CLINICAL UPDATE

Clinical Update: Collaborative Mental Health Care for Children and Adolescents in Pediatric Primary Care

American Academy of Child and Adolescent Psychiatry (AACAP) Committee on Collaborative and Integrated Care and AACAP Committee on Quality Issues

Objective: The objective of this Clinical Update is to review the principles, structures, processes, and outcomes of collaborative mental health care in the pediatric primary care setting.

Method: A search of the literature on this topic from 2001was conducted initially in 2016, yielding 2,279 English-language citations. These citations were supplemented by references suggested by topic experts and identified through Web searches, increasing the yield to 2,467 total citations, of which 1,962 were unduplicated. After sequential review by Update authors at title/abstract and then full-text levels, the citations were winnowed to 219 based on topic relevance. A follow-up search from 2016 was conducted in 2021, yielding 2 additional citations based on nonduplication from initial search and topic relevance.

Results: The collaborative care approach, arising in the 1990s and gaining momentum in the 2000s, aims to extend behavioral health care to the primary care setting. The goal of collaborative care is to conserve the sparse specialty care workforce for severe and complex psychiatric disorders through shifting certain specialty mental health tasks (eg, assessment; patient self-management; brief psychosocial intervention; basic psychopharmacology; care coordination) to primary care. Collaborative care can be delivered on a spectrum ranging from coordinated to co-located to integrated care. Although each of these models has some empirical support, integrated care—a multidisciplinary team-based approach—has the strongest evidence base in improving clinical outcomes and patient satisfaction while constraining costs. Challenges to integrated care implementation include insufficient mental health education and insufficient specialist consultative and care coordination support for primary care practitioners; space, time, and reimbursement constraints in the primary care setting; discomfort among primary care practitioners in assuming mental health tasks previously undertaken by specialists; and continuing need for and unavailability of ongoing specialty mental health care for severe and complex cases. Essential supporting activities for effective collaborative care include patient and family engagement, professional education and training, evaluation/demonstration of impact, fiscal sustainability, and advocacy for model dissemination.

Conclusion: Health professionals who are educated in the collaborative care approach can improve access to and quality of behavioral health care for children and adolescents with behavioral health needs.

Key words: collaborative care, coordinated care, co-located care, integrated care

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Mental health (MH) disorders affect one of every 4 to 5 children and adolescents in the United States[1,2] and are a leading contributor worldwide to years of life lived with disability.[3] Because of their high prevalence, early onset, and persistent course with need for ongoing care, MH disorders are among the most expensive of pediatric conditions, with annual treatment costs in the United States estimated at $12 billion.[4] When the societal impact (eg, undereducation; underemployment; overrepresentation in juvenile justice, child welfare, and social service systems) is included in the tally, the annual total cost of MH disorders in children and adolescents in the United States is estimated to approximate $250 billion.[4]

Despite known effective treatments, because of the longstanding pervasive shortage of MH specialists in the United States—notably child and adolescent psychiatrists[5,6]—less than one-half of youth with a diagnosed MH disorder receive treatment.[7] Nationally, approximately 10,000 child and adolescent psychiatrists are in practice, compared to more than 15 million youth in need of child psychiatric expertise, resulting in an average caseload of more than 1,500 patients per child and adolescent psychiatrist.[8] The ratio of child and adolescent psychiatrists per 100,000 youth ranges from 4 in Wyoming to 65 in the District of Columbia, with a national average of 14. Youth in rural areas and areas of socioeconomic disadvantage in particular experience severely limited access to child and adolescent psychiatrist expertise.[9] As a consequence of the MH workforce shortage, children and adolescents who do receive MH services are often cared for in nonspecialized

settings (eg, schools, primary care), where access to and quality of care can be variable,[10] and these youth can encounter decade-long delays in receiving appropriate treatment.[11]

More than one-half of pediatric primary care visits address MH problems,[12] and pediatric primary care clinicians (PCCs) write the majority of psychotropic medication prescriptions for youth.[13] The psychiatric disorders presenting most commonly in pediatric practices are anxiety, depression, and attention-deficit/hyperactivity disorder (ADHD), at least three-fourths of which are mild to moderate in severity.[14-16] In accordance with the 2013 American Academy of Child and Adolescent Psychiatry (AACAP) Presidential Initiative recommendations,[17] if PCCs can become confident and skilled in identifying, assessing, and managing mild to moderate presentations of common psychiatric disorders, then child and adolescent psychiatrists and other scarce specialty MH resources could be conserved for the management of severe, complex, unsafe, and treatment-unresponsive disorders.

Over the past several decades, both the American Academy of Pediatrics (AAP) and AACAP have provided an abundance of tools to support MH care by PCCs.[18] However despite these efforts, PCCs continue to experience considerable challenges managing MH problems in their practices, consistently citing lack of MH training, lack of confidence in their MH knowledge and skills, and administrative barriers (including lack of time and space and inadequate reimbursement).[19]

Collaborative partnerships between PCCs and MH specialists have the potential to attenuate the challenges of managing MH problems in the pediatric setting by providing PCCs with the support needed to deliver MH services in a setting that is individualized, longitudinal, trusting, empowering, family centered, prevention oriented, least restrictive, context aware, experienced in working with specialists, and familiar with chronic care principles (the "primary care advantage").[20] By substantially extending the MH workforce, collaborative partnerships between PCCs and MH specialists can play a key role in closing the gap between the millions of youths needing effective MH services and those receiving them.

In this Update, the history of and rationale for pediatric collaborative MH care is reviewed; collaborative care models and components are defined; research supporting collaborative care is presented; and key activities supporting collaborative care are described. Child and adolescent psychiatrists who acquire the knowledge and skills outlined in this Update can more effectively engage in collaborative partnerships with their pediatric colleagues. In so doing, child and adolescent psychiatrists can expand their clinical expertise to encompass this increasingly important domain of child and adolescent psychiatry.

METHODOLOGY

Initial Search

A medical librarian conducted a systematic search of the literature on collaborative (including integrated) behavioral health in pediatric primary care spanning the period January 1, 2001, to April 7, 2016, using Medline, PsycINFO, and Embase databases. Overall, this search yielded 2,279 citations. In addition to the database search, a number of other sources were used that were deemed of importance to the field, including recommendations of topic experts (n = 170) and organization websites (n = 18), for a total search yield of 2,467 citations. After removing duplicates, 1,962 citations remained. The authors of this Update examined all 1,962 titles and abstracts for topic relevance and English language. Of the 1,962 citations, 776 were identified for full-text review. After removing irrelevant citations (off-topic, irrelevant samples or outcomes, duplicative information), 219 citations remained.

Follow-up Search

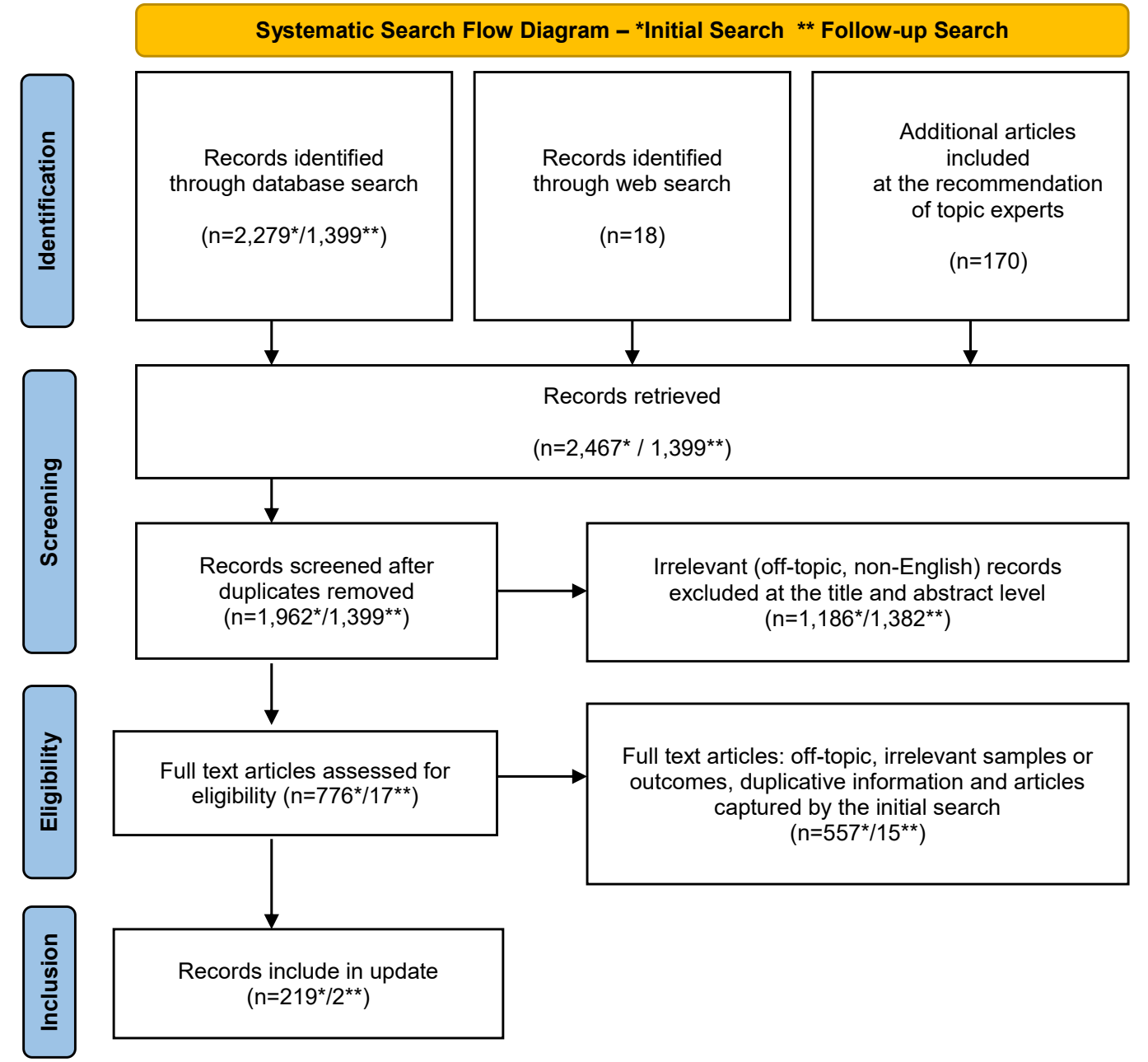
Using the same databases and search terms, a medical librarian conducted a systematic review of the literature spanning the period April 8, 2016, to March 16, 2021. This search yielded 1,399 unduplicated citations. The authors of this Update examined all 1,399 titles and abstracts. After removing previously identified citations, 17 citations remained for full-text review. After removing irrelevant citations (off-topic, irrelevant samples or outcomes, duplicative information), 2 citations remained.

