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Integrating children's mental health into primary care

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Unmet need for child mental health services

Children's mental health problems are among global health advocates' highest priorities [1] because they are among the leading causes of disability for children and youth and often going untreated for years, significantly disrupting healthy development [2,3]. In addition, advocates increasingly see mental health promotion in childhood as the only viable short-term path to reducing the burden of adult mental disorders [4,5]. Nearly three-quarters of adult disorders have their onset or origins during childhood, becoming harder to treat and incurring ever-greater social, educational, and economic consequences over time. In contrast, there is good evidence that commonly-occurring problems such as anxiety and depression can be prevented or ameliorated through intervention in childhood and adolescence [6–10].

Designing an expanded program to address mental health in childhood presents many challenges. Even in the most highly resourced countries, child mental health professionals are in short supply and their optimal use is hampered by fragmented systems and competition for limited public funding. In much of the world specialized care is virtually unavailable except to the most privileged [11]. In the United States, the 2003 National Health Interview Survey found that 56% of children 4–17 with definite or severe functional difficulties attributable to mental health problems had not seen a mental health professional in the past year [12]. A decade later, a study in Massachusetts, after the start of mandatory child mental health screening in primary care, found that 40% of screen-positive children had no prior history of mental health service use [13].

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A role for primary care

Strategies for improving children's access to mental health care focus largely on increasing the number and kinds of providers who can deliver preventive and treatment services. This includes engaging family members, improving the mental health promotion and treatment capacity of schools and community programs, and increasing the capacity of primary care [14].

Around the world, primary care is delivered in many different ways and by professionals and paraprofessionals with differing skill sets. The extent to which child mental health care integrates with primary care will thus vary, and will also depend on opportunities to expand services in schools and from community-based organizations. For example, in the US, primary care providers -- family physicians, primary care pediatricians, nurse practitioners, physicians' assistants and the others who work with them -- are tasked with a variety of health maintenance and monitoring functions that, in other systems, are carried out by public health workers. Thus integration efforts in the US focus mostly on primary care sites themselves, while in other countries (such as the UK) they involve work with a combination of primary care, school-based, and public health services.

Whether in primary care predominantly or in a combination of primary care and public health, the philosophy of promoting and tracking children's healthy development creates the benefit of integration, forming a natural base from which to promote mental health and detect emerging problems. Mental health care can then be delivered in the context of care for co-occurring medical conditions and with a focus on periods of individual and family vulnerability. Ongoing relationships can build willingness to share sensitive information and trust in the appropriateness of diagnosis and treatment.

Developing primary care as a resource for mental health has involved two strategies -- collaborative care and task shifting -- which in fact are inseparable. Collaborative care emphasizes effective partnerships between primary and specialty care, allowing patients to receive treatments that take advantage of specialty expertise while benefiting from the comprehensiveness and longitudinal aspects of primary care[15]. But collaborative care cannot function without some degree of task shifting -- the delivery of some specialized services by primary care providers themselves.[16]. Task shifting is needed for a number of reasons: early detection and intervention (as well as efforts at health promotion) may identify situations that do not qualify for specialty care; waiting times for specialty care may be too long; many patients may prefer to be treated in primary care, and opt for no care at all rather than accepting a referral. Task shifting may be the only alternative in settings where specialty care is available only at great expense or in extraordinary circumstances.

Barriers to task shifting

The biggest barrier to task shifting -- and even to the co-location of mental health providers in primary care offices -- is that most current mental health treatment does not fit with how primary care is practiced by clinicians or used by families. Primary care practice is characterized by the need to conduct many visits in a short time and accommodate unscheduled visits for acute illness. In contrast, mental health treatments are usually

delivered in sessions lasting from 30 to 60 minutes [17]. Primary care continuity is defined as longitudinal access and monitoring over an indefinite time frame, while mental health treatments are delivered in a series closely spaced visits often for a finite time. These differences may apply both to primary care providers themselves and to co-located practitioners. Business models supporting co-located providers may not allow for extended visits, and families may find it just as hard to return for serial visits to a primary care site as they do for mental health service sites [18–19].

Other difficulties with currently available treatments lie in their therapeutic targets. A recent analysis of child-youth treatments supported by randomized trials found that even if a full set of those recommended by the Substance Abuse and Mental Health Services Administration (SAMHSA) were to be available, nearly 50% of youth in need of services would technically not be considered appropriate candidates because their age, gender, or disorder did not match the characteristics of children among whom the intervention had been studied [20]. The situation in primary care is even worse: up to 20–30% of children seen in primary care have behavioral or emotional problems that impair their function but do not meet criteria for any disorder; thus the range of available evidence-based treatments is even smaller [21].

Many evidence-based treatments fail to take an ecologic perspective. Children's problems may stem from difficulties within their family or community and include parental mental health problems, food and housing insecurity, or exposure to dangerous neighborhoods or challenging schools [22]. Children may be the "identified patient" in these situations, but intervention may be more effectively directed to the underlying issues rather than the child's resulting behavioral or emotional state. The links between these so-called social determinants and mental health are becoming increasingly clear. In the US, an estimated 7% of infants and young children live with severely depressed mothers – a recognized and treatable cause of child mental health problems [23]. The prevalence rises to 11% for children living in poverty, and to 41 and 55%, for all children and those in poverty, respectively, if mild and moderate depression are included. Poverty itself impacts parental functioning in ways that have an impact on children's mood and behavior: the daily hassles of poverty, even when not experienced as stress, reduce cognitive "bandwidth," making it harder for parents to reason through problems and sustain goal-directed attention [24].

