are registered in this system, though the majority of use is limited to a smaller proportion of clinicians (Sarvet et al., 2010). To our knowledge, no RCTs have evaluated MCPAP to date, however, a national network of programs has been developed and pediatric primary care clinicians enrolled in the program report improved ability to meet their patients’ mental health needs (Straus & Sarvet, 2014; see the following website for more information: <http://nncpap.org/>).

Similarly, primary care resources for behavioral health have been enhanced using a range of skills training and

Table 2

Brief Overview of How Patient-Centered Medical Home for Pediatric Populations (P-PCMH) Components Specified in Agency for Healthcare Research and Quality (AHRQ) Definition are Operationalized and Included in Described Applications for Enhancing Behavioral Health Care Through Primary Care Services

Variable	Coordinated care MCPAP	Colocated or off-site connected, EBT implementation	Collaborative care (CCM)	
			YPIC and ROAD	Doctor Office Collaborative Care
Comprehensive team-based care			Team-based collaborative care	Team-based collaborative care
Patient-centered orientation			CM and PCC support youth and families in choosing care/treatment; psychoeducational materials	CM and PCC support children and families in understanding problems; psychoeducational materials
Coordinated care	Consultation to PCC at point of service		CMs coordinate and deliver services with PCC/team	CMs deliver and coordinate services with PCC/team.
Access to care	Enhanced access through PCC who has additional resources through MCPAP consultation	Enhanced through on-site/co-located or connected services with enhanced referral	Enhanced access to care through CM, co-location of CM and co-located or coordinated mental health services, telephone access	Enhanced access through collaborative care model in practices plus enhanced referral resources
Quality improvement, safety, evidence-based medicine		Access to evidence-based intervention through primary care	Improved access to evidence based care for adolescent depression (primarily CBT and medication). Regular monitoring of treatment adherence and response, stepped care algorithms.	Access to evidence-based care for behavior problems and comorbid ADHD and anxiety, clinical information system to monitor progress and plan for treatment, decision support guidelines, individualized goal assessments, psychosocial and medication services.

Note. MCPAP = Massachusetts Child Psychiatry Access Project; EBT = evidence-based treatment; YPIC = Youth Partners in Care trial; ROAD = Reaching Out to Adolescents in Distress Study; CM = care manager; PCC = primary care clinician; CBT = cognitive-behavior therapy; ADHD = attention-deficit/hyperactivity disorder.

consultation programs aimed at enhancing PCP comfort, communication, screening, and focused delivery of specific treatment strategies for behavioral problems (Kolko, 2009). Although effect sizes across studies have been variable, these efforts have often yielded positive effects on PCP comfort with behavioral health care and process of care variables (Brown, Riley, & Wissow, 2007; Gadowski et al., 2014). Likewise, peer consultation with expert pediatricians has promoted effective medication use for ADHD and symptom improvement following training (Epstein et al., 2007, 2008).

Second, several evidence-based treatments (EBT) have been applied using colocated or off-site staff working independently, especially those that are based on parent training programs (e.g., Incredible Years, Triple P, Brief Parent Child Interaction Training, behavioral parent training; Berkovits, O'Brien, Carter, & Eyberg, 2010; Kjøbli, & Ogden, 2012; Lavigne et al., 2008; Perrin, Sheldrick, McMenemy, Henson, & Carter, 2014; Spijkers, Jansen, & Reijneveld, 2013), interpersonal psychotherapy for depression (Mufson et al., 2004), and brief CBT for anxiety/emotional problems and somatization (Warner et al., 2011; Weersing, Gonzalez, Campo, & Lucas, 2008). Despite some heterogeneity across outcomes, many of these studies of colocated EBT delivery have reported clinical benefits (for review, Asarnow, Rozenman, et al., 2015).

Finally, current data point to particularly strong effects for CCM models. Two RCTs evaluated similar CCM models for increasing access to evidence-based care for adolescent depression (cognitive-behavior therapy, antidepressant medication): the Youth Partners in Care (YPIC) and Reaching Out to Adolescents in Distress (ROAD) trials. Results from these trials indicate that CCM increased service use and yielded greater improvement in depression (Asarnow et al., 2005a, 2009), as well as higher remission (Richardson et al., 2014). Two additional studies evaluated Doctor-Office Collaborative Care (DOCC) designed to focus on behavior problems and associated conditions (attention problems, anxiety). When compared with enhanced usual care, DOCC was associated with improved service access, clinical improvements in children's behavioral problems, less caregiver distress, and enhanced pediatrician intervention practices (Kolko et al., 2014; Kolko, Campo, Kilbourne, & Kelleher, 2012). Because these CCM programs included most of the components specified in the AHRQ PCMH definition (Table 2), the strong intervention effects found in these trials (Asarnow, Rozenman, et al., 2015) support the value of incorporating CCM models within the P-PCMH. The unique needs of children and adolescents create both challenges and potential benefits of P-PCMH implementation (Kolko & Perrin, 2014).

Potential Benefits and Challenges of P-PCMH Given Unique Needs of Children

The P-PCMH concept is evolving to address the unique needs of children and adolescents. It is important that a P-PCMH can address the problem of unmet behavioral health care needs among youths in the United States, particularly the disproportionate unmet needs of poor, minority and uninsured children (Asarnow & Miranda, 2014; Erskine et al., 2015; Farber, Ali, Van Sickle & Kaslow, 2017; U.S. Department of Health and Human Services, 2001; Wang et al., 2005). Because most youth in the United States have access to primary care and see a health care provider each year (Chevarley, 2003), the P-PCMH can both screen and identify youth with needs and link them to behavioral health care at the time of a health visit, a strategy that is associated with increased rates of care (Asarnow et al., 2005a; Kolko et al., 2014; Richardson et al., 2014).