The search methodology is depicted in Figure 1.[21]

DEFINITIONS

- Care coordinator—provides resource and referral support, often a nurse in the pediatric medical home.
- Care manager/behavioral health consultant—provides a broad range of services (case management, care coordination, psychosocial intervention) in the integrated collaborative care model; often a social worker.
- Collaborative care—an overarching term encompassing a 6-level spectrum[22] of collaborative interdisciplinary practice arrangements, ranging from minimal, basic, and close collaboration to full collaboration in an integrated practice (Figure 2).
- Mental health—cognitive, emotional, behavioral, and social well-being.

FIGURE 1 Systematic Search Flow Diagram



Note: *From: Page* et al.[21] *For more information, visit http://www.prisma-statement.org/*

- Mental health specialist—child and adolescent psychiatrist, psychiatric/mental health nurse specialist/practitioner, therapist (eg, clinical psychologist, clinical social worker, MH counselor).
- Pediatric medical home—an approach to providing comprehensive primary care that facilitates partnerships between patients, clinicians, medical staff, and families, based upon a standard of care that is accessible, continuous, comprehensive, collaborative, compassionate, culturally responsive, family centered, and community connected; also known as patient-centered medical home and, more broadly, patient-, family-, and community-centered medical home.
- Primary care clinician—in this Update, a term intended to encompass pediatricians, family physicians, nurse

FIGURE 2 Substance Abuse and Mental Health Services Administration Collaborative Care Spectrum

COORDINATED KEY ELEMENT: COMMUNICATION		CO LOCATED KEY ELEMENT: PHYSICAL PROXIMITY		INTEGRATED KEY ELEMENT: PRACTICE CHANGE	
LEVEL 1 Minimal Collaboration	LEVEL 2 Basic Collaboration at a Distance	LEVEL 3 Basic Collaboration Onsite	LEVEL 4 Close Collaboration Onsite with Some System Integration	LEVEL 5 Close Collaboration Approaching an Integrated Practice	LEVEL 6 Full Collaboration in a Transformed/ Merged Integrated Practice
Behavioral health, primary care and other healthcare providers work:					
In separate facilities, where they:	In separate facilities, where they:	In same facility not necessarily same offices, where they:	In same space within the same facility, where they:	In same space within the same facility (some shared space), where they:	In same space within the same facility, sharing all practice space, where they:
▸▸ Have separate systems ▸▸ Communicate about cases only rarely and under compelling circumstances ▸▸ Communicate, driven by provider need ▸▸ May never meet in person ▸▸ Have limited understanding of each other's roles	▸▸ Have separate systems ▸▸ Communicate periodically about shared patients ▸▸ Communicate, driven by specific patient issues ▸▸ May meet as part of larger community ▸▸ Appreciate each other's roles as resources	▸▸ Have separate systems ▸▸ Communicate regularly about shared patients, by phone or e-mail ▸▸ Collaborate, driven by need for each other's services and more reliable referral ▸▸ Meet occasionally to discuss cases due to close proximity ▸▸ Feel part of a larger yet non-formal team	▸▸ Share some systems, like scheduling or medical records ▸▸ Communicate in person as needed ▸▸ Collaborate, driven by need for consultation and coordinated plans for difficult patients ▸▸ Have regular face-to-face interactions about some patients ▸▸ Have a basic understanding of roles and culture	▸▸ Actively seek system solutions together or develop work-a-rounds ▸▸ Communicate frequently in person ▸▸ Collaborate, driven by desire to be a member of the care team ▸▸ Have regular team meetings to discuss overall patient care and specific patient issues ▸▸ Have an in-depth understanding of roles and culture	▸▸ Have resolved most or all system issues, functioning as one integrated system ▸▸ Communicate consistently at the system, team and individual levels ▸▸ Collaborate, driven by shared concept of team care ▸▸ Have formal and informal meetings to support integrated model of care ▸▸ Have roles and cultures that blur or blend

Note: *From: SAMHSA/HRSA Center for Integrated Health Solutions.*[22] *Available from: https://www.thenationalcouncil.org/wp-content/uploads/2020/01/CIHS_Framework_Final_charts.pdf?daf=375ateTbd56*

practitioners, and physician assistants who provide primary care to infants, children, and adolescents.

HISTORICAL REVIEW

Collaborative MH care arose from the chronic care model—an innovative approach to the management of adults with multiple severe chronic illnesses in the primary care setting. The impetus for this model lay in the excess total medical expenditures incurred by this complex population. Conceptualized by Wagner *et al.*,[23,24] the chronic care model was based upon 6 foundational principles (Table 1[23,24]). Multiple systematic reviews and meta-analyses have demonstrated superior outcomes in patients with chronic severe illness managed under this model.[25]

A parallel development has been the conceptualization of the patient-centered medical home (PCMH) (Table 1).[26] Among the various PCMH models, the model promulgated by the National Committee for Quality Assurance (NCQA) has gained prominence in the United States.[26] Standards and guidelines reflecting the 7 core concepts of this model have been established by NCQA; practices that achieve these standards can earn Recognition status, which can translate into increased practice revenue.[27] The PCMH model has been shown to improve patient-centered access, reduce care fragmentation, better manage chronic conditions, improve patient experience and staff satisfaction, and lower health care costs.[26]

As the substantial contribution of MH problems to the perpetuation of medical illness and the concomitant increase in overall treatment costs became widely recognized, the chronic care and PCMH models were adapted to include the identification and management of MH problems, with an initial focus on depression and anxiety in adult patients.[28] Collaborative MH care in adult primary care is based upon 5 principles similar to those of the chronic care and PCMH models (Table 1).[29] In the classic collaborative model developed for adult populations,[30] multidisciplinary team-based care facilitates the shifting of certain specialty MH tasks (eg, screening, assessment, and follow-up; patient self-management; brief psychosocial

TABLE 1 Foundational Principles of Prominent Patient Care Models

Chronic care principles[23,24]	Patient-centered medical home principles[26]	Collaborative care principles[29]
Team-based management	Team-based care and practice organization	Patient-centered team care
Evidence-based treatments	Initial referral management	Evidence-based care
Support for patient self-management	Knowing and managing your patients	Measurement-based treatment to target
Follow-up	Patient-centered access and continuity	Population-based care
Community partnerships	Plan and manage care	Accountable care
Coordination of care	Coordinating care and care transitions	
	Performance measurement and quality improvement	

intervention; basic psychopharmacology; care coordination) to primary care. In a meta-analysis of 79 randomized controlled trials enrolling more than 24,000 adult participants, this model was shown to significantly outperform usual care in improving both mental (depression, anxiety) and physical health outcomes.[31]

More recently, collaborative MH care has been extended to pediatric primary care, with the aim of providing holistic care for the emotional, behavioral, social, and physical needs of children and adolescents.[32] In a meta-analysis of 31 randomized controlled trials enrolling more than 13,000 pediatric participants,[33] the superiority of various types of collaborative care over usual care was demonstrated, with a 66% probability that a patient receiving some form of collaborative care would have a better MH outcome than a patient receiving usual care.

Despite these important supportive developments, significant barriers remain in the implementation and dissemination of collaborative care models.[19] In this context, there is a critical need to demonstrate the clinical, care experience, and financial benefits of collaborative care to ensure its sustainability.[34]

COLLABORATIVE CARE MODELS

In the widely adopted Substance Abuse and Mental Health Administration (SAMHSA) conceptualization (Figure 2),[22] collaborative care is an overarching term encompassing various types of collaborative MH care models arrayed along a spectrum from coordinated to co-located to integrated care.

In **coordinated care** (characterized by *communication*), MH specialists and PCCs are in separate facilities, use separate systems, have distinct, non-overlapping roles, and communicate periodically as initiated by PCC need. Examples of coordinated care include the referral model, in which the PCC refers a patient to an MH specialist for evaluation and treatment (SAMHSA Level 1: Minimal Collaboration); and the consultation model, in which the PCC requests consultation from an MH specialist to determine the most appropriate type of treatment and level of care (SAMHSA Level 2: Basic Collaboration at a Distance).

In **co-located care** (characterized by *physical proximity*), MH specialists and PCCs are in the same facility (but not necessarily in the same space or with shared systems) and communicate regularly about referrals or coordinated plans for patients. This model in the adult patient population historically has also been known as "primary care behavioral health"[35] or the "dyadic" model (PCC + MH specialist). Examples of co-located care include PCC referrals to MH specialists working in (or in close proximity to) the primary care setting (eg, "internal referrals") (SAMHSA Levels 3 and 4). Some co-located models incorporate some features of integrated care.