Another shortcoming of current mental health services is that they are separate from or lacking interventions that promote mental wellness. The "dual continuum model" [25] posits that mental illness and mental wellness are two separate though related concepts. Both mental illness and mental wellness predict lifetime medical problems and mortality, with mental illness markedly reducing lifespan and mental wellness increasing it [26]. Importantly, promoting wellness can prevent illness, but treating illness may not necessarily promote wellness. Promoting mental wellness has long been an aspiration of primary care in the U.S. [27], but there are no widely disseminated practical interventions beyond infancy and toddlerhood. The "Triple P" program shows promise as a primary care and community-based approach based on parenting training, but evidence for its effectiveness remains limited [28].

Finally, despite the demand and need for mental health services, current treatments are far from widely embraced by families. In one U.S. study, more than half of parents with emotional, behavioral, or developmental concerns about their children did not discuss them with their child's doctor [29], and even in highly integrated health care systems anywhere from a significant minority to a majority of referrals from primary care to mental health are never completed [30]. Patient preferences are important: in one primary care study of medication for adult depression, treatment was highly cost-effective for patients with favorable attitudes toward medication but showed no advantage over usual care for patients with negative attitudes [31]. In pediatrics, parents vary considerably in their attitudes toward therapeutic options for common childhood mental health problems [32].

Designing mental health interventions for primary care

In this paper we focus on what types of mental health treatment and promotion interventions might be practical, engaging to families, and effective for use by primary care providers and primary-care based mental health professionals. The goals of providing these services include:

- Being an effective gateway to specialty services
 - Being part of a safety net – identifying and helping families who fall out of the specialized mental health system for one reason or another
 - Providing early intervention – catching things before they get worse
 - Promoting positive mental health – the attributes that help children “flourish”
- We divide the remaining sections of the paper into three groups: what primary care providers might do, how they might be supported to learn to do it, and what could make it sustainable and become part of routine.

What might providers do?

A holistic framework for care

Much of the reasoning in this section flows from the concept that the brain is the principle organ of human adaptation [33]. The brain's processing of and responses to the environment determine both mental and physical health. Appraisal of the environment drives autonomic, endocrine, and immunologic responses with long-term implications for health; emotional responses to the environment drive behaviors that have profound implications for physical health as well as social connectedness, cognitive development, and ultimately reproductive success. Thus thinking about mental health is integral to good medical care – it is not an add-on. If mental health care is then integral to all of pediatric care, it needs to begin with interventions that permeate all care but are particularly put into play when working with families in which a child may have a mental health problem.

There are several possibilities for universal interventions that mesh seamlessly with day-to-day medical practice (Table 1). First, the “common factors” literature from psychotherapy demonstrates that there are aspects of the client-therapist interaction predicting outcomes across conditions and treatments [34]. This parallels observations of how patient-provider interactions and organizational culture influence outcomes in medical and agency-based

services [35,36]. Second, studies of “single session” psychotherapy demonstrate the effectiveness of providing problem (rather than diagnostic) targeted treatment in brief pulses across extended periods, similar to patterns of medical care[37]. Third, “stepped care” models suggest that generalists can provide first-contact mental health treatment based on brief, problem-oriented assessments if they follow patients to ascertain need for further diagnosis or intervention [38].

Targeted brief interventions

The major gap in our ability to provide mental health services in primary care is the need for brief interventions more specifically targeting particular common problems. To reach a large number of children these interventions need to be relatively few in number (crossing current diagnostic categories), easy to implement, and broadly address early intervention, family and social influences, and wellness promotion.

These brief interventions can be developed from more complex evidence-based treatments. In 2004, Hawaii’s Evidence Based Services Committee pioneered the technique of identifying “practice elements” used repeatedly across multiple evidence-based therapies for specific conditions [39]. Since then, the process of identifying elements has been refined [40] and trials in outpatient child mental health programs have found that using treatment where problems are matched to elements (as opposed to diagnoses being matched to evidence-based interventions) was effective and well-received by families [41,42].

Although there have yet to be similar trials in primary care, a pilot study that trained pediatricians to use an elements-based approach for children with anxiety found evidence of effectiveness and feasibility within the structure of primary care practice [43]. Table 2 shows, for four major child behavioral and emotional problems encountered by pediatricians, elements extracted from evidence-based treatments by the Hawaii Evidence Based Services Committee. There are a relatively small number of discrete interventions, most of which are already suggested for use in primary care [44].

Beyond diagnosis to promoting core components of mental health

While the conditions in Table 2 are readily recognizable, they still are “problems” rather than qualities related to positive mental health. Ideally we want to be able to address issues that are at the root of healthy functioning, and we want to be able to acknowledge that children’s behavior and emotional problems are closely linked to developmental, family, school, and community issues that might be important primary or simultaneous targets of intervention.

Over the last several years the U.S. National Institute of Mental Health has developed what it calls the Research Domain Criteria (RDoC) framework as a way identifying core brain circuits identified with mental illness and wellness independently of current diagnostic categories [45]. While not suggesting that there is a neurologic correlate to all behaviors and mental states, RDoC follows a line of inquiry in developmental psychology that tries to identify processes underlying the frequently comorbid and variable conditions seen in children’s mental health problems [46]. Multi-disciplinary panels identified five major domains: negative and positive valence systems, cognitive systems, social processes, and

arousal systems. Within each domain, particular constructs represent feelings and behaviors associated with both successful adaptation and difficulty functioning. Though the domains have evidence for their independent existence and functioning, they clearly work together promote positive mental health or influence states of emotional distress or behavioral dysfunction.

While the RDoC framework is new, it has shown promise as a clinical as well as research tool, helping clinicians think of patients' strengths and difficulties in ways that open additional avenues for treatment [47]. It offers the promise of grouping treatments in ways that are more intuitive to clinicians, using fewer categories than current schemes, increasing ease of dissemination.

Table 3 maps key circuits identified by RDoC with mental states associated with positive mental health [26,48] and then with a tentative selection of interventions for promoting mental health or intervening early with potential difficulties. The entries in the intervention columns of the table can be thought of as involving treatments aimed at children or parent-child dyads. Interventions in the boxes under the main table target the family overall or a parent in particular.