By improving access to and coordination of care among behavioral health and primary care clinicians, a P-PCMH can also reduce barriers to receiving behavioral health care, particularly when provided through colocated, collaborative, or integrated systems (Table 1). For instance, these approaches can lead to improved attendance at appointments and adherence to care recommendations by warm-hand offs, creating a "one-stop shop," and reducing the need for families to shift to an alternative care delivery system for behavioral health care. Pediatric populations also have elevated risk of premature drop out from behavioral health care (Edlund et al., 2002), therefore, providing care through an accessible health home with a network of coordinated providers and records can increase the likelihood that youth can be brought back into care as new health issues emerge.

From the perspective of population health, the P-PCMH has potential for decreasing morbidity and mortality stemming from behavioral health problems. Most health and health risk behaviors are established during childhood, as children develop healthy or unhealthy diet, exercise, sleep, behavior, and emotional patterns that affect longer-term health and behavioral health (Viner et al., 2012). Although compared with adults, children have fewer chronic medical conditions, many conditions begin early in life and some evidence points to earlier onset of conditions, such as diabetes (Alberti & Zimmet, 2014). The leading causes of death in adolescents are accidents, homicide, and death by suicide, all of which tend to be associated with behavioral health problems such as substance use and depression (Asarnow & Miranda, 2014; Sawyer et al., 2012; USDHHS, 2011). Many of these chronic conditions and deaths could be prevented with early, effective intervention, underscoring the critical necessity of offering screening and effective preventive

and treatment services for behavioral health problems for all pediatric populations.

Child health and behaviors in one developmental period have an impact at later points in a child's life, underscoring the value of preventive care in young age groups. A P-PCMH that offers continuous care has strong potential for addressing current needs, needs as children develop, and identifying youths at risk for health and behavioral health problems. Thus, a PCMH can deliver preventive services like those included in the Bright Futures Guidelines (AAP, 2015) and provide required screenings for behavioral health, vision, hearing and dental health, with seamless linkage to treatment or preventive intervention when indicated.

Finally, because pediatric populations generally have low rates of chronic illness (Asarnow et al., 2005b; Stancin & Perrin, 2014), young people represent a disproportionately small percentage of total health care spending in any year. Yet, effective care for children offers potentially large benefits over a lifetime when the consequences of chronic health conditions or complications become more substantial and costly. Our current health care system is not designed to support this long term perspective, but could change with health care reform (Miller et al., 2017).

Conclusions and Recommendations

The P-PCMH model for achieving primary care excellence, when combined with support for evidence-based behavioral health care, has strong promise for improving child health and well-being. Psychology and psychological science has been at the forefront developing evidence-based care strategies for screening, delivering enhanced preventive care, and developing and implementing effective intervention programs aimed at enhancing health and behavioral health outcomes. Psychologists have a strong history of building collaborative teams with pediatricians, psychiatrists, nurses, social workers, and other professionals to develop models of care in our practice settings and laboratories that yield significant improvements in our care delivery systems and in child, adolescent, and family outcomes.

The current transformation of the U.S. health and behavioral health care systems and emphasis on integrated medical-behavioral health care offer unique opportunities to mobilize our science to integrate evidence-based care strategies in our health system and perform rigorous evaluations of the natural "experiments" that are occurring within the U.S. health care systems. We offer recommendations below for advancing this work, with an emphasis on the value of psychological science and the contribution of psychologists.

Evidence-Informed Behavioral Health Care and Tracking of Outcomes Will Be Critical for Improving Care at Both Individual and Systems Levels

Consistent with the emphasis on evidence-based care in both psychology and medicine (American Psychological Association Task Force on Evidence-Based Practice for Children and Adolescents, 2008; McClellan, McGinnis, Nabel, & Olsen, 2008), the strongest results to date on improving behavioral health care through primary care derive from interventions designed to increase access to evidence-based treatments (for review, Asarnow, Rozenman, et al., 2015). This dual emphasis on evidence-based care and primary care system change likely contributed to observed patient benefits, an important point to consider as the P-PCMH and other models are further developed. Improved access to ineffective care is not likely to yield real benefits to children and families. Careful tracking of outcomes using a continuous quality improvement model can enhance both clinical decision making and systems development, with strong potential for both improving the lives of the youth and families we serve and transforming our health and behavioral health care systems in ways that will strengthen the health of children and adolescents in the United States. This approach also can support feedback from science to practice, practice to science, and continuing innovation.

Continuity of Care Within the P-PCMH Model Provides a Means to Address Children's Developmental Needs and Intervening to Support Healthy Development During Critical and Sensitive Periods for Physical, Psychological, and Social Development

Continuity of care within a P-PCMH model and access to a range of professionals with diverse expertise provides opportunities to address developmental sensitivities and windows at the most effective time points. There are periods when children may be particularly sensitive to the "toxic" effects of adverse childhood experiences and stresses, and conversely, developmental windows when children may be most likely to benefit from developmentally timed interventions and nurturing relationships (Cheng, Wise, & Halfon, 2014). For instance, adolescence is conceptualized as a sensitive period characterized by major biological changes associated with puberty and neural developmental patterns. These developmental patterns may contribute to the increase in sensation seeking during adolescence, which in turn may increase risk-taking and risk behaviors such as substance use, risky sex, and driving without seatbelts (Sawyer et al., 2012). Integrating behavioral health and medical care within a

P-PCMH provides fundamental resources for intervention and risk prevention, which can help to steer youth through adolescence with healthy and adaptive behavioral patterns, and prevent potentially life changing events such as early pregnancy, injury-related health sequelae, STDs, substance dependence, and school failure/drop out. While interventions and policies that limit exposure to risk, such as age limits for purchasing and using cigarettes and alcohol, may also reduce risk exposure, a P-PCMH with strong behavioral health care, can create a system of care delivery that supports youth and families in addressing developmental challenges.