In **integrated care** (characterized by *practice change*), MH specialists and PCCs share the same space in the same facility with roles that blur or blend, use the same integrated systems, and communicate frequently at the system, team, and individual levels in the service of holistic care of the patient (SAMHSA Levels 5 and 6). Although these integrated models accommodate multiple configurations of collaborative care components, MH teams, and delivery modalities, the classic model is "triadic" (PCC + care manager [CM]/behavioral health consultant [BHC] + consulting psychiatrist).[30]

Integrated models hold potential over coordinated and co-located models because of the benefits of interprofessional team-based care. According to the Institute of Medicine,[36] patients receive safer, higher-quality care at reduced cost and with higher satisfaction when health care professionals work effectively as a team, communicate productively, and understand each other's roles. The team establishes a common goal and, contributing their individual expertise, work in concert to achieve that goal. Joint decision making is valued, and each team member is empowered to assume leadership on patient care issues appropriate to their expertise. In a consensus monograph, AACAP topic experts further

TABLE 2 Excerpts from American Academy of Pediatrics Mental Health Competencies for Pediatric Primary Care Clinicians, 2019[39]

Communication skills	Promotion and prevention skills	Evidence-based assessment skills	Evidence-based psychosocial intervention skills	Evidence-based psychopharmacological skills	Team-based skills
The ability to build a therapeutic alliance that in turn increases the patient's and family's willingness to work toward improved MH	The ability to provide anticipatory guidance on healthy lifestyles, and to identify and evaluate risk factors to healthy emotional development	The ability to use standardized symptom rating scales to assess symptom severity	The ability to deliver brief interventions for MH symptoms based upon common elements of psychosocial therapies	The ability to deliver first-line, guideline-supported medications as indicated for moderately severe and functionally impairing ADHD, anxiety, and depression	The ability to collaboratively develop a plan of care at the appropriate level of intensity
	The ability to identify emerging symptoms that suggest future MH problems	The ability to apply basic psychiatric diagnostic nosology			The ability to coordinate transition to specialty care as indicated
		The ability to promptly recognize and manage MH emergencies			

Note: *ADHD = attention-deficit/hyperactivity disorder; MH = mental health.*

elaborate this type of interprofessional collaboration with specific real-world examples.[37]

In real-world settings where the structure of collaborative care programs is influenced by the availability of funding, MH specialists, and technical assistance as well as the needs and constraints of the pediatric practices, integrated models may evolve as a hybrid of the 3 collaborative care models described above. For example, the care coordinator/behavioral health consultant function may be integrated, the MH specialist (therapist) may be co-located, and the consulting psychiatrist and other specialists may be coordinated.

COMPONENTS OF COLLABORATIVE CARE

A decade ago, in a seminal AACAP white paper,[38] 4 key components of collaborative MH partnerships with PCCs were elaborated by AACAP topic experts; these components are MH education, psychiatric consultation, care coordination, and direct clinical service.

MH Education

Education conveys the requisite evidence-based MH knowledge and skills to PCCs and other members of a collaborative care team and, as such, is a foundational activity in collaborative MH care. The Institute of Medicine[36] named interprofessional education (IPE) as a key health professional education reform goal critical to improving the overall quality of health care. As recommended in the IOM report, because professional practice increasingly is multidisciplinary with overlap and fusion of professional roles, "all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team."

Because historically, MH care often fell outside the scope of traditional pediatric training and practice, the AAP has articulated specific MH competencies for PCCs (Table 2[39]), which identify the specific targets for MH education in pediatric primary care. MH education for PCCs can be provided in the context of the coordinated care model (eg, by child and adolescent psychiatrists who are participating in statewide child psychiatry consultation programs); the co-located model (eg, by child and adolescent psychiatrists and other MH specialists who work in close proximity to PCCs); and the integrated model (eg, by MH specialist team members including child and adolescent psychiatrist consultants).

Best practices in adult learning[40] are based upon a learning pyramid in which educational technologies are ranked in ascending order in terms of their effectiveness in achieving knowledge retention. In this ranking, didactic lecture occupies the lowest retention rung, followed by

reading, audiovisual presentations, demonstrations, discussion, practice doing, and teaching others. Educational programs inclusive of several of these modalities may have greater likelihood of retaining interest and resulting in practice change compared to single modalities.

Education ideally would comprise more than single-exposure training models or the simple provision of information, as educational research[41,42] has demonstrated the ineffectiveness of these methods in achieving practitioner behavior change. Ongoing post-education contact (eg, through ongoing coaching or consultation) appears to be important, as it has been estimated that 20 to 25 implementation attempts are required to achieve consistent professional behavior change, and newly learned skills and behavior are particularly fragile.

Adult learners come to new learning situations armed with attitudes and prior knowledge that frame their expectations. The ideal balance appears to be introducing skills (eg, the AAP MH competencies) that are different enough from existing practices to justify the training effort. Providers with the lowest competence may be least likely to engage in or benefit from trainings designed to improve their practice, suggesting the importance of motivational strategies. To build motivation, specific high-concern or low-performance areas can be identified to build provider commitment to change. Training is unlikely to be successful unless clear problems indicate that existing practices are inadequate. Pre-training interventions to provide data-based information about existing practices (eg, MH screening rates) and to boost provider motivation may be helpful in this regard.

To date, published evidence supporting the effectiveness of the educational component of collaborative MH, as disaggregated from other collaborative care components, is sparse, and is broadly summarized in Table 3.[43-52] Details of each educational program can be found in the corresponding references.

To provide greater access to MH education in primary care, Web-based trainings and on-line resources have become increasingly available on a tuition or no-cost basis.[53-58] Although most of these sites are directed at adult populations, both the AAP and AACAP provide pediatric-specific resources,[59-61] as does Project Echo[62] and some statewide child psychiatry consultation program websites.[63-65]

Psychiatric Consultation

Consultation is the process whereby child and adolescent psychiatrists and other MH specialists provide clinical guidance to non-psychiatric practitioners about the management of the MH problems of their patients. When co-occurring with an educational program, consultation as a form of experiential learning can extend and support the knowledge acquired in the educational program to the management of individual patients and, in so doing, can amplify the impact of both.[66]

Consultation may encompass level of care decisions, diagnostic clarification or confirmation, clinical formulation, treatment and referral options, psychotropic medication guidance, and guidance about preventive and therapeutic psychosocial interventions. Although primary care is the focus of this Update, consultation also can be provided to pediatric specialty care physicians.[67]

Consultation may be either indirect, direct, or a combination of the two. Indirect in-person consultation refers to the PCC consulting face-to-face with the MH specialist, who does not directly evaluate the patient (eg, as in an informal "curbside" hallway consultation or formal case conferences [collaborative office rounds]). Indirect remote consultation refers to the PCC consulting via technology-assisted means (eg, telephone, televideo) with an off-site MH specialist, who does not directly evaluate the patient. Indirect consultations typically culminate in general suggestions for patient management for the requesting PCC.

Direct in-person consultation refers to the patient engaging in a PCC-requested face-to-face consultation with an off-site MH specialist (eg, patient evaluation in an MH specialty clinic). Direct remote consultation refers to the patient having a PCC-requested technology-assisted consultation with an off-site MH specialist (eg, patient evaluation via telepsychiatry). Direct consultations typically culminate in a patient-specific report of clinical findings and management suggestions for the requesting PCC.

As noted in a recent review,[68] each of these consultation models has advantages and disadvantages. For example, although direct remote and in-person consultation provide precise diagnoses and detailed personalized advice for the PCC about specific patients, the consultation and requisite documentation and follow-up are time consuming; not all child and adolescent psychiatrists are trained and comfortable in the consultative role; there is some degree of inconvenience for the patient and family to schedule and complete the appointment; and the cost of the consultation may not be covered by the family's insurance plan. Although indirect remote and in-person consultation provides quick convenient access for the PCC to MH specialist expertise, diagnostic precision and comprehensive, appropriate treatment advice are limited by the information conveyed by the PCC about the patient, and the consultation may not be reimbursable. In both types of consultation, the PCC is expected to implement the treatment guidance, which may be challenging for PCCs with limited MH expertise and limited resource support.

TABLE 3 Published Findings From Educational Programs for Primary Care Practitioners Targeting Common Psychiatric Disorders (≥50 Participants)

Educational program/location	Study design	Participants	Focus and structure	Key outcomes
Practitioner Training in Child and Adolescent Psychiatry (PTCAP), Ontario, Canada[43]	Cluster randomized trial	76 rural PCCs	Anxiety, depression, ADHD, disruptive behavior 8-h in-person course	Compared to controls, participants had greater confidence in managing diagnosable MH conditions, managing general MH concerns, making necessary referrals, and obtaining consults
Communication Skills Training, Maryland[44]	Cluster-randomized trial	58 PCCs	Communication skills	Compared to control parents, participant parents had greater MH symptom reduction
Child and Adolescent Psychiatry Primary Care (CAP PC), New York[45-49]	Post-test; qualitative survey; pre/post-test	927 PCCs in statewide child psychiatry consultation program	ADHD, depression, anxiety, aggression 16-h in-person "mini-fellowship" with 12-h case-based conference calls Alternative 5-h in-person "core training" CME credits offered	Participants reported high satisfaction with program Participation was associated with greater confidence about interacting with families about MH problems, assessing problems, prescribing medications, and developing treatment plans Participation was associated with greater psychotropic prescribing
Building Mental Wellness (BMW), Ohio[50]	Pre/post-test	122 PCCs in 29 school-based health centers and pediatric practices	MH promotion; MH screening; anxiety, depression, ADHD, antipsychotic medications; community linkages; organizational context improvement 12-h in-person course; 11 online course modules CME credits offered	Participants increased MH confidence Participants significantly increased MH visits Participants increased prescribing for patients with ADHD and decreased prescribing of antipsychotics Families reported high satisfaction with care

(*continued*)

TABLE 3 Continued

Educational program/location	Study design	Participants	Focus and structure	Key outcomes
ADHD Collaborative, Ohio[51]	Pre/post-test	84 PCCs in 19 practices	ADHD treatment guidelines 5-h in-person and office-based training	Participants significantly increased use of initial and follow-up symptom rating scales, use of written care management plans, follow-up contact within 14 days after medication initiation, and follow-up visit within 6 wk of medication initiation
Behavioral Health Education in Pediatric Primary Care (BHE-PPC) Core Course, Massachusetts[52]	Post-test	81 PCCs in a statewide pediatric network affiliated with academic medical center	Core course: stepped care model, MH screening, guided self-management, anxiety, depression, ADHD, disruptive behavior, stress/trauma-related disorders, suicide 16-h in-person and televideo course with on-going bi-monthly televideo case discussion series Clinical manual for PCCs Guided self-management cognitive-behavioral toolkit for patients and families CME credits offered	Participants reported acquiring new knowledge about symptom rating scales, guided self-management, psychotherapy, psychotropic medications, and level-of-care decision making Participants reported acquiring greater self-efficacy in using symptom rating scales, prescribing psychotropic medications, making level-of-care decisions, and managing MH problems Participant MH self-efficacy was associated with attendance at the educational program Participants reported that the educational program improved the quality of their MH care

Note: *ADHD = attention-deficit/hyperactivity disorder; CME = continuing medical education; MH = mental health; PCC = primary care clinician.*

Irrespective of the model of consultation, timely convenient access and timely practical feedback are deemed essential for the success of the consultative process.[37,38] Responses to PCC indirect remote consultation requests are best provided within a time frame (ideally the same day) that allows PCCs to efficiently respond to the needs of their patients. Because PCCs see high daily patient volumes, their workflow requires efficient use of their decision making and time, and this affects both when and how consultations can occur.