As an example of how treatments and mental health promotion interventions might be mapped onto RDoC, we can take the case of a school-age child with trouble paying attention in school. Exercise might be associated with promoting overall brain states that favour effortful control, which is thought to be important in child anxiety, oppositional behaviour, and ADHD. Helping parents promote children's organizational and emotion regulating abilities might be associated with more specific training that accomplishes the same end [46]. Thinking through the child's problems using RDoC constructs might lead to exploring problems the child might have with chronic worry (about poor performance or related to trauma) and poor self-image (from feeling inferior to peers or being singled out as a problem in school). This is in contrast to current approaches based on diagnosis, which might elicit symptoms suggestive of ADHD and move to an evidence-based treatment such as stimulant medication.

Supporting parents or the family environment might also be considered, and likely fall within or not far from existing pediatric practice. Self-care is already an established part of counselling for parents of infants [44] as is smoking cessation advice for parents of children with asthma and family dietary counselling for children with weight problems [49,50]. Larger pediatric practices may work with social workers and other peer and professional staff capable of linking families to community services or advocating for them with schools or government agencies. Brief counselling models for adult substance use and depression might readily be incorporated into pediatric practice and are even more readily used by family practitioners providing care for both parents and children [51,38].

How can providers learn new skills?

In some countries, primary care providers already have a strong toolkit of early interventions targeting mental health promotion and treatment, but may need help building confidence [52] or need more than brief refreshers to build particular skills [35]. In other countries,

community health workers, health officers, and peer counselors have or can develop skills for both case-finding and brief counseling. [53]. Especially in communities where mental health problems are especially stigmatized, building a mental health component into interventions for other conditions may be the most effective avenue of dissemination. Doing this can leverage counseling skills providers have learned for other purposes, including HIV-related counseling or the promotion of breast feeding [54,55].

Many of the basic “common factors” skills and attitudes are developed in clinicians’ basic training: using them may be more dependent on shifts in office priorities and routines than learning new methods. However other skills, such as those derived from motivational interviewing or solution-focused therapy, may require additional learning and practice. They can be learned at workshops (In the US by the Institute for Healthcare Communication, the REACH Institute, and others), and via on-line trainings, including new resources being developed by the AAP (www.aap.org/mentalhealth).

While medical continuing education activities have traditionally focused on onetime educational sessions, it has been long recognized that knowledge and skills related to psychosocial concerns are best learned over time through collaborative relationships with specialists and exchange of experience with colleagues. In the 1950’s, British psychoanalyst Michael Balint initiated group meetings with general practitioners to discuss difficult patients and ways to try to better understand and address their concerns [56]. The Balint movement continues in North America and the UK, including the possibility of obtaining training and forming a group oneself (www.americanbalintsociety.org). Since 1989, the Maternal and Child Health Training Program, part of the US federal Maternal and Child Health Bureau, has funded a number of centers to organize “Collaborative Office Rounds,” community meetings based on the Balint concept but specifically addressing mental health aspects of pediatric care [57]. The groups are jointly led by pediatricians and child psychiatrists and may target trainees or established practitioners. A list of current grantees is available at <http://www.mchb.hrsa.gov/training/projects.asp?program=3>.

Most recently, a number of states have implemented programs that provide free, informal child mental health consultations to primary care providers caring for children and youth (and in some cases pregnant women). Based on a model originally developed in Massachusetts [58], the programs typically offer some form of optional training, assistance with finding mental health referrals, and a telephone “warm line” through which primary care providers can connect with a child mental health specialist to discuss diagnostic, treatment, or referral dilemmas. Initial evaluations of state programs suggest that they are effective in increasing primary care providers’ willingness and ability to manage child mental health problems [59,52]. The newly-formed National Network of Child Psychiatry Access Programs (www.nncpap.org) provides a directory of existing programs and can link providers with advice on program development and functioning.

Implementing and sustaining a mental health program in primary care

The Chronic Care Model as a blueprint

Mental health brings into sharp focus the reality that health care is distinct from many other public services in that it depends on human interactions at multiple levels [60]. Communities must develop goals for well-being and embrace services as a legitimate and effective. Individuals within communities need trusting relationships with health care providers and confidence in the relevance of the providers' knowledge. Providers may need new roles and relationships; community agencies may need to work more closely with each other and with medical services. Many cultural, structural and financial barriers stand in the way of these collaborations. Collaboration across staff levels and disciplines, involvement of families, and a willingness to rethink processes have proven to be necessary elements of integrating psychosocial concerns with the more medical model of primary care [61,62].

Elaborations on Wagner's Chronic Care Model (CCM) [15] have been the basis of most programs to integrate mental health with adult and pediatric primary care and with community services (Table 4). Several CCM interventions with positive outcomes have been reported for adult depression; two positive trial has been reported for adolescent depression and one for disruptive behaviors among younger children, both using co-located personnel [63,64,65].

The CCM sets out some key structural elements for specialist-generalist collaboration and task shifting.

- Generalists should systematically be looking for certain kinds of problems faced by their patients so that they can intervene early or try to prevent problems altogether. This process usually involves some combination of formal screening and a variety of changes to pre- and intra-visit interactions to promote discussion of patients' concerns.
- Generalists should have the tools and back-up to provide first-line care for the problems right away, usually through a combination of training, reference materials, and ready access to consultation and collaboration.
- Office systems and routines may need small but important modifications to be able to accommodate families with mental health concerns. These include some flexibility in assignment of visit slots when a slightly longer visit would be helpful, "huddles" or brief team meetings at the start of the day to identify families who will likely need more support, and review of protocols for helping those who are acutely distressed.
- Systems should be in place to follow-up first-line treatment and decide if it has been successful. Medical home models, for example, call for tracking referrals and creating registries of patients or families with particular needs.
- When more treatment is needed, generalists should be able to work closely with specialists – ideally with whom they have a personal relationship -- to assure

that patients get the added care they need, and that the added care fits with the patient's other medical needs (often referred to as "stepped care").