Clarifying the Associations Between Behavioral and Physical Health Conditions and the Impact of Integrated Care Programs in Pediatric Populations Is Critically Needed

Data on adults document increased medical costs among adults with behavioral health conditions, relative to adults without these conditions, and suggest potential cost savings of between \$26–\$48 billion annually through effective integration of medical and behavioral services (Melek, Norris, & Paulus, 2014). While emerging data with youth indicate increased physical health conditions and impairments among young people suffering from depression (Asarnow et al., 2005b; Asarnow, Zeledon, et al., 2014; Katon et al., 2010) and benefits of some integrated care models, cost-benefit analyses of integrated care or P-PCMH models remain to be conducted for youth. The relatively low rates of costly health conditions in younger populations may make it difficult to detect cost savings in the short term, require longer term evaluation, and may be evident only among high-cost high-utilizing patients (McGrady, 2014).

Strategies for Addressing Barriers to P-PCMH and Integrated Care Implementation Need to Be Developed

Despite enthusiasm for P-PCMH and integrated care models, a number of barriers exist to implementation. For instance, payment systems are needed that allow for care coordination time, team based care, and training and quality improvement monitoring time. Additionally, many practices do not have the capacity to deliver broad behavioral health services within a P-PCMH or other integrated care system, in part because of the absence of on-site behavioral health resources or specialists (Ratzliff, Christensen, & Unützer, 2014). Clearly, there is a need to evaluate the impact of providing financial resources and using pay for performance methods to support start-up activities, practice redesign, capacity-building, and ongoing consultation activities to ensure sustainability (Davis et al., 2012).

Tests of the Feasibility and Impact of Alternative Delivery Models for Behavioral Health Care Are Needed to Promote Population Health in the P-PCMH

A range of cost-effective interventions is warranted to serve the population of children with varying levels of health and behavioral health care needs. For some children, implementation of a fully integrated CC system may be necessary to achieve adequate clinical improvement. However, generally healthy children with low care utilization rates and low need for services might benefit from less intense and costly services such as telephone follow-up, ehealth curricula, or coordinated or colocated services. Stepped care or other hybrid models that use a full P-PCMH model with high-need and high-utilizing patients, but less intense and expensive models for the broader population, merit evaluation (Perrin, Anderson, & Van Cleave, 2014; Schwenk, 2014; Wissow et al., 2008). There is a critical need for rigorous research and demonstration projects to inform efforts to enhance effective P-PCMH implementation and other models for integrating care for behavioral health within primary care services.

Summary

In this article, we briefly explored the relevance, historical context, and clinical and empirical developments that are expanding the delivery of comprehensive care, including behavioral health care, for children and adolescents in the context of a P-PCMH. These applications extend a long and successful history of collaborations between psychologists and pediatricians to better serve the unique needs of children, adolescents, and their families. Despite limited scientific evidence examining the implementation and impact of the P-PCMH concept, one aspect of the P-PCMH model that has been subjected to rigorous evaluation involves programs that provide more comprehensive care through increasing access to behavioral health services. We discussed examples from research studies that evaluated outcomes of implementation of diverse models for promoting access to behavioral health services in primary care, a component of the P-PCMH, in pediatric or adolescent medicine clinics. These examples demonstrated increased access to evidence-based care, improved child and adolescent outcomes, and provider benefits, in targeting an array of behavioral health conditions.

Clearly, while extent work provides some support for the value of integrated behavioral health and medical care, this work needs to be extended to other clinical problems, providers, settings or systems, and care delivery models that are suitable for application in a P-PCMH. These novel directions are consistent with our recommendations for future research and practice innovations. Further attention to this agenda is needed if we are to advance the public health

impact of behavioral health care services by maximizing their availability, quality, benefits, and cost-effectiveness.