Consultation can be facilitated by systems for easily requested/scheduled consultations, electronic communication convenient to the PCC, hot- or warm-line–like access to the consultant, and/or third party–assisted consultations. Arrangements for consultations should include the days and hours available; the individual(s) who will be working with the PCC; the manner of availability; the documentation requirements for the patient record; and the procedures for routine, urgent, and emergent requests.

Given the significant national child and adolescent psychiatrist workforce shortage, child and adolescent psychiatrists providing indirect and direct remote psychiatric consultations to large geographic areas of PCCs has emerged as the predominant collaborative care model. There are now 45 states and the District of Columbia providing some level of consultation to PCCs; these programs have come to be known as "child psychiatry access programs" (CPAPs).[69] Besides providing same-day (some same-hour) telephonic responses, many of these programs offer direct face-to-face consultation and resource and referral assistance, and some offer an educational component delivered through print, electronic, in-person, and interactive televideo modalities. Support for these programs derives from multiple funding streams, including state legislatures, state agencies, public and commercial payers, and federal and private grants.

Despite the exponential growth in CPAP programs, recently fueled by large federal grants to 45 states and territories,[70] published rigorous evidence supporting their effectiveness is limited and primarily accrues from studies among adults.[71] Although one research letter suggested a favorable ecological association between the launch of CPAP programs and MH service use,[72] 3 recent reviews of CPAPs[68,73,74] concluded that evaluations of CPAPs have been largely descriptive in nature, focusing primarily on program use and provider satisfaction, and that although these findings are encouraging, additional research is needed to demonstrate the impact of these programs on patients, families, and systems of care (eg, associations between implementation of the Washington State CPAP and a decrease in antipsychotic prescribing[75] and an increase in BH visits for children in foster care[76]). A broad summary of published CPAP outcomes is presented in Table 4[45-49,75-96]; details of the programs can be found in the corresponding references and at AACAP and National Network of Child Psychiatry Access Programs websites.[69,97]

CARE COORDINATION

Care coordination is a "cross-cutting systems intervention"[98] that comprises the organization of patient care activities between a patient and the patient's care team to facilitate the appropriate delivery of health care services. Organizing care involves the marshalling of personnel and other resources needed to carry out all required patient care activities and is predicated upon free exchange of information among care team members responsible for different aspects of care.[99] In a busy pediatric practice, care coordination fosters improved productivity and efficiency by transferring the mechanics of multiple routine tasks to care coordinators rather than physicians. According to an AAP Policy Statement,[100] successful care coordination considers the entire continuum of health, education, early childcare, early intervention, nutrition, mental/behavioral/emotional health, community partnerships, and social services in the context of language and culture to improve the quality of care for children.[101]

In a national survey of children's health, approximately 40% of parents of children with MH conditions reported their child needed care coordination to obtain recommended services, and of those, approximately 40% of parents reported that their child's needs were unmet.[102] Children experiencing a comorbid physical condition and children exposed to family stress and adverse socioeconomic circumstances may be less likely to have their needs met.

Care coordination can be provided across the spectrum of collaborative care models and can play a key role in navigating the local MH and other child-serving services ecosystem. In coordinated models such as CPAPs, where specialty MH and PCCs do not share locations or systems, care coordinators can ensure that requests and documents pertaining to the consultation are communicated to the PCC and can identify requested MH resources. In some co-located models, a care coordinator may be available to facilitate internal referral to MH specialists or external referral for services unavailable in the practice. In integrated models, the care manager is a key member of the integrated care team, with a broad list of responsibilities spanning traditional care coordination as well as care management and psychosocial interventions (Table 5).

Several national organizations provide standards for care coordination structure, process, and outcomes and provide useful resources and tools. AHRQ has developed an Atlas[111]

designed to foster care coordination in the primary care setting.[112] The Center for Advancing Integrated Mental Health Solutions (AIMS) also has a number of tools that can be used to implement the more expansive type of care coordination/management seen in triadic collaborative care models.[113] The US Maternal and Child Health Bureau has funded the development of a Pediatric Care Coordination Curriculum that is being used in several state programs and delivery systems to create care coordination capacity.[114]

Families who receive general care coordination within the PCMH report better family−provider relations and family and child outcomes, including lower out-of-pocket expenses, less interruption of employment, and fewer days of missed school.[115] Care coordination also has been associated with decreased unnecessary office and emergency department visits, reduced unplanned hospitalizations and ED visits, and enhanced family satisfaction.[116,117] Evidence suggests that the ultimate utility of care coordination is dependent on the specificity to the target concern, suggesting the importance of having care coordinators in primary care with MH expertise.[99]

Care coordination is not inexpensive, with estimates for the annual cost in a community-based, general pediatric practice ranging from approximately $20,000 to $35,000.[118] The costs of care coordination are not directly reimbursable under many traditional fee-for-service models, despite evidence of reductions in health care costs.[118] Therefore, mechanisms to finance non-reimbursable care coordination activities must be developed; the care coordination Current Procedural Technology (CPT) codes demonstrate some progress towards fiscal sustainability.[119]

DIRECT CLINICAL SERVICE

The structure and delivery of direct clinical MH service in pediatric primary care can be guided by the shared principles of prominent patient care models as outlined in Table 1. Overarching key principles include team-based care, evidence-based treatments, measurement-based treatment follow-up, and ancillary support via coordination of care and community partnerships. Clinical MH service based upon at least some of these principles can be provided across the SAMHSA spectrum of collaborative care models.[22] Each of these types of clinical service models has advantages and disadvantages.[120]

Coordinated Clinical Service Models

In coordinated care Level 1 (the referral model), clinical service is provided by an MH specialist in the MH setting. Although this model ideally would provide services at the highest level of MH expertise, it is greatly challenged by the severe and pervasive shortage and maldistribution of MH specialists. Consequently, patients with severe mental illness may encounter unacceptably long waits for services while experiencing unnecessary clinical deterioration with concomitant increased demand for intensive specialty services. Moreover, a large proportion of specialty referrals are for cases of mild to moderate severity, which would preferably be managed by non-specialist pediatric providers so that MH specialists could be conserved for the management of severe and complex cases. Referred clinical service also faces challenges created by poor interprofessional communication (eg, untimely evaluation and treatment reports), uneven insurance coverage and the associated tendency for MH specialists to avoid insurance empanelment, limited availability of care coordination services, compromised continuity of care, and the costs, inconvenience, and stigma attached to receiving MH services in the specialty MH setting. As a result of these challenges, a substantial proportion of MH referrals are not completed in a timely manner or are never completed.[121]

In coordinated Level 2 (the consultation model), clinical service, if included in the model, generally is restricted to a time-limited period of "bridge" or "co-managed" care by the consultant. Although they fill a gap between primary and specialty care by expanding ready access to MH specialists, such arrangements are challenged by insufficient availability of MH specialists who engage in consultative work. The relatively small number of available consultants (eg, in the context of CPAPs) also can be legitimately concerned about rapidly exceeding their available clinical capacity because of limitations in their ability to effect appropriate dispositions to other MH specialists for ongoing care.

Co-located Clinical Service Models. In co-located Levels 3 and 4 ("internal referrals"), access to MH specialists is simplified, interprofessional communication is enhanced, and patients receive care at a high level of expertise and experience at least some degree of team care. Some challenges of this model[122] include the limited number of MH clinicians interested and trained in working in the primary care setting; high demand resulting in rapid filling of patient caseloads and subsequent inability to accept new patients; use of "warm handoffs" and other strategies to increase referral completion that may be non-reimbursable and may interfere with MH specialist historic workways (uninterrupted lengthy visits); limited opportunities for true team-based care, thereby perpetuating interprofessional "silos"; limited ability to provide non-reimbursable care coordination and preventive services; and uneven insurance coverage

TABLE 4 Published Findings From Statewide Child Psychiatry Access Programs

Consultation program/ location	Study design	Enrollment/adoption	Services	Key outcomes
Project TEACH, New York[45-49]	Periodic qualitative and quantitative surveys	3,000 PCCs 78% of registered PCCs used consultation Most common reasons for consultation: medication question, resource/ referral request	Real-time child and adolescent psychiatrist telephone consultation; scheduled face-to-face or televideo child and adolescent psychiatrist consultation; resource and referral services; education (multiple modalities, eg, teleconferences, newsletters)	Consultation was helpful to participants Consultation increased participants' knowledge, skills, and confidence to provide MH care Participants would recommend the program to other PCCs Satisfaction with the program was high High-volume callers were more likely to have cared for patients with MH problems, to have participated in MH education, and to feel more comfortable managing cases on their own
Massachusetts Child Psychiatry Access Program (MCPAP), Massachusetts[77-88]	Periodic qualitative and quantitative surveys	3,000 PCCs 79% of registered PCCs used consultation Most common reasons for consultation: medication question, resource/ referral request Most common disposition post-consultation: remained with PCC for ongoing management	Real-time child and adolescent psychiatrist telephone consultation; scheduled face-to-face and televideo child and adolescent psychiatrist consultation; resource and referral services; education (multiple modalities, eg, teleconferences, newsletters, care pathways)	On average, 5.2 calls per 1,000 patients per year Consultations were useful to participants Participants were able to receive consultation in a timely manner Participants had more interest in MH and were more likely to screen for MH problems than PCCs in a state without a consultation program Participants were comfortable managing ADHD, depression, and anxiety Participants were usually able to meet the needs of children with psychiatric problems Participants reported greater satisfaction with MCPAP services than with other MH resources (eg, community clinicians, development assessment centers, schools) Parents were highly satisfied with consultation No medical malpractice suits related to consultation

(*continued*)