The CCM is also a model of both patient and provider behavior change [66]. It posits that patient engagement is central to outcomes in conditions – like mental health -- that rely heavily on self-management [60]. Engagement is supported at the interpersonal level through patients' interactions with providers, at the social level through involvement with formal and informal community-based services, and at the systems level through the organization and financing of care. Within this engagement-promoting structure, clinical sites organize to detect problems early and deliver evidence-informed treatments in collaboration with specialists.

Getting started

The American Academy of Pediatrics (AAP)'s Task Force on Mental Health "Toolkit" (www.aap.org/mentalhealth) provides a comprehensive blueprint for practices contemplating a full-fledged effort to take on mental health care and largely follows the CCM. It addresses steps in planning, office readiness, universal interventions, condition-specific treatments, and collaboration with specialists. To conclude, we highlight two areas that have emerged as particularly important to beginning and sustaining mental health work: screening and team involvement.

Screening for problems and hooks for engagement

The CCM emphasizes the need for systematic assessment, and screening is often where practices begin when thinking about taking on mental health care. Screening has many appealing aspects, but it is much more complicated than it seems. There are clinical issues (how it will be presented to families, integrated with developmental screening or other pre-visit questionnaires, how the results will be used as a part of care) and logistic issues (how screens will be systematically given out, scored, entered into the medical record, and their results made available for use during the visit). A full discussion of screening is beyond the scope of this article, and many models and details can be found in the AAP Toolkit.

A concept that can guide screening implementation is to think of it as only one step in a process designed to initiate discussions about families' most pressing concerns. Screening can signal the acceptability of discussing topics that families may have assumed were out of scope for the visit, give time for family members to formulate and prioritize their questions, and give providers an indication, at the start of the visit, about a likely agenda. Framing screening as "routine" helps bringing up sensitive issues without feeling targeted or stigmatized [67].

A critical component of the process is the conversation between the clinician and family about the screening results. Not discussing the results diminishes their importance in the eyes of families and risks sending a message that the screen is just one more piece of paperwork that serves the system but not the patient. Both "negative" and "positive" screens need follow-up. Screens may be negative because the family truly senses that there are no difficulties to discuss, because they are not comfortable disclosing difficulties, because they don't understand the questions being asked, or because they have problems but don't feel

that they are reflected in the questions on the screen. A negative screen offers a chance to confirm that there are no problems and to ask if there might be something related that the family would like to discuss. Screens can be positive because the family in fact has difficulties to discuss, or because they misinterpret questions or the directions for completing the form. Verifying that the responses truly reflect a concern offers the chance to get a better understanding of what the family might want to discuss. The conversations between provider and patient that emerge from the use of the screener are more important than the positive/negative results of the screening tool itself. In fact, while clinicians often fear that screening will uncover more issues than can be dealt with in a single visit, the overlapping nature of family mental health problems, and their often common roots, create a situation in which complexity is a good thing: it offers multiple possible “hooks” by which a family might be engaged. Any issue that a family sees as a priority is likely to eventually lead to exploring the others that have been uncovered.

It is also important to remember that the positive/negative cut-points, even in “validated” screening tools, may not be applicable to the population for which you are caring or have limited predictive value in a generally well population. For example, the Pediatric Symptom Checklist (PSC), the Strengths and Difficulties Questionnaire (SDQ), and the Patient Health Questionnaire (PHQ) have positive predictive values of 50% or less at the prevalence rates found in well-child visits [68,69,70].

Mental health visits start at the front desk

Patients coming to medical and medical health sites develop therapeutic relationships with a variety of staff members, not just the clinician who conducts the formal “visit” [71,72]. Impressions made at the front desk and during the process of getting to an examining room or having vital signs measured can carry over into willingness to discuss sensitive information once the formal visit starts [73]. Thus, getting ready to provide mental health care involves the entire office team, and a consideration of how the office environment promotes a sense of safety and respect. The best way to involve and gain the collaboration – and wisdom – of team members is to involve them in planning the start-up or expansion of mental health care. Family representatives in particular are essential to developing effective plans and making the case for change, and increasingly are taking on a formal role as part of treatment teams [74].

Conclusions

Mental health problems in children remain a major public health challenge in both high-income countries and low-and middle-income countries. Promising models exist to address this challenge but there remain gaps in knowledge [75]. Two studies of primary care-based treatment for adolescent depression [63,64] found that use of a collaborative/integrated care model (some degree of task shifting to primary care providers themselves, use of a ‘care-manager’ to deliver treatment, and an algorithm for seeking more intensive care) improved outcomes and was feasible in a variety of settings (though neither study included stand-alone private practices). Another study focusing only on child behavior problems [65] had similar findings, again with a co-located therapist, in academic-affiliated practices. These studies

show that collaborative care can be effective, but they involve single conditions and leave unanswered the question of how the additional clinical resources can be financed in the long term.

Though not yet evaluated with regard to outcomes, advanced “child psychiatry access programs,” such as Massachusetts’ “MCPAP,” [59] have used a model promoting primary care services for a range of conditions (via regional hubs providing direct care, training, and support for primary care management). These programs, now in operation in some form in over 20 state, have garnered strong acceptance from policy-makers and the primary care community. They offer potential economies of scale, and the potential for impact across a broad range of conditions, but, again, in addition to uncertainty about their clinical impact, how they will be financed in the long term remains a question.