References

- Adams, S. H., Newacheck, P. W., Park, M. J., Brindis, C. D., & Irwin, C. E., Jr. (2013). Medical home for adolescents: Low attainment rates for those with mental health problems and other vulnerable groups. *Academic Pediatrics, 13*, 113–121. <http://dx.doi.org/10.1016/j.acap.2012.11.004>
- Ader, J., Stille, C. J., Keller, D., Miller, B. F., Barr, M. S., & Perrin, J. M. (2015). The medical home and integrated behavioral health: Advancing the policy agenda. *Pediatrics, 135*, 909–917. <http://dx.doi.org/10.1542/peds.2014-3941>
- Agency for Healthcare Research and Quality (AHRQ). (2015). *Patient Centered Medical Home Resource Center*. Retrieved from <https://pcmh.ahrq.gov/page/comprehensive-care>
- Alberti, K. G., & Zimmet, P. Z. (2014). Diabetes: A look to the future. *Diabetes and Endocrinology, 2*, e1–e2. [http://dx.doi.org/10.1016/S2213-8587\(13\)70187-6](http://dx.doi.org/10.1016/S2213-8587(13)70187-6)
- American Academy of Pediatrics. (2015). *Bright futures clinical guide*. Retrieved from <https://brightfutures.aap.org/materials-and-tools/guidelines-and-pocket-guide/Pages/default.aspx>
- American Academy of Pediatrics Ad Hoc Task Force on Definition of the Medical Home. (1992). The medical home. *Pediatrics, 90*, 774.
- American Academy of Pediatrics Council on Pediatric Practice. (1967). Pediatric records and a “medical home.” In *Standards of child care* (pp. 77–79). Evanston, IL: American Academy of Pediatrics.
- American Psychological Association Task Force on Evidence-Based Practice for Children and Adolescents. (2008). *Disseminating evidence-based practice for children and adolescents: A systems approach to enhancing care*. Washington, DC: American Psychological Association.
- Archer, J., Bower, P., Gilbody, S., Lovell, K., Richards, D., Gask, L., . . . Coventry, P. (2012). Collaborative care for depression and anxiety problems. *Cochrane Database of Systematic Reviews, 10*, CD006525.
- Asarnow, J. R., Hoagwood, K. E., Stancin, T., Lochman, J. E., Hughes, J. L., Miranda, J. M., . . . Kazak, A. E. (2015). Psychological science and innovative strategies for informing health care redesign: A policy brief. *Journal of Clinical Child and Adolescent Psychology, 44*, 923–932. <http://dx.doi.org/10.1080/15374416.2015.1077451>
- Asarnow, J. R., Jaycox, L. H., Duan, N., LaBorde, A. P., Rea, M. M., Murray, P., . . . Wells, K. B. (2005a). Effectiveness of a quality improvement intervention for adolescent depression in primary care clinics: A randomized controlled trial. *JAMA: Journal of the American Medical Association, 293*, 311–319. <http://dx.doi.org/10.1001/jama.293.3.311>
- Asarnow, J. R., Jaycox, L. H., Duan, N., LaBorde, A. P., Rea, M. M., Tang, L., . . . Wells, K. B. (2005b). Depression and role impairment among adolescents in primary care clinics. *Journal of Adolescent Health, 37*, 477–483. <http://dx.doi.org/10.1016/j.jadohealth.2004.11.123>
- Asarnow, J. R., Jaycox, L. H., Tang, L., Duan, N., LaBorde, A. P., Zeledon, L. R., . . . Wells, K. B. (2009). Long-term benefits of short-term quality improvement interventions for depressed youths in primary care. *The American Journal of Psychiatry, 166*, 1002–1010. <http://dx.doi.org/10.1176/appi.ajp.2009.08121909>
- Asarnow, J. R., & Miranda, J. (2014). Improving care for depression and suicide risk in adolescents: Innovative strategies for bringing treatments to community settings. *Annual Review of Clinical Psychology, 10*, 275–303. <http://dx.doi.org/10.1146/annurev-clinpsy-032813-153742>
- Asarnow, J. R., Rozenman, M., Wiblin, J., & Zeltzer, L. (2015). Integrated medical-behavioral care compared with usual primary care for child and adolescent behavioral health: A meta-analysis. *JAMA Pediatrics, 169*, 929–937. <http://dx.doi.org/10.1001/jamapediatrics.2015.1141>
- Asarnow, J. R., Zeledon, L. R., D’Amico, E., LaBorde, A., Anderson, M., Avina, C., . . . Shoptaw, S. (2014). Depression and health risk behaviors: Towards optimizing primary care service strategies for addressing risk. *Primary Health Care, 4*, 152.
- Baird, M., Blount, A., Brungardt, S., Dickinson, P., Dietrich, A., Epperly, T., . . . deGruy, F. (2014). Joint principles: Integrating behavioral health care into the patient-centered medical home. *Annals of Family Medicine, 12*, 183–185. <http://dx.doi.org/10.1370/afm.1634>
- Bauer, A. M., Thielke, S. M., Katon, W., Unützer, J., & Areán, P. (2014). Aligning health information technologies with effective service delivery models to improve chronic disease care. *Preventive Medicine, 66*, 167–172. <http://dx.doi.org/10.1016/j.ypmed.2014.06.017>
- Berkovits, M. D., O’Brien, K. A., Carter, C. G., & Eyberg, S. M. (2010). Early identification and intervention for behavior problems in primary care: A comparison of two abbreviated versions of parent-child interaction therapy. *Behavior Therapy, 41*, 375–387. <http://dx.doi.org/10.1016/j.beth.2009.11.002>
- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs, 27*, 759–769. <http://dx.doi.org/10.1377/hlthaff.27.3.759>
- Blumberg, S. J., Foster, E. B., Frasier, A. M., Satorius, J., Skalland, B. J., Nysse-Carris, K. L., . . . O’Connor, K. S. (2012). *Design and operation of the National Survey of Children’s Health, 2007*. National Center for Health Statistics. Vital Health Statistics, Series 1. Retrieved from http://www.cdc.gov/nchs/data/series/sr_01/sr01_055.pdf
- Brown, J. D., Riley, A. W., & Wissow, L. S. (2007). Identification of youth psychosocial problems during pediatric primary care visits. *Administration and Policy in Mental Health and Mental Health Services Research, 34*, 269–281. <http://dx.doi.org/10.1007/s10488-006-0106-7>
- Butler, M., Kane, R. L., McAlpine, D., Kathol, R. G., Fu, S. S., Hagedorn, H., & Wilt, T. J. (2008). Integration of mental health/substance abuse and primary care (AHRQ Publication No. 09-E003). *Evidence reports/technology assessments, no. 173*. Rockville, MD: Agency for Healthcare Research and Quality.
- Center for Health Workforce Studies. (2006, March). Licensed social workers in the United States, 2004 (Report for the National Association of Social Workers Center for Workforce Studies). Washington, DC, School of Public Health and University at Albany, Rensselaer, NY. Retrieved from <http://workforce.socialworkers.org/studies/fullStudy0806.pdf>
- Cheng, T. L., Wise, P. H., & Halfon, N. (2014). Promise and perils of the Affordable Care Act for children. *Journal of the American Medical Association, 311*, 1733–1734. <http://dx.doi.org/10.1001/jama.2014.930>
- Chevarley, F. (2003). *Children’s access to necessary health care, Fall 2001*. Rockville, MD: Medical Expenditure Panel Survey, Agency for Healthcare Research and Quality.
- Clarke, G., Debar, L., Lynch, F., Powell, J., Gale, J., O’Connor, E., . . . Hertert, S. (2005). A randomized effectiveness trial of brief cognitive-behavioral therapy for depressed adolescents receiving antidepressant medication. *Journal of the American Academy of Child & Adolescent Psychiatry, 44*, 888–898. [http://dx.doi.org/10.1016/S0890-8567\(09\)62194-8](http://dx.doi.org/10.1016/S0890-8567(09)62194-8)
- Croghan, T. W., & Brown, J. D. (2010). *Integrating mental health treatment into the patient centered medical home* (AHRQ Publication No. 10–0084-EF). Rockville, MD: Agency for Healthcare Research and Quality.
- C. S. Mott Children’s Hospital National Poll on Children’s Health. (2013). [Figure representation]. *Top 10 U.S. children’s health concerns, percent rated as a “big problem.”* Retrieved from <http://mottnpch.org/sites/default/files/reports/NPCH-TOP10-2013-General-1000.jpg>
- Davis, D. W., Honaker, S. M., Jones, V. F., Williams, P. G., Stocker, F., & Martin, E. (2012). Identification and management of behavioral/mental health problems in primary care pediatrics: Perceived strengths,