TABLE 4 Continued

Consultation program/ location	Study design	Enrollment/adoption	Services	Key outcomes
Partnership Access Line (PAL), Washington[75,76,89]	Periodic surveys, Medicaid claims data	1,000 PCCs in Washington, later extended to Wyoming and Alaska 61% of registered PCCs used consultation Most common reasons for consultation: medication question, diagnostic question Most common disposition post-consultation: remained with PCC for ongoing management	Real-time child and adolescent psychiatrist telephone consultation; scheduled televideo child and adolescent psychiatrist consultation; resource and referral services; education (multiple modalities, eg, in-person conferences, clinical manual)	Participants reported high satisfaction with the program Consultation was associated with increased participant prescribing for ADHD and antidepressant medications, decreased participant prescribing for preschool-aged children, decreased participant prescribing of high-dose psychotropic medication and antipsychotic medication, and increased maintenance of high-need children in community-based treatment
Behavioral Health Integration in Pediatric Primary Care (BHIPP), Maryland[90-92]	Program record reviews	700 PCCs Most common reasons for consultation: request for co-located social work consultation, consultation with child and adolescent psychiatrist, resource and referral services	Real-time child and adolescent psychiatrist telephone consultation; one-time televideo child and adolescent psychiatrist evaluation;resource and referral services; co-located social work consultation; education (multiple modalities, eg, in-person conferences, webinars, newsletters)	On average, 6.8 calls in 7 years Rural participants were more likely to request psychiatry consultation Participants requested psychiatrist consultations for moderate to severe externalizing cases and social work services for mild internalizing cases; 67% of severe cases were managed by PCC alone; 33% of severe cases were co-managed by PCC and MH specialist
Child Collaborative Care Program (MC3), Michigan[93,94]	Periodic surveys	2,000 PCCs Most common reasons for consultation: request for co-located social work services, diagnostic question Most common disposition post-consultation: referral for co-located social work services	Real-time child and adolescent psychiatrist telephone consultation; scheduled child and adolescent psychiatrist televideo consultation; group televideo case conferences; partnerships with regional community behavioral health consultants; resource and referral services	Participants reported confidence in effectively treating behavior problems Participants reported high satisfaction with the program

(*continued*)

TABLE 4 Continued

Consultation program/ location	Study design	Enrollment/adoption	Services	Key outcomes
Psychiatric Assistance Line (PAL), Minnesota[95,96]	Periodic surveys	300 PCCs Most common reasons for consultation: direct service request, diagnostic question Most common disposition post-consultation: remained with PCC for ongoing management	Real-time child and adolescent psychiatrist telephone consultation; resource and referral services; education	Consultation was helpful to participants Consultation increased participants' MH confidence Participants reported that consultation allowed them to provide better care for their patients Participants reported that their patient improved as a direct result of the consultation

ADHD = attention-deficit/hyperactivity disorder; MH = mental health; PCC = primary care clinician.

and, to some degree, the same patient/family cost, inconvenience, and stigma as experienced in the external referral model. Moreover, the benefits of co-located models appear to be modest in both adult[103,123] and pediatric[104-106,124] populations.

Integrated Clinical Service Models. In integrated Levels 5 and 6 (the integrated model), patients and families experience seamless holistic clinical service, in which their physical, social, emotional, and instrumental needs are addressed by a closely collaborating interprofessional team, each working at the highest level of their professional expertise. Although it conveys substantial advantages to the patient and family and is supported by a substantial rigorous evidence base in both adult and pediatric patient populations,[33,125-132] integrated care also faces significant challenges,[132] including complex practice re-design requiring staff re-deployment and operational training, limited appropriate space for psychosocial interventions, billing complexities, inadequate reimbursement for team-based activities, limited time for interprofessional communication, limited MH specialist workforce interested and trained in this model of care, discomfort among PCCs in assuming MH tasks previously undertaken by specialists, limited ability to preventively address emerging MH concerns due to lack of insurance reimbursement for sub-diagnostic presentations, and continuing need for and unavailability of ongoing specialty MH care for severe and complex cases.

Although the structure of integrated collaborative models varies, the basic structure in pediatric primary care (as derived from the adult triadic model[30]) comprises an on-site PCC as "team captain," an on-site MH care manager (CM)/behavioral health consultant (BHC), and an off-site consulting child and adolescent psychiatrist. The typical roles of each team member are outlined in Table 5. Brown and Wissow[133] have proposed a framework for training PCCs and ancillary office staff in MH skills, and Lu *et al.*[134] have outlined key MH skills needed by the team MH specialist. In this model, the primary role of the child and adolescent psychiatrist is to meet regularly with the CM/BHC (and PCC as indicated) to discuss the registry of patients with identified MH problems and, if indicated, suggest escalation of care ("stepped care") through an evidence-based algorithm of nonpharmacologic and/or pharmacologic treatments. Other models of integrative care involve more extensive interprofessional collaboration between clinicians from multiple disciplines, including child and adolescent psychiatrists, clinical nurse specialists/psychiatric nurse practitioners, psychologists, social workers/counselors, and pharmacists, thereby

substantially enriching the clinical environment in primary care.

Stepped Care Framework. In the stepped care model (example in Figure 3[135]), the intensity of treatment is determined by the severity of the clinical presentation as assessed through standardized screening tools and focused symptom rating scales, and through focused clinical interview. For subclinical symptom presentations (concerning but not problematic), a range of preventive interventions can be used by the PCC and/or CM/BHC, including healthy lifestyle guidance (eg, nutrition, exercise, sleep, stress reduction) as the foundation for MH and wellness, and guided self-management for patients and families who wish to learn and practice MH skills on their own with PCC/CM/BHC guidance and follow-up. For mild to moderate symptom presentations or subclinical presentations unresponsive to preventive treatment, treatment can be deployed in the primary care setting by the PCC (provision of first-line psychopharmacology as indicated) and by the CM/BHC (brief focused psychosocial intervention). For severe/complex symptom presentations or mild/moderate presentations unresponsive to primary care treatment, CM/BHC-assisted referral to specialty care can be undertaken, ideally with return to the PCC after stabilization for ongoing care.

MH Screening. Because of the high prevalence of undetected MH problems in pediatric settings, screening for social/emotional/behavioral concerns has been recommended by the AAP[136] and can serve as the entry point for the stepped care model. Screening can increase the efficiency and comprehensiveness of the clinical encounter and is increasingly linked to value-based care through accountable care organizations and PCMHs. The AAP has outlined specific screening implementation steps for pediatric practices,[136] has described some of the challenges associated with MH screening, and has suggested strategies to overcome those challenges, including transforming paper-and-pen screening methods into Web-based and smartphone versions, and automated scoring of screening measures with decision support embedded into the electronic medical record (EMR). In a systematic review, Wissow *et al.*[137] examined details of the screening process in primary care and suggested a number of strategies for improvement, including better engagement of patients and parents, better explanation of findings, and better follow-up for positive screens. Parkhurst and Friedland[138] have suggested appropriate tools for different screening situations and advantages for sequential use of universal and targeted instruments in increasing screening accuracy.

Self-Management of Subclinical Concerns. Guided self-management provides a method for preventively addressing subclinical yet concerning symptoms identified on a universal MH screen. These concerns (eg, sad mood, worries and fears, difficulties with executive functions) can be addressed by the PCC and/or CM/BHC through healthy lifestyle guidance as well as guided self-management. Guided self-management is designed to help the patient and family develop MH skills that may help prevent the escalation of MH concerns to full-blown disorders. These cross-diagnostic skills, derived from common elements of cognitive-behavioral therapy, executive skills training, and behavioral parent training, can be fostered in brief self-guided interventions that can be matched to the patient's needs. Skills information can be provided via brochures, books, websites, and apps. Because of frequently experienced access barriers to psychosocial intervention and the potential for prevention or early intervention, guided self-management is an appealing intervention with a growing evidence base.[139]

Brief Psychosocial Intervention. Brief psychosocial interventions can comprise both patient/family engagement through the common *factors* approach, and patient care through the common *elements* approach. Common factors theory proposes that the interpersonal aspects of therapy are highly associated with favorable treatment outcomes. The common factors approach, incorporated into AAP MH competencies and clinical process algorithms,[140] is summarized in the mnemonic HELP (build a therapeutic alliance): Hope, Empathy, Language/Loyalty, Permission/Partnership/Plan. Emerging evidence suggests that PCCs' deployment of these factors in clinical encounters may improve patient engagement as well as enhance treatment outcomes.[107]

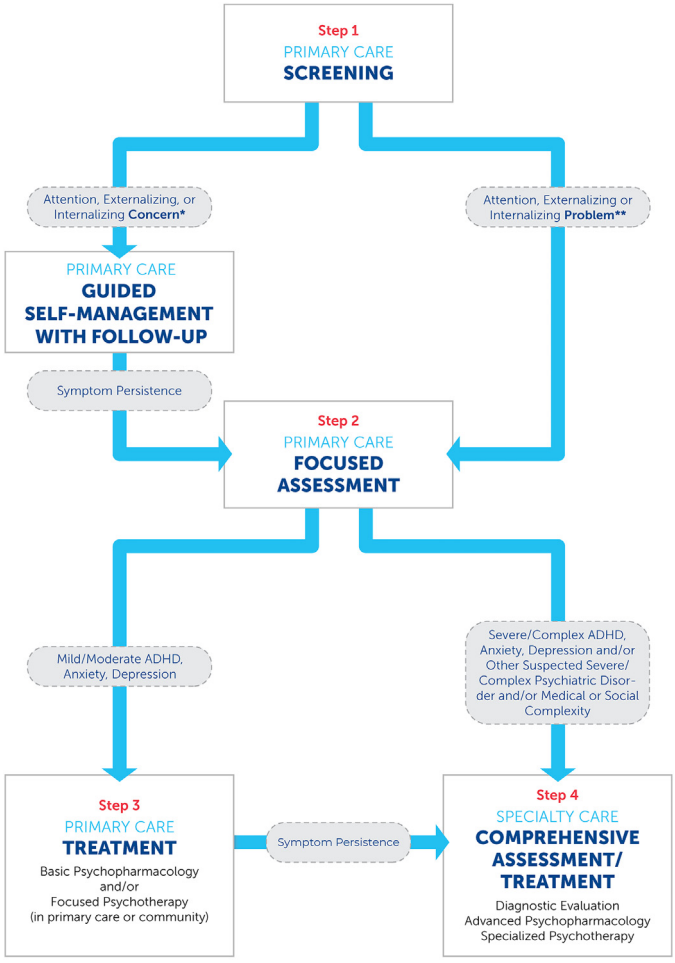
Common elements theory proposes that certain psychotherapeutic elements shown to be effective for the treatment of discrete psychiatric disorders are applicable across multiple diagnoses. These common elements include, for example, activity scheduling, relaxation, cognitive coping, problem solving, and exposure from cognitive-behavioral therapy; parent praise, parent limit setting, self-monitoring, tangible rewards, and natural consequences from behavioral parent training; and planning, organization, and time management from executive function training. These elements are sufficiently simple and brief to be effectively taught to patients and parents in groups or individually by PCCs, co-located or integrated MH specialists, or integrated CMs/BHCs. Considerable evidence demonstrates the effectiveness of this approach in reducing symptom severity and functional impairment.[108-110] According to surveyed PCCs, the feasibility of common elements and other psychosocial interventions in the primary