Solutions may come from two directions warranting active research agendas. First, refining and determining the impact of trans-diagnostic and combined illness/wellness approaches to treatment offers the promise of designing interventions that address a broad range of problems, are more readily adapted to use by primary care and other community-based providers, and that are potentially more potent, as well. Second, technology may offer ways of promoting task shifting and collaborative care that preserve the strengths of one-to-one mentoring that seem most effective but that are practical at scale, especially in settings where specialist consultants are in short supply [76]. In the meantime, there are many steps that individual practitioners, health systems, and educational and social welfare agencies can take that are sufficiently well developed to warrant thoughtful implementation.

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References

1. Collins PY, Patel V, Joestl SS. Grand challenges in global mental health. *Nature*. 2011; 475:27–30. [PubMed: 21734685]
2. World Health Organization (WHO). Caring for children and adolescents with mental disorders: setting WHO directions. Geneva: World Health Organization; 2003.
3. World Health Organization (WHO). Adolescent mental health: mapping actions of nongovernmental organizations and other international development organizations. Geneva: World Health Organization; 2012.
4. Insel TR, Scolnick EM. Cure therapeutics and strategic prevention: raising the bar for mental health research. *Mol Psychiatry*. 2006; 11:11–17. [PubMed: 16355250]
5. Wong EH, Yocca F, Smith MA, Lee CM. Challenges and opportunities for drug discovery in psychiatric disorders: the drug hunters' perspective. *Int J Neuropsychopharmacol*. 2010; 13:1269–1284. [PubMed: 20716397]
6. Bayer J, Hiscock H, Scalzo K, Mathers M, McDonald M, Morris A, Birdseye J, Wake M. Systematic review of preventive interventions for children's mental health. *Aust NZ J Psychiatry*. 2009; 43:695–710.
7. Cuijpers P, Van Straten A, Smit F. Preventing the incidence of new cases of mental disorders: a meta-analytic review. *J Nerv Ment Dis*. 2005; 193:119–125. [PubMed: 15684914]

8. Cuijpers P, van Straten A, Smit F, Mihalopoulos C, Beekman A. Preventing the onset of depressive disorders: a meta-analytic review of psychological interventions. *Am J Psychiatry*. 2008; 165:1272–1280. [PubMed: 18765483]
9. Durlak JA, Wells AM. Primary prevention programs for children and adolescents: a meta-analytic review. *Am J Comm Psychiatry*. 1997; 25:115–153.
10. Merry S, McDowell H.; Hetrick, S.; Bir, J.; Muller, N. Psychological and/or educational interventions for the prevention of depression in children and adolescents. *Cochrane Database Systematic Review*. 2004; (2):CD003380.
11. Kim WJ. American Academy of Child and Adolescent Psychiatry Task Force on Workforce Needs. Child and adolescent psychiatry workforce: a critical shortage and national challenge. *Acad Psychiatry*. 2006; 27:277–282. [PubMed: 14754851]
12. Simpson GA, Bloom B, Cohen RA, Blumberg S, Bourdon KH. U.S. children with emotional and behavioral difficulties: Data from the 2001, 2002, and 2003 National Health Interview Surveys. *Adv Data*. 2005 Jun 23:1–13. [PubMed: 16004071]
13. Hacker KA, Penfold R, Arseneault L, Zhang F, Murphy M, Wissow L. Screening for behavioral health issues in children enrolled in Massachusetts Medicaid. *Pediatrics*. 2014; 133:46–54. [PubMed: 24298005]
14. World Health Organization (WHO). Atlas: Child and adolescent mental health resources : Global concerns, implications for the future. Geneva: World Health Organization; 2005.
15. Wagner EH, Austin BT, Von Korff M. Organizing care for patients with chronic illness. *Milbank Q*. 1996; 74:511–544. [PubMed: 8941260]
16. World Health Organization (WHO). Task shifting to tackle health worker shortages. Geneva: World Health Organization; 2007.
17. American Academy of Pediatrics Committee on Coding and Nomenclature. Application of the resource-based relative value scale system to pediatrics. *Pediatrics*. 2004; 113:1437–1440. [PubMed: 15121969]
18. Areán PA, Ayalon L, Jin C, McCulloch CE, Linkins K, Chen H, McDonnell-Herr B, Levkoff S, Estes C. Integrated specialty mental health care among older minorities improves access but not outcomes: results of the PRISMe study. *Int J Geriatr Psychiatry*. 2008; 23:1086–1092. [PubMed: 18727133]
19. Williams J, Shore SE, Foy JM. Co-location of mental health professionals in primary care settings: three North Carolina models. *Clin Pediatr (Phila)*. 2006; 45:537–543. [PubMed: 16893859]
20. Bernstein A, Chorpita BF, Daleiden EL, Ebesutani CK, Rosenblatt A. Building an Evidence-Informed Service Array: Considering Evidence-Based Programs as Well as Their Practice Elements. *J Consult Clin Psychol*. 2015 Jun 1.
21. Briggs-Gowan MJ, Horwitz SM, Schwab-Stone ME, Leventhal JM, Leaf PJ. Mental health in pediatric settings: Distribution of disorders and factors related to service use. *J Am Acad Child Adolesc Psychiatry*. 2000; 39:841–849. [PubMed: 10892225]
22. Odgers CL, Caspi A, Russell MA, Sampson RJ, Arseneault L, Moffitt TE. Supportive parenting mediates neighborhood socioeconomic disparities in children's antisocial behavior from ages 5 to 12. *Dev Psychopathol*. 2012; 24:705–721. [PubMed: 22781850]
23. Vericker, T.; Macober, J.; Golden, O. Infants of depressed mothers living in poverty: opportunities to identify and serve. Washington, DC: Urban Institute; 2010 Aug.
24. Mani A, Mullainathan S, Shafir E, Zhao J. Poverty impedes cognitive function. *Science*. 2013; 341:976–980. [PubMed: 23990553]
25. Keyes CL. Promoting and protecting mental health as flourishing: a complementary strategy for improving national mental health. *Am Psychol*. 2007; 62:95–108. [PubMed: 17324035]
26. Keyes CL, Simoes EJ. To flourish or not: positive mental health and all-cause mortality. *Am J Public Health*. 2012; 102:2164–2172. [PubMed: 22994191]
27. Brazelton TB. Working with families. Opportunities for early intervention. *Pediatr Clin North Am*. 1995; 42:1–9. [PubMed: 7854864]
28. Wilson P, Rush R, Hussey S, et al. How evidence-based is an 'evidence-based parenting program'? A PRISMA systematic review and meta-analysis of Triple P. *BMC Med*. 2012; 10:130. [PubMed: 23121760]