- challenges, and new delivery models. *Clinical Pediatrics*, 51, 978–982. <http://dx.doi.org/10.1177/0009922812441667>
- Drotar, D. (1995). *Consulting with pediatricians: Psychological perspectives*. New York, NY: Plenum Press.
- Edlund, M. J., Wang, P. S., Berglund, P. A., Katz, S. J., Lin, E., & Kessler, R. C. (2002). Dropping out of mental health treatment: Patterns and predictors among epidemiological survey respondents in the United States and Ontario. *The American Journal of Psychiatry*, 159, 845–851. <http://dx.doi.org/10.1176/appi.ajp.159.5.845>
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196, 129–136. <http://dx.doi.org/10.1126/science.847460>
- Epstein, J. N., Langberg, J. M., Lichtenstein, P. K., Mainwaring, B. A., Luzader, C. P., & Stark, L. J. (2008). Community-wide intervention to improve the attention-deficit/hyperactivity disorder assessment and treatment practices of community physicians. *Pediatrics*, 122, 19–27. <http://dx.doi.org/10.1542/peds.2007-2704>
- Epstein, J. N., Rabiner, D., Johnson, D. E., Fitzgerald, D. P., Chrisman, A., Erkanli, A., . . . Conners, C. K. (2007). Improving attention-deficit/hyperactivity disorder treatment outcomes through use of a collaborative consultation treatment service by community-based pediatricians: A cluster randomized trial. *Archives of Pediatrics & Adolescent Medicine*, 161, 835–840. <http://dx.doi.org/10.1001/archpedi.161.9.835>
- Erskine, H. E., Moffitt, T. E., Copeland, W. E., Costello, E. J., Ferrari, A. J., Patton, G., . . . Scott, J. G. (2015). A heavy burden on young minds: The global burden of mental and substance use disorders in children and youth. *Psychological Medicine*, 45, 1551–1563. <http://dx.doi.org/10.1017/S0033291714002888>
- Farber, E. W., Ali, M. K., Van Sickle, K. S., & Kaslow, N. J. (2017). Psychology in patient-centered medical homes: Reducing health disparities and promoting health equity. *American Psychologist*, 72, 28–41. <http://dx.doi.org/10.1037/a0040358>
- Farmer, J. E., Clark, M. J., Drewel, E. H., Swenson, T. M., & Ge, B. (2011). Consultative care coordination through the medical home for CSHCN: A randomized controlled trial. *Maternal and Child Health Journal*, 15, 1110–1118. <http://dx.doi.org/10.1007/s10995-010-0658-8>
- Friedberg, M. W., Schneider, E. C., Rosenthal, M. B., Volpp, K. G., & Werner, R. M. (2014). Association between participation in a multipayer medical home intervention and changes in quality, utilization, and costs of care. *Journal of the American Medical Association*, 311, 815–825. <http://dx.doi.org/10.1001/jama.2014.353>
- Gadomski, A. M., Wissow, L. S., Palinkas, L., Hoagwood, K. E., Daly, J. M., & Kaye, D. L. (2014). Encouraging and sustaining integration of child mental health into primary care: Interviews with primary care providers participating in Project TEACH (CAPES and CAP PC) in NY. *General Hospital Psychiatry*, 36, 555–562. <http://dx.doi.org/10.1016/j.genhosppsych.2014.05.013>
- Garg, A., Jack, B., & Zuckerman, B. (2013). Addressing the social determinants of health within the patient-centered medical home: Lessons from pediatrics. *Journal of the American Medical Association*, 309, 2001–2002. <http://dx.doi.org/10.1001/jama.2013.1471>
- Hadland, S. E., & Long, W. E. (2014). A systematic review of the medical home for children without special health care needs. *Maternal and Child Health Journal*, 18, 891–898. <http://dx.doi.org/10.1007/s10995-013-1315-9>
- Health Indicators Warehouse. (2015). *Medical home: Children (percent)*. Retrieved from http://www.healthindicators.gov/Indicators/Medical-home-children_1152/Profile
- Heath, B., Wise, R. P., & Reynolds, K. (2013). *A standard framework for levels of integrated healthcare*. Washington, DC: SAMHSA-HRSA Center for Integrated Health Solutions.
- Kagan, J. (1965). The new marriage: Pediatrics and psychology. *American Journal of Diseases of Children*, 110, 272–278.