TABLE 5 Roles of Integrated Mental Health Care Team Members

Team members	Typical roles
Primary care clinician (on-site)	• Conduct universal MH screening • Conduct (or triage to CM/BHC for) initial MH assessment • Foster initial patient/family engagement • Meet with CM/BHC to consider diagnoses, clinical formulation, and treatment plan • Meet with CM/BHC, patient, and family to collaboratively develop treatment plan and define roles • Prescribe first-line medications for anxiety, depression, and ADHD as indicated[149-151] • Meet periodically with CM/BHC to discuss patient's treatment progress • Meet with CM/BHC, patient, and family as indicated to collaboratively adjust treatment plan • Consider need for child and adolescent psychiatrist consultation and treatment escalation if indicated by lack of treatment progress • Prescribe second-line medications for anxiety, depression, and ADHD and medications for other psychiatric disorders in consultation with child and adolescent psychiatrists as indicated • Meet with CM/BHC to consider need for specialty referral • Meet with CM/BHC to consider timing of treatment discontinuation as indicated • Meet with CM BHC to consider plan for post-treatment discontinuation follow-up
Care manager / behavioral health consultant (on-site)	Care Coordination • Create a registry of patients identified through MH screening • Conduct focused MH assessment, including focused symptom rating scales, focused clinical interview, assessment of psychosocial needs (eg, social determinants of health), assessment of language/cultural issues, strengths; enter data into registry • Meet with PCC to consider diagnoses, clinical formulation, and treatment plan • Meet with PCC, patient, and family to collaboratively develop treatment plan and define roles • Arrange for psychosocial resources as indicated • Arrange for services from child-serving entities as indicated (eg, school, vocational, community recreational, child welfare, juvenile justice) • Assess patient- and family-reported barriers to care and problem-solve solutions • Assess patient's response to treatment through periodic administration of focused symptom rating scales to patient, parents, and teachers • Meet periodically with PCC to discuss patient's treatment progress • Meet with PCC, patient, and family as indicated to collaboratively adjust treatment plan • Meet with PCC to consider need for specialty referral • Support and facilitate all care transitions across entities and time • Meet with PCC to consider timing of treatment discontinuation as indicated • Meet with PCC to consider plan for post-treatment discontinuation follow-up • Use health information technology for information sharing and care coordination Psychotherapeutic intervention • Develop therapeutic alliance with patient and family ○ Consider common factors approach[107] • Provide brief, cross-diagnostic psychotherapy ○ Consider common elements approach[108-110] • Provide problem-solving for challenging psychosocial situations • Provide support for coping with chronic medical conditions
Child and adolescent psychiatrist (off-site)	• Provide MH education to integrated team • Meet periodically with CM/BHC to review patient registry ○ Provide diagnostic clarification, review of clinical formulation and treatment plan, review of treatment progress and impediments ○ Suggest psychosocial/psychotherapeutic interventions as indicated ○ Suggest pharmacologic interventions as indicated ○ Suggest other specialty referrals as indicated
Other specialist consultants (off-site)	• Conduct additional physical, developmental, cognitive, social/ emotional/behavioral, academic, family assessments as indicated

***Note**: ADHD = attention-deficit/hyperactivity disorder; BHC = behavioral health consultant; CM = care manager; MH = mental health; PCC = primary care clinician.*

FIGURE 3 Example of a Stepped Care Model for Pediatric Primary Care



*PSC-17 sub-scale and/or total scores are below or at cut-point but parent or patient expresses concern about the symptom
**PCS-17 sub-scale and/or total scores are above cut-point

Note: From: Walter HJ, Vernacchio L, Correa ET, et al.[135]

care setting is enhanced if the intervention is brief, applicable to multiple disorders, easy to use and learn, and appropriate for families from diverse cultures.[141] Increasing interest is directed at non-traditional delivery mechanisms for psychosocial interventions, such as bibliotherapy,[142] Web-based instruction,[143-145] or brief PCC guidance with handouts[146]; the evidence base supporting alternative strategies is growing.[147,148]

Psychopharmacologic Treatment. In primary care, psychopharmacologic interventions typically prioritize first-line, guideline-congruent[149-151] medications for anxiety and depression (eg, selective serotonin reuptake inhibitors [SSRIs]) and ADHD (eg, stimulants, α-agonists, atomoxetine). Because familiarity with these medications varies across PCCs, simple algorithms depicting key prescribing information that can be embedded into the EMR can facilitate safe and effective prescribing. In the stepped care model, PCCs ideally defer prescription of second- and third-line medications and first-line medications for severe disorders (eg, bipolar, psychotic) to child and adolescent psychiatrists, or prescribe these medications in consultation with child and adolescent psychiatrists.

Implementation of Integrated Clinical Service. More than a decade ago, Foy and colleagues published a series of articles pertaining to the implementation of MH services in pediatric primary care. One article describes a detailed clinical process for delivering MH services in primary care, including promoting social–emotional health, identifying MH and substance use concerns, engaging the family, and providing early intervention in primary care, as well as managing identified social–emotional, MH, or substance use concerns.[152] Companion articles describe strategies for preparing a community for the delivery of MH services in primary care, including the development of a population perspective and fostering close relationships with child-serving agencies,[153] and strategies for preparing a primary care practice, including applying the chronic care model to children with MH problems and transforming the primary care practice to support integrated care.[154]

More recently, an entire issue of the *Child and Adolescent Psychiatric Clinics of North America*[155] was devoted to multiple aspects of collaborative care implementation, including teamwork, interprofessional education, the role of the child and adolescent psychiatrist, collaboration with schools, engaging primary care clinicians, MH screening, and collaboration with psychologists, advanced practice psychiatric nurses, and pharmacists. The American Medical Association, collaborating with multiple professional societies including AACAP and AAP, recently published a Behavioral Health Integration Compendium that provides detailed guidance around initiating and implementing MH integration in medical settings.[156] Wissow *et al.* summarize specific steps toward achieving the goal of practice integration in pediatric primary care.[32] A recent meta-analysis[130] revealed key components of effective integrated models in pediatric primary care, including population-based care, measurement-based care, and delivery of evidence-based MH services, which can usefully guide the development of new programs.

Effectiveness of Integrated Clinical Service. Integrated collaborative care models of clinical MH service have an emerging rigorous evidence base in pediatric populations. A meta-analysis of more than 13,000 patients enrolled in 31 randomized controlled trials of pediatric collaborative care[33] demonstrated modestly superior clinical outcomes for collaborative care vs usual care (overall effect size: $d = 0.32$, $p < .001$). When triadic models were examined separately from other models, the effect size compared to usual care

was considerably larger ($d = 0.63$, $p = .001$). Other subgroup analyses demonstrated that effects were larger for treatment ($d = 0.42$, $p < .001$) than for prevention studies ($d = 0.07$, $p = .49$), and for MH treatment ($d = 0.51$, $p < .001$) than for substance abuse treatment studies ($d = 0.17$, $p = .35$). Similar favorable findings have been reported from a more recent systematic review.[157] Specific outcomes of other types of collaborative models can also be found in the paper by Asarnow *et al.*[33]

Another recent systematic review[158] examined the external validity of pediatric integrated care trials, demonstrating that significant research gaps remain in the extent to which such programs reach and engage target recipients, which factors have an impact on adoption and implementation by clinicians, how fidelity can be maintained over time, and cost-effectiveness.

The findings from the triadic models included in the Asarnow *et al.* meta-analysis[33] are summarized in Table 6.[159-165] Also included in Table 6[52,135,166-171] are the findings from published quality improvement projects examining broader dissemination of integrated MH care in real-world settings; these studies are important in their demonstration of increased access to MH services in community-based pediatric practices.

KEY SUPPORTING ACTIVITIES IN PEDIATRIC COLLABORATIVE CARE

Collaborative MH care depends upon a set of key supporting activities for success and sustainability. These activities include patient and family engagement, professional education and training, evaluation/demonstration of impact, fiscal sustainability, and advocacy.

Patient and Family Engagement in Collaborative Care

The success of collaborative MH care in pediatrics depends to a large extent on the degree to which patients and families are engaged in the evaluation and treatment process. Factors associated with reduced engagement include poverty, minority status, higher levels of parent and family stress, and single-parent status, whereas factors associated with increased engagement include a diagnosable psychiatric disorder and functional impairment.[172]

Engagement has been defined as the process of progressing from the identification of a child's MH difficulty to the child receiving appropriate MH care. Pediatric patients and families can be hesitant to seek care in a specialty MH treatment setting; as such, primary care can be a more "approachable" entryway into MH care. PCCs, child and adolescent psychiatrists, and other MH specialists in collaborative MH care partnerships can work together to encourage and support patients and their families to be active participants in treatment. Information regarding the MH problem, including options and goals for treatment, can be delivered in an accessible manner that can be easily understood by the family and used as an ongoing treatment framework by PCCs. In addition to providing this information verbally, engaging written instructional materials can be shared regularly with patients and families, along with informational flyers posted prominently in offices, as written information is more likely to be retained over time. Recorded telephone messages for families while "on hold" can also address and destigmatize MH concerns. When providing education and written materials, language, cultural factors, and health literacy considerations are paramount. Maintaining engagement over time can be facilitated by frequent family contact through, for example, telephone or electronic screenings and check-ins.