29. Horwitz SM, Leaf PJ, Leventhal JM. Identification of psychosocial problems in pediatric primary care: Do family attitudes make a difference? *Arch Pediatr Adolesc Med.* 1998; 152:367–371. [PubMed: 9559713]
30. Hacker K, Myagmarjav E, Harris V, Suglia S, Weidner D, Link D. Mental health screening in pediatric practice: Factors related to positive screens and the contribution of parental/personal concern. *Pediatrics.* 2006; 126:1896. [PubMed: 17079560]
31. Pyne JM, Rost KM, Farahati F, Tripathi SP, Smith J, Williams DK, et al. One size fits some: The impact of patient treatment attitudes on the cost-effectiveness of a depression primary care intervention. *Psychol Med.* 2005; 35:839–854. [PubMed: 15997604]
32. Bussing R, Koro-Ljungberg ME, Gary F, Mason DM, Garvan CW. Exploring help-seeking for ADHD symptoms: A mixed-methods approach. *Harv Rev Psychiatry.* 2005; 13:85–101. [PubMed: 16020023]
33. McEwen BS. Brain on stress: how the social environment gets under the skin. *PNAS.* 2012; 109(suppl. 2):17180–17185. [PubMed: 23045648]
34. Karver MS, Handelsman JB, Fields S, Bickman L. A theoretical model of common process factors in youth and family therapy. *Ment Health Serv Res.* 2005; 7:35–51. [PubMed: 15832692]
35. Wissow L, Gadowski A, Roter D, et al. Aspects of mental health communication skills training that predict parent and child outcomes in pediatric primary care. *Patient Educ Couns.* 2011; 82:226–232. [PubMed: 20444568]
36. Glisson C, Green P. Organizational climate, services, and outcomes in child welfare systems. *Child Abuse Negl.* 2011; 35:582–591. [PubMed: 21855998]
37. Perkins R, Scarlett G. The effectiveness of single session therapy in child and adolescent mental health. part 2: An 18-month follow-up study. *Psychology and Psychotherapy.* 2008; 81(Pt 2):143–156. [PubMed: 18248695]
38. Katon W, Ünützer J, Wells K, Jones L. Collaborative depression care: History, evolution and ways to enhance dissemination and sustainability. *General Hospital Psychiatry.* 2010; 32:456–464. [PubMed: 20851265]
39. Evidence Based Services Committee, Child and Adolescent Mental Health Division, Hawaii Department of Health. Summary of effective interventions for youth with behavioral and emotional needs. Honolulu. 2004
40. Chorpita BF, Daleiden EL, Weisz JR. Identifying and selecting the common elements of evidence based interventions: a distillation and matching model. *Ment Health Serv Res.* 2005; 7:5–20. [PubMed: 15832690]
41. McGarry J, McNicholas F, Buckley H, Kelly BD, Atkin L, Ross N. The clinical effectiveness of a brief consultation and advisory approach compared to treatment as usual in child and adolescent mental health services. *Clinical Child Psychology and Psychiatry.* 2008; 13:365–376. [PubMed: 18783120]
42. Weisz JR, Chorpita B, Palinkas LA, Schoenwald SK, Miranda J, Bearman SK, et al. Testing standard and modular designs for psychotherapy treating depression, anxiety, and conduct problems in youth: A randomized effectiveness trial. *Archives of General Psychiatry.* 2012; 69:274–282. [PubMed: 22065252]
43. Ginsburg G, Drake K, Winegrad H, Fothergill K, Wissow L. An open trial of the *Anxiety Action Plan (AxAP)*: A brief pediatrician-delivered intervention for anxious youth. *Child and Youth Care Forum.* (In press).
44. Jellinek, M.; Patel, BP.; Froehle, MC., editors. *Bright Futures in Practice: Mental health, volume I, Practice guide.* Arlington, VA: National Center for Education in Maternal and Child Health; 2002.
45. Franklin JC, Jamieson JP, Glenn CR, Nock MK. How developmental psychopathology theory and research can inform the Research Domain Criteria (RDoC) project. *J Clin Child Adol Psych.* 2015; 44:280–290.
46. Steinberg EA, Drabick DA. A developmental psychopathology perspective on ADHD and comorbid conditions: The role of emotion regulation. *Child Psychiatry Hum Dev.* 2015 Feb 7.
47. Etkin A, Cuthbert B. Beyond the DSM: development of a transdiagnosticpsychiatric neuroscience course. *Acad Psychiatry.* 2014; 38:145–150. [PubMed: 24493358]