- Katon, W. J. (2003). The Institute of Medicine “Chasm” report: Implications for depression collaborative care models. *General Hospital Psychiatry*, 25, 222–229.
- Katon, W., Richardson, L., Russo, J., McCarty, C. A., Rockhill, C., McCauley, E., . . . Grossman, D. C. (2010). Depressive symptoms in adolescence: The association with multiple health risk behaviors. *General Hospital Psychiatry*, 32, 233–239. <http://dx.doi.org/10.1016/j.genhosppsych.2010.01.008>
- Kazak, A. E., Nash, J. M., Hiroto, K., & Kaslow, N. J. (2017). Psychologists in patient-centered medical homes (PCMHs): Roles, evidence, opportunities and challenges. *American Psychologist*, 72, 1–12. <http://dx.doi.org/10.1037/a0040382>
- Kazak, A. E., & Noll, R. B. (2015). The integration of psychology in pediatric oncology research and practice: Collaboration to improve care and outcomes for children and families. *American Psychologist*, 70, 146–158. <http://dx.doi.org/10.1037/a0035695>
- Kjøbli, J., & Ogden, T. (2012). A randomized effectiveness trial of brief parent training in primary care settings. *Prevention Science*, 13, 616–626. <http://dx.doi.org/10.1007/s11121-012-0289-y>
- Knapp, C. A., Hinojosa, M., Baron-Lee, J., Fernandez-Baca, D., Hinojosa, R., & Thompson, L. (2012). Factors associated with a medical home among children with attention-deficit hyperactivity disorder. *Maternal and Child Health Journal*, 16, 1771–1778. <http://dx.doi.org/10.1007/s10995-011-0922-6>
- Kolko, D. J. (2009). Options for the delivery of mental health services. In T. K. McInerney, H. M. Adam, D. E. Campbell, D. M. Kamat, & K. J. Kelleher (Eds.), *American Academy of Pediatrics textbook of pediatric care* (1st ed., pp. 1168–1176). Elk Grove Village, IL: American Academy of Pediatrics.
- Kolko, D. J., Campo, J., Kilbourne, A. M., Hart, J., Sakolsky, D., & Wisniewski, S. (2014). Collaborative care outcomes for pediatric behavioral health problems: A cluster randomized trial. *Pediatrics*, 133, e981–e992. <http://dx.doi.org/10.1542/peds.2013-2516>
- Kolko, D. J., Campo, J. V., Kilbourne, A. M., & Kelleher, K. (2012). Doctor-office collaborative care for pediatric behavioral problems: A preliminary clinical trial. *Archives of Pediatrics & Adolescent Medicine*, 166, 224–231. <http://dx.doi.org/10.1001/archpediatrics.2011.201>
- Kolko, D. J., & Perrin, E. J. (2014). The integration of behavioral health services in pediatric primary care: Services, science, and suggestions. *Journal of Clinical Child and Adolescent Psychology*, 43, 216–228. <http://dx.doi.org/10.1080/15374416.2013.862804>
- Kuo, D. Z., Houtrow, A. J., Arango, P., Kuhlthau, K. A., Simmons, J. M., & Neff, J. M. (2012). Family-centered care: Current applications and future directions in pediatric health care. *Maternal and Child Health Journal*, 16, 297–305. <http://dx.doi.org/10.1007/s10995-011-0751-7>
- Lavigne, J. V., Lebailly, S. A., Gouze, K. R., Cicchetti, C., Pochyly, J., Arend, R., . . . Binns, H. J. (2008). Treating oppositional defiant disorder in primary care: A comparison of three models. *Journal of Pediatric Psychology*, 33, 449–461. <http://dx.doi.org/10.1093/jpepsy/jsm074>
- Long, W. E., Bauchner, H., Sege, R. D., Cabral, H. J., & Garg, A. (2012). The value of the medical home for children without special health care needs. *Pediatrics*, 129, 87–98. <http://dx.doi.org/10.1542/peds.2011-1739>
- Mauksch, L. B., & Fogarty, C. T. (2014). How do we know when to celebrate? *Families, Systems, & Health*, 32, 135–136. <http://dx.doi.org/10.1037/fsh0000057>
- McClellan, M. B., McGinnis, M. J., Nabel, E. G., & Olsen, L. M. (2008). *Evidence-based medicine and the changing nature of healthcare: Meeting summary*. Washington, DC: The National Academies Press.
- McDaniel, S. H., & deGruy, F. V., III. (2014). An introduction to primary care and psychology. *American Psychologist*, 69, 325–331. <http://dx.doi.org/10.1037/a0036222>
- McDaniel, S. H., Grus, C. L., Cubic, B. A., Hunter, C. L., Kearney, L. K., Schuman, C. C., . . . Johnson, S. B. (2014). Competencies for psychol-