A relatively new strategy for patient/family engagement adapted from the chronic care model is the involvement of a "family partner" to provide "family navigation" services within the care team.[173] The goal of family navigation is to support families in overcoming structural and psychological obstacles (eg, transportation, language, fear, difficulties in obtaining information, and stigma) to medical or MH treatment. A family partner is a lay member of the collaborative care team whose role is to serve the family, help them engage and actively participate in the care team, and collaborate with the team to make decisions regarding the patient's care. Family partners foster a structured, strength-based relationship with the family that ensures that all family members are heard and their needs are addressed. Ideally, the family partner shares the family's ethnicity, culture, and language as closely as possible.

Specific activities of the family partner can include teaching the parent how to navigate the child-serving systems and processes; fostering empowerment through linkages to peer-parent support and self-help groups; and teaching the parent how to identify formal and community-based resources for their child. Training in motivational interviewing and collaborative decision making can enhance the family partner's work with a family. The AHRQ has published a technical brief addressing strategies for patient, family, and caregiver engagement.[174]

Family partnership/family navigation has been shown be associated with improved MH outcomes, including, for example, reducing appointment no-show rates,[175] increasing access to education, supports, and resources,[176] and reducing health care use.[177]

TABLE 6 Published Findings From Integrated Collaborative Mental Health Care in Pediatric Primary Care

Integrated collaborative care program/location	Study design and service Team structure and roles	Study population	Target disorders	Key outcomes
Youth Partners-in-Care (YPIC), California[159,160]	Randomized controlled trial Prescribers: PCCs trained in depression management Care coordination/psychosocial intervention: integrated care managers (MH or nursing) trained in cognitive-behavioral therapy for depression	418 Adolescents and young adults in 5 pediatric primary care practices	Depressive symptoms	Compared to usual care patients, intervention patients/families reported significantly: • fewer depressive symptoms • higher MH quality of life • greater satisfaction with MH care • higher rates of health care • greater psychotherapy or counseling • lower likelihood of severe depression at follow-up • shorter time to recovery
Brief Cognitive-Behavioral Therapy for Depressed Adolescents Receiving Antidepressant Medication, Oregon[161]	Randomized controlled trial Prescribers: PCCs Care coordination/ psychosocial intervention: master's-level psychologists trained in cognitive-behavioral therapy for depression	152 Adolescents in a health maintenance organization	Major depressive disorder	Compared to usual care patients receiving SSRI medication, intervention patients reported: • non-significant favorable trend in depressive symptoms
Doctor-Office Collaborative Care (DOCC), Pennsylvania[162]	Randomized controlled trial Prescribers: PCCs Care coordination/psychosocial intervention: integrated care managers (social worker, counselor, or nurse) trained in cognitive-behavioral therapy and parent behavioral therapy Consultation: psychiatrist	78 Children in 4 pediatric primary care practices	Behavior problems	Compared to enhanced usual care patients, intervention patients reported significantly: • higher service use and completion • greater improvement in behavioral and emotional problems • overall clinical response
Reaching Out to Adolescents in Distress (ROAD), Washington[163]	Randomized controlled trial Prescribers: PCCs Care coordination/ psychosocial intervention: integrated care managers (master's- level clinicians) trained in cognitive-behavioral therapy for depression Consultation: psychiatrist/ psychologist	101 Adolescents in 9 pediatric primary care practices	Major depressive disorder	Compared to usual care patients, intervention patients reported significantly: • greater decreases in depression symptom scores • greater response to treatment and remission of depressive disorder

(*continued*)

TABLE 6 Continued

Integrated collaborative care program/location	Study design and service Team structure and roles	Study population	Target disorders	Key outcomes
Doctor-Office Collaborative Care (DOCC), Pennsylvania[164,165]	Randomized controlled trial Prescribers: PCCs Care coordination/psychosocial intervention: integrated care managers (social workers) trained in cognitive-behavioral therapy and parent behavioral therapy Consultation: psychiatrist	321 Children in 8 pediatric primary care practices	ADHD, anxiety, behavior problems	Compared to enhanced usual care patients, intervention patients reported significantly: • higher rates of treatment initiation and completion • greater improvement in hyperactivity, internalizing and behavior problems • greater remission of internalizing and behavior problems • lower parental stress • greater consumer satisfaction PCCs in more stressful work environments demonstrated more positive perceptions of collaborative care
Early Management and Evidence-based Recognition of Adolescents Living with Depression (EMERALD), Minnesota[166]	Two-group retrospective comparison Prescribers: PCCs MH assessment/care coordination/ motivational interviewing/ behavioral activation: integrated registered nurse Psychotherapy: integrated clinical social worker Consultation/direct service: child and adolescent psychiatrists	661 Adolescents in pediatric primary care and family medicine practices	Depression symptoms at least moderate in severity	Compared to usual care patients, intervention patients reported significantly greater: • response to treatment • remission of symptoms
Generalist Behavioral Health (GBH) model vs Pediatric Behavioral Health Integrated Program (BHIP) model, New York[167]	Two-group comparison Prescribers: PCCs Care coordination/ psychosocial intervention: integrated care manager (generalist social worker) trained in problem-solving therapy vs Care coordination/psychosocial intervention by generalist social worker + Psychotherapy: integrated psychologist trained in treatment for ADHD, anxiety, conduct, depression, trauma disorders Psychiatry: integrated child and adolescent psychiatrists	112 PCCs in 13 pediatric primary care practices serving 35,000 children and adolescents	ADHD, anxiety, depression, disruptive behavior, stress/trauma-related disorders	Compared to GBH model, BHIP model had significantly greater: • PCC referral rates to MH services • PCC satisfaction with MH services • PCC self-rated competence in managing ADHD and in steps to take after a positive MH screen

(*continued*)

TABLE 6 Continued

Integrated collaborative care program/location	Study design and service Team structure and roles	Study population	Target disorders	Key outcomes
Team Up, Massachusetts[168-170]	Two-group, difference-in-difference design; provider interviews Prescribers: PCCs Psychotherapy: integrated MH specialists Care coordination: integrated community health workers (family partners) Consultation and education: child and adolescent psychiatrists	Pediatric clinics in 3 community health centers	Unspecified behavioral health problems	Program was associated with significant relative increase in rate of all types of primary care visits Participants reported that the program: • allowed development of team collaboration and communication • enhanced professional fulfillment • helped prevent burnout
Behavioral Health Integration Program (BHIP), Massachusetts[52,135,171]	Single-group, stepped wedge design Prescribers: PCCs Psychotherapy: integrated MH specialists (predominantly clinical social workers) Care coordination: integrated medical home care coordinators Consultation and education: child and adolescent psychiatrists and senior clinical social workers	350 PCCs in 59 pediatric primary care practices serving 300,000 children, adolescents, early adults	Anxiety, depression, ADHD, disruptive behavior, stress/ trauma-related disorders	Program was associated with: • significantly increased integration of MH care • high PCC self-efficacy for: ○ level-of-care decisions ○ prescribing psychotropic medications ○ using symptom rating scales ○ ability to manage MH problems • significantly increased access to MH services in primary care: ○ screening ○ psychotherapy ○ PCC MH visits ○ psychotropic prescribing • high professional satisfaction (PCCs and integrated MH specialists) • high program acceptability, appropriateness, feasibility, fidelity, adoption, penetration, and sustainability

ADHD = attention-deficit/hyperactivity disorder; MH = mental health; PCC = primary care clinician; SSRI = selective serotonin-reuptake inhibitor.

Professional Education and Training in Collaborative Care

Pediatric Trainees. The AAP has fostered the belief that pediatricians should attend to the psychosocial aspects of child and family health in a series of position and policy statements for more than 40 years, most recently in a 2019 reiteration[39] of the 2009[20] MH competencies for pediatricians (Table 2). The AAP has backed up this commitment by the development and dissemination of a voluminous collection of MH resources, including algorithms, toolkits, guidelines, books, educational videos, and a continuity clinic curriculum.[151-154,178-185] These efforts by the AAP have been supported by the American Board of Pediatrics, which delineated a specific training milestone pertaining to MH ("assess behavioral wellness and address prevention as well as manage the behavioral and mental health needs of patients through young adulthood, recognizing when further consultation from a mental or behavioral health specialist is needed").[186] In a recent technical report, the AAP proposed specific strategies for achieving the MH competencies for pediatricians.[18]

Despite these efforts, surveys over 3 decades have documented little change in PCCs' MH preparedness.[187,188] More than one-half of pediatric program directors surveyed in 2011 were not aware of the 2009 competencies.[189] The majority of pediatricians feel unprepared to achieve the MH competencies, which has not changed substantially over time.[19] A recent national survey of pediatric trainees applying for their initial certification examination in general pediatrics found that although there was high agreement that pediatricians should be competent in the management of common MH concerns, only one-third reported high competence in MH assessment skills and one-fifth reported high competence in MH treatment skills.[190]

Barriers to training residents may include resistance from residents to learn skills perceived to pertain to another specialty that they did not choose; limited exposure to MH disorders stemming from a greater presence of child and adolescent psychiatrists in academic medical centers; training with preceptors that are themselves uncomfortable with management of MH concerns; emphasis of training on tertiary rather than primary care; and limited curriculum time. Because many pediatricians may not feel competent to precept MH practice, more than one-half of pediatric residency continuity clinics have an on-site developmental behavioral pediatrician, social worker, child psychiatrist, psychologist, or other MH specialist[191,192]; however, at present, there is no financial structure to support their work as preceptors. A medical center in New England has piloted a program pairing pediatric residents and child and adolescent psychiatrist fellows, in which the child and adolescent psychiatrist fellow can function as an informal and formal consultant on complex cases, which may be a more cost-effective solution to preceptor needs.[193]

Child and Adolescent Psychiatry Trainees. Considerably fewer publications describe collaborative care training efforts for child and adolescent psychiatrist trainees. A collaboration between the American Psychiatric Association and the AIMS Center has developed model collaborative care curricula for general psychiatry trainees.[58,194,195] Several articles have reviewed the training of general psychiatry residents for work in primary care settings.[196,197]

Ngoroge *et al.*[198] apply the 6 Accreditation Council for Graduate Medical Education (ACGME) core competencies to the practice of integrated care across psychiatry, psychology, and social work disciplines (Table 7), and recommend that trainees in these disciplines receive interdisciplinary training experiences that complement the competency areas. They also describe a novel integrated behavioral health rotation for child and adolescent psychiatrist fellows in their institution. Giles and Martini[199] provide a guide to the essential elements of a collaborative MH training program for primary care. DeMaso and Knight[200] developed a case-based MH training curriculum—"Collaboration Essentials"—for collaborative office rounds. Gleason and Sexson[201] describe the preparation of trainees for integrated care through the triple board and post-pediatric portal programs, and suggest that physicians with combined pediatric/psychiatric training will offer a uniquely valuable perspective for developing systems.