48. Heckman JJ, Stixrud J, Urzua S. The effects of cognitive and non-cognitive abilities on labor market outcomes and social behavior. *J Labor Economics*. 2006; 24:411–482.
49. Pérez-Stable EJ, Juarez-Reyes M, Kaplan C, Fuentes-Afflick E, Gildengorin V, Millstein S. Counseling smoking parents of young children: comparison of pediatricians and family physicians. *Arch Pediatr Adolesc Med*. 2001; 155:25–31. [PubMed: 11177058]
50. Resnicow K, McMaster F, Bocian A, Harris D, Zhou Y, Snetselaar L, Schwartz R, Myers E, Gotlieb J, Foster J, Hollinger D, Smith K, Woolford S, Mueller D, Wasserman RC. Motivational interviewing and dietary counseling for obesity in primary care: an RCT. *Pediatrics*. 2015; 135:649–657. [PubMed: 25825539]
51. Madras BK, Compton WM, Avula D, Stegbauer T, Stein JB, Clark HW. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: Comparison at intake and six months. *Drug and Alcohol Dependence*. 2010; 99:280–295. [PubMed: 18929451]
52. Gadowski AM, Wissow LS, Palinkas L, et al. Encouraging and sustaining integration of child mental health into primary care. *Gen Hosp Psychiatry*. 2014; 36:555–562. [PubMed: 24973125]
53. Zafar S, Sikander S, Haq Z, et al. Integrating maternal psychosocial well-being into a child-development intervention: the five-pillars approach. *Ann N Y Acad Sci*. 2014; 1308:107–117. [PubMed: 24571213]
54. Sikander S, Maselko J, Zafar S, Haq Z, Ahmad I, Ahmad M, Hafeez A, Rahman A. Cognitive-behavioral counseling for exclusive breastfeeding in rural pediatrics: A cluster RCT. *Pediatrics*. 2015; 135:e424–e431. [PubMed: 25583916]
55. Wissow LS, Tegegn T, Legesse H, McNabb M, Tilahun T, Jerene D, Ruff A. Collaboratively re-framing mental health for integration with HIV care in Ethiopia. *Health, Policy, and Planning*. 2014 Jul 10. pii: czu058.
56. Kjeldmand D, Holmström I. Balint Groups as a Means to Increase Job Satisfaction and Prevent Burnout Among General Practitioners. *Annals of Family Medicine*. 2008; 6:138–145. [PubMed: 18332406]
57. Fishman ME, Kessel W, Heppel DE, Brannon ME, Papai JJ, Bryn SD, Nora AH, Hutchins VL. Collaborative office rounds: continuing education in the psychosocial/developmental aspects of child health. *Pediatrics*. 1997; 99:E5. [PubMed: 9099780]
58. Connor DF, McLaughlin TJ, Jeffers-Terry M, O'Brien WH, Stille CJ, Young LM, Antonelli RC. Targeted child psychiatric services: a new model of pediatric primary clinician--child psychiatry collaborative care. *Clin Pediatr (Phila)*. 2006; 45:423–434. [PubMed: 16891275]
59. Sarvet B, Gold J, Straus JH. Bridging the divide between child psychiatry and primary care: The use of telephone consultation within a population-based collaborative system. *Child Adolesc Psychiatr Clin N Am*. 2011; 20:41–53. [PubMed: 21092911]
60. Leykum LK, Lanham HJ, Pugh JA, Parchman M, Anderson RA, Crabtree BF, Nutting PA, Miller WL, Stange KC, McDaniel RR. Manifestations and implications of uncertainty for improving healthcare systems: an analysis of observational and interventional studies grounded in complexity science. *Implement Sci*. 2014; 9:165. [PubMed: 25407138]
61. Nutting PA, Crabtree BF, Miller WL, et al. Transforming physician practices to patient-centered medical homes: lessons from the National Demonstration Project. *Health Aff*. 2011; 30:439–445.
62. Stange KC, Etz RS, Gullett H, Sweeney SA, Miller WL, Jaén CR, Crabtree BF, Nutting PA, Glasgow RE. Metrics for assessing improvements in primary health care. *Annu Rev Public Health*. 2014; 35:423–442. [PubMed: 24641561]
63. Asarnow JR, Jaycox LH, Duan N, LaBorde AP, Rea MM, Murray P, et al. Effectiveness of a quality improvement intervention for adolescent depression in primary care clinics: A randomized controlled trial. *JAMA*. 2005; 293:311–319. [PubMed: 15657324]
64. Richardson LP, Ludman E, McCauley E, Lindenbaum J, Larison C, Zhou C, Clarke G, Brent D, Katon W. Collaborative care for adolescents with depression in primary care: a randomized clinical trial. *JAMA*. 2014; 312:809–816. [PubMed: 25157724]
65. Kolko DJ, Campo J, Kilbourne AM, Hart J, Sakolsky D, Wisniewski S. Collaborative care outcomes for pediatric behavioral health problems: a clusterrandomized trial. *Pediatrics*. 2014; 133:e981–e992. [PubMed: 24664093]

66. Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and meta-analysis. *Am J Psychiatry*. 2012; 169:790–804. [PubMed: 22772364]
67. Fothergill K, Gadowski A, Olson A, Solomon B, dosReis S, Gaffney C, Wissow LS. Assessing the impact of a web-based comprehensive somatic and mental health screening tool in pediatric primary care. *Acad Pediatr*. 2013; 13:340–347. [PubMed: 23830020]
68. Gardner W, Klima J, Chisolm D, et al. Screening, triage, and referral of patients who report suicidal thought during a primary care visit. *Pediatrics*. 2010; 125:945–952. [PubMed: 20385642]
69. Goodman R. Psychometric properties of the strengths and difficulties questionnaire. *J Am Acad Child Adolesc Psychiatry*. 2001; 40:1337–1345. [PubMed: 11699809]
70. Richardson LP, McCauley E, Grossman DC, et al. Evaluation of the patient health questionnaire-9 item for detecting major depression among adolescents. *Pediatr*. 2010; 126:1117.
71. Ware NC, Tugenberg T, Dickey B, et al. An ethnographic study of the meaning of continuity of care in mental health services. *Psychiatric Services*. 1999; 50:395–400. [PubMed: 10096646]
72. Pulido R, Monari M, Rossi N. Institutional therapeutic alliance and its relationship with outcomes in a psychiatric day hospital program. *Archives of Psychiatric Nursing*. 2008; 22:277–287. [PubMed: 18809120]
73. Christensen A, Brown J, Wissow LS, Cook B. Spillover of ratings of patient- and family-centered care: An example for physicians and medical assistants in a Federally Qualified Health Center. *J Ambulatory Care Management*. (in press).
74. Campo JV, Bridge JA, Fontanella CA. Access to mental health services: implementing an integrated solution. *JAMA Pediatr*. 2015; 169:299–300. [PubMed: 25664846]
75. Help on the Way: Communities Getting the Results They Want from Peer Matches. Center for the Study of Social Policy. Washington, DC: 2010. <http://www.cssp.org/publications/neighborhood-investment/help-on-the-way-communities-getting-the-results-they-want-from-peer-matches.pdf>
76. Hamdani SU, Atif N, Tariq M, Minhas FA, Iqbal Z, Rahman A. Family networks to improve outcomes in children with intellectual and developmental disorders: a qualitative study. *International Journal of Mental Health Systems*. 2014; 8(1):7. [PubMed: 24485093]