- ogy practice in primary care. *American Psychologist*, 69, 409–429. <http://dx.doi.org/10.1037/a0036072>
- McGrady, M. E. (2014). Commentary: Demonstrating cost-effectiveness in pediatric psychology. *Journal of Pediatric Psychology*, 39, 602–611. <http://dx.doi.org/10.1093/jpepsy/jsu019>
- Melek, S. P., Norris, D. T., & Paulus, J. (2014). *Economic impact of integrated medical-behavioral healthcare: Implications for psychiatry*. Denver, CO: Milliman Inc.
- Miller, B. F., Ross, K. M., Davis, M. M., Melek, S. P., Kathol, R., & Gordon, P. (2017). Payment reform in the patient-centered medical home: Enabling and sustaining integrated behavioral health care. *American Psychologist*, 72, 55–68. <http://dx.doi.org/10.1037/a0040448>
- Mosquera, R. A., Avritscher, E. B., Samuels, C. L., Harris, T. S., Pedroza, C., Evans, P., . . . Tyson, J. E. (2014). Effect of an enhanced medical home on serious illness and cost of care among high-risk children with chronic illness: A randomized clinical trial. *Journal of the American Medical Association*, 312, 2640–2648. <http://dx.doi.org/10.1001/jama.2014.16419>
- Mufson, L., Dorta, K. P., Wickramaratne, P., Nomura, Y., Olfson, M., & Weissman, M. M. (2004). A randomized effectiveness trial of interpersonal psychotherapy for depressed adolescents. *Archives of General Psychiatry*, 61, 577–584. <http://dx.doi.org/10.1001/archpsyc.61.6.577>
- National Quality Forum (NQF). (2010). *Preferred practices and performance measures for measuring and reporting care coordination: A consensus report*. Retrieved from www.qualityforum.org/Publications/2010/10/Preferred_Practices_and_Performance_Measures_for_Measuring_and_Reporting_Care_Coordination.aspx
- National Research Council and Institute of Medicine. (2009). *Depression in parents, parenting, and children: Opportunities to improve identification, treatment, and prevention*. Washington, DC: The National Academies Press.
- Ougrin, D., Tranah, T., Stahl, D., Moran, P., & Asarnow, J. R. (2015). Therapeutic interventions for suicide attempts and self-harm in adolescents: Systematic review and meta-analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 54, 97–107. e2. <http://dx.doi.org/10.1016/j.jaac.2014.10.009>
- Palermo, T. M. (2014). Evidence-based interventions in pediatric psychology: Progress over the decades. *Journal of Pediatric Psychology*, 39, 753–762. <http://dx.doi.org/10.1093/jpepsy/jsu048>
- Patient-Centered Primary Care Collaborative (PCPCC). (2014). *Defining the medical home*. Retrieved from <https://www.pcpcc.org/about/medical-home>
- Patterson, E. S., Roth, E. M., Woods, D. D., Chow, R., & Gomes, J. O. (2004). Handoff strategies in settings with high consequences for failure: Lessons for health care operations. *International Journal for Quality in Health Care*, 16, 125–132. <http://dx.doi.org/10.1093/intqhc/mzh026>
- Perrin, E. C., Sheldrick, R. C., McMenamy, J. M., Henson, B. S., & Carter, A. S. (2014). Improving parenting skills for families of young children in pediatric settings: A randomized clinical trial. *Journal of the American Medical Association Pediatrics*, 168, 16–24. <http://dx.doi.org/10.1001/jamapediatrics.2013.2919>
- Perrin, J. M., Anderson, L. E., & Van Cleave, J. (2014). The rise in chronic conditions among infants, children, and youth can be met with continued health system innovations. *Health Affairs*, 33, 2099–2105. <http://dx.doi.org/10.1377/hlthaff.2014.0832>
- Pollard, R. Q., Jr., Betts, W. R., Carroll, J. K., Waxmonsky, J. A., Barnett, S., deGruy, F. V., III, . . . Kellar-Guenther, Y. (2014). Integrating primary care and behavioral health with four special populations: Children with special needs, people with serious mental illness, refugees, and deaf people. *American Psychologist*, 69, 377–387. <http://dx.doi.org/10.1037/a0036220>
- Ratzliff, A. D., Christensen, C. L., & Ünützer, J. (2014). Building value-added teams to care for behavioral health needs in primary care. In P. Summergrad & R. G. Kathol (Eds.), *Integrated care in psychiatry* (pp. 103–126). New York, NY: Springer. http://dx.doi.org/10.1007/978-1-4939-0688-8_7
- Richardson, L. P., Ludman, E., McCauley, E., Lindenbaum, J., Larison, C., Zhou, C., . . . Katon, W. (2014). Collaborative care for adolescents with depression in primary care: A randomized clinical trial. *JAMA: Journal of the American Medical Association*, 312, 809–816. <http://dx.doi.org/10.1001/jama.2014.9259>
- Roberts, M. C., Aylward, B. S., & Wu, Y. P. (2014). Overview of the field of pediatric psychology. In M. C. Roberts, B. S. Aylward, & Y. P. Wu (Eds.), *Clinical practice of pediatric psychology* (pp. 3–16). New York, NY: Guilford Press.
- Roberts, M., & Wright, L. (1982). The role of the pediatric psychologist as consultant to pediatricians. In J. Tuma (Ed.), *Handbook for the practice of pediatric psychology* (pp. 251–289). New York, NY: Wiley Interscience.
- Routh, D. K., Schroeder, C. S., & Koocher, G. P. (1983). Psychology and primary health care for children. *American Psychologist*, 38, 95–98. <http://dx.doi.org/10.1037/0003-066X.38.1.95>
- SAMHSA-HRSA Center for Integrated Health Solutions. (2012). *Behavioral health homes for people with mental health and substance use conditions: The core clinical features*. Retrieved from http://www.integration.samhsa.gov/clinical_practice/CIHS_Health_Homes_Core_Clinical_Features.pdf
- SAMHSA-HRSA Center for Integrated Health Solutions. (2014). *Advancing behavioral health integration within NCQA recognized patient-centered medical homes*. Retrieved from http://www.integration.samhsa.gov/integrated-care-models/Behavioral_Health_Integration_and_the_Patient_Centered_Medical_Home_FINAL.pdf
- SAMHSA-HRSA Center for Integrated Health Solutions. (2015). *Health Homes and Medical Homes*. Retrieved from <http://www.integration.samhsa.gov/integrated-care-models/health-homes>
- Sarvet, B., Gold, J., Bostic, J. Q., Masek, B. J., Prince, J. B., Jeffers-Terry, M., . . . Straus, J. H. (2010). Improving access to mental health care for children: The Massachusetts Child Psychiatry Access Project. *Pediatrics*, 126, 1191–1200. <http://dx.doi.org/10.1542/peds.2009-1340>
- Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezech, A. C., & Patton, G. C. (2012). Adolescence: A foundation for future health. *The Lancet*, 379, 1630–1640. [http://dx.doi.org/10.1016/S0140-6736\(12\)60072-5](http://dx.doi.org/10.1016/S0140-6736(12)60072-5)
- Schroeder, C. S. (1979). Psychologists in a private pediatric practice. *Journal of Pediatric Psychology*, 4, 5–18. <http://dx.doi.org/10.1093/jpepsy/4.1.5>
- Schroeder, C. S. (2004). Reaching beyond the guild. In B. W. Wildman & T. Stancin (Eds.), *New directions for research and treatment of pediatric psychosocial problems in primary care* (pp. 1–32). Westport, CT: Greenwood.
- Schwenk, T. L. (2014). The patient-centered medical home: One size does not fit all. *Journal of the American Medical Association*, 311, 802–803. <http://dx.doi.org/10.1001/jama.2014.352>
- Sia, C., Tonniges, T. F., Osterhus, E., & Taba, S. (2004). History of the medical home concept. *Pediatrics*, 113(Suppl.), 1473–1478.
- Spijkers, W., Jansen, D. E., & Reijneveld, S. A. (2013). Effectiveness of Primary Care Triple P on child psychosocial problems in preventive child healthcare: A randomized controlled trial. *BMC Medicine*, 11, 240. <http://dx.doi.org/10.1186/1741-7015-11-240>
- Spirito, A., & Kazak, A. E. (2006). *Effective and emerging treatments in pediatric psychology*. New York, NY: Oxford University Press.
- Stancin, T., & Perrin, E. C. (2014). Psychologists and pediatricians: Opportunities for collaboration in primary care. *American Psychologist*, 69, 332–343. <http://dx.doi.org/10.1037/a0036046>
- Stancin, T., Perrin, E. C., & Ramirez, L. (2009). Pediatric psychology and primary care. In M. C. Roberts & R. G. Steele (Eds.), *Handbook of pediatric psychology* (4th ed., pp. 630–646). New York, NY: Guilford Press.