Evaluation/Demonstration of Impact of Collaborative Care

To ensure effective health care delivery services and to achieve desired health outcomes for patients and populations, a system of continuous quality improvement with measurement tracking is a central need. Clinicians, hospitals, and health systems are increasingly participating together in systems of care that are planning together how to measure the structure, processes, and outcomes of their care.[202] Variations in collaborative care designs and real-world implementation have necessitated that these care systems closely monitor their own processes, regardless of the outcomes that have been reported by other types of collaborative care systems.[32]

Measurement targets in collaborative care often extend beyond child and adolescent psychiatrists' more familiar focus on symptom rating scales to evaluate the health and wellness of children and families as well as the functioning of the care system.[203] Although there is no comprehensive set of well-

TABLE 7 Collaborative Care Competencies for Mental Health Specialists[198]

Interprofessional communication	Professionalism	Integrated care systems practice	Practice-based learning and education	Preventive screening and assessment	Cultural competence
The ability to encourage shared decision making among patients, families, and providers to promote effective team-based care.	The ability to establish a shared professional culture and ethical/legal guidelines for practice.	The ability to comprehensively understand the integrated primary care context and the different professional roles in this environment.	The ability to learn collaboratively with professionals from other disciplines. The ability to understand the evidence base for preventive and treatment interventions. The ability to use quality improvement methods to make ongoing programmatic adjustments in response to the changing evidence base for clinical practice.	The ability to understand the use of screening assessment tools for the early identification of emerging behavioral health conditions and for ongoing assessment of patient outcomes	The ability to understand ways of working collaboratively within diverse communities, understanding key differences in communication styles, identifying behavioral health concerns, and understanding barriers to treatment. The ability to understand the psychosocial determinants of health and the impact on children's and families' presentations.

accepted measures to evaluate value in collaborative care, measures are generally collected in one or more of the following 3 areas: structure, process, and outcomes.[204]

Structure measures report on a system's staffing plan, physical location, training processes, use of information technology, reimbursement structure, and overall scope of services. Structural elements may include availability of crisis management and care coordination systems, training curricula, clinical partnerships with consultants, and MH specialty referral pathways.

Process measures assess the action level of the care model, describing what is delivered in both access to and quality of care. Access measurement could include rates of screening, diagnosis, treatment, referral, and other service receipt over time for the different populations served, as well as the speed of service access. Quality of care measurement could include fidelity to evidence-based assessment and treatment and measurement-based care, and extent to which care practice integration is achieved.

Outcome measures can include youth health and functioning (MH and substance use disorders, physical health, ability to learn), family health and functioning (housing stability, family employment, family stress, social connectedness), consumer satisfaction/experience of care, and costs to clinics, payers, and consumers. Measures of MH outcomes would ideally include instruments researched and validated for use with young people.

When designing a measurement plan, program directors will need to consider what questions they most want to have answered for their specific purpose and identify measures for those questions. Data sources for measurements can include clinical data through the EMR, clinic operations data, claims/encounter data, symptom rating scales, surveys, and qualitative data from interviews. General wellness outcomes such as school attendance/performance and family functioning distal to the healthcare process are ideally incorporated also. Assessing the burden of data collection is a critical component of evaluation design and a requirement of monitoring. Measurement captured in the course of usual care documentation is functionally preferred over performing additional work for data collection and entry that would be difficult to sustain.[204] Wissow *et al.*[205] present an evaluation framework for pediatric integrated care that comprises measurement in 5 key domains: context, structure/processes, patient engagement, social determinants of care, and stepped/evidence-based care.

Fiscal Sustainability of Collaborative Care

Limited information about the fiscal components of collaborative care has been published. Regarding coordinated models, MCPAP expenses were estimated in 2010 at

$2 per child per year for 1.5 million children.[206] In PAL, expenditures related to medication increased, MH expenditures in foster care increased, and use of MH services (including emergency, inpatient, and outpatient services) did not change.[76] As such, although increased use of medication is considered a quality indicator, in PAL there was no cost offset to the overall system, such that the increased use of medication increased the total cost.

In a transdiagnostic integrated model (Behavioral Health Integration Program [BHIP]),[171] expected substantial increases in ambulatory expeditures, including pharmacy and emergency room, were not observed. A collaborative care model for adolescent depression in primary care (Reaching Out to Adolescents in Distress [ROAD]) was shown to be cost-effective, in that the ratio of Quality of Life Years (a cost-effectiveness measurement of improvement in patient outcomes) to cost data was favorable.[207] A collaborative care model for child behavior problems in primary care (Doctor-Office Collaborative Care [DOCC]) demonstrated that although the total costs of providing the intervention were twice the cost of usual care, the cost per patient was actually lower because almost all of the intervention group received intervention, whereas less than one-half of the youth in usual care received the indicated intervention.[129]

There are unique challenges associated with demonstrating the cost-effectiveness of child and adolescent integrated care, compared to adult populations in which high costs are incurred related to chronic medical conditions worsened by untreated MH disorders. The benefits of improving child MH are expected to accumulate over a lifetime rather than remaining isolated to short-term health system cost impacts. Nonetheless, collaborative treatment in childhood should lower some costs of care,[208,209] and children with greater medical needs may benefit even more in the short term from collaborative involvement, although the evidence supporting this assertion is limited. Proposed benefits of integrated care models also could accrue through cost offsets throughout the health care, childcare, and family system.[115]

Within a fee-for-service model, collaborative care could be viable and sustainable if several factors were dealt with system-wide by private and public payers: (1) integrated MH care should be supported without insurance carve-outs; (2) children and families should have easy access to MH care by both PCCs and MH providers without the need for prior authorization; (3) billing codes should be available for all needed evidence-based services by both PCCs and MH providers, including standardized screening and management protocols, consultative discussion and review meetings, nontraditional consultations via telepsychiatry or telephone contact, parent-only meetings, care management by nonmedical staff, and intervention for sub-diagnostic conditions; (4) there should be adequate relative value unit (RVU) reimbursement for both PCCs and MH providers, so that, for example, therapists can bill from the primary care office and PCCs can bill for MH visits; (5) payers should commit to similar reimbursement models that would allow continuity across payers for MH treatment; (6) financial support should be provided for data, telepsychiatry, and interoperable EMR infrastructure; and (7) incentives should be provided for PCCs and child and adolescent psychiatrists to advance their skills, knowledge, and attitudes regarding MH assessment and treatment in primary care settings.

Advocacy for Collaborative Care

Integrated care continues to face significant barriers to implementation, including lack of consensus about how primary care and MH specialists should apportion roles and responsibilities; the need for substantial practice transformation if primary care practices seek to implement integrated care; financing mechanisms that do not incentivize MH treatment in primary care or collaboration with MH providers; a lack of MH practitioners trained to work in primary care settings; challenges associated with translating the adult triadic collaborative care model into pediatrics; and the necessity of involving parents in the MH care of their children.

Although progress has been made at the federal, state, and professional society levels to promote integrated MH care, most efforts have been directed at adult health care. Accordingly, a new set of sustained advocacy initiatives is necessary to advance integrated care in pediatric settings. Wissow *et al.*[210] have outlined initiatives in 4 key areas: (1) transforming pediatric practices to address family psychosocial needs; (2) making pediatric integrated care financially feasible; (3) developing a larger and more diverse integrated care workforce; and (4) developing robust research programs to develop the processes and interventions that will bring pediatric integrated care to its full potential.

CONCLUSION

Collaborative MH care is a rapidly evolving concept that has become a major MH service delivery modality that is likely to gain further prominence in the near future. By mastering the knowledge and skills presented in this Update, child and adolescent psychiatrists will be prepared to take advantage of a propitious opportunity to lead or participate in the provision of the full spectrum of collaborative MH care.

Through collaborative partnerships, child and adolescent psychiatrists, other MH specialists including psychologists, clinical nurse specialists/psychiatric nurse practitioners, and social workers/counselors, CMs, care coordinators, family partners, and PCCs together can help to alleviate the substantial gap between the millions of youth needing quality MH services and those receiving them.

This Clinical Update was developed by the AACAP Collaborative and Integrated Care Committee (CICC): Abigail Schlesinger, MD, and Sourav Sengupta, MD, MPH (co-chairs); Larry Marx, MD, Robert Hilt, MD, D. Richard Martini, MD, and David R. DeMaso, MD (past co-chairs); Negar Beheshti, MD, Breck Borcherding, MD, Aleiya Butler, MD, Elise Fallucco, MD, Katrina Fletcher, MD, Elizabeth Homan, MD, Karen Lai, MD, Karen Pierce, MD, and Aditi Sharma, MD (members); and Marian Earls, MD (American Academy of Pediatrics liaison to the CICC); and the AACAP Committee on Quality Issues (CQI): Carol Rockhill, MD, PhD, MPH (co-chair and CQI liaison to the CICC); Oscar G. Bukstein, MD, MPH (past co-chair); A. Reese Abright, MD, Timothy Becker, MD, John Diamond, MD, Munya Hayek, MD, Helene Keable, MD, and Roma A. Vasa, MD (members); and Heather J. Walter, MD, MPH (co-chair and senior author).

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The primary intended audience for AACAP Clinical Updates is child and adolescent psychiatrists; however, the information presented also could be useful for other medical or behavioral health clinicians.

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Correspondence to the AACAP Communications Department, 3615 Wisconsin Avenue, NW, Washington, DC 20016.

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