Key points

- Mental health problems in children and adolescents are common and begin early in life
- Mental health promotion and early intervention during childhood are global public health priorities.
- Primary care can help meet this need through collaboration with specialists and by recognizing the centrality of mental health to physical health
- Mental health interventions can be re-designed to fit the work flow and staffing of primary care sites
- Taking on mental health promotion and care is a “whole office” task that includes families in its design and execution

Table 1

Promising adaptations of mental health treatment for primary care

Community and general medical settings	Parallels in mental health services
Emphasis on patient-centred care and joint decision-making building trust and activation	“Common factors” psychotherapeutic processes promoting engagement, optimism, alliance
Treatment delivered in pulses with follow-up for monitoring or as needed	“Single session” treatment models
Initial treatment often presumptive or relatively non-specific	Stepped care models with increasing specificity of diagnosis and intensity of treatment
Treatment based on brief counselling focused on patient-identified problems	“Common elements”
Links with community services, advice addressing family and social determinants	Peer/family navigators

Table 2

Most frequently appearing “common elements” in evidence-based practices, grouped by common presenting problems in pediatric primary care

Presenting problem area	Most common elements of related evidence-based practices
Anxiety	Graded exposure, modeling
ADHD and oppositional problems	Tangible rewards, praise for child and parent, help with monitoring, time out, effective commands and limit setting, response cost
Low mood	Cognitive/coping methods, problem-solving strategies, activity scheduling, behavioral rehearsal, social skills building

Abbreviation, ADHD, Attention deficit hyperactive disorder

Table 3

RDoC constructs, related mental states, and strategies for promotion/prevention and early intervention

RDoC domain/construct	States related to positive mental health	Promotion/prevention	Early intervention
Cognitive systems - effortful control - working memory	Reasonable ability to sustain attention, engage in problem solving	Parent-child joint attention activities, play involving concentration and memory, learning to structure work Whole-school interventions	Task monitoring, organizational support, rewards for sustained attention
Positive valence systems	Reasonable ability to derive satisfaction from constructive social and intellectual activity	Early cognitive and social stimulation, early exposure to role models intellectually stimulating peer activities	Identification and intervention for learning disorders and other impediments to school success
Negative valence low mood	Reasonable ability to regulate emotions and moderate responses to perceived threats	Contingent responsiveness, parental warmth, cognitive coping skills, promotion of self-esteem, self-efficacy (via social processes domain), skills and activities that build social capital	Behavioral activation, solution-focused problem solving
Negative valence - acute, potential, and sustained threat			Differentiation of sustained versus acute or potential fears: cognitive coping, behavioral rehearsal, modeling, graded exposure
Tolerance of negative valence states			Relaxation, distraction, mindfulness, controlled avoidance
Social processes - attachment - social communications - self representation	Positive sense of self, ability to form bonds with others, ability to read and express emotions	Parenting guidance Whole-classroom programmes Community-based group activities for children	Social skills groups Parent-child bibliotherapy
Arousal - sleep cycles	Evolving ability to match sleep needs with cultural norms	Monitoring of electronic activities, sufficient physical activity, limiting intake of substances interfering with sleep and arousal	Sleep hygiene, problem-solving around schedules, substance intake, increasing physical activity
Parent/family interventions		Support for parent to maintain these interactions over time, promotion of parental self-efficacy, mentalization, developmental knowledge	Support from across formal and informal community agencies to provide these interventions; treatment of parental mental health problems
		Support for the family in the community: social support of various kinds, promotion of financial stability; attention to mental health promotion and prevention across the lifespan	

Table 4

Core elements of Collaborative Chronic Care Model and related interventions

Element	Focus	Potential practice components
Patient self-management support	Practice able to provide coaching, problem-solving, skills-focused psychotherapy and psychoeducation to promote self-management and engagement in care	Primary care provider training in use of common factors skills during routine visits; universal brief advice for parent-child interactions, stress reduction, problem solving; brief advice for specific clusters of symptoms
Clinical information systems use	Facilitation of information flow from relevant clinical sources to treating clinicians	Data systems for tracking progress and referrals
Delivery system re-design	Re-definition of work roles of physicians and staff to facilitate anticipatory or preventive rather than reactive care	All staff oriented and helped to develop common factors skills; scheduling to accommodate families with greater needs, team huddles to share information and anticipate family needs; integration of co-located services; consideration of processes for systematizing prevention and case-finding..
Provider decision support	Facilitated provision of expert-level input to generalists to reduce need for consultation separated in time and space from clinical needs	Primary care staff training, development of collaborative and consulting linkages including warm lines, co-located services.
Community resource linkage	Support for clinical and nonclinical needs from resources outside the health care organization	Development of guides for referral to community services and family support programs
Health care organization support	Organization leadership and tangible resources to support goals and practices	Articulating the case for providing mental health care; developing markers for key goals

Adapted from Woltmann E, Grogan-Kaylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: systematic review and meta-analysis. *Am J Psychiatry* 2012;169:790–804; with permission.