- Straus, J. H., & Sarvet, B. (2014). Behavioral health care for children: The Massachusetts child psychiatry access project. *Health Affairs*, 33, 2153–2161. <http://dx.doi.org/10.1377/hlthaff.2014.0896>
- Toomey, S. L., Chan, E., Ratner, J. A., & Schuster, M. A. (2011). The patient-centered medical home, practice patterns, and functional outcomes for children with attention deficit/hyperactivity disorder. *Academic Pediatrics*, 11, 500–507. <http://dx.doi.org/10.1016/j.acap.2011.08.010>
- University of Washington AIMS Center. (2015). *Patient-centered Integrated Behavioral Health Care Principles & Tasks*. Retrieved from <https://aims.uw.edu/collaborative-care>; <http://aims.uw.edu/collaborative-care/principles-collaborative-care>
- Unützer, J., Katon, W., Callahan, C. M., Williams, J. W., Jr., Hunkeler, E., Harpole, L., . . . the IMPACT Investigators. (2002). Collaborative care management of late-life depression in the primary care setting: A randomized controlled trial. *Journal of the American Medical Association*, 288, 2836–2845. <http://dx.doi.org/10.1001/jama.288.22.2836>
- U.S. Department of Health and Human Services. (2001). *Mental health: Culture, race, and ethnicity- A Suppl. to mental health: A report of the Surgeon General*. Rockville, MD: Substance Abuse and Mental Health Services Administration.
- U.S. Department of Health and Human Services. (2011). *National prevention strategy*. Retrieved from <http://www.surgeongeneral.gov/initiatives/prevention/strategy/>
- Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet*, 379, 1641–1652. [http://dx.doi.org/10.1016/S0140-6736\(12\)60149-4](http://dx.doi.org/10.1016/S0140-6736(12)60149-4)
- Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 629–640. <http://dx.doi.org/10.1001/archpsyc.62.6.629>
- Warner, C. M., Colognori, D., Kim, R. E., Reigada, L. C., Klein, R. G., Browner-Elhanan, K. J., . . . Benkov, K. (2011). Cognitive-behavioral treatment of persistent functional somatic complaints and pediatric anxiety: An initial controlled trial. *Depression and Anxiety*, 28, 551–559. <http://dx.doi.org/10.1002/da.20821>
- Weersing, V. R., Gonzalez, A., Campo, J. V., & Lucas, A. N. (2008). Brief behavioral therapy for pediatric anxiety and depression: Piloting an integrated treatment approach. *Cognitive and Behavioral Practice*, 15, 126–139. <http://dx.doi.org/10.1016/j.cbpra.2007.10.001>
- Weisz, J. R., Kuppens, S., Eckshtain, D., Ugueto, A. M., Hawley, K. M., & Jensen-Doss, A. (2013). Performance of evidence-based youth psychotherapies compared with usual clinical care: A multilevel meta-analysis. *Journal of the American Medical Association Psychiatry*, 70, 750–761. <http://dx.doi.org/10.1001/jamapsychiatry.2013.1176>
- Wells, K. B., Sherbourne, C., Schoenbaum, M., Duan, N., Meredith, L., Unützer, J., . . . Rubenstein, L. V. (2000). Impact of disseminating quality improvement programs for depression in managed primary care: A randomized controlled trial. *JAMA: Journal of the American Medical Association*, 283, 212–220. <http://dx.doi.org/10.1001/jama.283.2.212>
- Wissow, L., Anthony, B., Brown, J., DosReis, S., Gadamski, A., Ginsburg, G., & Riddle, M. (2008). A common factors approach to improving the mental health capacity of pediatric primary care. *Administration and Policy in Mental Health and Mental Health Services Research*, 35, 305–318. <http://dx.doi.org/10.1007/s10488-008-0178-7>
- Woltmann, E., Grogan-Kaylor, A., Perron, B., Georges, H., Kilbourne, A. M., & Bauer, M. S. (2012). Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: Systematic review and meta-analysis. *The American Journal of Psychiatry*, 169, 790–804. <http://dx.doi.org/10.1176/appi.ajp.2012.11111616>
- Working Party Group on Integrated Behavioral Healthcare. (2014). Joint principles: Integrating behavioral health care into the patient-centered medical home. *Annals of Family Medicine*, 12, 183–185. <http://dx.doi.org/10.1370/afm.1633>
- Wright, L. (1967). The pediatric psychologist: A role model. *American Psychologist*, 22, 323–325. <http://dx.doi.org/10.1037/h0037666>

Received May 22, 2015

Revision received March 17, 2016

Accepted March 22, 2016 ■